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East Asian Multinationals in the Indonesian Electronics Industry

Idris Feltkamp Sulaiman

A thesis submitted for the degree of Doctor of Philosophy,
Australia–Japan Research Centre,
Asia Pacific School of Economics and Management,
The Australian National University

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Declaration

This dissertation was written while I was studying at the Australian–Japan Research Centre at the Australian National University and is submitted for the degree of Doctor of Philosophy at this university. It has not been submitted for a higher degree to any other University or institution. The opinions expressed are my own, unless otherwise indicated.

A handwritten signature in black ink, appearing to read 'Idris Feltkamp Sulaiman', with a long horizontal flourish extending to the right.

Idris Feltkamp Sulaiman

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Canberra, January 2000
Idris Feltkamp Sulaiman

Abstract

In the low-end global electronics market, Indonesia is competing with many developing countries in the Asia Pacific. For its electronics industry to achieve the aims of sustainable growth and development, it seeks to be a competitive production platform for electronic products by inducing inflows of resources and technology through multinational enterprises and their suppliers to establish world-class manufacturing facilities.

Competition between host countries for investment by multinational firms is subject to complex locational choice. On its own, the availability of cheap labour in a host country does not guarantee that the industry will develop successfully. Similarly, the presence of key global players may not by itself produce a more developed local industry. The critical factors that lead to industrial take-off and dynamic development of production must be uncovered through understanding the competitive behaviour of major investors, the regulatory framework and other factors that make up Indonesia's locational advantages and changing comparative advantage in world markets.

This thesis focuses on the competitive behaviour of the principal East Asian multinationals in Indonesia and, in particular, the characteristics of parent firms and affiliates, foreign investment behaviour and other aspects of market servicing of Japanese and Korean multinational firms, the main investors in the Indonesian electronics industry. This study adopts a comprehensive approach to the analysis of the comparative performance of these multinational enterprises (MNEs). It combines the standard approach to the study of foreign direct investment (FDI) of how well the various theories explaining FDI fit the facts (micro approach), analysing the so called macro factors that explain FDI outflows and inflows (push and pull factors) and a case study approach of analysing the strategic management and organisation issues utilised by industries studies.

The study illustrates the dynamic interplay between macro (locational) forces and micro (firm-specific) factors, drawing on the use of official statistics, survey data and interviews (case studies). These data sources, with careful a survey of theoretical and empirical writings on MNEs, lead to a rich description and analysis of the role of Japanese and Korean firms in Indonesia. The extant theoretical and empirical literature is surveyed and examines across several literatures, including MNE, FDI, strategy, location, development, trade and policy. The thesis is complex, balancing location, parent factors, affiliate characteristics, nationality and technology to uncover the intricacies of electronic sales and manufacturing to provide a dynamic element lacking from many MNE studies by explicitly dealing with time and path dependency.

Using the ownership–internalisation–locational advantages paradigm as starting point and including other tools from international production and strategic management theory to suit the setting, this study attempts to address five basic issues:

- the changes that occurred in the investment climate leading to remarkable investment surges at different periods by examining Indonesia’s locational advantages;
- whether there are significant differences in firm-level characteristics among subsidiaries manufacturing in Indonesia through a quantitative analysis of the Indonesian industry data;
- the impact of changing international and home-country conditions on the way parent firms invest or expand operations overseas by analysis of the competitiveness of the electronics subsectors in their home countries and their regional production networks;
- whether there are significant differences in parent-firm characteristics, their motivation and strategies in Indonesia by examining the profile of the principal firms, the entry timing of their affiliates and the results of company surveys of the relative importance of ownership, locational and internalisation advantages of Japanese and Korean firms in Indonesia; and
- whether there are significant differences over time in the investment and other market servicing strategies of Japanese and Korean multinationals in Indonesia through case studies of five MNE groups for three decades from the 1970s.

Many similarities but some important differences in the comparative characteristics and performance of MNEs from the two East Asian countries are uncovered in this study of their operations in Indonesia. However, a comparison of the Japanese and Korean firms suggests that country-of-origin differences do not significantly account for variations in the behaviour of MNEs after taking account of vintage or stage-of-development effects.

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List of acronyms

ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
ASEAN-4	Four members of Association of South East Asian Nations (Indonesia, Malaysia, the Philippines and Thailand)
ASIC	application specific integrated circuit
AV	audio and video equipment
<i>BAPEKSTA</i>	<i>Badan Pelayanan Kemudahan Ekspor dan Pengolahan Data</i> (Agency for Export Facility Services and Financial Data Processing, Indonesia)
<i>BPM-PBUMN</i>	<i>Badan Penanaman Modal dan Pembinaan Badan Usaha Milik Negara</i> (the Board of Investment and State-owned Enterprises, previously known as <i>BKPM</i>)
BBC	brand-to-brand complementation
<i>BKPM</i>	<i>Badan Koordinasi Penanaman Modal</i> (Investment Coordination Board at the national level, Indonesia)
<i>BPS</i>	<i>Badan Pusat Statistik</i> (Central Bureau of Statistics, Indonesia)
CBU	completely built up
CD/CDP	compact disc player
CEPT	Common Effective Preferential Tariff
CIM	computer integrated manufacturing
CKD	completely knocked down
CRT	cathode ray tubes
CSIC	custom specific integrated circuits
CTI	Committee on Trade and Investment
CTV	colour television set
<i>Deperindag</i>	<i>Departemen Industri dan Perdagangan</i> (Ministry of Industry and Trade, Indonesia)
DKB	Daichi Kangyou Bank Ltd
<i>DKI</i>	<i>Daerah Khusus Ibukota</i> (Special Capital Territory of Jakarta)
DRAM	dynamic random access memory
DVD	digital video disk
EC	European Community
EDI	electronic data interchange
EIAJ	Electronic Industries Association of Japan
EPR	effective protection rate
EPROM	Erasable programmable read-only memory
<i>EPTE</i>	<i>Enterpor Produksi Tujuan Ekspor</i> (industrial estates)
EPZ	export processing zones
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
FDI	foreign direct investment (a term used in preference to its equivalent direct foreign investment)

FMA	first mover advantage
FMS	foreign market servicing
FMS	flexible manufacturing system
FMV	fair market value
FOB	free on board
FTC	Fair Trade Commission (Japan, Korea)
GATT	General Agreement on Tariffs and Trade
GSP	General System of Preferences
HPEA	high-performing East Asian economies
IC	integrated circuit
IDEA	interactive digital electronic appliances
IMF	International Monetary Fund
IPO	international procurement office
ISIC	Indonesian Standard Industry Classification
IT	information technology
ITA	Information Technology Agreement
<i>Jabotabek</i>	The adjacent areas around <i>DKI</i> Jakarta delineated by the cities of Bogor, Tangerang and Bekasi, 'greater Jakarta'.
JETRO	Japan External Trade Organisation
JIT	just in time
JVC	Victor Company of Japan Ltd
KEPI	Korean Electronic Parts Industries
KLUI	<i>Klasifikasi Lapangan Usaha Indonesia</i>
KOTRA	Korean Trade Promotion Corporation
LCD	liquid crystal displays
LGE	Lucky-GoldStar Electronics
MAR	magnetic audio recording
MEI	Matsushita Electronics Industries Ltd
MFA	Multi-Fibre Arrangement
MFN	most-favoured nation status
MITI	Ministry of International Trade and Industry, Japan
MNE	multinational enterprise (a term synonymous with multinational corporation or multinational firm)
MNL	multinomial logit model
MOF	Ministry of Finance, Japan
NAFTA	North American Free Trade Agreement
NIE	newly industrialising economy
NSC	National Semiconductor company
NTB	non-tariff barrier
OA	office automation equipment (copiers, facsimiles, word processors, office computers, electronic cash registers, typewriters, and calculators)

OBN	own brand name strategy
OEA	Open Economic Association
OECD	Organisation for Economic Cooperation and Development
OEM	original equipment manufacturing strategy
OLI	Ownership–Location–Internalisation paradigm
OPR	overseas production ratio
PAFTAD	Pacific Trade and Development Conference
PBEC	Pacific Basin Economic Council
PBF	Pacific Business Forum
PCM	product cycle model
PDP	plasma display panel
PECC	Pacific Economic Cooperation Council
PKB/PDKB	<i>Penyelenggara Kawasan Berikat</i> (bonded management companies)/ <i>Pengusaha di Kawasan Berikat</i> (licensees located in a bonded zone)
PMA	<i>Penanaman Modal Asing</i> (foreign capital investment scheme as classified by the <i>BKPM</i>)
PMDN	<i>Penanaman Modal Dalam Negeri</i> (domestic capital investment scheme as classified by the <i>BKPM</i>)
PT	<i>Perseroan Terbatas</i> (placed in front of Indonesian company names, equivalent of company limited or the acronym: Co. Ltd.)
QC	quality control
R&D	Research and development
RHQ	regional headquarters
ROK	Republic of (South) Korea
ROO	rules of origin
Samsung EC	Samsung Electronics Co. Ltd
Sanyo EC	Sanyo Electronics Co. Ltd
SC	Sony Corporation
SEZ	special economic zone
SIA	Semiconductor Industry Association
SII	Structural Impediments Initiative (talks)
SME	small and medium-size enterprises
SRTA	sub-regional trade arrangement
TQC	total quality control
TV	television
UR	Uruguay Round of the GATT
VCR/VTRs	video cassette recorder or video tape recorder sets
VER	voluntary export restraint
WTO	World Trade Organisation

Note on names and places

All non-English words are italicised. Following Japanese and Korean convention, the names in the text and notes are given with the family name followed by the given name. In writings in English and Indonesian, however, the given name is followed by the family name. Except for place names commonly encountered in Anglophone countries, names of institutions are translated into English. All long vowels in Japanese are indicated by the letter 'u' after the vowel.

1 Issues

Growing global economic interdependence has been accompanied by increasingly intense competition among multinational firms. In the low-end global electronics market, Indonesia is competing with many other developing countries. As high labour costs and other factors in Japan and the newly industrialising countries (NIEs) in North and Southeast Asia¹ continue to force the relocation of some segments of their electronics industries to countries with lower labour costs,² there is no certainty that Indonesia will be the country of choice for firms with production bases in these countries. While Indonesia offers preferential access to the major markets in the North Americas and Western Europe, there are third countries which combine proximity to these markets with wage and land costs similar to those in Asia.

Competition between host countries for investment by large electronics firms is subject to complex locational dynamics. Forces driving the dynamics operating in the East Asian electronics industry need further explanation. The conventional view has it that the electronics industry developed in East Asian countries with a surplus of cheap labour, principally due to the speedy relocation of labour-intensive processes by Japanese firms.

But the reality is at once more complex and fundamentally different. There are countries in Asia where labour is cheaper than in Korea, Taiwan, Hong Kong and Singapore, yet the electronics industry has not developed appreciably in those countries. Nor is that lack of development due to the absence of Japanese investments. The Japanese have invested in the electronics industries of Indonesia, the Philippines and Thailand, but those industries have yet to reach their take-off stage of development. The critical factors of growth must be factors other than the low cost of labour. Essentially, the dynamic processes which have shaped the development of the Asian electronics industry involve all various aspects of comparative advantage. (Gregory 1985: 10)

¹ The term NIE is equivalent to the term NIC (newly industrialising countries). The former is preferable to the People's Republic of China, which claims sovereignty over Taiwan and Hong Kong. In East Asia, NIEs include the Republic of (South) Korea, Taiwan, Singapore and Hong Kong. Hereafter, Korea is used as a synonym for the Republic of (South) Korea.

² It has been argued that the low cost of labour may no longer be sufficient to attract foreign investment in the electronics industry in the 1990s. Average labour costs in selected major US multinational electronics firms fell from 10 per cent in 1982 to 5 per cent in 1986. In the broad electronics sector, where labour costs are around 10 per cent of the total cost of production, a 1 per cent saving of a 10 per cent cost factor is only one-tenth of 1 per cent (Stanford Research Institute International 1992: 4). The many dimensions of what might attract foreign investment to Indonesia are further discussed in Chapters 3 and 7.

If the electronics industry in Indonesia is to maintain its attractiveness as a competitive production platform for multinational enterprises (MNEs),³ it needs the appropriate macroeconomic and microeconomic policy settings to achieve a profitable, consistent and predictable investment climate. One way to achieve this is to develop a set of policies based on a thorough understanding of the investment behaviour of the relevant multinationals, the factors that might attract them to invest in Indonesia and the shifting trends in this rapidly changing global industry.

During the 1970s Indonesia, unlike Malaysia, did not attract many foreign electronics firms. This situation changed after the mid-1980s and by the early 1990s, observers of Indonesian industrial development saw the electronics industry as a new and important export earner capable of generating employment and growth (McCormick 1992; Stanford Research Institute International 1992; Pangestu 1994; Harianto 1995). In 1992 the electronics industry had become one of Indonesia's top five exporting industries (Manning 1992) and in 1997 the third in exports among the top ten industrial sectors. A comparison with the electronics industries in other high performing East Asian economies suggests that Indonesia's total output is smaller than that of Thailand, Malaysia, but comparable with the Philippines.⁴

With intensified global competition since the 1980s, decisions by MNEs about investment, organisation, technology and the location of their operations are increasingly interdependent and affected by movements towards decentralisation and regionalisation. Most multinationals are now evolving towards a single new 'integrated network' model with increasing interdependence among the various regionally based units of MNEs replacing the autonomy or dependence of earlier forms of organisation. Earlier forms involved the establishment of a virtually complete 'value chain' in each major market, known also as 'multi-domestic' strategies or firms⁵ (Westney 1997; Simon 1997).

³ A multinational corporation (MNE) is defined here as any company originating in one country and having continuous activities under its control in at least two other countries which provide more than 10 per cent of the total group turnover (Ghertman and Allen 1984: 2) as opposed to firms that produce in one country and export to overseas markets. This is a more concise definition than that used by the United Nations, which defines an MNE as any corporation, enterprise or firm that owns production or service facilities outside its national boundaries. There are no known definitions which relate to equity. Terms such as 'transnational corporation' or 'multinational firm' are synonymous with MNE. MNE is used in the dissertation for the purposes of consistency.

⁴ See Chapter 3 for further details of the comparison between Indonesia and other main East Asian economies.

⁵ Multi-domestic strategies pursued principally by MNEs prior to the mid-1980s involve the location of a complete or near complete value chain in each of their major selling markets. While there are variations between the US, EU and Asian 'proto-typical' organisations, they are characterised by the thesis of 'divide by territory' (Humes 1993:24). Examples of the multidomestic model were the established European MNEs, such as Nestlé, Unilever and Philips. The later-developing Japanese MNEs such as Toyota, Matsushita and Canon established their bases in the 1970s and 1980s.

By the end of the 1980s, as multinationals in Europe, Asia and North America came under pressure to adapt and improve their organisation, many developed a new MNE model, variously called the 'heterarchy' (Hedlund 1986), the 'multifocal firm' (Prahalad and Doz 1987) or the 'transnational' (Bartlett 1986; Bartlett and Ghoshal 1989). Previously, multinationals had developed a variety of approaches to organising their international efforts. While a few US MNEs continue to depend on international divisions to work with most or all of their product divisions in coordinating their operations, most rely upon highly structured product divisions. An increasing number of MNE groups from the European Union depend on their product divisions to manage international production, while some continue to depend on their globally dispersed operating companies. Japanese firms have developed 'function-split' global systems of marketing affiliates and manufacturing affiliates, while the Korean *chaebol*, with a stress on corporate culture similar to their Japanese *keiretsu* counterparts, are mainly 'product-split' conglomerates. A study of the organisation strategy of MNEs suggests that the different styles of organisation are converging towards one that relies on 'global operating divisions' supported by corporate-wide continental coordinating organisation (Humes 1993: 24–25).

There are different styles of managing international production among MNE subsidiaries operating in Indonesia. They are becoming increasingly interconnected with the activities of other subsidiaries in the neighbouring region, with their end-product markets and with other changes affecting their main global operating division and, ultimately, their parent MNEs. Whether a particular MNE is organised along product, functional or geographical lines, its subsidiaries in Indonesia are under greater international pressure. Nonetheless, little academic attention has been paid to the impact of global and regional reorganisation of production on the affiliates in a host country such as Indonesia.

The global electronics industry has spawned giant corporations — integrated electronics makers — and smaller specialised electronics firms that rely on outside sources for the non-principal 'value-added' parts that go into their products. Since the early 1990s, giant firms such as NEC, Fujitsu, Hitachi and Toshiba have played a more active role in the consumer electronics market. These firms have competed more fiercely with the smaller firms such as Sony, Sanyo and Sharp. At the same time, due to escalating costs of R&D and product development, the large firms are forming strategic alliances with smaller firms, increasingly with those of different nationality, to bolster

their technological capabilities and broaden their product range (Simon and Jun 1997; Tachiki 1995; Jun and Kang 1994).

While there may be deeper factors at work, these major changes in the structure of the market are driven by two technological developments that directly affect the operations of the affiliates of the MNEs in Indonesia. First, the switch from analogue to digital technology means that, increasingly, value-adding in consumer products lies in critical components such as semiconductor chips.⁶ Integrated firms are now in a better position to take advantage of the melding of consumer electronics, computing and telecommunications in multimedia devices by combining their component businesses, particularly semiconductor manufacturing, with their consumer electronics operations. In 1995, two leading Japanese firms (Matsushita and Sharp) and a Korean firm (LG Electronics) relocated some of their critical components manufacturing to Indonesia. These developments not only increase the 'value-adding' of end-products manufactured in Indonesia but also signify a major shift in the technology strategy of these MNEs — a step further than simply using Indonesian plants as low-wage and low-technology-intensive assembly operations.

Second, the advent of 'multimedia' and the 'information highway' in the 1980s and early 1990s brought with it many opportunities to introduce new technologies — both breakthroughs and incremental innovations in new products⁷ (Rosenberg 1995). New technologies enable the introduction of new products as well as new combined products from several electronics sub-sectors to create multi-function or multi-component devices and other 'hybrid' digital technology products. Since 1989, new products (such as digital video disks, flat-panel TVs, digital TVs, and hybrid IDEA gadgets) and an array of hybrid products (such as those based on the telephone or TV set) began to appear on the global market.⁸ After an initial period during which the new

⁶ Analogue electrical signals directly represent a form of energy, such as a human voice, while digital electrical signals indirectly represent the energy in a binary digital form. Digital signals are made up of discrete pulses coded to represent information, while analogue signals are in continuous form.

⁷ A breakthrough innovation can be defined as one that establishes a new framework for developing incremental innovations (Rosenberg 1995: 180). As an example of the former, Marconi discovered wireless communications but it was David Sarnoff who invented the radio and realised its possibilities as a device to transmit news, music and other forms of entertainment through his US company, RCA, in the 1920s. The Sony Walkman, is an excellent example of incremental innovation demonstrating how existing technological capabilities can be re-engineered to create an entirely new product.

⁸ A new product such as the digital video disk (DVD) represents a new standard of multimedia storage designed to replace the video cassette, computer diskette and other storage mediums, while the large flat plasma display panel (PDP) and high-quality digital television technology is aimed at replacing the current standard Braun-tube analogue-based television sets. On the other hand the term 'multi-functional' appliance refers to products that combine the functions of fax, telephone, printer and scanner and, more recently, computer TV with Internet and other traditional 'home entertainment' uses such as radio, audio or video recording and playback. The IDEA (Interactive Digital Electronic Appliances) is a hybrid of a computer and a consumer appliance (such as those manufactured by Diba Inc., Ibox of Japan and Network Computer of

products are manufactured in their country of origin, the manufacture of these products moves to technologically sophisticated but lower-cost manufacturing locations. When the subsidiaries in the latter countries shift the focus of their manufacturing activities away from lower-end final consumer products or components towards high value-added items, this often leads to a relocation of the production of more mature, lower value-added models or products to lower wage developing countries such as Indonesia.

While previous MNE relocations could be analysed using the product-cycle model (Vernon 1966), more recent theoretical studies of the dynamic growth of MNEs in technology-intensive manufacturing industries argue that the product-cycle model should be viewed a special case in the development of a more general dynamic theory of international production (Cantwell 1989c: 52–72). As a theory of innovation and technological accumulation, the product-cycle model is inadequate for two reasons. Firstly, while many innovations are generic, some critical innovations are a firm-specific process rather than a product-specific one, and firms tend to fall into technological paths followed by groups of competing firms and their suppliers and customers. Secondly, the product-cycle model views firms not as initiators of production and innovation, but purely as active agents within an established framework of market exchange (Casson 1987). Hence, what is needed is a model of active oligopolistic firms from various national origins interacting and influencing one another, all steadily expanding or ‘fragmenting’ their international production activities.⁹ Such a model would more adequately characterise the new global electronics industry in the 1990s.

The decision as to where to locate manufacturing plants by parent MNEs is shaped by a variety of factors. A rich body of literature suggests that the investment behaviour of MNEs may be influenced both by the specific microeconomic characteristics of firms, such as their product mix, techno-economic features of their production processes, corporate investment strategy, corporate history, size and organisational trajectory; by factor endowments; and by macroeconomic developments

Oracle Inc.). It can take the form of a combination phone and e-mail machine, or an Internet tool with a TV hook-up and database accessory.

⁹ Cantwell (1989: 57) cited one study where, as production grows in a follower country, a new wave of innovative activity can start so that products and processes do not necessarily become standardised (as predicted by the PCM). In the case of the colour television sector, once television production had shifted to Japan, not only was innovation resumed, but research continued so that standardisation was only occurring partially and Japanese firms then relocated production not only to developing countries but also to industrialised countries such as the United States, where the basic technology originated (Baba 1987).

in their home country such as prices, exchange rates, institutions and organisations; and by industry structure, demand patterns and technological capabilities.¹⁰

Given that there is a vast literature on multinationals, it is important to find an appropriate framework to understand the behaviour of key players or a specific group of East Asian multinational firms or 'firm-like organisations'¹¹ operating in the Indonesian electronics industry and to explore the differences among firms or among groups of firms in this industry. There may be features that are unique to firms from a particular country and there may be significant differences between different groups of firms.

One argument suggests that multinationals from different home countries tend to conduct their foreign investment in different ways and that the differences in their origin are paramount to their character (Zysman 1994):

Though these firms roam the globe, each has a home — a country that necessarily shapes its character and both constrains and directs its choices. Each 'home' has a distinct industrial and technological base and a developed 'domestic' regional market.

The literature that attempts to explain and characterise the investment patterns of MNEs and the nature of international production had its beginnings in the late 1950s and early 1960s (Dunning 1958; Hymer 1960). During the 1970s and early 1980s, most studies of foreign investment focused on firms from 'Western' or advanced countries. This reflects a time when firms from the United States, Western Europe and Japan held a dominant position in the world economy. Since the mid-1980s, the internationalisation of firms from Asian NIEs and developing countries has attracted the attention of both scholars and policy makers (Hill and Athukorala 1998; Lall 1996; Hobday 1995; Dobson 1993; Wells and Wint 1991; Bloom 1992; Jun 1988).

As the global integration of affiliates within MNEs has become more important, a distinction between import-substituting (trade-displacing) and offshore or export-platform (trade-creating) investment has been identified (Kojima 1978), comparing 'American-type' (the former) and 'Japanese-type' (the latter) investment. Kojima

¹⁰ Studies on international production began with a study on the impact of the growth of US-owned affiliates on British competitiveness, as measured by local industrial development and trade performance (Dunning 1957) and followed by a study of why US firms establish foreign operations and establish international production (Hymer 1960). For useful overview surveys, see Blomstrom (1989), Cantwell (1989), Caves (1982), Caves (1993), Chang (1992), Chesnais (1994), Dicken (1992), Dunning (1993), Kimura (1993), Krugman (1992), Lizondo (1991), Moran (1993), McCulloch (1992) and Safarian (1990).

¹¹ 'Firm-like organisations' refers to *keiretsu*-type relationships between a large multinational and small, weaker firms from the host country or another nationality based on long-term contractual relationships, and other exclusionary alliances. Such relationships are designed to overcome risks associated with uncertainty (an inherent part of operating in a developing country and in coping with shortening of product cycles and other problems). The dominant firms usually provide capital, managerial know-how, technology and a

assumed that the industries in which a country has its greatest potential to invest abroad are those in which it initially enjoys a comparative advantage in trade. He concludes that Japanese investments are somehow 'better' for the developing/host country in question because they involve a transfer of comparative advantage from declining industries in Japan, thereby promoting trade growth from developing countries. Another study suggests that there are many US firms with export-platform investments in Southeast Asia, and many Japanese firms with import-substituting investments in Europe and the United States (Cantwell 1989c: 200).

Industrial development in Japan in the 1950s and 1960s, like that in Indonesia now, was driven by the use of modern physical capital and an abundance of low-skilled labour — in keeping with the comparative advantage theory of development. Other studies argue that such development would not have been possible without the assistance of foreign MNEs. Without the licensing agreements obtained from MNEs, successful local technological development, which began in sectors with an initial technological comparative disadvantage such as electronics, would not have occurred in Japan (Ozawa 1974; Pasinetti 1981).

The challenge in this thesis is to integrate previous theories and empirical findings on the internationalisation of MNEs from industrialised countries and apply them to explain the investment behaviour of MNEs from Japan and East Asian NIEs operating in developing countries such as Indonesia. An understanding of their characteristics and behaviour over time — in the host-country, at the regional and global level — can inform policy on foreign investment and competition. By drawing on the experience of East Asian MNEs, we seek to draw some lessons which are of more general interest. Another challenge is to identify and understand similarities and variation in MNEs' behaviour by corporate nationality given the dramatic rise of foreign direct investment (FDI) from Japan and other East Asian countries in the Indonesian electronics industry and elsewhere in the Asia Pacific region. In recent years, this has stimulated enormous interest among managers, policy makers and scholars (McCormick 1992; Ali 1993; Harianto 1995).

The study focuses on Japanese and Korean firms (variants of among the East Asian¹² MNEs) to investigate whether there are there significant differences in the ways

market, direct the subordinate firms to use resources in particular way and play an active role in 'devising plans for future investment, production and marketing' (Hatch and Yamamura 1996: 46–60).

¹² The definition of East Asia used in the study includes the four first-tier NIEs (Korea, Taiwan, Singapore and Hong Kong), the ASEAN Five countries (Malaysia, Thailand, the Philippines, Vietnam and Indonesia) and China.

Korean firms establish and organise their subsidiaries in a host country compared with the methods of Japanese firms, and whether firms from the two different home countries have a different impact on the markets in a specific host country. Variation in MNEs' behaviour from the same national origin is also a subject of investigation. Indonesian Investment Coordinating Board (*BKPM*) approved investment data show that by 1996–97, in value terms, over 90 per cent of direct investments in electronics came from Northeast Asia with 54.1 per cent from Japan, 14.2 per cent from Korea, 3.62 per cent from Taiwan, 11.2 per cent from Singapore and 2.58 per cent from Hong Kong.¹³

In the literature, there are several hypotheses about the effect of nationality on investment patterns and behaviour (Pangestu 1994). Japanese firms are said to rely primarily on production, technological and marketing competence to produce differentiated, fault-free and well-known brand products at competitive prices (Gregory 1985; Ernst 1994). The most important ownership advantage attributed to Korean MNEs is managerial ability in manufacturing with careful planning to ensure lower costs. Korean firms are said to achieve lower spending on wages, expatriate staff salaries and training (Koo 1985; Ernst 1994; Lee 1993). Finally, Hong Kong and Taiwanese MNEs are said to compete against the others by operating in joint ventures with well-established Chinese local business groups that have the advantage of great familiarity with the regulatory environment and conditions in the domestic market in Indonesia and in other developing countries in which they operate (Noble 1996; Hobday 1995).

Yet the literature on multinational corporate strategies (Kogut 1985; Kogut 1985a; Yamamura 1994; Chang and Kogut 1992; Humes 1993) also contends that the sequence or pattern of investment is a product of a number of macroeconomic variables such as relative exchange rates and other cost factors. While Japanese multinationals in Indonesia may appear to have significantly different operations from those of East Asian NIEs, the difference may be mainly a result of the historical sequence of investment (Thee 1991).

Comparative investment behaviour in the Indonesian electronics industry has yet to be thoroughly studied. Notwithstanding some significant variations in the products, international and Indonesian domestic investment environment, no study has examined whether the earlier 'entry-phase' experience of Japanese firms in the 1970s can be compared with the current 'entry-phase' by firms from the NIEs from the late 1980s.

¹³ Investments made by firms registered in Singapore are often made by affiliates of Japanese and other East Asian firms based in that island state. Details of the investment patterns by East Asian sources are provided in Chapter 3 and 4.

One report on the electronics industry suggests that during the late 1980s and early 1990s, the leadership of Japanese firms in some segments of the Indonesian electronics industry was challenged by other East Asian firms as well as by indigenous Indonesian firms (Harvard International Institute of Development 1995). These latter firms have emerged as powerful competitors in certain 'low-tech' segments of the industry as technology diffuses with increasing speed world-wide. These developments invite investigation and explanation.

Given the recent trend of increasing internationalisation in the electronics industry, there is a need for further empirical investigation into how investment patterns of both established and late-comer firms in a host country such as Indonesia relate to regional and global trends at the level of a specific MNE and its multinational group of affiliates. The impact of changes in the home country and major MNE markets on the organisation of international production and the development of investment patterns in Indonesia are issues for study.

Research questions

This dissertation attempts to provide an overall picture of the comparative performance of MNEs from East Asia in their electronics manufacturing operations in Indonesia. By focusing on large MNEs from Japan and Korea, the study attempts to provide a more comprehensive coverage of understanding the characteristics of key principal firms and how they internationalise and expand their operations in a host country such as Indonesia. The analysis focuses on MNEs operating in the consumer electronics segment of the industry in Indonesia, which consists mainly of low-end labour-intensive assembly.¹⁴

There is a good deal of discussion in the literature about whether MNEs or FDI from different countries behave differently in developing their overseas operations, and whether these differences in behaviour are beneficial or harmful to the development of industries of host country (or countries) in question. This study examines in detail the

¹⁴ According to the Electronics Industries Association of Japan and the Japan Electrical Manufacturers Association, the 'narrow' definition of 'consumer electronics sector' includes products such as video cassette or video tape recorders (VCRs/VTRs), television sets, video cameras, and other visual imagery equipment; and radios, radio-cassette players, mini-component stereo sets, CD players, and other audio equipment. These products hereafter are referred to as 'Audio Video (AV)'. The 'broader' definition includes also 'home or whitegoods appliances', products such as refrigerators, washing machines, air conditioners, microwave ovens, electric fans, vacuum cleaners and other household electric appliances. See Tsuda and Shimada (1995: 7) for further details regarding the definitions of the electronics and electric machinery industry, and Chapter 4 for the definitions of the electronics industry used in Indonesian statistics.

characteristics of investment in the Indonesian electronics industry by foreign firms of different origin and undertakes comparative analysis of their investment behaviour and performance. It does not attempt to provide an assessment of the normative issues. In other words, the aim is not to identify any particular source country to be 'better' or 'worse' for the developing host country in question than another.

The study seeks merely to identify any differences among foreign firms of different national origins in Indonesia and to explain why those differences may have occurred; whether they are related to the country origin of the investor or other factors which are unrelated to the question of national origin. While a particular interest is the role of foreign investment in the development of the Indonesian electronics industry, the study throws light on foreign investment behaviour from different national sources more generally.

A principal interest in this study is the foreign investment trends, behaviour and strategies of the main East Asian firms in Indonesia. In order to present a dynamic analysis, a related question is: 'If multinationals in Indonesia appear to have significantly different operations, to what extent are such differences a result of the historical sequence of investment interacting with the life cycle of the firm?'

Similarities and differences in investment behaviour among Japanese and Korean multinationals in the electronics industry in Indonesia may be the result of a number of factors. These factors can be classified as push and pull factors.

The first set of factors emanating from their home countries that lead MNEs to invest abroad (push factors) includes home-country factor endowments, parent firm characteristics such as size and product mix, and competitive pressures faced by MNEs both in their home-country industry and the international market. In addition, the economic climate in the home country, its institutional policy framework, and human capital and technological capabilities are important in shaping the decision whether to expand domestic production in the home country, to produce overseas or to expand production overseas.

Five questions arise in this connection:

(1) Are there significant differences in investment and market conditions in the host country throughout the period under study?

(2) Are there significant characteristic differences among affiliates manufacturing in Indonesia?

(3) Are there significant differences in international and home country conditions that push parent firms to invest overseas?

(4) Are there significant characteristic differences among parent firms in the home countries and in their motivation to invest?

(5) Are there significant differences in the investment behaviour of East Asian MNEs in Indonesia by corporate nationality over time?

To answer these questions, different methodologies are required. Firstly, the investment climate in the host country, including factor endowments, political stability, the institutional and policy framework, and human capital and technological capabilities that lead to differences in investment behaviour among MNEs attributed to the host country determinants ('pull factors') can be observed (Chapter 3). Secondly, using available Indonesian investment data, the differences between Japanese firms and other non-Japanese East Asian firms can be quantified. Furthermore, if significant differences in the characteristics of investment by firms of different national origin can be found, a particular factor or characteristic which is statistically significant in explaining the differences can be identified (Chapter 4).

In answering the third question, differences in home country conditions over time that push parent firms to invest overseas (Chapter 5) and how these interact with international factors can be explained (Chapters 6). With respect to the interaction of market and regulatory climate in the home and host countries that produce several distinct investment 'waves' can be uncovered (Chapters 7).

Finally, to answer to the fourth and fifth questions, the characteristic differences among parent firms operating plants in Indonesia (Chapter 7) as well as their investment motivation and behaviour over time can be compared (Chapters 8 and 9).

To develop a comprehensive picture of the comparative characteristics of at the host-country industry level and at the level of key MNEs from East Asia in their electronics manufacturing operations in Indonesia, this study considers both push and pull factors to determine why, how, with whom and where MNEs decide to invest in the electronics industry in Indonesia. Prior to an outline of the methodologies employed in the study, we turn to previous research and then an outline of the hypothesis.

Previous research

The importance of the electronics industry globally and within the Indonesian economy is seen by all observers to be growing. The emergence of Japanese and, recently, East Asian NIEs as major sources of FDI in this sector and their impact on host countries is under-studied (Thee and Pangestu 1993a; McCormick 1992; Harianto 1995). This dissertation seeks to remedy this in several ways.

Firstly, the characteristics of firms within the Indonesian electronics industry are examined by nationality. While there are many studies of FDI in Indonesia (Hill 1988; Thee 1991; Pangestu 1994; Aziz 1995), there is no comprehensive study of MNEs in the electronics industry nor one that compares the activities of MNEs from different home countries in the electronics industry in Indonesia. In particular, there are no studies of the differences between firms from different East Asian countries. While there is a study of the Indonesian electronics industry focusing on its international export and import links (Sugiarto 1981) and another with an overall industry strategy policy focus on the sector (Stanford Research Institute International 1992), these have not examined the characteristics of specific MNEs in this sector quantitatively or completely.

Secondly, the thesis focuses on the activities of principal MNEs from Japan and Korea (as representatives of East Asian NIE firms) operating in Indonesia. A shortcoming in the existing empirical literature on foreign direct investment is its focus on the activities of MNEs from developed countries, and on comparisons of MNEs from the developed countries, on the one hand, with those from Japan and the NIEs, on the other, in their operations in developed countries such as the United States and the European Union. This study follows a recent trend focusing on the similarities and differences among East Asian MNEs (Pangarkar 1998; Hobday 1998). The operations of MNEs from Japan and Asian MNEs in developing countries such as Indonesia have grown recently, and the increased presence of multinationals there raises a number of interesting issues.

One is whether it is valid to apply a theoretical approach, such as Dunning's (1981a and 1988b), developed on the basis of the experience of firms from advanced Western countries to MNEs from newly industrialising economies. Are East Asian multinationals from Japan and the NIEs affected by different organisational practices, and the different government and institutional environments in which they originate?

The second way in which the thesis adds to the existing literature is by providing a quantitative analysis of the firm-level characteristics of affiliates' investment data in

the host country. The performance and characteristics of subsidiaries of firms from different countries and local firms have been the subject of many studies of capital by origin. The evidence is mixed and there is little agreement on the appropriate methodology or econometric procedure that should be employed to compare firm-level performance. Some studies suggest that Japanese affiliates and their non-Japanese counterparts perform differently in both developed and developing countries (Ramstetter 1991a; Belderbos 1992; Belderbos 1994; Han 1994). In this thesis a quantitative analysis of affiliates characteristics is carried out on some variables including levels of investment, equity holding, exports, imports, the length of construction and presence in Indonesia and the size of local and expatriate employees. These variables are then used to identify the differences in the characteristics of Japanese and other East Asian subsidiaries operating in Indonesia.

The third way in which the thesis fills gaps in the existing literature is by studying the role of inter-firm linkages¹⁵ within Japanese and East Asian NIE business groups as well as between foreign and local Indonesian firms. Little academic attention has been given to the comparative study of the investment strategies of large electronics MNEs in Indonesia and their 'associated' FDI. This study seeks to address this shortcoming and, in particular, is concerned with the interplay of factors internal and external to the specific MNE and its associate groups of firms that affects their investment decisions relating to timing and mode of entry to a given host country over time. It is argued that, to understand these investment decisions, these investments must be analysed for a business group as a whole or at the specific MNE group-wide level rather than at the individual subsidiary or affiliate level.

The role of regional production networks (vertical *keiretsu*) in specific MNE investment behaviour has been explored by earlier studies of Japanese *keiretsu*, suggesting, for example, that *keiretsu* firms are significantly less liquidity constrained in their investment decisions than non-member firms. This implies that membership of either vertical or horizontal business groups might help in facilitating risky foreign ventures (Hoshi *et al.* 1991; Gerlach 1992; Miyashita and Russel 1994; Sheard 1994). One recent study shows that the choice of location for Japanese manufacturing plants established in the United States is partly explained by the presence of plants owned by member firms of the same vertical *keiretsu* in the area (Head *et al.* 1993; Yamamura and Wassman 1989). These studies raise the question of whether the presence of investment

¹⁵ The inter-firm relationships of particular interest are those of a long-term nature which are part of enterprise groupings (such as *keiretsu* and *chaebol*) or other firm-like organisations (Demsetz 1993).

activities by related firms provides additional inducement to undertake FDI by other group firms (Japanese or from East Asian NIEs). The present study attempts to provide some answers to questions about the effects of business groups on FDI behaviour by examining their investment, strategic and locational patterns in Indonesia.

By providing an overview of changing international competitiveness of the electronics industry in the home countries and, a survey of investment motivations and case studies of selected MNEs from two of the main East Asian home countries, Japan and Korea, the study attempts to provide a more comprehensive view of the development of the investment strategies of individual firms and their relationship to regional and international developments during the period 1986–97. This period was important as one of high economic growth in Indonesia and in the Asia Pacific region. An overview of the experience of specific business groups involved in foreign investment in Indonesia provides a more complete picture of firm behaviour in seeking competitive success under various Indonesian policy environments over time.

Hypothesis

The thesis sets out to examine five sub-hypotheses.

The first is that there are significant differences in the affiliate characteristics of Japanese and the East Asian MNE affiliates in Indonesia and that some differences in the characteristics between the two groups may diminish over time. The hypothesis is to be tested using a univariate quantitative analysis of Indonesian industry data and, in addition, a multivariate analysis is conducted to identify the characteristics that appear most significant in showing the difference between the affiliates of Japanese and East Asian NIEs multinationals. Parents of subsidiaries of Japanese MNEs in Indonesia may have a different set of advantages in investing abroad from their counterparts from the East Asian NIEs (Chapter 4).

The second sub-hypothesis is that Japanese and Korean electronics' outward investment experiences are similar after taking account of their stage of development. By taking a sub-sectoral view to consider how changes in trade specialisation affect overseas investment patterns over time, we can examine whether there are no systematic differences between Japanese and Korean electronics MNEs in undertaking FDI in the region in specific segments of electronics (Chapter 5). By examining their regional production networks, we can assess whether MNEs from both origins have little choice

but to work towards similar types of organisation with increasingly integrated facilities for production, regional IPO and R&D centres (Chapter 6).

The subsequent hypotheses focus on the microeconomic factors driving the internationalisation of firm and the changes in the profile of MNEs.

The third sub-hypothesis is that parent characteristics affect the timing and mode of entry of MNE investments in the Indonesian electronics industry. This is to be tested by an analysis of resources and organisation of the parent MNEs and in their activities in Indonesia.

The fourth sub-hypothesis, to be tested against the results of company surveys, is that OLI determinants of investment in Indonesia by Japanese and Korean firms are not significantly different. This involves their consideration of Indonesia's locational advantages (such as access to the large and growing Indonesian domestic market, to the US and EU markets using Indonesia's General System of Preferences (GSP) facility under the auspices of the World Trade Organisation and other locational considerations), as well as those relating to their ownership and internalisation advantages (Chapter 7).

The fifth sub-hypothesis, to be tested by means of case studies of major Japanese and Korean firms operating in Indonesia, is whether over time they both follow a sequential pattern of long-term investment and market servicing in a particular foreign market (through a steady generation of ownership advantages through technology accumulation and learning) or a bunching pattern of investment occurs through competition on the basis of a high-risk latecomer strategy (Chapters 8 and 9).

As a corollary, through case studies of major multinationals and their regional and global activities, the study explores the more general question of whether competition between Japanese and Korean firms (and between firms of the same origin) typically exhibit the characteristic of 'follow-the-leader' behaviour in imitating the pattern of investment by their competitors and in their response to Indonesia's regulatory changes

The study examines whether large Korean multinationals, as late entrants in Indonesia, have chosen different entry modes to develop their operations in Indonesia in relation to their Japanese competitors. Or are the strategies of Korean firms over time becoming more like those employed by Japanese multinationals? The last sub-hypothesis is tested against evidence obtained in the case studies of large Japanese and Korean firms in Indonesia (Chapter 9).

By examining these five related sub-hypotheses, the thesis provides a comprehensive analysis of the nature of the investment behaviour of East Asian MNEs

and their strategic responses to competitive pressures in the Indonesian and international electronics industry. The overriding hypothesis of this study is whether variations in the behaviour of MNEs from different national origins suggest that country-of-origin differences are not significant after taking account of vintage or stage-of-development effects.

Methodology

Examination of multinationals and their international production systems can be carried out at various levels of analysis.

First, broad national and international factors affect industries in the home and host countries. Macroeconomic factors include the effect of exchange rate movements on costs and other general influences on trade specialisation in home countries, and FDI trends by firms from those countries. As the competitiveness of multinationals depends more on efficiency in organising production, distribution and R&D networks, macroeconomic analysis of investment decisions by electronics multinationals increasingly relies on examining how effective firms integrate their networks in addition to the traditional analysis of the impact of FDI on trade, production and other aggregates on the balance of payments of home and host countries, and on the functioning of currency and financial markets in the home and host countries (Aliber 1993; Aggarwal 1980).

Industrial economics and theories of innovation and technological competition among MNEs at the global industry level indicate that industry-specific factors related to electronics (such as rapid shortening of product cycles, multi-product externalities and global standardisation of products) could affect investment behaviour by leading firms and play a major role in growth and investment decisions by MNEs (Ernst 1997). Examination of investment behaviour whereby decisions on investment, organisation, technology and geographic location are assumed to be interdependent may be termed a global industry-level approach.¹⁶

¹⁶ The term global industry-level analysis ('mesoeconomics') can be said to have two focuses: first, the 'representative firm' and second, the global scope of competitive international industries. Alfred Marshall (1925: 318–19) used this term to refer to a firm that represents a group of firms within both perfectly competitive and imperfect (monopolistic or oligopolistic) market settings. He assumed that the behaviour of the group is fairly predictable and the effects of economy-wide and industry-wide changes can be analysed in terms of the responses of the representative firm (Ng 1986: 5–7); and that some firms will become large enough to dominate a market (Marshall's problem, Hatch and Yamamura 1996: 218). A second focus in this approach suggests that the growth of international production tends to be associated with rivalry, which sustains the process of technological competition amongst MNEs (Cantwell 1989: 203). The

The key players in the global electronics industry are 'large-scale corporation(s) and not a tiny firm as has been the case with neoclassical theory of the firm'. Such a corporation is characterised by large dimensions 'no matter how their size is measured' and consist of numerous plants in several countries and divisions involved in several industry fields (Odagiri 1981: 1).

Second, based on the theory of the firm, the study of international production requires an understanding of production networks (both at international, regional and local levels) and market conditions in a specific host country. From an industry microeconomic standpoint, an understanding of the characteristics and growth of individual firms (and their suppliers) can be obtained by examining cross-sectional data of groups of firms from different origins.

Finally, to obtain an understanding of the historical sequence of investment and other dynamic factors, another approach is to examine the strategic behaviour at the global industry level of major Japanese and East Asian NIE multinationals operating in Indonesia as well as the development of their presence in servicing the Indonesian market, from exporting from their home or third country platforms to establishing a manufacturing presence or other licensing arrangements. In other words, time and path dependency need to be explicitly dealt with to introduce a dynamic element in analysing the interdependencies between host country factors and parent firm capabilities, both in the FDI decision and the operation of Japanese and Korean firms in Indonesia.

All three perspectives inform the argument about whether MNE affiliates of different origin have distinct national characteristics in their investments in the Indonesian electronics industry. A framework is elaborated to link these three perspectives in order to build a comprehensive picture of the investment process by the different national groups of firms.

One framework that has been widely applied to the study of international production is the 'eclectic paradigm' or Ownership–Location–Internalisation (OLI) explanation of direct foreign investment (Dunning 1977; Dunning 1981a; Dunning 1988b). The approach has been successfully applied in many previous quantitative studies and, with modification, in the study of MNEs in developing countries (Belderbos 1992; Belderbos 1994; Lecraw 1991; Lecraw 1992). It is argued in this thesis that recent modifications emphasising the critical role of technology cycles in trade specialisation in sub-sectors (Dobson 1997) of East Asian production networks (Ernst

characterisation of individual and group firms within an imperfect market setting can thus be applied to the behaviour of electronics firms.

199), and of evolution in market entry (Johanson and Vahlne 1977) can provide a richer framework that can adequately analyse the nature of the expansion by major Japanese and East Asian NIE multinationals in the Indonesian electronics industry.

The OLI paradigm combines elements of different approaches to the theory of international production: the market power or Hymer theory of the firm;¹⁷ the internalisation or Coasian theory of the firm;¹⁸ macroeconomic developmental approaches;¹⁹ economic location theory²⁰ and competitive international industry approaches.²¹

The basic OLI approach identifies three groups of factors that influence a firm's competitive advantage and hence its decision to undertake FDI: ownership (O) advantages, locational (L) factors and internalisation (I) advantages.

Ownership advantages (the 'why' factors) arise first from the ownership of particular unique intangible assets (firm-specific management expertise, patents, trademarks and other firm-specific technology) and, second, from the joint ownership of complementary tangible assets (economies of scale, economies of joint supply, market access and complementary plants). With these ownership advantages, the firm is able to more than recover the costs of investing abroad. The nature of the ownership-specific advantages of a firm may vary over time. As the product cycle shortens, the creation of new technology ahead of the field by the leading MNE results in a continual creation of quasi-monopolistic positions. Hence, the critical role of technology needs further examination.

Locational factors (the 'where' factors) contribute to the decision to produce abroad with the aims of lowering the risks associated with production concentrated in the home country, and minimising costs. Firms investing abroad may avoid trade barriers in a third country export market or may seek lower labour, land or natural resources costs overseas. The extent and nature of location-specific advantages or attractions offered by a host country will add further value to ownership-specific advantages. The availability of infrastructure (electricity and communications facilities) and the nature of the regulatory environment of a host country are also important in the decision to undertake FDI. The process of continual interaction between ownership and locational

¹⁷ Hymer (1960 and 1971), Kindleberger (1969), Lall (1976).

¹⁸ Coase (1937), Arrow (1969), Williamson (1975), Caves (1982), Teece (1985).

¹⁹ This approach has various forms, such as the product cycle model (Mark I, Vernon 1966) and the investment development cycle (Dunning 1982).

²⁰ The product cycle model (Mark II, Vernon 1974).

²¹ Graham (1975), Knickerbocker (1973).

advantages, however, warrants further study. For example, by investing in research and production in technologically advanced centres, MNEs increase their own competitiveness (ownership advantages), the competitiveness of production in the countries concerned and their attractiveness to other firms (locational advantages).

Internalisation factors (the 'how' factors) determine whether foreign production occurs through FDI, that is, through internalising transactional advantages within the firm (through their internal hierarchy within the international production network of the MNE), or through the market by means of licensing other firms or exporting directly. Firms decide to create an internal market between the parent and subsidiary firms in order to control key sources of competitiveness or to reduce the risk that the firm might lose control of such intangible factors as knowledge and technology. They often create a network of production or marketing within the structure of their organisation. In addition to the internalisation advantages that MNEs enjoy, there are also long-term trading relationships (Joskow 1991; Schmalensee 1988).

The OLI approach has not yet been applied to an analysis of the electronics MNEs from East Asia in Indonesia, and some modifications to this approach might be appropriate. The thesis reviews the relevant theories of international production and presents a modified OLI analytical perspective that provides a framework that better analyses the features of East Asian MNEs and their investment behaviour in the Indonesian electronics industry.

Microeconomic analysis

Quantitative analysis of firm-level investment data is carried out with variables including levels of investment, equity holding, exports, imports, construction time and presence in Indonesia and the ratio of local and expatriate employees. These variables are then used to identify the differences in the characteristics of Japanese and other East Asian subsidiaries operating in Indonesia.

Univariate analysis of proposed and actual investment projects is used to verify the significance of factors that differentiate one group of firms from another (Chapter 3). A multivariate multinomial logit (MNL) model is applied in a separate exercise to determine which characteristics of investor firms are the most significant. These analyses aim to identify firm-specific (OLI) advantages for each national group of firms (Chapter 4).

Macroeconomic analysis

An assessment of the macroeconomic factors that drive MNEs from Japan and East Asian NIEs to locate electronics production abroad is offered. The way in which different MNEs use their ownership advantages to compete in Indonesia is subject to pressures in the international and home market (see discussion of push factors in Chapters 5 and 6) as well as the investment environment in the host country (see discussion of pull factors in Chapter 7) at particular points in time.

Firm-specific advantages drawing MNEs to Indonesia are examined using survey and other data assembled from Indonesia, Japan and Korea. A survey of Japanese managers' evaluations of their firms' ownership and internalisation advantages and of Indonesia's locational advantages as an investment destination is presented in this study. These results are then compared with Korean perceptions of the ownership, internalisation and locational advantages of investing in Indonesia (Chapter 7).

The analysis of the relationship between the parent firm characteristics and their investment patterns in Indonesia makes use of secondary and other statistical data published by authoritative industry, government and international organisations (Chapter 8). This analysis also uses background information obtained directly from interviews of electronics industry specialists in banks, consulting firms, academic institutions and government organisations in these countries and official publications.

Global industry analysis

The interaction of MNEs in the electronics industry in the regional and global theatres is examined by looking at the emergence of Japanese and Korean firm networks operating in the region and by examining case studies of principal firms or group of firms that have established manufacturing plants in Indonesia. The operation and performance of local subsidiaries and their subcontractors is directly related to the global strategies of the parent MNEs.²² The organisational structure of electronics MNEs in Indonesia and in the Asia Pacific region is also examined in this context (Chapter 6). The thesis explores the establishment of affiliates and other aspects of market servicing in further detail for the largest electronics MNE groups from Japan and Korea operating in Indonesia,

²² Vernon (1994: 159–62) suggests that in a comparative analysis of Japanese and other firms in Europe one should include an explicit examination of the likely impact of *keiretsu* structures on the overseas performance of Japanese multinationals.

namely Matsushita, Sanyo, Sony, LG Electronic and Samsung Electronics groups (see Chapters 8 and 9).

These case studies also illustrate the effect of investment decisions on the location and manufacturing capacity of new plants, and on firm organisation. Firm-specific factors in the home country as well as those related to subsidiaries in third (neither home nor host) countries also affect decisions to invest in Indonesia. There is a complex interplay between the intra-firm strategic, external and local Indonesian factors in the investment decision to build a 'greenfield' plant or expand existing facilities.

The cases studied provide cross-sectional 'snapshots' of individual firms and national groups of firms at different stages of globalisation and a dynamic coherent view of the FDI strategies of the distinct groups of firms (for example, Matsushita and Samsung) from particular home countries in Indonesia. Here the interest is in whether there is evidence of similarities or difference in investment strategies among firms of different nationality.

The expansion of foreign firms into the Indonesian electronics industry has been affected by domestic changes in Indonesia, with distinct phases of waves of FDI into electronics manufacturing in Indonesia:

- (1) the first wave of foreign investment in the early 'New Order' Soeharto Government era (1967–73);
- (2) a consolidation period of domestic market-seeking (import-substitution) foreign investment (1974–85);
- (3) the second wave of foreign investment and consolidation of export-oriented foreign investment (1986–92); and
- (4) a new period of export-oriented foreign investment with the advent of regional trade groupings (post-1992), which coincided with the beginning of the plan to set up an ASEAN Free Trade Area (AFTA).²³

While the continuity of Indonesian deregulation of FDI, and changes in the electronics industry could be more important than this regional grouping, its effects are among the factors affecting the investment behaviour of MNEs.

²³ In 1992, the original countries belonging to the Association of Southeast Asian Nations (ASEAN) — Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand — agreed to reduce and eliminate tariffs for goods manufactured in the region by committing themselves to a 15-year plan primarily designed to attract a greater flow of FDI from East Asia and elsewhere. The establishment of AFTA has been seen as marking a new era directed towards improving ASEAN competitiveness and has been welcomed by Japanese and East Asian MNEs (Itoh 1994; Mangkusuwondo 1992; Salleh 1992).

The expansion of Japanese and Korean firms into the Indonesian electronics industry can also be categorised in such phases. Dunning's approach, like 'classical' production theory, views competition as a 'process' which is essentially non-static as it deals with industrial evolution (Cantwell 1989: 216). Dunning's approach also argues that competition and monopoly coexist in an oligopolistic industry as firms compete through the constant creation of 'quasi-monopolistic' positions in tandem with 'stage' shifts of comparative advantage of home and host countries. These phases are characterised by the creation of a new market, new technology centres or new lower-cost export platforms ahead of competitors. For example, the introduction of the miniaturised radio-cassette, known as the Walkman, put Sony in a very strong position in this segment of the market for a period of time. Likewise, Matsushita's use of a production platform in Puerto Rico to by-pass US tariffs put it ahead of the pack. Korean electronics MNEs increased their global market share in DRAM semiconductor production due to their large-scale investments and accelerated learning.

An extension of Dunning's approach suggests that there is a continual interaction between ownership and locational advantages (Cantwell 1989b: 212). In other words, choice of production location is treated as endogenous, as location factors are themselves influenced by the growth of firms. For example, in the global electronics manufacturing industry, MNEs require direct access to all the main centres with locational advantages due to sophisticated technological development. By investing in R&D and production in these locations, they improve their own competitiveness (ownership advantages) as well as the competitiveness of production in the countries involved and their attractiveness to other firms (locational advantages).

Technological advantages tend to be treated also as endogenous in the modified OLI approach adopted in this thesis. There are several historical examples where the locational advantages of a country help to determine the pattern of technological specialisation of each country's firms. In other words, firms increase their ownership advantage as a result of being located in a particular area (Rosenberg 1982; Porter 1990). Some Japanese and Korean electronics firms that located some of their critical component plants in Indonesia may increase their own competitiveness as well as the competitiveness of production in the location concerned and their attractiveness to other firms.

By the application of this approach to the historical analysis of key Japanese and Korean electronics MNEs in Indonesia, the thesis provides insights into the roles

technology and location play in the competitive (and sometimes cooperative) relationships between large MNEs from various origins, as well as between large MNEs and their small suppliers, whether local or other foreign suppliers.

Policy issues

Indonesia has become increasingly concerned with maintaining and enhancing the competitiveness of its national economy, especially in technology-intensive industries such as electronics (Stanford Research Institute International 1992; Ali 1993). Although some MNEs from East Asian NIEs only began investing in Indonesia from the mid- to late 1980s, some larger firms from Korea already show similar characteristics to those from Japan. The changing nature of competition and technology management in MNEs presents one of the most difficult challenges policy makers face.

In the 1960s and 1970s, the manufacturing function of most MNEs was centralised in their home countries. Until the mid-1980s, critical component manufacturing and R&D centres were the most geographically concentrated function of East Asian MNEs in their home countries, but this is changing. Since the mid-1980s, with the combination of the globalisation of competition, and the availability of cheaper and more effective information technology, a growing number of critical component manufacturing centres have been located in Indonesia and other ASEAN countries. Further development of product-change capabilities within affiliates with a wider range of products particularly suited to a local or regional market has led MNEs to technology development systems that are simultaneously more geographically dispersed and more closely integrated across locations.

If MNEs are evolving towards a single model, albeit from different directions, then the 'ideal' model of the MNE is increasingly to develop technology whenever and however it can, and to embody that technology in products wherever it is most efficient. Host governments, on the other hand, are increasingly preoccupied with ensuring that technologies developed within their nation are turned into products and manufactured there. Further, they are anxious that if their market is one of the major end-product markets, MNEs should locate a near-complete value chain in their country (or region) including significant R&D and high value-added production rather than just end-product assembly, marketing, distribution and service. Here lies a potential difference in the

models of the 'ideal' MNE held by multinational managers and by policy-makers which may result in difficulties for both.

By examining the major value-adding activities of Japanese and Korean firms in Indonesia, a better understanding of the impact of the competition, investment and technology developments since the 1970s at the MNE group level, and the global and regional industry levels can be developed. In particular, the thesis seeks to illuminate the investment and strategic responses of East Asian electronics firms to changes in the investment environment and the likely impact of the Asian crisis. Policy decisions could be better informed by a better understanding of the investment trends in the industry and the experiences of principal East Asian MNEs in Indonesia.

Outline

The argument proceeds as follows.

Chapter 2 reviews the literature on the theories of international production and investment.

Chapter 3 surveys Indonesia's locational advantages by outlining the performance characteristics of its electronics industry and the regulatory environment and prior to and during the spectacular growth of the electronics industry in the late 1980s to mid-1990s.

Chapter 4 profiles the firm-level investments of Japanese and other East Asian affiliates of multinational electronics firms operating manufacturing plants in the Indonesian electronics industry. It examines the similarities and differences among these firms using univariate techniques. It further tests the significance of these similarities and differences by comparing two samples of joint ventures formed by Japanese and by firms with firms from East Asia. The multivariate econometric (MNL) procedure principally involves testing the relative significance or ranking of variables that capture country-specific advantages for significance, while controlling for firm-specific attributes that may also explain the partner choice of joint venture partners by Indonesian firms.

Chapter 5 explores the international and home country determinants for Japanese and Korean electronics firms to invest abroad and looks at the evidence of 'fragmentation' of production in trade specialisation and FDI trends.

Chapter 6 examines the ascendancy of Japanese and Korean production networks and the continuing pressures towards globalisation, particularly in the 'post-bubble' era of lower growth in their home countries. It examines the forces leading to the

development of regional production networks encouraged by economies of scale and scope in production, and by marketing and technology requirements, as well as regional trade agreements such as AFTA and APEC.

Chapter 7 outlines the characteristics of Japanese and Korean electronics firms in the Indonesian electronics industry and provides the results of the survey of the firm-specific factors that led them to invest in Indonesia towards the end of that period.

Chapters 8 and 9 present case studies of Japanese and Korean electronics firms in Indonesia. They examine substantial similarities and differences in their investment and market-servicing strategies as early and late entrants into the Indonesian market.

The final chapter reviews the main findings in the thesis. It sets out the implications of the study for policy making as well as the limitations of the study.

2 Analytics

The rapid expansion of international production by MNEs has occurred at such a pace that by the mid-1980s, foreign direct investment was growing faster than international trade (Ernst 1997a: 3). By 1996, the estimated total sales of domestic and overseas affiliates of MNEs exceeded aggregate world exports as the main vehicle for delivering goods and services to foreign markets (UNCTAD 1996). Exports from the seven largest Japanese affiliates made up 33 per cent (US\$5.68 billion) of total Indonesian electronics exports in 1997 (*Bisnis Indonesia*, 5 August 1998). Production from the largest dozen East Asian affiliates would make up an even larger share of total Indonesian electronics production. This poses new challenges both in understanding the complex and evolving nature of large MNEs' investment behaviour, the organisation and location of production of industrial goods and services internationally, and their impact on host economies such as Indonesia.

Firms from Japan and the United States have been said to have a different marketing orientation and impact on the welfare of host countries (Kojima 1978). Foreign investors from different countries have also been observed to adopt different strategies in choosing long-term paths of competence or capability (ownership advantage) building internationally (Hayes 1985, Teece *et al.* 1997: 529). In addition, newer MNEs from Japan and East Asian NIEs are said to be different from older MNEs (mainly from the United States and Europe) in their investment patterns, organisation and the geographic location of investment abroad (Abo 1995a and 1995b; Hatch and Yamamura 1996; Mathews 1996). Others maintain that, while late entrants might follow a shorter development path, the direction that these MNEs follow still constitutes systematic sequential development towards greater management control of local activities (Johanson and Vahlne 1997; Chang and Rosenzweig 1998).

A central interest in this thesis is related to these observations from the literature about the characteristics of foreign investor behaviour and the country of origin of the investment.

This chapter has two objectives. One is to provide an overview of theories of international production relevant to the role of East Asian MNEs in the Indonesian electronics industry. The second is to present additional methodological concepts to address the research questions under study. The starting point is adapted from Dunning's 'ownership–location–internalisation' paradigm (Dunning 1993), combined with recent concepts from international production and strategic management theories (including the resource-based approach to capabilities of firms (Teece 1984), dynamic capabilities of MNEs (Teece 1997) and boundary of the firm issues). The framework

developed here is then applied to analyse: (1) firm-level quantitative differences in the characteristics of the affiliates of East Asian electronics MNEs in Indonesia; (2) domestic economic push factors that led East Asian electronics MNEs to leave their home countries and the pull factors that led them to Indonesia; and (3) qualitative differences over time in long-term investment and other market servicing strategies of the major East Asian electronics MNEs that operate in Indonesia.

These exercises will provide evidence about foreign investor characteristics explained in terms of both cross-sectional and time-series (dynamic) evidence. They suggest that nationality of ownership, on its own, is not sufficient to explain why firms differ in their long-term approaches to FDI and in the way they organise their Asia Pacific regional production networks.

There is a rich body of literature relating to the organisation and location of production of industrial goods and services. It addresses the questions of why firms shift from exports to international production, what factors determine local production, the organisation of such processes and the effects of the investment activities of these MNEs on developments in home and host countries.¹

During the last four decades, a vast literature on international production, FDI and the multinational firm has developed. It might be thought that this literature would traverse a variety of normative standpoints. However, most mainstream economic theorising about international (or trans-border) production has been positive rather than normative in character. Most studies attempt to explain why firms from a particular country invest in a particular location or why a certain host country attracts investment. These explanations generally take variables exogenous to the behaviour of firms as given (at least in the short run). Yet the specific economic, political and social characteristics of nation states may be important determinants themselves as 'critical contextual variables influencing the response of firms to such exogenous variables' (Dunning 1994b: 4).

The economics literature also is theoretically diverse. Firstly, international production varies greatly according to the nature of the activity in which MNEs are engaged, and whether a firm is resource-based, import-substituting, export-platform or globally integrated affects home and host countries in different ways. Secondly, and related to this, the issues addressed and the questions asked often influence the way in which a particular theory is applied and developed. Thirdly, MNEs considered in this study are largely oligopolists that enjoy 'firm-specific' advantages including economies of scale, marketing skills, and — most importantly — technical superiority. They use these advantages by investing abroad to control² international affiliates and markets, and

¹ For detailed surveys, see Caves (1996), Chang and Kogut (1993), Kimura, Kragas and Pugel (1993), Mason and Encarnation (1994), Dicken (1992, 2nd edition), Dunning (1993), Moran (ed.) (1993) and United Nations (1993 chapters V to VII). See also Krugman and Graham (1992), McCulloch (1992), Chesnais (1994), Blomström (1992), Cantwell (1989), Safarian (1990) and Lizondo (1990).

² There are different forms of international involvement by an MNE apart from ownership of equity. There is a myriad of non-equity relationships that a large MNE enters into. For example, Philips of Eindhoven owns over 350 wholly or jointly owned subsidiaries, has over 800 strategic alliances and thousands of licensing or

in so doing enter into competition with MNEs from other home countries as well as domestic firms in host countries.

Discussions in the management literature of the importance of firm-specific factors and 'contextual variables' affecting the competitive advantage of firms have led to four main approaches: the competitive forces approach,³ a strategic conflict approach,⁴ 'resource-based perspective',⁵ and the recent 'dynamic capabilities' approach which highlights the critical role of firm-specific history in explaining firm-level differences at the global industry level (Teece *et al.* 1997).⁶

The latter framework is useful for the problem at hand, that is, to explain observed differences not only in firm-specific characteristics but also in the light of the strategic approaches adopted by firms of different national origins (for example those favouring 'strategic leaps' in contrast to 'incremental but rapid improvements' in their international production network and technological capabilities; see Teece *et al.* 1997: 529). Such insights from the management literature (which combines perspectives from the fields of innovation, manufacturing, organisational behaviour and business history) can be useful in unlocking the interaction between dynamic factors underlying the firm-specific history of competition between rival firms in a specific host country and to uncover what lies behind their corporate and national specific advantage. In particular, firms preoccupied with 'catching up' with their leading global competitors are in search of new approaches that give continually changing strategic direction in a turbulent environment as a result of a wide variety of structural changes due to deregulation, time-based global competition, changing technology and customer expectations.

While both the economics and the management literature on MNEs deals with the United States, Europe and Japan, comparative empirical research on MNEs from Japan and East Asian NIEs (particularly focusing on their investment strategies and production networks in the context of developing countries) are still at an exploratory stage (Kim 1997; Ohno and Okamoto 1994; Thee and Pangestu 1993a; Jo 1981). Hence, there is a need for caution in the application of concepts to explain the investment decision processes of electronics MNEs from different national origins (mainly from East Asia) in a host country such as Indonesia.

technical servicing agreements with industrial customers and subcontracting agreements with its suppliers. Dunning, however has argued that the OLI paradigm can be usefully applied to explaining non-equity forms of economic involvement but concedes that to explain the network of cooperative non-equity arrangements which are growing in complexity and number, economists may 'need to modify their traditional concepts of interfirm relationship' (Dunning 1981: 346). Non-equity control by Japanese MNEs is discussed in the section on the internalisation approach.

³ The competitive forces approach, which is rooted in the structure-conduct-performance paradigm of industrial organisation (Bain 1959), focuses on the formulation of a firm's strategy as being directly determined by industry structure which strongly influences the competitive rules of the game (Porter 1980).

⁴ The strategic conflict views the essence of strategy formulation based on product market imperfections, entry deterrence, and strategic interaction (Shapiro 1989).

⁵ The resource-based approach focuses on the rents accruing to the owners of scarce firm-specific resources rather than the economic profits from product market positioning. Ricardian rents are derived from unique firm-specific assets are often difficult to replicate rather than from strategies which deter entry and keep competitors off balance (Teece 1984).

⁶ The term 'dynamic' here is to refer to 'situations where there is rapid change in technology and market forces, and "feedback" effects on firms' rather than simply to refer to 'multi-period' situations (Teece *et al.* 1997: 512).

International production theories

Since the 1960s, interest in multinational firms and the determinants of international production has grown and much work has appeared. The rapid rise in FDI from the United States in Europe and elsewhere since the late 1950s and in the 1960s, Japanese FDI since the 1970s, and then FDI from the NIEs into East Asia in the 1980s has provoked academic interest and debate about how, why, with whom, where and in what sectors international production is organised.

In the 1980s, it was fashionable to search for general theories of international production. These were often advanced as 'general theories' of the MNE, the main institutional agent of international production, or general theories of FDI, the major means by which international production is financed.⁷ Whenever evidence of certain types of international production appeared not to 'fit' these general theories, the proponents of such theories often responded by dismissing the relevance of the evidence or by adapting their terminology to accommodate it, such that their theories became increasingly cumbersome and less operational. This is discussed by Buckley (1983) and Cantwell (1988). By the late 1980s the limitations of some general theories as catch-all explanations of international production appeared to have become obvious even to their strongest advocates (Cantwell 1991: 17).

Briefly, theories of international production, which are discussed in more detail in the following sections, can be grouped under five headings. The first is the market power theory of the firm based on a view of the firm as an agent for market power and collusion. Some examples of this approach are works by Caves (1996), Newfarmer (1985) and Cowling (1987).

The second is the internalisation approach, based on an early institutionalist view (Coase 1937) of the firm as an instrument for increasing efficiency by replacing markets; Rugman (1980) advanced this approach as a general paradigm but less immoderate claims are made for a similar approach by Buckley and Casson (1973); Buckley and Casson, (1985); Williamson and Ouchi (1983); Teece (1977); Caves (1996); and Casson (1987), amongst others.

Macroeconomic developmental approaches, which make up the third group of studies, come in various versions, including the early version of the product-cycle model (Mark I) advanced by Hirsch (1967) and Vernon (1974); the approach of the Japanese economists (Kojima 1978; Ozawa 1982); the investment-development cycle (Dunning 1982c) and the stages of developmental approach (Cantwell and Tolentino 1987); and approaches which have rather different emphasis and deal with the role of financial factors in FDI (Aliber 1971; Rugman 1980; Casson 1982).

⁷ Rugman (1980) appeals to internalisation as a general theory of the MNE cum FDI, while Aliber (1971) uses international currency valuation as the cornerstone of his general theory of FDI cum MNE.

The fourth group of studies of international production is based on the analysis of competitive interaction in international industries covering the Mark II versions in the product-cycle tradition (Vernon 1974; Graham 1975; Flowers 1976; Knickerbocker 1973); the technological accumulation approach (Pavitt 1987 and Cantwell 1989a); and the internationalisation of capital approach (Jenkins 1987).

The final framework is the eclectic paradigm, which was initially advanced by Dunning (1977; 1981a; 1988e) and which, as implied by the name, combines elements of all the above four approaches in such a way that it is compatible with various theoretical approaches. Dunning's is not an alternative analytical framework but rather 'an overall organising paradigm for identifying the elements from each approach which are most relevant in explaining a wide range of various kinds of international production, and in a wide range of different environments in which international production has been established' (Cantwell 1988).

The four main branches of international production theory and the 'eclectic' approach, which draws on some elements of all four branches, are summarised below in Table 2-1 using a typology drawn from Cantwell (1989a and 1991). The theories of international production relevant to this study and which have emerged since Hymer are summarised in this table.

The main concern of the present study is to explain the international production of MNEs in the electronics industry and its impact on the Indonesian electronics industry. These firms, principally from Japan, Korea and other East Asian countries, are mostly multi-product conglomerate enterprises. Most of the established literature focuses on Western MNE firms (Teece *et al.* 1994: 28) and there is a question as to whether the framework traditionally used to explain the nature of international production is adequate to explain the differences and similarities between these new East Asian MNEs and established MNEs from Europe and North America.

Market power approach

Theories of international production are based on analysis of specific advantages possessed by home country firms. Based on the theory of the firm and industrial organisation, it is postulated that the decision to invest overseas by MNEs, rather than exporting from the home country, can be explained by firm-specific advantages (Hymer 1960/1971). Due to market failure, the theory of international trade and capital movements does not explain the foreign operations of MNEs nor two-way flows of FDI between countries with similar factor endowments.⁸

The justification for this approach is based on the observation that firms in perfectly competitive international industries do not engage in FDI, and hence firms which invest abroad must possess some type of ownership, monopolistic or oligopolistic advantage.

⁸ Hymer suggests that without exception every subsequent attempt to explain FDI and MNEs has to do with some sort of market failure (Yamin 1991: 65).

Thus, the firm is seen as an agent for market power and collusion and its behaviour is seen in terms of a structure–conduct–performance framework (Bain 1956) or in terms of an industrial organisation context (Newfarmer 1985; Sugden 1983).

While originally Hymer's focus was on explaining why national firms went abroad, his theory and many subsequent theories attempt to explain the initial act of international operation rather than the growth of the MNE or the operation of a network subsidiaries of MNEs. In an era of globalisation of industries, these international production networks have expanded and are bound to expand further. The internalisation aspect of Dunning's eclectic paradigm is broader and better able than Hymer's approach to incorporate these developments since Dunning combines market power explanations of international production with internalisation and location dynamics explanations.

Hymer's basic idea is that firms, acting on their own or in collusion, enter international production to raise their market power, earn higher profits and find greater security, sometimes even at the expense of efficiency on the part of consumers (Newfarmer 1985; Cowling and Sugden 1987). While the neoclassical approach maintains that competition between firms leads to overseas investment and technological change, advocates of the market power approach view overseas investment as a means of furthering collusive networks so as to reduce competition and increase barriers to entry in their industry, thereby maintaining or lifting profits.

The underlying driving force that gives rise to the MNE's 'international operations' in the Hymerian view is market power rather than efficiency, and the 'possession of (firm-specific) advantage' explains the need to control the activities of firms in other countries. In cases where there are few buyers and sellers, integration or any other effective form of cooperation between firms increases joint profits as a result of the 'removal of conflict' among leading members of national oligopolies so as to offset the costs of international production (Yamin 1994: 68). Hymer's approach provides the foundations for Dunning's understanding of ownership advantages, or firm capabilities in more recent literature.

Table 2-1 Summary of theories of international production

Theoretical approaches	Representative author(s)	intellectual thrust of hypothesised primary driving force
(1) <i>Market power</i>	Hymer (1976)	firms as agents of market power invest overseas and collude to raise barriers to entry.
neoclassical economics; industrial organisation	Kindleberger (1969)	firm behaviour primarily determined by market structure; monopolistic competition prevails.
internationalisation of capital	Baran and Sweezy (1966), Newfarmer (1985) and Cowling and Sugden (1987)	firms collude to increase market power; 'monopoly capital' motive for overseas investment, raising profits and weakening unions; firms collude for security and to reduce rivalry.
(2) <i>Internalisation or transaction costs</i>	Coase (1937), Buckley and Casson (1976 and 1985), Rugman (1980 and 1985), Teece (1977), Caves (1996), Casson (1982 and 1987), Hennart (1982)	firms face market imperfections mainly in intermediate products, generating transaction costs which are internalised for the sector as a whole by bringing interdependent activities under common ownership and control.
(3) <i>Macroeconomic development</i> Product cycle model (Mark I), 'Flying geese' model, and the synthesis of PCM and FGM	Vernon (1966), Hirsch (1967) and Wells (1972), Akamatsu (1937), Shinohara (1982)	firms relocate as products mature; innovation is product rather than firm specific; dynamics of creation of comparative advantage; product cycle shifts in production and trade.
comparative advantage (Heckscher–Ohlin–Samuelson) 'four phases of industrial upgrading/restructuring'	Kojima (1978), Kojima and Ozawa (1985c), Ozawa (1974 and 1982) Ozawa (1991, 1994)	firms choose between import-substituting (trade-displacing) vs. export-platform (trade-creating) foreign direct investment; four related phases of home country 'industrial upgrading' and outward investment from Japan.
investment development cycle or stages	Dunning, (1982c, 1985a) Cantwell and Tolentino (1987)	direction of investment flow relates to country's stage of development; such development is path dependent.
critical role of investment return	Aliber (1971 and 1983), Rugman (1979) and Casson (1982)	primacy of financial rate of return and exchange rate; parallel direct and indirect investment.
Developmental escalator model	Mathews (1997)	in 'hi-tech' development, countries step onto the escalator through skills and technological build-up.
'developmentalist' cooperation between unequals	Hatch and Yamamura (1996)	export of Japan's <i>keiretsu</i> system to Asia with efficiency-promoting arrangements affected; dominant Japanese firms and subordinate local firms ties in 'vertical quasi-integration'.
(4) <i>Competitive international industry</i> Product cycle model (Mark II)	Vernon (1974)	firms behave oligopolistically after the initial innovatory phase of the product life cycle by preserving their position using scale economies rather than technological leadership.
strategic interaction	Graham (1975 and 1985)	intra-industry production as an 'exchange of threats' increases price-cutting and rivalry
oligopolistic interaction combined with the growth of the firm	Sanna Randaccio (1980) Flowers (1976), Knickerbocker (1973)	ability to gain market share is a function of the share of that market already possessed; 'follow-the-leader' oligopolistic behaviour.

Table 2-1 *contd*

business economics/ strategic management studies: 'competitive forces' 'strategic conflict' 'resource-based' 'dynamic capabilities' 'incremental process of market entry and internationalisation'	Stopford and Turner (1986) Porter (1980) Shapiro (1989) Penrose (1959), Rumelt (1984) Teece <i>et al.</i> (1997) Johanson and Vahle (1977; 1990)	case studies to highlight individual managerial or entrepreneurial strategies; a firm's defensible positions against competitors; firm keeps rival off-balance with strategic moves; isolating mechanisms to sustain rents; firm's ability to integrate, build and reconfigure internal and external competences; foreign market entry driven by incremental building of technological and marketing capabilities based on 'uncertainty-minimising' approach.
new internationalisation of capital	Jenkins (1987)	increasing internationalisation of R&D and newer non-US MNEs sustain technological competition.
technological accumulation	Cantwell (1989a, 1991 and 1992)	firms face technology-based competition in multi-products where product creation and process are interdependent; cumulative development of technology through network of production; increase in both technology competition and cooperation (cross-licensing) as technological interrelatedness rises.
Japanese 'hybrid production'	Abo(1994a, 1994b, 1995a, 1995b)	integration of Japanese procurement and management practices to existing MNE theories; distinct regional approaches to production.
industrial network	Axelsson, <i>et al.</i> (1992), Reger (1993)	industrial networks for input procurement and marketing based on enduring ties between firms.
production network; technological capabilities; shift from partial to systemic globalisation	Ernst (1994 and 1995) Ernst (1997b)	distinct production networks of electronic firms from Japan, East Asia and the United States; their varying degree of 'openness' to 'outsiders'; firms focus on market access, cost and uncertainty reduction, compression of speed of product development and product life cycle; learning and acquisition of external capabilities.
(5) <i>Eclectic paradigm</i>	Dunning (1977, 1988e, 1993, 1994) Lecraw (1981, 1991)	Synthesis of elements from other theories, investment depends on ownership, internalisation and locational advantages; equal weight given to the theories of macroeconomic location advantages, and the interaction between the firm and its macroeconomic environment.

Source: summary of the author's survey.

While the 'removal of conflict' explanation has been developed further by Cowling and Sugden (1987), some other writers (Buckley and Casson 1985; Casson 1987; Rugman 1981) have argued that this idea, which also originated with Hymer, is in fact not necessary to explain the existence of MNEs. These writers base their explanation of the emergence and growth of MNEs on the idea of internalisation in the multinational firm.⁹

⁹ The recognition of the 'removal of conflict' strand to Hymer's contribution (which could lead to a market-sharing agreement between leading MNEs) is argued to be relevant in the context of the debate on the role of ownership-specific advantages in the theory of MNEs as, Hymer's view could be put on a more rigorous footing by systematic consideration of transaction costs. However, it is argued that transaction costs can actually reinforce the 'Hymerian' view that monopoly/market power rather than efficiency factors give rise to the MNEs (Yamin 1994: 77).

Internalisation approach

The modern theory of the firm originated with Coase (1937), following earlier work on the nature of the firm by Knight (1921), among others. This theory emphasises the notion of internalisation of know-how and of markets (which are deemed imperfect) in intermediate product markets (Hennart 1991: 83; Teece 1981; Dunning and Rugman 1985).

Coordination of transactions can result in economies of scope across economic activities as well as in the reduction of costs associated with information gathering, opportunism, bounded rationality and uncertainty (for surveys of the internalisation approach, see Caves 1996; Hennart 1991; Casson 1990). International business applications of internalisation theory with insights into transaction costs have been developed by McManus (1972), Buckley and Casson (1976), Brown (1976), Hennart (1982), Swedenborg (1979), Dunning (1977) and Rugman (1981).

The internalisation school treats the structure of the final product market as secondary, while emphasising profit maximisation through efficient exchange of intermediate products rather than through the exclusion of potential or actual rivals in the final product markets. The market power approach focuses on the structure of competition or collusion in final product markets and the distribution of income. Both approaches may be useful in empirical work.

The link between the internalisation approach and Dunning's OLI approach (as well as capabilities-view (Teece 1984) lies in the internalisation of know-how within firms. The internalisation school does not deal with location and competitive dynamics. Internalisation explains the form (market-intermediate contracts-hierarchy) of overseas involvement. It is not a theory of FDI. Firms decide the form and the location of involvement simultaneously. Imperfections in intermediate product markets lead to vertical integration and production networks. These are organisational design and boundary of firm issues which need to be explained in the context of technological and other factors. Such factors are better analysed using the resource-based and dynamic capabilities approach.

Locational advantages and the OLI paradigm

The 'eclectic' approach pioneered by Dunning attempts to put the market power and internalisation approaches on an equal footing (Dunning 1977; 1988e; 1990b and 1993).

While Dunning's approach incorporates essential features of the four major approaches to international production, it is a comprehensive organising paradigm rather than a separate theory. It provides

¹¹ The nature of ownership advantages can be attributed to those of an asset kind or of a transaction cost-minimising kind (Dunning 1983a and 1988) or of a governance cost-minimising kind (Teece 1990).

a useful framework for a comparison between theories, by establishing the common ground or points of contact between them, and clarifying the relationship between different levels of analysis and the different (research) questions. (Cantwell 1991: 26)

Dunning's central proposition is that

to engage in international production....firms must possess certain economic advantages over their competitors or potential competitors; that they find it in their best interests to engage in value-adding activities based upon these advantages themselves, rather than sell the right to do so to other firms; and that they find it economic to locate at least part of the value adding activities outside their home countries. (Dunning 1988b: 9-10)

The eclectic paradigm has three main building blocks. The first is that MNEs which invest abroad require competitive or 'ownership' (O) advantages *vis-à-vis* rivals as a trade-off for the comparatively large costs of establishing overseas — costs which their host country competitors will not incur. Without a compensating advantage, a multinational firm would be at a cost disadvantage relative to its host country or other potential competitors. MNEs then use these advantages to set up production in sites that have appeal due to their 'location' (L) advantage.

The second building block of the eclectic paradigm, location (L) advantages, arises from the use of advantages in conjunction with factor inputs outside the home country. Without these advantages, foreign markets would be supplied by exports and domestic markets by production. Locational advantages contribute to the decision to employ ownership advantages to produce abroad; it may be financially less risky, trade or institutional barriers in third country export markets may be avoided, or lower-cost labour or natural resources may be available in the host country. The extent and nature of the location-specific advantages will add further value to ownership-specific advantages. The availability of infrastructure (such as electricity and communications facilities) and the regulatory environment of a host country are important considerations in this context.

The third building block, internalisation (I) advantages, arises both from the 'coordination' of complementary assets subject to the costs of managing a more complex network as well as from the 'appropriability' of the benefits of a full return on the ownership of distinctive assets such as its own technology (Teece 1983 and 1986). These advantages will determine whether foreign production occurs through FDI, that is through internalising advantages within the firm (through its internal hierarchy) or through the market to other firms by means of licensing or direct export. Firms decide to create an internal market among parents and subsidiaries in order to control key sources of competitiveness or to reduce the risks that the firm might lose control of such intangible factors as knowledge and technology. They often create a network of assets (productive, commercial, financial or marketing within the structure of their organisation) because of the 'internalisation' advantages of so doing.

Dunning's formulation in the 1980s distinguishes two types of competitive advantage that give rise to MNEs. The first are advantages that arise from the ownership of particular unique intangible assets ('Oa' advantages such as patents, trademarks and other firm-specific technology), and the second are advantages due to the joint ownership of complementary tangible assets ('Ot' advantages from common governance of cross-border activities such as the ability of firms to create new technologies, utilise economies of scale or of scope, economies of joint supply, market access and complementary plants).¹¹

In recent revisions, Dunning suggests that many of the explanations of the 1970s and 1980s need to be modified as firm-specific assets have become mobile across national boundaries (Dunning 1998). In some cases, the definition of 'foreign' is increasingly problematic. Due to the increasing 'porosity of the boundaries of firms, countries and markets', the eclectic or OLI paradigm of international production needs to take into account strategic alliances between firms, growing interdependencies of many intermediate product markets and countries embracing policies which enhance external economies of interdependent activities (Dunning 1995a: 16). He further distinguishes between 'shallow' and 'deep' international structural integration and argues that FDI — currently increasing at one-and-a-half times the rate of growth of world trade — is the most prominent modality of deep structural integration (Dunning 1995b: 138). The question of the development of international production will be further discussed in the section relating to the operationalising of the global industry framework in Chapter 5. The nature of the ownership-specific advantages of a firm may vary over time. While there is a market for a 'particular ownership advantage' such as licensing of a technology, there is no market for the 'collective type of ownership advantages' as they go beyond any particular asset or any one individual and in general cannot be sold outside the firm but are useable only within it. The latter kind of advantage is associated with the organisational abilities within the firm, the experience and entrepreneurial capabilities of its managers as a group, its brand and credit reputation, its political backing and contacts as well as its long-term business arrangements with other firms (Dunning 1983a; Dunning 1988d).

Dunning, however, offers no explicit account of the evolution of foreign market entry over time nor account of multiple entry by MNEs of different origins to a particular host country which aims to build local capabilities to specialise in a particular intermediate or end-product production. These issues will be addressed in the theoretical sections in the chapter on profiles of MNEs with manufacturing plants in Indonesia (Chapter 7) and in the case studies (Chapters 8 and 9).

In recent studies of international production and MNEs there have been various paradigms, concepts and models of MNEs. Each model is, of course, an incomplete explanation of the complex processes which drive the organisation of international production by MNEs. Each tries to capture, in some form or another, some important

aspect of their organisational changes — which are at once causes of technological change and determinants of the outcome of those changes. Here lies the challenge. Which additional concepts relating to the theory of international production can assist the analysis of East Asian MNEs in the Indonesia electronics industry during a specific time period can better capture a cross-sectional ‘snapshot’ or bring its own dynamic time-series explanation of the most salient features of that experience?

Since there are many different theories of the investment behaviour of MNEs and the way these entities organise international production, any typology of international production to some extent reflects the purposes for which it was designed. The aim of this study is to extend the OLI paradigm to capture the salient features of East Asian MNEs in the Indonesian electronics industry so as to answer questions relating to their investment characteristics and strategies.

In particular, the internationalisation of firms over the post-war era left a ‘distinctive imprint’ (Humes 1993: 19). The period 1945–59 was notable for the prominence of American multinationals. European multinationals saw a resurgence during the years 1960–74. The period 1974–89 witnessed the rapid growth of Japanese multinationals, while the post-1989 years saw more East Asian (non-Japanese) multinationals emerge.

While few advocates of particular theories of international production claim that their model is all-encompassing, most simply admit that there are too many dimensions to the characteristics of all MNEs to be neatly boxed in mutually exclusive categories. Our particular interests among East Asian MNEs are those from Japan and Korea. MNEs from Korea are among of the leading firms from East Asian NIEs. As international economic circumstances change, earlier conceptualisations of these multinational firms have also evolved. The theoretical concepts which we turn to in operationalising our framework of analysis should reflect such trends.

While these concepts may not always be mutually exclusive, they must add to the explanatory power of the particular internationalisation process of electronics MNEs from Japan and Korea. The next section examines these concepts which are relevant to these firms at three different levels of analysis.

Operationalising the framework

Here we explore how international production and strategic management concepts can be adapted in combination with Dunning’s OLI approach to undertake a three-level analysis: (1) a quantitative analysis of firm-level differences in the characteristics of the affiliates of East Asian electronics MNEs in Indonesia; (2) an analysis of macroeconomic push and pull factors that led East Asian electronics MNEs to relocate to Indonesia; and (3) a global industry analysis of the qualitative differences over time of

investment and market servicing strategies of the major East Asian electronics MNEs with manufacturing plants in Indonesia.

Micro-economic analysis

At the national industry level in Indonesia, rich firm-level data on approved (or planned) and realised (or actual) investment are available and can be subjected to rigorous quantitative analysis. From the results of a cross-sectional analysis, inferences can be made about individual characteristics of MNE affiliates to determine how firm-level characteristics of different national groupings may vary. By focusing on firm-level characteristics, we can determine which characteristics would be significantly similar or different between firms of different origin.

Firstly, by using the methodology of univariate comparison, separate individual characteristic variables of different nationalities controlling for size can be calculated (Chapter 4).

Secondly, by jointly comparing the available set of characteristics of affiliates by nationality groups, using multinomial logit modelling it is possible to work out which are the most critical differentiating variables between two groups of affiliates (Chapter 4).

These quantitative exercises may be seen as cross-sectional 'snapshots' of different firms from different national origins during a specific period of economic growth. The quantitative methodology employed in this study follows that of Dunning (1977) in obtaining indicators of firm-specific advantages. In this approach, the characteristics variables at the firm level can be quantified for affiliates of different origins.

Quantitative analysis of this kind only provides limited indicators of firm-specific advantages of MNE affiliates from Japan and East Asian NIEs in Indonesia at particular point in time. A broader view of their investment strategies can be gained by tracing their historical development over time. This is provided by the other two methodologies employed in this study, one being a macroeconomic and trade data approach.

Macroeconomic and trade analysis

The purpose of the national macroeconomic and international trade analysis is to assess push factors that drive MNEs from Japan and East Asian NIEs to locate their manufacturing production abroad and the pull factors that attract them to Indonesia.

The pattern of FDI from Japan and East Asian NIEs to the Southeast Asian region, and in particular to Indonesia, raises a question about the explanatory power of many international production theories that were developed when US and European firms were dominant players in foreign investment outflows during the 1960s and 1970s. At issue is whether these theories can also explain the rapid growth in

investments from Japan and East Asian NIEs in the Indonesian electronics industry during the 1980s and 1990s. Needless to say, the structure of the Indonesian electronics industry and its regulatory environment make up Indonesia's locational advantages and determine much of the pattern of FDI (Chapter 3).¹²

Macroeconomic explanations of the growth of firms outlined by Kojima-Ozawa and Vernon-Hirsch may be relevant to describing differences in the stage of development of Japanese and other multinationals from East Asian MNEs. Tolentino (1987) suggests that East Asian firms may be embarking on outward FDI at a much earlier stage of development than those from Japan. Evidence from the Japanese and South Korean electronics industry can be examined to determine whether there is a shortening of the successive 'waves' of outward investment. South Korea, one of the leading East Asian NIEs, can be used to illustrate the case (Chapters 5, 6 and 9).

In the context of Kojima's work on Japanese MNEs (Kojima 1978) and the literature on Third World MNEs (Chen 1983), the empirical evidence can be further explored to determine whether there exist phases in investment into Indonesia and whether Japanese investment phases were shorter than the subsequent investment waves from Korea.

In contrast to Kojima's and Chen's work, motivation based on ownership advantages of firms from East Asian NIEs or Korean MNEs in particular could be important and needs to be examined. One alternative explanation is that firms exploit ownership advantages that are directly or indirectly related to preferential access to the global major markets of the United States and Europe. These may also have been the underlying motivation to relocate and set up operations in Indonesia.

It may, then, be important to understand the relative importance of OLI advantages. By employing a survey of perception of managers of affiliates of Japanese and Korean MNEs, the major motivations of the sampled firms in Indonesia can be studied for a particular period. Comparison of the relative ranking of factors motivating FDI between two groups of firms can be assessed using a standard econometric technique (Chapter 7). The understanding of changes of investment motivations of MNEs can be further enhanced by the global industry approach.

Global industry analysis

The purpose of an analysis at the global and regional levels is to examine the investment and market servicing strategies employed by Japanese and Korean firms that operate manufacturing plants in Indonesia, and the interaction between them.

¹² Although 'parallels' in the direction of direct and indirect investment were not specifically studied at a sectoral level, it is interesting to observe that the flows of FDI from Japan and East Asian NIEs were not accompanied by a large influx of portfolio capital from these source countries into Southeast Asia (Thee 1991; Pangestu 1994b). In Indonesia's case, this is because portfolio investment was not an option until around 1989 due to local investment regulations.

The eclectic paradigm does not purport to explain the behaviour of particular groups of firms. It has only 'limited power to explain or predict particular kinds of international production; even less, the behaviour of individual enterprises,' (Dunning 1988b: 1), but it can be applied to the analysis of the impact of the activity of one MNE on that of another, and the interrelated development of the firm and its industry (Cantwell 1991: 30).

Focus on major large MNEs

This study attempts to explain the behaviour of particular groups of firms, by closely assessing their comparative investment strategies over time.

One factor of interest in the application of the global industry analysis is that since the late 1970s, the total value of production by multinational companies has exceeded the total value of world trade, albeit with differences in content (Wells 1977; Rugman 1979; Lall 1978). In the late 1980s, a study of the global economy suggested that 'trade conducted directly by multinationals, or indirectly by their subsidiaries, accounts for between 80 and 85 per cent of the United States and United Kingdom visible exports' (Holland 1987: 39). More recent estimates of trade conducted by advanced country multinational suggest that they represent an even larger proportion of total world visible trade.

Markets for electronics products are dominated by relatively few large MNEs. Hence, by their impact on world production and trade, a relatively few electronics MNEs may be able to alter the nature of competition in a particular segment at the regional or global level (Ide and Crum 1994; Tsuda and Shinada 1995).

Endogeneity of factor location

Global competitive industry approaches from strategic management postulate that the firm-specific advantages of MNEs depend on 'distinctive processes (ways of coordinating and combining), shaped by the firm's specific asset positions (such as the firm's portfolio of difficult-to-trade knowledge assets and complementary assets), and the evolution path(s) it has adopted or inherited' (Teece *et al.* 1997: 509).

Such an approach provides hints on path dependency. While the path dependency induced by location in Teece's model is not the same as Dunning's location advantages for specific firms, they both point to the fact that an interrelationship between firms' ownership and locational advantages can emerge over time.

In the context of the Indonesian electronics industry, it can be argued that while the locational advantages of Indonesia as a site for low value-added electronics production may vary according to a firm's home country origin. Over time, the presence of some large MNEs and an increasing number of component suppliers may increase

both the ownership advantages of MNEs relocated to Indonesia and the locational advantages of certain favourable sites. Preferential access to global markets and perceptions of a fast-growing Indonesian market suggest a potentially attractive site for investment. These may be key determinants of investment by all MNEs in Indonesia.

There are instances where ownership and locational advantages relating to investments from Japan and East Asian NIEs may be interrelated. While the market-power and internalisation approaches consider location as exogenous, a global industry approach considers location factors to be themselves influenced by the growth of firms. It suggests a continual interaction between ownership and locational advantages. For example, within the subsector of the conventional TV and air-conditioning manufacturing industry in Southeast Asia, large Japanese MNEs such as Matsushita and Mitsubishi benefit from direct access to locations such as Singapore and Malaysia's Penang island with strong suppliers and other tax advantages in the region (Ide and Croom 1994; Noble 1996). By investing in R&D and production in such locations, a firm increases its own competitiveness (ownership advantages), as well as the competitiveness in production in that country and hence its attractiveness to other firms (locational advantages). From this perspective, ownership and locational advantages are not independent. A similar argument can be applied in the case of low value-added electronic product assembly. The existence of a large base of second-tier component supplier firms from Japan and East Asian NIEs in Malaysia during the 1980s increased that country's attractiveness for other large electronics MNEs, particularly those from Japan and East Asian NIEs. The same argument appears to apply to Indonesia in the early 1990s, since large MNEs from Japan and Korea in particular made significant investments to establish plants for the manufacture of critical components such as TV tube and computer screen monitors, compressors for air-conditioners/refrigerators and video heads (Chapters 8 and 9).

Strategic management and economic approaches also suggest that there is a 'linkage' arising from the effect of concentration in the size of markets and the availability of inputs (Porter 1986; Arthur 1995; Krugman 1998).¹³ This approach, which stresses the role of historical accident in determining the location of industries, purports to have similarities with the insights about the role of increasing returns in industrialisation suggested by Ohlin (1933). Both describe industrial location as being driven by the logic of self-reinforcing concentration and suggest that differences in factor endowments and increasing returns are complementary sources of trade specialisation (Krugman 1999: 7). This perspective may be relevant in explaining the movement of goods and factors within the regional economy of Southeast Asia where affiliates of MNEs are increasingly engaged in specialised production of intermediate and end-

¹³ Since 1990, a genre of research described as 'new economic geography', has emerged. It differs from traditional work in economic geography mainly in adopting a modelling strategy that exploits the methodologies that played such a large role in the 'new trade' and 'new growth' theories. This new work is highly suggestive in indicating how historical accident can shape economic geography. It also serves the important purpose of placing geographical analysis in the economic mainstream (Krugman 1998).

products. Here, there is a tendency towards specialisation because of differences in factor endowments which are reinforced by the advantages of large-scale production.

The role of location and network economies and path dependency issues is discussed in Chapter 6 on networks.

Sequential or discontinuous investment path and industrial upgrading

The development of foreign investment in the Indonesian electronics industry in the late 1980s and 1990s in Indonesia is characterised by the presence of large MNEs which are engaged in competition in local as well as international markets and a larger number of subsidiaries of small and medium-sized subsidiary parts and components firms belonging to different production networks. The task undertaken in the analysis of the global industry and case studies in the thesis is to investigate how key MNEs of different origins came to their sole venture investment strategies in Indonesia from their initial activities of exporting into the country.

Development of investment and market servicing decisions of the leading MNEs can be conceptualised as following either continuous a sequential or discontinuous 'leapfrogging' pattern. Studies of the business history of Japanese MNEs suggest that investment in international production occurs as a sequential process (Johanson and Vahlne 1977). Other studies suggest that a specific jump in the stage of entry (generally categorised as exporting, licensing and local assembly or production) into a foreign market may result from learning across the subsidiaries of the firm, so that behaviour in one foreign market may affect behaviour in others. During periods of economic contraction, 'reversal' of stages can also occur where the 'stage' or 'phase' internationalisation is largely determined by the operating environment, industry structure and marketing strategy of the firm (Turnbull 1987) as well as the stages of 'industrial upgrading' of the economy (Ozawa 1994: 155).

In both cases, however, knowledge about penetration of key global markets may be diffused throughout the firm, allowing more rapid penetration of other foreign markets at a later date, particularly 'strategic' foreign markets with large populations such as China, India or Indonesia. The evidence about whether sequential or discontinuous stages of investment typify the behaviour of MNEs in the electronics industry is examined in the case studies of Matsushita and Sanyo (early entrants) and Sony, Samsung and LG Electronics (late-entrants to the Indonesian electronics industry).

'Follow-the-leader' strategies

Another question is whether foreign investment might have been spurred on by home country factors rather than international developments such as trade barriers in the major global markets or the 'catalytic' effect of currency appreciations (Ernst 1994a).

The waves of FDI expansion in Southeast Asia (Hook 1996) and the various stages of the Japanese and Korean 'industrial upgrading' are of interest in the context of the Indonesian electronics industry. Japanese relocations to Korea, Taiwan and other countries in the 1960s, then to Southeast Asia in the 1970s, can be argued to have followed the changing comparative advantages of these locations. Overseas investments by Korean firms exhibited a similar pattern, but at a later period.

At the firm level, however, there might be differences in investment strategy which to some extent were influenced by firm-specific historical considerations. The life cycle and characteristics, for example, of Matsushita appear to have produced a pattern of overseas investments in the East Asian region different from that of Sony or Samsung. Consequently, there are differences in its pattern of expansion and type of products manufactured in Indonesia (Chapter 8). Firms such as Sanyo appear to have adopted 'follow-the-leader' strategies emulating Matsushita's establishment of 'greenfield' investments and its expansion of investments in Indonesia.

Dunning suggests a way to explain the behaviour of individual MNE conduct by adding to his paradigm the idea of 'strategy-initiating' or 'strategy-led' behaviour (Dunning 1988e: 1).¹⁴

Among MNEs from Japan, it has been suggested that firms retain their competitive edge in cost, time and product design through various 'follow-the-leader' strategies.¹⁵ These strategies are seen as a response to the intensely competitive pressures in the Japanese electronics MNEs' home market, particularly in mass-produced product lines such as audio-cassette recorders, TVs, VCRs and microwave ovens where:

Each company in a particular industry watches, and sometimes follows, the actions of its counterparts, often leading to similar overseas investment activity, though with different partners and at times in different locations. (Simon and Jun 1995: 217)

Likewise, smaller component manufacturing MNEs might follow the investment location of large end-product (or 'set maker') MNEs. Production rationalisation strategies for small and medium-sized electronic firms may follow a different path from those of large 'set maker' firms but both Japanese and Korean 'part-maker' SMEs have been encouraged to 'follow the customers' (that is, their set makers) overseas, often to boost local content ratios in the case of firms from Korea (Jun 1992) and Japan (Simon 1995b). In Indonesia, the number of SMEs present in the Indonesian electronics

¹⁴ Dunning concedes that the OLI approach should not be perceived as another general theory: '...precisely because of its generality, the eclectic paradigm has only limited power to explain or predict...the behaviour of individual enterprises' (Dunning 1988e: 1). However, in a more recent formulation of his approach, Dunning (1990b and 1993) outlines the firm's pathways as those trajectories which are: (a) 'strategy-initiating', reflecting autonomous activities which aim to improve the OLI advantages of the firm, and (b) 'strategy-led', induced (or defensive) activities by senior management equipped with defensive policies to restructure (or 're-engineer') their organisation. The latter was a response to changes in the OLI variables themselves.

¹⁵ The Japanese expression *yoko narabi* (or 'marching together in one line') is equivalent to the corporate strategy of 'follow the leader' or 'me-too-ism'. This behaviour has been observed among 'follower' and 'latecomer' firms competing in the same industry (*Electronics Business Asia*, April 1994: 40-7).

industry increased in the early 1990s suggesting that 'associated' FDI had taken place (Chapter 5).

One of the most interesting developments has been the growing number of joint ventures involving Japanese and Korean firms to supply principal set makers mainly engaged in export-oriented manufacturing (Chapters 8 and 9). The simultaneous establishment of two manufacturers of critical components of TVs (TV tubes and their components) in Indonesia — one a Japanese–Korean–local joint consortium, the other a Korean wholly-owned plant — is an interesting case in point. Such plants provide greater ability for all TV assemblers to increase the local content of production. Similar developments have occurred with the establishment of 'in-house' critical component plants (for example, video parts, air-conditioners and refrigerator parts) by principal set makers. Hence, the supplier base or supporting industry for electronics in Indonesia is becoming more robust. Some have argued that the situation in Indonesia in the early 1990s is comparable with that in Malaysia in the mid-1980s (Harianto 1995).

Production networks

The extent to which the building of production networks affects investment decisions and the role of firm-specific history in explaining firm-level differences is not examined by Dunning and others employing the OLI paradigm.

In a recent study of the developments of international production networks of Japanese electronics MNEs, three key features were identified as affecting the processes that shape their activities (Ernst 1994: 4). First, many of these firms are under increasing pressure to rely more on international production than exports. Second, there is mounting cost pressure on firms to rationalise and open up their international production networks in response to technological change and to market demand. Third, many large firms, particularly in the electronics industry, have already entered a great many countries, such that for these firms the main question is no longer whether to produce in the home country or overseas, but rather how to achieve the best organisation of the existing branches of a global enterprise.

It can be argued that large Japanese and East Asian MNEs are coming to use a common 'best practice' that is well suited to achieve a global presence by building a regional production network. At the same time they are continually improving their existing technological capabilities and are engaging in collaboration activities with firms from the United States and Europe to achieve technological leadership (Simon 1997a and 1997b).

Another recent study has identified distinctively different electronics production networks under the control of US, Japanese and other multinationals operating in East Asia. The US networks tend to be 'open to outsiders, fast and flexible in decision-making, structured through formal, legal relationships, and capable of changing contour (and partners) as needs change'. By contrast, the Japanese networks tend to be

'relatively closed to outsiders, more cautious in making and implementing decisions which are generated from Japan, and structured on stable, long-term business and *keiretsu* relationships — that is, closed, cautious, centralised, long-term and stable' (Borras 1997a). Korean networks have been characterised as lagging well behind their Japanese counterparts (Kim 1997). By the end of the 1990s, the emerging Japanese and Korean networks appear to have combined some features of US MNE approaches, but with distinctive characteristics.

Trade between subsidiaries of the same MNE in different countries is more involved with intermediate than final products (Smith 1987 and Dunning 1981a). Technology transfer among different parts of a multinational firm or firms within a business group (or from its leading centres to its less developed units) is a key feature of the way multinationals organise hierarchical structures. A pivotal group of firms controls the key technologies while other technologies are transferred to subsidiary units which use standardised technologies. Multinationals often divide their subsidiaries into divisions that manufacture high-technology and medium-technology components and, finally, those that assemble them. End-product assembly is often conducted in low-cost countries (Sigurdson 1997). The regional organisation of production and technology in subsidiaries is often conducted by regional headquarters in locations such as Singapore or Hong Kong. Hence, the overall development of technology and investment decisions of MNEs is primarily organised on the basis of a combination of regional or global concerns about sourcing factors of production.

In dealing with regional and global sourcing, MNEs are constrained by the sequential nature of their investment (Kogut 1985 a and b). Kogut argues that firms accumulate international (or regional) sequential advantages and increase their network flexibility if they establish an efficient network configuration, around a highly vertically-integrated HQ, affiliates and subsidiaries in a particular region. This issue will be discussed further in Chapter 6.

Converging investment patterns

Whether a kind of a 'convergence theory' of investment patterns (Roemer 1975) might exist where follower countries come to resemble the pattern of leading countries remains to be examined. The aim of this study is to determine whether at the firm level, certain 'unique' aspects of the investment patterns of Korean MNEs apparent in the 1980s have changed in the 1990s, particularly as reflected in the behaviour of their affiliates in Indonesia. It can be postulated that certain early differences could be temporary, reflecting nothing more than a transitional stage in a firm's technological development (Mason 1980).

By focusing on the major MNEs, endogeneity of factor location, MNE investment and market servicing strategies, industrial upgrading stages, production Networks and the possibility of converging investment patterns outlined above, it is

possible to relate the global investment strategies of MNEs from Japan and Korea with the pattern of their activities in the Indonesian electronics industry.

By analysing global strategies, which invariably transcend national borders, interaction of affiliate function, product types and geography of affiliate location can be understood more clearly. These interrelationships are important in the investment decisions of large MNEs:

Three sets of organizational perspectives — function, product and geography — drive the parts that comprise a multinational. These three, which compete with, conflict with and complement one another, cut across management issues and converge on specific management posts or decision to invest in greenfield projects or in expanding existing projects. (Humes 1993: 10)

By adopting a firm-oriented rather than a product-oriented approach, this study seeks to capture some of the interrelated factors that affect the investment behaviour of MNEs from Japan and Korea which have manufacturing plants in the Indonesian electronics industry.

Summary

This chapter suggested that the OLI paradigm can be adapted to explain the characteristics and growth of manufacturing investment in Indonesia by electronics firms from Japan and East Asian NIEs, particularly Korea.

Each approach to the theory of international production comes from a particular time and brings its own image or snapshot of the most salient features of that time. As the circumstances of international production have changed, other approaches may have become more relevant, particularly in dealing with competition between leading MNEs in all major markets.

The chapter has shown how these concepts can be operationalised to analyse data on affiliates on MNEs of different origins. It examined firm-level characteristics of affiliates in Indonesia, the macroeconomic push and pull factors that led these MNEs to relocate or expand their investments globally and their specific affiliate developments in Indonesia through case studies of leading MNEs. In doing so, qualitative similarities and differences among the investment strategies of firms of different origin can be examined. The next chapter offers a background to the structure of the Indonesian electronics industry and reviews aspects of the regulatory environment that make up Indonesia's locational advantages.

3 Indonesia's locational advantages

Indonesia's locational advantages have changed considerably since the first Japanese firm established a manufacturing plant there in 1970. There is little doubt that changes in Indonesia's regulatory environment and comparative advantage have had a major impact on the flow of FDI into the Indonesian electronics industry. This chapter traces these changes and illustrates their impact on the fledgling industry and the inflows of consumer and component electronics FDI from 1970 until mid-1997, providing a comparative context for the Indonesian industry with respect to those in neighbouring countries, and setting the scene for detailed analysis of East Asian investment in the Indonesian industry in later chapters.

A central theme throughout the dissertation is the inquiry into variation in MNEs' behaviour by corporate nationality. MNEs exploit national and regional diversity to promote their own competitive advantage, and in doing so, these firms are able to integrate and manage their activities across borders. The electronics industry is characterised by significant barriers to entry, differentiated products, high levels of intra-industry trade, and strategic behaviour on the part of firms. MNEs link operations in countries with differing locational advantages.

This chapter describes the structure of the Indonesian electronics industry and reviews aspects of the regulatory environment that make up Indonesia's locational advantages (which can be seen as supply-side determinants of FDI). An understanding of investment conditions in Indonesia relative to other ASEAN countries, such as the regulatory environment and other locational effects, provide the necessary backdrop to a discussion of the variation in MNEs' behaviour by corporate nationality.

Many changes have occurred in Indonesia's regulatory environment since the first East Asian manufacturing affiliate was established during the post-war era in 1970. There is little doubt that the regulatory environment has had a major impact on the flow of FDI into the Indonesian electronics industry. Most of the deregulation measures introduced since the fall in oil and gas revenues in the early 1980s have been 'market-conforming', stimulating the establishment of new firms in the industry, particularly firms that are export-oriented. The 'pendulum' of the regulatory regime has sometimes been perceived to have swung the other way with deregulatory 'backsliding'. A major

shift occurred in Indonesia's policy environment during the decade from mid-1980s driven by the collapse of oil prices. The collapse of oil prices put pressure on reform and led to a fundamental shift from inward-looking trade and investment policies to a regime that was more outward-looking. This change was a major influence on Indonesia's policy environment until the onset of the Asian crisis. The effects of such changes in the regulatory environment, however, may impact differently on firms' behaviour in Indonesia according to corporate nationality.

The objectives of this chapter are: (1) to provide a profile of the structure and performance of the Indonesian electronics industry; (2) to outline some of major comparative investment indicators amongst the ASEAN countries; and (3) to review the regulatory and other influences that shape Indonesia's locational advantage by surveying the main changes in the general and industry-specific regulatory environment prior to mid-1997.

Profile of a late catch-up

Before examining how the regulatory environment has impacted on the electronics industry, a summary of the development, structure and performance of the industry in Indonesia illustrates how changes in regulation since 1991 have encouraged spectacular growth, largely a product of the role of foreign investors and their export orientation.

Development of the Indonesian electronics industry can be divided into three phases. In the first phase, before 1973, domestic firms were dominant and the industry was typified by a small group of importers of electronics equipment, repair and service centres, and a few simple assembly operations that operated outside government regulation. The majority of these were small cottage industry operations (less than five workers) whose production capacity ranged from 25 units to a maximum of 200–300 units per month. The electronics industry first produced light bulbs and vacuum receivers for radios. From the 1950s a few local firms such as PT Tjawang, PT Ralline and PT Galindra began larger-scale assembly operations of radio sets and household appliances under local brand names such as 'Tjawang', 'Ralin' and 'Galindra'. There were also a few service centres set up by sole agents of imported products to provide after-sales service (Stanford Research Institute 1992: 40). In 1962, black-and-white TVs were introduced and a number of larger local firms began assembling them.

While Indonesia has always been open to foreign direct investment, the 1967 and 1968 regulatory changes by the newly installed 'New Order' government provided a

revised regulatory framework and investment incentives. As a result, rapid growth in output in electronic began in 1967. After 1968, the industry grew even more rapidly when it was opened to domestic capital investment. Growth was limited to the assembly of consumer electronics products but demand for electronic goods in general was expected to increase with the rising income of the population, government development programs in the telecommunications area, the rural electrification program, further construction of transmitters and relay stations and other programs (Sugiarto 1981: 4–10).

During the second phase, from the 1970s to the mid-1980s, the industry was principally oriented to import substitution with assembly operations mainly in consumer electronics. Foreign investment was afforded import protection and incentives. The second phase, which can be termed the ‘first foreign investment wave’, got underway in 1970 and lasted until 1983. The revision of the Foreign Capital Investment Law stimulated the promotion of the electronics industry. From the early 1970s, several joint ventures between Japanese and local firms were set up to take advantage of the government’s Foreign Capital Investment Scheme (*PMA*). Many of these joint venture firms were Japanese, including PT National Gobel with Matsushita, PT Sanya with Sanyo and PT Yasonta with Sharp, but there were also a few European brands such as Grundig, Philips and ITT. These were later to become the principal producers of consumer electronics products in the country. At the same time, large electronics firms were also set up under the Domestic Capital Investment (*PMDN*) policy framework. The main focus of the industry continued to be limited to assembly operations with designs and components provided by foreign parent firms (Stanford Research Institute 1992: 42).

The government adopted an enclave export orientation policy from the early 1970s and investors could apply for bonded warehouse status. This was the earliest attempt at establishing component production facilities capable of production similar to that in Malaysia. Two major American semiconductor manufacturers, Fairchild in 1973 and National Semiconductor (NSC) in 1974, were allowed to set up operations. In 1986, however, due to a combination of worldwide economic slump, restrictions on export/import procedures, foreign investment equity limitations and a restrictive policy environment that discouraged automation (principally directives from the Manpower Ministry), both firms closed down. For a brief period between 1975 and 1985, Indonesia exported semiconductors (diodes and transistors), a trade that peaked in 1984

with exports at \$135 million, but this embryonic development ceased abruptly in 1986 with the closure of the two plants (Thee and Pangestu 1994: 21).

Until the late 1980s, the electronics industry produced a variety of products, from very simple band radios to sophisticated colour TVs. During this time the advanced electronics industry was at an early stage of development. The greatest demand for advanced electronic goods came from government bodies, such as the Ministry of Transport and Communication (which administered state-run telecommunications) and the Ministry of Information (which administered state-controlled radio and television), mainly to build the telecommunications and broadcasting infrastructure.¹ The slow growth of the advanced electronics industry, despite relatively large domestic demand, is directly attributable to reliance on imports, lack of standardisation and large variations in the technical specifications of imported goods. In addition, the development of such an industry requires highly skilled labour, significant investment in capital equipment and R&D facilities — all of which are rather limited in Indonesia (Sugiarto 1981: 12–16).

The ‘second wave’ of foreign investment and export-oriented development began in 1986 after the deregulation and liberalisation following the decline in oil prices in the early 1980s. The fall in oil revenues resulted in a redirection of government efforts towards promoting labour-intensive and export-oriented production which led to an upgrading of the overall quality of electronics output. During this time the industry, like the rest of the economy, was greatly affected by the deregulation ‘packages’ in banking, trade and taxation and various incentive measures to attract foreign investment (but fiscal incentives were largely abolished in 1984).

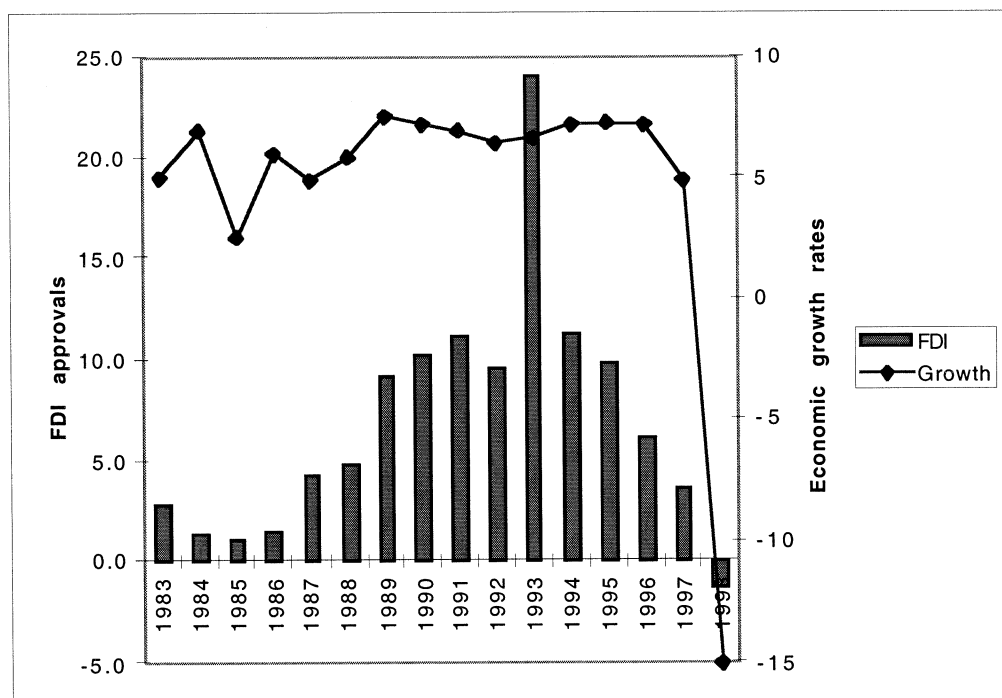
The deregulation and reforms undertaken after the mid-1980s changed the investment climate. The regulatory environment encouraged incumbent firms, joint ventures and domestic firms to increase their share of production for export. Combined with fiscal austerity, effective exchange rate management and prudent microeconomic reform, these reforms resulted in ‘near boom conditions’ in most sectors from 1987 to the mid-1990s: ‘anticipated benefits from the various regulation packages of 1986–89...are now obvious...Exports of manufactured goods are continuing to rise to unprecedented levels, the banking system is awash with liquidity’ (Mackie and Sjahrir

¹ The installation of various microwave links and the Palapa Domestic Satellite system with its complete set of ground relay stations, telephone and telex network, radio networks and colour TV transmitters covering the whole of the archipelago was carried out from 1975 and was largely operational by 1981 (Sugiarto 1981: 12–16).

1989: 1). Annual growth from 1987 to 1992 averaged 6.7 per cent and for the first time in its history, Indonesia became a 'significant industrial exporter, following the well-travelled route of its East Asian neighbours' (Hill 1996: 17).

This upsurge of industrial activity following the liberalisation of non-oil trade, finance and investment regulations continued well into the mid-1990s. Foreign investment approvals climbed steadily in the late 1980s, peaking in 1994 at US\$24 billion² (Figure 3-1). Indonesia was the largest net recipient of FDI among ASEAN countries in 1996, and nearly so in 1997 (Hill 1999: 35). This period was accompanied by annual rates of economic growth which averaged 6.7 per cent from 1987 to 1992 and 6.6 per cent from 1993 to 1997. With its large population of 182 million in 1990 and forecasts of a population of 214 million in 2000, and with one of the highest proportions in the youngest age groups in the Asia Pacific region (*Asia-Pacific Profiles* 1993: 20–21), Indonesia's large market was one of the fastest growing in the region, prior to the crisis in 1997.

Figure 3-1 Foreign investment approvals and annual rates of economic growth in Indonesia, 1983–98 (\$ billion)



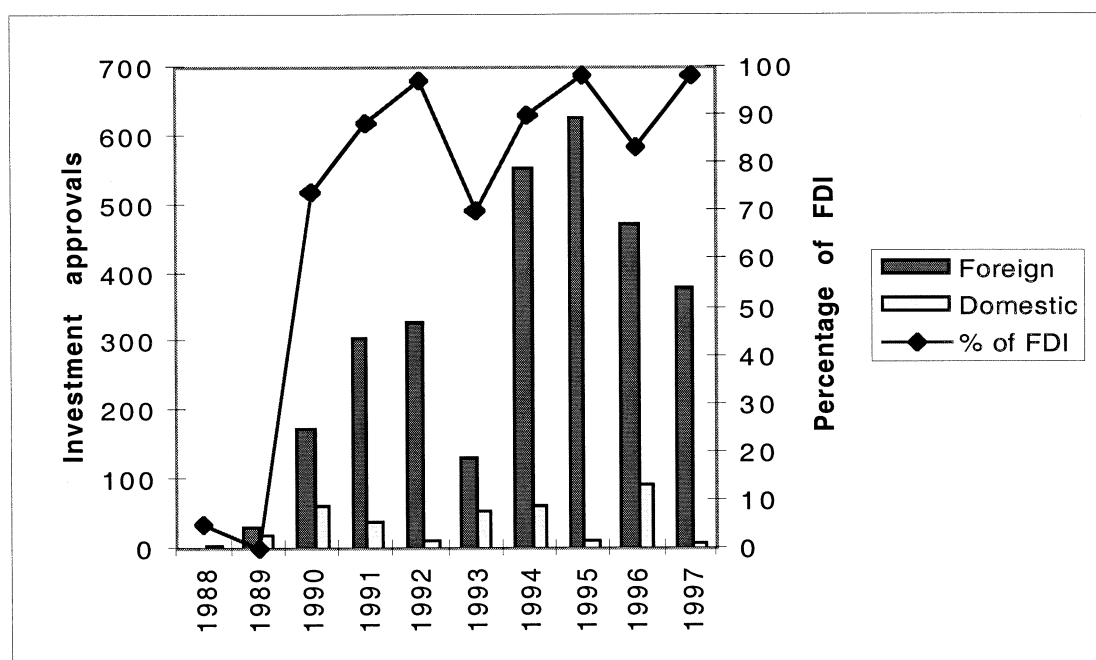
Source: Bank Indonesia, *Annual Report*, various issues for foreign direct investment approvals; Central Bureau of Statistics (BPS), *Economic Indicators*, various issues, for growth rates.

² Unless otherwise specified, all dollar amounts are expressed in US dollars.

Mirroring the trends in overall FDI approvals, following the liberalisation of trade, banking and investment regulations, the electronics sector experienced an unprecedented period of growth. From the early 1990s the role of foreign investment increased in importance.

The Indonesian government saw FDI as a complement to local capital. In the electronics sector, domestic sources contributed more than foreign sources in 1989 (\$28.2 million compared with \$16.5 million) but by 1990, the reverse was the case, with foreign contributions reaching \$90.3 million and domestic sources totalling \$82.5 million. In 1990–97, FDI generally made up over 70 per cent of total investments approved. The high percentage of FDI in the electronics industry underscores the importance of understanding the role of foreign investment in the Indonesian economy (Figure 3-2).

Figure 3-2 Foreign and domestic investment approvals and percentage of foreign approvals in total investments in the electronics industry, 1990–97 (\$ million)



Note The electronics industry here is defined as those with the following ISIC codes: 3825, 3832, 3833, 3839. Source: Investment Coordinating Board (Indonesian *BKPM*), author's calculations. Under the definition used by the *BKPM*, some 'foreign' investment includes some Chinese domestic investment represented as 'foreign' loans and stated as equity which may be balanced out by Indonesian Chinese capital disguised 'foreign' capital (see Hill 1988: 34).

Since the early 1990s, foreign investment in electronics has been dominated by newly established consumer electronics firms from Japan, Korea and other East Asian countries. Their operations in Indonesia export almost all of their production. Another wave of investment expansion by established firms and investments by smaller component firms from these countries occurred from 1992–93. The investment pattern

of investors from Japan and other East Asian NIEs in the electronics industry is discussed further in Chapter 4.

Table 3-1 Output by electronics segments in Indonesia and \$/Rp exchange rates, 1989–96 (Rp billion and \$ million)

	1989		1990		1991		1992	
Consumer	56%		47%		50%		46%	
Industrial	28%		35%		33%		31%	
Component	16%		18%		17%		23%	
Total in Rp.	926,748	(100%)	1,387,999	(100%)	2,457,916	(100%)	3,961,648	(100%)
Total in \$	792		753		1260		1952	
Rp./\$1	1170.1		1842.8		1950.3		2029.9	

	1993		1994		1995		1996	
Consumer	50%		46%		45%		47%	
Industrial	30%		26%		26%		27%	
Component	20%		28%		29%		27%	
Total in Rp.	5,069,920	(100%)	7,004,057	(100%)	11,285,078	(100%)	13,543,333	(100%)
Total in \$	2429		3241		5018		5783	
Rp./\$1*	2087.1		2161		2249		2342	

Note: * Average yearly exchange rate provided by the Economist Intelligence Unit.

Source: Central Bureau of Statistics (BPS, Indonesia), *Industry Survey*, various issues.

The remarkable surge of investment into Indonesia's electronics sector has led to an increase in the number of firms. In 1993, according to the Association of Electronics Industries, the industry, broadly defined, consisted of about 295 firms with an estimated workforce of 100,000 and output of \$2.4 billion. Using a narrower definition of

³ The definition of various segments of the electronics industry is described by the ISIC codes for the subsectors of the electronics industry as follows:

- 3825: Electronic office machinery (including manual, electric office equipment such as computing and accounting machinery),
- 3829: Electrical machinery (including electronic sewing machines, compressors, air conditioning, refrigerators and their components),
- 3831: Electric machinery (including electric generators and motors, transformers, voltage stabilisers, switch gear, welders and other electrical machinery),
- 3832: Electronic equipment (including radios, televisions, other consumer electronic products, communication equipment and their components),
- 3833: Household electrical appliances (including electric fans, rice cookers, and the like),
- 3839: Electrical devices (including electrical accumulators, dry cell batteries, bulbs, spotlights, other lamps, electric and telephone cables and their components).

⁴ In 1994, the value of output of the industry rose by 41.5 per cent (in \$US terms) over the previous year, while the value added increased by 35.5 per cent (Indonesian Electronics Association 1994, 1995).

⁵ The industrial classification for electronics industries follows one that is used by the *Statistik Industri 1990 (Survey of Manufacturing Industries Large and Medium, Volume 1)* published by the Central Bureau of Statistics (Indonesia). This classification is based on the International Standard Industrial Classification of all economic activities but has been modified according to local conditions in Indonesia to become the *Klasifikasi Lapangan Usaha Indonesia (KLUI)* with 329 industrial groups, expanded from the previous classification of 119 groups in 1989. Note that the five ISI Classifications are often referred to as the 'wide' definition of electronics while the subsector under ISIC3832 is often referred to as the 'narrow' definition of the electronics industry. A corresponding Standard International Trade Code categories of SITC 76 (consumer electronics) and SITC 75 (industrial/business subsector), making up the 'narrow' definition and including SITC77 (industrial electrical equipment) to constitute the broader definition. Note that some differences in the coverage of ISIC and SITC definitions exist.

electronics,⁶ the industry comprised 143 medium and large firms in 1993, employed 64,541 people and produced a total output of around \$1.6 billion.

Since the liberalisation measures undertaken in the early 1990s, the number of firms in the 'narrow' industry climbed to 179 in 1994 (an increase of 38 firms or 27 per cent), of which about 33 (87 per cent) are component suppliers.⁷ For the period 1990–94, output rose by an average of 37.2 per cent per year. In the pre-1997 crisis years, the industry was clearly experiencing boom conditions.⁸

While the share of electronics production in GDP remained low (0.2 per cent in 1990), exports became more important in consumer electronics and components production emerged during this period. Elimination or reduction of tariffs on selected electronics components (by *BAPEKSTA* from 1986 onwards) allowed exporters access to imported electronic components at globally competitive prices. As a result, there was a rapid growth in electronics output and a change in the composition of segments within electronics.

Electronics industry output has risen dramatically and the composition of output has shifted sharply with the increasing importance of the components segment (Table 3-1 and Figure 3-3). During 1985–95, average production growth for the industry was 30 per cent per annum and growth accelerated from 1990 until mid-1997. Production in 1996–97 was \$5.78 billion. The contribution of consumer and industrial electronics fell from 56 and 28 per cent of total output, respectively, in 1985 to 47 and 25 per cent,

⁶ The definition of various segments of the electronics industry is described by the ISIC codes for the subsectors of the electronics industry as follows:

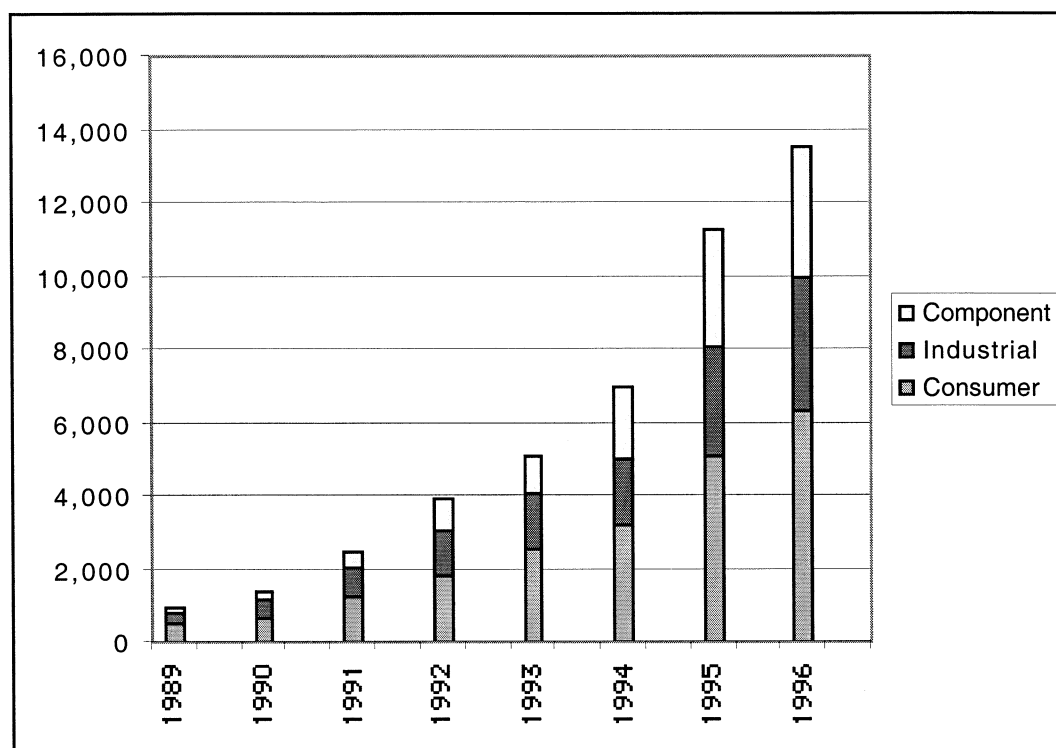
- 3825: Electronic office machinery (including manual, electric office equipment such as computing and accounting machinery),
- 3829: Electrical machinery (including electronic sewing machines, compressors, air conditioning, refrigerators and their components),
- 3831: Electric machinery (including electric generators and motors, transformers, voltage stabilisers, switch gear, welders and other electrical machinery),
- 3832: Electronic equipment (including radios, televisions, other consumer electronic products, communication equipment and their components),
- 3833: Household electrical appliances (including electric fans, rice cookers, and the like),
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⁷ In 1994, the value of output of the industry rose by 41.5 per cent (in \$US terms) over the previous year, while the value added increased by 35.5 per cent (Indonesian Electronics Association 1994, 1995).

⁸ The industrial classification for electronics industries follows one that is used by the *Statistik Industri 1990 (Survey of Manufacturing Industries Large and Medium, Volume 1)* published by the Central Bureau of Statistics (Indonesia). This classification is based on the International Standard Industrial Classification of all economic activities but has been modified according to local conditions in Indonesia to become the *Klasifikasi Lapangan Usaha Indonesia (KLUI)* with 329 industrial groups, expanded from the previous classification of 119 groups in 1989. Note that the five ISI Classifications are often referred to as the 'wide' definition of electronics while the subsector under ISIC3832 is often referred to as the 'narrow' definition of the electronics industry. A corresponding Standard International Trade Code categories of SITC 76 (consumer electronics) and SITC 75 (industrial/business subsector), making up the 'narrow' definition and including SITC77 (industrial electrical equipment) to constitute the broader definition. Note that some differences in the coverage of ISIC and SITC definitions exist.

respectively, in 1996. At the same time, the contribution of electronics components rose from 16 to 27 per cent, with greater specialisation and industrial ‘deepening’.

Figure 3-3 Electronics output and its composition by segments in Indonesia, 1989–96 (Rp billion)



Source: Central Bureau of Statistics (BPS, Indonesia), *Industry Survey*, various issues.

Production for the domestic market by Indonesia’s electronics industry is generally higher than for exports. A comparison of production and export values for 1985, 1990 and 1992 suggests that, in each case, domestic production values are larger than those for exports (Table 3-2). The exports to production (E/P) ratio within each segment tends to vary, for example in consumer electronics, which underwent rapid changes from 1985 to 1992 to become an export-oriented segment. Audio equipment production has experienced a much more rapid increase in its P/E ratio than the video equipment segment, while in ‘other electronics’ (mainly audio and video tapes), production is declining, resulting in a very high P/E ratio (Table 3-3).

Export and import patterns also differ by the three major electronics segments. While consumer electronics is the only segment where exports exceed imports, in general exports have been rising, from \$106 million in 1985 to \$2,959 million in 1992 (Table 3-2). The most dramatic effects of liberalisation on trade performance have taken place since the mid-1980s, and particularly since 1990. Exports grew by 40 per cent per

annum from 1985 to 1990, accelerating in the latter half of the period with a rise of no less than 71 per cent per annum during the period from 1990 to 1992.

Table 3-2 Production, exports and export to production ratio in consumer electronics products in Indonesia, 1985, 1989, 1992 (\$ million)

Segment	Production			Exports			Export to Production Ratio		
	1985	1989	1992	1985	1989	1992	1985	1989	1992
Electronics									
Video Equipment	105.48	128.35	491.80	0.64	0.79	190.15	1%	1%	39%
Audio Equipment	54.23	87.59	345.26	0.12	19.34	160.28	0%	22%	46%
Other	65.17	40.48	27.18	38.72	36.74	26.94	59%	91%	99%

Note: Video equipment comprises colour and B&W televisions, monochrome monitors, video cassette recorders and others; audio equipment consists of radios, tape recorders and radio-tape players combinations, car radios, amplifiers and others; other consumer electronics comprises electronic musical equipment, audio and audio tapes and others.

Source: Yayasan Bina Industria Kopri Unit Departemen Perindustrian (1993), *Indonesian Electronics Industry*, PT Sarana Informatika Industria, Jakarta: 17-23.

In 1995, the industry's exports came close to \$3 billion with consumer electronics contributing 46 per cent of the total — up from 33 per cent a decade earlier. The contribution of this segment remains the highest although the other segments have also grown rapidly. In terms of imports, 27 per cent growth was recorded during the 1985-95 period, but the rate of import growth decelerated during the latter half of that period to 15 per cent per annum. As a result the value of imports exceeded the value of exports by \$600 million in 1995 for the industry as a whole and by \$1 billion for the industrial electronics segment, while the consumer segment enjoys a net export trade of over \$1.2 billion. With the exception of consumer electronics, the value of imports exceeds that of exports in all segments of the Indonesian electronics industry. Since the component segment has attracted considerable foreign investment in the recent years, it is likely that imports will decline in relation to production and exports. This is not the case with industrial/business electronics, particularly the telecommunications industry, which will remain import-dependent in the foreseeable future.

Table 3-3 Exports and imports in the Indonesian electronics industry, 1985–95
(\$ million and per cent)

Segment of Electronics	Production			Exports			Imports		
	1985	1990	1995	1985	1990	1995	1985	1990	1995
Consumer	202	353	2,262	35	77	1,364	20	46	79
(percentage)	(54)	(47)	(45)	(33)	(38)	(46)	(6)	(3)	(2)
Industrial	79	262	1,312	0	50	635	147	988	1,671
(percentage)	(21)	(35)	(26)	(0)	(24)	(21)	(47)	(56)	(47)
Component	94	138	4,442	71	78	960	149	732	1,800
(percentage)	(25)	(18)	(29)	(67)	(38)	(33)	(47)	(41)	(51)
Total	375	753	5,016	106	205	2,959	316	1,766	3,550
(percentage)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Source: Production data from Central Bureau of Statistics (CBS), *Industry Survey*, several issues, and trade data from CBS, *Exports*, various issues and *Imports*, various issues.

Given that some of the most interesting developments in production and exports in electronics have been in consumer and component manufacturing since the early 1990s and that these sectors have attracted significantly greater foreign interest than industrial electronics, the focus of the thesis will be confined to these two segments. Coincidentally, an influential consultant's report, commissioned by the Indonesia Ministry of Industry and Trade at the beginning of the 1990s, recommended a coordinated program to attract foreign multinationals to relocate their plant particularly in the two segments (Stanford Research Institute International 1992: 10–3).

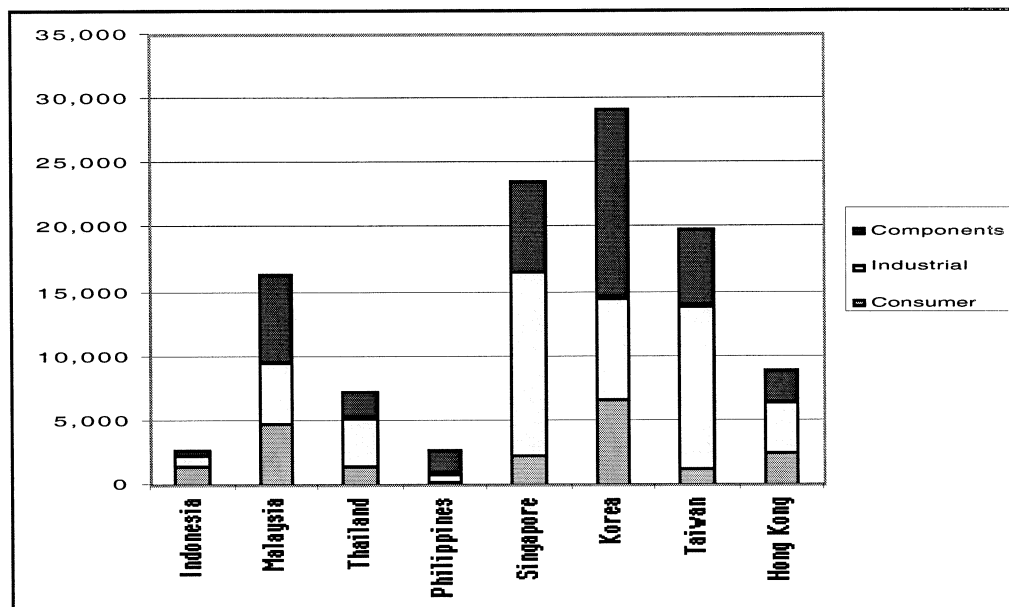
Comparative performance of Indonesia's electronics industry

While the electronics sector in Indonesia has grown substantially since the late 1980s, it remains smaller than in many other East Asian countries. This is a result of the much earlier growth in world electronics production and Indonesia's post-1985 export boom in manufacturing. Even by 1990 after several years of rapid electronics export growth, Indonesia accounted for only 0.6 per cent of all electronics exports from ASEAN whereas Malaysia and Singapore together accounted for 84 per cent (Stanford Research Institute International 1992: 23).

A comparison with the electronics industries among East Asian economies suggests that Indonesia's total electronics output is slightly larger than that of the smallest producer of electronics, the Philippines. Indonesia's component segment is the smallest while its consumer electronics segment is the largest in the region in 1993 (Figure 3-4 and Table 3-4). Nevertheless, there are indications that Indonesia's growth in

electronics has been the second highest in the region and that it has maintained growth rates that were above the ASEAN-4 in the period 1989–90 and 1990–91 (Table 3-5).

Figure 3-4 Electronics production and composition in 1993 in various countries (\$ million)



Source: Yearbook of World Electronics Data 1995.

Table 3-4 Electronics production and composition in 1993 in various countries (\$ million)

	Consume r	%	Industrial	%	Components	%	Total
Indonesia	1,341	(49)	932	(34)	478	(17)	2,751
Malaysia	4,882	(30)	4,663	(28)	6,839	(42)	6,384
Thailand	1,438	(20)	3,808	(53)	1,981	(27)	7,227
Philippines	203	(8)	765	(29)	1,631	(63)	2,599
Singapore	2,360	(10)	14,145	(60)	7,052	(30)	23,557
Korea	6,689	(23)	7,943	(27)	14,530	(50)	29,162
Taiwan	1,304	(7)	12,596	(63)	6,012	(30)	19,912
Hong Kong	2,518	(29)	3,908	(44)	2,408	(27)	8,834
Japan	30,739	(14)	108,414	(51)	73,027	(34)	212,180

Note: Percentages are calculated with the total of the three segment production for each country as denominators.
Source: Yearbook of World Electronics Data 1995.

There is little doubt that in terms of the proportion of electronics exports in total manufacturing sector exports, Indonesia is well behind the other high performing East Asian (HPEA) countries during the period between 1985 and 1995. In 1985, the proportion of electronics in total manufacturing exports was 3 per cent, about 10 per cent of the ASEAN-4 countries' average (Table 3-6). This had risen by 1995 when electronics accounted for 12 per cent of Indonesia's total exports, nearly 27 per cent of the ASEAN-4 countries' average. While Indonesia's ascendancy into an electronics export performance is somewhat more favourable than that of India.

Table 3-5 Electronics production growth rates in various countries, 1985-93

	1985-86	1986-87	1987-88	1989-90	1992-93
Indonesia	22	16	13	30	27
Malaysia	30	25	16	29	31
Thailand	35	36	6	46	17
Philippines	20	25	18	1	11

ASEAN-4					
Average	26.8	25.5	13.3	26.5	21.5
Singapore	19	24	14	19	16
Korea	44	24	13	4	12
Taiwan	30	10	4	1	12
Hong Kong	15	8	1	5	4
Japan	39	2	6	0	8

Source: *Yearbook of World Electronics Data*, various issues.

A comparison of the percentage contribution of electronics exports to growth of total merchandise exports confirms that Indonesia's electronics sector made a significant contribution (Das 1998: 78). Indonesia's contribution rose from a mere 1 per cent in 1986-90 to a significant 28 per cent in 1991-95, a percentage contribution equal to China's (Table 3-7).

Table 3-6 Proportion of electronics exports in total manufacturing sector exports in selected East Asian countries, 1985-95 (per cent)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
ASEAN-4	28	30	28	30	31	33	35	36	38	42	45
Indonesia	3	1	1	1	2	2	4	7	8	11	12
Malaysia	49	56	54	54	55	56	56	56	59	62	64
Philippines	19	21	24	25	28	27	37	37	40	44	47
Thailand	16	20	18	23	26	29	30	32	32	36	36
NIEs	21	29	25	28	28	229	30	30	33	37	40
Hong Kong	21	20	21	23	23	23	24	24	25	26	28
Korea	16	22	25	27	27	27	28	29	30	33	37
Singapore	45	50	53	53	53	56	56	58	61	66	67
Taipei	16	36	17	17	19	17	16	16	18	19	20
Mainland China	--	--	8	7	8	9	10	13	14	16	18
India	3	3	3	4	4	3	3	2	2	3	3

Source: UN, Comtrade data tapes; Council for Economic Planning and Development, *Taiwan Statistical Data Book 1996*; and ADB, *Key Indicators of Developing Asian and Pacific Countries 1996* as cited in Das (1998: 77).

In terms of government and other taxes charged to foreign firms, Indonesia appears to rank favourably among a selected group of host countries. A comparison of various taxes as a percentage of profit on sales for the Japanese Matsushita Group shows that Indonesia and China ranked in the lowest 10 per cent among the selected countries. Taiwan ranked eleventh with the lowest tax burden measured as a percentage of profit on sales amongst the Asian countries listed (Table 3-8).

Table 3-7 Percentage contribution of electronics exports to growth of total merchandise exports in selected East Asian countries, 1985–95 (per cent)

	1985-90	1991-95
ASEAN-4	32	46
Indonesia	1	28
Malaysia	58	66
Philippines	21	38
Thailand	26	35
NIEs	26	32
Hong Kong	6	43
Korea	39	79
Singapore	62	23
Taipei	18	23
Mainland China	8	28
India	4	3

Source: Das (1998: 78).

Competition in attracting foreign investment to host countries is determined by total costs and profitability. The social security and tax burden faced by firms may be one factor but in Indonesia's case the two 'key' factors in perceived profitability in electronics are 'the cost of labour and the cost and ease of importation'. These influence the nature of Indonesia's comparative advantage, which is in 'assembly operations and low end production', in other words labour-intensive and import-intensive production processes (Harvard International Institute of Development 1995: 3).

Table 3-8 Comparative indices of various taxes as a percentage of profit on sales for Matsushita in various countries, 1995 (per cent)

Country	Profit on Sales	Social Security Exp.	National Corp. Tax	Local Corp. Inc. Tax	Property and Cons. Taxes	Total Social Security and Tax Burden
Japan	100	3.4	3.0	1.6	1.1	9.1 (4)
France	100	9.3	0.9	0.0	1.0	11.2 (2)
Germany	100	7.2	2.6	1.3	1.3	12.4 (1)
U.K.	100	2.8	3.9	0.0	0.3	7.0 (5)
U.S.	100	4.6	2.6	0.7	1.4	9.3 (3)
China	100	1.9	3.4	0.0	0.0	5.3 (=10)
Indonesia	100	1.9	3.4	0.0	0.0	5.3 (=10)
Malaysia	100	1.9	3.8	0.0	0.0	5.7 (8)
S.Korea	100	1.9	4.1	0.3	0.1	6.4 (6)
Singapore	100	1.9	3.5	0.0	0.0	5.4 (9)
Taiwan	100	1.9	1.7	0.0	0.0	3.6 (11)
Thailand	100	1.9	3.3	0.0	0.7	5.9 (7)

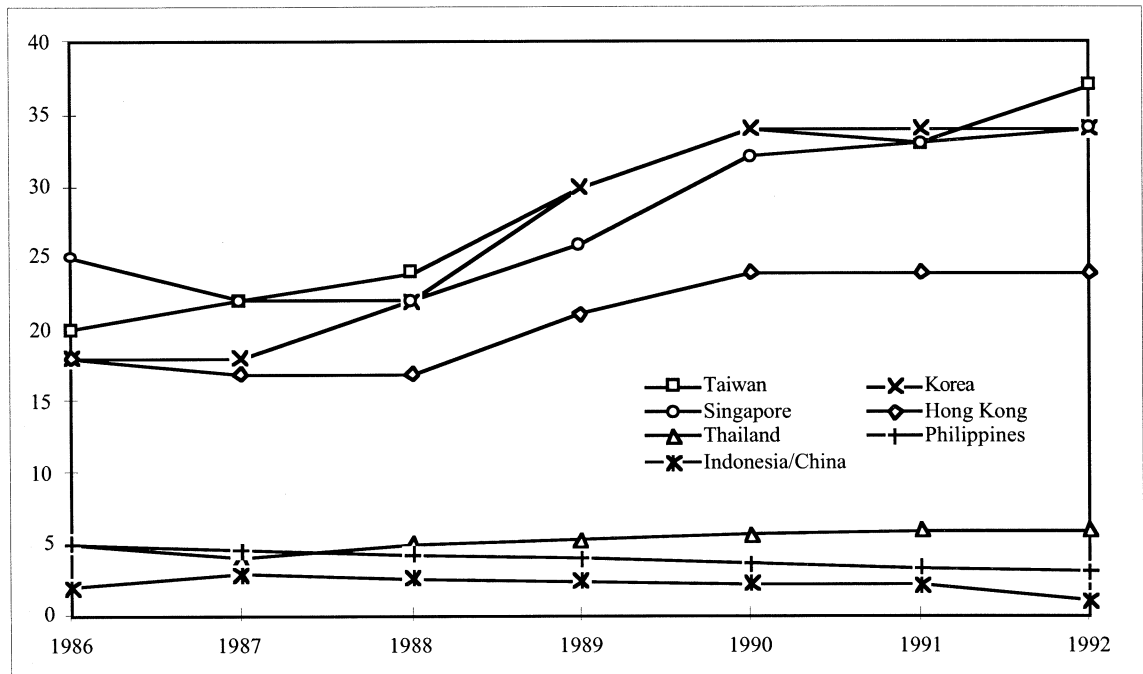
Note: The above percentages have been rounded; 'Corp. Inc. Tax' denotes corporate income tax and 'Cons. Tax' denotes consumption tax.

Source: Internal document provided by Matsushita Electric Industries Co., Ltd., 1995.

During the periods 1980–85 and 1985–90, wage and other cost differentials between Japan and neighbouring Asian countries widened. Between 1988 and 1990,

wages in Asian NIEs began to increase markedly while wage levels in Indonesia, other ASEAN countries and China were still considerably lower, about 10 per cent of those in Japan.

Figure 3-5 East Asian manufacturing wage levels (index Japan=100), 1986–92



Source: cited in Igusa (1994: 6).

While labour cost considerations are important to labour-intensive assembly operations by end-product and SME component makers, the quality of human resources and the availability of skilled labour and engineers are also important, sometimes more important, since labour costs make up only a relatively small share (3–5 per cent) of total production costs (Ohta *et al.* 1995: 42). The skill level of labour in Indonesia has gradually improved, particularly as a result of investments in the public schooling system since 1970, and due to improved labour experience in a variety of export industries in the 1985–95 period. In addition to improvements in productivity, the supply of labour has been sufficiently elastic that wage rates have risen more modestly than in competing countries (Harvard International Institute of Development 1995: 8).

While Indonesia improved its export attractiveness considerably in the period 1975–95, many of the improvements on the cost and ease of importation are due to regulatory reforms.

Improving the regulatory regime

Favourable regulation makes up a significant part of a country's attraction to investors. Since the mid-1980s, the locational advantages of Indonesia's geographical proximity to its ASEAN neighbours have been reinforced by political stability, an improving regulatory environment, infrastructure and greater liberalisation.

As discussed in Chapter 2, one of the building blocks of the OLI framework is location-specific advantages which include the macroeconomic, social and regulatory environment. In other words, locational advantages can be seen as supply-side determinants of FDI. Other building blocks of the OLI approach are the ownership of firm-specific proprietary advantages and internalisation of these advantages so that the pattern of FDI can also be explained by differences in ownership (home country of investors, share of ownership by foreign investor) and internalisation.

Locational advantages arise from the use of advantages in conjunction with factor inputs outside the home country and contribute to the decision to employ ownership advantages to produce abroad; it may be financially less risky, trade or institutional barriers in third country export markets may be avoided, or lower-cost labour or natural resources may be available in the host country. The extent and nature of the location-specific advantages will add further value to ownership-specific advantages. The availability of infrastructure (such as electricity and communications facilities) and the regulatory environment of a host country are important considerations in this context.

Indonesia's regulatory environment has changed considerably since the first Japanese manufacturing firm established its subsidiary there in 1970. From the early 1970s to the mid-1980s, Indonesia's regulatory environment was largely set in an import substitution framework and the industry was dominated by assembly operations in consumer electronics. As a result of this unfavourable investment and regulatory environment and unlike other ASEAN economies, few large MNEs were attracted to invest in Indonesia and most located their semiconductors, computer peripherals and other industrial electronics elsewhere in ASEAN. The investment climate changed for the better with the deregulation and reforms undertaken in the mid-1980s.

Import substitution stage

The development of the Indonesian manufacturing sector, including the electronics subsector, has been influenced by changing policy regimes that can be divided into three phases: pre-1973; 1973–85; and 1986 to mid-1997.

During the Old Order period (1950–65) and the New Order period up to about 1973, the industry was very underdeveloped. The electronics sector mainly comprised a small group of importers, repair and service centres, and a few assembly operations.

The opening up of foreign investment since 1967 with the introduction of the Foreign Investment Law whereby foreign investment was allowed to enter with incentives including tax holidays, accelerated depreciation and duty-free imports of capital goods. After the stabilisation period (1967–70), protection of the industry was in place in terms of quantitative restrictions and tariffs. In 1971, a ban on some completely built up (CBU) imports — TVs and radios — was introduced and tariff for other consumer electronics CBU imports varied between 20 and 60 per cent and for industrial electronics goods varied between 5 and 50 per cent. To stimulate domestic assembly, the tariff and import taxes on completely knocked down (CKD) units were lower than for the import of CBU products (Thee and Pangestu 1993: 30).

Foreign firms began to establish joint venture firms and local firms under licence to assemble consumer electronics products as a result of import protection and incentives. Further foreign investment interest in the assembly of colour TVs came as a result of the introduction of CTV broadcasting in 1976. In the mid 1970s, around ten firms were licensed to assemble CTVs.

While at first the import of CKD kits was subject to lower import duties than the import of components, this differential treatment was relaxed in the late 1970s. At first, import duties on CKD kits were lower than import duties on separate parts and components with the purported justification of protecting domestic component producers and preventing importers from becoming pseudo assemblers. This policy favoured firms linked to principals, but disadvantaged domestic producers not linked with a principal because at that time, CKDs could only be imported through a principal. Recognition of the disadvantage this posed for domestic producers led to removal of the differential treatment.

There were two other types of quantitative restriction in the electronics industry in the late 1970s and early 1980s. The first type of restriction involved the introduction of a 'deletion list' whereby the import of items on the list was banned to encourage the increased use of domestic components by industries such as the automotive and electronics industries. In 1984 the 'negative list' included: telephone sets, switchboards, small transmission earth stations up to 200w, speakers, cassette decks (CKD and CBU), cassette boxes (magnetic tape), TV antennae, radio antennae and cassette recorders (CKD and CBU).

The second type of quantitative restriction is through import licensing and the approved importers system under which the importation of some electronics products could only be undertaken by approved importers. The sole agency system for electronic goods and domestic electrical appliances was also introduced in 1982 for domestic assemblers linked to a foreign principal. The main stated aim was to encourage technology transfer and to ensure that the import of capital goods and certain industrial products support such development.

A related policy affecting the electronics sector was restrictions in the import of second hand machinery. The rationale for this policy was to prevent the import of obsolete machinery by joint ventures. However, it discouraged relocation investments because of increased investment costs. In this period, the structure of protection in general was biased towards the manufacture of final consumer durable goods and away from capital and intermediate goods, and it was characterised by a strong anti-export bias. The resulting incentive system predictably suffered from a high effective protection rate (ERP) with weak backward linkages (Thee and Pangestu 1993: 32; Fane and Phillips 1991).

The structure of protection as well as other disincentives favoured the growth of operations engaged in the assembly of final consumer goods for the domestic market. With new production licences difficult to obtain, high protection limited competition in the domestic market.

While the import substitution policy was enforced with a strong anti-export bias, the government was at the same time engaged in a 'dualistic' export promotion of electronic components. In the early 1970s, it introduced 'bonded warehouse' status and two major American semiconductor manufacturers set up operations in Indonesia. Both firms closed down their operations in 1986. While during the 1975–85 period the assembly and packaging of semiconductors in Indonesia did not become important as in the way they did in Malaysia, the semiconductor story provided the beginning of a more export-oriented development.

Export-oriented manufacturing stage

As a result of the oil price plunge in the mid-1980s, the Indonesian government, like others in the ASEAN-4 countries, drastically deregulated towards amore export-oriented industrialisation and improved the overall incentive system to attract FDI (Thee and Pangestu 1993). The introduction of several deregulation measures to encourage export

orientation in Indonesia began in full force in 1985. This resulted in the beginning of the export of consumer electronics products by joint ventures and some local firms. As discussed above Indonesia's locational advantage largely lies in labour-intensive processes such that consideration of cost and ease of importation are critical in attracting foreign investment.

Trade regime

Several measures relating to trade administration have been implemented by the Indonesian government to improve the ease of importation during the mid- to late 1980s:⁹ These factors were likely reasons underlying Indonesia's recent export success.

(1) Reduction of delays with border inspection. The use of a Swiss surveying company SGS (Societe Generale de Surveillance) instead of its own Custom's department started in 1985 to simplify and reduce the cost of importation in ports and airports.

(2) The introduction of export processing zones (EPZs) and industrial estates (EPTE) from 1989 to exporting firms.¹⁰ EPTE status requires physical separation of production facilities for exports and domestic sales, and is available only if the firm exports at least 75 per cent of its output. EPTE status enabled companies to deal with problems relating to the duty exemption scheme, which operated efficiently until 1992. There were, however, complaints about long delays, difficulties in securing duty-free status for indirect exporters and excessively difficult procedures and requirements, including attaining white list status. Part of the reason for the delays was that the increase in applications accompanying the boom in manufactured exports was not matched by commensurate administrative capacity.

Many electronics firms applied for EPTE status. Its main advantage is that EPTE firms can take only five days to clear shipments instead of more than 17 days through

⁹ This discussion draws on Indonesia's regulatory environment outlined in official documentation obtained from the Directorate General of Machine, Basic Metal and Electronics Industries (DJ, IMLDE), Investment Coordinating Board (BKMP) and several authoritative studies (Thee and Pangestu 1993; Soesatro and Pangestu 1998; Harvard International Institute of Development 1995; Stanford Research Institute International 1992).

¹⁰ EPTE (or *Entrepot Produksi untuk Tujuan Ekspor*) can be translated as a duty-free warehouse for export goods production. The term's definition by law (Presidential Decree No 95, implemented as a tax package in February 1993) is 'primary location or building used for the production of export goods'. Application for EPTE licensing is submitted to the finance minister via the chief of the Tariff Agency, in turn, a licence issued by the former. Once an EPTE license is obtained, the parts, components and materials needed for export goods are exempted from import duty (BM), import added tax (BMT), prepaid corporation tax (PPH22), value-added tax (PPN) and luxury sales tax (PPnBM). License holders were also exempted from SGS inspection of parts, components and material but this inspection was abolished in April 1996, as its benefits were deemed no longer significant (various BKPM documents, 1993–1996).

the duty-exempt facility. Cost savings of using the *EPTE* instead of the duty exempt facility have been estimated to be in the order of \$600 per 20-foot container. The implementation of *EPTE* meets the needs of firms in the electronics industry. It is now easier for final goods exporters in an *EPTE* to subcontract indirect exporters.

Another option is to locate the factory in an EPZ where all production is for export markets and imports can enter duty free. The main facilities are: (a) duty-free imports of components; (b) duty-free and tax-free imports of capital goods; and (c) simpler administration procedures for export. However, the *EPTE* seems preferable because of its flexibility and because duty-free bonded zones are not as prevalent in Indonesia as in other ASEAN countries. Firms located on the island of Batam located 20 km south-east of Singapore, however, enjoy the island's duty-free status for import and export of raw materials, products and equipment.

(3) Easier access to inputs at world prices through *BAPEKSTA* (Agency for Export Facility Services and Financial Data Processing) facilities giving exporting firms duty exemption facility and free access to imported raw materials. Exporters' costs consequently improved. This measure complements EPZ and *EPTE* measures. Previously *BAPEKSTA* administered the 'negative list' of products restricted to FDI.

(4) Streamlining investment licensing. The Investment Coordinating Board (BKPM) assisted in the facilitation of export activity by allowing new firms to obtain imported inputs duty free for a limited number of years as part of its investment licensing provision; the investment climate has become more favourable since 1986 with the simplification and streamlining of applications for investment licences. Such licences are now granted for a lifetime and extensions of production capacity up to 30 per cent no longer require approval.

(5) Gradual removal of divestiture and other restrictions. Previous foreign ownership restrictions, and requirements on fiscal technology transfer and on training to be met by foreign investor have yet to produce persuasive arguments regarding their effectiveness (Hill 1988: 145-7) but Indonesia's attractiveness in relation to other ASEAN countries is assessed in terms of much of the deregulation achieved on restriction on foreign equity ownership and other conditions.

These measures were designed to stimulate the development of non-oil manufacturing sector in response to the decline in oil revenues through creating an environment more favourable to foreign investment.

While a majority foreign ownership for export-oriented foreign firms has been allowed since December 1987, Indonesia was perceived as having foreign ownership

restrictions which were not in place in its ASEAN neighbours. Other governments in the ASEAN-5 countries also introduced policies to improve investment environment and attract FDI (see summaries in Appendix: Chapter 3 Tables A3-1 and A3-2). In the late 1980s Indonesia was perceived as one of the least attractive countries in the region to foreign investors, principally due the more restrictive ownership and divesture requirements for foreign firms (Stanford Research Institute International 1992: 171).

From July 1992, the government has gradually liberalised its foreign investment policy by allowing majority foreign ownership (up to 95 per cent) and less stringent divestment of foreign ownership requirements for export-oriented firms. In mid-1994, most restrictions on foreign investment were removed with 100 per cent foreign ownership allowed and virtual removal of the divestment requirement. Exports and domestic sales of goods produced by a foreign firm can now be undertaken by a joint venture. However, until 1997, distribution of goods not produced by the foreign firm remained closed to joint ventures and import and sales of electronic products not produced domestically had to go through appointed agents. The introduction of 100 per cent foreign ownership in June 1994 was a further important boost for electronics FDI due to the consideration of maintaining control over technology. Furthermore, the divestment requirement that required foreign joint ventures to divest their shares to majority Indonesian ownership over 15–20 years was seen to be a disincentive for electronic firms and component suppliers with specialised technology as a source of firm-specific advantage.

As mentioned above, the government relaxed the 100 per cent foreign ownership restrictions and divestment requirements in stages. First, 100 per cent foreign ownership was allowed in Batam in 1989. Divestment requirements were also relaxed. Batam is the island next to Singapore and the idea was to develop high technology industries there, capitalising on the ability to work with firms in Singapore. Firms in electronics were attracted to Batam for this reason, as well as the synergy the location offered *vis-à-vis* Singapore. Second, in 1993, 100 per cent foreign ownership was allowed for large investors with investments of \$50 million or more located in Eastern Indonesia. To attract specialised small and medium sized component suppliers, 100 per cent foreign ownership was allowed for investors in supplier industries with a minimum capital of \$2 million. Divestment requirements were also relaxed.

The 1 June 1994 package represented a breakthrough and has significantly improved the foreign direct investment environment. The package allows for 100 per cent foreign ownership in all sectors, with the exception of nine sectors considered

essential for the welfare of the people (utilities, telecommunications etc.). In addition, there is no longer mandated divestment. For 100 per cent foreign-owned firms 'some' divestment will be required in 15 years. The amount of divestment is left to the foreign investor to determine. The minimum capital requirement, which was initially set at \$1 million and later lowered to \$250,000 for certain industries, was also removed.

Large-scale production advantages and tariff reductions

Indonesia's domestic demand alone does not create sufficient scale economies. This is so particularly in several categories of final electronics products and key medium-to-high value-added and capital-intensive intermediate products or components.

Another possible factor that led to the rise of exports by firms with domestic (*PMDN*) status — some of which have significant foreign equity — was the attempt to increase the production scale in anticipation of increased competition in the domestic market. This arose due to the possibility that export-oriented firms (both domestic and foreign) would be allowed to sell a certain percentage of their production on the domestic market.

The proportion of production from firms located in export processing zones and bonded warehouses that can be sold to the domestic market was initially set at 15 per cent in May 1986. This percentage was raised to 25 per cent in June 1993. Products sold on the domestic market would still be subject to import duties and sales tax, but domestically oriented producers were afraid of competition as export-oriented firms produced in large volumes and had lower unit costs.

During the import-substitution phase, protection from imports took the form of total restrictions, tariffs, and barriers to entry, as new licences to produce were hard to obtain. This created an overly protected domestic market and competition in most consumer electronic products was restricted to a few brands and created lucrative price differences that encouraged smuggling, particularly from Malaysia and Singapore (Ramadhan 1994: 138). According to some reports, this was a serious issue that was estimated to affect 20–50 per cent of the domestic market for most consumer electronics products (Thee and Pangestu 1993: 33).

In summary, Indonesia's export-oriented strategy started in 1986 and increasing export activity in the manufacturing sector took off in the period 1986-89, mainly in non-electronics sectors such as textiles and garments, footwear and some wood based industries. Policy reforms included the clean up of customs administration when SGS

was brought in; duty drawback schemes such BAPEKSTA; the encouragement of FDI on Batam Island, in EPZs and through EPTE zones; allowing 95 per cent foreign ownership for export-oriented companies (defined as those exporting 85 per cent of their production; and improved access to export credit.

These reforms were utilised by foreign textiles and garment, footwear and to lesser extent wood based manufacturing firms to develop export-oriented activities in Indonesia. Export-oriented electronics did not enter into the picture until 1990. Why was this so? Was it because of the foreign investment regime or was it to do with the lack of supporting industries? Did Indonesia pay a high price for being a late starter and its negative image due to the pull-out of Fairchild and National Semiconductor?

Deregulation of Indonesia's electronics sector

Industry-specific deregulation that was aimed at the electronics sector occurred only in May 1990, later than in other sectors and later than the efforts by other ASEAN-4 governments to accelerate the promotion of electronics (Das 1998: 79).

The May 1990 package contained several major elements for reform: (1) import tariffs on electronic end products were lowered from 20–60 per cent to 20–40 per cent, and at the same time all surcharges were abolished; (2) import tariffs on many electronics components were lowered drastically from the previous level of 20–30 per cent. Tariffs on electronics components not produced in Indonesia or produced locally but competitive with imports were essentially eliminated. For components produced locally but not competitive with imports, tariffs were set at 5–10 per cent to encourage multi-sourcing; (3) removal of a large number of non-tariff barriers (NTBs), including those on electronics goods, both final products and components.

The May 1990 deregulation allowed all electronics goods and their principal components to be imported under the non-restrictive General Importer licence and no longer only through Approved Importers. This meant that imports of CBU electronics products were allowed, subject to lowered tariffs.

Improvements in the trade regime were made by removing quantitative restrictions and gradually lowering tariff levels. The most significant further tariff reductions and removal of NTBs after the May 1990 package came in 1995 and 1996. The May 1995 package included, among other things: (a) an across-the-board tariff lowering of 64 per cent of all tariff items; (b) a schedule of tariff reduction for the next eight years to 2003; (c) lowering of the average tariff from 20 per cent to 15 per cent;

and (d) reduction of the average nominal tariff to 7 per cent in 2003. The June 1996 package expanded on the schedule of tariff reductions and introduced reductions on nearly 1,500 tariff items. The unweighted average tariff rate was lowered from 27 per cent in 1986 to 15 per cent in 1995 and NTBs as a percentage of HS tariff items were lowered from 17 per cent in 1990 to 3 per cent in 1995.

Indonesia's commitment to unilateral tariff reduction within the framework of APEC and AFTA contributed to greater attraction of relocating specialised end-products production and large-scale production of the high-value intermediate components.

Indonesia's APEC commitment left tariffs on consumer products higher than those on industrial products and components. During the 1990–96 period average tariffs on all products declined significantly, with average tariffs on consumer products declining from 27 per cent to 17 per cent, industrial electronics from 16 per cent to 9 per cent, and components from 10 per cent to 3 per cent. Under the national schedule of tariff reductions, tariffs will fall even further, with tariffs on consumer electronics falling from 25–30 per cent in 1995, to 0–10 per cent by 2003, while the already low tariffs on components will fall to 0–5 per cent by 2003.

In 1993, a broad agreement amongst ASEAN member countries was reached to work towards the formation of AFTA. A proposal relating to the implementation of the Common Effective Preferential Tariff (CEPT) was that firms located in ASEAN would obtain trade advantage due to tariff reductions among member countries. CEPT consists of two programs: a fast-track program to reduce tariffs over a period of 7–10 years; and a standard program. The fast-track program covers 15 sectors, including electronic appliances and products. CEPT started in January 1993 with tariffs on items in the 15 sectors scheduled to be reduced to 0–15 per cent within ten years for items subject to tariffs of 20 per cent or more, and within seven years for items subject to tariffs less than 20 per cent. At the same time, the regulations stipulate a local content ratio of at least 40 per cent for ASEAN products (Salleh 1992: 122–24).

The schedules for Indonesian tariff reductions for the years 1995 and 1996 follow those of the tariff reductions under AFTA–CEPT but there is a higher end target of 0–10 per cent compared with 0–5 per cent under AFTA (Table 3-9). Under the AFTA–CEPT program, by 2003 the most-favoured nation (MFN) tariffs could be slightly higher than CEPT tariffs, with a margin of preference ranging from 2.5–5 per

cent. Aside from the national and AFTA schedules, there is continued pressure on cross-border tariffs from global agreements, in particular the Information Technology Agreement (ITA), which requires the elimination of customs duties and other charges on information technology products through equal reductions, beginning on 1 July 1997 and concluding on 1 January 2000. The tariff cuts will affect computers, telecommunication products, semiconductor manufacturing equipment, software and scientific instruments.

Table 3-9 AFTA-CEPT rates of selected electronics products 1995-2003 (per cent)

Description	1995	1996	1997	2003
Telephone sets	25	10	5	5
Audio frequency electric amplifiers	25	20	20	5
Tape recorders	30	30	20	5
Video recorders and reproducers	30	30	20	5
Radio	30	30	20	5
Car radio	30	30	20	5
Colour TV	30	30	20	5
B&W or monochrome TV	30	30	20	5
Capacitors	5	2.5	2.5	2.5
Resistors	0	0	0	0
Printed circuits	5	5	5	5
Digital integrated circuits	0	0	0	0

Source: ASEAN Secretariat, *CEPT Tariff Schedule*, 1996.

AFTA aims to promote scale and other firm-specific internalisation efficiencies of the ASEAN region as an export production location. In committing to the implementation of CEPT mechanisms, Indonesia enhanced its locational advantage as export base for foreign firms. Most large foreign-owned firms are attracted to relocate to the ASEAN-4 countries with an aim to export to the rest of the world, and capturing the local market was 'not their immediate objective'. The destination of their exports was primarily the US market (for most their largest market), followed by the other ASEAN countries, and Japan and the European Union came last (Das 1998: 80).

The impact of the regulatory regime and other locational factors on the electronics sector development in Indonesia can be observed from the data from Indonesia's Central Bureau of Statistics (BPS) for years 1990, 1993, 1996 and 1998. These data show that changes in the characteristics of establishments in the electronics subsectors, namely consumer electronics (ISIC-38321: radio, TV and other consumer electronics), component electronics (ISIC-38324: sub-assembly parts and consumer electronics) and household electrical appliances (ISIC-38330). There has been a phenomenal growth in foreign investment in both consumer and components electronics.

Changes in the regulatory regime and other locational factors had a different impact on foreign and domestic firms and across the three subsectors. In consumer

electronics, while the numbers of foreign firms increased over 1990-1996, the number of domestic firms fell in 1993, perhaps due to the severity of foreign competition for the domestic market. It climbed back in 1996. After the East Asian Crisis, the number of domestic firms dropped by 27 firms while only 3 foreign firms stopped their operations.

After the deregulation of foreign investment, most exporting from the Indonesian electronics industry came from foreign firms. The share of output exported by foreign firms is set out in Table 3-10. This share leaped from 20 per cent in 1993 to 70 per cent in 1996, although it fell back to 53 per cent in 1998. There was an opposite trend for domestic firms. The export share in their output fell from 54 per cent in 1993 to 20 per cent in 1996, but jumped to 97 per cent in 1998.

Foreign firms appear to run larger establishments, have higher value added per worker, have better plant efficiency despite higher labour cost per worker than their domestic counterparts.

In the electronics components subsector, there was a phenomenal increase in the number of both foreign and domestic firms and few firms have exited the industry following the Crisis.

In the household appliances subsector, which is more domestic-oriented, there are only few foreign plants (6 compared to 20 domestic firms in 1996). The low percentage of exports among foreign firms in the household appliance subsector prior to the Crisis (27 per cent in 1993 and 20 per cent in 1996) suggests that their main motive in relocating to Indonesia was in response to changes in the regulatory regime. This was the case also with foreign firms in the consumer electronics subsector up to 1993 when their percentage of exports was only 20 per cent.

The components sector in the Indonesian electronics industry has also grown rapidly. The total number of all firms has increased from a mere 26 in 1990 to 181 in 1998. There appear to be increasing numbers of indigenous suppliers, with the number of domestic firms more than doubling during this time period. The number of foreign components suppliers rose from 2 in 1990 to 99 in 1998. Most of the large foreign product assemblers encouraged home-country suppliers to relocate to Indonesia. The role of foreign suppliers is discussed in the case studies in Chapters 8 and 9.

Table 3-10: Industry Establishment Characteristics 1990, 1993, 1996 and 1998

	Consumer Electronics				Component Electronics				Household Appliances			
(1) All firms	1990	1993	1996	1998	1990	1993	1996	1998	1990	1993	1996	1998
Number of Establishment	48	44	56	36	26	57	123	181	15	19	26	28
Worker/Est.	364	683	626	852	241	342	435	452	121	316	210	139
VA/Worker	10	12	34	51	9	9	22	54	2	15	18	37
VA/Output	18	21	25	29	32	32	33	27	13	30	21	29
Labour Cost/VA	21	24	14	10	21	42	26	21	55	25	20	20
Labour Cost/Output	4	5	4	3	7	13	9	6	7	7	4	6
Inputs/Outputs	59	66	70	58	30	56	57	63	68	62	68	58
% Inputs Imported	81	84	79	66	46	86	90	85	60	77	56	56
% Exports	5	38	63	40	27	78	73	6	n	24	15	50
Labour Cost/Wkr	2.1	2.9	4.8	5.4	2	3.8	5.8	11.3	1.2	3.7	3.8	7.4

(2) Foreign firms

	1990	1993	1996	1998	1990	1993	1996	1998	1990	1993	1996	1998
Number of Establishment	4	12	14	11	2	25	63	99	n	5	6	5
Worker/Est.	944	951	1405	1035	214	450	601	533	n	797	547	278
VA/Worker	2.5	13	49	46	46	11	21	54	n	21	25	65
VA/Output	21	20	24	33	38	30	28	24	n	31	22	27
Labour Cost/VA	19	32	13	16	7	37	30	22	n	23	19	18
Labour Cost/Output	4	6	3	5	3	11	9	5	n	7	4	5
Inputs/Outputs	51	63	72	38	19	61	63	67	n	61	65	65
% Inputs Imported	65	82	79	60	95	88	92	92	n	79	49	61
% Exports	5	20	71	53	29	79	83	8	n	27	20	74
Labour Cost/Wkr	4.7	4.2	6.3	7.5	3.2	4.1	6.3	12.1	n	4.7	4.7	11.9

(3) Domestic firms

	1990	1993	1996	1998	1990	1993	1996	1998	1990	1993	1996	1998
Number of Establishment	44	31	41	14	23	32	60	51	15	14	20	18
Worker/Est.	311	598	374	196	249	258	261	362	121	144	109	97
VA/Worker	6	11	15	10	7	7	26	62	2	3	9	17
VA/Output	15	23	32	20	29	40	53	49	13	22	18	43
Labour Cost/VA	24	18	19	6	29	53	18	15	55	51	27	31
Inputs/Outputs	4	4	6	72	8	21	10	7	7	11	5	13
Labour Cost/Output	65	69	60	1	34	39	34	45	68	71	78	49
% Inputs Imported	91	85	77	99	36	76	83	65	60	68	76	50
% Exports	5	54	20	97	26	76	35	2	0	0	0	0
Labour Cost/Wkr	1.4	2.1	2.9	5.8	1.9	3.5	4.8	9.3	1.2	1.8	2.4	5.2

Notes: 'n' indicates non availability; and data are based on the Indonesian Standard Industry Classification, namely ISIC-38321 for Radio, TV and other Consumer Electronics; ISIC-38324 for Sub-assembly Parts and Component Electronics and ISIC-38330 for Household Electrical Appliances

Source: Calculated by author from unpublished data obtained in 1999 from the BPS, Jakarta, for the years indicated.

Supporting industries and facilities

Compared with Singapore, Malaysia and Thailand, supporting industries and facilities for the electronics industry in Indonesia are still relatively under-developed and can only meet supplies of a limited number of materials and parts. This became apparent with the growth in the number of assembling operations across a broad range of electronics products in the late 1980s.

By 1996–97, in spite of major improvements as a result of the presence of foreign-affiliated parts suppliers, there is still a high dependence on imported

components. Despite the liberalisation measures above, the localisation ratio of most consumer electronics products is relatively still low at 30 to 35 per cent.¹¹

As shown before, import tariffs on components have been lowered gradually and are generally already very low. Tariffs on raw materials for components production remain high, and indirect exporters (local or foreign-affiliated companies supplying large-scale consumer electronics assemblers) do not enjoy the same facilities as those with *EPTE* status. Under this status, licensed firms must export all goods except sales from *EPTE* to *EPTE/EPZ* which were largely indirect exports since all products made by *EPTE/EPZ*.

There has been, however, several progressive deregulation of *EPTE* rules with each new rules addressing some previous difficulties faced by foreign firms, in particular large end-product makers with in-house component production and parts and component suppliers. First, in October 1993, a new rule allowed up to 25 per cent of export volume to be sold inside the country. Second, in January 1996, the *EPTE* domestic sales limitation was changed from a volume to a value basis and this sales need no longer need to follow strict HS commodity codes guidance. Even non-*EPTE* licensed firms could now treat to *EPTE/EPZ* as an export for taxation purposes. Third, in June 1997, *EPTE* was renamed *PKB/PDKB* which meant that *PKB/PDKB* approval is granted to companies whereas *EPTE* approval had been granted to a location or building.¹² Finally, in November 1997 as a result of pressures applied by the IMF, rules regarding domestic sales were further relaxed such that domestic sales limits for *PKB/PDKB* manufacturers were expanded to 50 per cent of export values. In addition, storage and warehouse businesses could now be undertaken by *PKB/PDKB* manufacturers (*BKPM*, 1993–1997).

Most electronics parts and components produced in Indonesia in 1996–97 fall into four categories by source (1) Japanese, Korean and NIE assemblers' in-house production including tuners, magnetic heads, compressors, semiconductor assembly, batteries; (2) Japanese-affiliated supplier firms including pipes, plastic moulding parts, plastic resins, speakers, wire, switches, VCR heads, motors, transformers; (3) NIE-

¹¹ Key parts and components in limited supply in Indonesia include TV tubes or CRTs (particularly prior to 1996), refrigerator/air-conditioner compressors (prior to 1992), TV/VCR tuners (prior to 1989), advanced plastic parts, mechanical parts (e.g. advanced machine processed moulding, surface mounted), electrical parts (e.g. flexible and multilayer PCBs, induction motors, low current connectors), and electronic parts (e.g. semiconductors prior to 1996–97, advanced condensers and resistors) are still largely imported from Singapore, Malaysia, Thailand, Korea and Japan (Japan International Cooperation Agency 1997: 4–56).

¹² *PKB* (*Penyelenggara Kawasan Berikat*) refers to bonded management companies while *PDKB* (*Pengusaha di Kawasan Berikat*) refers to licensees located in a bonded zone. The change from *EPTE* to *PKB/PDKB* that premises for a previously *EPTE*-approved location was changed to a *KB* (*Kawasan Berikat* or bonded zone).

affiliated firms including press parts, plastic moulding parts, plastic resins, tape mascots, wire, speakers, CRTs, transformers and components; (4) domestic firms including press parts, plastic moulding parts, pump cast housings, PCBs, coils, antennas, batteries, packaging, printed and other related material, solder and tapes.¹³

Finally, supporting institutions in the area of electronic standards, product testing and certification, generation of useful industry and trade statistics, provision of more adequate human resource development need to be further developed (Stanford Research Institute International 1992: 10-4-10-8).

Some of the major obstacles to the development of the component industry in Indonesia include the further need for tariff liberalisation for components. There are no tariffs on imports of television tubes, but a 15 per cent tariff is applied to the import of the glass used in their production, even though this kind of glass is not produced in Indonesia. In 1993 the government introduced a facility to waive import tariffs and surcharges on raw materials used in the production of nine selected electronic components.¹⁴

The June 1996 deregulation package eliminated import tariffs and surcharges on raw materials used in the production of a wider range of electronic components.¹⁵ This deregulation was well received and marked the beginning of a further emphasis on the development of the component industries. Given the overall increase of the component segment in the total output of Indonesian electronics during 1989-96 (Figure 3-3) and more recent data (Table 3-10) on the increased numbers of foreign and local component suppliers, there is little doubt that the previous emphasis produced some success. More recent reforms have encouraged foreign multinationals to procure from and work with domestic local and foreign affiliates from different origins.

¹³ . In terms of the number of items, there is large procurement from domestic firms but in terms of value, it is generally less than 50 per cent of total local procurement. Since domestic firms produce few critical parts, assemblers depend heavily on parts and components imported from overseas and/or produced by foreign-affiliated firms in Indonesia (Japan International Cooperation Agency 1997: 4-56; Japan International Cooperation Agency 1997).

¹⁴ The nine electronics parts are namely loudspeakers, printed circuit boards, solar panels, transformers, plastic parts, resistors, electrolytic capacitors, ceramic capacitors, and crystal resonators. This facility has been under-utilised, largely because of the bureaucratic procedures involved. It remains easier for producers to purchase raw materials through general importers, even given the prevailing tariffs. In any case, limiting the facility to the production of nine components was not significant, because the industry uses a much larger number of components.

¹⁵ The electronics parts included in the June 1996 deregulation package include integrated circuits, cathode ray tubes (CRT), other tubes, diodes and transistors, capacitors and resistors, printed circuit boards, transformers, converters, speakers and microphones, antennae, relays, switches and other TV and radio parts.

Stable effective exchange rate and macro environment

An important policy factor that contributed to the success of the export-oriented drive in 1986–93 was the political and macroeconomic environment. The free movement of capital and foreign exchange into and out of the country is a major attraction, keeping the effective cost of capital relatively low. Because many ASEAN countries have similar regimes, it is less important in the 1990s.

The second factor was the effective exchange rate. Depreciation to offset inflation and movement of other exchange rates, particularly greater appreciation against the US dollar and less depreciation against the Japanese yen (Chapter 5) meant that Indonesia's real effective exchange rate was stable over this period, particularly in relation to Indonesia's competitors in electronics (such as the ASEAN-4 countries). Despite the real revaluation of the rupiah against the dollar after 1990 and particularly in the immediate pre-crisis period, Indonesian electronics exports were not greatly affected.

The gradual and continuous improvements in Indonesia's foreign direct investment regulations have had a positive effect on the electronics industry. They increased export-oriented investments from Japan and the East Asian economies. Investments from these sources was largely realised in Indonesia in 1990–92, although the outward flow of investments began in 1986–88, reflecting the timing and impact of Indonesian reforms relative to those other countries.¹⁶

Summary

Developments in the late 1980s and 1990s led to greater flows of FDI into the Indonesian electronics industry and resulted in improvements in terms of growth of output and exports. Government policies specifically aimed at promoting electronics industries did not play a significant part. No specific measures targeting the electronics industries were implemented. Once fiercely protectionist, the Indonesian government has attempted with some success to undo prior policies and achieve growth in electronics on a par with its ASEAN neighbours. Though rather late in implementation,

¹⁶ According to the *BKPM*, during the five years from 1984 to 1989, foreign investment approvals in electronics amounted to only \$44.7 million, involving four projects. Approved foreign investment in electronics increased from \$16.5 million in 1989 to \$90.3 million in 1990. This increased dramatically to \$468 million in 1992 and to \$788 million in 1994. In 1989–94, there was an upsurge of foreign investments approvals in electronics to \$0.94 billion, involving 107 projects. In 1994–96, *BKPM* approved a further 72 electronics projects with a total investment value of around \$1.3 billion. Most of these projects are export oriented. Approved export-oriented electronics investment projects (foreign and domestic) in 1994 and 1995 had a combined export target value of \$1.1 billion and \$1.3 billion, respectively.

liberalisation measures resulted in improvements in industry performance and the regulatory environment.

The rapid development in Indonesia's electronics industry in response to these reforms meant that this embryonic industry enjoyed spectacular growth and gradually became more export oriented. This was achieved mainly through the inflow of FDI in the form of relocations from Japan and the Asian NIEs.

Three broad phases in the development of the Indonesian electronics industry can be identified: 1950–70 when the industry was very underdeveloped; the import substitution stage between 1971 and 1985 when the industry was protected by means of both quantitative and tariff barriers whereafter it became more export oriented, assisted by a number of deregulation measures and a weakening of the domestic market; and finally the export-oriented stage from the mid-1980s.

The 1990s, prior to the onset of the Asian financial crisis, saw some encouraging developments in the Indonesian electronics industry. Improvements in terms of growth of output and exports are mainly the influx of FDI after the beginning of the 1990s. Other policies seem to be moving in the direction of greater liberalisation, including the establishment of EPZs and a protected domestic industry outside the EPZs; renaming of *EPTE* to *PKB/PDKB*; domestic sales limitation on *PKB/PDKB* licensed firms was expanded to 50 per cent of export values and various trade administrative reforms.

While none of these trade and administrative measures was fully implemented and each of them works well for certain firms and in certain situations (Chapter 7). The impact of Indonesia's regulatory changes on foreign and domestic firms, taken together, has provided greatly improved opportunities.

Although these measures have been important in attracting new electronics firms, they could also be constraints to continued growth. Future export growth will involve moving into more complex assembly and higher value-added production. The challenge for both domestic and foreign electronics firms is to improve product quality and increase local sourcing of components and parts. The hurdles faced by supporting industries and institutions, including the low level of skills and education of the workforce and inadequate supporting institutions, are of a medium- and longer-term nature.

The market for investment from global manufacturers is very competitive and competition is likely to intensify. The once rigid and inward-looking policies of Indonesia's competitors such as China and India are becoming increasingly competitive.

Indonesia's infrastructure has improved but findings from interviews of foreign MNEs (Chapter 7) suggest that there are concerns about labour, inadequate infrastructure, red tape, unclear regulations and irregular business practices. While Indonesia has an abundance of relatively cheap unskilled labour which can be trained, low labour cost advantages can be offset by administrative inefficiency and inadequate supporting infrastructure and supporting industries.

In summary, improvements in Indonesia's locational advantages have had a positive effect on the electronics industry. They increased export-oriented investments of the relocation type, mainly from Japan and the East Asian economies.

Discussion of the characteristics of firm-level investments by Japanese and other East Asian firms which operate manufacturing plants in Indonesia is provided in the next chapter.

4 Japanese and other investment profiles in Indonesian electronics

There is competition between different multinational firms and their associated supplier firms in the Asia Pacific region, some only recent players outside their home bases. Previous surveys contend that there may be differences in the investment behaviour of MNEs from different origins, at least in the short term. The incumbent and principal competitors, Western and Japanese MNEs, exhibit patterns of investment and competitive behaviour that are relatively familiar and have been much studied. As newcomers in the region's electronics industry, firms from East Asian NIEs are less studied and less familiar to Western researchers. They often are assumed to share the characteristics of Japanese firms, albeit at an earlier stage of development. Yet such a simplistic view may not fully explain the characteristics of their manufacturing operations, investment behaviour or styles of management, and their influence on Asia Pacific economies.

This chapter offers a new methodology to extract the firm-level national group characteristics of realised investment data on MNEs' manufacturing operations. This framework can enhance our understanding of the actual investment environment in an embryonic Indonesian industry such as electronics. First, simple univariate statistical methods are applied on firm-level planned and realised investment data to analyse the salient profiles of affiliates of firms from Japan, Korea and others from East Asian NIEs in Indonesia. Similarities and differences in the characteristics of these firms are spelt out and some indicators of the relative rates of investment 'realisation' (that is, actual implementation of investment projects due to disbursement of foreign equity and loans) for different groups of firms are estimated. There have been periodic attempts to estimate realised investment figures by *Bank Indonesia*, *BKPM*, and the Central Bureau of Statistics (*BPS*, *Statistik Industri*) series have reasonable estimates but there is little

information available on realised Indonesian equity investment by national origin at a subsector industry level.¹

Univariate comparisons, however, do not take account of the interaction amongst the characteristic variables; they are treated as independent. A difference in respect of one variable might be due to differences in respect of any of the other characteristics, or a combination of other additional characteristics. Thus, to take account of the interaction among variables, a multivariate analysis is applied in this chapter. The use of the multinomial logit model also allows the selection of a set of statistically significant variables as the most critical variables in differentiating different pair-wise groups of firms while jointly considering all available variables.

There has been little comparative research on the characteristics of the affiliates of MNEs from different origins or between foreign subsidiaries. Particularly in Indonesia, lack of suitable data has prevented formal quantitative analysis. This chapter is an attempt to provide such an analysis of the Indonesian electronics industry and to examine firm characteristics from the available official data with variables such as investment size, equity, export, import, land use, plant construction time, range of products, incumbency, and local and expatriate employment levels. The results vindicate the hypothesis in Chapter 2 that while the characteristics of MNEs suggest a variety of investment behaviour, nationality of ownership, on its own, is not sufficient to explain why firms differ in their investment patterns and strategies to FDI.

The outline of the chapter is as follows.

The first section introduces the literature on the comparative performance of affiliates of the MNEs operating in Indonesia and the methodology of univariate analysis to be applied on the raw investment data sets.

The second section discusses sources of the data used in this chapter, the method of collection and conversion of 'raw' investment flow (nominal) variables into constant investment stock values. The purpose of such conversions is to construct more economically meaningful approximations of the 'capital stock' values for individual

¹ The total approved foreign investment from the *BKPM* tends to overstate foreign equity investments, as these figures include both the equity contribution of the Indonesian partner(s) as well as foreign loans. The data on realised investment only refer to realised foreign equity investment and realised loans (Thee 1990: 72).

firms and groups of firms so as to obtain an approximation of the 'realisation' percentages of planned compared with actual investment for different groups of firms.

In the third section, a univariate analysis of the approved and realised data is outlined in terms of pair-wise (two-group) comparisons of the characteristics of firms from different origins. This section also goes some way in examining the individual distribution of the 11 variables in the data set. They include investment size, equity size, export, import, land use, plant construction time, product number, establishment year, domestic and expatriate employment and broad industrial classification of firms. In addition, it provides a summary and analysis of 'realised FDI' estimates for different groups of firms, providing an additional important measurement of their characteristics.

The fourth section analyses jointly the characteristic variables of affiliates in the Indonesian electronics industry using a multinomial logit model. The analysis of three group of firms (from Japan, East Asian NIEs and others) is formally introduced and followed by an outline of the associated hypotheses relating to each of the explanatory variables. The results of the econometric analysis are provided. Finally, the main findings of the quantitative exercise and implications that can be drawn from the econometric and informal descriptive approach in the previous chapter are given in the summary.

Comparative characteristics and performance

The characteristics and performance of subsidiaries of firms from different countries and local firms have been the subject of many studies of capital by origin. The evidence is mixed and there is little agreement on the appropriate methodology or econometric procedure that should be employed to compare firm-level performance.

Some studies suggest that Japanese affiliates and their non-Japanese counterparts perform differently in both developed and developing countries (Ramstetter 1991a; Belderbos 1992; Belderbos 1994; Han 1994). The evidence supporting widely-held assumptions regarding 'unique' or significantly different characteristics possessed by Japanese affiliates, however, remains mixed (Beechler and Krazmien 1995; Beechler and Stephan 1996; Kinoshita 1995; Tan and Vertinsky 1995b; Abo 1994; Beechler 1995). There are numerous comparative studies of capital by origin of ownership showing that

the different market orientation of Japanese and American affiliates leads to different performance by their subsidiaries (Kojima 1973, 1985; Lall 1983).

Based on the experience of subsidiaries in Korea (Lee 1980), Taiwan (Chou 1988), Hong Kong, Taiwan, Korea and ASEAN countries (Kojima 1985), some studies suggest that there are distinctive features of Japanese subsidiaries relative to US firms in various developing countries. Other work based on Taiwanese data finds that there are strong links between some of the firm-specific characteristics (such as ownership, firm size and efficiency) and the level of exports or local sourcing (Liu, Schive and Tsai 1990; Chung 1980).

Some studies find links between some of the firm-specific characteristics (ownership, firm size, factor intensities, factor productivity, export performance and import dependence) which distinguish foreign-owned and local firms. For example, Kumar (1989) in India, Blomstrom (1989) in Mexico, Willmore (1986) in Brazil, Riedel (1975), Schive (1990) and Wang (1996) in Taiwan suggest that foreign-owned firms and local firms perform differently with regard to several important characteristics.

Some studies from the 1970s do not distinguish between 'Third World' MNEs, which differ in important respects from developed country MNEs. Ozawa (1979) and Kojima (1978) argue that Japanese MNEs, in contrast to the giant, high technology, investors from the United States, tend to be relatively small, low technology firms making standardised products, and invest abroad mainly to exploit lower costs of labour or access to raw materials. The advantages they exploit abroad are not of the Caves-Kindleberger or Hymer variety — based on product differentiation, barriers to entry and large firm size — but are based on proprietary (firm-specific) knowledge, applying well-diffused technologies to the conditions in less-developed economies.

It may be argued that the experience of these early Japanese MNEs was an intermediate stage in the development of Japanese industry similar to that experienced by the NIE MNEs during the 1980s. MNEs from Japan, particularly since the 1980s, behave in much the same way as US MNEs on the basis of size and technological/marketing advantages.

Lall (1983) suggests that there can be several conditions under which MNEs from NIEs or developing countries can develop a set of proprietary or ownership advantages

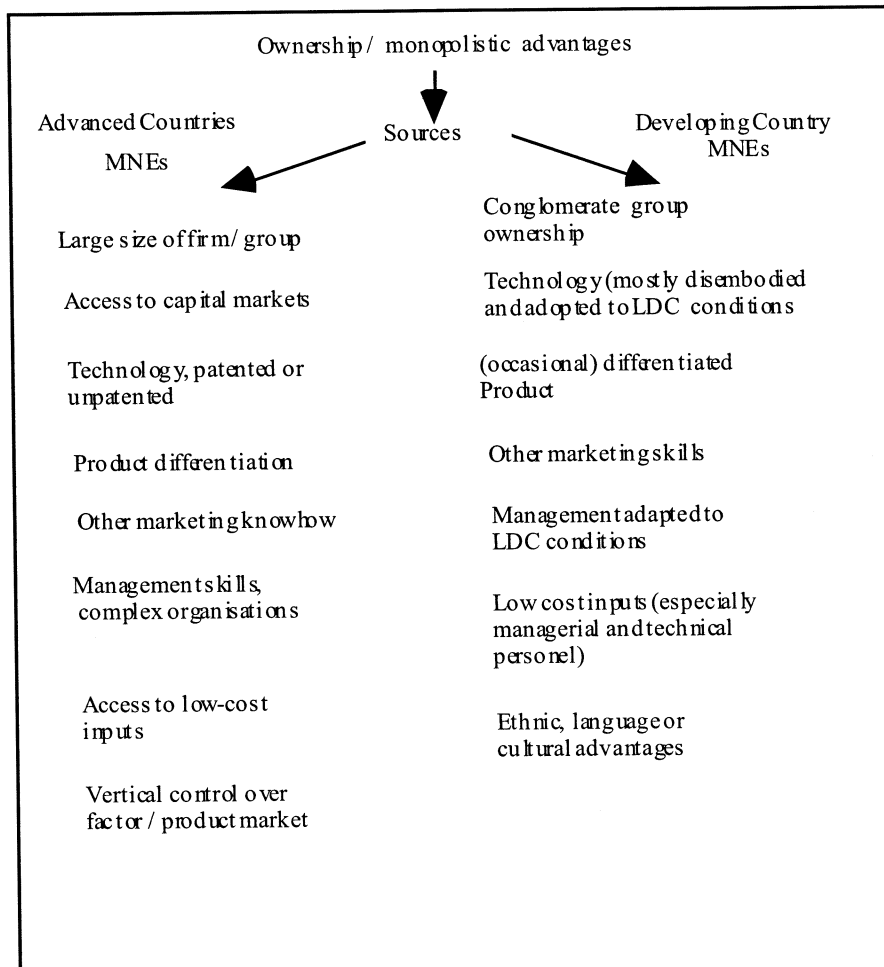
vis-à-vis competitors from more advanced countries: (1) their technical knowledge can be localised around a different set of techniques from those used by advanced country MNEs, and be more appropriate to factor price, quality and demand conditions in other LDCs; (2) the product may be tailored to developing country conditions, or adapted in such a way that many of the 'frills' (or luxury characteristics) are dropped while retaining its essential functions; (3) the developing country MNE may direct its innovation to techniques which are efficient at smaller scales than advanced country MNEs; (4) in some cases, developing country MNEs may develop differentiated consumer products which compete with branded products of advanced country MNEs; the main determinant of success may be a large domestic market or closer interaction with buyers rather than sophisticated mass-promotion marketing; (5) the ability to function better in a similar developing country environment may be supplemented by peculiar ethnic, cultural or linguistic links, and the experience of training 'raw' labour may provide developing country MNEs with some advantages over advanced country MNEs; (6) access to relatively cheap skilled manpower in the home country may strengthen the above advantages of developing country MNEs; and (7) the developing country MNEs may belong to large, diversified conglomerate groups run by traditional business families which provide them with advantages in terms of finance, managerial and technical resources.

The proprietary or monopolistic advantages of MNEs from developed countries are illustrated in Figure 4-1 and their characteristics are contrasted with MNEs from developing countries.

Empirical studies of MNEs from developing countries are found in the works of Wells (1977), Lecraw (1977, 1991), Lecraw, Grosse *et al.* (1990) and Lall (1983). An example of a study on MNEs from Hong Kong is Chen (1981) while there are recent studies on MNEs from Indonesia and operating in Indonesia (Lecraw 1992) and those that have plants in the ASEAN region (Lecraw 1981) whose methods may be relevant to a study of MNEs operating in the Indonesian electronics industry. Distinctions between MNEs from different origins in developing countries context are in their empirical analysis of electronics industry in Taiwan (Wang 1996), export orientation in Sri Lanka

(Athukorala, *et al.* 1995) and firm-level comparative performance (Wilmore 1976; 1986; Riedel 1975; Natke and Newfarmer 1985).

Figure 4-1 Sources of ownership (monopolistic) advantages for MNEs



Source: (Lall 1983 : 7).

In this chapter, prior to multivariate econometric analysis, a univariate analysis is employed to test data accuracy but it can also examine firm characteristic variables as separate variables. By rigorous 'data cleaning', misleading results and conclusions which might be purely a consequence of the way the basic data have been constructed can be avoided (Tukey 1977: 12).

The univariate analysis of the two available data sets — the approved and realised investment data — sets the stage for a multivariate econometric model analysis in the next section. This provides pointers to which variables are the most important (that is, key discriminants or differentiators) in differentiating firms from different origins. Both

analyses can provide pointers on the extent in the differences of the characteristics of Japanese and other East Asian NIEs' investments.

As a first step in data analysis, univariate analysis methodology is employed to examine independently the distribution of values of variables to achieve several aims. First, it can eliminate errors of data acquisition, measurement, data entry and checking. Second, it can systematically determine outlier and extreme values (as defined by objective statistical criteria) as well as determine whether differences or similarities between groups are statistically significant. Third, it can be used to evaluate the individual variables in the data set so as to provide a preliminary examination and to assess their appropriateness for the selection of variables to be used in this chapter for the univariate analysis and for the multivariate hypothesis testing and model building exercise in the next chapter. Such an approach is consistent with the general quantitative approach taken by those who attempt to balance economic (based on *a priori* assumptions) and statistical considerations (Amemiya 1981: 1485).

Data issues and sources

Indonesia and other developing countries do not possess the same quality of secondary data as the mature industrialised economies of Japan, North America and Western Europe. The univariate and graphical analysis presented below also ensures that some outliers in the data are taken into consideration.

There are relatively few empirical studies of firm-specific characteristics in the Indonesian electronic industry. With the exception of some case studies (Thee and Pangestu 1993a and 1993b), there are no empirical studies on FDI in the Indonesian electronics industry which compare the characteristics of Japanese or other investors using firm-level data. This might in part be due to the 'formidable data constraints' to rigorous analysis of foreign investment in Indonesia (Hill 1988: 33) as there is a dearth of firm-level data on FDI in Indonesia. Other sources of realised foreign investment data are from the Indonesian Central Bank (*Bank Indonesia* which also provides loan data) and from the Survey of Industry by Central Bureau of Statistics (*BPS*, see Table 3-10). However, these data are not available by country of origin and for this reason they are not used in this study.

The data set of approved FDI used in this study consists of a sample of 279 firms that planned investment from the beginning of 1970 to 30 June 1994. This data set for approved investment in the electronics sector covers registered foreign investment projects (*Penanaman Modal Asing, PMA*). To obtain export and other facilities, firms must register and report their planned projects for approval by the *BKPM*. The data is based on the reports submitted by the firms and some firms may not actually submit reports. Although the propensity to report affects the coverage of the data, there is generally a high propensity to report among both foreign and domestic firms when they are seeking to expand their business since reporting allows them to obtain a number of concessions (drawback, EPTE status eligibility as outlined in Chapter 3). Other 'second best' justifications in utilising approved data are discussed below (see also footnote 6 below).

In June 1994, the Indonesian government allowed wholly-owned firms to set up operations in Indonesia for the first time. Prior to this, MNEs operating in the electronics industry, as in other industries in Indonesia, had to form joint ventures with local partners. They could do so under two arrangements based on the level of equity investment: as a foreign majority owned affiliate (*PMA*); or as a domestic majority owned affiliate (*PMDN*)².

The focus on this study is on the approved investment *PMA* data which are based on firms that were given approval to set up their operations between 1 January 1967 and 30 June 1993, while the realised data set comprises firms that had established operations up to 30 July 1995.³ The variables listed below refer to this time period and firms are classified into three groups:

- (1) Japanese affiliates: joint-venture firms in which the majority equity is held by parent firms from Japan;

² Foreign investment in Indonesia is governed by the *Foreign Investment Law No.1, 1967* and its subsequent amendments. For a comprehensive outline of these amendments up to 1986, see Hill (1988: 28–52).

³ All foreign projects in the data set plan to realise their investments in 25th, median, and 75th percentiles at 18, 27 and 36 months, respectively, with a mean period of 24.89 months (see Table 4-3). Hence, this is a fair assumption for the average time period of investment realisation and the end point of coverage of the approved and realised data is set at 25 months after 30 June 1994 (30 July 1995). It is also assumed, for the purpose of the quantitative exercise in this chapter that each approved project represents an independent individual affiliate.

(2) NIE affiliates: joint-venture firms which are mainly owned by MNEs from of East Asian NIEs, namely Korea, Singapore, Hong Kong and Taiwan;⁴ and

(3) ROW affiliates: affiliates with principal owners from the United States, the European Union, and the rest of the world (ROW); this and other categories of firm are classified as being principally foreign financed (*PMA* firms in official statistics);

The three categories of firm origin are expressed by the variable *CNTCOD*, which represents the aggregated codes as follows:

0 = Japan ; 1 = East Asian NIEs; 2 = ROW

CNTCOD will also be used as the dependent variable, F_{ij} , in the modelling exercise in the last section of this chapter.

The other (or independent) variables are as follows:

INVSZE represents the nominal total size of investment (measured in millions of US dollars).

EQTSZE denotes the nominal amount of equity held by the parent firm in the affiliate firm (measured in millions of US dollars).

EXPEST represents the estimated exports of the affiliate (measured in millions of US dollars).

IMPEST denotes the estimated imports of the affiliate (measured in millions of US dollars).

LNDRQD represents the total physical size of land used for the manufacturing plant (in tens of thousands of square metres).

CNSTIM denotes the average actual construction time of the establishment of the manufacturing plant operated by the affiliate (in months).

PRDNUM represents the total number of distinct products manufactured in Indonesian plants by the affiliate firm.

YRESTD denotes the year of the establishment of the first manufacturing plant by the affiliate firm in Indonesia.

EMPXPT represents the number of foreign or expatriate employees working as managers, technicians or administrative workers in the Indonesian affiliate.

⁴ The sampled number of Korean firms is too small to make up a separate group for separate testing in the realised data. Hence, they are included as part of the NIE group.

EMPINA denotes the number of local Indonesian employees working as managers, technicians or administrative workers in the Indonesian affiliate (measured per 100 employees).

ISICOD represents the four-digit Indonesian Standard Industry Classification (ISIC) codes for the subsectors of the electronics industry.⁵

There is a new variable created:

PEQTINV denotes the percentage of the nominal amount of equity held by the parent firm in the total nominal investment of the affiliate firm.

The principal use of the approved data in this study is a 'second best' method (owing to data limitations) to assess differences or similarities in the comparative rates of realisation of investment projects among foreign groups of firms in the sample by comparing the approved with the realised investment data sets at the 'commencement of production' and 'commercialisation' stages of the operation of firms.⁶

Secondly, it can be argued that the approved data have an intrinsic value as they are 'at least a broad indication of investment' (Hill 1988: 35).

Thirdly, the approved data can provide some indication of the 'announcement effect' in the context of an oligopolistic competitive market. That is, the approval of the investment project of a leading firm has a direct or indirect effect on its competitors or follower firms, so as to cause the well-known 'bunching' effect⁷ in a particular place. This effect has been demonstrated to be prevalent in oligopolistic competition, which is characteristic of the electronics industry (Banerjee 1992). It has also been noted by other studies of foreign investment behaviour, for example, of foreign investment by US manufacturing firms (Knickerbocker 1973) and of Japanese electronics firms in Asia (Simon and Jun 1995).

For example, as Korean firms catch up, they monitor Japanese firms' presence in a market such as Indonesia. As there are no other indicators of the presence of new

⁵ The ISIC codes for the subsectors of the electronics industry are already defined in Chapter 3.

⁶ The realised investment data set consists of firms that reported the status of their project after the completion of the building of the proposed manufacturing plant ('*realisasi investasi*' — A1 stage), which is stipulated to be two years after the initial approval of the investment project. By decree, firms are required to report at the time of the commencement of the commercial production ('*realisasi komersil/produksi*' — *Laporan Komersialisasi Penanaman Modal*' — A2 stage) which is set at a maximum of two and three years, respectively, after the initial project approval. Although not all firms comply, more often than not they do to obtain export and other facilities when they need to further expand their production. The data set used in the present study includes firms which have completed both A1 and A2 stages.

⁷ Also known as 'herding', 'follow-the-leader' and 'bandwagon' effect.

entrants into a particular subsector of electronics, it can be argued that the approved investment figures and start-up dates since the 1980s should be taken more seriously than those during the 1970s when Japanese firms faced little competition in Indonesia. Observing the approved investment statistics of rivals investing in Indonesia, either from the same home country or elsewhere in the same subsector, could provide several signals to a potential investor. First, a rival investing in Indonesia because it has a favourable investment climate, for example, due to changes in its investment and trade regulations, gives the potential investor a favourable signal since the latter uses knowledge of the rival's actions and considers that there is less risk involved in investing in Indonesia. The potential investor will match its rivals by undertaking similar investment activities. Second, the potential investing firm will also gain external economies from being a follower, for example, by using the network of suppliers that the rivals have established in the country. Finally, when the size of the domestic market is large and growing rapidly (as in the case in Indonesia), the potential investor will attempt to avoid falling behind its rivals (Kinoshita 1995: 11).

The fourth reason to use approved investment data relates to the unique circumstances surrounding the electronics industry in Indonesia during the late 1980s and early 1990s. Since most of the investments made by foreign firms from Japanese and the East Asian NIE sources considered occurred during the last five boom years, it could be argued that the realisation figures based on the approved investment data are higher than the realised values in previous period.

Univariate analysis of approved investment data

Little is known about the differences in the characteristics of planned investment by different ownership groups of firms in the Indonesian electronics industry. This section provides an overview of variables in the planned or approved investment data set and outlines some economic interpretations of these differences.

The question under consideration here is whether there are statistically significant differences in firm-level characteristics between Japanese affiliates and those belonging to firms from other ownership groups. This section reviews the establishment of foreign and domestic firms in the industry, their historical development, origin composition and

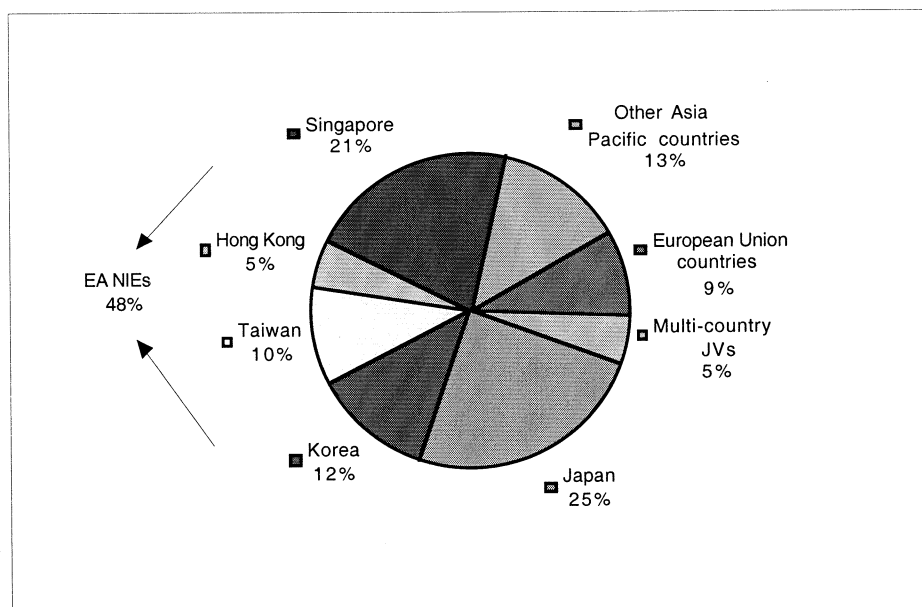
geographical distribution in Indonesia. It is followed by an analysis of the descriptive statistics for the pooled sample and the three groups of foreign firms.

Investment and employment size

Data on approved investment in Indonesia by the number of projects reveal some interesting characteristics of firms of different origins. The distribution of *PMA* firms in Figure 4-1 shows that firms from Japan make up the largest number (25 per cent) followed by those from East Asian NIEs (48 per cent) which consist of Singapore (21 per cent), Korea (12 per cent), Taiwan (10 per cent), and Hong Kong (5 per cent).⁸ Firms from Singapore, however, are to some extent a special case because they are often actually affiliates of firms from third countries such as the United States, the European Union, Japan and East Asian NIEs. Given that the numbers from each of the East Asian NIEs (and their proportion) are too small to make up a statistically meaningful group, they are treated as a single group unless otherwise stated. MNEs from the United States, Canada and others (13 per cent of the total number of projects) are included in the group of firms from other Asia Pacific countries. While firms from the United States are very important in Singapore and Malaysia, the curiously small proportion of FDI projects in Indonesia could be a result of the withdrawal of two prominent US MNEs (National Semiconductor and Fairchild) in 1986 (see Chapter 3).

⁸ While the treatment of Singapore in NIE may not be justified as the Singapore data includes US/Japanese FDI, there is a significant number of indigenous Singaporean supplier firms (as observed

Figure 4-2 Distribution of cumulative numbers of approved FDI projects by origin in the Indonesian electronics industry, 1993



Source: Author's calculations from *BKPM* data, Jakarta, 1995.

The distribution within the two groups of firms of approved investment (which has been deflated to a comparable constant investment price index)⁹ reveals some startling differences. When the data are categorised into small (less than \$1 million), medium (\$1–50 million), and large (greater than \$50 million) investments, it appears that Japanese firms dominate the large investment category (with a total of 10) while NIE firms have the largest number both in the medium (125) and small (33) range. In the medium category, investments by firms from the rest of the world (ROW) amount to 36 (Table 4-1).

A different picture emerges when firms are classified according to their employment of Indonesian workers. Affiliates of NIE firms are the largest employers in all categories except medium-sized firm with 20–99 employees where the Indonesian majority-owned firms appear to be the largest (see Table 4-2).

from the identity of firms in the *BKPM* data) that have relocated to Batam and *Jabotabek* areas. The treatment of Singaporean FDI may need further investigation but is beyond the scope of this study.

⁹ See footnote 17 and Appendix 1 on the investment price indices as deflators.

Table 4-1: Number of firms based on (nominal) investment size by parent firm origin, 1993

Investments	Japan	NIEs	The rest of the world	Total
Small firms (less than \$1m)	3	33	13	49
Percentage of total	6.1	77.3	26.5	100
Medium-sized firms (\$1–50m)	52	125	36	213
Percentage of total	24.4	58.7	16.9	100
Large firms (greater than \$50m)	10	6	1	17
Percentage of total	58.8	35.3	5.9	100
Column total	65	164	50	279
Percentages	23.3	58.8	17.9	100

Source: Author's calculations from BKPM data, Jakarta, 1995.

Turning to the distribution of their product categories, firms in the approved data set are not evenly distributed among the different ISI classifications across the wider definition of electronics (ISIC3825–3839). Most firms are concentrated in the narrow consumer electronics (ISIC3832) segment — including radios, television sets, other consumer electronic products, communications and their components.

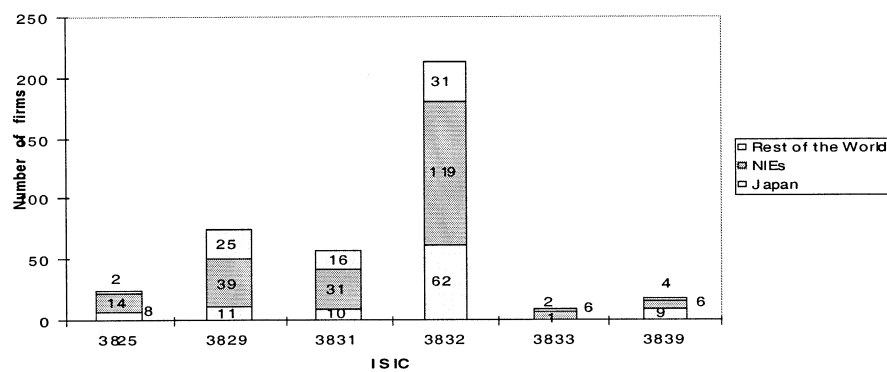
The next largest segment is electrical machinery (ISIC3829)— including electronic sewing machines, compressors, air conditioners, refrigerators and their components; and is followed by the electric machinery subsector (ISIC3829) — including electric generators and motors, transformers and other electric machinery. Japanese and East Asian NIE affiliates appear to have the largest presence in consumer electronics and least in household electrical appliances (ISIC3839) — including electric fans, rice cookers, and others — where only firms from Japan and East Asian NIEs are present. The majority of firms which are present in all segments with the exception of electrical devices (ISIC3839) are firms from East Asian NIEs. Small numbers of all groups are present in electronic office machinery (ISIC3825), household electrical appliance (ISIC3833) and electrical devices (ISIC3839).

Table 4-2: Indonesian employees by parent firm origin, 1993¹⁰

Investments	Japan	NIEs	Rest of the World	Total
Small firms (less than 20 employees)		5	2	7
Percentage of total		71.4	28.6	100.0
Medium-sized firms (20–99 employees)	16	29	21	66
Percentage of total	24.2	43.9	31.8	100.0
Large firms (100–999 employees)	37	113	23	173
Percentage of total	21.4	65.3	13.3	100.0
Very large firms (1000 employees or more)	12	17	4	33
Percentage of total	36.4	51.5	12.1	100.0
Total	65	164	50	279
Percentages	23.3	58.8	17.9	100.0

Source: Author's calculations from BKPM data, Jakarta, 1995.

Figure 4-3 Distribution of the ownership groups of firms by ISIC or segment categories, 1993



Source: Author's calculations from BKPM data, Jakarta, 1995.

10 The first three classifications of firms by employment size up to the 100–999 employee category follow those used by the Indonesian Central Bureau of Statistics (for example *Statistik Industri 1990, Biro Pusat Statistik*, Jakarta, p. x). The fourth category of very large firms of 1000 employees or more is added to distinguish the larger plants of giant electronics multinationals such as Matsushita, Sony and Samsung.

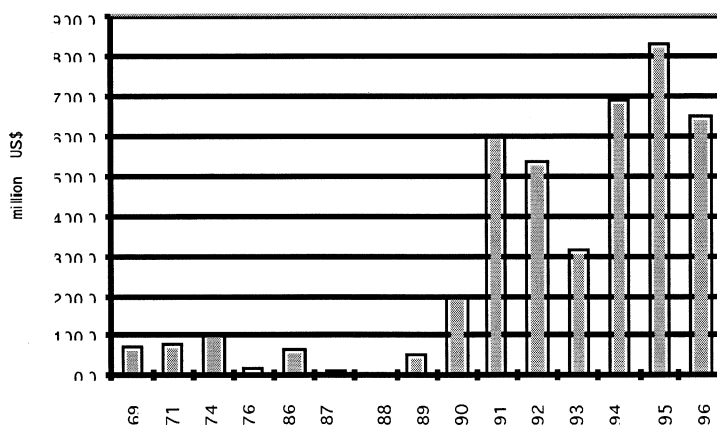
Timing of investment by origin

Examination of the investment approvals of foreign and domestic firms suggests that while there were relatively few investment projects approved between 1969 and 1988, a surge of approvals began from 1989.

In 1990, the number of approvals increased over the previous year, and in 1991 the total value of approved investment projects peaked at a record high of \$745.2 million (see Figure 4-4). Although over the following three years, the value of projects approved declined, the second highest level of \$701.1 million was reached in 1994. The following year, in 1995, there was a marked decline in the value of approvals but they were still at the relatively high level of \$573.0 million.

The rapid growth in electronics since 1989 is hardly surprising given the dramatic changes that have taken place in the home countries of the principal sources of electronics FDI in East Asia, and given the dramatic improvements in the investment climate in the Indonesian domestic economy. Other labour-intensive industries such as textiles and footwear have enjoyed a similar boom in foreign investment (Harianto 1995: 62).

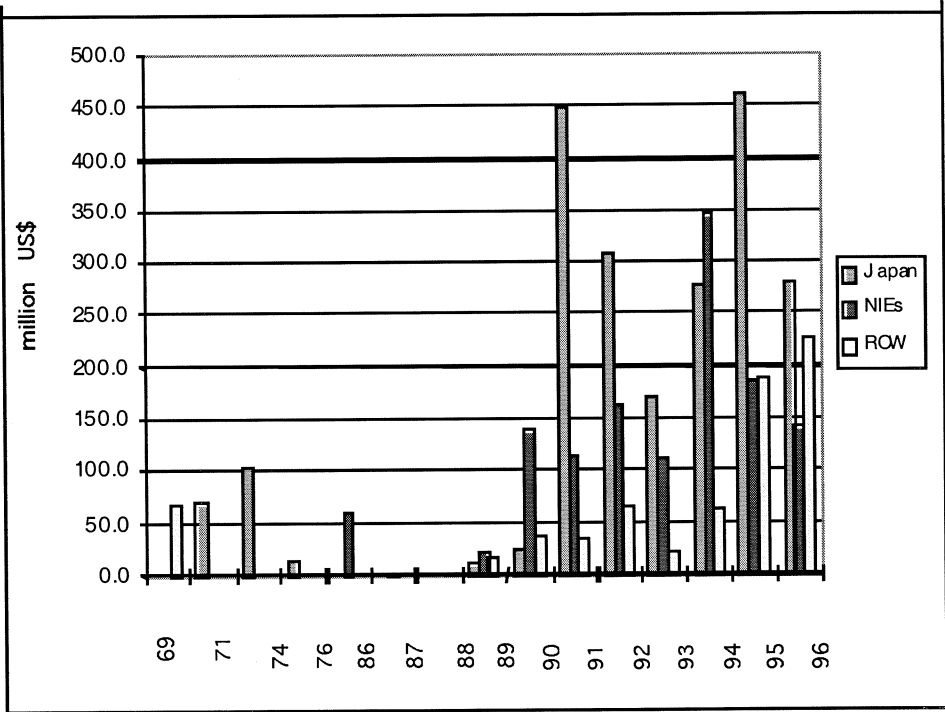
Figure 4-4 Distribution of approved foreign (PMA) investment flows in the Indonesian electronics industry, 1969–96 (\$ million)



Source: Author's calculations from BKPM data, Jakarta, 1996.

There is, however, a clear difference in the timing of investment approvals for the different group of firms between 1969 and 1995 (See Figure 4-5). Investments of the Japanese affiliates started at a low level of less than \$100 million in 1971, and declined to a trickle in 1976 with no significant investment recorded until 1986, then declined significantly in 1987 and petered out the next year. Foreign investment then started to emerge again from 1989 and rose sharply to peak in 1991 at around \$600 million but fell in the following years to about \$306 million in 1993. From this year, FDI in electronics increased rapidly to reach a record level of over \$800 million in 1995 but fell in the following year to about \$640 million. Due to the composition of origin of FDI (Figure 4-2), the trend for electronics FDI in Indonesia roughly mirrors the boom and bust (or 'bubble' economy) conditions in the domestic economy in Japan and East Asian NIEs.

Figure 4-5 Distribution of approved foreign (PMA) investment flows in the Indonesian electronics industry by origin, 1969-96 (\$ million)



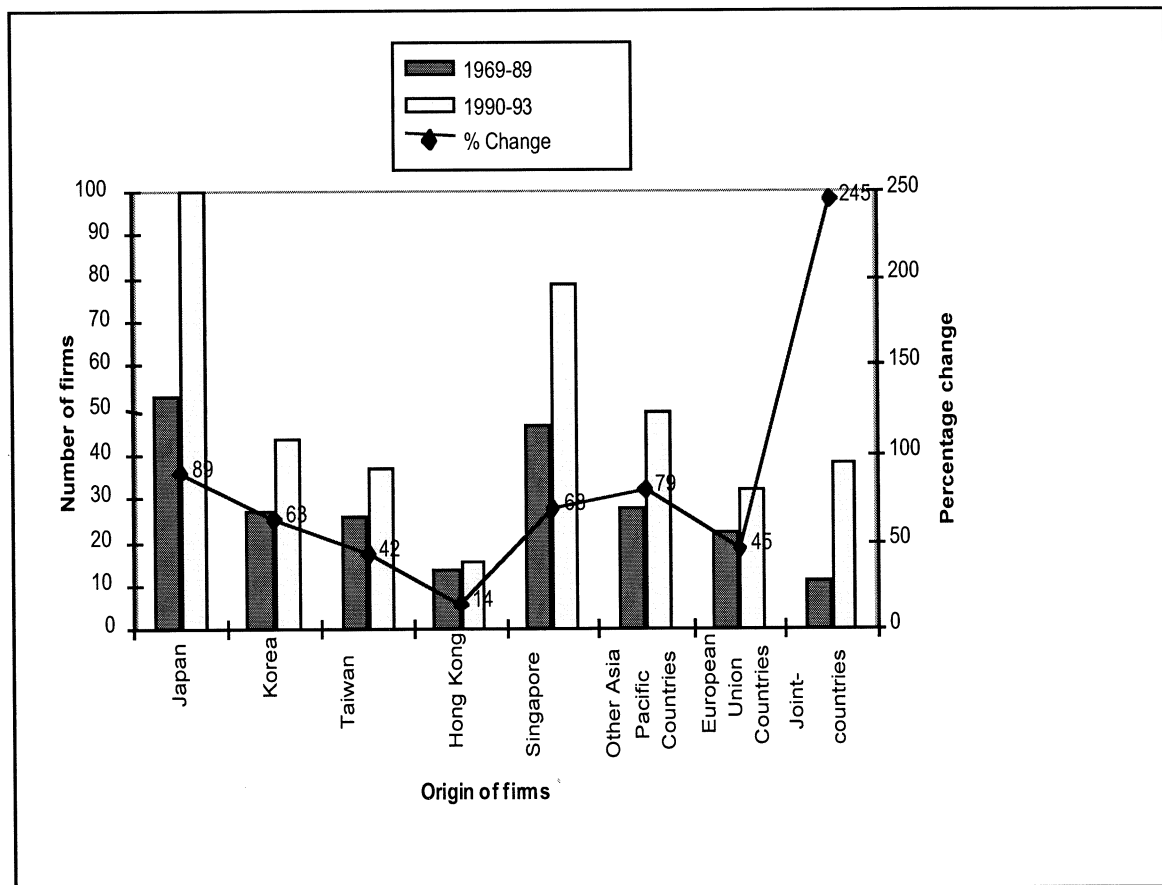
Source: Author's calculations from BKPM data, Jakarta, 1996.

There are clear differences in the timing of investments by different groups of firms. Investments by the Japanese affiliates started at a low level of less than \$100 million in 1971, and declined to a trickle in 1976 but started to grow from 1989 to reach

a peak in 1991 of around \$450 million. While this declined during the next two years, it started to expand again in 1994 and increased to peak at over \$460 million in 1995 but fell in subsequent years. Foreign investments from the East Asian NIEs began in 1989 and increased to a peak in 1992 at around \$155 million, one year after the peak in Japanese FDI. In 1993, FDI from East Asian NIEs fell slightly but the following year it reached a record peak of close to \$350 million in 1994. The approvals of investment from the ROW clearly followed another pattern which began with a total investment of \$70 million in 1969 and peaking at \$103 million in 1995. Thus, the total investment approvals associated with firms from different origins clearly peaked at different periods reflecting to a large extent the different home country and international conditions faced by their parent firms.

Turning to our data set, a comparison of the investment projects approved during the period 1969–89 with those during the period 1990–94 can be made.

Figure 4-6 Distribution of cumulative numbers of approved FDI projects in the Indonesian electronics industry, 1969–89 and 1990–93



Source: Author's calculations from *BKPM* data, Jakarta, 1995.

Foreign investment from all origins into the Indonesian electronics industry experienced an upsurge, displaying a much more diverse distribution than ever before. Japanese FDI appeared to experience the largest increases, followed by the NIEs, with investments approvals by firms from Korea the second largest after those from Singapore (see Figure 4-6).

This discussion of the timing of FDI does not differentiate between the influence of regulatory environment or other factors and firm-specific capabilities. A focus on the latter which is the focus of the capability literature (Chapter 2) suggests that late comer firms (particularly those from NIEs) are preoccupied with 'catching up' with the global leaders (importantly firms from Japan).

Geographic location

The geographical distribution of foreign affiliates appears to be highly concentrated in the industrial estates known as 'bonded' and entreport areas (*kawasan berikat* and *EPTE*)¹¹ in West Java (57.9 per cent of the total firms). Most are located in the Greater Jakarta (*Jabotabek*) areas adjacent to the Special Capital Region (DKI) of Jakarta consisting of the satellite towns of Bogor, Tangerang and Bekasi. If Jakarta (12 per cent) is included, then 86.9 per cent of firms are located in this area.

Batam Island in Riau Province, about 20 km south of Singapore, is another important location, with 25 per cent of the total value of approved projects. These projects are largely labour-intensive assembly plants run mainly by Singaporean-registered firms which many are actually affiliates from third countries and thus are special cases, as discussed earlier. Other provinces have not attracted significant foreign investment (less than 1 per cent) but Central and East Java constituted 6 per cent of total investments.

11 Bonded areas are special industrial zones in which firms enjoy exemption from paying import duties in return for accepting a number of restrictions, including that a large proportion of their production must be sold abroad.

Descriptive statistics of approved investment data

This section examines the firm-level characteristic variables of the approved investment data set by comparing the means of the pooled sample for all firms with those of each group and then tests them to see whether there are any statistically significant differences. The means, standard deviation and number of observations are provided in Table 4-3 for eleven variables.¹²

A comparison of the mean values of the *EQTSIZ*, *EXPEST*, *IMPEST* and *INVSIZ* variables among the different groups of firms suggests some clear differences between Japanese affiliates and the rest (see Table 4-3)¹³

First, all the monetary variables for the Japanese affiliates appear to have larger means than any other group. But in statistical terms, compared with the NIE firms, the Japanese affiliates possess two significantly larger variables (at 1 per cent level), the investment and equity size variables (*EQTSIZ* and *INVSIZ*), but the percentage of equity holding (*PEQINV*) show no significant difference (at 5 per cent level) and all other variable differences are not significant.

This suggests that while the NIE firms, on average, undertake smaller investments, they hold similar equity shares even though they are latecomers in this industry and operate mainly small to medium-sized manufacturing or assembly plants in Indonesia.

Second, when comparing Japanese and NIE affiliates with those from the rest of the world (ROW), it appears that the magnitudes of the variables for Japanese firms is significantly larger than for ROW firms: absolute equity (*EQTSZE*) investment size (*INVSIZ*), expected imports (*IMPEST*), Indonesian (*EMPINA*) and expatriate (*EMPXPT*) employees variables. The results suggest that Japanese firms are more similar in respect of these characteristics to NIE firms than those from the ROW.

¹² The eleventh variable in the original data set, the Indonesian Standard Industry Classification code, ISIC, is not included in Table 3-4 since it is a categorical variable. In its place, another variable is used, the percentage of the nominal size of equity, *PEQINV*.

¹³ A statistical test of mean differences and their t-values of the hypothesis that all Japanese owned and non-Japanese owned firms possess characteristic variables not significantly different (Appendix Chapter 4: Table A4-1).

Table 4-3 Descriptive statistics of group samples of approved investment data, 1993
(\$ million and '000s units)

Variable	Origin of firms	Mean	Std. dev	Obs.	Variable	Origin of firms	Mean	Std. dev	Obs.
EQTSIZ	Japan	8.97	15.69	65	PRDNUM	Japan	3.72	4.64	65
	NIEs	2.56	5.17	163		NIEs	2.63	1.97	164
	ROW	2.15	4.04	50		ROW	2.54	2.06	50
EXPEST	Japan	21.97	45.89	37	YRESTD	Japan	92.55	3.89	65
	NIEs	11.07	16.18	116		NIEs	91.98	2.46	164
	ROW	7.17	8.83	26		ROW	92.24	3.84	50
IMPEST	Japan	6.82	8.76	26	EMPXPT	Japan	15.38	13.35	65
	NIEs	3.72	8.75	96		NIEs	17.80	22.50	164
	ROW	1.35	1.92	27		ROW	9.78	14.61	50
INVSIZ	Japan	26.77	47.62	65	EMPINA	Japan	5.59	7.70	65
	NIEs	7.48	17.31	164		NIEs	4.49	5.97	164
	ROW	5.85	11.08	50		ROW	2.85	4.94	50
LNDRQD	Japan	3.33	4.55	28	PEQTINV	Japan	48.75	24.97	65
	NIEs	2.06	3.89	111		NIEs	46.17	27.49	163
	ROW	12.36	55.80	29		ROW	46.46	29.01	50
CNSTIM	Pooled	24.89	11.00	273					
	Japan	26.50	10.83	30					
	NIEs	23.04	11.50	113					
	ROW	29.40	9.23	30					

Source: Author's calculations from *BKPM* data, Jakarta, July 1995.

The only other physical (or non-monetary) variable that shows that comparisons of the planned plant-construction time (CNSTIM) variable suggest that NIE affiliates have lower means than Japanese NIE affiliates but difference is not statistically significant at 5 per cent level. Both, however, have lower plant-construction times than ROW firms (significant at 1 per cent level), which may suggest that the latter experienced more difficulties in setting up their manufacturing operations in Indonesia.

The above analysis of mean values of firm-level characteristic variables in the approved investment data offers some generalisations. With the exception of the investment and equity size variables, Japanese and NIE affiliates variables are not significantly different. Both these groups appear to have more variables that are statistically different from the ROW affiliates.

Univariate analysis of realised investment data

Official FDI statistics often do not reveal different rates of investment realisation among foreign firms. The evidence from the data is that at the firm level in the Indonesian electronics industry, there may be significant differences in investment realisation for investment from different countries of origin. The method of calculation demonstrated below can be applied to other industries and may be useful for improving the process of monitoring trends of many groups of firms.

The available realised data set for the electronics industry used in this section has some features that differ from the approved data. First, it has a smaller but still statistically robust sample of 82 firms while the approved data set has 275 firms. Since both data sets show firm identification, the set of 82 firms used for further analysis are firms from the approved data set and these are compared with those in the realised data set.

The distribution of firms of different origins is slightly different in the realised and the approved investment data where the NIE and Japanese projects together make up 91 per cent of the total approved investments. In the realised data set, the comparable figure for the NIEs and Japanese projects is 97.7 per cent of the total, which is composed of 26 Japanese firms (31.0 per cent) and 56 East Asian firms (66.7 per cent). The two ROW firms (2.4 per cent) are subsequently omitted.

The focus of the analysis of the realised data is then on the two groups of firms from Japan and the NIEs. This can be justified since they make up the overwhelming majority (63 per cent) of firms in the industry (see Figure 4-1). As more data come to light, the procedures developed for these two groups of firms could be extended to other firms in the industry.

Before proceeding with the analysis of the realised investment data, an outline of the definition of original and derived variables in the data set (which has some important variations to the definitions used in the approved data set) is in order.

First, some variables are identical in their definition to those outlined in the previous approved data set. These are values obtained from the approved data set indicating the planned values at the commencement of the commercialisation of the investment project and are given an initial 'P'. These do not differ from those used in the previous approved data set.

The second group of variables is unique to the realised data set. These variables are identical in their definition to the variables outlined in the previous approved data set but were reported at the commencement of the commercialisation stage of an individual firm. The additional realised variables are: *REQTSZE*, *REXPEST*, *RIMPEST*, *RLNDRQD*, *REMPXPT*, *RIMPXPT*, *RCNSTIM*, *RPRDNUM*, *RYRESTD*, *REMPXPT*, *REMPINA*.

There are defined as follows:

REMPXPT denotes the realised number of foreign or expatriate employees registered as working as managers, technicians or administrative workers in the Indonesian affiliate (the numbers are expressed per 100 employees). The comparable planned variable is *PEMPXPT*.

REMPINA represents the realised number of local Indonesian employees registered as working as managers, technicians or administrative workers in the Indonesian affiliate (expressed as above). The comparable planned variable is *PEMPINA*.

The third group of variables consists of two additional variables which are constructed to approximate the 'net capital stock' for individual firms in the data set and aggregated to make up their group total values and averages. They are also unique to the realised data set and are based on the reported values at the commencement of the commercialisation stage of the individual firm.

The two alternative investment price indices used are a US investment price deflator (constructed by the International Monetary Fund) and the Indonesian investment price index (calculated by the Indonesian Central Bureau of Statistics). Both are constructed to express the stock of investment of an individual firm in terms of the 1993 US dollars to derive the 'constant dollar' values of all investments that a specific

group of firms accumulated up to 31 July 1995. The two investment price indices are used to approximate two possible scenarios depending on whether a firm spends most of its investment either overseas or in Indonesia. The ratio of investment 'realisation' is calculated as the percentage of the realised investment(s) over the approved investment(s), measured in the same constant dollar values as at July 1995. Hence, by aggregating these ratios for the individual firms in a specific group of firms, the corresponding total investment aggregate in constant dollars and the corresponding average realisation ratios can be calculated for a specific groups of firms.¹⁴ The two proxy variables are defined as follows:

RINCUSP represents the net capital stock of the total investment(s) made by an individual firm aggregated as at July 1995, deflated by the US investment price index and expressed in constant 1993 dollar values (in \$ millions).

RINCIP denotes the net capital stock of the total investment(s) as at July 1995 deflated by the Indonesian investment price index and expressed in constant 1993 dollar values (in \$ millions) converted from rupiah.

PRINCUSP represents the proportion or ratio of the values of the realised investment(s) by the firm to the approved investment(s) calculated by dividing *RINCUSP* by the realised *NINVSZE* measured in constant 1993 dollars.

PRINCIP denotes the proportion or ratio of the values of the realised investment(s) by the firm to the approved investment(s) calculated by dividing *RINCIP* by the realised *NINVSZE* measured in constant 1993 dollars.

PRINNOM represents the percentage of the value of the realised investment(s) by the firm to the approved investment(s) calculated by dividing *RINNOM* by the realised *RINVSZE* measured in nominal dollars.

14 The total capital stock for a single firm is the net accumulation of individual investments made over a period of time which makes up the total physical stock of capital goods (buildings, plant, machinery) possessed by the firm at a particular point in time. The capital stock for each firm has been estimated for the period from 1969 by adding the deflated value of individual investments to obtain the aggregated net capital stock. The difference in the observed constant US and Indonesian indices lies in the method for approximating the total capital stock based on the different exchange rates. For details on the derivation of the Investment Price Indices (Appendix Chapter 4 Table A4-5).

Descriptive statistics of realised investment data

Differences in average values and distribution for the characteristic variables of affiliates from Japan and NIEs can be seen in the means and standard deviations of 17 variables for their group samples (Table 4-4).

Calculations of the means and standard deviations above show more statistically significant variations between the two groups of firms than those obtained in the approved data set. Firstly, as in the previous case, the Japanese affiliates appear to possess much larger statistically significant (at 1 per cent level) means for all net capital stock variables (*RINCUSP* and *RINCIP*) compared with those of the NIE affiliates. On the other hand, with the realisation ratio variables (as measured by both the Indonesian deflator, *PRINCIP* and the US deflator, *PRINCUSP*; or as measured by their nominal equivalent, *PRINNOM*), the opposite appears to be the case (at 5 per cent level).¹⁵

Secondly, comparisons of the realised imports variable suggest that Japanese affiliates possess a statistically (at 5 per cent level) much larger (over four times) realised import mean (*RIMPEST*) than that of firms from NIEs.

Finally, the realised year of commencement variable shows statistically different means (at 1 per cent level) between the two groups of Japanese (late 1988) and NIE (early 1992) affiliates. This observation is in line with those found in other studies, which suggests that while most Japanese affiliates relocated to Indonesia in the mid- to late 1980s, the overwhelming majority of NIE affiliates established their investment projects after 1989 (Harianto 1995; Harvard Institute of International Development 1995). Differences in all other variables are not statistically significant.

¹⁵ See Appendix Chapter 4 for statistical tests for group samples in the realised investment data.

Table 4-4 Pooled and group samples in the realised investment data, 1995 (\$m and '000s)

	Mean	Std Dev	Obs.		Mean	Std Dev	Obs.
RINCIP				RLNDRQD			
Full sample	7.940	1.383	82	Full sample	3.658	6.518	52
Japan	16.500	2.153	26	Japan	5.609	6.714	12
EANIEs	3.960	0.448	56	EANIEs	3.073	6.429	40
RINCUSP				RCNSTIM			
Full sample	7.450	1.244	82	Full sample	20.537	12.081	54
Japan	15.020	1.926	26	Japan	24.429	12.221	14
EANIEs	3.930	0.445	56	EANIEs	19.175	11.884	40
RINNOM				RPRDNUM			
Full sample	9.240	1.756	82	Full sample	3.463	5.124	54
Japan	20.470	2.759	26	Japan	5.786	9.150	14
EANIEs	4.030	0.457	56	EANIEs	2.650	2.271	40
PRINCIP				RYRESTD			
Full sample	96.817	88.094	82	Full sample	90.866	3.978	82
Japan	85.231	103.173	26	Japan	88.385	6.145	26
EANIEs	102.196	80.609	56	EANIEs	92.018	1.368	56
PRINCUSP				PEMPINA			
Full sample	99.305	89.169	82	Full sample	860	1520	80
Japan	90.231	105.678	26	Japan	1220	2343	25
EANIEs	103.518	81.095	56	EANIEs	696	925	55
PRINNOM				PEMPXPT			
Full sample	109.646	92.070	82	Full sample	19	20	80
Japan	106.808	97.966	26	Japan	20	25	25
EANIEs	110.964	90.089	56	EANIEs	18	18	55
REQTSIZ				REMPXPT			
Full sample	6.401	13.388	54	Full sample	15	14	80
Japan	14.983	21.651	15	Japan	17	21	25
EANIEs	3.100	6.086	39	EANIEs	13	10	55
REXPEST				REMPINA			
Full sample	20.200	38.623	50	Full sample	887	1852	80
Japan	42.596	74.884	11	Japan	1352	2995	25
EANIEs	13.883	16.177	39	EANIEs	675	941	55
RIMPEST							
Full sample	5.581	11.198	47	Total			
Japan	13.917	16.184	12	Observations	= 82		
EANIEs	2.723	7.209	35				

Source: Author's calculations from *BKPM* data, Jakarta, 1995.

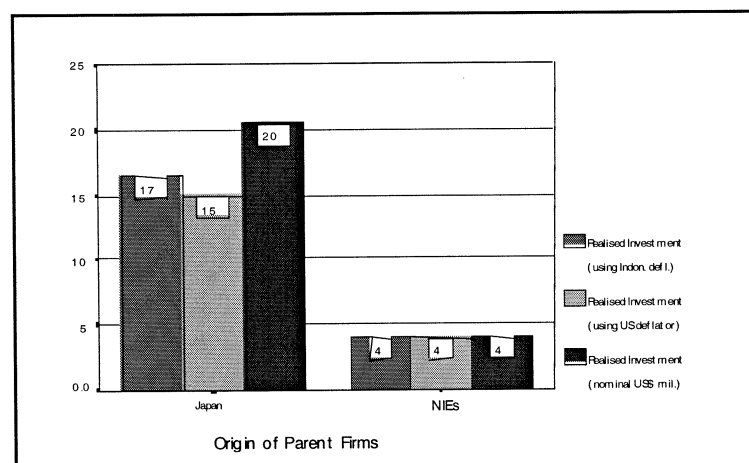
Capital stock estimation

Further comparisons of the realised capital stock variables (*RINCIP*, *RINCUSP* and *RINNOM*) aggregated for the two groups of firms suggest a clear contrast between the nature of the operations of the Japanese and NIE affiliates in the electronics industry in Indonesia (see Figure 4-7).

The large differences in the mean values of both the current and constant stock of investment of affiliates from Japan and the NIEs suggest a number of features about their manufacturing operations in Indonesia.

First, in the case of Japanese affiliates, a comparison between the adjusted constant value of investment stock (deflated by either the Indonesian or US price deflator, generating the *RINCIP* and *RINCUSP* variables, respectively) and the accumulated current dollar value of the realised investments (in this case represented by the *RINNOM* variable which is often cited by official sources) suggests that the latter figure overstates the estimated actual average capital stock either by 19.4 per cent using the US investment price deflator, or by 14.1 per cent using the Indonesian investment price deflator.

Figure 4-7 Mean capital stock of Japanese and NIE firms in current and in constant 1993 prices (deflated by US and Indonesian prices)



Source: Author's calculations from the *BKPM* data, Jakarta, July 1995.

The average capital stock for the Japanese affiliates in constant 1993 US dollars is estimated to be \$15.02 million using the US deflator and \$16.50 million using the Indonesian deflator. This suggests that these values are, respectively, 26.4 per cent and 19.4 per cent lower than the average nominal accumulated investments of \$18.98 million. Similar large percentages which can be seen as 'overstatements' of current nominal investment aggregate have been found in other studies using the *BKPM* data (Hill 1988: 36). In the case of data for the affiliates from Japan used in this study, the magnitude

difference may be explained by the fact that the majority of Japanese large investments were made in the earlier periods, particularly during the 1970s and from the mid-1980s. Hence, their current values would be subject to a greater discounting so that their realised constant investment value estimates seem to be lower than investments made in the early 1990s.

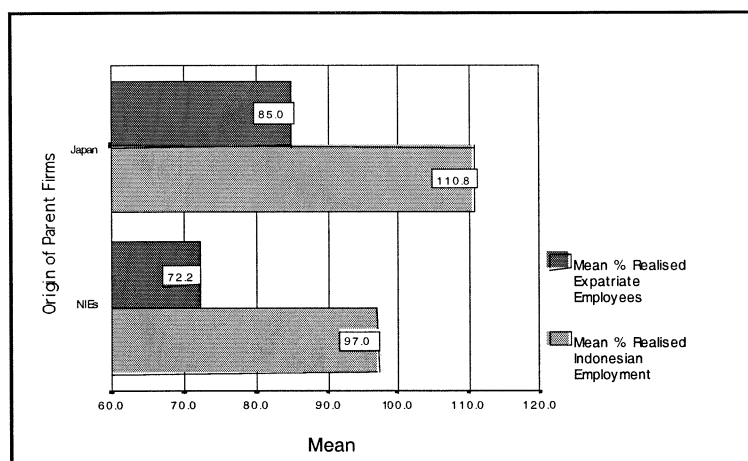
A second observation concerns the mean values of the capital stock of NIE investments, which are estimated at \$3.96 million or \$3.93 million using the US and Indonesian deflators, respectively. When compared with their accumulated current mean value of \$4.02 million the two previous mean values suggest an 'overstatement' of about 2.5 per cent, or 2.0 per cent, depending on which deflator is used. This suggests that the majority of investment from the NIEs tends to be SMEs, in contrast to Japanese affiliates which are mostly larger establishments. Some of the very large Japanese MNEs such as Matsushita and Sanyo established their manufacturing and assembly plants in the early 1970s while most investments from the NIEs were realised in the early 1990s. It is not surprising that the value of the more recent investments from the NIEs is less affected by the price adjustment or deflating process.

The significant differences in realisation ratios for Japanese versus NIE firms clearly does not depend on the type of price deflators used as both United States dollar and Indonesian rupiah based deflators yield similar results.

Employment realisation by different affiliates

Comparison of Japanese and NIE affiliates reveals some interesting differences in the planned and actual size of their expatriates and Indonesian workforce.

Figure 4-8 Average realisation ratios of expatriate and Indonesian employment by affiliates from Japan and NIEs, 1995



Source: Author's calculations from *BKPM* data, Jakarta, July 1995.

The mean value of 20 people for the planned number of expatriates employed by the Japanese affiliates is only slightly higher than the corresponding realised value of 17 people. This suggests a realisation ratio of 85.0 per cent for the Japanese firms. On the other hand, the mean of the planned number of 18 expatriate employees for the NIE affiliates is much larger than the corresponding realised value of 13 people, indicating a realisation ratio of 72.2 per cent (Figure 4-8).

The lower expatriate employee numbers for the NIE group suggest that, firstly, they tend to operate smaller manufacturing plants than the Japanese affiliates. Secondly, there are suggestions (field interviews, 1994–95 see Chapter 7) that levies imposed on foreign firms by the Indonesian Government to deter the employment of expatriates (and in turn to encourage the use of local managers and technicians) could have a relatively greater impact on SMEs than on larger MNEs. Since there are more NIE firms in the former category, it could be argued that the levy might force the NIE affiliates to employ fewer of their own expatriate managers and technicians. Thirdly, the need for the latter might not be as great with lower technological content in the production of the NIE affiliates, particularly SMEs which are engaged in labour-intensive and passive component production; Japanese affiliates may require more expatriate employees as they are operating more complex assembly lines which need to cope with a greater number of model or specification changes.

Turning to the employment of Indonesian plant workers, the comparative figures for planned (1,220) and realised (1,352) employment levels for the Japanese affiliates tend to be larger than those for the planned (696) and realised (675) employment levels for the NIE affiliates. The two sets of figures (see earlier discussions on this variable) suggest that the realisation ratio for Indonesian employment by Japanese affiliates of 110.8 per cent is higher than that of 97.0 per cent for the affiliates from the NIEs. For both groups, the realisation ratios for the employment of Indonesians are higher than those for expatriate employment.

Investment realisation by different affiliates

The estimated ratios of investment realisation, that is, the proportion of the realised (actual) to approved (planned) investments for the Japanese and NIE affiliates, provide some unexpected results.

Firstly, when the calculations use the Indonesian investment price deflator, the Japanese affiliates scored a lower realisation ratio of 85.2 per cent, 17.0 per cent lower than the investment realisation for the NIE affiliates at 102.2 per cent (see Figure 4-9). Secondly, by using a similar calculation method but employing the US index, the realisation ratio for the Japanese affiliates is 90.2 per cent, which is again lower than the estimates for the NIE affiliates at 103.5 per cent. This suggests a difference of 13.3 per cent between the two groups. Finally, the ratios obtained using unadjusted data give a much smaller difference of only 4.2 per cent. Hence, adjustments by deflators (all evaluated in constant 1993 US dollars) produce markedly different realisation ratios for both groups compared with those calculated using gross investments in current dollar values.

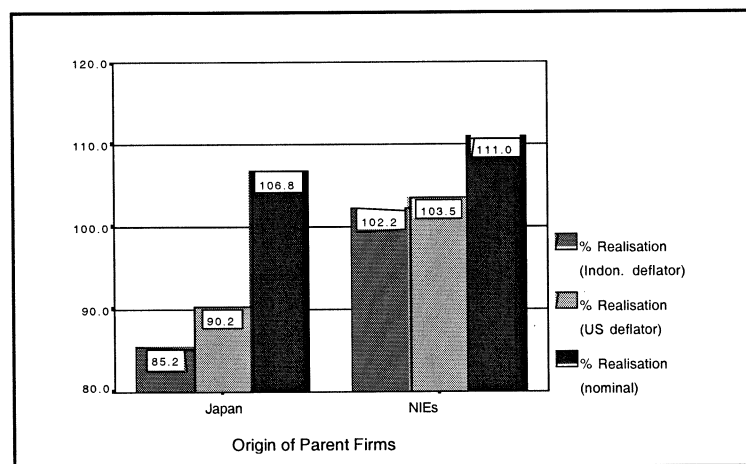
The realisation rates for both Japanese and NIE affiliates in the Indonesian electronics industry estimated here are much higher than the officially announced all-industry average for 1995 of 52 per cent (quoted from the *BKPM* by the *Oxford News*, *Reuters News*, 9 October 1996). Given that there was a period of high growth and expansion in manufacturing capacity, particularly from Japan and East Asian NIEs during the period 1986–95, it can be argued that the results obtained are reasonable. First, the high realisation rates for electronics can be understood from the conditions that

prevailed in the industry which to some extent are different from many other export-oriented and domestic-firm dominated industries such as clothing and textiles or the footwear industry.

Explanations for these theoretically counter-intuitive results lie in the fact that Japanese investments tend to be larger and therefore could carry greater risk (see Chapter 8). Secondly, since larger firm ownership advantages often lie in propriety technology, Indonesia's 100 per cent ownership restriction prior to June 1994 could have deterred larger firms, which rely on product technology advantages.

Thirdly, the explanation for the high realisation rate of investment by the NIE affiliates in the sample may be due to the fact that most of the smaller NIE affiliates were more driven by factors such as rising labour and other costs, and rising currencies in their home countries than larger firms from Japan. NIE firms mostly arrived after 1992, later than those from Japan which mostly established around 1988.

Figure 4-9 Percentage of investment realisation by firms from Japan and East Asian NIEs



Source: Author's calculations from *BKPM* data, Jakarta, July 1995.

Thirdly, the explanation for the high realisation rate of investment by the NIE affiliates in the sample may be due to the fact that most of the smaller NIE affiliates were more driven by factors such as rising labour and other costs, and rising currencies in their home countries than larger firms from Japan. NIE firms mostly arrived after 1992, later than those from Japan which mostly established around 1988.

Among the NIE affiliates, the overall investment realisation rate for the Korean affiliates appears to be the lowest (79.4 per cent and 78.8 per cent using the Indonesian and US deflator, respectively¹⁶). This fact may reflect the relative inexperience of Korean firms amongst the NIEs (particularly compared with Singapore and Taiwan) since Indonesia was one of the first major destinations for most manufacturing plant relocations and is located further from Korea than the other NIEs (Thee 1991a and b). For these reasons Korean firms, mostly component SMEs, might obtain less support than their counterparts from other NIEs.

Multivariate modelling of firms' comparative characteristics

Which of the variables is the most critical in differentiating different groups of firms? This section outlines a multivariate logit model for ranking of key discriminant characteristic variables between groups of firms.

The application of a binomial or multinomial model of the realised investment data assumes that in two or several focus groups, the dependent variable is the probability (or the log of probability) that a firm falls into a particular joint venture with a firm from a national group or from a certain origin. In other words, given that any one affiliate possesses a certain set of characteristics (explanatory or independent variables), the dependent variable is the chance or probability that it belongs to a specific group. For example, if an affiliate has a particular set of characteristics, then the chance that it falls into a Japanese affiliate group is given by the explanatory variable. Hence, the hypothesis in this model that is examined is the extent to which Indonesian companies choose to form joint ventures with foreign firms on the basis of firm-specific advantages of the partner firm or parent MNE. The use of the MNL model allows the selection of a set of statistically significant variables as the most critical variables in differentiating different pair-wise groups of firms.

¹⁶ See Appendix Chapter 4 Figure A4-4 for comparisons among NIEs samples.

Hypotheses of comparative characteristics

The MNL model attempts to explain the probability that an affiliate will be in a joint-venture relationship with a firm of a given (parent) origin. The origin of different MNEs is classified as belonging to one of the following two groups:

- (1) foreign majority-owned affiliates of MNEs from Japan; or
- (2) foreign majority-owned affiliates of MNEs from the NIEs (Korea, Singapore, Hong Kong and Taiwan).

As economic motivations vary among firms, the effects of firm characteristics are incorporated in the model as covariates and their hypothesised relationships are discussed below.

(1) Firm size

The size of a firm can be an important determinant in increasing the synergistic effects of a joint-venture arrangement which gives the partners either cost savings or greater profits, or both, as a result of combining the resources of partners (Contractor and Lorange 1988). Evidence from international studies about the effect of size on firms' external cooperation or joint venture activities, however, is inconclusive. In a large-scale study of the largest US manufacturing firms it is found that larger firms account for a higher proportion of joint ventures than smaller ones (Boyle 1968). A study of a sample of Japanese firms commercialising bio-technology products finds a negative correlation between firm size and cooperation, without controlling for firm age which may be related for the effect of size (Shan and Hamilton 1991). Various studies of electronics FDI by Japanese and NIEs affiliates suggest that firms from NIEs tend to be smaller in size and have fewer subsidiaries abroad than the affiliates of Japanese MNEs (Ohta 1995; Tanaka 1994). Therefore, the following hypothesis is formulated:

Hypothesis 1 The propensity of a firm to be engaged in a joint-venture relationship with a Japanese firm increases with its size (causality runs from size variable to the dependent variable).

(2) Incumbency or firm age

It is generally acknowledged that the age of a firm encapsulates many of its intangible assets, such as accumulated knowledge or learning economies in production organisation, management and marketing or brand recognition, which tend to be accumulated over time (Singh and Lumsden 1990: 168). MNEs from Japan started operations in Indonesia from the early 1970s while the NIEs and other countries began operations in Indonesia later, suggesting that the latter group tends to be less experienced in manufacturing and marketing. Indonesian firms, however, might suffer from a technology gap with these foreign firms and might be less inclined to form joint ventures with foreign firms, particularly older firms which can purchase blueprints of technologies from foreign sources. The preceding argument with respect to incumbency suggests:

Hypothesis 2 The propensity of an affiliate to be a Japanese joint venture increases with the firm's age.

(3) Size of foreign-owned equity

Theories of FDI developed in the 1970s suggest that MNEs are primarily engaged in capital cost arbitrage in a world with imperfect capital markets (Aliber 1971). These theories yield the hypothesis that firms invest abroad because they have capital cost advantages over other foreign firms and, to some extent, such theories can be applied to explain differences between outbound FDI from the three groups of firms considered in this study. In particular, Japanese and Korean firms are often perceived as having greater access to low-cost capital through their vertically-integrated business groups and through their horizontally-integrated banking groups. During the height of the so-called 'bubble economy' in the late 1980s until just before the onset of the Asian currency crisis in mid-1997, capital cost advantages resulted mainly from high levels of liquidity in Japanese and Korean firms (*Business Week*, 8 December 1997). In a world of imperfect capital markets where relatively inexpensive state-subsidised credits and internally generated funds can be available at a lower cost to the firm than external funds, liquidity is often found to influence MNEs to invest abroad (Hoshi 1991; Aliber 1993; *Economist*, 17 July, 1997). This will apply particularly to decisions to invest abroad for which the costs and benefits are more uncertain (Caves 1993). Therefore:

Hypothesis 3 The propensity of a given firm to be a Japanese joint venture increases the larger the percentage of foreign equity ownership.¹⁷

(4) Export orientation

There is little doubt that affiliates of MNEs which export their products overseas are likely to produce better quality output and that foreign affiliates have an advantage in terms of greater access to international markets. However, due to differences in their industrial structure, level of technology and the closeness of the host country, the export performance of NIE affiliates can be expected to vary compared with those from Japan. While inconclusive empirical evidence from one Asia-wide study concluded that local firms are more likely to export than foreign firms (Cohen 1975), other studies on Indian and Sri Lankan cases suggest that foreign affiliates have better export performance than their foreign or local counterparts (Lall 1985; Athukorala *et al.* 1995; Hill and Athukorala 1998). Another study on the two groups of firms in Taiwan finds no significant difference in export propensity (Riedel 1975). However, many of firms from East Asian NIEs in our study are small and medium-sized and there is anecdotal evidence (field interviews, 1994–95) of a prevalence of indirect exporters among them (those that sell to local end-product assemblers in Indonesia). As a result Japanese subsidiaries' tend to be more engaged in direct exports. The preceding discussion suggests:

Hypothesis 4 The propensity of a given firm to be engaged in a Japanese joint venture increases with higher exports.

(5) Imports and the use of local components

Analysis of the realised investment data in our study suggests that Japanese affiliates import significantly more parts and components from overseas than those from the East Asian NIEs; this may or may not be associated with the firm's age. In theory, the longer-established firms could be expected to use fewer imports and to possess a wider

¹⁷ Over-investment may be caused by excess liquidity, according to the free cash flow theory as suggested by Jensen (1986). If a firm generates a cash flow which is greater than the cash flow required to finance all projects in the firm's core business, managers can use the surplus — the free cash flow — at their discretion. Managers will choose not to pay this surplus to shareholders, but will use it for diversified investment projects and

and deeper network of domestic suppliers. However, the tendency to import (and hence not to source components locally) might not be correlated with a firm's age, when particular products require specific components that are not manufactured domestically. Therefore:

Hypothesis 5 The propensity of a given firm to be a Japanese joint venture increases with higher part and component imports.

(6) Product range

The effects of a larger number of products or greater diversification on affiliate formation and on corporate performance have been the focus of several studies in industrial organisation and management literature (Rumelt 1974; Shan 1990; Stopford and Wells 1972). There is a widely-accepted notion that product diversification leads to increased market power and enhances firm performance (Caves 1981; Miller 1973). Less diversified Indonesian firms may benefit more from forming a joint venture with a Japanese MNE parent (likely to be either a leader or follower firm) that is more diversified in its product range than with an NIE parent firm (likely to be a latecomer firm, see Chapter 8). This yields the following:

Hypothesis 6 The propensity of a given firm to be a Japanese joint venture is positively correlated with a larger range of products.

(7) Technology transfer

Due to data restrictions, tests on hypotheses involving technology transfer variable often involve proxy independent variables. In our case, the percentage of foreign expatriate employees in the total (expatriate and local) workforce of the firm is chosen. Our previous analysis on approved and realised investment data suggest no significant differences in both expatriate and local workforce variables. Lall (1983) and others cited earlier suggest that foreign affiliates from advanced developed countries tend to possess more sophisticated proprietary technology. In addition, many affiliates of Japanese MNEs in operation in Malaysia are found to have more technology transfer agreements

acquisitions. This theory thus predicts a positive relationship between (foreign) investment and liquidity.

with local partners (Palacios 1995) than with home countries. This is also likely to be the case in Indonesia. Hence, Japanese firms are likely to be engaged in more extensive programs of training local managerial, technical and supervisory staff in Indonesia than East Asian NIE affiliates.

Hypothesis 7 The propensity of a given firm to be a Japanese joint venture is positively correlated with greater technology transfer (which is approximated by a high proportion of expatriate employees to their Indonesian workforce).

The MNL method is based on the joint examination of the estimated coefficient of firm-characteristic variables and the determination of which characteristic variable is the most important discriminant in a pair-wise comparison which possesses the most significant coefficient.¹⁸

Given the previous hypothesised explanatory variables, the estimating equation for the multinomial logit model is:¹⁹

$$F_{ij} = \beta_0 + \beta_1 (INVSZE)_i + \beta_2 (FIRMAGE)_i + \beta_3 (EQTSZE)_i + \beta_4 (EXPEST)_i + \beta_5 (IMPEST)_i + \beta_6 (PRDNUM)_i + \beta_7 (EMPXPT)_i / (EMPINA)_i + e_i$$

where the dependent variable F_{ij} equals the assigned values below if the i^{th} individual firm falls in the following j^{th} category, and

$F_{ij} = 1$ refers to a foreign majority-owned affiliate of MNEs from Japan;

$F_{ij} = 2$ refers to a foreign majority-owned affiliate of MNEs from the NIEs;

and

e_i is the standard error term.

The model is estimated using a standard technique (Maddala 1977: 15–27).²⁰

The explanatory variables and data sources are identical to those outlined earlier.

¹⁸ In multinomial models, the effects of the independent variables are assumed to be linear in the logarithm of the odds that the dependent variable is equal to one.

¹⁹ The variable AGE or the age in rounded years of the firm is derived directly from the variable *YRESTD* or the year when the firm was established. See Chapter 3.

The models were estimated using the Newton–Raphson technique.²¹ The model estimation using the realised investment data set. The results of statistical analysis are reported in Table 4–5 below.

Results of estimation

The result of estimation using the realised investment data suggests that there are some variables which stand out as significant discriminants between Japanese or Korean affiliates operating in Indonesia.

In the Japan–East Asian NIE comparison, the variable which denotes the year of establishment of the first manufacturing plant by the affiliate in Indonesia (*YRESTD*) is found to be highly significant (at 1 per cent level). This result confirms our result earlier that suggests Japanese firms tend to be established earlier, on average around 1988, while the establishment date for East Asian NIE firms averages 1992.

Other variables found to be significant (at the 5 per cent level) were the realised constant investment (*RINCUSP*) and equity size (*EQTSIZ*) level, and the import level variable (*IMPEST*). This result supports the earlier hypothesis that the propensity to engage in a joint-venture relationship with Japanese firms increases with the size of investment and equity as well as the level of imports. The variable denoting the technology transfer proxied by the ratio of expatriate to domestic employees (*EMPXPT/EMPINA*) is found to be significant at the 10 per cent level suggesting that while Japanese group of firms possess firm-specific advantages over the East Asian NIE group in technology transfer, this is not as strongly significant as the other discriminants.

²⁰ A study which compared logistic regression and parametric discriminant analysis concluded that the former is preferable to the latter in cases where the dependent variables cannot assume multivariate normal distributions within the categories (Press and Wilson 1978). Since the dependent variable in our case cannot assume the normal distribution as shown the above section, logistic regression is therefore more efficient than discriminant analysis (SAS Institute Inc. 1987: 40).

²¹ In estimating the model, the LIMDEP (Limited Dependent) econometric package (version 5) is used which minimises the log-likelihood function using a FORTRAN based algorithm (Green 1995: 483–88).

Table 4-5 Results of logit multinomial analysis (realised data in constant \$)

Categories of firms for analysis: Japanese affiliates compared with East Asian NIEs affiliates			
Variable	<i>b</i>	t-ratio	ranking of significant variables t-ratio
Intercept	1.535	2.750	
<i>RINCUSP</i>	2.161**	2.217	2
<i>EQTSIZE</i>	2.182**	2.180	3
<i>EXPEST</i>	0.007	1.181	
<i>IMPEST</i>	0.494**	2.117	4
<i>PRDNUM</i>	0.392	0.635	
<i>YRESTD</i>	1.0649***	2.813	1
<i>EMPXPT/EMPINA</i>	.0169*	1.795	5

Note: * and ** denote statistical significance levels of 10 and 5 per cent, respectively (2-tail tests).

There are 2 outcomes for LH variable *CNTCOD*

Degrees of freedom = 7

Dependent variable is *CNTCOD* (Firm's origin)

Number of observation = 84

Iterations completed = 8

Log likelihood function = -42.67

Estimated coefficients are denoted by *b*

Chi-squared = 26.99

Source: Author's calculation from BKPM data, 1995

One variable that turned out to be insignificant was the export level (*EXPEST*) variable, suggesting that the difference between the two groups in this case appears insignificant. The result for the last variable is not surprising since both groups of firms were attracted to relocate to Indonesia by the possibility of exporting to home or third countries.

A ranking of the seven variables in the model above on the basis of their t-levels magnitudes suggests (in descending order): year of firm establishment, size of realised investment and equity, import level and technology transfer proxy. The results suggest that these firm-specific advantages strongly influence the formation of Japanese joint ventures. This ownership or firm-specific advantages can be expected to flow from parent firms from advanced industrialised countries as pointed out earlier (Figure 4-1). However, the strongly significant incumbency variable suggests that in our case it can be regarded as 'a surrogate for multiple underlying constructs that vary with age' (Singh and Lumsden 1990: 168). Hence, the attractiveness of forming joint ventures with

Japanese firms to acquire these firm-specific advantages can be expected to diminish over time.

Summary

Some new light can be shed on our understanding of the character of investments from various analyses using the planned and realised investment data of Japanese and other East Asian affiliates in Indonesia.

The univariate analysis lends itself to a number of conclusions about the firm-level characteristics of foreign investments in the electronics industry in Indonesia. The evidence from both approved and realised investment data sets suggests that significant quantitative differences exist between Japanese and other investments rather than between Japanese and East Asian NIE investments.

By focusing on the last comparison, the available data on approved and realised investments suggest a number of observations.

Firstly, in terms of their number, investment and employment size, Japanese and NIE affiliates appear to have significant differences in their investment characteristics. Both planned and actual investment characteristic variables suggest that Japanese investment and equity sizes are significantly larger but large variances estimated for both variables suggest that there is considerable diversity within both the Japanese and the NIEs groups. The analysis of the ratios of investment realisation suggests that Japanese affiliates have lower ratios of investment than NIE electronics firms. Such a trend suggests that Japanese affiliates are more cautious in realising their planned investment than firms from the NIEs on the whole. However, among firms from the NIEs, Korean firms have the lowest realisation rates. Korean firms could be at a relative disadvantage (in terms of geographical and cultural proximity as well as less established in terms of their number and presence in Indonesia) compared with firms from other East Asian NIEs (Singapore, Hong Kong and Taiwan).

Differences in realisation rates would not have been detected unless the respective investment stocks were adjusted by the appropriate investment price deflators since both deflator proxies yield similar lower realisation rates than the realisation rates obtained using the nominal data. These deflated results must be, nevertheless, regarded

as 'first approximation' estimations given the difficulties in constructing a 'true' deflator series.

Secondly, the modelling exercise in our study suggest that Japanese firms posses significantly larger levels of investment, equity, imports and proportionally higher levels of expatriate employees than their NIE competitors. But the fact that Japanese firms are more established (or have been longer established in Indonesia on average) underscores these differences. One exception is that Japanese firms import significantly more than their East Asian NIE competitors. This is surprising because most Japanese affiliates were established in Indonesia earlier than those from the East Asian NIEs and therefore could be expected to have developed either a more capable in-house capability for producing parts or a bigger network of local parts suppliers. While this could be the case for few large end-product assemblers, most Japanese firms are medium sized (Table 4-1). As a result, they may require more imports of parts since they may lack in-house production capabilities. Alternatively, these Japanese affiliates could be more dependent on their regional networks for components and parts (for example in Malaysia or Singapore). In planned and realised exports, however, there is no significant evidence that, on average, the Japanese and NIE affiliates performed differently in their export performance.

The modelling exercise lends support to the hypothesis that there are significant differences in a few key characteristic variables between affiliates from Japan and East Asian NIEs which influence the formation of their joint ventures. The importance of the incumbency variable, however, suggests that over time, if these firm-specific advantages of Japanese firms in Indonesia diminish, then the incentives to form joint ventures with non-Japanese East Asian NIE firms could increase.

Our study used a relatively small sample of firms from both groups. Further research using a larger cross-section of affiliates and involving other groups of firms in Indonesia might be in order. Similarly, it is important to trace the longitudinal development of specific group of firms over time. One could focus on the influences of international factors, the host country and their home country investment environment on their decisions to carry out foreign investment. As a preliminary look at the

international factors, a survey of the competitiveness of Japanese and Korean electronics industries is set out in the next chapter.

5 Changing competitiveness of electronics in Japan and Korea

In the three decades to mid-1997, international pull factors and home country push factors resulted in increased FDI in electronics from Japan and Korea. In particular, relatively labour-intensive electronics segments of the industry were relocated to Indonesia and other Southeast Asian countries. The previous chapter examined MNE affiliates in Indonesia's electronics industry and showed that affiliates of Japanese and Korean¹ firms dominate this industry. In this chapter, we look at the circumstances in both countries that led to greater investment in electronics production abroad.

Internationalisation of production can be explained by a combination of short- and long-term considerations that are relevant at different periods of time. Dunning's paradigm on international production suggests that the underlying long-term motivation for internationalisation of firms is of a microeconomic kind.² The surge of Japanese FDI can also be explained by changes in indicators of comparative advantage and other indices of competitiveness, as well as by shorter-run cyclical factors. In other words, while the eclectic paradigm assumes the need for firm-specific advantages as a determinant of internationalisation, it does not attempt to distinguish the short- and longer-term sources of these ownership advantages. While there are longer-term microeconomic considerations driving firm-specific ownership and internalisation factors relating to the internationalisation of firms, trade-related factors and macroeconomic factors such as changing international competitiveness, the appreciation of home-country currencies and other cyclical factors also explain for the rise in foreign direct investment.

This chapter focuses on indicators of the growth and decline of trade specialisation in specific segments of the electronics industry in Japan and Korea. The subsequent two chapters focus on the microeconomic factors driving the internationalisation of firm and the changes in the profile of firms.

The conceptual framework used here to explain why international firms³ produce abroad is based on Dunning's paradigm of ownership–location–internalisation advantages, extended to take account of dynamics of sectoral change in the electronics

¹ Korean FDI in Indonesian electronics appears to have the largest number of projects and cumulated investment value amongst those from NIE sources (see Figure 4-4). In the remainder of the thesis, analysis is focused on Korean electronics MNEs and their investments to examine the core question of whether they possess unique features that distinguish them from Japanese investments, once allowances have been made for their stage of development.

² Two main categories exist for motivations of firms to produce abroad: the search for resources (natural resources, technology, low cost labour or other strategic assets) and the search for markets (for another classification, see Dunning 1993). Such motivations underlie a firm's strategy.

³ International firms are defined here to include both large and diversified multinational enterprises (MNEs) as well as supplier small and medium-sized enterprises (SMEs).

industry. The electronics segment or subsector is used as the unit of analysis to examine the relationship between changing in comparative advantage in the segment of electronics industry so as to understand firms' motivations for overseas production. A sectoral perspective is also applied in a later examination of the determinants of the relocation of the electronics industry at different phases of foreign investment from the early 1970s to late 1990s. The paradigm 'should be all the more powerful' because it takes account of specific features of the electronics industry and firms' strategies. Such strategies result from the 'confrontation of objectives (or firms' longer-term motivation) and resources, the sectoral competitive game and national characteristics' (Sachwald 1995: 53; Porter 1990). The sectoral perspective can also provide a better understanding of macroeconomic forces that lead firms to internationalise.

To pursue a comparative analysis of Japanese and Korean electronics' outward investment experiences, it is necessary to take a sectoral view and to consider how changes in trade specialisation affect overseas investment patterns over time. In this way, we can examine whether there are systematic differences between Japanese and Korean electronics MNEs in undertaking FDI in the region in specific segments of electronics.

Given that most of the global electronics industry operates in an environment of competition based on product differentiation, shortening product life cycles, and economies of scale and scope, the chapter argues that the growth and the decline of trade specialisation in these segments and related patterns of foreign investment reflect the dynamics of changing comparative advantage in the home countries of MNEs.

This chapter comprises five sections. Firstly, a review of Dunning's static taxonomic approach to international production theory is extended to include notions of relocation of segments overseas (rather than complete relocation) and substituting for home-country exports. In this case, FDI is associated with the growth of intra-firm trade in final and intermediate goods in relatively labour-intensive and capital-intensive segments. Secondly, evidence of decline in the indices of trade shares, particularly in the more labour-intensive segments of the electronics industry for Japan, Korea and some of their key trading partners are examined. It can be expected that a decline in trade specialisation in labour-intensive segments in each country will be associated with rising related foreign investment. The process of growth and decline of trade specialisation in these segments (rather than the entire industry) in line with the expected dynamics of the comparative advantage of these countries. Thirdly, an examination of corresponding export and investment data is undertaken to determine whether Japanese and Korean investment have increased in the relatively labour-intensive segments.

The fourth section examines the trade-FDI nexus in order to gain a better understanding of Japanese and Korean investments in Indonesia and other Southeast Asian countries by reviewing the role of restrictive trade policies in the United States

and Europe and other home country currency appreciation in spurring several phases of cost reduction and 'tariff jumping' FDI from the 1970s to the 1990s.

This reveals that, aside from earlier vintage effects, there were few systematic differences in the way Japan and Korea were motivated to undertake FDI. Finally, a summary is presented.

Trade specialisation and 'fragmentation' of production

In the electronics industry, the proliferation of competing products is accompanied by an increasing 'fragmentation' of production (or finer division of labour). This occurs whenever products are produced through several steps in the 'value chain'. For example, the production of semi-conductor-based integrated circuits can be divided into wafer fabrication (highly capital intensive), photo-lithography (capital and skill intensive), wire-bonding and encapsulation (very intensive in relatively low-skilled labour) and testing (medium labour intensive) processes.

Because unit transport costs have fallen since the early 1980s and the processes have become physically separable, the various steps above are often carried out in locations widely separated from one another. The wire-bonding and encapsulation steps tend to be performed in low-wage countries in Southeast Asia while wafer fabrication and photolithography steps are performed in Japan, Korea, the United States or European Union countries.

Within MNEs, principally two categories of advantage of such division of labour exist (WTO 1996: 15). First, MNEs with vertical FDI locate different stages of production in different countries (Brainard 1993; Wong 1995). The exploitation of differences in input costs across countries is the principal motivation for these MNEs. By expanding existing facilities in affiliates or by establishing 'greenfield' investments as substitutes⁴ for exports from the home country, firms build up their production network by breaking the manufacturing process into discrete pieces, that is by 'fragmentation' or 'atomisation' (Helleiner 1979; Taniura 1988: 49) or 'slicing up the value chain' (Krugman 1995; Dobson 1997: 10) of the production process. Electronics MNEs frequently locate certain labour-intensive stages of their production chain in countries with low labour costs, while locating production stages requiring substantial 'human capital' in countries where highly skilled workers are in relatively abundant supply. When fragmentation of the production process occurs, it is the sliced up 'segments' of the industry that relocate rather than entire industries.

⁴ The traditional view of trade and FDI as substitutes ignores the complexity of the relationship in the contemporary global economy so that it is not easy to determine *a priori* the relationship between FDI and home or host country trade due to the need to differentiate the nature of trade in end-use products from intermediate products or services (World Trade Organisation 1996: 18–20).

International firms combine these value-added activities into their production networks in order to become more competitive. Host-country locational factors, particularly factor endowment and government policies, are determinants of the location of these activities. In global electronics, value-chain slicing is made possible by firm-specific capabilities simultaneously to produce and trade many components for assembly into the final product.

The second main category of advantages of international production gives rise to horizontal FDI, in which similar types of production activity take place in different countries (Brainard 1993; Markusen 1995). Certain kinds of product need to be produced in proximity to consumers; local production renders it easier to adjust to local product standards and results in more information about local competitors, and transport or transaction costs for certain products may make local production more profitable. If transaction costs are higher because of trade barriers or other distribution barriers, then FDI can be motivated by 'tariff jumping' or strategic investment aimed at reducing the probability of future protectionist measures (Bhagwati 1987; Kojima 1977; and Wong 1995).

Dunning's eclectic OLI paradigm is compatible with more specific sectoral explanations for the occurrence of international production (Sachwald 1995: 51). By taking a sectoral approach, a more integrated interpretation of international production can be arrived at, particularly regarding the relationships between firms within an industry and the interaction between different decisions to produce abroad. It has been suggested that this is particularly relevant in the case of Japanese firms, given their specific organisation of production featuring close relationships with their suppliers.⁵ Whether Korean firms follow similar trends to their Japanese competitors and generate 'associated' foreign investments by their suppliers is discussed further below and in Chapters 7 and 9.

A sectoral approach enables us to understand the strategic motives of firms. This approach, based on analysis of the trade-FDI nexus can be useful in explaining the characteristics of investment in electronics (Dobson 1997: 8). A relationship can be established between the growth and decline of trade specialisation in specific segments of the electronics sector in Japan and Korea and the growth of outward investment in these respective segments. Following Dobson (1997: 10), the next section focuses on the various electronics 'segments' or subsectors as the unit of analysis. The question to be explored is whether the growth and decline in trade specialisation in specific

⁵ If in the country of origin, a firm has a close relationship with a supplier, which may be a component of its ownership advantage, it will need to maintain that supplier abroad. This may lead to the supplier also relocating abroad without clear competitive advantage over local competitors (domestic firms and other foreign affiliates); the motivation for FDI is then mostly resource-seeking rather than market-seeking (Sachwald 1993: 53). See the survey of determinants of Japanese and Korean electronics firms in Indonesia outlined in Chapter 7.

segments, rather than entire industries, is associated with the relocation away from home countries in those segments.

Trade specialisation and FDI — evidence of the nexus

Patterns of trade specialisation can be detected in trade shares of specific segments of electronics. The hypothesis is that a decline in these indicators of comparative advantage in relatively labour-intensive segments of the electronics industry is associated with corresponding increases in their share of electronics FDI.

Similar changes in patterns of trade specialisation and investment across the segment of the electronics industry in the selected countries can be expected to occur at different periods, from low- to medium- and then to high-technology-intensive electronics products. Japan began its export drive in electronics from the late 1950s and the 1960s when it began actively investing in Korea, Taiwan and the United States. Since the mid-1960s, Japanese investment expansion spread to Southeast Asia, Europe, Central and South America.⁶ Korea, on the other hand, began to export in earnest in the 1970s and, after the mid-1980s, Korea's FDI in the United States, Europe and Southeast Asia increased rapidly.

Export trade shares

Changing comparative advantage can be measured by examining relative export shares for the industry. The shares of electronics exports in total manufacturing exports are calculated for the main five electronics segments for Japan and Korea, the EC-12, and the United States for the period between 1971 and 1996 (Figures 5-1-1 to 5-1-5). Export shares in the relatively labour-intensive segments can be expected to decline for the more industrialised countries and their trade specialisation in these segments can be expected to decline earlier than in the case of more capital-intensive segments. Conversely, Korea's share in more labour-intensive segments can be expected to rise as it increases its trade specialisation in these segments.

In the case of the office and computing machinery segment, a relatively capital-intensive segment, the export share of all four countries rose consistently, particularly during the early 1980s (Figure 5-1-1). Japan's share appears to rise more rapidly than Korea's. Korea's export share started from a much lower level — about one-third of Japan's in 1971. During the period between 1986 and 1996, Korea's share increased

⁶ The proportion of total overseas investment by Japanese electronics firms in Asia during the period 1951–64 was 83.3 per cent, which declined to 30.8 per cent during the period 1975–79. The corresponding figures for North America were 16.7 per cent and 48.5 per cent; for Europe, 0 per cent and 6.2 per cent; and for Central and South America, 0 per cent and 12.0 per cent, respectively (Tanaka 1993: Table 5).

only marginally. Nevertheless, Korea's share registered a five-fold increase in the 25 years between 1971 and 1996. By 1996, however, Korea's share remains only about half that of Japan, indicating that Korea has still some way to go in catching up in this high value-added segment of electronics.

Export shares in the consumer electronics segment suggest that Korea's export shares were lower than those of Japan in 1971 (Figure 5-1-2). Since the early 1980s Korea's share rose to a higher value than Japan's, and by 1996 it registered 17.5 per cent, the highest amongst the four countries. Korea's relatively high share in this segment suggests that it has come to specialise in this segment rapidly since 1981. As a result of improvements in Korean technology, booming OEM exports of industrial electronics, and growing technical tie-ups with foreign firms, Korea became a net exporter of industrial electronics after 1985 (Kohama and Urata 1993: 148).

Meanwhile, Japan's export shares in this segment grew steadily from 8.5 per cent in 1971 to reach 13.5 per cent in 1986, but have since declined to 13.3 per cent in 1996, while Korea's export shares grew relentlessly, notwithstanding a slight fall in 1981, with an increase of 250 per cent during the period 1971-96. In 1986 Korea overtook Taiwan to become the second largest consumer electronics exporter to the United States (ESCAP 1990: 61).

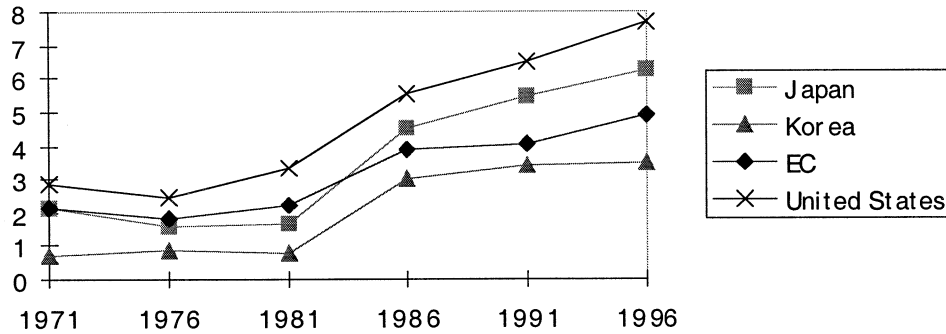
The export shares for the relatively labour-intensive segment of domestic electronic appliances (Figure 5-1-3) show that both Japan and Korea experienced growth until 1981. From this point Japan's share declined after Korea's export shares rose rapidly in the mid-1980s. Korea's share then declined slightly in the late 1980s but remained much higher than that of Japan throughout the first half of the 1990s.

In the case of export shares for electrical components and apparatus including parts (Figure 5-1-4), both Japan and Korea experienced an uninterrupted increase from 1971 to 1986. From 1986, Japan's share experienced a decline while Korea's share rose and then there was a trend reversal in the early 1990s. Finally, Korea's share rose rapidly in the early 1990s to surpass that of Japan in 1996. Note that the export share of the United States and the EC-12 countries appeared to be of a similar magnitude, reinforcing the point made earlier that the electronics components and parts segment consists of a combination of labour- and capital-intensive products

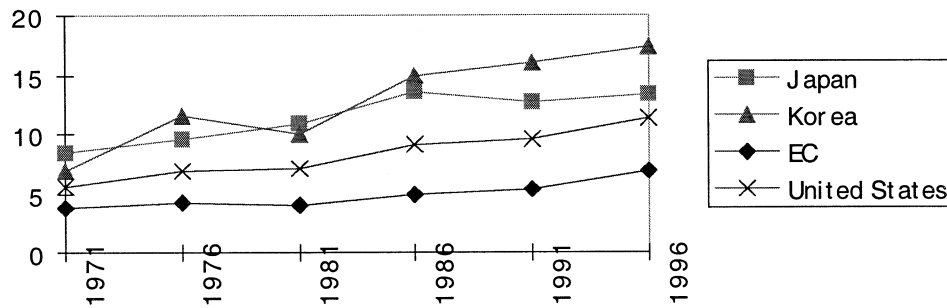
Figures 5-1-1 to 5-1-5

Export shares of 5 main electronic segments as a percentage of total manufacturing exports to the world (SITC 3) in Japan, Korea, the EC-12, and the United States, 1971-96

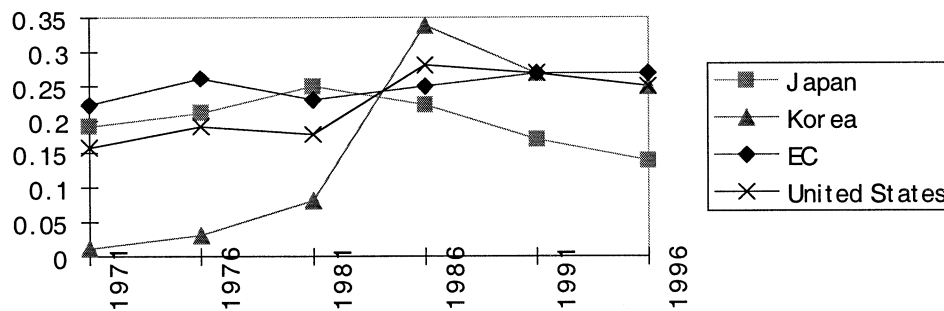
(5-1-1) Office and computing machinery – industrial electronics (SITC-752)



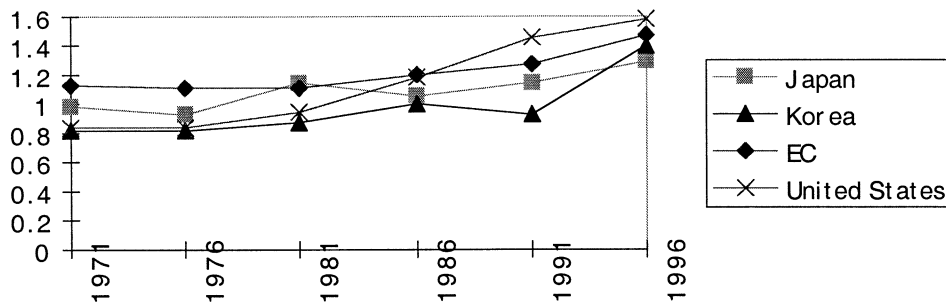
(5-1-2) Consumer electronics inc. calculators and parts (SITC-75, -751 and -759)



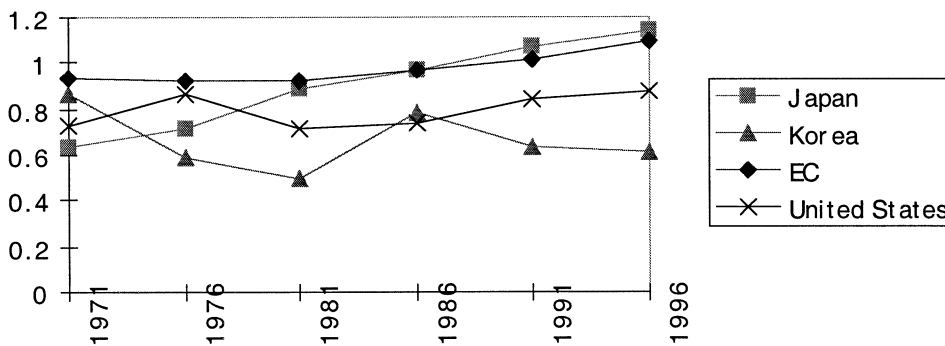
(5-1-3) Domestic electric equipment or household appliances (SITC-752)



(5-1-4) Electronic components and parts of office equipment (SITC-77 and-7599)



(5-1-5) Electrical industrial machinery equipment (SITC-726 to SITC-729)



Note: Export shares are proportion of the export shares of the given SITC classification in the total manufacturing exports to the world (SITC 3) for each of the reporter country or group of countries.
Source: International Economic Data Bank, the Australian National University, 1998.

Finally, export share data for the relatively capital-intensive electrical industrial machinery segment (Figure 5-1-5) suggest that the trend of export shares of Korea can be seen to be generally lower than for the industrialised countries, with the exception of those for the early 1970s and around the mid-1980s. Japan's export share, however, shows a comparable trend to those of the EC-12 and the United States. Japan's share in this segment slightly surpassed those of the EC-12 countries since 1986 and has been somewhat higher than the export shares of the United States since the late 1970s.

The analysis of segment shares as a percentage of total manufacturing exports suggests that, as might have been expected, trade specialisation in Japan and Korea was initially in low-end products in the early 1970s. Both countries moved to mid-end and high-end segments, but with the exception of the electronics components and parts segment, Korea's share of electronics exports has some way to catch up to Japan's.

Rising FDI in labour-intensive segments

The evidence on the growth and decline of trade specialisation of Japan and Korea in the relatively labour-intensive segments of the electronics industry can be associated with the growth of overseas investment in both countries. The rapid increase in FDI from these countries culminated in the deepening integration of their production networks within the East Asian region in the 1990s.

Japan's electronics FDI

Japan's outward direct investment in electronics grew strongly over the last three decades. Japanese production capacity overseas expanded as trade shares in low-end/labour-intensive products declined.

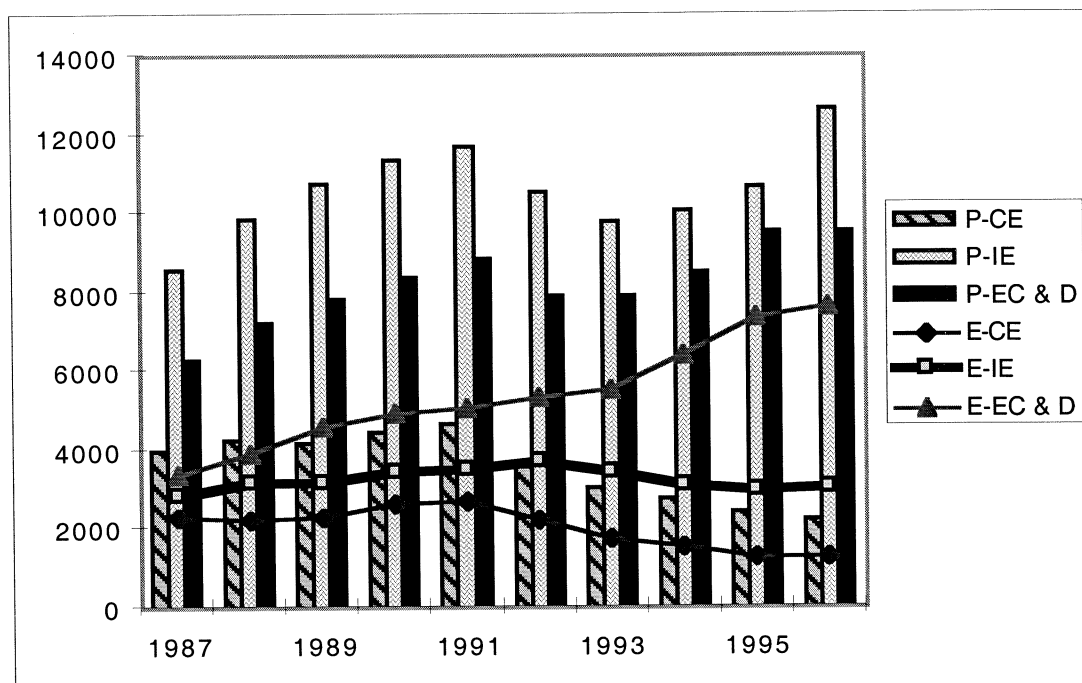
Comparable investment data disaggregated by segment or broad product groupings are not available on the same bases as the trade data, so it is difficult to make exact comparisons between trade and investment flows in each segment of the industry.

While data on aggregate FDI in the electronics industry (the 'electrical machinery industries' in Japan) are available, only data on the number of subsidiaries from the various segments of the electronics industry that have been established in various countries in Asia allow examination of outward investment in the labour-intensive segments of the industry (Tanaka 1994: 10). Changes in the distribution of Japanese investment across the different segments of the electronics industry can be analysed by the number of subsidiaries that have been established, but not the amount of investment.

An overview of Japan's electronics production and trade activity across the different segments of the industry is provided prior to closer examination of the transition in overseas investments undertaken in the consumer electronics and other segments of the electronics industry.

Domestic production and exports in the consumer electronics segment in Japan (Figure 5-2) peaked in 1991 at ¥4,696 billion and ¥2,696 billion, respectively. In the relatively capital-intensive segment of electronic components and devices (dominated by components such as integrated circuit (IC), liquid crystal displays (LCD) and other high performance parts), production and export surpassed their previous high levels in 1991 and reached a peak of ¥9,567 billion and ¥7,638 billion in 1996. As the production and export of labour-intensive passive components (resistors, capacitors and others) fell, offshore production rose (Electronics Industry Association of Japan 1997).

Figure 5-2 Japan's electronics production and exports by category of consumer electronic equipment, industrial electronics equipment and electronics components and devices, 1987-96 (¥ trillion)



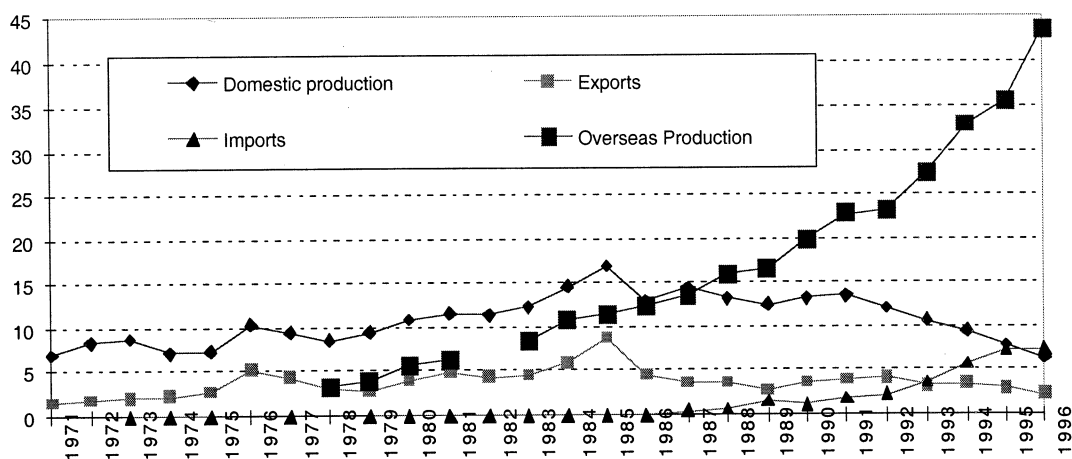
Notes: P-CE, P-IE and P-EC & D denote the value of production in consumer electronics, industrial electronics and electronics components and devices segments, while E-CE, E-IE and E-EC & D denote the value of exports in consumer electronics, industrial electronics and electronics components and devices segments.

Source: Ministry of International Trade and Industry, Japan, as cited in Electronics Industry Association of Japan (1997), *Facts and Figures on the Japanese Electronics Industry*, Tokyo, pp. 9-10.

These trends are reflected in more disaggregated data. Domestic and overseas production of colour television sets (CTVs), respectively, was 16.9 million and 8.9 million units in 1985 (Figure 5-3). A subsequent decline ensued, together with a rise in the value of imports. Overseas production grew from tiny base levels in the 1970s to reach 43.6 million units in 1996, while domestic production fell to 7.5 million units.

There is a similar trend in other mass-produced low-end products such as video tape recorders (VTRs). The domestic production and export of VTRs peaked at 31.3 million and 27.7 million units in 1986 (one year later than CTVs, a product using an older technology) and both have since declined, while the overseas production of VTRs began at 0.3 million units in 1983 and reached 26.6 million units in 1996 (see Figure 5-3).

Figure 5-3 Japan's domestic production, exports, imports and overseas production of colour television sets, 1971-96 (in thousand units)

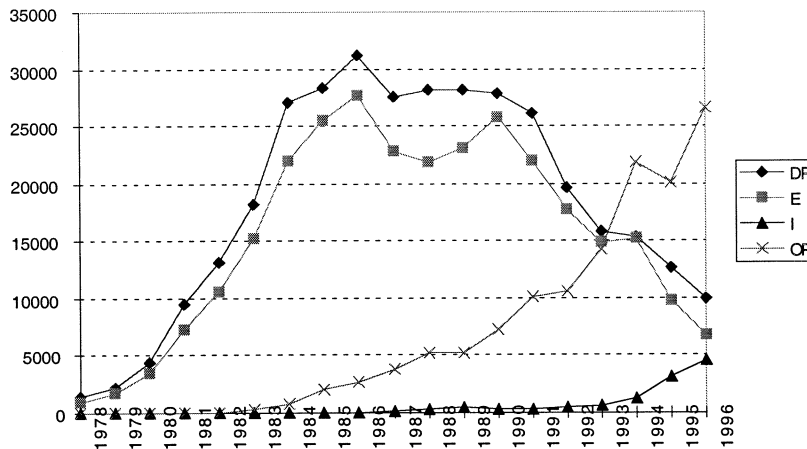


Source: Production data are from the Ministry of International Trade and Industry, data for exports and imports are from the Ministry of Finance, and data for the overseas production from the EIAJ as cited in EIAJ (1997:16).

VTR 'reverse' imports (or imports from Japanese affiliates overseas) began at 8,000 units in 1978, rose rapidly to 59,000 units in 1979, declining to 5,000 units in 1980. Imports were reduced to virtually zero levels between 1981-83 due to recessionary conditions in Japan; then re-emerged at 10,000 units in 1984 to peak at 4.6 million units in 1996. A similar trend in 'reverse' imports can also be seen in other mass-produced low-end products such as magnetic audio recording (MARs) which, in terms of value, started to increase rapidly from 1993 (Figure 5-4).

The value of electronics imported into Japan can be used as a reasonable proxy for the overseas production of principal products by Japanese MNEs. A recent survey of FDI trends undertaken by the Japanese electronics industry suggests that: '...hardly any companies other than the Japanese-affiliated ones are capable of exporting consumer electrical appliances to Japan. To get a picture of international intra-company trade is not easy because of statistical limitations, but import of electrical appliances from ASEAN can safely be regarded as re-imports from Japanese-affiliated companies in those countries' (Tanaka 1993: 2).

Figure 5-4 Japan's domestic production, export, imports and overseas production of video tape recorders, 1978-96 (thousand units)



Notes: DP, E, I and OP denote Japan's domestic production, export, imports and overseas production of video tape recorders.

Source: Ministry of Finance, as cited in EIAJ (1997:17).

In value terms, imports of relatively labour-intensive products made by Japanese affiliates in Asia, for example, CTVs, VTRs, MAR and reproducing systems and other electronics equipment underwent a rapid increase in 'reverse' imports (Figure 5-4).

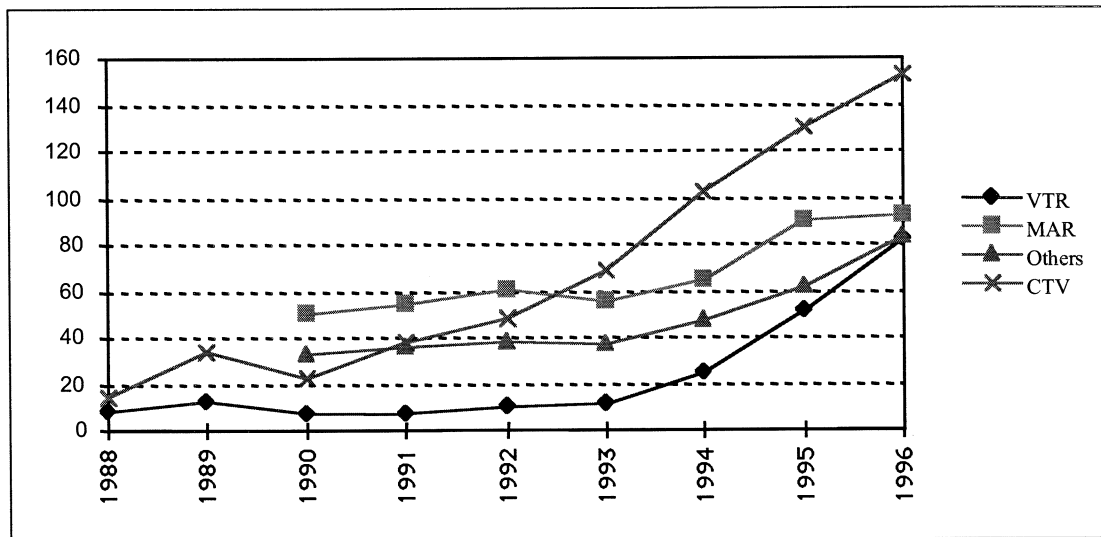
There are several important features of patterns in Japanese electronics industry relocation through foreign investment over the last three decades. First, during the 1960s, investments in Asia were focused on the ASEAN countries⁷ and Taiwan. During this time, within the ASEAN countries, import-substitution industrialisation prevailed. In order to maintain market dominance in these countries, Japanese MNEs were forced to make 'tariff-hopping' investments. By the late 1960s, these investments were supplemented by additional investments made by parts manufacturers as well as final assemblers in Taiwan, principally for the purpose of 're-exporting' back to Japan. Taiwanese plants undertook final assembly to take advantage of low labour costs.

Second, during the 1970s and 1980s, 'tariff-hopping' investment gradually declined and production bases aimed at 're-exporting' to the United States and Europe were established. The first of these were in Korea and Taiwan, followed by Singapore and Malaysia and then in other ASEAN countries. 'Trade friction', particularly with the United States was the catalyst for these investments as well as investments in North America, which grew to over 20 per cent of total Japanese electronics FDI in the early

⁷ Unless otherwise specified, the term ASEAN countries refers to the original five countries belonging to the Association of Southeast Asian Nations, namely Indonesia, Malaysia, Philippines, Thailand and Singapore.

1970s, and surpassed similar FDI in Asia in the latter half of the decade, eventually amounting to about half the total of Japanese electronics investments. During the first half of the 1980s, there was a rise in Japanese electronics FDI in Europe and a decline in FDI in Asia but during the second half of the 1980s, FDI by the electronics industry rose sharply in terms of both value and share, suggesting that the internationalisation of production by Japanese MNEs greatly accelerated after the Plaza Accord in 1985.

Figure 5-5 Japan's imports of colour televisions, video tape recorders, magnetic audio recording/reproducing systems and others, 1988-96 (¥ b)



Notes: VTR, MAR, CTVs and others denote the video tape recorder, magnetic audio recording/reproducing systems and other major consumer electronic equipment categories of imports.

Source: Ministry of Finance, as cited in EIAJ (1997:16).

Total cumulated investments by Japanese electronics MNEs in Asia for the period 1951-90 amount to \$4,175 million, of which \$833 million was invested in 1951-85 (20.0 per cent of the cumulated total) and \$3,342 million (or 80.0 per cent of the total) in 1986-90 (Tanaka 1993: 4-8).

The expansion of Japanese electronics FDI into Asia between 1986 and 1995 falls into two categories. First, consider the investments made by the Japanese electronics industry as a whole. The initial investment surge was directed at the NIEs, starting in Taiwan in the late 1960s and extending to Korea and Hong Kong in the early 1970s. Singapore and Malaysia were also beneficiaries of this surge in investment. The second was directed to the ASEAN economies in the 1980s.⁸

These investment trends are consistent with the gradual increase observed in overseas production by Japanese affiliates. However, according to Tanaka (1993: 10), the total number of subsidiaries established declined from the late 1970s to 1985 despite

⁸ These surges of Japanese investment in the electronics industry in East Asia are shaded in Table A5-1

an increase in the total amount of investment due to an increase in the capitalisation of these subsidiaries. This suggests a rationalisation of production to increase economies of scale in production.

A second category of electronics FDI relates to a subset of the first category, namely the more labour-intensive electronics part-maker segments. Japanese investments in part-making subsidiaries peaked in almost the same periods as in those for the electronics industry as a whole.⁹ Investments in component making were confined to fewer countries. For example, investments that reached their peak in the 1970s were confined to Singapore and did not extend to Malaysia at that time.

Components and parts-maker investment was primarily a 'countermeasure' against investments in ASEAN made by the US semiconductor producers. Investments by Japanese consumer electrical appliance end-product assemblers in Asian NIEs in the late 1980s were not large in scale since these countries also were experiencing rising production costs (due to rising wages and currencies), and investments made by the Japanese electronics industry as a whole peaked in 1986 and 1987.

Investments by Japanese consumer electrical appliance firms after 1987 were mainly aimed at relocating the production of mass-produced standardised products previously manufactured in Japan (Abo 1995; Ohta 1995; Baba 1994). Between 1987 and the early 1990s, many investments were undertaken by parts makers, particularly in Malaysia and Thailand. After 1990 investment in China, Indonesia and Other Asia (Vietnam and India) grew (see shaded areas in Appendix Chapter 5 Tables A5-2) and 'lagged' investments by parts makers continued in Indonesia through to 1995 (see Chapter 7).

Several studies of Japanese electronics overseas investments between 1971 until 1996–97 argue that most Japanese overseas investments were made as 'defensive' responses to changing conditions in the international market with trade 'friction' and home country currency/costs issues being some of the more prominent motivating factors. But these investments also allowed consolidation of their network of affiliates through integrating the regional production base (Tanaka 1993; Ohta *et al.* 1994; Tsuda *et al.* 1995; Satake 1994).

Sectoral analyses of the electronics industry suggest that the source of Japanese competitiveness rests on the production system (Abo 1994c; Doherty 1994). In particular, it is in the assembly processes of consumer electronics where consistent productivity, relatively short product cycles and rapid adaptation to the market are critical. In electronic components, the source of Japanese competitiveness lies in the exploitation of economies of scale and on the capability to be the first mover for successive generations of products. In all segments of electronics, however, high and consistent quality has become one of the main sources of competitiveness. This

⁹ see Appendix Chapter 5 Tables A5-1

competitive advantage results from the organisation of the production system which 'goes beyond the firm itself to include its relationships with its suppliers'. Often these relationships are 'long-term contractual relationships' resulting in organisational features which are internalised, either within firms or within networks, usually centred on a core or principal firm (Sachwald 1995: 74).¹⁰

Here lie the difficulties in the 'transplantability' of the Japanese production system. Firms face great challenges in replicating their production system in foreign countries where both the industrial structures, regulatory, infrastructure and work practices are different from those in the home base. As a result, protectionist measures in the main developed country markets have been strong motivations for them to relocate to produce abroad. Otherwise, Japanese firms would have maintained their export strategy much longer. In the earlier relocations to East Asia in the 1970s, Japanese firms followed a strategy of firstly relocating final assembly. Since the mid-1980s, as part of 'tariff-jumping' investment into production platforms in East Asia to export to major markets, there has also been a relocation of final assembly processes and then various component production.

The next section surveys the pattern of foreign investment of Korean electronics firms since the 1970s and examines the evidence on the relationship between changes in their competitiveness and their motivations to produce abroad. Various similarities and differences between the pattern of Japanese and Korean electronics FDI are also reviewed.

Korean electronics FDI

The growth of FDI by Korean electronics firms coincided with a decline in 'export-led' growth and increasing costs at home. Initially, Korean electronics investment substituted overseas production for exports, as was the case with Japan. In Korea also, rising FDI in labour-intensive segments of the industry was associated with declining Korean exports of these products.¹¹

The Korean electronics industry clearly followed the pattern seen earlier in Japan in that the consumer electronics industry was 'its initial entry point, while components

¹⁰ In the Japanese production system, core firms often rely on long-term relationships with suppliers for component production. Such relationships are demanding for both parties and are not pure 'arms-length' market transactions by which products are traded. Rather, the parties enter into contractual relationships where both products and technical know-how are exchanged (Sachwald 1995: 74).

¹¹ Like the case of industrialisation in Japan, Korea embarked on a path of labour-intensive industrialisation, albeit a decade later, from the early 1960s, with a similar pattern of technology transfer, relying heavily of foreign technology and through learning by doing (Hong 1994: 10). As in Japan, Korea had a comparative advantage in low-cost, highly skilled labour, combined with foreign capital obtained through loans rather than FDI, which was highly restricted. The strategy for industrialisation in electronics was initially based on export-led growth with a limited technology base, negligible brand recognition overseas and no international marketing presence. As technology in the electronics industry is constantly changing, Korean firms consequently were 'heavily dependent on OEM agreements to provide both technology and access to overseas markets' (Bloom 1992: 13).

early on became an equal second pillar' with a focus on 'production technology that would enable it to capitalise on its low labour cost and ... rapid capacity and market share expansion'. Consequently, Korean electronics differs from the pattern set by the US and European electronics industries in which industrial electronics, generally defined to include computers, telecommunications and industrial automation equipment, were 'by far more important driving forces'.

Korean electronics firms also have some important differences when compared with their Japanese counterparts. First, the catch-up rate accomplished in both consumer electronics and in components was considerably faster in terms of the pace and scope of expanding production capacity and international market share. This was possible because growth in Korea was driven principally by continuous product diversification of low-end, price-sensitive products based on mass-production techniques and huge capital investments, which relied heavily on economies of scale. Underlying all this was an industrial structure which, in terms of 'essential backward linkages and accumulated technological capabilities, remained, quite shallow' with an immense concentration and control of production by the four most powerful *chaebol* (business groups) Samsung, Goldstar, Daewoo and Hyundai (Ernst 1994: 14–58).¹²

During the 1970s and early 1980s, Korean consumer goods and semiconductors were the driving force behind Korea's electronics exports — they exhibited a remarkable progress rate in terms of diversification and quality improvement. During this period, three international factors assisted this growth: low oil prices, low international interest rates and a low US dollar (Ryou and Song 1993: 21). By 1981, the share of consumer appliances in trade exports reached 55 per cent of total exports, with TV sets the biggest single item. In 1984, Korea surpassed Taiwan as the largest supplier of consumer electronics to the US market after Japan. The yen appreciation from September 1985 increased Korea's price competitiveness and consumer electronics exports grew from \$1.860b in 1985 to \$6.436b in 1988 (Korea Development Bank 1994: 90).

After 1989, the growth of Korean electronics exports slowed and its international market share declined, particularly in North America — once the largest market for Korean electronics products — where its export market shrank from \$2,387 billion in 1989 to \$1,778 billion in 1990 to recover only slightly by 1993 to \$1,814 billion. While the European market expanded, reaching \$1,1761 billion in 1991, it declined in 1992 to \$1,227 billion. However, exports to Southeast Asia, which dropped slightly to \$859

¹² The degree of concentration of the Korean electronics industry has been described by one well-known researcher in the electronics industry as 'extreme ... to a degree unknown in any other country' (Ernst 1994: 46). On an item-by-item basis, the first three *chaebol* controlled 100 per cent of the production of the VCRs, microwave ovens and refrigerators and washing machines and 82.2 of the CTVs produced locally in 1990 (Bark 1991: 32). Hyundai is a latecomer to the industry and focuses on the production of components and industrial electronics, and has little activity in consumer electronics.

billion in 1990 from \$942 billion in 1989, increased to \$1,428 billion in 1993 (Korean Development Bank 1994: 91).

There were three main reasons for this decline in exports. First, in the United States and Europe, protection increased with the imposition of import restrictions on Korean-made medium and small-sized CTVs, compact disc players (CDPs), radio cassettes and car radios (Korea Development Bank 1994: 90). In these markets, increasing competition in the price-sensitive, low-end product categories came from Japanese transplants in Mexico, Malaysia, Thailand and China. Second, most Korean electronics affiliates in the United States and Europe were unsophisticated, low-tech operations with mainly 'screw-driver assembly plants with design, components and sub-assemblies provided by the Korean parent company in the form of completely or semi-knocked down kits' (Ernst 1994: 16).

For some critical components, the Korean parent firms were still dependent on Japanese suppliers. Another constraint on the growth of Korean electronics exports was that after 1986 Japanese electronics firms increased their production of low-end, price-sensitive items in Southeast Asia (especially Malaysia and Thailand, as outlined above). Lower prices for products from Southeast Asia allowed Japanese firms to regain their competitiveness in most low-end market segments, particularly after 1992. At the same time, Korean firms had to deal with deteriorating sales and profitability due to increasing labour costs, labour shortages and currency appreciation as well as a lack of technological sophistication in product innovation.

Faced with these new competitive pressures, most Korean *chaebol* rushed to follow the Japanese example and began to establish low value-added assembly plants in ASEAN countries and China, concentrating on mass-produced standardised products such as CTVs, microwave ovens, VCRs and refrigerators (Table 5-1).

As in the case of Japanese electronics FDI, data on the regional distribution and the size of investments by the Korean electronics firms in the low value-added consumer electronics segment are not available. The total number of plants manufacturing consumer electronics in Southeast Asia (13) was just one lower than in Europe in 1993 (Table 5-1). The total size of FDI committed by the electric and electronics industry in Korea is modest compared with FDI by Japanese firms. While the proportion of FDI committed by the electronics industry as a proportion of total FDI hovered around 14–15 per cent between 1981 and 1991, the amount of investment quadrupled.

Table 5-1 Regional distribution of Korean foreign direct investment in electronics, 1993

Product	Europe	N. America	SE Asia	China	Total
CTVs	5	4	4	-	13
Microwave ovens	4	-	1	-	5
Refrigerators	2	-	3	-	5
VCRs	3	-	1	1	5
Washing Machines	-	-	1	-	1
Audio Equipment	-	-	3	1	4
Total	14	4	13	2	33

Note: Figures are based on reports of the investments by the big three *chaebol*, Samsung, Goldstar and Daewoo. While there are other particularly SME electronics firms, their investment is insignificant.

Source: Korea Institute for Industrial Economics and Trade cited in Korean Development Bank (1994).

Table 5-2 Industry shares in Korea's foreign direct investment, 1993

Industry	1981	1985	1988	1991
Agriculture, forestry & fishing	0.5	0.4	0.4	0.4
Mining	0.2	0.2	0.2	0.1
Manufacturing	69.6	55.3	61.2	64.3
Electric & electronics	15.0	14.9	18.1	14.3
Service	29.7	44.1	38.2	35.2
Total	100.0	100.0	100.0	100.0
(amount: \$ m)	1,455.1	2,657.5	4,994.4	7,967.1

Source: Ministry of Finance, Korea, *Recent Trends in FDI in Korea*, Seoul, October, 1993.

Between 1988 and 1993, however, in another aspect of their response to competitive pressure, Korean firms aggressively expanded their OEM sales in consumer products into the US market (Ernst 1994: 17).¹³ Further discussion of the impact of 'trade friction' issues on Korean electronics firms and their 'defensive' response in the area of consumer end-products production, Japan's competition with Korea in the component segment and the attempt by firms from both countries to build regional production bases in Southeast Asia prior to 1997 is provided below. Suffice it to say at this stage that changes in Korea's external environment were the driving force behind the early attempts at setting up plants in the region but they did not go beyond low value-added assembly plants between the late 1980s and 1993. In a similar way, such external factors had motivated Japanese firms to relocate parts of their production to ASEAN countries since the late 1960s.

¹³ Original equipment manufacturing (OEM) is an arrangement whereby a firm supplies a particular product, with product and/or process technology (i.e. in-house design and new product development capacity) that meets a contractual specification, to another firm which, in turn, sells the product under its first firm's brand name. OEM sales differ from own brand name (OBN) sales in that the firm does not rely on its marketing channels or advertising to promote its products' prestige. Participation in OEM international supplier networks has proved to be a cost-effective method of attaining core capabilities in production and investments, particularly for producers using assembly production based on foreign technology (Ernst 1994: 65).

Trade friction and protection in the major markets

During the investment boom in the latter half of the 1980s, both Japanese and Korean electronics firms were driven to invest abroad by their desire to avoid trade friction — protectionist measures implemented in the major markets such as the United States and the European Union. There was a complex interaction between trade and FDI. In the first half of the 1990s, appreciation of Japan's and Korea's currencies and rising costs at home motivated overseas investment directed at improving competitiveness. During certain periods, industrial restructuring and upgrading of domestic and foreign-affiliated plants, vital in boosting technological capabilities to respond to changes in the international markets, occurred in stages. How did these factors affect the FDI strategies of Japanese and Korean firms?

Impact of trade friction on Japanese electronics' FDI

Overseas expansion by Japanese firms related to protectionist pressures can be divided into five stages (Tsuda and Shinoda 1995).

First, between 1971 and 1978, Japan experienced the first period of currency appreciation as a result of the Nixon 'shock' (whose policies led to the abandonment of the dollar standard by IMF members). From 1971 the yen rose, and in 1973, Japan shifted to a floating exchange system. In 1976, the yen appreciated even further. In response, firms started to set up production bases for home appliances in Asian NIEs as well as some ASEAN countries. While local markets in these countries were growing, the principal motive was to find substitute export bases.

The Asian NIEs were the most attractive hosts to the Japanese firms during this period. Japanese firms were eager to capture the local market, which was protected from foreign competition by import barriers. Matsushita was the most active investor and it established subsidiaries, so-called 'mini-Matsushita', in almost every single country in the Asian NIEs and ASEAN (Ide 1994). >From the late 1960s and during the early 1970s, however, the orientation of these firms shifted towards the overseas market as firms responded to the export promotion policies adopted by Asian host governments, which relied on cheap and abundant labour. The main product categories produced were black-and-white TVs, electric fans, radios and other electronic products, which require standardised technology, allowing the Japanese firms to utilise abundant labour (Urata 1993: 16).

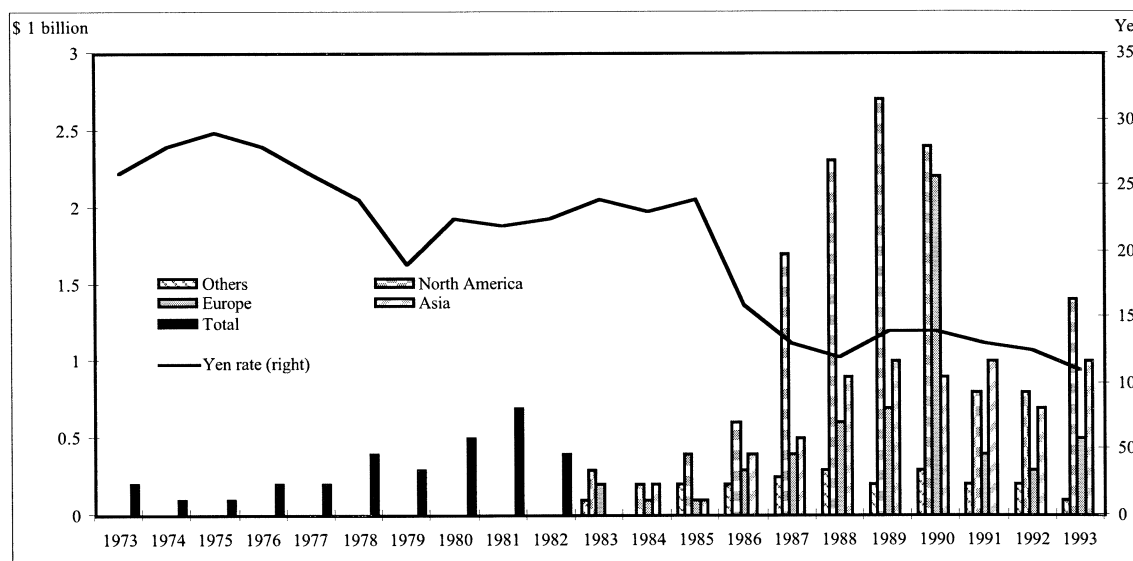
The export of TV sets became a source of friction with the United States and Europe.¹⁴ Production in ASEAN countries began to serve as 'tariff hopping' or

¹⁴ While the 1986 US Supreme Court decision was to dismiss the charges of US colour television producers that the Japanese had been engaged in collusive predatory pricing during the 1960s and early 1970s, the topic continues to provoke debate among economists and lawyers. It has been shown that

'roundabout' export planks to counter trade friction or 'jump' trade barriers. During this period, investment in overseas production plants grew steadily (Figure 5-5) and most plants focused on assembling knockdown production with almost all parts supplied by Japan (Tanaka 1994: 8).

The second phase of FDI expansion by Japanese electronics firms occurred during the years between 1979 and 1985. The yen fluctuated in a roller-coaster fashion until the US government under President Reagan embarked on a strong dollar policy, which was accompanied by a generally weak yen (Figure 5-6). Japanese affiliates overseas had difficulty in maintaining their profitability during this period and their competitiveness sagged in relation to direct exports from Japan. While they were able to scale down production, they lacked a flexible production system to counter the weak yen during this period (Tsuda and Shinoda 1995: 28).

Figure 5-6 Broad regional distribution of FDI from the Japanese electronics industry and the yen exchange rate, 1973-93



Note: No data on regional breakdown are available until after 1982.

Source: Ministry of Finance, Japan, 'Monthly Bulletin of Financial Statistics' cited in Tsuda (1995: 27).

Japanese electronics exports to the then European Community, which caused trade 'friction' between the EC and Japan for almost two decades, attracted voluntary export restraint (VER) measures. VTR exports were cut and Japanese firms established production capacity in Europe.

An analysis of the relationship between trade policy and Japanese electronics firms' investment in the EC gives strong support for the view that an important motive

Japanese firms enjoy asymmetries in competitive conditions in the US and Japanese markets, which enable them to sell in the US at prices below average costs (Belderbos and Holmes 1993). The exit of US firms and the dumping of products such as CTVs were possible since the Japanese had developed superior production processes, design and quality, while at the same time they were able to obtain much higher prices in their home market than in export markets (Belderbos 1994: 48-49, ff39).

for manufacturing DFI by Japanese electronics firms in the EC was to 'jump' trade barriers. The correspondence between plant establishments and trade policy measures shows that the timing of FDI was governed by trade policy, while the evidence suggests that the level of investment increased substantially as well. Comparison at the product level of the relationship between trade policy measures and investments in the European Community and the United States corroborates these findings (Belderbos 1994: 48).

The European Commission used its discretionary powers (including anti-dumping measures) to protect European 'champion' firms such as Phillips Electronics NV and Thomson SA (a contrast to the lack of significant local competitors in the United States) as well as to allay concerns about persistent trade deficits in electronics with Japan (Belderbos 1994: 50; Tsuda *et al.* 1995: 28).

'Tariff-jumping' investments in the United States and the European Community in the late 1970s and early 1980s saw the importance of Asia for Japanese firms decline somewhat. Although a breakdown of electronics' FDI is not available before 1983, the size of investments in Asia as whole declined as a proportion of total investment, from 83.3 and 56.8 per cent, for the periods 1951–64 and 1965–69 to 48.8, 30.8 and 30.8 per cent for the periods 1970–74, 1975–79 and 1980–85, respectively (Tanaka 1994: Table 5). Another notable development during this period was the reversal of the position of Asian NIEs and ASEAN (particularly Thailand and Malaysia) as production planks following wage increases in the NIEs. Wage increases affected electronics component producers more seriously than final product assemblers since the former were mainly small and medium-sized firms utilising labour-intensive technologies (Urata 1993: 17). On the whole, however, the rapid increase in electronics FDI in Asia was a result of the trebling of wage costs in Japan. On a per capita basis, GDP rose in Japan from about \$10,000 in 1985 to around \$30,000 in 1993 (Itoh and Shibata 1995: 188).

A third surge in electronics FDI took place between 1986 and 1992. The appreciation of the yen following the Plaza Accord of September 1985 dominated this period, but trade friction issues were also prominent. The value of Japanese electronics FDI quadrupled in the United States (from \$1.66 to \$8.94 billion), increased nine-fold in Asia (from \$0.36 to US\$3.34 billion) and eleven-fold in Europe (from \$0.33 to \$3.92 billion) between the period 1980–85 and 1985–90 (Tanaka 1994: 7). During this period, immense wage and other cost differentials also emerged between Japan and neighbouring Asian countries (Figure 3-5). A comparison of East Asian manufacturing wage levels shows that, compared with wage levels in Japan, other East Asian NIE economies also experienced wage rises between 1988 and 1990. At the same time, wage levels in the Philippines and Thailand also experienced smaller increases during the same period. Meanwhile, wages were relatively constant and considerable lower (at less than 3 per cent of those in Japan) in China and Indonesia.

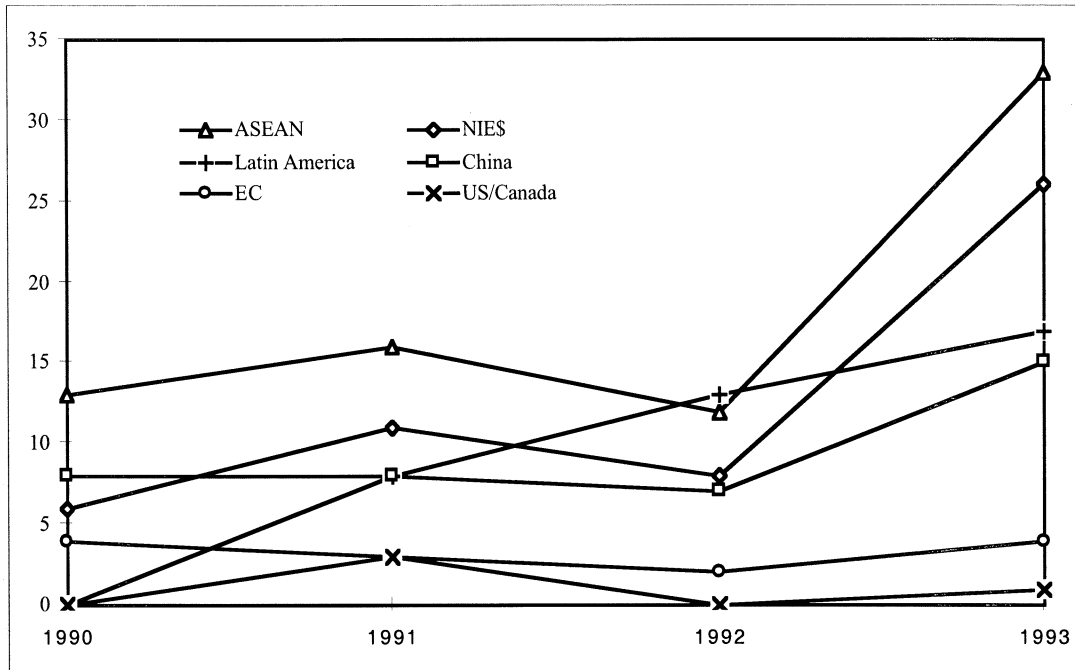
While labour cost considerations are important to labour-intensive assembly operations by end-product makers and SME part makers, the quality of human resources

and the availability of skilled labour and engineers are as important, and sometimes even more important, since labour costs make up only a relatively small share (3–5 per cent) of total production costs (Ohta *et al.* 1995: 42).

As Japan lost export competitiveness in the production of end products for mass consumption, most Japanese firms developed production bases overseas, mainly in ASEAN countries, in the expectation of even lower costs, with Thailand and Malaysia being the most common choice. Electronics component makers tended to prefer to invest in Southeast Asian countries rather than the United States or Europe since there were already a number of local electronics component producers in Asian countries. Most Japanese SMEs suffer from a lack of experience in and familiarity with market conditions in developed economies (Urata 1993: 20). One important development is the growing significance of China as a production base for Japanese firms. Many firms initially established consumer electronic plants in order to establish a market presence, but since 1986 China has become more important as an export plank. Component makers who adopt a 'low-cost' strategy also followed the end-product assemblers by aggressively making direct investments in ASEAN and China (Satake 1994; Wakasugi 1994: 6).

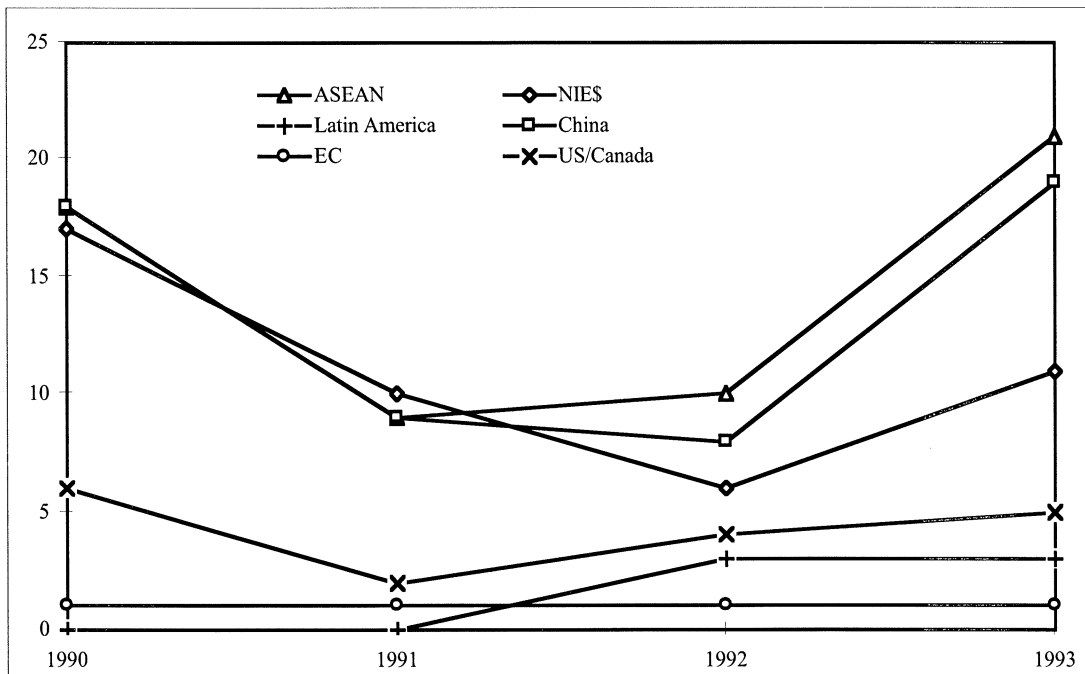
Towards the end of 1992, practically all Japanese electronics firms were able to produce parts locally in most Southeast Asian locations and this prompted the entrenchment of production 'networks' which maintain 'a close symbiotic relationship with their main SME component suppliers' (Abo 1996: 23). Japanese electronics production and investment data suggest a growing regional specialisation, reflected in intra-industry trade between Japan and East Asia (Ohta *et al.* 1995: 34). Meanwhile, trade friction issues with developed countries shifted from home appliances to semiconductors (Tsuda *et al.* 1995: 29), resulting in an increase in local production of semiconductors in Europe and the United States. As a result of trade friction and the yen appreciation, production aimed at third countries (principally developed markets) by Japanese firms in ASEAN and China was also stepped up, while production aimed at 'reverse' exports to Japan, which had declined in the Asian NIEs, also rose in ASEAN and China, particularly after 1991 (Figures 5-6 and 5-7).

Figure 5-7 Third country export destination of Japanese electronics, 1994



Source: Survey of FDI motivation of Japanese electronics MNEs by the Export Import (EXIM) Bank of Japan, cited in Ohno and Okamoto (1994: 77).

Figure 5-8 Sources of 'reverse' electronics exports into Japan, 1994



Source: Survey of FDI motivation of Japanese electronics MNEs by the Export Import (EXIM) Bank of Japan, cited in Ohno and Okamoto (1994: 77).

A fourth phase in the expansion of overseas investment by Japanese electronics firms occurred between 1993 and mid-1997. A major development during this period

set the stage for a new phase of overseas investment expansion — integrated international production. New competitive pressures emerged from within regional blocs such as North American Free Trade Agreement (NAFTA) and the European Union. Through improvements in information, communications and transportation technology, liberalisation of policies governing trade and investment flows as well as flows of technology and finance resulted in a more competitive environment. Japanese firms faced an added competitive challenge from a further yen appreciation which reached historic highs during the first half of 1995 (85–89 yen to the US dollar) rendering imports of end-products or parts from Japan less competitive (Ernst 1994: 27–45).

Before 1993, East Asian subsidiaries tended to procure most of their high value-added critical components or intermediate production inputs from Japan. This approach became uncompetitive with the appreciation of the yen with respect to the US dollar. After 1993, the importance of trade friction eased somewhat since Japanese firms transferred their production bases to Europe and the United States. The continued growth of the US trade deficit remained a concern, however.

As a way of countering the dependence on high-cost (yen-based) imports from Japan, a consolidation or deepening of overseas production networks has taken place since 1990. Japanese firms were forced to open their regional production networks with linkages to local and non-Japanese firms in East Asia, with the focus shifting from equity to non-equity forms of investment (Itoh 1995: 196). In establishing ‘a local presence as a way of entering (key large) overseas markets or gaining access to access to critical production or R&D assets that lie abroad’ (Simon and Jun 1995: 203), Japanese firms have implemented ‘irreversible...changes brought about by the yen appreciation’ (Ernst 1994: 28). A substantial amount of new investment has been sunk in East Asia, bringing changes both in the domestic Japanese production system and in the Asian production networks such that ‘it thus would be very difficult for Japanese electronics firms to return to the *status quo ante*, once the yen starts depreciating again’ (Ernst 1994: 299).

As the yen started to depreciate from the second half of 1997, Japanese electronic firms in the ASEAN first responded by increasing their capital both for defensive reasons (the weakness of local investors and the local credit crunch) and offensive reasons, taking advantage of eased investment regulations to seize majority stakes in local affiliates. But there was a conspicuous decline in new investments from Japan from the latter half of 1997. By the first half of 1998, there was also a drastic reduction in demand in the East Asian, particularly the ASEAN-4 countries, with demand for CTVs falling by 30 per cent to 2.43 million units and demand for air conditioners by 20 per cent against the previous year to 710,000. Japanese firms were, however, able to minimise production cuts by switching to exports (JETRO 1999: 3).

In the aftermath of the Asian financial crisis, it is still unclear to what extent Japanese production platforms in Indonesia and the ASEAN-4 countries will be maintained. Most large end-product assemblers suffer from over-capacity. The difficulties faced by all end-product and parts makers could lead them to at least cut their operations by reducing the number of production shifts and other production rationalisation methods. In some cases they may close down large-scale investments which are yet to return reasonable profits (JETRO 1999: 5).

Impact of trade issues on Korean electronics' FDI

As was the case with Japanese FDI, Korean electronics firms were reluctantly driven to outward investment by trade friction issues and/or by changes in the relative value of the domestic currency. These external factors impacted in five distinct stages.

First, between 1981 and 1988, Korean firms began to establish overseas assembly plants in two quite different locations as a way of avoiding trade 'friction' with developed countries. In high labour cost economies such as the United States and the United Kingdom, investments were made some years after VERs were imposed on CTVs imported from 1978. Goldstar was first to invest in a CTV assembling plant in the United States in 1981.¹⁵ After this investment other firms engaged in tariff-jumping, which was critical since the United States or the European Community countries were prime markets for CTVs and other products such as VCRs and microwave ovens that were to follow (Table 5-3 below). Without exception, all these investments were made to overcome trade barriers already in place or anticipated future barrier (Jun 1995: 174).

Investments for the purpose of avoiding trade barriers were clearly defensive, and the relocation of many Korean firms to developed markets was 'premature', demonstrated by the fact that their local production costs were much higher than their pre-trade barrier export costs. One study found that the resulting overall 4 to 7 per cent cost disadvantage was significant in view of the low margins (normally less than 3 per cent) in the export business of Korean firms (Kim 1997: 15), even though the overall cost difference was not big enough to wipe out the whole business (ESCAP 1990: 59).

¹⁵ A 'follow-the-leader' pattern or strategic response by Korean firms was apparent at this early stage of foreign expansion as Samsung made its first FDI in Portugal only a few months after Goldstar established a foreign manufacturing subsidiary in the United States in 1982. At the same time, Samsung's decision to set up a US-based plant in 1984 was made after a dumping charge was filed on CTVs imported from Korean plants (Kim 1997: 91).

Table 5-3 Manufacturing subsidiaries of Korean electronic firms in developed countries, 1981-91

Name of firm	Country	Year of establishment	Ownership (per cent)	Product
Goldstar (more recently known as LG Electronics)	US	1981	100	CTVs
		1986	100	MWOs
	W. Germany	1986	100	CTVs, VCRs
	Mexico	1988	100	CTVs
	UK	1989	100	MWOs later CTVs
Samsung Electronics	Italy	1990	30	Refrigerators
	Portugal	1982	55	CTVs
Daewoo Electronics	US	1984	55	CTVs
	UK	1987	100	MVOs, VCRs
	Spain	1987	100	VCRs
	UK	1988	100	VCRs
Inkel	France	1988	70	MWOs
Haitai	UK	1991	100	Audios
	France	1990	51	CDPs Car audios

Source: Various Korean company reports, 1990-94.

The second phase of Korean firms' direct investment focused on developing countries, starting in 1988 (Table 5-4). Local content requirements and the imposition of dumping suits on parts in the United States and the Europe Community (Bloom 1992: 83) diminished the effectiveness of 'screwdriver plants' in the developed countries.

Consequently, the US operations of the two major Korean firms were closed and merged into the operation of their Mexican plants. In addition, to bypass VCR quota restrictions imposed on Korean exports in the United States and Europe, Korean firms established manufacturing plants in Southeast Asia. At this stage of their development, Korean firms began to relocate some of their component in-house production and/or affiliates to Southeast Asia, mainly because of the region's proximity advantage and its ample and cheap supply of labour (Lee 1995: 252). Rising labour and interest costs at home and the appreciation of the won, particularly between 1987 and 1989, were further reasons for the relocation (Jun 1995: 173).

Another motivation for the Korean firms in setting up production bases in the region was competitive pressure from the Japanese affiliates based there. Japanese affiliates were manufacturing better quality products and manufacturing them in lower wage Southeast Asian countries (*Far Eastern Economic Review*, 30 May 1991). Korea's rivalry with Japan in middle- and low-priced products during this period suggests a 'follow-the-leader' pattern, common in the oligopolistic electronics industry (Lee 1995: 254).

The third phase of Korean overseas investment expansion began in 1993, when the competitiveness of Korean exports started to recover as product quality improved

and prices became more competitive. This allowed Korean firms to build regionally integrated production systems based on emerging regional economic trading blocs.

At the same time, there was a drastic appreciation of the yen and a depreciation of the won against the US currency, which had a favourable effect on Korean exports (Figure 5.14) (DRAMs) and lower-end consumer devices. The rise in the yen led to rising import costs from Japan for the Japanese affiliates in Southeast Asia, resulting in a rise in their export prices for CTVs and VCRs (Ernst 1994b: 20).

This rise in Korean product competitiveness combined with efforts by Korean firms to rationalise domestic production, which included alliances between former competitors in production and in R&D activities, began to yield tangible results when domestic demand also increased (Jun 1995: 177–8; Korean Development Bank 1994: 90).

Table 5-4 Manufacturing subsidiaries of Korean electronics firms in developing countries, 1988–91

Name of firm	Country	Year of establishment	Ownership (per cent)	Product categories
Goldstar (more recently known as LG Electronics)	Turkey	1988	25	CTVs, audio equipment, washing machines (WMs)
	Mexico	1988	100	CTVs
	Thailand	1988	49	CTVs, B/W-TVs, cassette tape recorders, WMs
	Indonesia	1990	70	Refrigerators, CTVs
	Philippines	1988	60	AEs, WMs, CTVs
	Egypt	1990	70	CTV parts (diode yokes, flyback transformers, FBTs)
	China	1992	70	Industrial pumps
	China	1993	70	Audios
	Indonesia	1994	55	Pumps
	Samsung Electronics	Mexico	1988	100
Thailand		1988	51	CTVs, VCRs
		1990	100	DYs, FBTs, tuners, oil condensers
Indonesia		1989	50	Refrigerators
		1991	80	VCRs, CTVs, CDPs
Slovakia		1991	44.8	Refrigerators
Turkey		1989	20	CTVs
Hungary		1989	50	CTVs
Malaysia		1989	100	MWOs, Acs
		1991	100	Colour picture tubes (for TVs), computer monitors and electric guns
		1992	100	Colour glass tubes
		1992	100	Glass bulbs for CPTs
China		1992	90	Audios
		1992	100	Rotary transformers
Portugal		1994	38	Semiconductors
	1995	100	Computer monitors	
Vietnam	1995	70	CTVs	
India	1995	51	CTVs, VCRs	
Brazil	1995	100	CTVs, VCRs	
China	1995	100	Semiconductors	
	1995	80	MWOs, refrigerators and WMs	
Daewoo Electronics	China	1989	48	Refrigerators
	Myanmar	1990	55	Refrigerators, CTVs, B/W-TVs, audio equipment
	Mexico	1991	100	CTVs, MWOs, refrigerators

Source: Various Korean company reports, 1990–95.

As a result, during the years between 1992 and 1995, the electronics affiliates of the Korean *chaebol* were able to generate increasing cash flows from key consumer electronics exports such as standardised low-end CTVs, VCRs and microwave ovens as well as some high value-added components such as DRAMs. A renewed effort was made to expand overseas production networks amid some significant changes in the global electronics market. Demand in the United States and European Union markets slumped and price competition became fiercer with Japanese affiliates and other low-end producers in Southeast Asia and China (Kim 1997: 174).

At the same time, regional economic blocs start to emerge. The European Union with its single integrated market became a reality in 1992. NAFTA, which included the United States, Canada and Mexico, emerged in the late 1980s as the most important single market for Korean firms. Last, but not least, the ASEAN Free Trade Area (AFTA) in Southeast Asia was to be enforced after the 1991 commitment by ASEAN heads of government (Drysdale and Garnaut 1994: 48). A principal effect of these regional blocs was to discriminate against firms that did not have affiliates in the regional market. When NAFTA came into force, overall local content increased to over 50 per cent, while the European Union increased local requirements (40 per cent in 1989) and extended dumping investigations and VER requirements. Likewise, AFTA was also planning to rein in the phased elimination of tariffs under the CEPT observed by member countries (Salleh 1992: 27). Firms with a regional presence would then enjoy phased elimination of tariffs and quotas within the regional bloc. Thus, like their Japanese competitors, Korean electronics firms were compelled to undertake foreign investments to establish a base within the regional bloc (Tejima 1993).

Another significant change that affected Korean electronics firms during the early 1990s was the liberalisation of the domestic electronics market, which had imposed restrictions on foreign electronics products. This led to the entry of Japanese and other firms. The opening of the Korean market, which coincided with Korea's effort to secure OECD membership, started in 1989 when import restrictions on consumer electronics goods were eliminated. In 1993 a plan to cut the average tariff rate to below 10 per cent for all imported electronics goods was implemented. The Korean market share of imported electronics increased from 5 per cent in 1991 to 15 per cent in 1993 (Kodama and Kiba 1995). Korean firms responded by reinforcing their domestic marketing efforts, shortening the delivery time to customers and improving their service networks and their general marketing channels (Jun 1995: 186).

On the international front, changes in the competitive environment renewed Korean electronics MNEs' efforts to widen their component supply and marketing networks and to integrate their international production system. They also improved their technological capabilities by seeking foreign acquisitions and by upgrading their

design and product development capabilities and international management (Choi 1995: 29). While the macroeconomic environment enhanced Korean competitiveness as the yen appreciated and the won depreciated against the US dollar, the profitability of the top three MNEs increased somewhat (Figure 5-8). Korean firms still based their competitiveness on a market share, mass production, a 'high volume-oriented growth' strategy and the development of their domestic technological capabilities, even though the source of their competitiveness had shifted from low labour cost production.

Table 5-5 Debt–equity ratios of top 4 *Chaebol* groups, 1998

	1996		1997		1998	
	Non-financial	Total	Non-financial	Total	Non-financial	Total
Hyundai	376.4	377.0	437.7	458.8	578.7	685.8
Samsung	205.8	369.7	267.2	458.9	370.9	597.0
Daewoo	336.5	309.6	337.5	314.7	472.0	462.1
LG	313.2	323.1	346.5	3737.3	505.8	542.8
Average ¹	347.5	386.9	386.5	449.1	519.0	603.6

Note: 1 Averages of debt–equity ratios of 30 *chaebol* groups measured at the end of accounting year.
Source: Fair Trade Commission cited in Yoo (1998: Table 9).

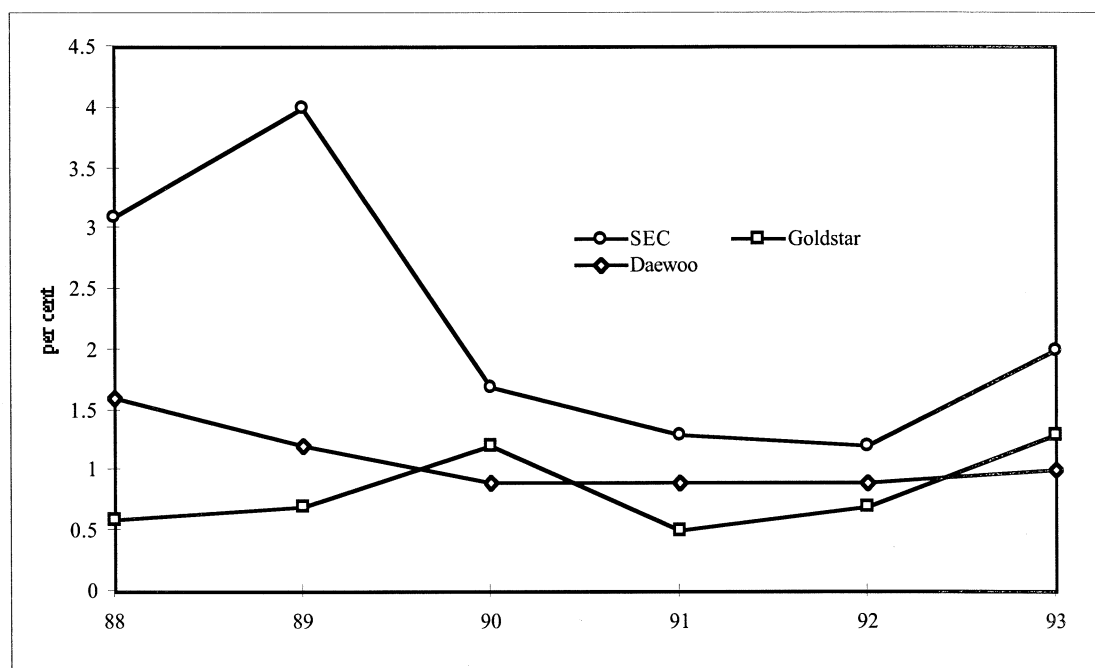
Questions surrounding the sustainability of Korea's export-led market share expansion strategy in electronics had been raised since mid-1994 (Ernst 1994b; Lee 1995). The 'quick-follower' strategy, which was applied by Korean firms, is based on two types of production: a low or mid-level assembly of final goods, especially consumer durables like CTVs and VCRs, and the production of standard components that are heavily dependent on economies of scale and scope. This required huge fixed capital outlays. The resulting need to raise a substantial amount of capital weakened their financial position. Their debt ratios — well above their Japanese competitor's average of 200 per cent — became quite high as a result, while their profit ratios — less than 1 per cent — were quite low (Table 5-5). For example, in the Samsung group, which derives a substantial part of its revenue from electronics and which is one of the most powerful electronics-based *chaebol*, the debt ratio reached 282 per cent, while the profit ratio was only 0.3 per cent in 1996.¹⁶

The financial situation above illustrates the substantial cost of the quick follower strategy, which has had impressive results in terms of export and production performance and technological upgrading, at least until recently. Since 1993, Korean electronics firms have responded to the competitive challenge in the consumer electronics and computer peripherals segments by extending their low-cost and high

¹⁶ Korean Fair Trade Commission data suggest that the total debt–equity ratios of Hyundai, Samsung, LG and Daewoo group were well above 300 per cent in 1996 (Table 5.17).

productivity networks and by improved product differentiation and market development capabilities in developing and developed countries.

Figure 5-9 Margin on global sales for Samsung Electronics, Goldstar and Daewoo, 1988–93



Source: Kim, Yoon and Hong (1994: 15).

As part of their effort to improve their production networks, Korean MNEs' affiliated component makers relocated to Asia, the Americas and Europe. In a manner similar to Japanese MNEs, they moved into these locations near established Korean and Japanese end-product assembly plants so that more efficient coordination of assembly and component manufacturing could take place. In 1992, Goldstar Electronic Devices Co. Ltd. was restructured and established a component plant in Huizhou, China. Its rival, Samsung, had a more extensive network of firms in China with three affiliates in several regional centres producing various standard components (Jun 1995: 167).

The Chinese affiliates of each Korean firm form their own regional assembly and component manufacturers, together with their regional headquarters (RHQ), marketing and R&D, regional management office and service facilities. These make up a regional corporate grouping formed in response to the emerging regional economic groupings of the early 1990s.

A major strategic change in the period after 1993 was Korean firms' realisation of the need to take on new foreign competition by rationalisation of their domestic operations. By entering into cooperative agreements among themselves with the aim of

reaping advantages of scale, which cannot be attained by individual companies, and sharing the benefits of technology collaboration, this strategy has reinforced their domestic marketing efforts (Jun 1995: 178; Lee 1995: 224).¹⁷

Table 5-6 Foreign investment by Samsung's component suppliers, 1995

Company and some components	America	Europe	Southeast Asia	China
Samsung Electronic Company (CTVs, VCRs, CDPs, MWOs, Washing Machines, Radios, DRAMs)	Mexico	UK, Turkey, Hungary, Spain, Czechoslovakia, Portugal	Thailand	Tianjin, Huizhou, Shandong, Suzhou
Samsung Electronic Devices (CPTs, CDTs, electronic guns)	Mexico	Germany	Malaysia	-
Samsung Electro-Mechanics (tuners, DYs, FBTs, speakers, tape decks, cylinders, motors, keyboards)	Mexico	Portugal	Thailand	Tianjin, Guangdong
Samsung Corning (colour glass rotary transformers and others)	-	Germany	Malaysia	Tianjin

Source: Samsung homepage <http://www.samsung.co.ko>, 1998.

Korean electronics *chaebol* have further encouraged the relocation of in-house subsidiaries as well as affiliated firms which produce parts and components. Between 1995 and 1997, 127 components and parts plants were established overseas, making up 49 per cent of the total amount invested abroad. There were 46 industrial electronics plants (18 per cent of the total) constructed and 86 plants (33 per cent of the total) for end-product assembly, and computer, semiconductor and telecommunication plants established during the same period. The total amount committed for relocations in the three years amounted to half of the total cumulated investments abroad. The principal motive for these relocations was to lower costs mainly due to rising domestic wages, but another motive was to develop new markets (Electronics Industry Association of Korea 1997: 35).

Such massive relocations and the continuation of some aspects of the 'quick-follower' strategies coupled with production capacity expansion and expensive merger and acquisition (M&A) could have contributed to the growing indebtedness of the four

¹⁷ A example of strategic alliance between two of Korea's *chaebol* is the cooperation of arch-rivals Samsung and Goldstar in the production of large refrigerators, which used to be imported by two rival firms. Samsung produces 720 litre class refrigerators while Goldstar does the same with the 650 litre class so that they can swap and sell them under their own brand names. Another example of cooperation between the two in the area of a cross-licensing agreement in 1992 to share more than 8,800 patents related to CRTs, computer monitors and LCDs which have been registered in Korea and overseas for three years (Samsung home page, 1996).

chaebol. Recent data on debt–equity ratios of these Korean firms suggest that debt grew rapidly during the years between 1996 and 1998 (Table 5-5).

Summary

The growth and decline of trade specialisation in the electronics segments were associated with patterns of outward investment in the case of both Japan and Korea. By using proxy indicators at the segment level, such an association can be shown to reflect similar dynamics of changing comparative advantage in the home countries of the Japanese and Korean MNEs in the electronics industry.

Extending Dunning's approach provided a more sectoral approach to international production to take account of a particular characteristics of the electronics industry. The approach in this chapter sheds light on changes in segment competitiveness and associated foreign direct investment. A sectoral approach of this kind provides a more integrated framework taking account of the relationship between firms and the changing nature of overseas investment as a function of the evolution of industrial structure in the home country. This analysis of firms' investment motivations and strategies is extended in Chapters 7, 8 and 9.

Evidence of growth and decline in trade specialisation was obtained by examining changes in the segment shares of trade in total electronics exports. As expected, both suggest that trade specialisation in Japan was initially in more low-end labour-intensive products. Japan's trade share in higher value-added segments such as office and computing machinery and electrical industrial machinery, however, increased in line with the expected dynamics of comparative advantage. Japan's export share of domestic appliances, which are more labour-intensive and lower value added, was shown to decline. On the other hand, Korea experienced an increase in the export shares of domestic appliances and a less rapid growth in export shares of more capital intensive segments.

Data on electronics investment do not allow a detailed segment-by-segment analysis. Growth in outward investment in those segments overseas was shown indirectly by the evidence of growth of overseas production in more labour-intensive products and 'reverse' imports to the home country in these segments. Data on the more labour-intensive appliances, end-product plants and the general category of electronics for Japanese investments in the region suggest that there were several phases of foreign investment expansion of labour-intensive production in the Asian region starting with a high level of investment expansion to Korea, Taiwan, and Hong Kong during the 1960s and 1970s. This was followed by another wave of expansion in the late 1980s to Singapore, Malaysia and Thailand and in the early 1990s to Indonesia, China and other Asian countries.

The patterns of Korean electronics investment overseas show that the growth of investment in the various low-end segments began in the Southeast Asian region in the early 1990s. The total number of Korean plants manufacturing consumer electronics in the Southeast Asian region and the corresponding total size of foreign investment committed appears to be modest compared with investments made by Japanese firms. In both cases, however, foreign investment activities were undertaken as a defensive measure in response to increasing protection in the major markets of the United States and European Union.

Aside from differences in their stages of development, both Japanese and Korean firms responded to changes in external circumstances in a similar manner. They responded to currency appreciation, rising wage and operation costs at home by undertaking FDI in low-wage countries. While Korean firms were initially disadvantaged in terms of technological know-how and had to rely on OEM sales, they were able to raise their productivity and competitiveness from the early 1990s. By responding to proliferating price wars and the emergence of new low-cost and high-productivity Japanese competitors in Southeast Asia, Korean firms also upgraded their competitive position through improved product differentiation, through their own R&D efforts, and by acquiring new technology through mergers, acquisitions and strategic alliances with foreign firms. In addition, they have taken on foreign competitors by rationalising their domestic operations. However, the most significant change in the investment activities of Korean electronics firms has been the expansion of their integrated production system since the early 1990s, even though it resulted in acute indebtedness.

More detailed discussion of regional integrated production networks is provided in the next chapter. These networks show that in moving towards the limits of 'catching-up', Korean firms have been able to proceed step by step in a pattern roughly similar to the international production established earlier by Japanese firms.

6 Emergence and integration of Japanese and Korean Production Networks

Large Japanese and Korean electronics MNEs may differ widely in their individual strategic responses to similar competitive pressures such as a currency realignment or increased protection in their major markets. But the dynamics of global competition in the electronics industry in the 1990s led them to develop strikingly similar structures of integrated facilities, segmented according to regional economic blocs and resulted in similar patterns of FDI in the Asia Pacific region.

The previous chapter examined the different macroeconomic pressures that led to the establishment of affiliates of Japanese and Korean MNEs in the region, including those in Indonesia's electronics industry. One of the findings was that, once vintage effects have been taken into account, the factors that motivated these MNEs to undertake FDI were similar at similar stage of development. As competition in the electronics industry became more globalised in the 1990s, MNEs based in Japan and Korea exhibited a 'follow-the-leader' strategy in responding to competitive pressures. As a result, electronics MNEs from these two home countries exhibited some similarities in their expansion of their overseas affiliates, export market orientation and responses to protectionism in the major markets. This poses a further question: How likely is the possibility of similarities in efforts to integrate their international production systems? Is there some convergence in the network structures of MNEs and choice of strategic locations as part of their integrated facilities for production, regional IPO and R&D centres? Mainstream economists such as Vernon and Krugman¹ suggest that the 'international strategies of multinational firms will converge over time, no matter what their national origin' while others such as Ernst contend that there are substantial differences in how Japanese (as opposed to Korean, American and European) firms develop their international production activities such that the effects of their activities may also be 'substantially different' (Ernst 1994: 5).

¹ Vernon (1971 and 1977) and Graham and Krugman (1992).

This chapter examines several issues. Firstly, an outline of a conceptual framework of the globalisation pattern of large MNEs is provided. It explains why international firms have little choice but to work towards similar types of organisation to compete globally, based on an integrated vertical and/or horizontal system of organisation rather than stand-alone partial globalisation. Secondly, intra-firm trade across national boundaries is examined to provide evidence of increasing integration of international production through FDI; in particular, intra-industry trade flow data (as a proxy of intra-firm activity in Japan and Korea) is used to test the proposition that intra-firm trade between the two countries and their key trading partners has increased relative to their total trade. It is argued that similarly high proportion of intra-firm trade in electronics segments or sub-sectors suggest comparable integration of production system for their electronics MNEs. Thirdly, other evidence is examined to determine whether a convergence towards similar regional organisation of production by Japanese and Korean MNEs has occurred in forming integrated structures for their vertical and/or horizontal system of regional production, marketing, and procurement.

Trade–FDI nexus, integration and convergence of international production networks²

An integrated framework for explaining the trade–FDI nexus is in the early stages of development. In recent years, however, there has been increasing work linking trade theory with understanding the overseas investment behaviour of firms (Dobson 1995: 8 and Dixit and Pindyck 1994: 242).

In earlier conventional analysis prior to the 1980s, theories of international trade and FDI have evolved side by side but they have not been linked. As discussed in Chapter 2, Dunning's paradigm of international production provides an appropriate framework to analyse why firms internationalise, that is, why they engage in international production through FDI in overseas locations. Rather than undertaking international business through market transactions such as export, firms internationalise

² A production network is defined as the organisation, across national borders, of the relationships (intra- and, increasingly, inter-firm) through which the firm accomplishes the entire value chain of production including research and development, product definition and design, supply of inputs, manufacturing, distribution, and support services (Borras 1994: 15; Ernst 1992).

to exploit their ownership, internalisation and location advantages as determinants of investment options (Hymer 1976; Casson 1992; Dunning 1992). The OLI paradigm has been referred to as the 'MNE assets' explanation of why firms engage in FDI (WTO 1994: 14).

The purpose of the paradigm is 'to point to a methodology and to a generic set of variables which contain the ingredients for any specific explanation of particular types of foreign value-added activity' (Dunning 1991, cited in Sachwald 1995: 50). In particular, the paradigm assumes the need for internalisation advantages as a determinant for internationalisation, but does not claim to analyse the source of this advantage. This chapter attempts to examine explanations of the specific development of production systems developed by Japanese and Korean MNEs in the last two decades and to look at evidence of convergence in some of key characteristics of the two systems in respect of trade characteristics and network building.

Trade theory developed to explain why countries trade with one another in a general equilibrium framework. One traditional explanation has been the comparative advantage (cost) principle as the determinant of trade patterns, whereby countries export what they produce at a lower resource input cost and import what they produce at a higher cost.

Attempts over the past two decades to link trade and FDI fall into two categories. One is based on the product cycle framework which has two versions: analysis of the product-cycle behaviour of innovating firms in industrialised countries (Vernon 1966); and analysis of the behaviour of imitating firms in Japan and other developing countries, often referred to as the 'flying geese' paradigm (Kojima 1978; Akamatsu 1962).

The above explanations, however, do not allow for generalisations based on different kinds of integration of international production by different kinds of MNE. The analysis of economic integration implies several level of analysis: the level of individual economies, the multiple-country or regional level and the firm level in particular industries.³ The overview in this chapter relates to firm behaviour at the

³ Economic integration concept here is to mean the 'shallow' integration process in which 'barriers to flows of goods, services, and capital are reduced, allowing the freer play of market forces'. Such a process can be both 'spontaneous or induced by the trade liberalisation agreements among governments and it is

regional level in the context of their efforts to compete globally. The growth of MNEs and their ability to supplant and complement trade with sales by foreign affiliates — now estimated to be higher in value than world exports — and the internalisation of one-third of world trade within MNE systems and the direct engagement of MNEs in arm's-length trade in another third, point to the importance the understanding how MNEs distribute their international activities and so determine a particular trade–FDI nexus outcome (World Trade Organisation 1996: 123).

Since the early 1980s, new international trade theories have emerged that no longer assume that firms are national and allow for the possibility that they own and employ factors of production located in different countries. These new models answer the central question of how individual firms' choices determine the aggregate combination of national and multinational corporation or enterprises (MNEs) — usually referred to as the sector regime. The models focus mainly on vertical FDI, which consists of the geographical separation of different stages of the value-added chain, or horizontal FDI, which duplicates the entire production process in several countries, except for headquarters activities.

Within these integrated frameworks, firm activities fall into two categories. First, there are 'headquarters' activities, which involve engineering, managerial and financial services, as well as services of corporate reputation or public affairs, brand name, trade marks and so forth —often jointly categorised as research and development. Second, there is the actual production process, which may comprise upstream (intermediate goods) production and downstream (final goods) production.

In these frameworks, all firms' activities are assumed to exhibit product differentiation, increasing returns to scale and imperfect competition but impediments to trade and final goods transport costs are not considered. Firms are assumed to compete not only through price and quantity but also through production configuration: they choose to be national or multinational in order to maximise their profits in a way that is sensitive to the behaviour of their competitors. An MNE's network configuration is achieved either through vertical and/or horizontal integration by means of FDI in production, marketing and other supporting services. The resulting network

contrasted to "deep" integration process when governments alter domestic policies to harmonise them of

configuration or distribution of the national and multinational network of affiliates of various firms is the production part of the analysis from which the international trade pattern is derived.

Vertical FDI

One strand of the integrated framework to explain the trade–FDI nexus is referred to as vertical FDI (Helpman 1984, Helpman and Krugman 1985). The firm’s activities are broken down into product headquarters services in the differentiated sector, the finished differentiated goods and the homogeneous goods and these are assumed to be, respectively, the most capital-intensive, of intermediate capital intensity, and the most labour-intensive functions.

While transportation costs and trade barriers are not taken into account under the assumptions above, increasing returns to scale are considered as promoting concentration of the firm’s activities, and choices as to location of FDI are determined by factor price differentials. Hence, the greater the differences among countries in factor endowments, the more likely is a firm manufacturing differentiated products at home to invest abroad to exploit factor price differentials. One implication of this model is that trade is will be exports of head office products from the home country — capital-intensive and differentiated products and exports of finished versions of differentiated and homogeneous products produced by affiliates in foreign locations.

Another theoretical implication is that if countries are very different in terms of relative factor endowment whenever FDI occurs, complementary intra-firm trade flows of finished goods from foreign affiliates to parent companies (intra-firm) or to the home country (arm’s length), and intra-firm transfers of intangible headquarters services from parent companies to foreign affiliates will emerge. Similarly, intra-firm parent-to-affiliate exports of intermediate inputs will occur if production is divided into upstream and downstream components. Vertical FDI will occur whenever there are large differences in countries’ relative factor endowments. This explanation tends to be more applicable to vertical investments from developed countries to developing countries.

their trade partners’ (Dobson 1997: 3).

Horizontal FDI

Models of horizontal FDI assume greater importance in the understanding of investments between developed countries (Markusen 1984; Brainard 1992; Markusen and Venables 1995). They attempt to explain FDI as driven by all kinds of impediments to trade, both tariff and non-tariff barriers, either to overcome existing measures — ‘tariff-jumping’ FDI — or to avoid the probability of future protectionist measures or ‘quid pro quo FDI’ (Kojima 1977; Bhagwati 1987; Wong 1995) that is FDI to reduce transport costs. In another strand of these models, the motivation for horizontal FDI is assumed to derive from multi-plant economies of scale generated by the high fixed costs of research and development and other headquarters activities (Markusen 1984). In all models of horizontal FDI, however, the main trade-off is between plant-level scale economies, on the one hand, and firm-level scale economies and transport costs, on the other. They generally exclude vertical FDI by assumption.

Both explanations of horizontal FDI are counterbalanced by concentration advantage, that is, increasing returns to scale at the plant level, so that the higher the value of multi-plant economies of scale and transport costs relative to plant-level scale economies, the more likely is the presence of MNEs (Brainard 1993).

This version of the horizontal FDI model allows for the separation of upstream and downstream production and predicts that exports of intermediate goods from parent firms to their foreign affiliates will occur when firms decide to invest in downstream facilities so that there is complementarity between horizontal FDI and international trade (Brainard 1993). The other strand extends this approach to include asymmetry between countries in terms of market size, factor endowments and technical efficiency (Markusen and Venables 1995) such that the choice between being national or multi-plant multinationals makes it relatively convenient to be national and located in the advantaged country. Hence, in this version, trade and FDI can coexist.

The international production and trade models described above have come a long way from the trade models of the 1980s where only national firms exist. They cannot, however, significantly represent real MNEs’ behaviour or fully explain the trade–FDI nexus. The reason is that they do not take into account final goods transport costs and impediments to trade in the case of vertical FDI, complex international integration

strategies and other factors, market imperfections such as information asymmetry, limitations of the computational capabilities of decision makers and the role of government in influencing trade patterns (Dunning 1995). Other research has already demonstrated the possibility of including the vertical and horizontal integration motives of MNEs in a unified model (Markusen, Venables, Konan and Zhang 1996a; Markusen and Venables 1996b).

While a full testing of these models is beyond the scope of this study, some limited empirical testing of how firms organise their production, particularly with respect to their trade activities, can indirectly reveal the relative extent to which Japanese and Korean electronics MNEs have integrated their production network. By uncovering the extent of intra-firm and intra-industry trade by corporate nationality (home country of investors) and by examining the integration process of their production network, we can infer the extent of firms' regional economic linkages. Observations can be made from the 'quantitative' pattern of FDI expansion and the associated international trade and 'qualitative' changes in terms level of integration of 'stand-alone' operations in individual host-countries into 'complex international production' network (Ernst 1997: 2). Once these observations are made, we can determine whether 'shallow' (partial globalisation with simple integration) or 'deep' (systemic form of globalisation) integration has occurred and whether particular integration patterns differ by corporate nationality.

Trade-FDI nexus and structural phases of international production

The link between international distribution of firms' activities and international trade patterns is clearly not static, but changes according to the different phases of industrial upgrading of MNEs, international market conditions faced by MNEs and locational determinants including host governments' policies (Dobson 1997: 10).

Changes in international production can be stylised as three stages of general strategies (World Investment Report 1994: 136): stand-alone, simple integration and complex integration strategies (Figure 6-1). Their corresponding characteristics are summarised in Table 6-1.

First, during the labour-driven and heavy and chemical industrialisation stages of the 1950s and 1960s, the foreign production of home country firms was typically based on an unambiguous division of tasks between the parent firm and foreign affiliates where the latter would follow a stand-alone strategy (Figure 6-1).

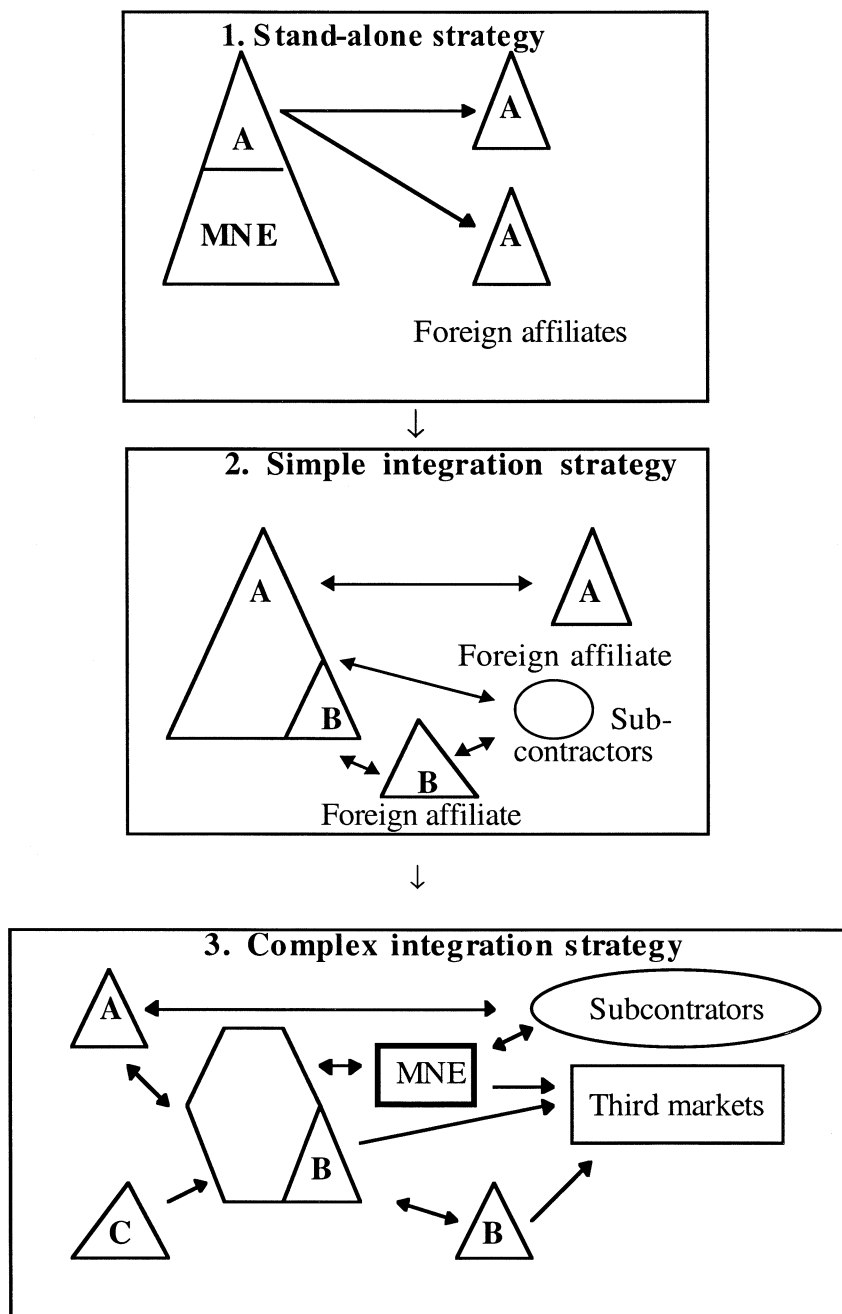
This strategy involves the virtual replication of the entire value chain of the parent firm, with the exception of technology and finance, which are imported from the parent firm with the aim of servicing the host country and/or neighbouring markets.

Second, as a result of liberalisation and technological progress in the 1970s and 1980s, during the assembly-based manufacturing stage, there was gradual emergence of shallow form of integration which changed the organisation of international production. Technological progress in the electronics, automobile and aerospace industries, particularly standardisation of components and greater modularisation (Baba 1994: 14), were accompanied by falling transportation and travel costs. These factors expanded the geographical reach of corporate strategy and allowed large oligopolistic firms to combine economies of scale with the organisation of low-cost suppliers on a worldwide or regional basis. By using technology from their parent firms, affiliate firms could supply parent firms with specific inputs, making them more competitive. This resulted in the formulation of simple integration strategies (Figure 6-1) with new forms of cross-border linkages (such as subcontracting relations) and greater two-way flows of information, technology and value-added activities between parent firms and affiliates.

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linkages (such as subcontracting relations) and greater two-way flows of information, technology and value-added activities between parent firms and affiliates.

Figure 6-1 Three stylised stages of international production strategies



Note: A, B and C denote different functions/activities within one multinational enterprise.
 Source: United Nations Conference on Trade and Development (UNCTAD), Division on Transnational Corporation and Investment cited in World Investment Report (1994, 136).

Third, increased liberalisation of international economic transactions and the further spread of information technology, driven by competition, meant that production

within MNEs evolved towards complex integration strategies combining elements of the two previous stages, which were rather fragmented due to the limited cross-border internalisation of economic activity. More recently, with the advent of innovation-driven flexible industrial manufacturing, MNEs are turning to new management methods to organise their productive assets and distribution systems which integrate their dispersed affiliates on a regional or global basis. The result is a complex integration strategy (Figure 6-1) which enlarges the scope of corporate functions undertaken by MNEs such that all individual units are subject to one unified strategy that governs the entire corporate system. This system can be vertical or horizontal in nature, depending on what configuration contributes most to the profitability of the entire corporate system. Using the same reasoning, the geographical coverage of each function can vary; some functions can be integrated globally (for example, finance or Strategy A in Figure 6-1), others regionally (for example, international purchasing office or Strategy B) while others again may remain general local (for example, training or legal services). Therefore, MNEs pursuing complex integration strategies need to be considered as an integrated set of corporate functions, each with a potentially different geography.

As a result of the complex integration, intra-firm (rather than arm's-length) transactions become more important. Hence:

The resulting product is a complex bundle of inputs, produced in a variety of locations, assembled in host or home countries for sale in those countries or anywhere in the world...[which] may make it increasingly meaningless to identify a product as 'Made in [name of a country]' but rather requires an identification as 'Made by [name of firm]'. In a sense, MNEs seem to be in the process of replicating at the international level the degree of integration of production achieved at the national level, especially in their home countries. (World Investment Report 1994: 140)

When a group of MNEs from a particular home country is considered, one must consider the aggregation of complex integration strategies across a number of MNEs and their economic activities that were previously solely subject to their home country's national control but now increasingly come under the common governance of MNEs. However, while more and more firms pursue complex integration strategies under the pressure of competition, such strategies coexist with stand-alone and simple integration strategies.

Another important feature of the trend towards integrated international production is the significant change in the product composition of intra-firm trade.

Specifically in medium and high-technology segments, the electronics industry, like other manufacturing goods that expanded during the 1970s, underwent rationalisation on a world scale (household appliances, radio and television equipment, office machinery, instruments and others) such that there is now a higher level of intra-firm imports for intermediate goods than previously (Lee 1993: 35). Such a shift in composition is also reflected in the rising share of intermediate products in intra-firm exports from parent firms (World Investment Report 1994: 143).

Table 6-1 **Stylised strategies and structures of multinational enterprises**

Strategy	Intra-firm linkages	Foreign affiliate type	Degree of integration	Environment
Stand-alone, e.g. multi-domestic	Ownership, technology, finance; mostly uni-directional	Miniature replica of the parent firm, e.g. 'mini-Matsushita'	Weak	Host country accessible to FDI, trade barriers; costly communications and transportation
Simple integration, e.g. outsourcing	Ownership, technology, markets, finance; other inputs; mostly bi-directional; subcontracting	Rationalised producer of one or a few elements in the value chain	Strong in some points of value chain, weak in others	Open trade and FDI regimes, at least bilaterally; non-equity arrangements permissible
Complex integration at the regional or global level, e.g. networks of production, distribution and R&D centres	All functions; mostly multi-directional	Product or process specialist; functional specialisation	Potentially strong throughout value chain	Open trade, technology and FDI regimes; use of advanced information technology; convergence in tastes, heightened competition, low communication and transportation costs.

Source: UNCTAD, Division on Transnational Corporation and Investment, cited in *World Investment Report* (1994: 136).

In most developed countries, outsourcing has become an increasingly important practice as MNEs focus more closely on core activities and purchase various intermediate products from other firms. With outsourcing at the international level, the principal firm (usually an MNE) coordinates and often controls the relationship with its suppliers and there is a tendency towards 'much closer, longer-term relationships between firms and their principal suppliers' (Baba 1994: 23; Ernst 1997a: 56).

The most telling characteristic of MNEs in recent years, reinforced by global or regional economies of scale, has been the increasingly oligopolistic rivalry that was already present in simple integration strategies. In response to competitive pressures, electronics MNEs have no choice but to follow a transition from 'partial to systemic globalisation' (Ernst 1997a; Borrus 1997a). Such developments have had a significant impact on world trade and the world economy so that '...today, the emergence of an integrated international production system is taking place in the context of greater macroeconomic uncertainty and instability' (World Investment Report 1994: 145).

As constraints to deeper integration have been lifted with the increasing liberalisation of world trade, firms attempt to take advantage of the possibilities of cross-border interactions and have built up international governance in production, workforce training, distribution and R&D.

Evidence of integration

Quantitative and qualitative changes have occurred in the development of production networks in the pursuit of regional and globalisation strategies by MNEs from Japan and Korea.

First we examine whether there are systematic differences in the development of the production system of Japanese and Korean electronics MNEs in the 1980s and 1990s. Second, we provide an analysis of inter-firm trade (as proxied by intra-industry trade) in all segments of the electronics industry to determine whether there are differences in their traded activities in the 1990s.

Growing integration of international production

Among East Asian countries that there is little doubt that Japan has led the investment expansion of international production in electronics. Japan has been actively investing in Korea and Taiwan since the early 1960s, while Korea only started to embark on expanding its production facilities overseas in the 1970s.

In what follows, the pattern of FDI by Japanese and Korean firms in the Asia Pacific region in different periods is considered in terms of the framework of international production strategies described earlier.

Japanese networks

Japanese electronics firms built their international production networks from the time they started to engage in FDI⁴ in Thailand in 1961 (Kinugasa 1982). The development of Japanese production networks in the region can be described in several stages of development that culminated in the regional integration of production, sourcing, market distribution and services by the early 1990s.

Firstly, during the 1950s and 1960s, the foreign production of home country firms was typically based on an unambiguous division of tasks between the parent firm and foreign affiliates where the latter would follow a stand-alone strategy conforming to a horizontal FDI strategy (Figure 6-1-1). For example, in Asia, Matsushita — one of the pioneers of international expansion during the ‘export stage’ of development — replicated its structure more or less in total throughout the entire value chain of the parent firm, albeit with lower technology production in several ‘mini’ Matsushita affiliates. They imported CKD kit components from parent firms and aimed at servicing the host and third countries, particularly the United States (Chapter 5). The establishment of local sales subsidiaries began in the United States in 1959 and then spread to mainly Western European countries but also some large market economies in South America. While in East Asia examples of such affiliates were only established in two locations Thailand in 1970 and in Singapore in 1974. Until the early 1970s most Japanese firms, with the exception of Matsushita and Sony, did not market their own brand for products such as radios, TV sets, electric appliances, dry batteries, transistors, and stereos (Kinugasa 1982: 30).

During this export stage of development, Japanese firms also began to establish local manufacturing subsidiaries producing highly standardised and technologically simple products. Using Matsushita’s case as example, local manufacturing affiliates were established in mainly low-wage Asian or Latin American countries and only six out

⁴ FDI here is defined only as the establishment and operation of overseas manufacturing subsidiaries not including the setting up of overseas sales subsidiaries which are operated at the exporting stage. As FDI in manufacturing and exporting activities of firms is closely interrelated with most Japanese and Korean firms, the relationship between the two throughout firms’ expansion in Indonesia for the selected case studies of firms is described in Chapters 8 and 9. It is argued that capabilities accumulated during the exporting or pre-manufacturing stage must be considered significant to the success of transfer of manufacturing plants to a particular host country (Kinugasa 1982: 25).

of 27 affiliates established between 1961 and 1975 were in developed countries. A large number of plants were, however, established in East Asia during this period beginning in Thailand in 1961, Taiwan in 1962 and 1966, Malaysia in 1965 and 1972, Philippines in 1966 and 1975 and Indonesia in 1970. During this phase, there was a direct relationship between exporting and FDI. In particular, 'defensive' FDI is often undertaken to protect against import restrictions in the target markets, in particular in the United States in the 1970s. The establishment of plants in developing countries served to utilise relatively lower labour costs and in some locations such as Puerto Rico to 'tariff jump' into the US target market. The accumulated experience of local markets obtained by firms during this sales distribution phase of expansion was combined with know-how of manufacturing products from the home plants for further overseas expansion.

The second phase of overseas expansion occurred during the second half of the 1970s and early 1980s when the electronics industry in Japan entered the assembly-based manufacturing stage. During this phase, more aggressive FDI aimed at effective utilisation of local advantages, such as lower local land, labour or management costs and reduced transport costs.

During this phase, trade barriers emerged in developed countries and some lowering of Japan's competitiveness due to the yen appreciation (Chapter 5). Technological progress in the electronics industry, particularly standardisation of components and greater modularisation, allowed for the establishment of in-house or dedicated component manufacturing in developing countries, thus marking the beginning of vertical FDI.

In Matsushita's case, during this stage of development, the formulation of simple integration strategies with new forms of cross-border linkages (such as subcontracting relations) took place alongside the rapid growth of end-product assemblers and component makers in developing and developed countries. Matsushita established several end-product assemblers in the Philippines (1975), Venezuela and Spain (1973), El Salvador, the United Kingdom and Brazil (1974), Guatemala (1977), Mexico (1978), Germany, Portugal and the United States (1984), while at the same time component and parts plant affiliates were established in the Philippines (1970), Canada, Singapore and Malaysia (1972 and later expanded in 1977 and 1978), Germany, the United States (1985, 1986 and 1988) and the United Kingdom (1987). Matsushita also established

several plants primarily to serve third countries, namely the developed countries that were raising their barriers of entry, in Singapore and Malaysia (1977 and 1978 and later expanded in 1987 and 1988) and in the United Kingdom (1986). Other firms such as Sanyo followed a strategy similar to the one that Matsushita pioneered (Abo 1994b).

The establishment of Japanese electronics affiliates in East Asia (Figure 5-4) started first with the 'horizontal' production network of affiliates dates back to the early 1960s and 1970s. From the mid-1970s, however, the focus of the expansion of component making plants to Asia, the North America and Europe began to take shape of increasingly a 'vertical FDI' type.

During the third stage of development beginning from the second half of the 1980s, there are signs that Japanese MNEs began to move from partial (simple or shallow integration) to systemic globalisation, involving increasingly complex integration strategies. The developments were initially rather fragmented due to limited cross-border internalisation of economic activity (Ernst 1997: 45–47).

In contrast to Japanese FDI in North America and Europe, lower wage costs for workers, technicians and managers in Southeast Asia played a much greater role in the decision to invest since their activities are mainly focused on assembling activities. The geographical proximity of Southeast Asian countries and their economic and political ties with Japan also greatly reduced economic distance in the region. Japanese firms enjoy many advantages operating in this region compared with firms from other East Asian countries. Kojima (1978) and Ozawa (1979) argued that active Japanese government support and the assistance of Japanese trading houses (*soujou susha*) reduced the costs, risks and informational requirements of investing in Southeast Asia but Japanese firms' accumulated knowledge of overseas marketing and production (Kinugasa 1982 and Nakagawa 1982) and the growth of Asian markets could have made an equal, if not greater, contribution to their success in establishing production networks in Asia (Tejima 1993).⁵

⁵ Kojima (1978) and Ozawa (1979) argue that the Japanese government encouraged the relocation of manufacturing activities to Southeast Asia, which it saw as an indispensable part of industrial restructuring policy, as early as the 1960s. Since then, FDI has been actively promoted by the government through tax breaks and through semi-governmental institutions such as the Export-Import Bank of Japan, which provided assistance and low interest loans. Foreign plants were often set up as joint ventures with one of the major Japanese trading houses which have decades of experience in dealing with these countries (Tejima 1993).

The emerging regional networks of Japanese affiliates have brought about increasing integration in manufacturing production between Japan and Asia. Over the past three decades, the focus of Japanese FDI shifted twice: first from Northeast Asia (Korea, Taiwan and Hong Kong) to the ASEAN 'second-tier' NIEs (Singapore, Malaysia and Thailand); and then, beginning around 1992, from these countries to China, Indonesia, the Philippines, and Vietnam. The dramatic effect of the yen appreciation around 1986 led to further entrenchment of regional 'vertical FDI' networks while at the same time Japanese firms continued to use their Asian production network to engage in 'tariff-jumping' or horizontal FDI focused on the North American and European market.

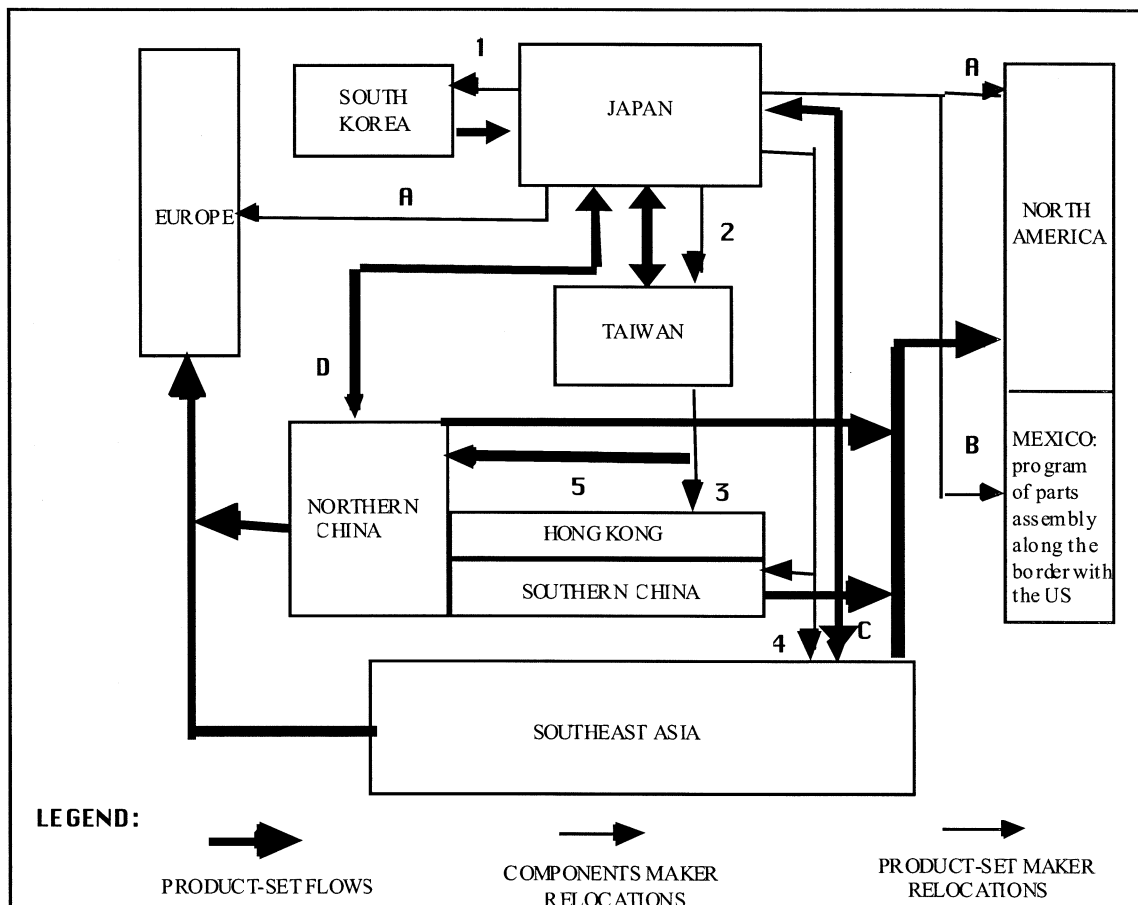
The Asian region accounted for about two-thirds of total overseas investment by Japanese manufacturing firms in 1988 but by 1993, this ratio had risen to more than 90 per cent (JETRO 1995: 20) with most investment entering China in the early 1990s. The driving force behind the shift into Asia has been the electronics industry. Between 1985 and 1993, nearly half of the total increase of Japanese manufacturing FDI in East Asia went into electronics and by 1993, almost 60 per cent of all foreign affiliates of Japanese electronics firms were located in Asia. In terms of employment, however, the share was higher. In 1993, 70 per cent of overseas employment of Japanese electronics firms was in East Asia, which attracted more labour-intensive FDI than North America and Europe (Ernst 1997: 46).

As Japanese international production has risen since the beginning of the 1990s, regional specialisation has emerged, with two complementary changes. First, production lines and procurement linkages have been upgraded. Second, Asian affiliates of component manufacturers, especially in Taiwan and South Korea, have been improved. While the details vary for different sectors and product groups, regional specialisation takes the following form: Singapore and Hong Kong have become rivals for the location of RHQ with their major support functions such as international procurement office (IPO), testing, engineering services, and training; South Korea and Taiwan compete for OEM⁶ contracts and as suppliers of precision components; Malaysia and Thailand, and

⁶ OEM or original equipment manufacture occurs when a firm subcontracts for an item to be produced with its brand name on it, even though that firm is not the producer. This practice is widespread in the

the Philippines are preferred locations for volume production, especially of mid-level and some higher-end products; and Indonesia, China and Vietnam compete for low-end assembly and simple components manufacturing (Ernst 1997: 47).

Figure 6-2 Flows of intermediate parts and end-product/final products of Japanese electronics firms, 1970s to 1990s



Source: Satake (1994: 53).

One study on regional specialisation posits that during the early 1990s, similar locational advantages became more important in the decision to invest in a particular country with the transformation of the Japanese electronics MNEs' structure towards a 'bloc management' system from a 'Japan-based' system to exploit the emergence of trading blocs such as NAFTA, the European Union, and the China 'circle' (mainland China, Taiwan and Hong Kong) and AFTA (Satake 1994: 27). With the greater role of

electronics industry where retailers like to promote their image or manufacturers want to extend their product range (Bloom 1992).

such locational advantages in FDI decisions by product division and regional headquarters and with the trend towards 'bloc management', the role of horizontal FDI has become correspondingly greater. Figure 6-2 provides a graphic illustration of the flow of parts/components and final product sets across the major regional areas in the mid-1990s⁷.

The above illustration is the result of an extensive survey of principal electronics MNEs (final/end-product assemblers or set makers) and their manufacturing-centred (or vertical business groups) firms conducted by the Nomura Research Institute (Satake 1994) from the 1970s to the 1990s. Relocation of electronics plants have been observed across the different regions and countries with the establishment of overseas plants and greenfield developments by principal large MNEs (the nine major firms), which can be categorised into several broad groupings (letters correspond to those in Figure 6-3):

- (A) Relocations of product-set-maker (or end-product) plants to the United States during the 1980s which were reactions to increasing trade friction faced by Japanese firms.
- (B) Relocations to Western Europe and Mexico.
- (C) Relocations of product-set maker plants to Korea (1) and then to Taiwan (2), Hong Kong (3), Southeast Asia (4) and Northern China (5) from the latter part of the 1980s to early 1993 partly as a result of the yen appreciation increasingly to serve local markets while still serving major markets. Component plants, initially relocated to Korea and Taiwan, were also transferred to Southeast Asia and Mexico.
- (D) Relocations of both product-set and component plants (both in-house and associated small and medium-sized enterprises) during the early 1990s were aimed at exploiting the Chinese and Southeast Asian market and the availability of the 'regional core networks' within the two areas. Nevertheless, large product-set export flows were still aimed at the major markets of North America and Europe.

To understand the relocation of SME component makers, a brief explanation of the structure of Japanese supplier firms is required. These firms are often classified as

⁷ See Chapter 7 for a more detailed analysis of the development of corporate strategies of Japanese and

belonging to a vertical business group if they are owned by parent firms with which they have a subcontracting or OEM relationship and if they are likely to receive significant guidance from the parent. Firms owned by a parent firm but which do not have business links with it are generally excluded. In one study of 204 electronics firms, 49 were classified as subcontractors in vertical business groups (Ozawa 1991: 51). The number of subcontractors in the data by major parent firm is listed in Table 6-2. Fujitsu appears as the largest vertical business group in terms of the number of firms listed as its subcontractors, followed by Hitachi, NEC and Matsushita.

Table 6-2 Subcontractors by major vertical business groups and manufacturing subsidiaries of the parent firm in Southeast Asia and Europe/North America, 1991

Parent Firm	Number of subcontractors in the sample	Parent manufacturing subsidiaries in Southeast Asia	Parent manufacturing subsidiaries in Europe/North America
Fujitsu	9	5	4
Hitachi	7	10	5
NEC	7	4	7
Matsushita	6	28	17
Toshiba	4	7	6
Other	16	13	16
Total	49	67	55

Source: (Ozawa 1991: 51).

Overseas plant relocations and greenfield developments by SMEs often follow the end-product makers (Ozawa 1991). These components suppliers or part makers, which are mostly members of *keiretsu* groups in Japan, clearly followed a slightly different but complementary pattern to that of the principal firms. In most cases there is a time lag involved in relocation of related component suppliers, following the lead of principal firms. The following pattern of plant relocations by component suppliers has been observed.

First, from the late 1970s to the early 1980s, there was initial investment at the early stage of the development of overseas production of components and parts in Korea. Second, similar trends during the same period were observed in Taiwan. Third, during the late 1980s, there were many relocations of precision tools, automated

other East Asian electronics MNEs.

processing and computer-related plants into Southern China and Hong Kong. Fourth, from the early 1980s, the relocation of assembly plants into Southeast Asia began with Singapore, Malaysia and Thailand as the most popular destinations. However, in more recent years China, Indonesia and the Philippines became more popular choices due to their locational cost advantages (Chapter 3). Finally, a large number of relocations of part makers into the northern region of Mainland China occurred. Many of these investments took the form of joint venture partnerships with overseas Chinese from Taiwan and Hong Kong.

Since the early 1990s most component SMEs that undertook FDI in Southeast and East Asia relocated following formal and informal pressure by the principal HQs of MNEs to maintain and improve their competitiveness in the face of the yen appreciation (Satake 1994: 61). In addition, most part makers have also under pressure to transform their existing labour-intensive production techniques to become more capital intensive and to rely on a greater subdivision of the manufacturing process. This change of strategy occurred because the labour cost component of the total product cost for most electronics products is decreasing and because there is greater availability of semi-skilled local technical personnel and managers in East Asia, particularly in Indonesia, China and Vietnam.⁸

Greater integration of Japanese networks and the transition from the partial to systemic globalisation strategy led to greater intra-firm transactions of goods and services. In East Asia, the geographic dispersion of production of Japanese electronics affiliates occurred on a massive scale, mostly in the late 1980s and 1990s. Some studies suggest that in the course of this process, the degree of integration achieved at the national level in Japan was replicated in East Asia at the regional level, together with various kinds of cooperation between cartels, *keiretsu*, and other forms of extra-market (or non-spot market) inter-firm relations. All these factors resulted in the adoption of a closed regional production network, particularly in the developing countries of East Asia (Hatch and Yamamura 1996). Others, however, contend that since the early 1990s there were pressures to open up the Japanese network of sub-assembly and parts suppliers.

⁸ A typical example of such firm is Showa Plastics. An Osaka-based plastic moulding component maker, 95 per cent of its 3000 employees work overseas, mainly in Southeast Asian countries (fieldwork interview 1995).

As Japanese firms shift a variety of PC-related products and there are greater pressures to keep the cost of local sourcing low, Japanese firms have begun to compete for the same supply sources as US and other offshore assemblers in East Asia (Ernst 1997: 25). At the same time, other Korean, Taiwanese, Singaporean and other Asian component suppliers, competing on cost, quality and time-to-market, have emerged in the region. The extent of value-added contribution by other Asian producers contributing to the Japanese networks, which previously relied largely on a domestic and affiliated supply base, is still a subject of debate. Some argue that the other Asian firms' contribution is still minimal (Borras 1997: 12) while others maintain that in components such as advanced displays and DRAMs, their value-added contributions have increased markedly (Linden *et al.* 1997).

Korean networks

Latecomers to international production are likely initially to take a different approach from more experienced firms. But as they move beyond the 'catch-up' stages of development, they too have developed more integrated and complex international production networks.

Korean electronics firms are latecomers in building their international production networks, establishing overseas manufacturing plants in 1981 (Table 5.12). Being smaller and having a weaker technological and managerial bases, their initial motivation to invest overseas was similar to that of Japanese MNEs, namely to avoid trade friction — a reason that was important during the investment boom in the latter half of the 1980s (Chapter 5). Like the Japanese before them, Korean firms had to minimise risk by organising their production networks in a highly centralised manner.

This was further reinforced by the highly centralised nature of Korean electronics MNEs which are said to be shaped by their *chaebol* corporate culture.⁹ Although the case of Hyundai reflects an extreme case of the overwhelming influence of the

⁹ The term *chaebol* in the Korean language refers to a financial combine or a group of firms owned and controlled primarily by a single CEO entrepreneur and usually his family members. In such a multi-company grouping, firms invest in different locations and markets but ultimately decisions often fall under 'common entrepreneurial and financial control', usually the CEO and an elite group of advisers (Leff 1978). The emergence of these *chaebol* can be considered a unique Korean institutional innovation to overcome market deficiencies (Il 1993: 61) or a kind of hybrid of the pre-war Japanese *zaibatsu* and current *keiretsu* (Bello and Rosenfeld 1992: 402).

authoritarian chief executive officer (CEO), until recently a 'bluster and swagger' mentality prevailed within many of Korea's *chaebol* (Il 1993; Leff 1978).¹⁰ One of the main differences between Korean and Japanese firms, particularly in their initial horizontal FDI decisions, is the stronger influence of the CEO or head office of the parent company. Decisions tended to be made more quickly and perhaps with less bureaucratic scrutiny in Korean firms (Bello and Rosenfeld 1992). Another difference between Korean and Japanese electronics firms in their FDI decisions in the 1980s was the need to consider the wider range of products and lines of businesses that the *chaebol* possess.¹¹ This may imply that intra-firm sharing of managerial and administrative capabilities across different product divisions occurs more frequently in Japanese firms than in the case of the Korean firms, which have a less integrated managerial organisational structure.¹²

The third main difference between Korean and Japanese electronics firms in their FDI decision making process is that the lack of industrial deepening (or manufacture of most critical components) in the early 1990s means that Korea still relies heavily on imported components for electronic hardware production (mainly from Japan) and on imported software, particularly for computers and telecommunications equipment (mainly from the United States and Europe). This situation was described as 'dual dependency' on foreign technological sources by various interviewees (interviews, 1995). By the early 1990s, Korean firms were building intra-group vertical production networks in Southeast Asia, partly induced by AFTA. At the same time, there has been further expansion of production bases in China, particularly since 1989. However, their spectacular increases in international market share in certain narrow segments (for example in dynamic random memory or DRAM chips) 'have not been matched by an equally strong parallel process of industrial deepening' (Ernst 1994: 4).

¹⁰ The term was used by *Asian Wall Street Journal* (13 December 1994) to describe the authoritarian and flamboyant style of Hyundai's CEO Chung Ju Yung (Kirk 1994). Other account of the activities of post-Korean War *chaebol* CEOs with dominant electronics industries suggest similar traits (Steers 1989).

¹¹ Hyundai, Daewoo and Samsung all boast of their wide product range with slogans like 'from chips to ships' (Hyundai). There is, however, some evidence of inter-firm collaboration between the *chaebol* in pre-competitive product R&D development, according to interviews with Dr Yong-Soo Hong from the Korean Institute for International Economic Policy, March 1994.

¹² This is suggested by Kirk (1994: 179–83) who demonstrates that there is a certain amount of transfer of top managers into Hyundai Electronics from other divisions.

Nevertheless, Korean electronics technology has been improving in the 1990s (Kim 1997: 70). During earlier stages of their development Korean firms relied heavily on their OEM marketing and mass-production advantages focusing on high volume production of a few products to compensate for their lack of technology assets. Since the 1980s, they have gradually developed their own technological capabilities in some areas of high technology products such as DRAMs, and in some components and parts. At the same time, dependence on foreign components persists.¹³ This narrow product line strategy has been successful since the sales earnings in these specific product segments such as DRAM semiconductors of the top three firms, Samsung, Goldstar and Hyundai, can almost be put in the same league as Japan's Sony Corp, Sanyo Electric Co. and Sharp Co. In terms of market share, for example, Samsung heavily relies on a few product categories (TVs, VCRs and microwave ovens) and components (CRTs, DYs and FBYs).

Notwithstanding some of the differences between Korean and Japanese firms, from the beginning of the 1990s, Korean electronics firms have formulated some similar strategic responses to the forces of globalisation and regionalisation by reorganising their production, marketing and R&D (Jun 1995: 12). In the late 1980s, the horizontal FDI in US and Europe undertaken by Korean firms was mainly in response to the forces of regionalisation, while investments in Southeast Asian countries, Mexico and China were motivated by 'efficiency-seeking' vertical FDI and the emergence of regional blocs. By the early 1990s, Korean relocations were mainly a response to worsening domestic factor cost conditions (Kim 1997: 72).

Two additional motivations drove Korean MNEs to respond to the forces of regionalisation: first, strategic investment designed to 'check the dominance' of Japanese competitors in Southeast Asia by competing with them for local market share; second, Korean MNEs needed to by-pass import restrictions imposed on Korean exports by the United States and the European Union by exporting from Southeast Asian and other production bases (Jun 1992: 28). Hence, the 'dual purpose' operations of Korean

¹³ Since the early 1990s, Korean electronics MNEs such as Samsung and Goldstar have made aggressive attempts to increase their technological self-reliance through in-house R&D spending, partnerships with foreign firms and investments (through merger and acquisition) in overseas R&D and production facilities (Chapter 5). However, while much has been achieved to lower their technological dependency on foreign technologies, a study of Samsung Electronics Co. suggests that 'an unhealthy degree of dependency still exists, especially upon SEC's Japanese competitors' (Koh 1992: 62).

investments in these countries were very similar to the *modus operandi* of Japanese firms.¹⁴

The late entry of Korean firms in building networks similar to the Japanese firms can be illustrated by the case of Samsung's operations in Southeast Asia, which started about two decades after those of its Japanese competitors. Samsung Electronics Corporation (SEC) established its sales branch office in 1987 and then its first production subsidiary in 1988 in Thailand (Thai Samsung Electronics, TSE). TSE was the first Korean MNE in Southeast Asia (Table 5-9). Since then a number of joint ventures and wholly-owned affiliates have been established in the region, beginning in Thailand (1989, 1990 and 1993), Indonesia (1990, 1991 and 1992), Malaysia (1991, 1992 and 1995) and India (1995). These affiliates produce CTVs, VCRs, refrigerators and CDPs, while subsidiaries of sister companies of the same *chaebol*, Samsung Electronic Devices, Samsung Electro-Mechanics and Samsung Electronic Corporation produce CRTs, tuners, FBTs and glass bulbs (Kim 1997: 133; Jun 1992).

The building of regional vertically integrated networks has only taken place in earnest since 1992 by linking end-product subsidiaries with affiliated component subsidiaries (Kim 1997: 134). As illustrated in Figure 6-3, in 1989 the Thai affiliates (T1 and T2), began CTV manufacturing with components that were fed from the operations of the Malaysian component subsidiaries (M1 and M2), while another plant in Malaysia (M3) received components for its production of microwave ovens from one of the Thai transplants (T2). The Indonesian affiliates (IN1 and IN2) also received components (tuners, FBTs and DYs — core components for CTVs) from affiliates in both Thailand (T2) and Malaysia (M1). The latter affiliates were intended to supply affiliates in India (ID1) and Vietnam (V1).

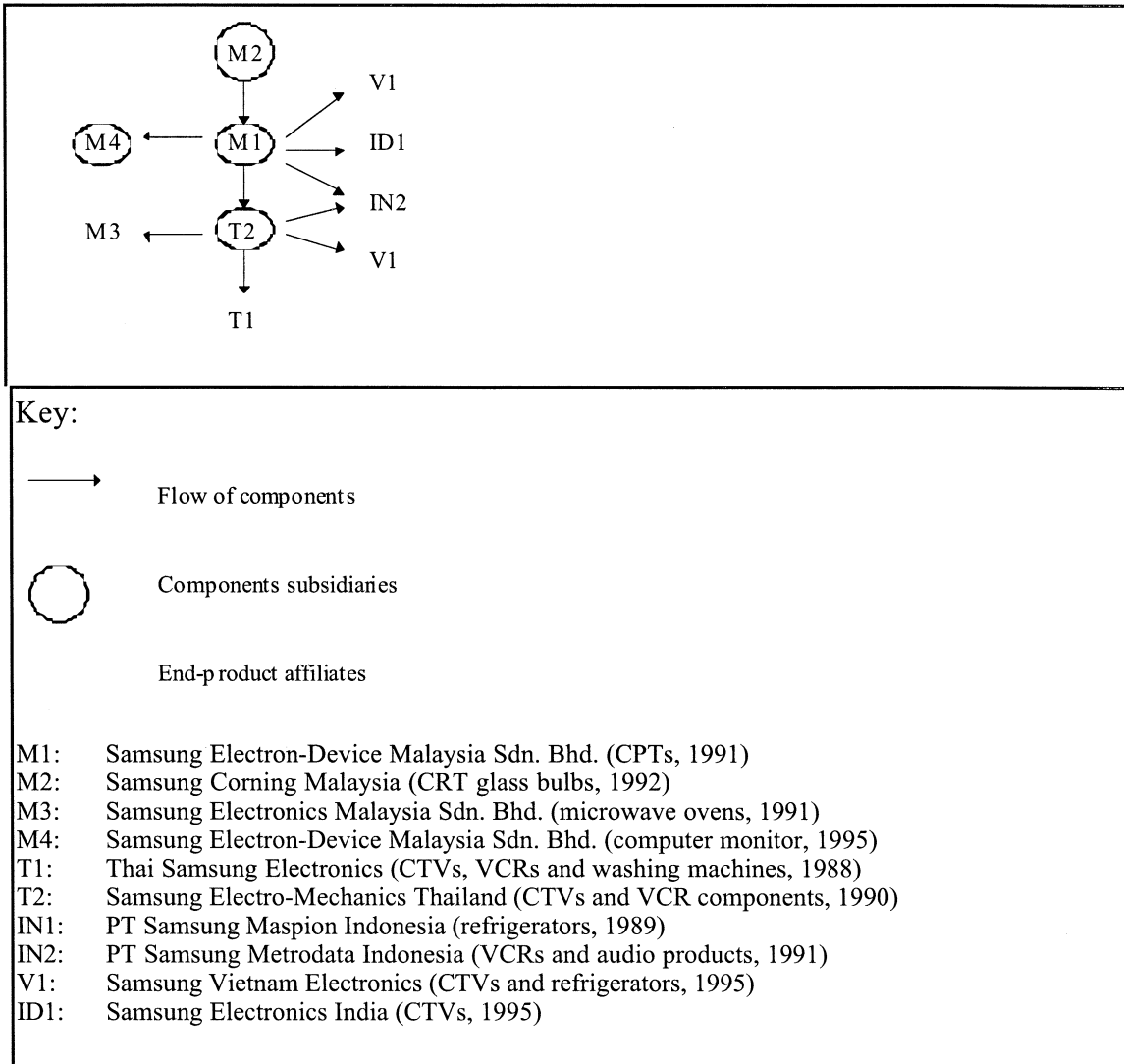
As Samsung expanded its regional production network in Southeast Asia after 1988 and established an IPO in Singapore in 1992. The purpose was also to purchase low-priced parts for the Korean plants and to coordinate procurement for affiliates in the region. Most Japanese electronics firms locate their IPO in Singapore. From 1995, Samsung increased its integration by increasing investment within the existing

¹⁴ The dual purpose of the operations of both Japanese and Korean investments in Southeast Asia is that they maintain joint venture with local business, but use 100% subsidiaries for export business. The aim is to have a fast decision-making mechanism which is free from intervention by local partners and to

subsidiaries. In Thailand, TSE assumed control of the marketing affiliates (control was previously by a joint venture partner) and established a new washing machine assembly line in 1995. In Indonesia, SME constructed a new factory assembling CTVs and established a new sales subsidiary for local distribution of CTVs. By the end of 1995, further integration of affiliates in Thailand, Malaysia, Indonesia, Singapore, Vietnam and India had been initiated (Kim 1997: 134).

Since the early 1990s the other two largest Korean electronics firms — Goldstar and Daewoo — also started to spread and reorganise their offshore low-cost production platforms, marketing in both developed and developing countries as well as through their domestic and overseas R&D networks. They were aiming, like Samsung and their Japanese competitors, to set up integrated production based on ‘management blocs’ corresponding to the trade regions of North and South America, the European Union, Southeast Asia and China. Prior to the Asian economic crisis of 1997, Korean firms were planning to increase their offshore production ratio from an average of 2 per cent in 1993 to 60 per cent by 2000. In 1994, the overseas production ratio of Goldstar (later known as LG Electronics) and Daewoo was only 3 per cent and 8 per cent, respectively (UNCTAD 1996: 37). As latecomer it not surprising that these Korean firms’ offshore production ratios are generally much lower than those of their Japanese competitors.

Figure 6-3 Samsung's emerging production network in Southeast Asia, 1997



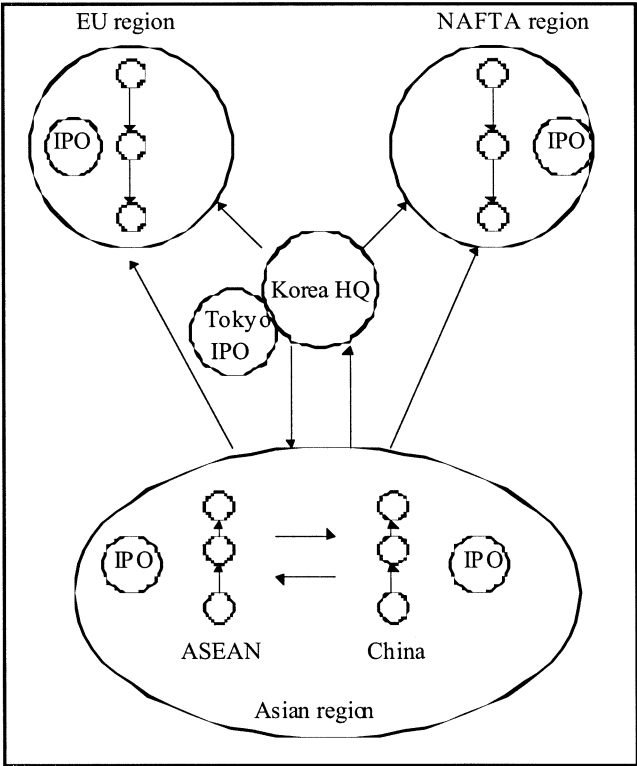
Source: Adapted from Kim (1997: 133).

With increasingly integrated production networks based on trading blocs, Korean firms continued to improve their regional management by establishing further regional headquarters. For example, by 1995 Samsung had established five RHQ made up of five sales subsidiaries, two production affiliates and four branch offices; a European RHQ with eight regional sales affiliates, five production subsidiaries and five branch offices; a Chinese RHQ with two sales subsidiaries, four production plants and four branch offices; a Southeast Asian RHQ has two sales subsidiaries, four offshore production plants and eight branch offices; and a Japanese RHQ, which oversees one sales subsidiary and one branch office (Samsung Electronics Co. Ltd. Homepage, 1998). The Korean HQ, which liaises closely with Tokyo IPO, coordinates all RHQ and operates the global purchasing information system to achieve optimum parts sourcing based on a

streamlined parts approval procedure coordinated by regional IPOs. One clear common feature between the Japanese and Korean firms is that Samsung's integrated facilities are also divided according regional economic blocs with one each in the European Union, NAFTA, Southeast Asia and China (Figure 6-5).

The driving force behind Korean MNEs' investment abroad since the early 1990s, as was the case for their Japanese competitors, was a desire to recover and improve their international competitiveness by the relocation abroad of labour-intensive activities in end-product and then component manufacturing. It was a reaction to increasing domestic costs as well as a desire to establish local supplier networks to reduce imports and can be argued to be a form of vertical FDI. In contrast, the investment made by Korean firms to secure protected industrial countries' markets was carried out by use of the generalised system of preferences (GSP) facilities of less-developed Asian countries. Such motivation for FDI is consistent with the horizontal investment hypothesis and is also similar to the motivation of Japanese firms during the investment boom in the latter half of the 1980s.

Figure 6-4 Samsung's regional integrated networks, 1998



Source: Samsung Electronics Co. Ltd. Homepage (www.samsungelectronics.co.kr), 1998

While Japanese and Korean firms had significantly improved their vertical linkages by increasing cooperative interaction between affiliated firms by the mid-1990s, Korean electronics firms remain relative laggards in international production compared with their Japanese counterparts. The contrast with their American and European counterparts is even starker (Ernst 1996: 47). Korean overseas production ratios (OPRs) are generally much lower than those of their Japanese counterparts. In 1996, in terms of their sales, Sanyo's OPR was almost 34 per cent and both Sony and Matsushita achieved OPRs of about 20 per cent. OPRs are typically much higher for small and medium-sized Japanese electronics firms. Similarly, firms with a smaller range of products like Aiwa (whose OPR exceeds 85 per cent) or Uniden (with an OPR of close to 100 per cent) also have high OPRs (Ernst 1997: 48). Japanese MNEs have considerably lower OPRs than their European and American counterparts due to the latter's long involvement in international production while Japanese (and also Korean) firms have been initially quite reluctant to shift to international production. Japanese firms have attempted to 'reap the maximum advantages from certain basic features of their domestic production which they thought would be difficult to reproduce abroad' (Ernst 1997: 47).

The fact that Japanese and Korean firms differ in their exposure to international production, due to the vintage or stage-of-development effects,¹⁵ significantly affects other features of their international production networks. In the course of building and managing international production networks it takes time to harness technological and organisational capabilities. Furthermore, in developing the capacity to manage international production, the vintage factor is more critical and the role of learning at the headquarters and foreign affiliates is equally critical (Ernst 1997: 47):

... firms progress over time from the simplest to more complex forms [of international production networks] as they learn how to manage [them] as skills and resources accumulate within the various foreign units, new options and more complex projects can be undertaken by relying heavily on the parent organisation for help and guidance. (Stopford 1995: 2 cited in Ernst 1997: 49)

¹⁵ The vintage or stage-of-development effects are those factors related to the resource and organisational development of as well as exposure to international production of an MNE where critical 'learning' occurs both at the headquarters and foreign affiliates (Ernst 1997: 47-49).

Measures of integration: growing intra-firm and intra-industry trade in industry segments

FDI can change the composition of trade. The distribution of the international activities of MNEs influences the international pattern of both intra-firm and intra-industry trade. Are exports and direct investments of Japanese and Korean firms, particularly in East Asia, complements or substitutes? How do these patterns differ by corporate nationality?

While foreign production can substitute for trade in a single product, the impact on trade of establishing multi-product plants — as is the case with most electronics FDI — is more complex. While primarily engaged in replacing exports, an affiliate usually generates demand for other products, such as capital or intermediate goods and services. As seen in the models discussed above, these intermediate products may be provided by other parts of the parent firm, its associated suppliers (that is, from the same business group), or other independent component firms at home or firms in third countries. This trade in home and host countries is sometimes called ‘associated’ trade (UNCTAD 1996: 79).

As discussed in Chapter 5, the relocation of some processes undertaken by Japanese and Korean end-product principal MNEs often led to the relocation of their suppliers to the same host countries after a time. If the initial FDI attracts domestic suppliers abroad, this can lead to new investment, so-called ‘associated investment’. Empirical investigation of these indirect effects is fraught with difficulty owing to data and methodological limitations (Helleiner 1979). While economists pay considerable attention to intra-firm trade, it is difficult to obtain intra-firm trade data from firms. However, part of intra-industry trade may be intra-firm trade. Intra-firm trade coincides with intra-industry trade when diversified firms develop different product lines in various countries (horizontal FDI) to reap economies of scale or to penetrate protected or monopolistic markets through product differentiation.

When a firm undertakes vertical FDI or fragments its production process among different plants at home and abroad, intra-firm trade usually involves the exchange of goods classified in different industrial or service categories. This trade is not classified as intra-industry trade. However, firms that are both vertically integrated and diversified and that use common services, equipment, technology, marketing mechanisms and

know-how, internalise those aspects that provide them with advantages and improve their competitiveness, widening intra-firm trade. Hence, for specific industry segments, intra-firm trade can be proxied by intra-industry trade (Taniura 1988: 48).

While factors which drive the investment decisions of international firms primarily operate at the firm level, many MNEs from Japan and Korea are part of a larger business group, and were often organised by functional divisions of labour across different industry segments prior to the emergence of geographic divisions in the early 1990s. Hence, as a first approximation, their intra-firm trade can be proxied by intra-industry trade (Taniura 1988:48).

The aim of this section is to examine whether there are any systemic differences in trends in intra-industry trade between Japan and Korea. For a specific firm producing a specific product, it can be shown that there is a linear, step-by-step sequence of servicing foreign markets giving precedence to exports over FDI as a way of entering foreign markets (UNCTAD 1996: 76). Both Japanese and Korean firms initially have undertaken FDI in line with this linear sequencing in the early stages of internationalisation. Their multi-product orientation, which was simultaneously geared towards market-seeking and low-cost labour-seeking FDI, has been a feature of their operations since the mid-1980s. However, in the 1990s, they have entered into other variants of efficiency-seeking FDI that aim at exploiting economies of locational dispersion and integrated production, with the particular aim of accessing regional trade blocs as well as global markets.

Their FDI patterns gave rise to different trade patterns at different stages in their overseas expansion. The strategies of Japanese and Korean MNEs may be reflected by changes in their FDI-generated intra-firm trade patterns. By using sectoral trade data, specifically intra-industry trade coefficients¹⁶ as proxies for intra-firm trade, the nature of the increases in inter-firm trade can be inferred: whether it is simply inter-firm trade-

¹⁶ Intra-industry trade (by commodity) is a measure of the trade between pairs or groups of countries relative to their shares of world trade and measures the amount of trade within an industry (commodity group). It is calculated by partner and commodity as follows:

$$ITT_{ij}^k = \frac{(X_{ij}^k + M_j^k) - |X_i^k - M_j^k|}{(X_i^k + M_j^k)}$$

where X_{ij} is country i 's export to country j ; X_i is country i 's exports; M_j is country j 's imports; M_w is world imports; and M_i is country i 's imports.

replacing or both inter-firm trade-replacing and -supporting, or on balance, inter-firm trade creating.

The evidence presented is limited by the fact that the FDI–trade relationship is complicated by changes in the composition of trade as a result of FDI and because, over time and as MNEs mature, strategies change, as do trade relations. Exporter MNEs from a home country can become importers into it via their foreign affiliates; importers into a host country can also become exporters from it. For example, as discussed in Chapter 5, there is clear evidence that both Japanese and Korean electronics firms have now become importers of the low-end consumer products produced by their affiliates overseas and are using low-cost production platforms in Southeast Asia and Mexico to export to developed country markets.

Changes in intra-industry trade indices also can provide indirect evidence of intra-industry trade and growing trade complementarity. Organisational transformation within Japanese and Korean electronics firms has occurred in such a way that their resulting outward investments have generated growing intra-firm trade which can be proxied by growing intra-industry trade.

The evidence on the growth and decline of trade specialisation by Japan and Korea in the relatively labour-intensive segments of the electronics industry, as seen above, can be associated with the growth of FDI in these segments by the two countries as well as intensified integration of production within the East Asian region.

The growth of trade specialisation and the deepening of both vertical and horizontal integration of production may be reflected in the growth of intra-industry trade in some sectors of the electronics industry (Taniura, *et al.* 1988: 48–50). Sectoral intra-trade industry evidence for Japan, South Korea, the EC-12 and the United States is tabulated for all SITC electronics industry segments for 1971, 1976, 1981, 1981, 1991 and 1996 (Tables 6-3 – 6-11).

Office and computing machinery (OCM: SITC 752, Table 6-3) intra-industry trade indices for Korea, as expected, started from very low levels in all reporting countries and the coefficients can be seen in Indonesia, Malaysia and Thailand from 1986 and in China and the Philippines from 1991. In contrast, Japan already appeared to have some intra-industry trade with each of these countries at an earlier time than Korea, with the exception of Indonesia. By comparison, for the other two partner

countries, the EC-12 as a group and the United States have indices that are highest with China in the earlier years from 1971 and 1976, respectively. These declined, but rose rapidly to a peak in 1991 for the EC-12 and in 1996 for the United States to a level below that of Japan's index for the same year.

In a comparison of the trend for trade indices in the OCM products with the world, the indices for Japan indicate a considerable decline until 1986, after which they show some increase, while for Korea, the index started at a very low level of 8.037 and peaked in 1986. For the years 1976 and 1981, Japan's indices mirror closely those of the United States in value and trend but instead of declining further, the indices for the United States in 1986, 1991 and 1996 showed a considerable increase during comparable years. The EC-12 countries, however, showed a general decline, suggesting that EC-12 had lower intra-regional trade with the rest of the world.

For the electronics industry machinery segment (including apparatus: SITC 751 and 759, see Table 6-4), intra-industry trade indices of Japan and Korean trade with the world as well as with the five reporting economies clearly suggest that Korea lags behind Japan in timing as well as in volume and also that Indonesia's participation in intra-industry trade with Japan, Korea, the United States and the EC-12 countries as well as the rest of the world appears to come later than other similar FDI recipient countries selected in the region.

Japan's intra-industry trade indices with all of the five economies first appear in 1976, with the exception of Indonesia which appears in 1981, albeit at a low level. In the case of Korea, trade indices show a significant level of trade with China and the Philippines but not in the years prior to 1991, and with Indonesia prior to 1996. With Malaysia and Thailand, however, trade-intensity indices register relatively high values from 1976. The indices for the EC-12 and the United States show similar trends to those of Japan for the six benchmark years for trade with the five reporting economies. The steady decline in the indices for the EC-12 group and the relative decline in those for the United States throughout the six years stand in contrast to the increase in the indices for Japan and Korea, albeit the latter at a much lower level. This suggests that the latter two countries are making a headway in increasing their intra-industry trade in this high-value end of the electronic industry.

Table 6-3 Office and computing machinery (SITC 752): intra-industry trade coefficients for five East Asian economies with Japan, Korea, the EC-12, the United States and the World as partners, 1971–96

Reporter	Year	EC-12	Japan	Korea	USA	World
China	1971	77.43	9.09	n.a.	n.a.	39.82
	1976	15.77	0	n.a.	70.36	50.68
	1981	6.546	0.1119	n.a.	3.704	12.73
	1986	20.16	1.824	n.a.	2.612	25.52
	1991	97.41	19.66	96.08	30.19	75.29
	1996	17.05	84.28	77.51	60.19	67.95
Indonesia	1971	0	0	n.a.	0	0
	1976	0	0	n.a.	0	4.066
	1981	0	0	0	0	0.2081
	1986	0	0.1026	19.98	0	1.001
	1991	24.64	0.1317	0	0.0092	24.52
	1996	64.04	29.03	2.973	74.02	52.57
Malaysia	1971	0	0	n.a.	0.5524	8.812
	1976	72.76	0	0	36.2	65.85
	1981	0.6426	0.1354	0	2.431	3.91
	1986	19.15	1.793	26.19	15.76	17.23
	1991	65.01	91.01	97.96	92.49	84.22
	1996	22.59	70.3	83.86	58.39	59.99
Philippines	1971	0	0	n.a.	0.797	0.2967
	1976	0	0	0	0	0.0054
	1981	0	0	0	0	1.218
	1986	0.3018	0.3284	0	7.444	26.72
	1991	27.94	67.79	24.49	93.27	83.15
	1996	12.92	77.08	78.97	44.99	81.96
Thailand	1971	0	0	0	0	0.0312
	1976	1.597	1.921	0	19.61	40.13
	1981	0.3775	0	0	2.396	5.215
	1986	63.1	11.46	66.58	84.44	37.31
	1991	27.68	92.68	77.17	77.03	79.13
	1996	17.6	47.59	51.51	32.83	54.95
World	1971	99.15	82.45	8.037	53.15	97.62
	1976	94.66	54.04	84.44	53.32	97.49
	1981	83.69	52.04	72.35	47.64	98.88
	1986	84.06	26.23	87.85	87.25	98.82
	1991	80.74	36.14	77.3	96.03	97.25
	1996	76.91	64.98	60.81	90.3	97.1

Note: n.a. indicates that the data is not available; SITC denotes Standard International Trade Classification.

Source: International Economic Data Bank, Australian National University, 1998.

Compared with the two previous more ‘technology-intensive’ segments, electronic radio and telecommunications equipment (including apparatus: SITC 76, see Table 6-4) shows a much larger volume in Korea’s trade with the world for the six years observed, again as expected. The downward trend for Korea and Japan suggests that they are both relocating their industries abroad.

On the other hand, the trade indices for the EC-12 and the United States are mixed, with some fluctuation between relatively high indices from 1971 to 1981 and then a relative decline in the case of the United States by 1996 while for the EC-12, the

coefficients of intra-industry trade increase. These trends do not lend themselves to a clear interpretation but the inclusion of telecommunication equipment in this segment can explain to some extent the rise in the trade activity of the EC-12, the United States and Japan in 1991 and 1996.

Table 6-4 Electronic industry machinery (including apparatus, SITC 751 and 759): intra-industry trade coefficients for five East Asian economies with Japan, Korea, the EC-12, the United States and the World as partners, 1971-96

Reporter	Year	EC-12	Japan	Korea	USA	World
China	1971	7.951	0	n.a.	n.a.	72.04
	1976	3.735	0.5475	n.a.	1.767	72.46
	1981	50.45	4.413	n.a.	85.87	85.07
	1986	12.22	10.04	n.a.	21.96	68.98
	1991	32.67	94.35	27.11	99.24	75.87
	1996	98.79	66.53	46.87	37.22	57.59
Indonesia	1971	0	0	n.a.	0	0
	1976	0	0	0	0	0.0953
	1981	0	0.0544	0	0	0.1926
	1986	0	0	0	0	0.0067
	1991	0.008	0.5433	0	0	2.215
	1996	0.675	0.7019	2.442	0.5914	12.85
Malaysia	1971	0.353	0	n.a.	0	18.54
	1976	78.03	98.7	5.714	46.18	57.38
	1981	4.479	0.6723	26.08	5.327	6.083
	1986	98.49	18.78	60.74	40.48	74.51
	1991	85.29	60.72	63.53	45.47	83.24
	1996	80.21	68.22	71.72	63.77	73.83
Philippines	1971	0	0	n.a.	0	0.0173
	1976	0.014	1.178	0	0.2254	0.4439
	1981	0.262	0.0871	0	1.513	1.199
	1986	3.084	0.9807	0	16.43	7.651
	1991	4.583	4.518	1.782	8.87	5.698
	1996	7.743	7.867	3.94	14.36	10.09
Thailand	1971	0	0	0	0	0.6595
	1976	0	6.911	22.72	0.6827	4.894
	1981	34.06	5.495	16.83	98.14	87.79
	1986	99.73	20.08	67.5	81.48	75.66
	1991	47.14	54.75	67.28	97.31	77.66
	1996	59.56	83.92	69.89	27.25	65
	1971	97.5	57.05	3.816	79.31	71.91
World	1976	99.67	57.12	13.89	75.83	69.02
	1981	99.02	38.69	12.95	97.77	68.32
	1986	88.3	36.1	17.21	65.97	68.71
	1991	81.88	55.21	24.52	63.42	66.59
	1996	78.05	66.99	26.84	57.04	62.67

Source: International Economic Data Bank, Australian National University, 1998.

The trend for intra-industry trade coefficients for Japan and Korea in the domestic appliances industry segment (including houseware SITC 7725, see Table 6-6)

in their trade with the world as well as with the five reporting countries is similar to the previous segment. The coefficients for Korea are lower than those observed for Japan for all reporting countries with the exception of China for 1996. The observed coefficient for the five reporting countries start in 1991, with the exception of the Philippines which started in 1986. This suggests that Korean firms focus much of their household/domestic appliances production in China after an initial attempt to establish operations in the Philippines, which shows a relatively large coefficient in 1986.

Table 6-5 Electronic radio, telecommunications equipment (SITC 76): intra-industry trade coefficients for five East Asian economies with Japan, Korea, the EC-12, the United States and the World as partners, 1971–96

Reporter	Year	EC-12	Japan	Korea	USA	World
China	1971	25.48	0	n.a.	n.a.	49.78
	1976	6.56	0.0796	n.a.	14.88	33.12
	1981	22.04	0.4158	n.a.	22.82	17.89
	1986	27.43	2.445	n.a.	55.17	45.41
	1991	20.49	16.78	10.01	49.37	85.88
	1996	93.8	59.82	59	69.68	91.38
Indonesia	1971	0	0	0	0	0
	1976	1.508	0.268	0	2.79	3.941
	1981	10.41	0.3423	0	0.1974	26.12
	1986	2.919	0.0937	0	1.294	19.89
	1991	16.14	14.15	3.221	66.42	32.71
	1996	56.69	64.6	37	69.86	96.96
Malaysia	1971	0.248	0.0353	0	0.1569	4.111
	1976	32.72	20.52	9.591	30.08	34.82
	1981	85.97	34.88	21.38	97.61	93.92
	1986	58.9	56.12	71.24	84.93	94.3
	1991	60.49	54.77	64.91	73.74	90.85
	1996	78.43	65.2	21.76	81.12	93.1
Philippines	1971	0.636	0	n.a.	0.0328	0.4914
	1976	15.09	1.309	7.134	6.643	8.11
	1981	9.193	0.7762	85.16	72.15	46.9
	1986	81.81	49.48	42.75	99.54	91.8
	1991	88.98	61.93	36.87	96.41	91.7
	1996	84.08	69.62	42.28	98.46	97.14
Thailand	1971	0	0	0	0	0.7127
	1976	36.58	0.3384	24.49	64.09	57.88
	1981	33.28	1.237	51.37	29.82	35.17
	1986	31.19	1.685	12.85	33.62	32.18
	1991	77.35	31.23	28.69	90.22	84.36
	1996	90	49.35	44.73	87.29	83.61
	1971	77.51	14.12	86.61	91.24	92.7
World	1976	82.55	13.23	80.16	94.49	93.12
	1981	97.46	10.74	71.86	98.56	90.72
	1986	97.95	11	67.9	73.75	91.49
	1991	95.47	22.94	56.89	97.11	90.13
	1996	99.9	42.06	56.62	92.9	89.51

Source: International Economic Data Bank, Australian National University, 1998.

The intra-trade coefficients in the domestic appliances sector of Japan and Korea with the world reach a low point in 1981 for Japan and in 1986 for Korea. After this, both countries' coefficients rose, suggesting once again that Korea follows to some

extent the trend set by Japan. A comparison of the EC-12 and the United States coefficients with the five reporting countries suggests that the two continue to enjoy a high volume but there is a mixed trend in their intra-industry trade coefficients with the six reporting countries. In contrast, coefficients observed for Japan and Korea with all reporters suggest an increasing intra-industry trade.

Table 6-6 Domestic appliances (including houseware, SITC 7725): intra-industry trade coefficients for five East Asian economies with Japan, Korea, the EC-12, the United States and the World as partners, 1971-96

Reporter	Year	EC-12	Japan	Korea	USA	World
China	1971	66.66	0	n.a.	n.a.	0.8083
	1976	65	0	n.a.	11.11	1.283
	1981	29.78	0	n.a.	62.5	40.73
	1986	76.9	17.3	n.a.	0.9439	35.06
	1991	19.06	48.61	10.25	4.872	22.41
	1996	12.5	38.64	93.74	0.6688	10.72
Indonesia	1971	0	0	n.a.	0	0
	1976	0	0.0913	0	0	0.1529
	1981	0	0	0	0	0
	1986	0.124	0	0	0	0.3778
	1991	13.36	87.36	60.73	40.32	98.03
	1996	21.79	33.11	17.69	64.58	89.67
Malaysia	1971	0	0	n.a.	0	37.94
	1976	1.409	0.2836	0	0	8.948
	1981	0.978	0.0754	0	1.202	16.82
	1986	26.48	5.688	0	4.491	89.22
	1991	60.81	63.19	3.329	10.37	59.45
	1996	41.99	65.02	7.946	8.288	43.05
Philippines	1971	0	0	n.a.	0	22.44
	1976	0	0	n.a.	0.3527	1.53
	1981	17.94	0.464	n.a.	72.78	22.3
	1986	22.85	1.162	66.66	93.24	58.53
	1991	49.25	74.67	12.94	38.21	87.44
	1996	51.68	37.02	7.323	72.41	68.75
Thailand	1971	0	0	n.a.	0	0
	1976	0.51	0	0	0	7.297
	1981	2.078	0.049	0	10.76	35.07
	1986	25.57	8.153	0	54.05	52.11
	1991	30.7	72.71	57.38	2.77	29.83
	1996	93.11	42.08	15.81	9.063	36.92
	1971	91.31	29.74	40.12	94.03	89.4
World	1976	98.91	19.28	60.56	94.99	87.5
	1981	96.09	9.484	25.13	63.28	87.25
	1986	92.23	23.44	8.127	26.92	86.03
	1991	91.74	74.96	29.48	52.25	92.96
	1996	96.15	70.56	46.64	44.54	94.16

Source: International Economic Data Bank, Australian National University, 1998.

Trends are mixed in electronic components and parts segment (SITC 77 excl. 7725, see Table 6-7) because there is a wide variation in the technology and labour intensity of most products in this segment, as discussed above. Nevertheless, some interesting general observations can be made for all countries' coefficients in their trade

with the world. The highest coefficients are observed in the most recent years, confirming the suggestion in the theoretical discussions that there has been an increase in intra-industry trade in intermediary products.

Korea's coefficients with the world as reporter suggest that the country has been a large components supplier since the 1970s with a relatively large coefficient observed, even in 1976. This has remained the case, with high levels of coefficients for the five consecutive observed years until 1996. Surprisingly, the coefficients for Japan suggest relatively modest volumes of intra-industry trade compared with Korea for the six observed years, suggesting that trade in intermediate electronic products by Japanese MNEs was not necessarily conducted with the principals in Japan but with subsidiaries elsewhere in the region.

Table 6-7 Electronic components (SITC 77 excl. 7725): intra-industry trade coefficients for five East Asian economies with Japan, Korea, the EC-12, the United States and the World as partners, 1971–96

Reporter	Year	EC-12	Japan	Korea	USA	World
China	1971	21.76	42.87	n.a.	n.a.	46.78
	1976	6.466	5.573	n.a.	7.816	97.87
	1981	32.81	1.106	n.a.	96.35	89.52
	1986	7.118	2.691	n.a.	61.96	43.62
	1991	23.76	36.14	55.67	54.69	90.22
	1996	93.03	82.73	70.92	58.73	85.29
Indonesia	1971	0	0	n.a.	0	0
	1976	0.541	0.008	0	24.47	13.75
	1981	0.01	2.239	0	0.0343	6.138
	1986	0.118	0.0987	0	3.832	4.808
	1991	29.9	39.19	29.66	70.27	71.5
	1996	42.5	98.12	7.849	73.88	92.41
Malaysia	1971	0.112	0	0	5.154	24.74
	1976	11.43	18.44	2.09	65.26	47.7
	1981	6.105	0.7463	1.698	39.39	13.67
	1986	35.34	5.85	3.545	82.55	40.87
	1991	89.94	42.54	28.49	78.35	69.15
	1996	84.61	53.12	27.62	87.28	86.55
Philippines	1971	0	0	n.a.	0	2.855
	1976	0	3.629	28.57	0.1387	15.5
	1981	5.916	4.295	0	16.83	13.1
	1986	8.658	0.1333	0	64.21	34.82
	1991	36.54	83.66	3.85	43.46	93.31
	1996	33.23	75.33	17.53	32.19	99.24
Thailand	1971	0	0	0	0	5.964
	1976	0.704	0.0649	0.378	0.6413	5.903
	1981	19.8	2.863	60.62	79.07	91.73
	1986	91.29	9.931	74.87	97.37	66.48
	1991	61.79	61.21	23.88	71.61	82.02
	1996	76.25	73.13	62.03	66.97	98.47
World	1971	76.54	21.73	27.71	81.8	95.2
	1976	76.3	25.32	80.72	63.22	93.99
	1981	83.46	18.02	93.05	76.24	93.52
	1986	93.61	27.07	90.75	85.92	92.7
	1991	95.09	45.23	96.62	97.85	91.69
	1996	89.97	58.19	97.09	81.73	89.92

Source: International Economic Data Bank, Australian National University, 1998.

Compared with Japan, however, the coefficients of intra-industry trade for the EC-12 and for the United States show similarities in trade with the five reporting countries but much lower volumes for Japan in trade with the world during the six observed years. This suggests that intra-industry trade in parts and components of electronics is higher in value with the EC-12 and the United States than with Japan.

Trends in intra-industry trade coefficients for the main electronics segments suggest clear variations in trends for Japan and Korea on the one hand, and with the United States and the 12 countries of the European Community on the other as partners to the world as well as the five East Asian economies (Indonesia, Malaysia, Philippines, Thailand and China) between 1971 and 1996. The following salient features emerge. Firstly, the data show that there are similarities in the explanations for intra-industry trends of Japan and Korea, particularly in those segments which are use relatively 'labour-intensive technology'. However, in the 1990s, Korea's intra-industry trade trends appear to follow Japan's even in technology-intensive segments such as the OCM segment.

Secondly, Korea's coefficients in all segments tend to reach a higher values in the observed years later than those for Japan, suggesting that Japanese and Korean firms exploit the factor endowments of different locations in the five East Asian countries in a similar fashion but that Korea lags behind Japan, suggesting that the vintage effect is in operation.

Thirdly, there is evidence of 'slicing the value chain' or vertical FDI since both Japan and Korea appear to have increasingly greater intra-trade particularly in lower-end segments with countries endowed with comparative advantage in low-cost labour and other inputs. China, Indonesia, and the Philippines can be seen to engage in increasingly greater intra-industry trade in lower value-added activities while Malaysia and Thailand increasingly undertake higher value-added OCM and electronics industrial activities for Japanese firms. However, Indonesia lags behind the other four reporting countries in intra-industry trade.

Fourthly, the data show slightly different ranking of intra-industry trade shares in different segments between Japan with the six selected countries, and Korea with the same set of countries (Table 6-8). For example, in 1996, the largest coefficient in the

intra-industry trade in the consumer electronics segments with Japan is with the Philippines while in the case of Korea it is with China.

Table 6-8 Ranking in descending order of intra-industry trade shares in major electronics segments between Japan and Korea with five selected East Asian countries, 1996

Electronics segments	Japan's trade with	Korea's trade with
Office and computing machinery (more capital intensive)	China, Philippines, Malaysia, Thailand, Indonesia	Malaysia, Philippines, China, Thailand, Indonesia
Electronics industry machinery (more capital intensive)	China, Malaysia, Thailand, Philippines, Indonesia	Malaysia, China, Thailand, Philippines, Indonesia
Consumer electronics (more labour intensive)	Philippines, Malaysia, Indonesia, China, Thailand	China, Thailand, Philippines, Indonesia, Malaysia
Domestic/household appliances (more labour intensive)	Malaysia, Thailand, China, Philippines, Indonesia	China, Thailand, Indonesia, Malaysia, Philippines
Electronic components and parts (mixed)	Indonesia, China, Philippines, Thailand, Malaysia	China, Thailand, Indonesia, Malaysia, Philippines

Source: Summaries of Tables 6-3 to 6-7.

The ranking of intra-industry trade shares above suggests that while there are differences in the specific ranking of intra-trade shares between Japan in each of the five main electronics segments on the one hand, and between Korea with the same five countries on the other, closer observation of the trade share coefficients of the largest three countries trade in each of the segments suggests that the overall trends of intra-industry trade shares between each of the top three of five selected countries with Japan and Korea are similar.

Summary

Over the last three decades, FDI has been the principal mechanism linking traditionally separated markets. A gradual process of emergence and integration of markets, production and other functions has taken place in electronics firms from both Japan and Korea. They have undertaken vertically integrated, horizontally diversified FDI and strategic FDI to maintain their international competitiveness.

Empirical trade data and qualitative evidence suggest that, as a differentiator of investment patterns and motivations, corporate nationality of FDI is not significant.

This finding is not surprising given the similar cost structures in home-country locational factors owing to similar factor endowments and government policies. More important are vintage effects. They influence not only the relative size but also the technological and organisational capabilities of the two national groups of MNEs. As Korean MNEs are gradually catching up in higher value-added products, and as both groups of firms have been subject to similar international market conditions, their pattern of foreign investments and their network configuration have gradually begun to converge, particularly since the emergence of regional trading blocs in the 1990s.

With such regionally-based networks, a related pattern of intra-firm trade (which is proxied by intra-trade) has appeared, particularly in the East Asian region. As electronics firms from Japan and Korea have had to undertake vertical, horizontal and strategic FDI to survive in the industry, their regional networks of production, sales, R&D and regional headquarter affiliates as well as corporate headquarter activities are increasing, based on integrated international production. The resulting network configurations of Japanese and Korean large MNEs are broadly similar, and their apparent intra-firm trade also shows a similar pattern across different segments of the electronics industry, showing no systematic differences once the vintage effect has been taken into consideration.

The principal findings in this chapter can be summarised as follows. Firstly, since the early 1990s Japanese and Korean electronics firms have become increasingly competitive not only in price and quality but also in terms of their network configuration, across regional trading blocs. Although smaller in size, as indicated by the scale of their overseas operations, Korean firms have found similar solutions to the challenges posed to them by international market, and have formulated strategies to see them through different stages of industrial upgrading since undertaking their initial horizontal FDI in the 1980s. Their development occurred at a later time than that of most Japanese firms which set up their horizontal investments in the early 1960s. However, by the mid-1990s, Korean MNEs have adapted to the pressures posed by regionalisation and emerging trading blocs by establishing their own regional networks, particularly in East Asia, although their organisational structures are weaker, and they are burdened by over-diversified *chaebol* structures and greater international dependence on critical parts, technology and finance. They have also reacted to the need to upgrade

their technological capabilities by undertaking vertical FDI in a way similar to Japanese firms in developed country markets by means of merging and acquiring local firms with special technological capabilities. Both Japanese and Korean firms invested in developing countries to exploit low-cost labour but increasingly also to exploit the economies of local dispersion and integrated production with the aim of serving regional and global markets.

Second, the intra-industry trade evidence presented reveals a significant correspondence between the growth and decline of intra-trade indices in the more labour-intensive segment of electronics and the stages of overseas investment for both Japan and Korea. In capital-intensive segments, however, intra-industry trade continues to increase, suggesting that in these cases FDI is not a substitute but rather a complement to trade. The intra-industry trade data suggests indirectly that there is growth of intra-firm trade between Japan and five largest electronics FDI-recipient countries in the region. Similar trends are found in the case of Korea. In the relatively labour-intensive segments of the electronics intra-industry trade were highest for those countries that can be associated with high growth of FDI in these segments by the two countries. These observations suggest that an intensification of integration of production is occurring within the selected East Asian countries with Japan as well as with Korea. The quantitative evidence thus supports some of the findings by other studies reviewed which suggest that over the past three decades, the focus of Japanese FDI shifted twice: first from Northeast Asia (Korea, Taiwan and Hong Kong) to the ASEAN 'second-tier' NIEs (Singapore, Malaysia and Thailand); and then, beginning around 1992, from these countries to China, Indonesia, the Philippines and Vietnam. The pattern of Korean electronics FDI since the early 1990s appears to follow a similar trend but with China playing a greater role in the more labour-intensive segments of electronics (Table 6-8).

Firms, regardless of their origin, exploit changes in factor costs in their host and home markets in such a way as to increase their exports of capital goods and other intermediary products such as critical components and to exploit their segment or their subsectoral comparative advantages. Hence, once the vintage factor has been taken into consideration, there are no systematic differences in the converging pattern of production configuration nor in the patterns of intra-firm trade as proxied by the intra-industry trade of Japanese and Korean exports in electronics. Thus, the trade-FDI nexus

has become the handmaiden of integration of international production. The next chapter, looks at the parent profiles, their entry timing and investment motivation of MNEs from the two home countries that invest in Indonesia.

7 Japanese and Korean investment strategies in Indonesia

The vintage factor, as we have seen, plays an important role in shaping the international production networks that Japanese and Korean firms have established. While international production networks appear to be in the process of converging, it has taken time to develop the capacity to build and manage them. Such learning takes place within the foreign affiliates. While firms are exposed to the same international competitive pressures and motivation to invest in a particular host country, factors which determine the timing of entry and motivated firms to make such investments may differ for firms of different origin.

Relatively little attention has been given to the comparative study of investment strategy of electronic MNE affiliates in Indonesia. This chapter seeks to address this shortcoming and, in particular, is concerned with an analysis of the parent profiles, entry timing and motivation of investment by Japanese and Korean electronics firms in Indonesia. It draws from fieldwork interviews, secondary sources, and survey data from Japanese and Korean firms engaged in manufacturing activities in the Indonesian electronics industry.

In a rapidly changing electronics industry based on new technologies that are constantly emerging, firms entering a host country are faced with developing a multidimensional entry strategy — all aspects are equally critical in determining the entrants' eventual success. Typically, these dimensions include when to enter, why and how to enter (entry mode and scale of entry), and how to compete once the market has been entered.

The chapter examines the first two dimensions, the question of when to enter, and the determinants of Japanese and Korean investment in Indonesian electronics industry. It explores whether there are any systematic variations or common trends in the investment behaviour of firms from these origins. It tests the proposition that Korean firms do not have any choice but to proceed in a pattern of investment similar to that established by Japanese firms in entering Indonesia. In addition, once the role of Indonesian domestic and other home country effects on the character of their investment have been taken into account by focusing on a particular investment development cycle (or FDI wave), both Japanese and Korean patterns in investing in their affiliates in Indonesia are hypothesised to be influenced by their parent firms' profiles or characteristics.

The main findings are:

(1) Examination of the profiles of Japanese and Korean parent MNE suggests that, during a particular investment development cycle, the profile (both resources and

organisational attributes) of parent firms affects the timing of entry of investments in Indonesia.

(2) Our survey of FDI motivations suggests that there is no significant difference in MNEs' major motivation to invest in their affiliates in Indonesia. The survey further suggests that both Japanese and Korean electronics firms established production facilities in Indonesia with a strong focus on enhancing their international competitiveness by exploiting their production capabilities and management know-how. In doing this, their primary aim has been to focus on export market elsewhere by using Indonesia's GSP facility rather than to focus on domestic market size and growth. There are, however, some differences between the sampled Japanese and Korean firms in their firm-specific advantages in investing in Indonesia.

The chapter is divided into three parts. The first part reviews the literature on investor parent firm profile, competitive investment behaviour and market entry timing. The second part examines the profiles of Japanese and Korean parent firms with manufacturing plants in Indonesia. The final section outlines the results of a survey on the factors which motivated firms to invest in Indonesia. The chapter concludes with a summary.

Parent firm profiles, FDI mode and entry timing

For firms considering entry into an emerging market, at least three main dimensions must be considered: when to enter, why enter and how to enter or service the market (export, foreign investment or other licensing mode of entry and scale of entry), and how to compete once the market has been entered. In previous chapters, both MNE home country factors and Indonesian domestic influences have seem to exert considerable influence on the timing of entry of firms into new markets. A much less researched question is the role of firm and industry characteristics on the timing of entry of existing firms into a new foreign market or host country. Some explanations of entry timing issues relate to the question of why firms enter a new foreign market.

Explanations in the literature, as outlined in Chapter 2, as to why firms enter a new market are based on an analysis of firm-specific advantages of MNEs from 'mature' industrialised economies. They argue that internationalisation of firms is an incremental process based on a firm's exerting market power overseas after harnessing its competitive advantage in terms of its technological and marketing capabilities in the home market. As firms strive to maximise profits, they choose the most economically attractive market first, and then — as these market become saturated — enter less attractive ones. Both rival incrementalist explanations can be consistent with reality depending on different phases of entry. During initial entry, uncertainty consideration dominate economic factors and during subsequent entry periods, the opposite tends to be the case. A longitudinal study of 568 Korean FDI decisions between 1973 and 1990 suggests that uncertainty factors (proxied by physical distance) play a critical role in

market selection during the early waves of investment, but economic factors become more important in subsequent waves. In addition, majority ownership tends to become more prominent over time but firms appear to 'leapfrog when the market potential is good' (Erramilli *et al.* 1999: 21). Furthermore, in this and other studies (Davidson 1980 and 1983), it is suggested that in investment decisions relating to international production (internationalisation theory of foreign-market selection), it is critical to make a distinction between initial and subsequent entry (Erramilli *et al.* 1999: 42).

OLI approaches which explain how firms internationalise do not offer any explanation for the factors that influence the timing of entry of firms into new markets or new segments of industries, particularly in host developing countries.

The question of how firm characteristics influence the timing of entry of firms into a specific host market has not received much attention. This is surprising since decisions about entry timing are obviously of great importance to the development of a particular industry. However, there is some literature investigating the factors that influence the timing of entry of firms into new industries based on new technology.

Electronics MNEs, particularly multi-product, large and diversified firms, compete on the basis of new technology. Technology leaders (for example Sony or Matsushita, Intel or IBM) possess the competence to develop new products or processes that give them important advantages in the marketplace. Followers (for example Sanyo or Sharp or Intel), like leaders, have access to advanced markets and leading edge technology. Even latecomers (such as Samsung and Acer) initially have substantial labour cost advantages and access to technology through OEM contracts. They later devise strategies to overcome market barriers to entry, build robust channels into overseas and especially advanced markets and then forge the user-producer linkages to obtain new technological capabilities (Hobday 1998). Thus it can be argued that, given the technology-driven characteristics of the electronics industry, the dynamics of competition of the entry timing of firms into new host countries or geographical locations (such as Indonesia) or to access highly competitive advanced markets (such as the United States or Europe) via a third-country production platform is somewhat similar to the dynamics of the entry timing of firms into new market based on new technology (Schoenecker and Cooper 1998).

In building affiliates overseas, individual firms have been hypothesised to follow an investment development cycle where their overseas expansion depends on the development stage in the home country (Dunning 1986 and Tolentino 1993). In extending this line of argument for the case of entry into new or emerging geographical markets, it is hypothesised that timing of entry and dimensions of individual firms' strategies are influenced by both industry and parent firm characteristics as determinants of entry timing (Shchoenecker and Cooper 1998: 1127 and Geroski 1993). The dimensions of what factors lead to enter are hypothesised to follow Dunning's OLI firm-specific advantages.

As insufficient data prevents direct quantitative testing, the first hypothesis is analysed by examining qualitative evidence of the pattern of entry timing of Japanese and Korean firms. As they both were subject to similar Indonesia's domestic influences, it is found that where their entry pattern significantly differed it was due to differences in parent firm characteristics (resources and organisational attributes) and their life cycles rather than due to differences in their country of origin. After regulatory effects (and excluding other idiosyncratic effects such as the personal preferences of key executives) have been taken into consideration by focusing on a particular phase of investment, the sequential entry of firms from different origin can be examined. While the great majority of the research into foreign firms' entry into an emerging market has focused on the relationship between the determinants of investment, the first half of this chapter will address a much less researched question: What non-regulatory factors determine when existing foreign firms enter a new host country? In doing so we can determine whether, after domestic regulatory influences have been taken into account, the timing of entry into the Indonesian market is more systematically determined by resources and organisational profiles of parent firms than by their country of origin effects.

Firm resources and entry timing

The determinants of entry timing in foreign markets in industries such as electronics which globalised over the course of many years have been argued to follow a process of 'sequential entry' rather than as a one-time endeavour, or a random set of events (Johanson and Vahlne 1977 and Kogut 1983).

Such an approach suggests that the pattern of entry may not follow a blueprint but the strategy may have come about as a result of resources and organisational investment and unexpected opportunities and threats over a relatively long period of time (Bowman and Hurry 1993). Firms are assumed to maximise their resources and the realised value of organisational learning such that FDI can be regarded as an option or platform for future investment (Kogut and Chang 1996). Using event history analysis to study sequential FDI in the United States by European and Japanese firms in the chemical and electronics industries from 1975 and 1992, Chang (1998) found that there was a tendency for both European and Japanese firms to exhibit a pattern of sequential foreign investment based on the extent of resources commanded by the line of business. It is found that MNEs tend to introduce lines of business with greater competitive advantages over local (and other foreign firms) thereby minimising their risk of failure. Over time, as the MNEs' presence is maintained in the host country, they add lines of business that are less strong and of lesser competitive advantage.

There is a growing literature that analyses how firm resources influence timing entry into new markets (Chatterjee and Wernerfelt 1991; Montgomery and Hariharan 1991 and Mahoney and Pandian 1992). While this literature explores whether there are

systemic relationships between firm resources and entry timing into new industries based on new technology, it can be argued that it can also specifically address the issue whether there are systematic relationships between firm resources and entry into foreign markets.

Factors that influence the timing of entry of firms into new industries (such as segments of computing and electronics) are influenced by technological, marketing and financial resources (Schoenecker and Cooper 1998). These factors can be argued to be relevant in explaining entry into new foreign markets, particularly in the electronics industry, since firms compete on the basis of improvements in firm technological capabilities with continual introduction of new incremental changes or modification of new models and of radical new products. In this way, following electronics firms from Japan, Korean firms constantly learned to innovate in electronics. OEM acted as training school for such latecomers, enabling them to overcome entry barriers and to assimilate manufacturing and design technology (Hobday 1995). Latecomer strategy (contrasted to that of leaders and followers) began with incremental improvements to manufacturing processes which led on to minor product innovations.

When new foreign markets involve the introduction of new technology, greater technological resources (a greater commitment to R&D) to lead to earlier entry (Mahoney and Pandian 1992); and pioneers often incur greater R&D costs than do their rivals (Mansfield 1986). However, at least initially, many Japanese and Korean firms tended to enter developing host countries in industries and markets with the following features: 'attractive long-range potential for creating new value and growth...; standardised, exportable products; highly price-sensitive; are knowledge-intensive and have high value-added; have potential economies of scale; weak or low threat of competitive reaction to entry'. Such a pattern could be replicated by Korean or other firms from East Asia (Smothers 1990: 526).

Greater marketing resources such as presence of marketing operations, direct sales capability or distribution networks in the host country lead to earlier entry. Empirical study of the diagnostic imaging industry suggests that incumbent firms that possessed a direct sales force entered earlier into emerging industrial sub-fields (Mitchell 1989). In the case of foreign market entry, a distribution network run by a licensed importer of well-known products of a firm provides that firm with an advantage for earlier entry to the host country.

Greater financial resources (larger current assets to current liability ratio and/or smaller debt:equity ratio) can lead to earlier entry into a new segment (Mansfield 1986). Entry into a foreign market involves high costs to overcome the liabilities of foreignness, so only financially secure firms can meet the cost of early entry.

Firms with greater technological, marketing and financial resources can be expected to be earlier entrants in industry segments with significant opportunities to

build first-mover advantages (FMAs) in a specific market.¹ Those which are very large and diverse in their product lines may find fewer incentives to establish greenfield investments unless a particular market is perceived to be a 'threatened market'. This is a market that absorbs a significant percentage of a firm's total export sales. It can be hypothesised that firms that have a greater export share to a potentially large market will be earlier entrants. Such a market may have the necessary appeal for a firm that otherwise would not aggressively commit its resources (Lieberman and Montgomery 1998).

Barriers to entry in the labour-intensive segments of the electronics industry, while similar to barriers of entry in general, are well above the average for other industries. Also 'what separates this (the electronics) industry from other industries is the intensity, the spread and variety of such barriers, their complex dynamics and their increasingly systemic nature' (Ernst and Cooper 1992: 1).

In a number of segments of consumer electronics, components and PC markets, Korean and Taiwanese firms have successfully entered as latecomer firms and sustained their market shares. Some would argue that in such industry segments which lack first-mover advantage, no systematic relationship between entry timing and parent profiles can be postulated. In such segments, while technological change continuously results in new products and markets and thus new entry possibilities, oligopolistic control has not been weakened, particularly at critical high value-added stages of the 'production chain'. These stages are of crucial importance to competitive success in the electronics industry and given the systemic nature of the global electronics industry, it can be argued that first-mover advantage can be important even in labour-intensive segments of this industry.

First-mover advantage is defined as the potential for pioneering firms to acquire superior resources, capabilities and, in particular, to pre-empt resources, including superior positions in geographic space (for greater market share or prime physical locations for instance), technological space (for example patents), or customer perceptual space (Lieberman and Montgomery 1998: 1116). Some studies examine how the characteristics of an emerging electronics market, specifically the VCR industry, are likely to affect first-mover advantages (Rosenbloom and Cusumano 1987; Cusumano, Mylonadis, and Rosenbloom 1992). Hence, the above discussion of first-mover advantage provides a theoretical basis to distinguish firms that arrive early in a particular host-market and those that arrive later so that some leading firms which might enter at a later time in a particular host market may be distinguished from late entrant firms.

¹ The concept of first-mover advantage (Lieberman and Montgomery 1988) has been widely applied in economics literature with respect to 'network externalities' and the setting up of 'product standards' (Katz and Shapiro 1994), with respect to 'the endogeneity of entry timing' (Aron and Lazear 1990; Gabszewicz, Pepall and Thisse 1992; Dutta, Lach and Rustichini 1995).

Firm organisational attributes and entry timing

The above three broad categories of firm resources — technological, marketing and financial — form the building blocks of firm capabilities (Teece, Pisano, and Shuen 1997). They differ from organisational attributes such as size, presence in a threatened market or diversity, which are attributes found in other firms and are not considered as providing inherent advantages to firms. However, these attributes tend to influence ‘the speed with which decisions are made and implemented or the incentive to incur the risk of early entry’ (Schoenecker and Cooper 1998: 1131).

In deciding on whether to enter new technologies or to enter a new market, organisational size (particularly in terms of employees) of firms on the timing of entry depends on the existence of the ‘structural inertia’ (size of bureaucracy and greater potential for infighting) affect the speed of decision making.

To sum up, factors that influence the timing of entry of existing firms into new market can be explained by parent resources (technological, marketing and financial) and organisational profiles (size, product diversity, commitment to ‘threatened market’) and we can expect profiles of early and late-entering firms to significantly differ, once the role of Indonesian and MNE home-country influences on the character of investment has been taken into account.

This chapter focuses on the investment development cycle of Japanese and Korean investments in Indonesia (see Tables 7-3 and 7-11) to account for the way in which influences external to the firm affect the character of investment. Since it is difficult to quantify Indonesian and MNE home-country influences on the character of investment, it is assumed that during each FDI wave, Indonesian domestic and MNE home-country influences on the character of investment in Indonesia are uniform across parent firms from the investing country of origin.

An examination of parent profiles of MNEs from Japan and Korea that operate manufacturing activities in Indonesia reveals why some entered Indonesia earlier than others. This is discussed in the next section. Differences in aspects of investment strategies other than entry timing and determinants of entry of some major firms, namely modes of ownership, choice of product mix, and the relative significance of Indonesian plants in their regional network in Southeast Asia, will be further discussed in the next chapter.

Profiles of Japanese parent MNEs in Indonesia

An initial examination of the profiles of the parent firms of Japanese affiliates with manufacturing plants in Indonesian electronics suggests a wide variation of profiles (Table 7-1). The early entrants formed joint ventures in the 1970s rather than licensing their product to a local company and these included both small and medium-sized

companies in terms of their paid-up capital and employment inside and outside Japan. Upon closer examination, however, the timing and mode of entry suggest some systematic patterns.

In the post-colonial era, the entry of Japanese electronics firms to Indonesia to engage in manufacturing activities has taken place in several phases.

First FDI wave

As part of the first FDI wave, in 1970 Matsushita Electric Industries (MEI) Co. Ltd. and Sanyo Electric Co. Ltd. (Sanyo) pioneered the establishment of local assembly plants for consumer electronics and home appliances to supply the domestic market, establishing joint ventures with local firms during the import-substitution policy regime of 1970–85. Their affiliates were able to grow quite rapidly behind high rates of effective protection (Thee and Pangestu 1993; Firdaus Ali 1993). In terms of their home country industry, both these early entrant firms in Indonesia were regarded as ‘the most internationalised typical manufacturing MNE in Japan’ (Abo 1994b: 179).

Since the mid-1960s both firms have engaged in an early phase of their production internationalisation, but by Japanese standards they were medium sized in terms of their technological, marketing, and financial resources, size (employee numbers) and product diversity (Abo 1994b and 1994c; Craig 1997) compared with the then large and diversified ‘reluctant’ multinationals such as Toshiba, Mitsubishi and Hitachi. The paid-up capital values of both Matsushita and Sanyo are significantly lower than the latter group of very large firms which were established much earlier this century (see Table 7-1).

There may be some idiosyncratic factors that influenced the involvement of Sanyo in Indonesia due to a close relationship in its early days with the larger Osaka-based firm, Matsushita, the core company of the Matsushita group. Also, both Sanyo and MEI — each with significant manufacturing vertical ties — have close ties to the Sumitomo Banking group. This group’s trading company (*sogo sosha*) has significant local market knowledge since it has a long historical association with a trading presence in Indonesia since 1905 (Yoshihara 1982).

Table 7-1 Parent firms of Japanese affiliates in Indonesia, 1996

Name	HQ	Establishment	Paid-up	Total employ-	Total employ-	Yearly Sales in	Yearly Sales	After-tax	After-tax	Over-seas	No. of over-	Entry to Indo-
of	Location	year	Capital	ment in Japan	ment over-seas	Japan	over-seas	profits in Japan	profits over-seas	Production ratio ²	seas affiliates	nesia: year & mode of entry - 1st, 2nd in 19xx, etc. ³
Corporations			(billion yen)	('000)	('000)	(billion yen)	(billion yen)	(billion yen)	(billion yen)	(%)		
Sanyo Electric Co, Ltd.	Osaka	1950	168.4	29.6	56.1	1180	1616	20.5	16.8	*32	33	69 (j) 90 (w) 95 (w)
Matshushita Electric Ind. Co., Ltd.	Osaka	1935	196.4	47.6	242.2	4995	7450	109.5	132.9	35	237	70 (j) 91 (j) 96 (w)
Toshiba Corporation	Tokyo	1904	272.8	73.7	168	3185	4722	42.4	39.5	25	30	70 (l), 94 (w) 95 (w)
Sharp Corporation	Osaka	1935	172.7	26.6	41.0	1201	1555	36.1	39.1	45	11	70 (l), 94 (w) 95 (w)
Yamaha Corp.	Shizuoka	1897	16.5	12.2	19.3	383.7	513	2.8	5.74	29	30	74 (j)
Toa Corp.	Kobe	1949	2.4	0.88	1.3	31.33	34	821	841	27	12	75 (j)
Sony Corporation	Tokyo	1946	298.0	19.8	119.0	1979	3915	20.7	120.1	64	87	78 (l), 91 (w) 95 (w)
Fuji Electric Co. Ltd.(2)	Tokyo	1923	46.8	14.3	23.5	638.7	909	13.2	16.8	12	36	83 (j)
Foster Electric Co., Ltd.	Tokyo	1948	3.8	1.2	3.5	52.32	67	0.3	0.4	53	20	90 (w)
Shinmei Electric Co. Ltd.S	Kawasaki	1955	7.6	0.72	n.a	40.28	37	-6.5	-7.193	90	15	90 (w)
Kyocera Corp.	Kyoto	1959	102.0	14.5	25.9	317.1	454	23.3	27.1	38	16	91 (w)
Mitsubishi Electric Corp.(2)	Tokyo	1921	174.7	49.6	102.7	2611	3343	29.5	36.1	18	25	91 (j)
Hitachi Ltd.	Tokyo	1920	270.9	82.2	324.9	3925	7765	82.3	127.6	23	19	91 (j) 95 (w)
Yokogawa-Hewlett-Packard	Tokyo	1963	7.4	4	n.a.	165.9	n.a.	5.8	n.a.	6	n.a.	92 (j)
Omron Corp.	Kyoto	1948	38.7	7.4	18.7	388.8	483	5.8	6.172	15	17	92 (w)
Taiyo Yuden Co., Ltd.	Tokyo	1950	16.9	2.5	7.9	81.62	94	0.5	1.1	30	22	92 (w)
NEC Corp.	Kawasaki	1899	188.3	39.9	128.3	3049	3774	38.7	15.3	18	22	92 (j) 95 (w-parts) 95 (j-telco)
Aiwa Corp.	Tokyo	1951	27.9~	n.a.	n.a.	1786	11162	24.4	152.5	84	15	95 (w)
Asahi Denka	Tokyo	1917	165.3	n.a.	n.a.	1014	41	13.1	0.4	4	2	95 (w-parts) 96 (w)
JVC	Tokyo	1927	1145	n.a.	n.a.	5077	2640	194.9	100.8	52	15	

Note: 1 The table above only lists major investments of over \$US10 million at the initial greenfield project.

Source: Dodwell Marketing Consultants (1996, 'The structure of the Japanese Electronics Industry', Tokyo; 2 Toyo Keizai, Kaishabetsu Kaigai Shitshutsu Kigyo, 1996/97 (in Japanese); 3 Database of the Indonesian Investment Coordinating Board (various years); the bracketed symbols 'j' denotes joint-venture firm; 'w' denotes wholly-owned firms and 'parts' to denote investment solely in a critical part manufacturing plant.

As a result of difficulties in competing with the very large electronics firms in the home market, both firms are known to be 'flexible in setting up their overseas manufacturing subsidiaries and branches in terms of timing, place, product and scale' (Abo 1993: 1). Both established production bases in East Asia, unlike Sony, which was more active in developed countries, particularly the United States. Matsushita and Sanyo had overseas production ratios (in value terms) of 12 per cent and 20 per cent, respectively in 1991, and these increased to 29 per cent and 37 per cent in 1994.

Table 7-2 **Distribution of subsidiaries of the top nine Japanese electronics multinationals, 1996**

Company	Consolidated subs.	Manufacturing	Home-country domestic sales	Other (joint-ventures)	Overseas manuf. (% of total mntg)	Sales	Other (joint-ventures)	Total and % of cons. subsidiaries
Hitachi	818	25	10	8	14 (35)	4	1	19 (2)
Toshiba	134	19	7	8	16 (45)	10	4	30 (22)
Mitsubishi Electric	98	23	26	22	11 (32)	10	4	25 (25)
NEC	105	37	19	27	10 (21)	8	4	22 (21)
Fujitsu	365		119		246 (n.a.)			246 (67)
Matsushita	313	40	22	14	70 (63)	23	144	237 (75)
Sharp	20	2	4	3	6 (75)	4	1	11 (55)
Sony	749	68	3		53 (43)	34		87 (12)
Sanyo	44	7	18	3	10 (58)	6		16 (36)

Note: Fujitsu is an electronic firm that focuses on computer and office automation.

Source: E.D. Westney (1996), *The Internationalisation of Japanese firms*, Centre on Japanese Economy and Business Working Paper no. 114, p. 36.

Both MEI and Sanyo are said to have a strong tendency to source much of their production locally (Abo 1994b: 197) but, largely due to restrictions on full control of equity in Indonesia prior to 1994, MEI built most of its Asian 'export-plank' production bases in Malaysia while Sanyo focused its main export plank in China (Huaqiang and Shekou). A comparison of their production activities in Indonesia shows that MEI has more affiliates than Sanyo in Indonesia, so MEI's total investments in this country are much larger. Sanyo has major investments in critical video parts and compressors (for air conditioners and refrigerators) in local and export markets. Details of their activities in Indonesia are outlined in case studies in the next chapter.

Other prominent Japanese firms can be seen as early entrant firms but they lacked a significant market presence in the Indonesian consumer electronics industry or had not specialised in a niche segment. Sharp Corporation has had a technical assistance (licensing) contract since 1970 with PT Yasonta, a domestic firm which runs an independent operation.² In 1975, Toa Corporation similarly licensed its public assembly and intercom products to PT Toa Galva Industries, a domestic firm that made sizeable profits from its limited range of products for Muslim places of worship. While specialising more in musical instruments than consumer electronics, Yamaha established a joint venture for the assembly of music and audio equipment mainly for the domestic Indonesian market.

² PT Yasonta is a domestic firm owned by the Yauw family and has been involved in manufacture and assembly under licence from Sharp as well as in sales and distribution of its products (e.g. colour and B/W TVs, radio cassette recorders, amplifiers and loudspeaker boxes).

Table 7-3 Phases of Japanese FDI and its entry into electronics in Indonesia, 1970s to 1990s

(1) **First FDI wave** in East Asia largely based in 'export processing zones'. Many developed into a miniature establishments of the parent firms' operations such as 'mini-Matsushitas' and were largely domestically oriented as a result of the import-substitution policy regimes of the early 1970s to the early 1980s.

(2) **Second FDI wave** after the Plaza Agreement in 1985 new large-scale export-oriented investments in 'EPZ-type' development were added to the previous domestic market-oriented plants with full scale production. These featured:

- (i) wider product range (in terms of economies of scale and scope) from washing machines, audio-video products to component parts;
- (ii) all processes in production line (from chassis assembly to final assembly);
- (iii) large-scale production (for domestic and export markets);
- (iv) logistical deployment for local production in East Asia (from procurement of materials and parts, to mutual supply of products, to shifts in production stages from NIEs to ASEAN).

(3) **'Post-bubble' transitional period** in East Asia took on new strategic directions since the bursting of the 'economic bubble' in Japan (around 1990). There was a move away by most Japanese MNEs from 'mini-Matsushita' plants towards more export-led production bases for electronics assembly products, such as CTVs, VTRs, ACs and low-end audio products in Indonesia, ASEAN countries and China. More FDI into the assembly of more high value added critical parts and components in Malaysia and Thailand and some assembly of labour-intensive parts such as speakers in Indonesia. This move meant that an upgrading of technological capabilities and local R&D ability to deal with small or adaptive design change. In the mean time, Korean and other NIE affiliates graded up or narrowed down products for domestic markets and export bases, both of which needed a greater level of local R&D ability.

(4) **Third FDI wave ('high-yen' era)** period from the early 1990s until 1995 when the yen rose to Y80 to the US dollar until the onset of the Asian financial crisis in mid-1997. This unleashed a rapid hollowing out of Japanese, and to a lesser extent Korean, industries as manufacturers relocate the mid-range to some hi-tech production to lower-cost Indonesia, ASEAN and China with the following foci:

- (i) minimisation of the use of labour and adoption of standardised parts and components, and adoption of the use of labour together with more robotics machinery;
- (ii) use of cheaper parts from overseas plants to lower costs for home country production;
- (iii) strengthening the development of new products and further cost reduction and rationalisation by Japanese subsidiaries abroad;
- (iv) greater relocation of manufacturing plants overseas based on regional divisions, internationalisation of product launching and adoption and reducing 'low to mid-range' value-added/technology production in Japan; and
- (v) greater local procurement of parts and resources to minimise yen payments and greater regional coordination by regional IPOs in the East Asian region, particularly those based in Singapore and Hong Kong, with 'harmonisation' (*ingoka*) and specialisation (*setsuka*) of networks of plants within each region. These RHQ serve as the administrative bases for many MNE networks in the Southeast Asian region and have resulted in these regional production networks supporting Japanese and, more recently, Taiwanese and Korean home production.

Source: LTCB 1994; Yano Economic Institute 1994; Borrus and Zysman 1997; and Linden 1998.

By 1996, an overall assessment of overseas production activities of the top eight Japanese consumer electronics MNEs in Indonesia (Sanyo, MEI, Toshiba, Sony, Hitachi, Mitsubishi, Sharp, NEC) suggests that all firms had a substantial overseas presence. MEI had the largest number of overseas (manufacturing, sales and other) affiliates with a total of 237 making up 75 per cent of its consolidated subsidiaries, followed by Sony and Hitachi with a total of 87 and 30 overseas affiliates, respectively (Table 7-2). For Sony, overseas subsidiaries constitute only 12 per cent of its consolidated subsidiaries while for Hitachi they make up 22 per cent. When we compare overseas manufacturing affiliates, it is clear that firms established after World War II, such as Sony, Matsushita and Sanyo,

had to place greater reliance on their overseas production and sales than older competitors like Hitachi and Toshiba. For reasons which will be explored in Chapter 8, only Matsushita and Sanyo pioneered the establishment of their manufacturing plants in 1970 while other firms chose to license local firms.

Second FDI wave

Similarly during the 1980s, a second 'wave' of Japanese MNEs established production bases overseas, mostly in Malaysia and other ASEAN countries. Most of the investments that trickled into Indonesia were directed to existing plant expansion rather than greenfield investments (Table 7-3). Among the major firms listed in Table 7-1 only Matsushita in 1987 established a battery assembling plant and in 1983, Fuji Electric Co. Ltd. set up a passive component plant in Indonesia during this period. These include simple components such as PCBs, TV antennae, variable resistors and capacitors

During the 1980s, the Indonesian electronics industry experienced a transition from an import substitution industry to an export-oriented industry. Regulatory conditions changed considerably, culminating with the policy package of May 1990, the abolition of the deletion (increased local sourcing) program and the sole agent system, such that any importer can import any brands which are already produced within the country. As detailed in the previous chapter, this stimulated exports but increased competition in the domestic market. However, the restrictions on wholly-owned foreign firms and others did not encourage large-scale investments in Indonesia. There are relatively few electronic components firms because component electronics plants involve the use of higher technological capabilities and larger scale of economies, beyond the level that can be sustained by the then Indonesian market alone.

Third FDI wave

The third wave of Japanese investment comprised large investments by major MNEs and small and medium-sized 'parts makers'. It began in earnest from the early 1990s as a result of the rapid rise of the yen. Apart from the leading specialised consumer electronics firm Sony, most of the 'late entrant' large firms are affiliates of highly diversified and heavy electrical MNEs such as Hitachi, Toshiba and Mitsubishi. Another parallel development was that most firms which had earlier established joint ventures or licensing partners with domestic market-oriented plants set up joint ventures or wholly-owned subsidiaries mainly for export markets. Some chose to focus on the domestic market, for example Sharp Corporation's joint venture (P.T Sharp Yasonta Indonesia) which was established in July 1994, but these were notable exceptions.

Before establishing plants in Indonesia, most of the very large MNEs had established licensing agreements with local distributor/dealers in the 1970s. During the second FDI wave, however, they began establishing joint ventures with local Chinese

business groups. In 1981, Mitsubishi Electric Corporation established two joint ventures with the Lippo group, PT Lippo Melco Manufacturing (to manufacture car radios, radio/cassette recorders, laundry machines, cooking stoves, TVs and air conditioners products) and PT Lippo Melco Electronics Indonesia (to distribute these products as well as imported VCRs and higher quality TVs, air conditioners products). In 1980 and 1987, Mitsubishi invested in a watt-hour meter and automotive parts plant. In 1982, Hitachi established a wholly owned subsidiary to produce colour TVs, gas stoves and rice cookers with the Modern Dinamika Ardimas group. In 1996, Toshiba built a CRT plant in Indonesia and, in the same year, Hitachi set up a joint venture to manufacture audio-video products and another one to make parts for light bulbs and florescent lamps. While investments by the very large MNEs in Indonesia are clearly late entrants, they have established subsidiaries in other countries in the Southeast Asian region since the early 1970s (Mitsubishi Electric, Toshiba and Hitachi company reports, various years).

A large investment was made by Sony, the specialised consumer electronics firm. Sony's affiliate in Singapore, Amcol Electronics Industries, established a joint venture, PT Amcol Graha Electronics, with PT Graha Seruni in 1987 to manufacture audio-video Sony products in Indonesia. However, in 1991, Sony established an almost wholly-owned subsidiary, PT Sony Electronics Indonesia, to manufacture a very limited range of labour-intensive low- to mid-end audio products (hi-fi stereos, radio cassette recorders and walkmans) mainly for export (90 per cent of production). At the same time, Sony continued with its licensing agreement with a joint venture firm PT Amcol Graha to import most of its audio-video and other products. Likewise, in 1970 Sharp licensed its consumer electronics products to local firm PT Yasonta and its office electronic machinery through PT Toritano. In 1994 after the liberalisation of full foreign ownership in Indonesia, Sharp, which previously manufactured its low to mid-end products mostly in Taiwan, Malaysia, Philippines, established a 100 per cent subsidiary in Indonesia. Hence, for the mid-sized more specialised consumer electronics firms such as Sony and Sharp, their entry timing in Indonesia clearly reflect factors not related to firm resources but to its organisational preferences to locate in locations in Southeast Asian countries other than Indonesia.

The third wave of Japanese FDI in Indonesia also featured many specialist component and parts makers as late entrant firms in the early 1990s. Many such firms are SMEs that were encouraged or given financial, technological and personnel support incentives by large end-product assemblers to relocate to Indonesia. Such firms established their manufacturing of mainly low-end and labour-intensive components (Shinmei and Foster) on Batam Island as well as in locations nearby Jakarta. Some large firms also established critical components plants, such as TV tubes and semiconductors.³

³ PT Tosummit Electronics Devices Indonesia (TEDI), which manufactures CRT, which started production in late 1996 has a paid-up capital of \$40 million and a production capacity of 2.3 million CRT units annually. It is an unusual joint venture between a largely Japanese consortium, consisting of Toshiba Corporation, Sumitomo Corporation and Orion Electric Co. Ltd. (a Korean firm) and an Indonesian consortium composed of PT Tabung Gambar Indonesia, PT Hartono Istana Electronics, PT Panggung Electronic Industries and PT Topjaya.

Relocation of component manufacturing affiliates also occurred in telecommunications parts (for example, Kyocera, a Kyoto-based medium-sized company, established a plant in Batam to manufacture bells, filters and printer components), automated machinery computer equipment and components (Omron, Yokugawa, Taiyo) and plastic moulding (Showapla and Amcol-Sony). These firms are medium-sized firms with relatively low overseas production and employee ratios and earn most of their income in Japan (see Table 7-1). In May 1996, over 20 Japanese electronics components firms (with various lines of business ranging from printed circuit boards (PCB), audio visual material, electronics wire and plastic injection moulding) signed a memorandum of understanding to relocate to Indonesia and in some cases this led to approval for the establishment of manufacturing plants which were due to start production the following year. Because of the financial crisis of mid-1997, these relocations have been postponed.

The most dramatic development in electronic components relocation to Indonesia occurred after 1996 with the establishment of three new semiconductor plants, PT Sharp Semiconductor Indonesia (PT SSI), PT NEC Humpuss Semiconductor Indonesia (PT NHSI) and PT Matsushita Semiconductor Indonesia (PT MSI). In addition there are also other larger projects undertaken by subsidiaries of Japanese MNEs (Table 7-4 outlines the projects by firms that are not covered in the case studies in the next chapter). Much of the more recent relocation activities since the early 1990s also involves the establishment of component makers of large and diversified MNEs such as Toshiba Corporation and Mitsubishi Electronics. By the mid-1990s, Matsushita Electric Industries had joined the ranks of very large MNEs with considerable technological, marketing and financial resources, even surpassing Toshiba and Mitsubishi Electronics in terms of sales in 1996 and 1997.

Table 7-4 Subsidiaries of major Japanese Electronics MNEs with manufacturing plants in Indonesia, 1996

Parent Names	Subsidiary Name	Month/ Year Establish ed	Products	Shares (%)	Planned FDI* (Million \$)
Toshiba Corporation	PT Tosummit Electronic Devices Indonesia	Nov '95	(joint-venture with PT Tabung Gambar Indonesia and Sumitomo Corp.) 14", 20" TV tubes (CRT)	28-35-22; 67-23;	100
Corp (trading house)	PT Toshiba Consumer Products		Refrigerators, household appliances	81-19	26.9
T. C. & T. Singapore	PT Toshiba Metal Parts	June '95	Flames, inner-shields and holders for CRT		20.0
T. Metal Parts & Sumitomo Corp.		April '94			
Sharp Corp.	PT Sharp Semiconductor	Sept. '95	ICs, opto-device components	100	21.9
	PT Sharp Yasonta Indonesia	Jul. '94	Refrigerators, colour TV	53.75-36.25	16
Yamaha Corp.	PT Yamaha Indonesia	Jan. '77	Electronic organ, piano, drum, trumpet, recorder	75	4
Toa Corp (38.4%), Sumitomo Corp (7.0%)	PT Toa Galva Industries	May 75	Horns, speakers, microphones, transformer, wireless amplifiers	45.45	13.6
Mitsubishi Electric Corp.	PT Lippo Melco Electronic Indon.	Nov. '81	CTV, room air-condition, VCR, audio products	83	14.4
	PT Lippo Melco Manuf. Indon.	Nov. '81	CTV, room air-condition, VCR, audio products	67	13.2
	PT Tjiparai Permai Electrindo	Jun. '87	automotive electronics	75	1.0
Omron Corp.	PT Omron Manuf. of Indonesia	Feb. '92	Electronic components	95	9.55
Hitachi Ltd.	PT Modern Group	Aug 95	VCR, CTV and other audio (RCR) products	75	60

Note: The planned FDI data is as at the year when they were established.

Source: Indonesian Capital Investment Coordinating Board, 1996 and company reports.

To summarise, the main trends in timing of first entry investments made by major Japanese electronics MNEs in Indonesia appear to conform to some of the theoretical

expectations outlined earlier. Most firms that entered Indonesia early during the first FDI wave in the 1970s such as Matsushita and Sanyo are, in terms of their home country industry, modest in terms of their technological, marketing and financial resources as well as their size and product diversity. During the second FDI wave, a few firms entered and established joint ventures to manufacture a limited range of products but during the third FDI wave, most of the well-resourced and very large electronics firms (such as Hitachi, Mitsubishi and Toshiba) along with some of the medium-sized specialised consumer electronics firms (such as Sony and Sharp) entered Indonesia to establish final product manufacturing plants. They became later entrants in the early 1990s. By the mid-1990s, again, only the medium sized MNEs (Matsushita and Sanyo), rather than the very large MNEs, established critical component plants in Indonesia, suggesting that firms' technological, marketing and financial resources have a bearing on decisions about entry timing into this host country.

To this point, the discussion has not dealt with the extent of commitment by Japanese electronics firms to the Indonesian market as a proportion of their total sales in the region. While such firm-level data are extremely difficult to obtain, there is no doubt that electronics firms do aim to take advantage of a potentially expanding market which has been growing apace with rapid improvements in purchasing power in developing countries and greater access to export/third-markets during the 1980s (PT Data Consult Inc. 1991). Major firms from Japan and Korea had an added interest in relocating to Indonesia if they had complementary, previously established distribution channels for their exports there. The advantages offered by the country include low-cost labour and the availability of the US GSP facility for electronics produced in Indonesia. The next section offers a survey of MNEs' motivation in investing in Indonesia and explores whether these determinants differ significantly between investors from different countries of origin.

Motivation of Japanese MNEs in relocating to Indonesia

In order to understand the importance of OLI advantages of Japanese and Korean electronics MNEs in Indonesia, key executives of 62 firms from both countries with direct investment in Indonesia were surveyed by way of a questionnaire which was either mailed to each firm or presented in personal interviews with managers.⁴ The questionnaire was drafted to identify its OLI advantages for each firm in making investments during 1994–95 (materialising in the late 1990s), which restricts the interpretation of the survey results to conditions pertaining during the third FDI wave. These were measured using a five-point Likert scale which gave the respondents the opportunity to rate various factors from 'very unimportant' (1) to 'very important' (5). In

⁴ For the survey questionnaire and in-depth interviews for case studies, see the Appendix.

addition, one or two interviews with representatives of respondent firms were carried out to provide a more detailed investigation of the OLI advantages.

A sampling frame for the study had to be constructed from the various lists of Japanese and Korean investment projects compiled by the *BKPM*, the Indonesian Ministry of Industry and Trade (*Depperindag*), the Association of Electronics and Electrical Home Appliances Industries of Indonesia (*GABEL*), the Electronics Industries Association of Japan (Directory of Overseas Corporation Subsidiaries, *Kaigai Houjin Risto*, 1994) and the Bank of Korea, Foreign Exchange Department (Overseas Direct Investment List, *Hyae Witu Sya Haeyoung Ji Ban Ei Hayoung Hawaeng*, 1994). The lists were rigorously screened to ensure they contained only current, wholly-owned or joint-venture affiliates in Indonesia and to exclude representative or distributor offices. The surveys were mailed to top managers in the parent headquarters of MNEs and were collected between August 1994 and May 1995.⁵ They generated 52 responses (from 27 Japanese and 25 Korean subsidiaries), giving a response rate of 63 per cent.⁶

The average of the five-point Likert scale responses to the questionnaire on the ownership and internalisation advantages which the managers perceived their firms to possess to enable them to relocate to and be competitive in Indonesia are summarised in Table 7-5.

With regard to ownership advantages, the Japanese firms sampled appear to agree strongly on their ability to take advantage of international differences in prices, particularly as a result of the yen appreciation. Some exceptions were firms that procured most of their parts from their other subsidiaries or other sources in the Southeast Asian region, or firms that wrote most of their sales contracts in US dollars. The next three most important ownership advantages were having a well-known brand name (recognised internationally as well as in Indonesia) and being able to exploit the production capability and intangible management know-how of the parent firm. This finding is consistent with the observation that most Japanese firms during the early 1990s had obtained international brand recognition in terms of quality and reliability — all made possible by the technological sophistication of their production and management (Yamamoto 1994: 6).

Next, the survey suggests that the advantages of having a pre-production stage (ownership advantage 5 in Table 7-5) which provides firms with sufficient knowledge of the Indonesian market is seen as important, suggesting that the experience of servicing a particular market is critical, as suggested by the Uppsala approach discussed above.

⁵ In many cases the answers were collected during follow-up interviews which took place at the same time.

⁶ The industrial profile of the sample of Japanese firms is made up of 3 large firms (11.1 per cent) and 24 small and medium-sized firms (89.9 per cent) from the total of 27 firms. This sample roughly corresponds to the recorded number of Japanese firms by the Indonesian Capital Investment Coordinating Board (*BKPM*, see Table 3-1), which suggests that there were about 55 small and medium sized (84.6 per cent) and 10 large (9.1 per cent) Japanese firms investing in Indonesia in 1995.

Table 7-5 Ownership and internalisation advantages to compete in Indonesia as perceived by Japanese MNE firms, 1994–95⁷

Ownership advantages	Mean	Median	Mode	Std Dev.
1. advantages due to value changes of home-country currency and differences in factor endowment and markets	4.38	4.00	5.00	0.88
2. well-known brand names	4.33	4.00	5.00	1.11
3. production capability of the parent firm	4.25	4.00	5.00	0.96
4. management know-how of the parent firm	4.22	4.00	4.00	1.25
5. business partners (distributor, licensee, etc.) in the pre-production stage	4.19	4.00	4.00	1.07
6. experience in similar countries	4.18	4.00	4.00	1.17
7. marketing knowledge within firm	4.09	4.00	4.00	1.46
8. quality parts supply from affiliated firms	4.01	4.00	4.00	1.32
9. ability to influence decision makers at different levels of government in Indonesia	3.94	3.00	4.00	1.72
Internalisation advantages				
1. facilitating control of exports to third countries or re-exports to home country	4.61	4.00	4.00	1.18
2. maintaining control of production quality	4.43	4.00	4.00	1.11
3. avoiding costs of tariff and non-tariff barriers	4.31	4.00	4.00	1.16
4. defending and/or expanding existing market share by directly investing there to counter competitors	4.26	4.00	4.00	1.15
5. preventing disruptions to the flow of inputs from home-country or third-country affiliates	4.17	4.00	4.00	1.17
6. protecting trademark and proprietary technology	3.14	3.00	3.00	1.42
7. difficulties in finding appropriate local licensee	2.09	2.00	2.00	1.16

Source: Summarised from author's survey results..

The next most cited advantage is having had experience in dealing in similar countries. This is what Teece (1983) refers to as production and ownership transactional advantages (rather than asset advantages) to overcome market imperfections in similar countries by capturing transactional benefits (and lessening the transactional costs) arising from the common governance of a network of these assets, located in different countries. Instead of using external markets or entering arms-length transactions to source components, transactional benefits can be captured by firms through sourcing parts 'in-house' within the firm or from a related supplier-firm. Dunning (1985) also suggests that multinationality enhances the preceding advantages by offering wider opportunities, and follow-up interviews of managers suggest that most had prior working experience in East Asian subsidiaries before coming to Indonesia.

The next two most important ownership advantages are knowledge of marketing within the MNE or the firm and the ability to exploit the advantage of quality parts supply from within the MNE. As discussed in Chapter 6, the organisation of parts supply and distribution, particularly within the network of affiliates in the ASEAN and East Asian region, has improved considerably since the establishment of IPOs, mainly in Singapore, since the late 1980s. The use of such networks of subsidiaries provides firms with transactional benefits which cannot be obtained using arms-length intermediate product markets (see Chapter 6). Nevertheless, for 'cost' advantages, most Japanese

⁷ The mean, median and mode are used here to describe the distribution of the responses where the mean is the arithmetic average, the median is the value above and below which one-half of the responses fall and the mode is the most frequently occurring value (or values).

affiliates preferred to rely increasingly on Indonesia for a greater range of labour-intensive and passive audio-video parts than import them from other affiliates overseas (interview with Japanese managers, 1994–95).

The next variable, the ability to form a good working relationship with the government, can be understood in the context of Indonesia's legal system's perceived shortcomings in protecting foreign firms' interests. Firms had mixed experiences in dealings with the Indonesian regulatory system, in particular with changes in regulations which often were implemented with a time lag of nearly a year. However, as the standard deviation on the last three variables shows, respondents showed greater differences in their perceptions of the importance of this variable in their business success in Indonesia. Much depends on the quality of the local partner; firms such as Matsushita, which was able to find local partners who were prior electronics assemblers rather than mere distributors, appear to have a more agreeable relationship with their local partners (interview with Japanese managers, 1994–95).

The most important internalisation advantage which has motivated the sampled firms to relocate their manufacturing to Indonesia (rather than other forms of market entry) was increased control of exports to third countries. While closely coordinated activities in low-end electronics are not needed where the parts are standardised, most recently relocated plants in Indonesia are export-oriented transplants with designated export markets and manufacture to achieve economies of scale not possible in the Indonesian domestic market.

The next most important advantage is the defence and/or expansion of an existing market by directly investment to counter competitors. Follow-up interviews revealed that by investing in Indonesia, firms often do behave in reaction to their major competitors by establishing a manufacturing plant as well as monitoring the behaviour of local firms, in particularly the lower-end segments of the electronics market. This vindicates the 'follow-the-leader' behaviour of foreign investment (Knickerbocker 1973). The next most important reason for adopting FDI was the requirement to control the quality of production and after-sales service to the standard operating in the home country. Because Japanese transplants in ASEAN countries are more competitive in price and increasingly also in quality with Japan, and a lot of high quality parts and components are being produced by subsidiaries, the problem of labour shortages and wage rises in Thailand and Malaysia has become acute. As a result, production in Indonesia has become more competitive in price with Japan and quality is becoming comparable to ASEAN standards (Kawashima 1994).

The next motivation for internalising operations in the Indonesian market is to avoid tariff and non-tariff barriers. This was particularly important for firms that entered Indonesia during the import-substitution era of the 1980s. At the time of the survey, most electronics products (CTVs and home appliances) were subject to high tariffs (38 per

cent nominal and 600 per cent effective)⁸ while local producers were subject to a 10 per cent luxury good tax (*pajak penjualan barang mewah, PPnBM*). While direct exporters are exempted from paying tariffs, most of their suppliers — particularly indirect exporter that do not enjoy the EPTE or tax-free status — are not, so firms have an incentive to internalise parts production.

The next variable relates to the protection of trademark and propriety technology. This did not score as an important variable amongst the respondents, a result that sits oddly with the fact that intellectual property is not securely protected by patent and other enforceable legislation in Indonesia. The large standard deviation suggests mixed views on this question, perhaps because there are a small number of firms which regard this variable as less important than the problem of parallel imports (or ‘smuggling’) of electronics products.

Finally, the variable relating to difficulties in finding an appropriate local licensee was the least important. While the relatively large standard deviation reflected some differences in perception, on average, respondents revealed had little difficulty finding an appropriate local licensee, which is surprising and contrary to other earlier evidence (Hill 1988). The sheer magnitude of the third FDI wave was such that many local previous licensees and electronics distributors responded enthusiastically (personal interviews with Japanese firms, 1994–95).

Thus, from the responses above dealing with internalisation advantages, FDI was perceived as somewhat more important by Japanese respondents for the strategic reason of furthering international competitiveness (through export to third countries) than for either minimising transaction costs or reaping ownership benefits from their trademark and proprietary technology, particularly in the Indonesian domestic market.

Table 7-6 reveals how Indonesia’s locational advantages were perceived by Japanese MNEs. The main motivations underlying Japanese electronics investment in Indonesia appear to have been to benefit from the relative political and macroeconomic stability at that time (1994–95). All respondents showed strong consensus on these principal variables, as for the next two variables, the GSP facilities for marketing in the United States and in the European Union. Such a result is consistent with the findings above on internalisation advantages, which makes the need to control exports to third countries or re-export to home country as the most important variable. Evidence presented in Chapter 5 also shows the growth in the importance of exports to third markets (principally the United States and Europe) and re-exports of low- to mid-end products to Japan since the late 1980s.

⁸ The nominal and effective tariff rates were calculated in 1992 by the Jakarta office of the World Bank while the effective rate calculated by input–output method was 342.7 per cent (Wymenga 1991: 135). An ASEAN Secretariat study reported the comparative average tariff rates for electronics and house appliances for the ASEAN-4 countries at 21 per cent with individual country rates as follows: Indonesia at 24 per cent; and Malaysia at 15 per cent; Philippines at 18 per cent; Thailand at 25 per cent (*Kompas*, 1 December 1994).

Table 7-6 Indonesia's locational advantages as perceived by Japanese MNE firms, 1994-95

Locational advantages	Mean	Median	Mode	Std Dev.
1. political stability	4.63	5.00	5.00	0.99
2. macroeconomic stability	4.45	5.00	5.00	1.02
3. GSP facility for marketing in the United States	4.29	4.00	4.00	0.93
4. GSP facility for marketing in the European Union	4.17	4.00	4.00	0.91
5. waiving of import duties by government (in FTZs and EPTEs) to facilitate procurement, imports and exports	4.16	4.00	4.00	1.64
6. absence of foreign exchange controls and equity limits	4.11	4.00	4.00	1.38
7. low cost and availability of unskilled labour	4.07	4.00	5.00	1.08
8. low material and land costs	4.05	4.00	4.00	1.16
9. domestic market size and growth	3.75	3.00	4.00	1.12
10. shipping and land transport	2.36	2.00	3.00	1.56
11. labour productivity	2.18	2.00	2.00	1.15
12. availability of technicians and managers	2.03	2.00	2.00	0.99
13. infrastructure (cost of electricity, industrial parks and telecommunications)	1.97	2.00	1.00	1.01
14. language and cultural issues with local workforce	1.81	2.00	1.00	1.17
15. expatriate staff restrictions	1.73	2.00	1.00	1.03
16. investment restrictions (ownership of product distributor, divestment and minimum capital requirements, etc.)	1.64	2.00	1.00	0.92

Source: Summarised from author's survey results.

The respondents sampled further perceive the next most important motivations to invest in Indonesia to be the waiving of import duties by the government (FTZs and EPTEs) to facilitate procurement, imports and exports, and the absence of foreign exchange control. Both measures have come about as result of the process of deregulation since the mid-1980s, notwithstanding the 'tax-drawback' delays.⁹ This fact lends support to the evidence presented in Chapter 3 which suggests that East Asian investors have been responsive to the introduction of a series of deregulation measures since 1983 and that this deregulation has led to increased FDI flows into the Indonesian electronics industry. The consensus among interviewees was also that the low cost and availability of unskilled labour, low material and land costs and the availability of adequate shipping, port infrastructure and land transport are the next three important sources of locational advantage for Indonesia.

There are, however, mixed perceptions as to whether domestic market size and growth are important locational advantages. The standard deviation on this variable suggests that the interviewees had contrary perceptions, on the basis of the main activities of firms (69.4 per cent or 43 out of the 62 firms surveyed here are export-oriented). Estimates of the actual market in Indonesia for various electronics products vary according to region and income groups, but the survey of ownership of electronics goods was mainly limited to the top 30 per cent of household incomes or to the middle and upper classes (PT Capricorn Industry Consultant 1991), which amounts to around 50-60 million of the then 200 million total population. Ownership of low-end and mid-

⁹ The 'drawback' system allows rebates to be claimed on tax paid on electronics parts imports by firms which have paid 0-5 per cent (for most passive components) or 5-40 per cent (for materials for ceramic and other capacitors; loud speakers; plastic parts; transformer; PCB, etc.). The problem of this system, which was introduced after the deregulation package of May 1990 (*Pakmei '90*), is that often the authorities takes months to process a successful claim (*Business Indonesia*, 22 March 1991).

range products rapidly expanded from the late 1980s until mid-1997 and Japanese affiliates in Indonesia since the early 1970s have been placed to capture a large slice of both the domestic market and of Indonesia's exports. As discussed earlier, the exports of the seven largest Japanese affiliates made up 33 per cent of Indonesia's total electronics exports in 1996–97.

The next most important locational advantage variable that attracted firms to Indonesia was labour productivity. Put another way, they perceived labour productivity to be a source of advantage. While some Japanese observers have suggested that the low labour productivity offsets the advantages of low wages in Indonesia (Oshima 1986: 6–11), more recent data indicate that improvement in labour productivity in the manufacturing sector has occurred.¹⁰ The remaining four variables of infrastructure, language and cultural issues, restrictions on expatriate staff numbers and investment restrictions on foreign involvement in local distribution, and the divestment and other minimum capital requirements¹¹ were clearly perceived not as advantages but disincentives to relocate to Indonesia. Similar perceptions have been underlined by official recommendations made by Japanese investors (sponsored by the Jakarta Japan Club) to the Chairman of the Investment Coordinating Board (*BKPM*) in previous years (1993–94).

In summary, the survey results indicate that the key investment motivation of the sampled Japanese (mainly export-oriented) firms in Indonesia was related to their export-oriented activities and accessing markets in the United States and the EU. These factors were perceived to be more important than factor cost considerations in the host country. Responses suggests that export markets elsewhere and Indonesia's GSP facilities were primary factors attracting Japanese electronics firms to Indonesia rather than the Indonesian domestic market. Advantages of 'cost' (international arbitraging) advantages, exploiting trademark and proprietary technology and prior knowledge of the domestic market conditions made them competitive. Once the restrictions on wholly foreign ownership were removed by the Indonesian authorities in June 1994, firms preferred to invest in wholly owned subsidiaries or to take over or increase equity in existing joint ventures to maximise their sales and procurement flexibility within the ASEAN region. The Indonesian market size and growth potential, while clearly considered important as suggested in the literature survey earlier, were only considered as secondary factors.

¹⁰ Labour productivity in the manufacturing sector has improved from 5.60 to 9.04 (Rp. million per annum) between 1985 and 1995 (Indonesia Bureau of Statistics cited in Forrester 1998: 79).

¹¹ As outlined in Chapter 3, the relaxation of the 100 per cent foreign ownership restrictions, divestment requirements and the minimum capital requirement were conducted in stages but the June 1994 package was the most significant in removing these restrictions.

Profiles of Korean MNEs in Indonesia

Korean MNEs have become formidable international competitors in electronics in the last three decades, suggesting that much of their firm capabilities and organisational size and other attributes have improved considerably. While export-led economic activity through exports has played a major part in Korea's economic progress since the 1960s, during the 1980s and 1990s Korean firms enjoyed further rapid growth, a technology upgrading and expansion of production. Some of the now well-known firms such as LG Electronics were established only in 1958, and the large *chaebol* Samsung, Daewoo and Hyundai only entered the electronics industry in 1968, 1972 and 1981, respectively. By the late 1990s, the 'big three' became worldwide forces in electronics goods, particularly in colour TV, CRTs, VCRs, microwaves and semiconductors.¹²

In terms of their financial resources and organisational size, by the end of 1997 some of the larger Korean electronics firms had 'caught up' with their Japanese competitors in terms of their sales and hence regional standing. In a list of the Asian region's largest 1000 companies, the big 'three' electronics firms — Samsung, LG Electronics and Daewoo — attained the ranking of 38th, 128th and 280th largest firms, respectively, surpassing some well-known Japanese firms in terms of sales.¹³ In terms of their net profit ranking (148th, 318th, 373th largest, respectively), the 'big three' Korean electronics firms are clearly behind the Japanese firms.

Hence, comparisons of both sales and net profits between the large Japanese and Korean firms suggest that by the mid-1990s Korean *chaebol* parent firms have become comparable in firm resources and organisational attributes in a short period of time since their establishment. By 1996 the Korean electronics industry had achieved a significant status in the global market by obtaining a 5.2 per cent share of global production and becoming the sixth largest industry in the world (*Financial Times*, 16 September 1996: 26). The 'big three' made many aggressive investments during the height of their overseas investment spending in the mid-1990s. For example, between 1994 and 1995, Samsung Group, which accumulated the largest actual total overseas investments amounting to \$1,388 million, announced the largest number of major overseas projects (six projects) to be implemented, totalling \$3,010 million (Table 7-7).

In their expansion overseas, however, Korean firms appear to be risk seekers in their attempts to improve their position confirming the 'prospect' theory outlined earlier. Evidence shown in Chapter 5, suggests that the 'big three' and the latecomer into

¹² In 1994, Samsung had become the largest producer of colour TV tubes and monitors in the world while the 'big three' were already major suppliers of colour TVs, VCRs, microwaves. In 1997, Samsung attained the position of the world's largest maker of DRAM microchips, with a global market share of 17 per cent and sales of \$6.5 billion (*Asiaweek*, December 1997). Rival subsidiary LG Semicon, which was the third largest Korean company after Hyundai Electronics Industries Co., was purchased by Samsung for \$5.4 billion, making the merged combine now the largest DRAM maker with sales of \$2.8 billion and a global market share of 23 per cent (*Business Week*, 26 July 1999).

¹³ See Appendix Chapter 7: Table A7- Parents of Japanese and Korean consumer electronics multinational affiliates in Asia: ranking by sales and profits in the *Asiaweek* 1000 largest companies, 1996-97

electronics, Hyundai, possess large debt-to-equity ratios, averaging a total of 386.9 per cent in 1996 and 449.1 per cent in 1997, respectively (Table 5.13).

Table 7-7 Major investments by South Korea's 'big three' electronics *chaebol*, 1995 (\$ million)

Chaebol Group	Affiliate Name	Product	Location	Amount Planned	Total Planned	Overall total of investments*
Samsung	Samsung Electronics	Microchips	U. S.	1,500	3,010	1,388
	Samsung Electronics	Home appliances	U. K.	700		
	Samsung Electronics	Computers (AST)	U. S.	380		
	Samsung Electronics	Electronics	China	160		
	S. Display Devices	TV tubes	Mexico	120		
	S. Display Devices	TV tubes	Germany	120		
	Samsung Electronics	Semiconductors	Portugal	<u>30</u>		
LG	LG Electronics	Computers (Zenith)	U. S.	350	630	647
	LG Electronics	TV tubes	Indonesia	240		
	LG Electronics	TVs, microwave ovens	Britain	<u>40</u>		
Daewoo	Daewoo Motor	Car assembly	India	1,000	2,698	1,277
	Daewoo Motor	Car assembly	Romania	760		
	Daewoo Motor	Joint venture plant	China	500		
	Daewoo Motor	Joint venture plant	Austria	260		
	Orion Electric	TV tubes	S. Africa	150		
	Daewoo Motor	Joint venture plant	Poland	<u>28</u>		

Note: * These are the overall total of actual overseas investments by each group as at August 1995.
Source: Bank of Korea, as cited in *Far Eastern Economic Review*, 2 November 1995.

Korean *chaebol* firms have done much to bolster their technological resources. While the R&D investments of large Korean electronics firms on the whole may not have reached comparable levels to the investments of their Japanese competitors (with the exception of Samsung Electronics, see Table 7-8), the Korean *chaebol* affiliates did increase their R&D expenditure in the 1990s and developed a narrow range of highly sophisticated technical capabilities, particularly in cathode ray tubes, magnetrons and DRAMs which are critical components in TVs, microwave ovens and computers. As a result, there are increasing numbers of leading Japanese and US electronics firms entering joint ventures with these Korean firms beyond simple OEM relations (Kenney 1999: 12).

In terms of their marketing resources, size of sales, international network and R&D investments, there is little doubt that by the mid-1990s the 'big three' Korean firms ranked amongst the world's largest international electronics firms and possessed ownership and internalisation advantages arising from their respective technological, marketing and financial resources that can be considered comparable to Japanese firms. This may not be the case for smaller and medium Korean firms that were forced to undergo the *segzewha* (globalisation) process of shifting overseas to strategic and cheaper locations to maintain profit levels in the face of increasing protection in advanced countries and mounting wage and other costs at home from the late 1980s.

Table 7-8 R&D by large Japanese and Korean MNE electronics assemblers, 1995 (\$=100¥)

Korean assemblers			Japanese assemblers		
1	Samsung Electronics	1,403	Matsushita Ind. Electronics	3,900	1
2	LG Electronics	511	Hitachi	3,800,	2
3	Hyundai Electronics	479	Toshiba	2,900,	3
4	LG Semiconductor	391	NEC	2,900	4
5	Daewoo Electronics	324	Fujitsu	2,800	5
6	Samsung Aerospace	169	Sony	2,391	6
7	Daewoo Telecom	104	Mitsubishi Electric	1,650	7
8	Samsung Display Devices	100	Canon	1,400	8
9	LG Information & Communications	93	Sharp	1,150	9
10	Samsung Electro Mechanics	87	Sanyo	820	10

Source: Kenney (1999: 12).

In terms of product diversity, Korean *chaebol* firms have done much to become more diversified. Notwithstanding greater protection in the United States and the European Union, the Korean *chaebol* affiliates expanded their manufacturing operations there to compete with Japanese and Western rivals to sell more sophisticated goods. Their success is proof of these firms' world-class status and technological sophistication. These advanced markets have been a testing ground for Korean electronics and other companies. Vice-chairman of Samsung Electronics, Kim Kwang Ho, asserts that 'We have to be there and win if we want to survive in any market' (Hoon 1995: 47). During the early to mid-1990s, Korean firms were expanding their investments in China. They grew from 2 per cent of total company-wide cumulative actual investments in 1991 to 15 per cent in 1994. The comparable figures for the rest of Asia were 31 per cent in 1991 and 27 per cent in 1994. Their investments in China represents 'the horizontal spread of low- to mid-tech manufacturers seeking respite from high costs, while Europe is a vertical climb up the technological ladder' (Hoon 1995: 47). In terms of their technological capabilities, Korean investments in Indonesia can arguably be put in a similar category to those in China but the motivation of Korean electronics in choosing Indonesia as a location may be quite different in that it is oriented less to the domestic market than to export markets. This question is further discussed in detail below. As mentioned before, it is hypothesised that the magnitude of particular resources or organisational characteristics needed to enter a new market (reflecting the barriers to entry) may also influence whether there are systematic relationship between firm characteristics and FDI entry timing to a particular host country such as Indonesia. For example, if R&D capabilities are not greatly needed to enter a host country, then even firms with weak R&D would be able to enter early. While no hypothesis is put forward about the interaction between different firm characteristics and the timing of entry, it is important to outline the key characteristic of parent Korean electronics firms in the setting of Korean FDI in Indonesia as a whole (Thee 1991).

During the late 1980s, in a 'typically Korean fashion', large numbers of Korean electronics and other firms (textile, footwear and others) established their manufacturing plants 'almost overnight' in Indonesia (Soesastro 1993: 1). This is hardly an exaggerated description of the surge of Korean investment in Indonesia as, on an approval basis, cumulative investments during the five-year period from 1987 to 1991 totalled over \$5 billion, involving 1,787 projects compared with the \$1.2 billion involved in 765 projects throughout the entire 18-year period from 1968 to 1986. From insignificant beginnings in 1967 to late 1997, Korean investments across all industries in Indonesia have grown to reach \$11.34 billion, comprising 3,001 projects which make up 5.1 per cent of the total of all foreign investments in Indonesia (Gero 1997).

Prior to the establishment of joint-venture production plants, Korean firms already had prior business involvement with Indonesia consisting mainly exports of both electronics and other goods. Samsung and LG Electronics (previously known as Lucky-Goldstar) established their manufacturing plants in February 1990 and May 1989, respectively. Other electronics firms established their investments in the country soon after as part of the wider surge of Korean FDI in the early 1990s that made Indonesia the second most important destination after the United States (Table 7-9). In 1990, Hyundai established PT Hyundai Bextronics Electronics to manufacture car audio products and then Goldstar Telecom (now part of LG Electronics) set up a joint venture, PT Inti Goldstar, for assembly of telecommunications equipment. Of the 'big three', Daewoo Electronics was the late entrant in Indonesia by establishing its joint venture firm only in 1995.

Therefore, during the first Korean FDI wave which began in the mid-1980s (see Table 7-10), amongst the large Korean firms, the magnitude of resources and organisational advantages clearly outweighs the bureaucratic effects, and facilitated early entry to Indonesia. Both Samsung and LG Electronics far outranked Daewoo, not only in terms of sales and profits, but also in terms of R&D (see Table 7-8), suggesting that one can expect significant differences in firm characteristics between early and late entrants.

The establishment of large *chaebol* affiliates in Indonesia was soon followed by smaller component manufacturers who mostly established their plants in areas close to *chaebol* affiliates in or near Jakarta up to the mid-1990s (Table 7-9). For example, Buk Doo (established in Korea in 1972 and managed by a former Daewoo CEO since 1994) is a manufacturer of speakers and electronic guns for TVs. The firm established a joint venture with the Astra Group of Indonesia in 1990 with a total investment of \$2 million employing over 150 people to manufacture cone papers and small speakers. The Indonesian production plant (which is its first overseas plant) is a low-end operation so that the parent firm (Buk Doo) can concentrate its production of medium and large-diameter speakers in Korea. The third major shareholder of PT Buk Doo Indonesia is LG Electronics.

There are examples of other parts supplier firms that relocated to Indonesia. One such firm is Jee Won Inc., a leading manufacturer of stereo recorders and car stereos that has recently it has diversified into an electronic paging operation in Korea. It established its joint venture in Indonesia with a total investment of \$2.25 million. Prior to coming to Indonesia, its only other overseas subsidiary was located in the US. Its wholly-owned affiliate in Indonesia, which started production of low-cost car stereo products in 1992 with a work force of 300, is also a supplier to a Japanese subsidiary PT Uniden Acoustic Indonesia. Uniden of Japan is a medium-sized manufacturer of telecommunications products which has its development and management in Japan and its production exclusively overseas with the majority of sales going to the United States.

Other Korean firms that are involved in the car audio and component electronics lines of business in Indonesia are Daisung, Shinwoo, Insung and Carspect Electronics, but these firms are privately owned and not listed on the Korean stock exchange. Tae Bong Electronics of Korea is the largest producer of tuners for car stereos in its home country and supplies Hyundai Electronics Industries. The establishment of its 90 per cent owned subsidiary in Indonesia is part of its relocation overseas to reduce labour and other costs. Prior to coming to Indonesia, it established two plants in China. Tae Bong is also producing tuners for colour TV and households audio products in all affiliates.

A supplier to Samsung that chose to locate to Indonesia, in December 1991 was Korea Electronic Parts Industries (KEPI), which manufactures speakers, audio racks and related products. As with the other parts makers, its parent firm only has relatively small total assets and relocated its low-end production to Indonesia to focus on higher value production at home. In 1994, KEPI started its production of speakers in Indonesia through its subsidiary PT Kepsonic. In addition, this subsidiary produces plastic injection moulds with the increase of its own brand 'KEP' speakers, it is reducing the OEM proportion of sales.

Korea Dai Dong Electronics is another moderately capitalised supplier firm which manufactures electronics parts, plastic injection moulding and cabinets. It was established in 1972 as a joint venture with Modo Plastic of Japan. Dai Dong established an affiliated in Indonesia in 1991 to manufacture plastic mould parts for audio products and speakers. It also supplies a Japanese large MNE affiliate (Sony) in Indonesia and operates other overseas joint ventures in China and Thailand to improve its price competitiveness and to concentrate on the high value-added plastic products in Korea (personal interviews with Korean and Japanese electronics firms, 1994–95).

A common profile of all Korean firms that relocated their manufacturing plants to Indonesia is that they manufacture or assemble a rather smaller range of products than their Japanese competitors (Table 7-1). Most Korean firms came in the early 1990s and hence much later than the early Japanese relocation of the early 1970s. At the time of their entry to Indonesia, Korean firms were not only far less experienced in operating overseas subsidiaries than their Japanese counterparts but they are also much 'younger'

firms in that most were established in the late 1960s and early 1970s. Most Japanese firms that entered Indonesia were established well before the 1960s (Table 7-1) and have had longer experience in managing overseas manufacturing plants, particularly in Asia (see Chapter 6).

There is, however, an apparent similarity between the early Japanese and Korean large firm entrants in their choice of investment mode. Both Japanese and Korean firms have mainly chosen joint ventures. However, during the time when the Japanese firms initially entered Indonesia, full ownership of plants was not an option (see Chapter 7). The opposite was the case for the early Korean entrants that formed joint ventures with domestic Indonesian firms, particularly in the early 1990s. Since May 1991, export-oriented affiliates have been allowed under the Indonesian investment rules to be fully-foreign owned with conditions particularly if foreign firms locate in Batam. Yet, most Korean firms chose to form joint ventures with high share ownership, with most having over 90 per cent ownership (Table 7-9).

Korean electronics firms, like their Japanese counterparts, exhibit a pattern of sequential foreign entry (Chapter 6) but with a shorter overseas production experience. In the case of large parent end-product assembler (or 'setmaker') firms such as Samsung and LG Electronics, the decision to establish production facilities in Indonesia in 1989 and 1990, respectively, came after a period of exporting various products to Indonesia through their licensed distributors. The two firms elected to manufacture a small range of low-end audio and video products and Samsung in addition produced household appliances, chiefly refrigerators. Earlier, LG Electronics and Samsung established their foreign plants in 1982 (the United States) and 1984 (Portugal), respectively, so that their international experience was rather limited compared with the early entrant Japanese firms at the time of their first entry to Indonesia. In addition, they themselves had only been established in 1959 and 1968, respectively, and then emerged to become two of the 'big three' electronics firms, together with Daewoo (see Table 7-9). Details about the two firms are further discussed in their case studies in Chapter 9.

The third largest Korean electronics firm, Daewoo, announced the investment of \$6 million in a manufacturing subsidiary only in January 1998, clearly a late entrant in Indonesia. Its manufacturing plants are to be run by a joint venture with minority ownership by a local firm (PT Bukaka Kujang Prima which will contribute 30 per cent of the investment). The subsidiary planned to start production in August 1999 with a small range of products of low-end colour TVs, refrigerators and washing machines with a strong export orientation were delayed due to the financial difficulties of the parent firm (*Bisnis Indonesia*, 13 January and 22 August 1998). In 1992 the electronics subsidiary of the *chaebol* Hyundai, the fourth largest Korean electronics firm, established a small assembly plant in Indonesia, mainly to relocate its low-end car audio products, but soon closed down in 1993.

Table 7-9 Korean parent electronics (end-product and parts-maker) MNEs with manufacturing plants in Indonesia, 1994-95

Parent Company Name / Subsidiary Names in Indonesia	Year Est'd	Net Assets (\$ in million)	Parent Total Asset (\$ in million)	Share-holders Equity (\$ in million)	Parent Export Ratio (%)	Parent Employees	No. of affiliates World wide -	Family equity in Chaebol (%)	Foreign holding Equity (%)	Par't Establishment year in Indonesia: Ret. year and (mode of entry) in the 1st, 2nd and next instance (%)
	(1)	(3)	(1)	(1)	(1)	(1)	(1)	(3)	(1)	(3)
Samsung Electric Co, Ltd. / Samsung Maspion Ind. and S. Metrodata I.	1969	5,973	4,125	2,449	66.1	47,597	61	48.9	10.0	31.8 89 (j-SMI), 91 (j-SME)
LG Elec. Co./ Goldstar Astra, Inti Goldstar, LGE Display Devices	1959	5,060	4,925	1,620	55.7	30,379	54	37.7	9.9	12.4 90 (j) 95 (w) 96 (w)
Buk Doo>LG E &Daewoo / B. Indon	1972	n.a	20.25	6.37	37.2	288	1	6.0	0.05	0.6 90 (w)
Daewoo Electronics Co./D. E. Indonesia	1972	6,084	3775	896	60.8	12,392	55	42.4	9.9	4.8 95 (j)
Hyundai Elec. Ind. (2)/ H. Bestronix Astra	1983	7,163	57(2)					61.3		91 (j) closed '92
Jee Won Ind./ JW Indo.	1981	n.a	53.3	27	99.3	218	2	17.5	8.9	9.6 90 (j)
Tae Bong>S>Hyundai Elect/Tae Bong-Indon.	1973	n.a	24.1	8.1	65.2	331	2	29.9	3.0	5.0 93 (w)
Dae Sung Electric Wire/ Dae Sung Indonesia	1988	n.a	53.0	21.8	43.2	295	3	n.a.	5.5	n.a. 91(j)
Korea Electronic Parts Industries>>>SamsungEC	1973	n.a	24.7	13.8	35.1	391	1	18.6	1.9	2.6 90 (j)
K. Dai Dong Electronics	1972	n.a	20.6	11.4	96.5	356	3	40.0	10.0	91 (j)

Notes: the bracketed symbols 'j' denotes joint-venture firm; 'w' denotes wholly-owned firms and 'parts' to denote investment solely in a critical part manufacturing plant; (a) The exchange rate use is the average Won/Dollar as at 1994 = 800 won /\$;
Sources: (1) Asia-Pacific Infoserv, Inc.(1994 Autumn), 'Korea Company Handbook — Investment Guide', Hwanshin Publishing, Seoul. (2) Hyundai Electric Co. is a unlisted company but data for employment as at 1983, parent net asset, profits and exports as at 1993 are from Kirk (1994: 345, 348); (3) Fair Trade Commission, Korea, April 1, 1994 compiled net assets, defined as the difference between total assets and total liabilities, government subsidies and investment in subsidies, of the *chaebol* and their 374 subsidiaries, as of April 1, 1994; figures are in millions of dollars converted at the rate of 805 won to the dollar.

For large parent end-product assembler firms, the decision to establish production facilities in Indonesia was principally to relocate a small range of products and aimed towards serving export markets, at least initially. In contrast, most of the early entrant Japanese firms that relocated in the 1970s during the import-substitution industrialisation era, were engaged in the production of a wider range of consumer electronics and household appliances for the Indonesia domestic market. In terms of product range, the difference between the Japanese and Korean affiliates in Indonesia does stem from the nature of their home country parent firms in that the Japanese tend to be manufacturers of a larger range of consumer electronics products, partly due to the fact that Japanese firms tend to be much 'older' firms (personal interviews with Korean and Japanese electronics parts suppliers, 1994-95).

Table 7-10 Subsidiaries of Korean electronics (assembly and parts-maker) MNEs with manufacturing plants in Indonesia, 1994

Parent Name	Subsidiary Name	Establishment date	Products	Share (%)	FDI (\$ million)
Samsung E.C.	PT Samsung Maspion Industries	May '89	Refrigerators, household appliances	50	10.2
Samsung E.C.	PT Samsung Metrodata Electronics	Jun '91	VCR, CTV and other audio (RCR) products	80	19.4
Lucky Goldstar Electronics	PT Goldstar Astra	Nov '90	Color TV, audio products, refrigerators	49	13.0
	PT LGE Display Devices Indo.	June '96	17", 20" TV tubes (CRT)	100	14.2
Goldstar Telecom.	PT Inti Goldstar	Dec '92	Telephones and telcom. equipment (PABX)	90	4.0
K. Dai Dong Electr.	PT Daidong Indonesia	Oct '91	Plastic mould parts for Audio, Speakers	80	5.1
Korea Elec. Parts I.	PT Kepsonic Indonesia	Dec '91	Plastic mould parts for Audio, Speakers	70	2.6
Jee Won Industries	PT Jee Won Jaya Indonesia	Apr '90	Car Stereo, SVR	80	2.3
Tae Bong	PT Tai Bong Indonesia	Jul '93	Car Audio (Radio Cassettes) and tuners	90	1.2
Buk Doo	PT Bukdoo Indonesia Co. Ltd	Nov '90	Speaker, Cone paper	55	2.0
Hyundai Elec. Ind.*	PT Hyndai Bestronix Indones.	April '91	Car Audio (Radio Cassettes)	75	1.0
Insung Elec.	PT Insung Corporation	Aug '90	Car Audio (Radio Cassettes)	95	0.7
Carspec Elect.	PT Automen Elec. Manuf.	May '90	Car Speakers	90	1.1
R.F. High Tek	PT R.F. High Tek	Apr '90	Power transformer, Freq & other parts	65	0.3
Shinwoo	PT Shinwoo Indonesia	Dec '90	Headphones	95	9.5
Daisung	PT Daisung Indonesia	Jun '91	Transformer coils, electronics components	90	1.4

Source: The Bank of Korea, Foreign Exchange Department (1994), *Overseas Direct Investment Statistics Yearbook*, Seoul.

Interesting comparisons can be made between Japanese and Korean parts-making firms that relocated to Indonesia during the early 1990s. The parent profiles of small-to-medium sized electronics enterprises (SMEs) operating in Indonesia (Table 7-10) reveals that their total asset and employment size in Korea appears to be smaller than their Japanese parts competitors in Indonesia (Table 7-1). Compared with the Japanese, the Korean SMEs are also engaged in the manufacture of a smaller range of products and their overseas activities firms tend to be limited, with a handful number of overseas subsidiaries prior to establishing their presence in Indonesia. However, the comparisons of SME firm characteristics does not shed much light on whether later entrants have different advantages than earlier entrants, primarily because both groups of SMEs relocation are thought to be associated with the relocation of their principal end-product large MNEs (personal interviews with Korean and Japanese electronics parts suppliers, 1994–95). Under these circumstances, such idiosyncratic factors as the presence of associated large MNEs may influence timing.

Table 7-11 Phases of Korean FDI and its entry into Indonesia, 1970s to 1990s

(1) Beginnings. Some electronics firms were set up by trading *chaebol* (e.g. the first was Goldstar in 1959), others as new joint-ventures with Japanese and US firms (e.g. Matsushita, Sanyo, Signetics, Fairchild, Motorola), with main products including transistor radios, mechanical exchangers and integrated circuits. Most firms quickly increased production and exports. During the First Promotional Push, the Korean government enacted the Electronics Industry Promotion Law (1968) and the Basic Plan for Electronics Industrial Plan (1969–76), with liberal provisions of financial and fiscal incentives in addition to facilities such as Export Processing Zones (1970) and Industrial Estates (1971). More domestic electronics firms emerged but the 'big three' (Lucky–Goldstar Electronics with Samsung Electronics Co. and Daewoo Electronics established in 1969 and 1972) dominated domestic production and began to form joint ventures to make parts and components with Japanese firms. Local firms set up in-house R&D of main products: cassette tape recorders, B&W TVs, transceivers, electronics calculators, condensers, transformers.

(2) First FDI wave. With the severe recession of the early 1980s, *chaebol* rationalised firm management. At the same time, the United States and the European Community began imposing the first anti-dumping duties on imports of Korean colour TVs in 1983 and 1987, respectively. Export diversification to other markets outside the US and EC markets and 'tariff jumping' FDI began. Import liberalisation in Korea began as a result of foreign pressure (Bark 1991: 9). Korean government launched the Second Promotional Push and attempted to boost demand by strengthening financial assistance and incentives with special efforts for the promotion and encouragement of relocation to Southeast Asia by setting up the Promotion Agency for Small-scale Companies in 1986 and the Export–Import Bank in 1987. Since 1987, the Bank has been sending study missions to Indonesia to analyse the investment environment and provide information to prospective Korean investors (Chang 1990:21). Promotion of semiconductor and computer subsectors occurred and Hyundai enters this segment in 1983. Improvement of process development occurred in most large firms but problems of weak product development persisted with main products being car stereos, colour TVs, video tape recorders, microwave ovens, telephone sets, semi-electronics exchanges, B&W and colour TV tubes, audio recorders and other parts and DRAM chips (Ernst 1994b). Samsung and LG Electronics first entered into joint-venture production in Indonesia in 1989 and 1990, respectively.

(3) Second FDI wave. Further overseas investments occurred after the early 1990s together with rapid expansion of exports as the Korean won appreciated with the Japanese yen during the 1994–95 period. Soaring investment and consumption, expansion of the domestic market, and rapid production growth occurred with the sharp appreciation of the won. At the same time, rapid rises in wage and cost factors at home and growing import restrictions by developed countries (particularly in the United States and the European Union) lead to 'tariff jumping' to third countries with GSP facilities (such as Indonesia, China, Vietnam). Structural adjustment ('hollowing out') occurred in the Korean economy. Standardisation of major parts and components (over 200 parts and materials including transformers, connectors, magnetic heads, capacitors) started from 1992 through to 1996. Many parts and component firms entered into both near wholly-owned and joint-venture production overseas, including in Indonesia in the early 1990s (Electronics Industry Association of Korea, various years).

(4) Third FDI wave. This period occurred from the mid-1990s with increasing motivation to build integrated production export bases together with some relocations of critical parts processes and of low-technology and labour-intensive part manufacturers. It marked the beginning of heavy investment in automation, particularly for exports and domestic production of high-value products such as video cameras, compact disk players, personal computers, fibre optics transmissions, facsimile machines, VLSIs (16 Megabyte DRAMs) and magnetic heads. Further relocation of all 'older generation' products and processes overseas and expanding intra-group overseas networks. Massive investments in physical capital (particularly in semiconductor 16M DRAMs) and R&D efforts encouraged by government guarantees and subsidies. Further incentives for relocation of uncompetitive products and processes. Gradual decrease in technological dependency through mergers and acquisitions, pursuit of own brand name (OBN) and decreasing own equipment manufacturing (OEM) strategy; improvements in international marketing and slowing down of growth rate for domestic industry occurred but all large firms expanded their global technology networks through joint-production R&D and mergers and acquisitions. New strategic alliances with some Japanese, US & other advanced country firms and new joint R&D projects and acquisitions of foreign technology firms for additional core technology in order to improve technological capabilities (Ernst 1998). LG Electronics relocated some critical components plants to Indonesia (TV tubes) and many parts and component makers expanded overseas production in Vietnam and China from mid-1996.

Sources: Electronics Industry Association of Korea, various years; Bark 1991: 9; Chang 1990:21; Ernst 1994b.

The relocation to Indonesia of Korean SMEs specialising in parts and components had twin aims: to supply the low-end assembly plants of the large firms in Indonesia; and to export back to Korea as well as to supply OEM contracts in third country markets such as the United States and Europe. Since local provision of parts in Southeast Asia has been one of the greatest challenges faced by large end-product assemblers (Hong 1993: 25), they have provided incentives and encouragement for SMEs to follow them in relocating. Large Korean firms have been more successful in

lowering their OEM exports than small and medium-sized firms. In 1995, a survey by the Korean Trade Promotion Corporation (KOTRA) found that large firms were exporting 53.9 per cent of their products under their own brand, while the comparable figure for SMEs was only 27.1 per cent due to the latter's difficulties in entering new overseas markets and the high cost of establishing after-sales service systems (*Korea Times*, 8 March 1995). Both large firms and SMEs have been under pressure to expand their own brand production, but the large firms have easier access to credit and are more able to relocate OEM arrangements, rather than licensing their own brands to local firms (Hong 1993: 26).

The overall aim of all Korean firms has been to transform product lines in Korea to higher value-added activities. This has been attained through increases in R&D, merger and acquisition activities and expansion of distribution sales networks in advanced countries, all of which are more likely to be undertaken by large firms. In addition, most industrial promotion programs, including concessionary credit in Korea, discriminate against smaller firms and favoured a handful of *chaebol* firms which have given the latter long-term advantages in capital-intensive and high-tech industries like electronics (Mody 1989; Bloom 1992).

There are strong indications that most Korean SMEs that relocated to Indonesia have strong if not exclusive links with particular affiliates of *chaebol* firms. While in Korea they are formally independent, most are linked and are tightly integrated into the production networks of one of the four major *chaebol* which, until the early 1980s, produced almost all electronics components and accessories in-house. However, an unusual characteristic of the Korean electronics industry is that 'subcontractors work only for one manufacturer and are thus locked into a fairly closed production network controlled by a particular *chaebol*' (Ernst 1998: 270-1). Such practices might have been a feature of Japanese electronics firms in 1970s but this was much less apparent by the mid-1980s (Miyashita 1994). In addition, there is evidence of a dualistic structure prevailing in the Korean electronics industry where the *chaebol* are strong and smaller parts and components makers are weak. Needless to say, this creates enormous difficulties for the suppliers (Lim 1999).¹⁴

Due to their lower profit margins than their Japanese competitors, Korean suppliers are unable to buy the latest and most sophisticated capital equipment and raw materials. Hence there are fewer supplier specialists available compared with Japan, and the Korean electronics industry still has fewer large specialist firms and fewer layers of subcontractors and suppliers than Japan (Kenney 1999: 9). This phenomenon can be observed from the Asian Region Largest 1000 Companies list (Table A7-1) where there

¹⁴ The dualistic nature of the Korean electronics industry can be further illustrated by examining the *Asiaweek* 1000 Region's largest companies list (see Table A7-1 in the Appendices). The only other Korean electronics firm listed (ranked 980th), Tae Kwan Industries, is not officially a member of the 'big three' *chaebol*. While this firm is the nation's second largest acrylic manufacturer, it only obtains 15.5 per cent of its total sales in 1994 from electronics products such as mini-components, colour TVs and VCRs which are mainly supplied on OEM contracts to Daewoo Electronics (Korea Company Handbook 1994: 81).

are the fewer Korean specialist electronics parts and components makers (four firms) than there are in Japan (11 firms). This appears to be replicated in Indonesia and may be exacerbated by the fact that Japanese firms have had a much longer presence than Korean firms (personal interviews with Korean and Japanese electronics parts suppliers, 1994–95).

Differences in industry settings between Korean and Japanese firms may determine entry timing in overseas expansion and in entering Indonesia. The dualistic nature of the Korean electronics industry can be further illustrated by examining the *Asiaweek* magazine's list of the region's 1000 largest companies. The only other Korean electronics company listed (and ranked as 980th) that is not officially a member of the 'big three' *chaebol* is Tae Kwan Industries (Table A7-1).

The relocation of most Korean firms that occurred in the late 1980s and early 1990s has been part of the second FDI wave which occurred due several factors.

This wave of Korean FDI was the result of two factors. First, to counter the deterioration of cost conditions in Korea due to the won appreciation, rising wages, land and capital cost which eroded Korea's competitive advantage in low-cost standardised products, Korean electronic firms relocated their low-cost mass production processes to Southeast Asia to be able to increasingly focus on greater product differentiation and marketing with their own brand name at home. Second, an equally important motivation for FDI for Korean firms came from the growing import restrictions mainly in the form of anti-dumping measures in developed countries, particularly the United States and the European Union.

Both 'cost-reduction' and 'tariff jumping' motivations contributed to the first FDI wave by Korean firms to third countries with GSP facilities such as Indonesia, China, Vietnam and others. As price and non-price competition become intertwined, however, these two types of motivation for FDI can become indistinguishable (Ernst and O'Connor 1992). At home, there were other strategies to lower costs within the Korean electronics industry. For example, there was a move towards standardisation of major parts and components (of over 200 parts and materials including transformers, connectors, magnetic heads, and capacitors) from 1992 through to 1996 (Electronics Industry Association of Korea 1993, see Chapter 5 for other examples of rationalisations).

During the first Korean FDI wave, the 'hollowing out' of labour-intensive production processes occurred amongst end-product large MNEs but in the second FDI wave, parts and component firms followed (Table 7-11). To survive, it was imperative for them to relocate their production facilities to Thailand, Indonesia and China, where wage rates were much lower than that in Korea (Chapter 5). As discussed above, in the early 1990s, some SMEs started to establish their manufacturing plants in Indonesia.

During the second FDI wave, which began in the mid-1990s, there was an increasing trend to build integrated production export bases as well as the relocation of

some critical parts and processes to low-cost countries and the relocation of remaining low-technology and labour-intensive part manufacturers. For example, LG Electronics relocated its TV tube and compressor (a critical component for refrigerators and air-conditioners) plants. For the *chaebol* firms, it was a period of further large investment overseas (Table 7-8 above) and of automation at home, particularly for exports and domestic production of high-value products (Jun 1994 and 1995).

Until about mid-1996, the large Korean firms embarked on a 'muddling-through' strategy which was successful for three reasons. First, the won depreciation against the yen meant that price-sensitive Korean products such as DRAMs and lower-end consumer goods became very competitive and Japanese competitors lost their market shares in these products to the Korean firms.¹⁵ Second, between 1993 and mid-1996, DRAM exports enjoyed a cyclical boom allowing the four leading Korean firms to increase capital outlays dramatically and to further expand investments in their overseas networks. They were following 'technological leadership' strategy aimed at technological upgrading through rising R&D expenditure and merger and acquisition efforts in the pursuit of greater own brand name (OBN) production and exports. This strategy was augmented by the Korean firms entering into new strategic alliances with some Japanese, US and other advanced country firms (Jun 1995). The third reason was that the mainland Chinese market increasingly absorbed cheap household products and audio-visual equipment from 1992 and so provided further windfall profits for Korean firms. Many parts and components SMEs also followed large firms into China, generating greater competition for Indonesia. Since 1996, the Chinese authorities have clamped down on imports and Korean firms' sales to China declined (Ernst 1998: 275). Nevertheless, a KIEP survey revealed that Korean firms direct their investment to China both to access the vast domestic market and to use China as an export platform. Thus it can be expected that Korean FDI in China will continue to increase. By mid-1996, Korean FDI in China across all industries and also in electronics surpassed Indonesia as has been predicted earlier (Soesastro 1993: 8; Kim 1997).

The foregoing analysis of the relationship between the parent profiles of Korean MNE affiliates and the nature of their manufacturing presence in Indonesia suggests that:

(1) The firm profiles of Korean first entry investments in Indonesia appear to confirm to the theoretical expectations outlined earlier. The early entrants, such as Samsung and LG Electronics, have better technological capacity (with higher R&D expenditures), marketing expertise (with higher sales), financial resources (with higher profits) and product diversity (with more product-mix) than the later entrants, such as Daewoo and Hyundai electronic parent firms;

¹⁵ Korean electronics firms compete with their Japan counterparts head-to-head in about 65 per cent of their exports, ranging from semiconductors to cars. Analysts have claimed that every 10 per cent yen appreciation against the won translates into an increase of between \$US1.5 and \$2 billion in exports (personal interview with Korean analysts, 1997).

(2) The firm profiles of first entry Korean investments in Indonesia appear to confirm to a different set of theoretical expectations from those of their Japanese counterparts. Early Japanese entrants appear to differ from late Japanese entrants in terms of their possession of fewer resources and different organisational characteristics. The larger Japanese firms, such as Hitachi, Toshiba and Mitsubishi, later entrants to Indonesia, are better endowed with technological, marketing and financial resources. Their organisational attributes also compare favourably in terms of firm size and product diversity. The phenomenon of structural inertia of their organisation size could have prevented them from becoming early entrants to Indonesia. In addition, due to their dominant position in the domestic market, firms may hesitate to embark on an early expansion overseas. In fact, their dominance of the Japanese domestic market could have forced the medium-sized MNEs such as Matsushita, Sanyo and Sony to expand their distribution and later on their manufacturing network overseas at an early stage of their life cycle (Gregory 1985). Early Korean entrants, however, appear to differ from late Korean entrants in terms of the greater resources at their disposal, but they appear to have similar organisational attributes. The two early Korean entrants, Samsung and LG Electronics, possess greater technological, marketing and financial resources but their organisational attributes are mixed. In their electronics product mix late entrants, such as Hyundai and Daewoo, have less product diversity and experience in relation to late entrant firms but they — like the two early entrants — both hold major portions of market share in their domestic markets.

(3) The firm profiles of first entry Korean SME investments in Indonesia seem to differ from the early Japanese entrants in that the Japanese firms appear to be better resourced and possess more advanced organisational characteristics in terms of firm size and product range. This Korean SME firm profile may be attributed to the high degree of market dominance by the ‘big three’ *chaebol* firms in the Korean electronics industry and the fairly closed production network controlled by a particular *chaebol*.

This discussions provides a setting for further investigation into the ‘cost-reduction’ and ‘tariff jumping’ motivations that have contributed to the Korean FDI investment wave in Indonesia. What firm-specific advantages did the firms believe they had to compete in Indonesia? Why did they choose to set up in Indonesia rather than use other modes of market entry? Why did they choose Indonesia? As for Japanese firms, the next section uses survey data to provide some answers for a sample of Korean firms in Indonesia.

Motivations of Korean MNEs in relocating to Indonesia

The growth of Korean electronics FDI in Indonesia occurred in parallel with their other international investments. There is little doubt that the seeking of foreign locations both as markets and as production bases and the pursuit of foreign technology played critical

roles in the internationalisation of Korean firms. Most studies use macro-level analyses and do not provide an adequate overview of the firm-level process of investment and other decision-making (Castley 1998). The following survey provides evidence about the ownership and internalisation advantages which Korean managers believed their firms to possessed that enabled them to compete in Indonesia, as well as Indonesia's locational advantages during the years of 1994 and 1995 financial years.¹⁶

Table 7-12 summarises the ownership and internalisation advantages that managers believed allowed their firms to invest in Indonesia. The four most important variables are: (1) the ability to enhance international arbitraging in the sense of taking advantage of the price differences in labour and other factors of production; (2) experience in similar countries; (3) production capabilities of the parent firm. As outlined in Chapter 5, since the yen rise in 1985 the Korean firms have been able to become more competitive as OEM suppliers to the United States and Europe in major product lines such as TVs, VCRs, microwave ovens, audio equipment, electronic clocks and watches, and household appliances, chiefly refrigerators. In the early 1990s, however, many Korean firms had difficulties in coping with the appreciation of the won which was rising about 20 per cent per year relative to the US dollar, as were average wages. By 1994–95, most Korean firms had responded by relocating to offshore assembly facilities, by increasing automation and value-adding at home, and by direct sales under their own brands (Korea Development Bank 1994). While their technological capabilities overseas were somewhat behind Japanese competitors, Korean managers may have perceived that their firms had made sufficient technological progress and market expansion through catch-up strategies to have advantages over indigenous firms, even though these advantages may have been temporary (Kim 1998).

¹⁶ The industrial profile of the sample of Korean firms is 2 large firms (8 per cent) and 23 small and medium-sized firms (92 per cent) of the total of 25 firms. This sample roughly corresponds to the number of Korean firms registered by the Indonesian Investment Coordinating Board (*BKPM*, see Table 3.1) which suggests that there are 158 small and medium-sized (96.3 per cent) and 6 large (3.6 per cent) Korean firms recorded in Indonesia in 1994–95.

Table 7-12 Ownership and internalisation advantages to compete in Indonesia as perceived by Korean MNE firms, 1994–95

Ownership advantages	Mean	Median	Mode	Standard deviation	Ranking by firms from Japan
1. advantages due to appreciation of the currency of home country and differences in factor endowment and markets	4.35	5.00	5.00	0.88	1
2. experience in similar countries	4.29	4.00	5.00	1.81	6
3. production capability of the parent firm	4.19	4.00	4.00	0.96	3
4. management know how of the parent firm	4.1	4.00	4.00	1.35	4
5. marketing knowledge within firm business partners	3.99	3.00	4.00	1.07	7
6. quality parts supply from affiliated firms	3.84	3.00	4.00	1.57	8
7. well-known brand names	3.62	3.00	3.00	1.16	2
8. business partners (distributor, licensee, etc.) in the pre-production stage	2.51	2.00	2.00	1.12	5
9. ability to influence decision makers at different levels of government in Indonesia	2.12	2.00	2.00	1.22	9
Internalisation advantages					
1. facilitating control of exports to third countries	4.56	4.00	5.00	1.17	1
2. maintaining control of production quality	4.48	4.00	4.00	1.43	2
3. preventing disruptions of the flow of inputs from home-country and/or third-country affiliates	4.34	4.00	4.00	1.66	5
4. difficulties in finding appropriate local licensee	4.26	3.00	4.00	1.25	7
5. avoiding costs of tariff and non-tariff barriers	4.04	3.00	4.00	1.72	3
6. defending and/or expanding the existing market by directly investing there to counter competitors	3.21	3.00	3.00	1.49	4
7. protecting trademark and proprietary technology	2.12	2.00	1.00	1.55	6

Source: Summarised from author's survey results.

There is, however, one critical point on price disadvantages due to won appreciation that needs canvassing. The Korean firms suffered from a dilemma due to their relatively high dependence on the foreign supply of sophisticated components, mostly purchased from Japanese suppliers. Higher Korean electronics exports usually mean a greater trade deficit with Japan (Kenney 1999: 7). It has been estimated that, on the whole, Korean electronics exporters gain only a three to four per cent price advantage over their Japanese competitors for every ten per cent appreciation of the yen against the US dollar, and the remainder is offset by the requirement to purchase more expensive Japanese components and capital machinery (Seo 1994: 6).¹⁷ Nevertheless, in Indonesia the Korean assemblers mainly manufacture low-end and standard products rather than the latest products which earn higher margins.

The next most important ownership advantage was the ability to exploit the advantage of quality parts from the parent firm, or within the firm, by using the low cost labour and materials in Indonesia — although the high standard deviation on this variable suggests that respondents were divided on this issue. In markets such as Indonesia as elsewhere in Southeast Asia, Korean firms have to overcome the 'first mover advantages' (FMA) of Japanese electronics firms, not only in their production but

¹⁷ Sourcing of expensive and sophisticated parts from the Japanese has been cited as a reason why Korean firms are more likely to relocate to a particular country which has many Japanese critical component manufacturers. (Dr. Jin Soh, a Telstra Korea director and former employee of Samsung Research Institute cited Malaysia as a case in point, personal interview, 1995).

also in the formation of supplier, customer and technology networks. While Korean parent firms suffer from high import dependency in high-value added electronic goods and capital goods, the external sourcing of low- to mid-range models is considerably lower. Large Korean firms have a competitive advantage in producing components for these lower-value products as their component segment exhibits a stable production share but most smaller firms may suffer a corresponding disadvantage as they do not have any proprietary technology (Lee 1993: 23). This question will be further explored in the discussion on internalisation advantages below.

The survey shows that the variable of having a well known brand name was not regarded an important advantage for the Korean firms in Indonesia. This is rather surprising observation for most large MNEs, but not for SMEs which do not rely on their own brand name such a finding makes sense. This finding is in contrast with the perceptions of Japanese firms, which ranked brand name as their second most important ownership advantage. The next variable that was not regarded as important was experience in Indonesia during the pre-production stage of market servicing. This is hardly surprising as most Korean firms only established their manufacturing plants in the country from the early 1990s and did not have prior presence in Indonesia, with the exception of Samsung Electronics and LG Electronics. Finally, again with the exception of these firms' affiliates, most of the respondents did not regard the political influence variable of being able to influence decision makers at different levels of government in Indonesia as an important ownership advantage. This result contrasts to responses given by the Japanese firms., Although they ranked the variable as only the ninth most important, they did perceived it to be somewhat important. This initially appears to be counter-intuitive as the problem of widespread corruption and the importance of having 'connections' with government decision-makers in Indonesia appears to go hand in hand (Hill 1998: 99). Nevertheless, because most Korean firms in Indonesia are small and medium-sized firms, they are less able to exert political influence and so it hardly comes as a surprise that they did not perceive having such an advantage as important. This explanation was borne out in follow-up interviews in which several respondents openly expressed their frustration in dealing with the government because of administrative delays, particularly in processing tax 'drawback' claims, customs clearance and other operations relating to the entrepot (*EPTE*) area, despite frequently resorting to unofficial 'fees' or 'under-the-table payments' (personal interviews with Korean electronics firms, 1994–95).

With respect to internalisation advantages, the most important motivation for Korean firms to invest directly in Indonesia rather than to undertake other forms of market entry was the ability to control exports to third countries or to re-export to their home country. This is consistent with the findings of a survey by the Korean Association of Electronics Industry Promotion (1993 cited in Lee 1994: 24) which suggests that the motives of Korean firms are centred on 'escaping the imposition of import restrictions

and accessing markets (particularly in the developed countries), while FDI motivated by the shortage of labour or wage rises in Korea scored rather lower response rates' in the survey. Passive investment motives due to import restrictions, labour shortages, and high wages summed to 53 per cent of the responses, while active motives such as sourcing parts and components made up only 5 per cent.¹⁸

The next most important motivation for direct investment was the need to maintain production quality with over half (54.5 per cent or 12) of the managers rating this variable in the range of 'important' (defined as scoring 4) to 'very important' (defined as scoring 5). This finding is related to respondents' perceptions that low labour productivity is widespread in Indonesia (fieldwork interviews with Korean firms, 1994–95). Firms were forced initially to maintain higher levels of Korean expatriate managers to train technicians and low-skilled workers than otherwise would have been the case even though their salaries were higher than those of local managers. Since most Korean manufacturing plants undertake assembly of end-products and components to serve OEM arrangements, they were reluctant to license their products to local firms. Since the mid-1990s Korean firms have been trying to expand their own brand production (Ernst 1997a). The high rating of the variable relating to input supply disruption is not surprising since the focus of most Korean firms is on using Indonesia as an export production base.

The next most important variable is that relating to the avoidance of local tariffs and non-tariff barriers. This received a somewhat mixed response. This could, as before, relate to the different impact of such impediments on firms of different sizes: large firms often find these barriers less important than small firms do. The next variable relating to the defence of the existing market was rated as not important. This follows from the fact that most Korean firms surveyed were engaged in export-oriented activities. While some of the respondents claimed that there is apparently some systematic relationship between Korean end-product assemblers and suppliers, most large end-product assembling firms have been placed under tremendous pressure to increase their local sourcing. Local components suppliers are mostly perceived as unable to turn detailed designs into high quality and cost competitive products. Japanese local suppliers who do provide quality products charge high prices and Korean firms found them to be uncompetitive. Hence, large Korean assemblers have also encouraged their smaller suppliers in Korea to relocate (fieldwork interviews with Korean firms, 1994–95). In this respect, Korean respondents show similar behaviour to their Japanese counterparts who have been relocating their component makers to Indonesia.

¹⁸ According to the survey by Korea Association of Electronics Industry Promotion, the motives reported for FDI are as follows with their respective percentages: access to new markets 37 per cent; evading import restrictions 23 per cent; securing human resources 16 per cent; utilising lower wages abroad 14 per cent; sourcing parts and components 5 per cent; and technology sourcing 5 per cent (Lee 1993: 24).

Table 7-13 Indonesia's locational advantages perceived by Korean MNE firms, 1994–95

Locational advantages	Mean	Median	Mode	Standard deviation
1. political stability	4.74	5.00	5.00	0.92
2. macroeconomic stability	4.70	5.00	5.00	1.15
3. GSP facility for marketing in the United States	4.59	5.00	5.00	1.29
4. GSP facility for marketing in the European Union	4.46	5.00	5.00	1.21
5. low cost and availability of unskilled labour	4.13	4.00	5.00	1.34
6. low material and land costs	4.11	4.00	5.00	1.42
7. waiving of import duties by government (FTZs and EPTes) to facilitate procurement, imports and exports	4.06	4.00	5.00	1.18
8. absence of foreign exchange controls and equity limits	4.02	4.00	4.00	1.36
9. domestic market size and growth	3.95	3.00	4.00	1.42
10. availability of technicians and managers	2.36	3.00	3.00	1.26
11. labour productivity	2.13	2.00	2.00	1.15
12. shipping and land transport	2.05	2.00	3.00	1.53
13. infrastructure (cost of electricity, industrial parks and telecommunications)	2.02	2.00	3.00	1.61
14. expatriate staff restrictions	1.83	2.00	2.00	1.23
15. language and cultural issues with local work force	1.69	2.00	2.00	1.31
16. investment restrictions (ownership of product distributor, divestment and minimum capital requirements, etc.)	1.61	2.00	1.00	1.12

Source: Summarised from author's survey results..

Turning to the survey responses on the perception of Indonesia's locational advantages (or the perceived 'pull-factors'), Korean companies placed political and macroeconomic stability as the two most important reasons to relocate manufacturing activities to Indonesia, as did their Japanese competitors (Table 7-12). These factors are generally more important for Korean firms, and particularly SMEs, which make up the bulk of those surveyed, since they can less afford long periods of delay due to disruptions to Indonesia's stability than can large MNEs. The next two most important motivations for direct investment were the GSP facility for marketing in the United States and European Union. While larger Korean MNEs, particularly those firms that entered in the late 1980s, aimed to take advantage of the Indonesian domestic market, they were focused on these third markets. By 1994–95, after successive liberalisation of Indonesia's investment restrictions, both large and small Korean firms became much more export oriented.

Low labour, material and land costs proved to be the next two most important sources of competitive advantage. This is not surprising since most Korean firms relocated to reduce labour and other costs which had been rising at home (Chung and Park 1997). By 1994–95, the had won appreciated against the yen (from around 870 won per 100 yen at the end of 1994 to around 790 won per 100 yen at the end of 1995), pushing up the costs of critical components for most Korean electronics firms which relied, to varying degrees, on Japanese suppliers. At the same time the won was also appreciating against the US dollar (but to a lesser extent than against the yen), rendering Korean exports to the United States and other advanced countries less competitive (Kim

and Kim 1999 and fieldwork interviews of LG Electronics and Samsung Electronics, 1994–95). Labour and other cost considerations are ranked more highly in the case of Korean firms than that in Japanese firms.

The response to the two next most important variables for the waiving of import duties by the Indonesian government and for the absence of foreign exchange control and equity limits are to be consistent with the fact that most Korean firms aim their activities at export markets rather than solely attempting to capture Indonesia's growing domestic market (personal interviews with Korean firms and electronics parts suppliers, 1994–95). One explanation for the variation of rankings between Japanese and Korean firms may be that most of the Korean firms surveyed are SMEs initially engaging in an indirect exporters scheme with the end-product large Korean MNE subsidiaries such as Samsung and LG electronics. While many of the smaller firms import most of their high value components from Korea, they often do not have their own marketing networks in the advanced market economies.

The shipping and land transport cost variable attained a mean score just below the 'important' (score 4) classification. Many SMEs surveyed reported that they experienced longer delays and higher costs for port clearance than in Korea (2–3 days in Korea compared to 3–4 weeks in Indonesia) and that this somewhat compromised the relatively cheaper raw materials available in Indonesia. A number of Korean firms have had to buy Korean trucks because they were dissatisfied with local transport firms.

The remaining variables appear to be perceived as disincentives to invest in Indonesia because they obtained very low average scores. While there are some differences in their ordering, notably in respect of the negative Korean perception of domestic shipping and land transport, these variables also obtained low scores from the Japanese respondents. Some firms observed that the time taken for customs clearance is too slow at 3–5 days for a full container and more than 10 days for a shared container (which also contains goods for other firms). In addition, a levy on the employment of expatriate technicians and managers imposed by the Indonesian government was felt to be an 'unnecessary' penalty, particularly for SMEs (personal interviews with Japanese and Korean electronics firms, 1994–95).

The investment restrictions on foreign ownership of domestic distributors and other divestment requirement (to increase local ownership in joint ventures and others) have been liberalised in recent years. These have been equally perceived by the Korean and Japanese firms as important barriers to control local market outlets and also as lowering their profit margins. Many Korean managers expressed dissatisfaction with the provision of electricity even in industrial estates and some pointed out that they had had to purchase their own power generation as a back-up or supplementary source of power (personal interviews with Korean and Japanese electronics parts suppliers, 1994–95).

It remains to be seen whether there are significant differences in the reported FDI motivation of the sampled Japanese (Table 7-5 and 7-6) and Korean firms (Table 7-12

and 7-14) with respect to the 32 listed variables. In order to test this proposition, a statistical test can be performed to detect whether there is a significant difference between the mean score ranking of FDI motivations which explain investment by Korean and Japanese firms in Indonesia. The hypothesis to be tested is that the two groups of respondents share the same distribution of motivations. If Korean electronics firms have matured and become more internationalised, then the mean score ranking of both Korean and Japanese firms' motivations can be hypothesised to belong to the same underlying population distribution.

The non-parametric Mann–Whitney test is chosen to test this hypothesis because the survey samples of the 32 variable responses from Japanese (n=27) and Korean (n=25) firms is relatively small, such that a parametric independent-sample *t* test cannot be applied. The Mann–Whitney test does not require assumptions about the shape of the underlying distributions, but only requires an ordinal scale. It tests whether the two independent samples come from populations having the same distribution or whether the sample from one group yields mean scores that consistently fall below the mean scores of the other group.

Table 7-14 Mann–Whitney test output for Japanese and Korean survey respondents

Origin of firms	Mean rank	Variables	Rank sum		
Japan	38.13	32	1144		
Korea	31.33	32	940		
Corrected for ties: $Z = -1.7789$		2-Tailed $P = 0.1895$			
Origin of firms	N	Mean	Standard Deviation	Minimum	Maximum
Japan	32	3.51	1.02	1.64	4.63
Korea	32	3.48	1.06	1.61	4.74

Source: Author's calculations from the survey data.

Table 7-14 sets out the result from the Mann–Whitney test for the two sets of respondents. The average/mean of the mean scores and the sum of the mean scores are shown for each group. The observed significance level of the test for the sample is 0.1895 (or 18.95 per cent significance level) which turns out to be sufficient not to reject the hypothesis that the mean scores of the Korean responses have the same distribution as the Japanese responses. The descriptive statistics further show that there is both a greater range and a larger standard deviation of the mean scores for the Korean firms than for the Japanese firms. This suggests that there is, on average, a greater polarisation in the survey responses amongst the Korean group of firms than amongst the Japanese group. This result may reflect similar findings of other studies of the Korean electronics industry cited above that suggest there is greater variation of profiles amongst Korean firms in general than amongst their Japanese competitors. It is interesting that greater

variation of profiles amongst the Korean electronics firms is to some extent mirrored in Indonesia.

The main finding of the surveys is that there is no significant difference in the FDI motivations of Japanese and Korean MNEs to invest in their respective Japanese and Korean affiliates in Indonesia. The survey further suggests that both groups established production facilities in Indonesia with a strong focus on enhancing their international competitiveness by exploiting production capabilities and management know-how and with the aim of exporting to markets elsewhere using Indonesia's GSP facilities. There are, however, differences in perceptions of firm-specific advantages in investing in Indonesia. For the Japanese firms, brand name and prior knowledge of the domestic market conditions were rated highly in enabling them to be competitive in that market, while for the Korean firms, production experience and marketing channels in third markets and their home country were more important.

Regarding internalisation advantages, the major factors which led both groups of firms to directly invest in Indonesia rather than use other modes of market entry were their desire to control exports to third countries and control of production quality. Finally, both groups appear to regard Indonesia's locational advantages in a remarkably similar way. Both their ranking of variables relating to Indonesia's political, economic and regulatory advantages are rated high and above those for the cost of labour. Different rankings were given by the two groups of firms on the importance of Indonesia's domestic market size and growth. The Japanese firms appeared to regard this variable as more important than the Korean firms, but both groups ranked its importance below that of low wages and other cost advantages.

Both groups of respondents appear to agree that in order to invest in Indonesia, most importantly the investment climate, regulation and physical infrastructure must be suitable no matter how attractive the wage and other costs might be. Such a result confirms anecdotal information which was reported in the financial press even prior to the 1997 financial crisis. Events after the crisis tend to reinforce this conclusion as Indonesia became the least favoured destination for Japanese electronics firms amongst the ASEAN-4 countries in the financial year 1997-98, despite the massive devaluation of its currency (Electronics Industry Association of Japan, 1998).

Summary

Indonesia provides interesting information about an under-researched question: what factors determine when existing Japanese and Korean firms enter a new host country. Consistent with previous research, it is shown that firm characteristics (resources and organisational attributes) played significant roles in entry timing of both Japanese and Korean MNEs once home and host country factors have been taken into account.

In previous chapters, the role of home-country factors and Indonesian domestic influences (regulations, political stability and other domestic factors) were discussed in detail. This chapter shows that, once such influences have been taken into account by focusing on a specific investment development cycle (or FDI 'wave'), the major characteristics of MNE investments in Indonesia can be shown to be significantly determined by parent firm characteristics and life cycles. It was the medium-sized MNEs (such as Matsushita and Sanyo) that first entered Indonesia in the early 1970s during the first wave of FDI. They were smaller and less diversified than other larger firms in the Japanese electronics industry (such as Hitachi, Mitsubishi and Toshiba). This suggests that the organisational inertia argument (large 'bureaucratic' firm-size will slow down entry), the risk-seeker argument (smaller firms are more likely to be early entrants) or the domestic industry structure argument (that less dominant firms are more likely to be early entrants) seem to be more compelling.

During the second FDI wave into Indonesia, despite some deregulatory measures in the mid-1980s, important foreign investment restrictions (wholly-owned ownership, equity divestment and others) still prevented large scale new 'greenfield' investments and mainly resulted in expansion investment by some existing subsidiaries of Japanese MNEs. But by when the third FDI wave occurred after the early 1990s, many new investments were made by firms from both Japan and Korea. Very large and diversified Japanese and Korean firms and smaller supplier SMEs from both countries made their investments in Indonesia.

Comparisons of SME firm characteristics do not, however, throw much light on whether later entrants have different advantages from earlier entrants, primarily because both groups of SME relocation are thought to be associated more with the relocation of their principal end-product large MNEs. Under these circumstances, such idiosyncratic factors as the presence of associated large MNEs may influence timing. Such idiosyncratic and other life cycle aspects of individual large MNE firm are of considerable interest and will be discussed in the next chapter.

With respect to the more researched question of what factors drive existing Japanese and Korean firms enter a new host country, this chapter provides results that are consistent with previous research.

The main finding of the surveys is that there is no significant difference in the FDI motivations of Japanese and Korean MNEs to invest in their respective Japanese and Korean affiliates in Indonesia. The survey further suggests that both groups established production facilities in Indonesia with a strong focus on enhancing their international competitiveness by exploiting production capabilities and management know-how and with the aim of exporting to markets elsewhere using Indonesia's GSP facilities.

Regarding internalisation advantages, the major factors which led both groups of firms to directly invest in Indonesia rather than use other modes of market entry were

their desire to control exports to third countries and control of production quality. Finally, both groups appear to regard Indonesia's locational advantages in a remarkably similar way. Both their ranking of variables relating to Indonesia's political, economic and regulatory advantages are rated high and above those for the cost of labour. Different ranking were given by the two groups of firms on the importance of Indonesia's domestic market size and growth, but both groups ranked its importance below that of low wages and other cost advantages. Both groups of respondents appear to agree that in order to invest in Indonesia, most importantly the investment climate, regulation and physical infrastructure must be suitable no matter how attractive the wage and other costs might be.

A greater polarisation in the survey responses amongst the Korean group of firms than amongst the Japanese group may reflect similar findings of other studies of the Korean electronics industry that suggest there is greater variation of profiles amongst Korean firms in general than amongst their Japanese competitors. It is interesting that greater variation of profiles amongst the Korean electronics firms is to some extent mirrored in Indonesia.

'Cost-reduction' and 'tariff jumping' motivations have attributed to the motivation of both Japanese and Korean firms to invest in Indonesia. Over time, it has been argued, price and non-price determinants to invest can become intertwined, particularly if a systematic sequential (rather than idiosyncratic or random) pattern of investment in a particular foreign market can be observed for an individual firm such that 'cost-reduction' and 'tariff jumping' motivation for FDI is indistinguishable (Ernst and O'Connor 1992).

Groups of SME relocations are thought to be associated more with the relocation of their principal end-product MNEs. Many Japanese and Korean firms belong to a specific group of firms. The following chapter will discuss the pattern of investment by individual group of Japanese and Korean electronics MNEs to determine whether or not a systematic pattern of sequential foreign entry by some groups from the respective countries occurred in Indonesia. In this way, the investment decision processes at the level of the group of firms (that is at the *keiretsu* or *chaebol* level) from the two countries can be analysed to enrich the analysis of when, how and why such firms have entered Indonesia.

8 Case studies of Japanese MNEs

As multinationals relocate setting up subsidiaries over time, they encourage their suppliers to follow them to host countries with an appropriate investment climate. A multi-product MNE and its affiliates formulate an overall market servicing strategy that includes an investment strategy. This relates to decisions about timing and mode of entry of affiliates and to addressing changes in circumstances. An MNE and its affiliates must regularly adapt its strategy to changing internal and external factors affecting the group. Regardless of origin, MNEs may differ widely or converge in their strategic responses to change, both internal and external. Internal factors are the principal forces that shape an MNE's global evolution and its commitment to a specific foreign market, while external forces are the most influential forces that shape a MNE's decisions on timing and mode of entry into a host country.

Over time, a sequential pattern of investment in a particular foreign market can be observed for an MNE and its affiliates with an identifiable set of price and non-price determinants for each investment while longer-term investment motivations may not be easily distinguishable (Ernst and O'Connor 1992). At the same time, a sequential pattern of investment implies that the choice of entry modes of foreign market servicing over time is fairly predictable in that MNEs tend to aim for greater control, provided there is growing confidence and willingness to assume greater market and political risks arising from investment in that host country.

One alternative to this sequential pattern, is a bunching pattern (or 'large spectacular strides') of overall market servicing strategy by multinationals. Latecomer firms and, in particular, some Korean MNEs have been argued to follow such a strategy in their bid to catch up with dominant firms in the electronics industry during the 1980s and 1990s (Oh *et al.* 1998). Established and large Japanese MNEs, one time latecomers themselves, have been mostly regarded as 'leader' or 'follower' firms following a sequential investment strategy.¹ Does this imply that Korean MNEs (or Japanese late entrants to a particular market) do not aim for greater control or a greater market share in a particular host country?

The chapter is divided in three parts. The first part reviews the literature on FDI modalities, investigates entry patterns as aspects of market servicing and considers market size, the competitive investment behaviour of leader, latecomer and market entrants. The second part provides case studies of the investment behaviour of the major Japanese MNEs and their affiliates in Indonesia. An examination of their choice of

¹ A 'latecomer' firm here is different from a 'follower' firm in that a 'follower' is behind the 'leader' firm in a particular technology, while a latecomer firm tends to be behind across a broad range of product technologies. However, latecomer firms have cost advantages over the leaders and followers as they can select from on-the-shelf generic technologies and bypass the long and costly process of research and product development, thus creating a market niche for the new product and building a brand name — at least in their initial market entry stage (Das 1999: 86).

location, timing of entry, local partner, product line, market orientation and other operational aspects allows the development of their investment strategies in Indonesia over different time periods to be assessed. The chapter ends with a summary.

Investment as part of a market-servicing strategy

While Dunning's OLI or 'eclectic' paradigm (Dunning 1977, 1980, 1988) offers a comprehensive explanation of factors that influence the initial act of foreign production by enterprises, it does not elaborate on the process or choice of investment timing, its mode or subsequent growth stages after the initial investment. Nor does it explain the evolution of a multi-product and multi-divisional MNE's entry mode decisions where multiple national markets are served from multiple national sources. The MNE generally uses a global organisation based on area or product group and, for a given product/target host country, managers are able to evaluate all possible entry modes to select the most appropriate one.

There are two streams of literature on location and mode of FDI: risk behavioural (Uppsala school) and economic (Casson and Buckley) explanations. The two have opposite predictions of the behaviour of MNEs.

The 'Uppsala School' maintains that internationalisation of MNEs from developed countries can be conceptualised as a process in the development of technological and marketing capabilities by which firms increase their involvement in international operations in an incremental fashion rather than in large spectacular strides (Johanson and Vahlne 1977; Cavusgil 1980; Cavusgil and Nevin 1984).

In a further extension, the evolutionary approach to foreign market entry, the evolution of a manufacturing firm's entry mode decisions can be assumed to proceed in a predictable fashion. MNEs will opt for entry modes that provide greater control over foreign market operations. To gain greater control, the MNE needs to commit more resources to particular foreign markets and thereby assume greater market and political risks.

MNEs typically take account of four major factors: political, domestic, external and investment climate of a host country.² It is difficult to separate out these influences but during the 1970s and early 1980s, due to Indonesia's regulatory restrictions on equity and/or risk-averse behaviour, Japanese and Korean firms both preferred minority joint ventures in the entry stage of their operations. In recent years, and particularly since the relaxation of foreign ownership restrictions in the June 1994 package, wholly-owned

² The four general categories of risk consist of political factors (stability of political environment, level of development of the institutional framework, transparency in the decision-making process), domestic factors (outlook on growth, inflation, consumption, income, savings, investment, debt, fiscal policy, perception of level economic management of the country, infrastructure, etc.), external factors (willingness to fulfil payment obligations, situation with balance of payments, valuation of exchange rates and openness of the economy) and investment climate such as receptiveness, transparency and consistency in the investment process, risk of nationalisation, contract repudiation and nonpayment (Ting 1987).

foreign affiliates have become more common. This liberalisation, together with other improvements in Indonesia's FDI regulations (see Chapter 3), had a decidedly favourable impact on the electronics industry.

Increasing confidence in their ability to compete in a particular host country and in large markets overseas shifts an MNE's trade-off between control and risk in favour of control. Over time, an MNE becomes more willing to enter a particular host country as an equity investor and subsequently as sole venture manufacturer, followed by the establishment of a series of wholly-owned related plants. A large local (developing country) market encourages localisation of production, and most electronics MNEs have established many plants in developing countries (particularly to exploit low-cost labour). However, there is a tendency among many MNEs to view operations in the advanced industrial countries as more crucial to their global business. The orientation of MNEs and related firms in Asia can be hypothesised to follow three alternative marketing strategy focuses: low-cost domestic market, differentiation within a domestic-external market continuum and international market focus strategies (Dobson 1998: 223).

It has been suggested that MNEs follow an investment development cycle where the quality of their overseas expansion depends on the stage of development of their home countries (Dunning 1986 and Tolentino 1993). Differences between MNEs manifest themselves in entry strategies, including the motivation of the first and subsequent FDI investments. In the United States from 1975 to 1992, European and Japanese firms in the electronics and chemical industries entered in their largest and strongest lines of business and, over time, extended their position by entering lines of business that were smaller and less strong (Chang and Rosenzweig 1998). Given a favourable investment climate, the evidence of multiple entry by MNEs to a particular host country points to the building of local capabilities which allow subsidiaries to benefit fully from economies of scale and scope within foreign markets (Chang and Rosenzweig 1998: 798).

The evolution of the mode of entry from indirect export to manufacture in foreign investment decisions is stylised as four progressive shifts or stages in Figure 8-1. The first stage commences with irregular/indirect export activity to serve occasional, unsolicited export orders. Firms may also become involved in a licensing arrangement. At this stage, there is only a weak commitment to foreign markets.

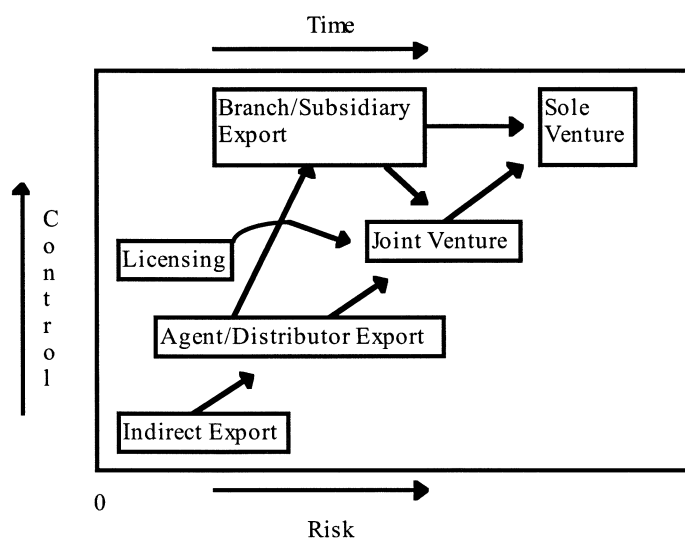
In the second stage, firms move into active exporting and/or licensing to penetrate foreign markets through an independent agent/distributor or by the use of a sales branch/subsidiary. Firms may also solicit licensing agreements. At this stage, international business can be perceived as separate from domestic business. Up to this stage, firms cannot yet be classified as multinational enterprises unless they own and control a sales branch/subsidiary overseas.

The third stage involves efforts to penetrate foreign markets. This means stepping up to full production in some foreign markets, combined with exporting and/or licensing

elsewhere. While an international division replaces the export department, international business is not integrated across countries and regions. Nor is international business strategy integrated with the domestic business strategy.

During the fourth stage, full-scale integrated multinational research, production and marketing are initiated whereby multiple national markets are catered for from multiple national sources. Most firms transform their international division with a global organisation based on area or product group. Global business strategy becomes fully integrated with domestic (home-country) business strategy to form an overall market servicing strategy. The MNE's home country is one of many national markets.

Figure 8-1 Stylised evolution of a MNE's decision on entry mode into foreign markets



Source: Summary of text.

The movement from one stage to another is driven by experiential knowledge accumulation and the direction over time is generally towards greater equity, greater management control and lower risk. This 'uncertainty-minimising' approach is used to explain market selection and choice of entry-mode, and suggests that in their initial operations in a foreign market, firms lack knowledge and, because of this perceived uncertainty, make the least possible commitment (Erramilli 1991). This approach also predicts that firms initially enter markets that are culturally similar and geographically close to the home market (in 'psychic' distance) and gradually venture into countries characterised by successively greater cultural and geographic distance.

Three exceptions to the staged and psychic distance constructs have been suggested (Andersen 1993; Johanson and Vahlne 1990): bigger steps towards internationalisation may be made by larger firms; knowledge about appropriate FMS may be obtained by means other than learning-by-doing and experience when stability prevails in a set of related foreign markets; in such markets, a firm may generalise

experience gained in one market to another. If these conditions prevail, it is possible for firms to jump stages.

Critics of the Uppsala approach argue that it fails to explain how or why internationalisation begins in the first place and claim that it emphasises the profiles of firms in each stage but pays little attention to the causes of modal change. These scholars maintain that the model does not fully explain multi-step mode changes or divestment, and is deterministic in nature (Anderson 1993; Calof and Beamish 1995). Calof and Beamish provide empirical evidence that suggests that 48 per cent of mode changes do not follow an incremental pattern and their study concludes that modal choice could be associated with perceptions of potential sales volume in the foreign market, the belief that each mode could produce a certain sales volume and beliefs associated with the costs of each mode. At the same time, managerial and other resource capacity and strategic considerations could mediate mode choice (Calof and Beamish 1995).

A second 'economic' school answers some of these criticisms but provides similar incrementalist explanations for the behaviour of MNEs from mature economies based on the rationalist paradigm of neoclassical economics (Dunning 1977, 1993; Buckley and Casson 1976, 1985; Caves 1982). Here, choice of entry mode is thought to be determined by the demand and cost profiles of each mode (Buckley and Casson 1976). Variable and fixed costs associated with exporting and foreign production modes determine which of the two is chosen. The additional fixed cost involved in increasing home production in order to export tends to be small but variable, including transportation and tariffs. In contrast, foreign production generates much larger fixed costs as it leads to expenditure relating to the acquisition of new production and distribution facilities overseas. Variable costs, in such a case, are lower than the cost of exporting, since transportation and tariff costs are avoided. Assuming that firms maximise profits, the most profitable mode will be determined by demand. If demand is low, then the fixed cost of FDI cannot be justified, thus exporting will be optimal for small markets. If demand is high with a larger market, then FDI may justify the high initial fixed cost.

The 'economic' approaches suggest that internationalisation of firms is an incremental process based on a firm's exerting market power overseas after harnessing its competitive advantage in terms of its technological and marketing capabilities in the home market. Buckley and Casson (1976) hypothesise that firms will alter their foreign market servicing over time if the foreign market grows. Firms will begin by exporting and switch to licensing and FDI as market size increases. In his early work, Buckley (1983) allowed a greater role for transaction costs in the choice of mode. In a more recent work, Contractor (1990) extends the Buckley and Casson model by including more potential modes and by considering the administrative transaction and internalisation costs as well as the direct costs of each mode.

The explanations of 'sequential' behaviour in international investment suggest that MNEs change entry mode decisions in a fairly predictable fashion. As illustrated in Figure 8-1, increasingly they choose entry modes that provide greater control over foreign market servicing. Low cost and low risk is associated with exporting to a foreign market while high cost and high risk is associated with foreign production mode, but the former provides a high degree of control to the investing firm. To gain greater control, MNEs have to commit more resources to foreign markets and thereby assume greater market and political risk. Growing confidence in their ability to compete abroad generates progressive shifts in an MNE's trade-off between control and risk in favour of control.

A similar economic paradigm is used in studies on developing market MNEs by Vernon (1966, 1974, 1979), Wells (1977), Lall (1983) and Tolentino (1993). These studies suggest that internalisation of MNEs is an incremental process also dictated by economic and strategic considerations.

Both these rival incrementalist explanations can be persuasive, depending on the phase of entry to be explained. During the initial entry phase, uncertainty considerations dominate economic factors while during subsequent entries, the opposite tends to be the case. The geographic pattern of MNE expansion depends on the prior existence of investments in a given country such that there is a greater likelihood of further investments in a particular country if it has received previous investments.

An alternative framework argues that the internationalisation of MNEs from developing markets does not always conform to the sequential development approach since the global environment has become more hostile to this pattern in recent years. Apart from the factors mentioned above that allow firms to jump phases of internationalisation, firms may be forced to build up their competitive advantages quickly and to internationalise at the same time in order to compete in the mature markets of advanced industrial countries. A strand in the literature on location highlights the global strategic focus of MNEs (Kogut 1985) such that analysis of individual MNE entry mode must include consideration of its global strategic objectives. The establishment of any one subsidiary cannot be viewed in isolation but within the interdependent network of subsidiaries belonging to the MNE. For instance, a subsidiary could be established in competitive response to a firm's main competitor even though its operation is likely to be unprofitable (Kim and Hwang 1992).

Markets with the greatest potential receive the attention of firms aiming for sales growth. The size and growth of markets have been found to be important determinants of FDI (Terpstra and Yu 1988). The sequential development of location decisions can be distorted by government efforts to alter demand conditions by lowering taxes, relaxing industry regulation or expanding and improving the supply of infrastructure (Boddewyn and Brewer 1994). Developing countries with a large population and growing per capita income, such as China, India, Indonesia and Brazil, can place the home-country

government in a better bargaining position to promote investment in their large and expanding markets, especially if they provide incentives to invest.

Thus, rather than expanding in an incremental fashion, a study of a Korean firm (Daewoo) in a mature industry (automotive) suggests that this latecomer MNE had to build up competitive advantage in large spectacular strides through resource stretching and leveraging and, at the same time, establishing or acquiring overseas production capacities by expanding into developing markets (Oh *et al.* 1998).

These explanations of the nature and strategies of entry of MNEs can be complemented by explanations of the process by which a specific foreign market is serviced. Prior to FDI, export or other activities in servicing the host country may have taken place and the experiential knowledge gained through pre-FDI activities may reduce uncertainty for an individual firm. Studies such as Aharoni's (1966) suggest that FDI is a distinct phase in internationalisation and represents only part of the process of foreign market servicing.

Modalities of foreign market servicing and market size

FDI, exports and licensing or collaborative alliances, which used to be thought of largely as substitutes, are increasingly being perceived as complementary modalities for exploiting a firm's competitive advantages. FDI is only one type of foreign market servicing strategy. Others include indirect exporting, active exporting (X) and licensing and other contractual relationships (L). The 'sequential school' suggests that the stylised pattern of servicing foreign markets over time generally follows the pattern:

$$X \rightarrow L \rightarrow FDI \text{ or } X \rightarrow FDI.^3$$

While the relationship between exporting and other forms of market servicing has not been widely studied, it has been suggested that this relationship must be 'carefully specified, as must the factors influencing multi-plant operations' (Scherer *et al.* 1975). Each of the three generic activities of foreign market servicing covers a range of operations that can be simply conceptualised, but complexities arise in practice and must be taken into account (Buckley 1997: 36–38). In particular, FDI covers activities from marketing to production operations, and distinctions sometimes must be made between different modes of FDI entry — greenfield venture, expansion or takeover — and between its different organisational forms (joint venture or wholly-owned subsidiary). In a cross-sectional analysis of foreign market servicing, total foreign sales (TFS) can be conceptualised as being comprised of exports (X), sales abroad licensed by home country firms (L) and sales arising from FDI (FDI). That is, $TFS = X + L + FDI$.

In theory, the amounts of each of the above components can be measured at a point of time, over time and in specific markets. In practice, the simple static

³ Other contractual relationships include: original equipment manufacturing; own-design and manufacture (ODM); sub-contracting; foreign buyer arrangements; and overseas acquisitions and equity investments. Needless to say, some of these forms of market servicing overlap (Das 1998:86).

differentiation can become highly complex, necessitating a dynamic approach to the analysis of specific firms' (rather than countries' or industries') FMS strategies in a specific host country.

Only by understanding the complexities of the total market servicing strategy can the individual locational decisions of MNEs be analysed. The FMS network of a firm must be understood in both cross-sectional and time-series dimensions, but the sequencing in time of changes in foreign market servicing decisions is to some degree predictable when the strategic importance of the market size of a specific host country is underscored (Buckley 1997: 44–50).

In relation to a specific market, a major complicating factor in understanding the FMS strategies of MNEs is that the three forms are often complements and not substitutes, such that a close examination of the relationship between modes is essential. Several dynamic effects that blur the distinction between the three generic FMS forms and cloud the specification of the optimal timing of a switch in modes have been identified.

Firstly, there is the 'pulling' of later-stage FDI to the sites of initial investments, resulting in the creation of an integrated, self-contained value chain overseas for the non-production activities of procurement support, employment, training and R&D (Craig 1997) as well as production activities related to intermediate 'critical' high value-added components manufacturing (see examples of investments in TV tubes, semiconductors and other such parts in Indonesia in Chapter 7 which will be discussed in case studies below).

Secondly, there is 'defensive investment' by an MNE in a plant producing a competitive product which can take the form of strategic 'exchange-of-threat' or 'follow-the-leader' behaviour between firms (Buckley 1997: 39; Jun 1992: 7; Knickerbocker 1973); such competitive behaviour of MNEs in foreign markets occurs because competition comes less from 'locally-based' companies with a home country advantage than from fellow non-local MNEs (Craig 1997: 145).

Thirdly, there are other complicating effects in the analysis of foreign market servicing such as: 'anticipatory exports' where goods are exported from the source country before the foreign plant is built; 'associated exports' where complementary products are exported by the parent after the establishment of the subsidiary; 'balancing exports', which occur when the first plant built abroad is operating at capacity; the 'world-wide competitive' dynamic effect, which occurs when the investing firm undertakes a specific FDI project; and changes in demand conditions as a consequence of a 'presence effect' which result in increased demand after the establishment of an investment presence (Hood and Young 1979: 313–15).

Fourthly, there is the situation where initial investment by a multi-business and multi-product MNE affects the nature and timing of subsequent investment (Chang and

Rosensweig 1998: 798) and increasing commitments in a given country increase the likelihood of further investment in that country (Davidson 1980).

Fifthly, Japanese firms with prior investment in a foreign market, particularly in export-related distribution operations, have been shown to be more likely to invest subsequently given appropriate exchange rates (Kogut and Chang 1996). Exchange rate considerations can be extended to cover other factors such as tariffs, regulatory and other locational effects in a specific foreign market, supporting the propositions made by Aliber (1970) above. The complexities in the cross-sectional analysis above suggest that a dynamic approach must be employed to analyse specific firms' market servicing strategies in a given market.⁴

As outlined in Chapter 7, the literature suggests that firm characteristics (both resources and organisational attributes) determine timing of entry, that is whether a firm is a leader or a late entrant into a particular market. The evidence from the Indonesian electronics industry chapter 7 suggests that firm characteristics play significant roles in the timing of entry of both within Japanese and Korean MNEs in Indonesia once home- and host-country macroeconomic factors had been taken into account. It remains to be seen whether the pattern of market servicing strategy over time, namely the mode of entry decisions of these MNEs differs by their origin. The investment profiles of early and late-entering firms can be compared over time against successive FDI waves or different stages of investment in a particular host country. Can the investment behaviour over time on the part of Japanese MNEs be sufficiently distinct to be attributed to Japanese rather than Korean MNEs? Discussions on early- and late-entrant affiliates of particular latecomer MNEs (such as Korean firms) in foreign markets is provided in Chapter 9.

The above review of the literature provides some pointers to the key issues in the analysis of the overall market servicing, including investment strategy for a group of MNE affiliates as a whole or at an MNE-wide level. Some hypotheses can be generated to reflect the nature of investment patterns of MNE groups and can be analysed against evidence found in the case studies.

Firstly, long-term investment patterns by large MNEs often consist of multiple foreign market entry over time and decisions to enter through exporting, licensing and FDI can be described as a systematic and sequential process in the sense that MNEs trade off control and risk in favour of control; MNEs choose entry modes of foreign market servicing that provide greater control, provided there is growing confidence and willingness to assume greater market and political risks. Both early- and late-entrant firms follow incremental shifts and a sequential investment strategy over time. However, when there are short-term changes relating to factors both internal and external to their

⁴ The discussion of 'associated' and 'defensive' investment patterns by MNEs, which can take the form of a strategic 'exchange-of-threat' or 'follow-the-leader' behaviour between firms, points to the need for an explanation of the distinction between leader, follower and latecomer MNEs and their associated firms. This is given in Chapter 9.

individual MNE group, some MNEs change their investment strategy in progressive shifts and a bunching of investments can occur, given appropriate exchange rates and a favourable investment climate.

Secondly, both internal factors (which are principal forces in shaping an MNE's global evolution and in shaping its growing commitment to a specific foreign market) and external factors (which are the more immediate and influential forces) shape an MNE group's timing of entry and mode decisions for a specific product or target country.

Thirdly, the character of investment by MNE groups in Indonesia is partly determined by the life cycle of the MNE group (vintage effect), which initially focuses on manufacturing the 'strongest' product lines. In the later stages, the establishment of affiliates is motivated by building local capabilities in production and R&D for specialised world products as well as the production of critical components.

The case studies on Japanese MNEs below discuss the global and regional milestones of each MNE, their operations in Indonesia and their attempts at building local capabilities through the development of their local suppliers to examine whether their long-term pattern of investments in Indonesia confirm the three elements of the above hypothesis. The next chapter deals with case studies of Korean firms and assesses whether, as they mature, Korean firms have come to adopt similar sequential investment strategies to those employed by their Japanese competitors.

MNEs which entered Indonesia during the 1970s and early 1980s are classified as early entrants while 'late entrant' firms are those which entered after the late 1980s and early 1990s.⁵

The case studies of three Japanese large MNEs below examine whether there are significant variations in the overall investment strategies of their MNE groups in relation to the evolution of their market servicing decisions on entry mode and timing. Each case reviews the development of the multiple entry of firms related to a major MNE group into Indonesia. With MNE group-level analysis, individual relocation or establishment of MNE affiliates can then be examined within the trajectory of the group's development.

Case Study 1: Matsushita Group

Japan's Matsushita Group has been a world leader in many consumer electronics products and a pioneer in overseas expansion since 1959 (Kinugasa 1982). Before the mid-1980s, Matsushita, like other Japanese leading electronics MNEs, internationalised its manufacturing investments with the aim of reducing trade friction and countering the impact of the strong yen on cost competitiveness. In addition, sales and distribution investments were shifted to access overseas markets (*Focus Japan* 1996). A new pattern

⁵ A late-entrant firm is a classification for firms in reference to their time of entry into a host country. Such a firm can be either a 'latecomer' firm (such as Korea's Samsung) or a leading firm (such is the case with Sony from Japan).

of internationalisation in support functions such as R&D and employee training facilities which occurred since 1985 has been suggested as 'pulling' later-stage FDI to the sites of initial investments, resulting in the creation of integrated, self-contained value chains overseas (Craig 1997).

This investigation of Matsushita Group investments in Indonesia between 1970 and 1997 covers the nature of and motivations for these investments. It examines the pattern of FDI and other market servicing during the period and argues that the Matsushita Group follows a sequential and staged entry process. Further, it argues that since the early 1990s, initial investments created a 'pull' of later-stage FDI of export-oriented and critical component plants to Indonesia. While continuing to serve the domestic market, Matsushita clearly attempted to develop specialised products production platforms and a network of local suppliers to support its manufacturing operations in Indonesia. Some minor changes in R&D activities for some products were carried out in Indonesia, resulting in the establishment of more integrated, self-contained value chains. The investment pattern of the Group's expansion in Indonesia is examined by reference to Matsushita's earlier overseas expansion and the role of Indonesia's domestic influences. By mid-1997, Matsushita had 14 affiliates, the largest number of any foreign electronics firm, and the longest presence in Indonesia.

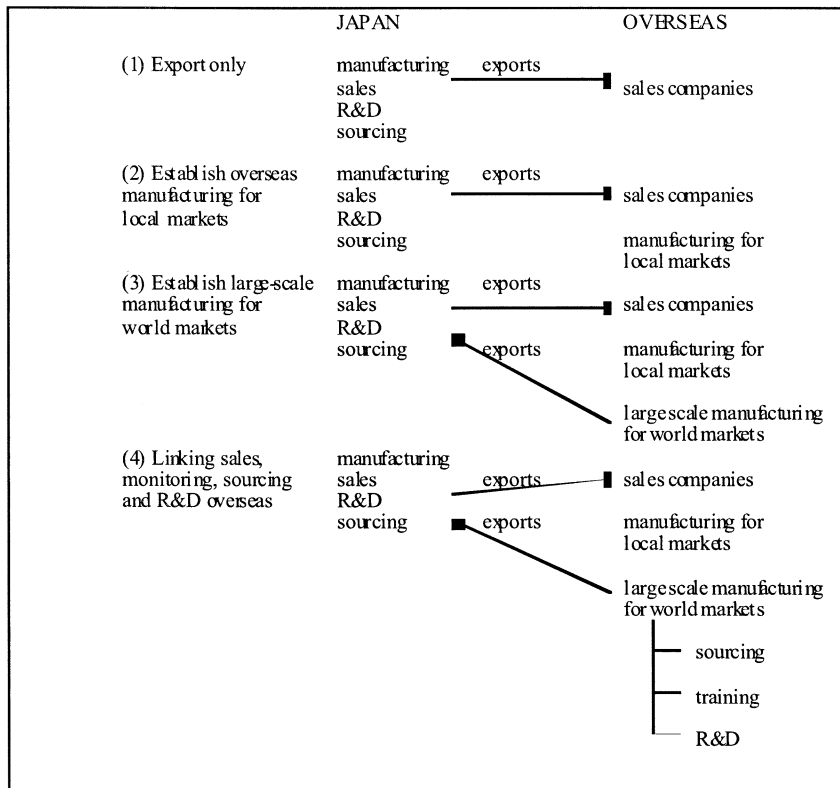
Matsushita's global and regional milestones

The principal parent company, Matsushita Electric Industries (MEI) Co., Ltd., is tenth among the top ten largest Asian MNEs (Table 7-7) with total sales for the 1996 fiscal year of \$70.6 billion. Founded in Osaka in 1918, the Matsushita Group has more than 300 affiliates around the world with 63 per cent of its manufacturing facilities located overseas (Table 7-2). This makes it one of the most internationalised Japanese MNEs.

Matsushita's overseas expansion has had a long history and can be classified into four stages (Table 8-1).

Firstly, for exports only, the earliest motivation before and after World War II was for sales and distribution. The second phase was the establishment of overseas manufacturing for local markets. The third phase came in response to import restrictions in advanced industrialised countries, chiefly the United States. Matsushita expanded its overseas manufacturing in low-cost production platforms for world markets. In addition, there was motivation to produce where consumption occurs and to increase local sourcing.

Table 8-1 The four stages of Matsushita's internationalisation, 1950s to 1990s



Source: Craig (1997: 151).

The fourth and current phase for expansion came with the need to fully utilise scarce managers and skilled workforce, material, capital and technology by linking development, production and sales (*kai-sei-han* or *kaishatsu-seisan-hanbai*) to maximise the value of overseas operations. This motivation, according to Ryoji Mita of Matsushita corporate headquarters, is more important than the directives or incentives given by host country government to localise production and research:

...there are external pressures...such as demands to increase local procurement. But we are doing this less in response to government pressures than for economic reasons. The ideal is to have R&D, material and component procurement, manufacturing and sales in one geographic area. In the end this is most economically efficient, though not necessarily now, during transition. (Craig 1997: 150)

In 1932 Matsushita entered into direct export of products such as dry batteries, battery lamps and radios through its export trading company, first to China and Manchuria, and later to all Southeast Asian nations. Further development in the 'new exporting activities' program began in 1954. The pattern of success, as in the initial case of radios, involved the development of a new product design, low price as a competitive tool and mass production, which dominated marketing channels in Japan first. Then MEI applied those methods overseas, building up business know-how acquired through domestic activities. The establishment of overseas marketing of radios was followed by overseas manufacturing, with close cooperation between the Radio Division and Matsushita Electric Trading Co, which was established in 1935 to handle overseas trade

(Matsushita 1988: 227). The close relationship between the product division and the Trading Co. would be repeated for other products later (Kinugasa 1982: 29).

From the beginning of the 'new exporting system' in the postwar period, MEI directed its exports at the US and advanced markets, establishing local marketing systems (with a sales subsidiary as the centre) in the United States (1959), West Germany (1962), Canada (1966) and in Southeast Asia in Thailand (1970), Singapore (1974) and Malaysia (1976). MEI regarded the US market as the most important export market and concentrated its efforts in product development for this market. 'Matsushita used the U.S. market as a pilot farm for product diversity and an index for sales all over the world' (Kinugata 1982: 30).

Direct investment in LDCs in the 1960s and 1970s began with investment in Thailand (1961 producing radios, dry batteries, parts, CTVs), Malaysia (1966 producing also dry batteries, radios, parts, electronics appliances), the Philippines (1967 producing dry batteries, radios, stereos, transistors) and Indonesia (1970 producing B&W TVs, transistor radios, parts and electrical appliances, see Chapter 6). Most of these subsidiaries were established initially to produce highly standardised and technologically simple products.

Matsushita's operations in Indonesia

During a period of considerable growth in local and third-country markets in the 1970s, Matsushita's manufacturing operations began in Indonesia. MEI expanded into countries where there were few foreign ownership restrictions and a supportive investment climate prevailed. MEI's major manufacturing divisions first established overseas parts factories. MEI founded wholly-owned subsidiaries to produce critical parts in Singapore, Malaysia and Mexico (1972–78) and compressors for refrigerators and AC, wireless, electronic motor and other parts (Ide 1994: 3). The possibility of such relocations to Indonesia was remote in the mid- to late 1970s because the anti-Japanese *Malari* riots that occurred in Jakarta (January 1974) precipitated a swing towards more restrictive FDI policies with the banning of 100 per cent foreign ownership, increased domestic ownership and progressive 'deletion' requirements (Hill 1988: 145).

In 1970, the initial motivation to establish a Matsushita subsidiary in Indonesia was to counter protective tariff and import restrictions by the host-country government. The focus in this phase was on marketing products in local markets by establishing joint ventures with local partners, but direct investments were small in scale. However, during this phase, the Matsushita Group, like other Japanese electronics MNEs, regarded the United States and other developed country markets as of greater strategic importance than markets in the developing countries (interview, former managing director, 1970–90, PT National Gobel, 1995).

During the 1970s, many of Matsushita's subsidiaries located in low-cost developing countries were solely aimed at production for large advanced markets. Such investments were primarily driven by the motivation to penetrate the US market (Kinugasa 1982: 37). For example, the successful subsidiary established in Puerto Rico in 1965 was established to serve the US market.⁶ Using this strategy, Matsushita achieved considerable growth in production by selling to third-country developed country markets. The initial range of products (starting with radios or dry batteries) had the following characteristics: (i) they were highly standardised and technologically simple; (ii) they needed a limited number of parts; and (iii) the scale of production could be easily adjusted to meet local demand. Over time, the range of products and volume of production gradually increased (Kinugasa 1982: 32).

In 1960, the Matsushita Group began its activities in Indonesia with a 'technical assistance agreement' to produce radios with a local firm, PT Transistor Radio Manufacturing, led by the pioneer Indonesian electronics entrepreneur Mohammad Gobel.⁷ In 1962 the same company started to assemble black and white television sets under licence from Matsushita for the Jakarta Asian Games. As the market for both products rapidly expanded, this company changed its name to Gobel & Cawang Concern in 1967. By July 1970, Matsushita formed a joint venture with this company (with 40 per cent equity) under the name PT National Gobel (NABEL) to produce radios. The size of the investment was a modest \$17.5m and it employed 2,371 local and 22 expatriate workers (Table 8-2a).

Changes in factors internal to the Matsushita Group, particularly the growing commitment to the US and other developed countries markets, shaped the Group's transition from stage two to three (Table 8-1) of its international expansion during 1973–85, with the gradual introduction of large-scale manufacturing for world-wide markets. The external environment during the 1970s, particularly in the aftermath of the first oil shock (1973), resulted in Matsushita undergoing rapid overseas expansion. In addition, in Indonesia, the competitiveness of local manufacturing rose when the Indonesian rupiah depreciated by 50 per cent in 1978. As a result, NABEL expanded its investment to \$50 million including the in-house production of parts (TVs antennas, transistors and transmitters). This was soon followed by the production of black-and-white TVs in 1972, air conditioners in 1974, refrigerators and car audios in 1975, CTVs

⁶ Puerto Rico's market was small but it had the same tariffs as the United States and new foreign investments then received various kinds of concessions. The cost of labour was also comparatively cheap. Products made there could legally carry the 'Made in the USA' label and did not attract any tariffs when entering the US market. Matsushita's investment in Puerto Rico was made before the enforcement of import restrictions by the US authorities. Thus, Matsushita's investment in Puerto Rico was not primarily driven by the low labour cost but rather by the motivation to 'cope with the uncertainty of the U.S. market and to penetrate' that market (Kinugasa 1982: 37).

⁷ In 1954, the entrepreneur Dr H. Th. Mohammad Gobel established PT. Transistor Radio Manufacturing, the first transistor radio plant in Indonesia, which produced radios under the brand name Cawang. The joint venture PT. National Gobel worked under a twin corporate business policy: the first was 'mass producing good products at fair prices', which MEI's founder Konosuke Matsushita referred to as the 'tap-water philosophy' (analogous to the public water supply system that provides portable water at low cost) to promote the livelihood and development of the global market culture (not just Japan) with a constant emphasis on gaining market share (Matsushita 1988); and the second company credo of 'usefulness of all parts, regeneration and adaptive resilience' was based on Gobel's 'the life cycle of banana trees' concept (Ramadhan 1994).

in 1978 and washing machines in 1979 (Table 8-2). In 1974, a sole domestic agent to distribute MEI's more sophisticated products (National, Panasonic and Technics brand name not produced by NABEL) was established. This was followed by the establishment in 1977 of a new domestically owned (*PMDN*) firm, PT Gobel Dharma Nusantara, to market NABEL across the Indonesian archipelago.

Factors in Indonesia played an important role in shaping the character of Matsushita Group's investment. The 'dark-age' import-substitution period (1973–85) offered limited possibilities for NABEL to upgrade its technological capabilities to undertake small product changes or R&D (Chapter 3). The effects were still felt in the 1990s (interview, 1995). The high protection given by the government as well as the fact that the market was relatively unexposed to the new electronic goods made the domestic market rather 'soft'. During 1973–85, almost all the products NABEL introduced were acceptable to this market as there was little competition from local or other foreign electronics firms. Quality control was low, there was little transfer of technology as it was deemed unnecessary by MEI. Management methods were described by some local managers and employees as 'authoritarian colonial style' as there was only room for those who were obedient 'order-takers' (interviews, former NABEL employees, 1994).

After 1985 NABEL, like all former 'mini-Matsushita' subsidiaries that produced a variety of products for domestic markets from small plants, underwent a transition with the aim of turning particular subsidiaries into world 'product mandate' producers or specialist manufacturers of a specific narrow range of products. Mass-production concepts embodied in the 'water-tap' philosophy were replaced and a new focus on market segmentation was introduced. There was greater emphasis on innovation within subsidiaries to cater for specific markets. MEI subsidiaries were instructed to trim their product lines by up to 30 per cent and a massive program of restructuring was launched to overhaul the distribution system, cut costs through attrition and emphasise profit over market share (interview, PT Kotobuki Electronics Indonesia 1994).

The decline in Indonesia's oil revenues led to a 38 per cent devaluation of the rupiah during 1982–83 and Indonesia entered a new phase of 'deregulation'. The appreciation of the yen after 1985 placed NABEL under intense pressure to increase local parts sourcing and to raise export performance. NABEL now had to be able to compete with other firms and MEI affiliates which had achieved low costs by applying their production techniques to maximise scale. Another major issue was local sourcing. With some standard products such as radios and cassette tape recorders, NABEL was able to achieve 85 per cent domestic content, but for more sophisticated products such as TVs and VCRs, NABEL could only supply 50–60 per cent and 5 per cent of the parts, respectively. This was largely due to the absence of local TV tube or semi-conductor fabrication plants (interviews, a former PT NABEL employees, 1994–95).

Table 8-2 Subsidiaries of the Matsushita Group in Indonesia, 1970-97*

(part a)					
Name of subsidiary	PT. National Gobel (NABEL)	PT. MET and Gobel (MET&G)	PT. Matsushita Gobel Battery Industry (MGBI)	PT. Kotobuki Electronics Indonesia (KEI)	PT. National Panasonic Gobel (NPG)
Establishment Date	July 1970	October 1974	February 1987	May 1991	May 1991
Investment size#	\$17.5m	\$1m	\$10m	\$20m	\$3.135m
Domestic-foreign ownership ratio	40:60	100:0	45:55	5:95	40:60
Local (and foreign) workforce	2,371 (22)	44(3)	500(5)	2,088(22)	595(3)
Products/services	Radios, R-cassettes, stereo sets, Backlit address, B/W & CTVs, ACs, irons, water pumps, refrigerators, washing machines, electric fans, speakerboxes, kitchen systems	Agent of National, Panasonic, Technics not yet produced in Indonesia	Batteries and torchlights	VTR exclusively for the North American market; sub assembly and electronic components	Sole agent of PT. NABEL and PT. MGBI
Market orientation	domestic	domestic/export	domestic/export	export	domestic/export
(part b)					
Name of subsidiary	PT Asia Matsushita Battery (AMB)	PT Matsushita Gobel Electric Works Manufacturing (MABEL)	PT Panasonic Gobel Electronic Components (PGCOM)	PT Matsushita Denko Gobel (MDG)	PT Matsushita Gobel Battery Industry (MGBI)
Establishment Date	November 1991	May 1992	July 1993	May 1993	April 1994 (re-launched)
Investment size#	\$0.31m	\$20m	\$10m	\$1.2m	doubled to \$20m
Domestic-foreign ownership ratio	0:100	0:100	11:89	0:100	45:55
Local (and foreign) workforce	115 (3)	100(3)	1,258(5)	20 (0)	950 (5)
Products/services	Battery pack manufacturing	Lighting products		Sole agent of PT. MABEL	D, C, AA and AAA batteries
Market-orientation	domestic/export	Domestic/export	domestic/export	domestic/export	domestic/export
(part c)					
Name of subsidiary	PT Panasonic Battery of Indonesia (PBI)	PT Matsushita Semiconductor Indonesia (MSI)	PT Matsushita Lighting Indonesia (MILI)		
Establishment Date	March 1996 and 1997	March 1996 and September 1997	Announced in July 1996 to start building in Sept. 1996 and start production in July 1997 (East Java)		
Investment size#	\$25.5m (MEI 35%, MBI 60%, MGBI 5%)	\$60m (MEI 60%, Gead Co, Osaka 40%)	\$60m		
Domestic-foreign ownership ratio	0:100	0:100	0:100		
Local (and foreign) workforce	100 (2)	176 (4)	100 (2)		
Products/services	Coin-type lithium batteries	(to be the largest overseas semiconductor base in Asia by 2000, third after Singapore and Shanghai). 700,000 micro-controllers and 1.3m ICs	(to raise to 5% from 1% share of overseas production, other plants Thailand and Mexico) Screw-in/circular and straight type florescent lamps and glass globes, PCBs, energy-saving lightbulbs		
Market-orientation	domestic/export	domestic/export	domestic/export		

Note: # Amount of investment at the inception; * Amount based on the exchange rate as at 28 September 1995;
Source: Asian and Middle East Region Section, Matsushita Electric Industries Co. Ltd., Tokyo, 28 September 1995.

Development of local suppliers

While Indonesia possesses comparative advantages in areas of parts production such as in plastic components, wood cabinets and other highly labour-intensive operations, these

tend to be low 'value-adding' products. Initially, NABEL found the extent of value-adding activities was limited. Apart from the adverse investment rules that prevented NABEL or other foreign subsidiaries from relocating critical component plants to Indonesia during 1973–85, the small scale of the domestic market at the time prevented economies of scale.

During the early half of the 1980s, Japanese trade friction with the United States and Europe escalated. In this period, NABEL continued its domestically-oriented activities as in the 1970s but with greater emphasis on expanding its training facilities as an acute shortage of technically qualified and semi-skilled workers who were literate in English began to emerge.⁸ In 1984, the Mas-Gobel Institute Foundation training centre (and Education Division *Yayasan Pendidikan Mas Gobel*) was opened and training was available to NABEL and other firms. In the same year NABEL's founder, Mr M. Gobel, passed away and his son Rachmat Gobel took over the Indonesian management of National Gobel Group (NGG) and his 40 per cent stake of NABEL.⁹ The company is known to have a large number of local suppliers but they mostly receive technical rather than financial support.¹⁰

In the latter half of the 1980s, as the yen strengthened after the Plaza Accord, MEI entered a new expansionary phase and embarked on an ambitious plan to establish a four-polar managerial system, independently based in Japan, the United States, Europe and Asia. The integrated production networks in Southeast Asia were to be managed from the regional headquarters in Singapore in 1989 by Asia Matsushita Electric. While in the past the Group had exclusively exported finished products and parts from Japan, in this phase it expanded operations to the procurement of materials and parts from overseas suppliers and also the import and the marketing of consumer products in Japan to reduce Japan's trade surplus (Ide 1994: 3). Matsushita started to relocate plants

⁸ The average level of education of Indonesia's workforce is the completion of primary school, while the technical colleges (STMs) have lagged in their ability to meet MNE subsidiary requirements. They have hardly changed their curriculum during the last two decades.

⁹ While in the past Mr Gobel Snr. believed in the importance of maintaining his equity and a good bargaining position *vis-à-vis* the Japanese, the position that Mr Gobel Jnr. is taking is quite different. He does not seem to worry about the level of equity that he obtains (although he still retains the original 40 per cent that was granted to his father) but he focuses his efforts in becoming a good supplier so that the Japanese become more dependent on his company. Gobel Jnr. is said to have a better understanding of Japanese management as he received his tertiary education in Japan. Some argued in the early 1990s that MEI had an underlying long-term strategy to lower local ownership of PT NABEL (interviewee, former manager, PT NABEL, 1995). Since the joint-venture contract would cease after 30 years in the year 2000, by 1992–93 Matsushita was aiming for the establishment of subsidiaries which would be 95 per cent Japanese owned before 2000. These subsidiaries would specialise in the production of profitable and export-oriented products such as water-pumps, radios. By 2000, it is expected that the NABEL company itself will be completely 'hollowed out' so as to become powerless and the Indonesian partner would be put in an increasingly weak bargaining position *vis-à-vis* the Japanese management. Such a strategy was alleged to be 'hidden' underneath the public relations campaign conducted by NABEL. While subsidiaries with 95 per cent Japanese ownership did become a reality before the year 2000, nevertheless at the time of writing, there is no clear evidence that the Indonesian management are now in a weaker bargaining position.

¹⁰ In 1985 the Indonesian government presented an award to the company, the first such award given to a company for success in the support of small-scale industry under the 'linkage' program, which encourages links between SME suppliers with large assemblers such as NABEL. While a number of suppliers to NABEL reported that, in practice, they only receive technical rather than financial support, it was estimated that there were 250 or more suppliers to the Matsushita Group in Indonesia by the mid-1990s (interview, former NABEL manager, 1995).

producing high-tech products such as AV and information-processing devices plants to the United States and Europe.

For a range of low- to mid-end products, MEI based its world sourcing strategy on investment in locations in Southeast Asia. In Malaysia, integrated production networks (such as for air conditioners) were established, ranging from an R&D centre to final assembly in 1989. As discussed above, the shift to larger factories producing single products for exports to third markets began in the 1970s, when the first appreciation of the yen (*endaka*) began to erode the export competitiveness of goods produced in Japan. The move towards a fully integrated production system in the late 1980s was also driven by exchange rate appreciation. The increasing cost of parts imported from Japan made products and some critical parts assembled using relatively cheap labour suddenly very competitive. The relocation of product design and R&D was critical, since if product design remained centralised in Japan, it would be difficult to increase local content. Matsushita was also experiencing increasing difficulties in recruiting R&D staff in Japan and established the Matsushita Education Centre in Matsushita Electric Corporation of America for the Americas (Craig 1997: 150). A similar centre for the Southeast Asian region was established in Malaysia (Ide 1994: 12).

From 1986, the Matsushita Group's presence in Indonesia expanded with the introduction of product modification design activities, expansion of product range (electric irons) and establishment of the large-scale manufacture of specialised products for world-wide markets. In 1987, a joint venture company, PT Matsushita Gobel Battery Industry (MGBI), was established to produce dry-cell batteries. Its shareholders are PT Pabrik Diesel Dan Traktor (which owns a 45 per cent share and previously had technical and financial support from PT NABEL), Matsushita Electric Industrial Co., Ltd. (MEI, 25 per cent) and the Japanese affiliate specialist battery manufacturer Matsushita Battery Industrial Co., Ltd. (MBI, 30 per cent) (Table 8-2b). MGBI went into production in 1990 and reports exports over 60 per cent of its output overseas (NGG company report 1991). In 1988, the production of water pumps began. In 1991, a new sales division (PT National Panasonic Gobel – NPG) was established to market the products of NABEL and MGBI, replacing PT Gobel Darma Nusantara. While NABEL claims to have been engaged in export activities since 1980, by 1991 it reported that its exports (of which about 75 per cent are speakers) were only a little over 10 per cent of total sales (PT NABEL company report 1992).

In 1991, the Matsushita Group commenced an investment which set a new pattern for its investments and for the National Gobel Group as a whole in Indonesia. A new Matsushita affiliate, PT Kotobuki Electronics Indonesia (KEI), was established with capital of \$20 million and employing 350 local and 15 expatriate employees to produce VCRs for export on an OEM basis to US electronics makers to be sold under Magnabox, Thomson, Philips and Matsushita's Panasonic brand names. Indonesia's investment regulations at that time stipulated that all KEI's products had to be exported overseas.

The parent company Matsushita–Kotobuki Electronics Industries, Ltd., which controls 95 per cent of KEI's shares, is Matsushita Group's production centre for VCRs, principally for the US market.¹¹ Components used for KEI operations come from Matsushita's affiliates in Japan (video heads), Thailand, Malaysia and Singapore (customised microchips, TV tuners, assembly kits) (interview, 1994).

In November 1991, another much smaller affiliate of the Singapore-based Asia Matsushita Electric Co. Ltd. was established in Batam Island — PT Asia Matsushita Battery (AMB), producing battery packs. Its investment was a modest \$310,000 and it initially employed only 115 local and three expatriate workers. The motivation was to take advantage of low labour costs on the island and the relocation incentives provided by the Singaporean government (interview, 1994).

In 1992, MEI embarked on a major global restructuring drive to counter the effects of the economic downturn affecting Japan, reorganising its production and distribution system in Japan to focus to higher value-added processes and products, particularly an emerging new wave of products combining consumer electronics and telecommunications (*Asian Wall Street Journal*, 7 October 1992). While demand in Japan and elsewhere in the United States and Europe was in decline, in Southeast Asia there was strong demand for a wide range of electronics.

As part of the global restructuring effort, two new affiliates of Japanese affiliates of MEI were established in Indonesia in 1992. Firstly, PT Matsushita Gobel Electric Works Manufacturing (MABEL), a lamp and lighting manufacturing subsidiary, was established to supply both domestic and overseas markets (Table 8-2b). With an initial investment capital of \$20 million and a workforce of 100 local and three expatriate employees, it was jointly owned by MEI (35 per cent), Matsushita Electronics Corporation (60 per cent) and NABEL (5 per cent). As lighting products were considered as separate from mainstream consumer electronics products, a local distribution firm, PT Matsushita Denko Gobel, was established (Table 8.15). Secondly, Panasonic Gobel Electronics Components (PGCOM) was separated from Nabel as it became a centre for speaker production to supply world markets. PGCOM's investment totalled \$10 million and its shareholders are MEI (25 per cent), Matsushita Electronics Components, Ltd. (55 per cent), NABEL (15 per cent) and Mr R. Gobel (5 per cent).¹² Half of PGCOM's output was to be exported and half was for domestic use for all NGG affiliates. The aim was to create an upstream source of components supply to attract the relocation of other Japanese OEM and suppliers to Indonesia so Matsushita's specialist affiliates such as PGCOM, MABEL and MGBI could lower component costs and attain sufficient scale of production.

¹¹ Matsushita–Kotobuki Electronics Industries, Ltd., with sales of about one-thirteenth of MEI's (in 1997, ¥577 billion compared with ¥7.4 trillion), started out as Kotobuki Denko Co. in 1960 but came under the control of the Matsushita group in 1969. By 1997, it was focusing on the production of its mainline products such as large-capacity hard-disk drive (HDDs), CD-ROMs and their related parts, camcorders and other high-end products in Japan and transferred VCR production on an OEM basis and other lower-end production overseas to Indonesia and Ireland as well as small-capacity HDDs to Singapore (MKEI company reports 1997).

¹² Note that R. Gobel also holds a 5 per cent share of KEI, but 85 per cent of MET&GOBEL.

Because of Indonesia's comparative advantage in producing low-cost components and its low labour costs, the product mandate for speakers was assigned to Matsushita's Indonesian operations. According to its senior manager, the Indonesian speaker plant for exports had the highest productivity among all MEI affiliates in Southeast Asian (interview, 1994). To supply end-users and other electronics manufacturers in Indonesia such as the Japanese firms Sanyo and Sony, Indonesian domestic firms such as Polytron and others, another affiliate, PT National Komponen, was established with a speaker manufacturing plant in Cawang, Jakarta in 1991. It was managed separately from PT NABEL so that it could assemble speaker components — the magnet, frame, plate and compartment — which are produced locally at least 70 per cent more cheaply than in Japan. The only imported parts were ceramic speaker components (interview, 1995). As a result of MEI's policy of greater R&D localisation, between 1990 and 1995, there were more R&D activities among all Matsushita affiliates in Indonesia with a move to go beyond product modification to localisation of model design in products such as TVs, electric fans, and radio and audio headphones.

There were other MEI affiliates relocations to Indonesia in the early to mid-1990s. In January 1993 PT Matsushita Gobel Battery of Indonesia, which was capitalised initially at \$10 million, was doubled in 1994 (Table 8-2b) to expand the manufacturing of several types of batteries and battery related products (torchlights). The ownership composition of the revamped battery affiliate changed, with MEI controlling 25 per cent, Matsushita Battery Industries controlling 30 per cent, and PT Gobel International (the Gobel family holding firm) controlling 45 per cent. The plant that was built in Jakarta's outskirts became the world's largest manganese dry battery plant. Its establishment was aimed at 'strengthening Matsushita's global supply system' as one of its 15 battery plants world-wide. Exports went chiefly to the US, the Middle East and the Oceania markets, where about 75 per cent of output was exported in 1996 (*Matsushita Newsrelease*, 12 March 1996). Battery production by a NABEL affiliate, PT Paditraktor, which began in 1972 as a sideline to its diesel and tractor business, was transformed in 1987 into a specialist battery manufacturer under the name MGBI. However, the share in this affiliate of the Indonesian partners did not diminish as a result of the transformation, suggesting that they maintained a steady bargaining position.

In June 1996 a new affiliate, PT Panasonic Battery of Indonesia, initially capitalised at \$20 million and employing 100 people, was announced (Table 8-2c). It was owned by MEI (35 per cent), Matsushita Battery Industries (60 per cent) and MGBI (5 per cent), and started manufacturing lithium batteries for calculators, electronic watches, notebooks, cameras, video and game machines in December 1996. Global demand for lithium batteries is estimated at 700 million units and rapid growth is expected in Asia with around 50 per cent of total market demand.

In September 1996 PT Matsushita Lighting Indonesia (MLI) was established to manufacture fluorescent lamps in Indonesia and to market lighting products to the US,

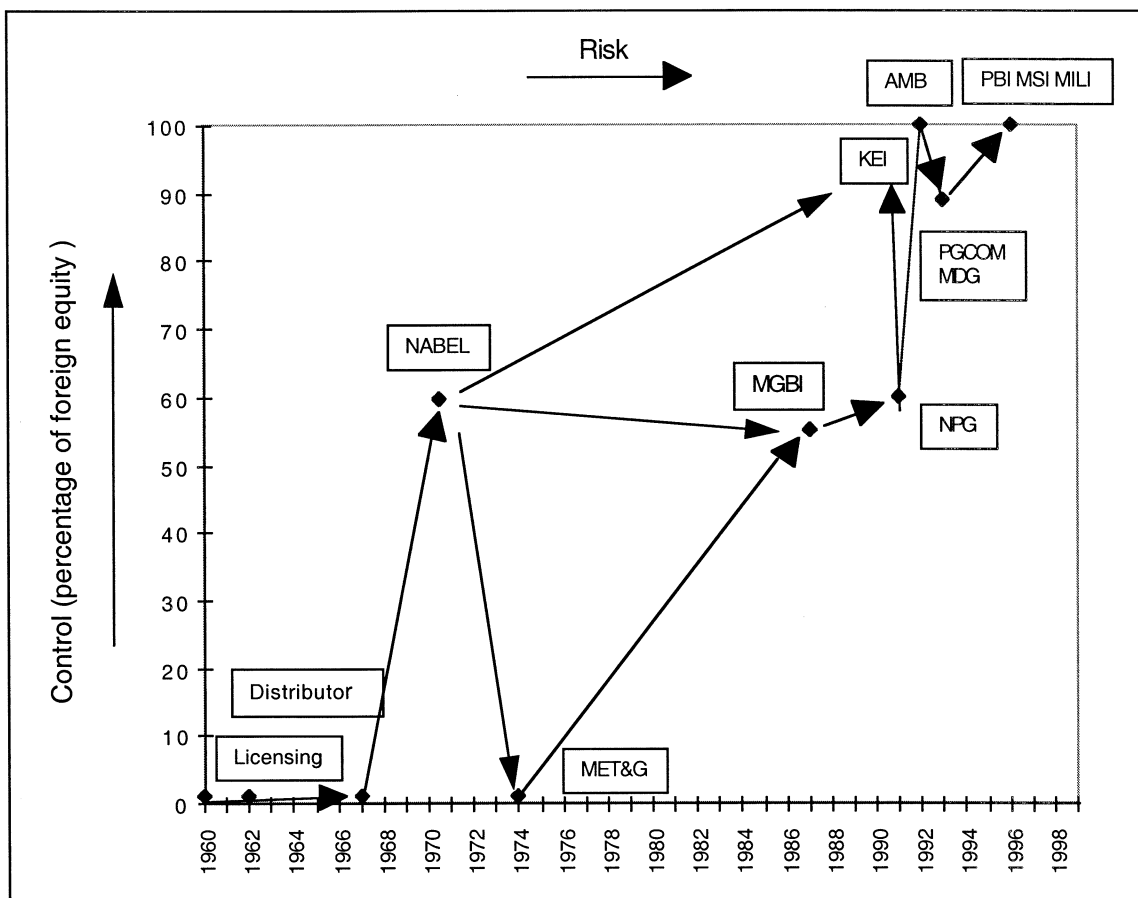
European and Middle Eastern markets, complementing production platforms in Thailand and Mexico. Unlike most other Matsushita Group affiliates in Indonesia which are located in or near Jakarta, this new plant is located at Pasuruan Industrial Estate Rembang (PIER) in East Java. The Matsushita Group's share of production of lighting products outside Japan up until 1996 was a rather low, at 1 per cent of the total. The new lighting products plant in Indonesia is part of a world-wide effort to raise overseas production ratio to 5 per cent (*Matsushita Newsrelease*, 31 July 1996).

In September 1997 PT Matsushita Semiconductor Indonesia (MSI), capitalised at \$60 million, a wholly-owned subsidiary of Matsushita Group, completed the construction of a plant in Karawang, West Java, to supply high-quality semiconductor products such as micro-controllers and ICs to end-product manufacturers in Southeast Asia. This new investment was a joint venture between MEI (40 per cent) and Matsushita Electronics Corporation (60 per cent) which specialised in semiconductor, electron tubes and lighting products and started its operations with 165 employees. The plant was designed to become one of the largest overseas semiconductor assembly bases of Matsushita Group in Asia to serve the regional as well as local markets. At the time that the plan for MSI's establishment was announced in October 1995, the Matsushita Group also announced plans to build a \$600 million semiconductor wafer fabrication operation in the United States as part of its strategy to double its production of computer DRAM chips from about ¥340 billion to some ¥600 billion by 2000, adding the capacity of existing plants in Shanghai and Singapore.

The Asian crisis severely affected demand for personal computers and DRAMs, so that MSI has only been able to continue pre-production preparations to upgrade its manufacturing technologies in the Indonesian plant. With the onset of the crisis, Matsushita suffered a sharp decline in its sales to the Indonesia in 1998 but 'Matsushita's Indonesian affiliates still survive amid the sluggish domestic sales because 86 per cent of their exports are exported' (Morihiro Sato, MEI's executive director, *Japan Press*, 11 May 1999). Like all major Japanese MNEs in Indonesia, MEI suspended operations and planned to reduce the types of product made for the Asian domestic markets while increasing the output for each product. At the same time, Matsushita is seeking to expand new markets in the United States and Europe for its electrical and electronics household appliances (*Jakarta Post*, 23 August 1998).

Since the initial manufacturing activity in Indonesia in 1970, the Matsushita Group has increasingly become integrated with its Asia Pacific network of affiliates. From the import substitution emphasis of the 1970s and the first half of the 1980s, the transformation of its affiliates serving the domestic market has been a gradual process. During this period, the evolution of the Group's approach to entry mode in Indonesia is summarised in Figure 8-2.

Figure 8-2 Development of the Matsushita Group in Indonesia, 1960s to 1990s



Note: The control (percentage of foreign equity) variable is the sum total of shares owned by foreign affiliates; licensing and agent/distributor affiliates were wholly owned by the Indonesian domestic partner; the initials inside the rectangles are those of affiliates of the Matsushita Group and the arrows are used to indicate the origins of affiliates established in later years.

Source: Constructed from Table 8-2 and data obtained from company reports.

The transformation of affiliates from the import substitution operations in the 1970s and early 1980s was a gradual process. The process of entry into various new ventures has been staged and sequential rather than an overtly bunching pattern of investment. During each manufacturing establishment phase Matsushita's FDI in Indonesia has to be understood in relation to both the internal parent firm's activities (the four stages of Matsushita's internationalisation in Table 8-1) and to external factors in other key developed country markets (particularly the US market) as well as the Indonesian domestic investment climate.

Initially, Indonesia's market potential and the openness of its regulatory regime was limited, so that Matsushita entered its strongest lines of business, namely standardised products, exploiting its existing competitive advantage at that time. In later stages of entry, economic considerations related to Matsushita's regional production network and to supplying its key advanced country markets dominated decisions to expand operations. Later transplants which were joint ventures with Japanese-based affiliates led to a dramatic restructuring of the activities of all Matsushita affiliates

towards a greater reliance on export markets after the Plaza Accord of 1985. The new transplants have generally served as 'world product-mandates' or production centres specialising in standardised products (radios, batteries and speakers) that match Indonesia's comparative advantage. The products from these plants are to supply regional and world markets. A notable exception was the operation of KEI, which manufactures VCRs on an OEM basis for export to the US market. With increasingly integrated production, the Matsushita Group also successfully set up different world-product production centres in Malaysia and Thailand. However, these countries were able to establish a more conducive investment climate earlier in the first half of the 1980s with the result that they now produce higher value-added specialised products than Indonesia.

The internationalisation of the Matsushita Group and its long-term investment pattern in Indonesia confirms the sequential investment hypothesis. Firstly, its investment pattern can be described as a systematic and sequential process occurring during periods when there are changes in factors internal and external to the MNE group. However, some Matsushita affiliates changed their investment strategy in progressive shifts and changed their market orientation. Secondly, internal and external factors have significantly affected the Matsushita Group's entry timing and mode decisions for a specific product or target country. Thirdly, the character of investment by the Matsushita Group in Indonesia has followed the life cycle of the MNE group. The initial focus on radio and TV manufacturing indeed represented their 'strongest' product lines in the 1970s. Since the late 1980s, several affiliates were established by building local capabilities in the production and R&D for specialised world products as well as the production of critical components.

Case Study 2: Sanyo Group

Much of Sanyo's overseas production activity has been dictated by its early industrial settings and changes in international conditions. As a latecomer and as a result of its 'follow-the-leader' behaviour, Sanyo's internationalisation closely followed that of Matsushita. Matsushita's FDI pattern has been closely monitored, if not emulated, by Japanese and other electronics firms, none more closely than Sanyo Electric Corporation (SEC, *Sanyo Denki*). This firm forms the nucleus of the Sanyo Group and is a diversified home appliances and electronics firm, but it has been developing niche specialisation in clean energy, batteries, key components, including semiconductors and industrial equipment. SEC was founded in 1947 and incorporated in 1950 by Toshio Iue (President 1947–68), a former Matsushita employee, to make 'dynamos' for bicycles, a product which he developed himself (Abo 1996: 181).

Sanyo was the first Japanese firm to set up a manufacturing plant in Indonesia in 1971 and, after a lengthy period of producing for the domestic market, it embarked on establishing components and OEM products to form an export platform. This survey of

Sanyo's global and regional activities and its penetration into the Indonesian market covers the four decades since 1971. It reviews some of the major global milestones of how Sanyo became a multicontinental firm and relates its global and Asian operations to its activities in Indonesia.

Sanyo's global and regional milestones

Like the Matsushita Group, Sanyo is also a forerunner in overseas expansion activities in audio-video and home appliance products, but its strength has been relatively low-priced mass-produced standardised products based on modifying earlier models developed by other makers (Abo 1996: 182). Its most recent overseas activities in Asia have focused on China.¹³ By 1997, SEC attained the largest market share in solar cells and batteries in Japan but it is shifting 'boldly' to production of non-consumer industrial electronics, including office automation (copiers, facsimiles, wordprocessors and others) and industrial equipment. Currently, it is entering family game equipment (Toyo Keizai Inc. 1997: 748).

Unlike Matsushita and the more established pre-war giants such as Toshiba, Hitachi and Mitsubishi, the relatively newcomer follower firms did not have a strong presence in the Japanese domestic market. SEC was ranked the eight, ninth and 20th largest electrical and electronics manufacturer in Asia, Japan and the world, respectively (see Table 8.10). Sanyo initially was a latecomer in Japan with a 'small profit and quick return (high sales volume)' orientation and lacking many superior product technologies (Abo 1996: 198). Until the early 1990s, however, Sanyo held the top share in the air conditioner and commercial refrigerated showcase markets in Japan (Dodwell Marketing Consultant 1992: 266).

SEC and its Group are considered to be part of the Sumitomo Group *keiretsu* or *kigyo shodan* group since their largest shares and borrowing are with the Sumitomo Bank (Dodwell Marketing Consultants 1991: 267). Sanyo pioneered solar battery R&D and succeeded in mass production of amorphous-silicon solar cells in 1980, a world first. Since 1990 Sanyo has aimed at specialising in several niche products: clean energy technologies to protect the environment, with developments related to solar energy and cost-effective electricity ('nicad' and advanced chemical batteries), CFC-free air-conditioners and heating systems, audio, video and computer-multimedia, optoelectronics and semiconductor technologies. These higher-value products are developed and manufactured in Japan, while the remaining lower-end products such as home appliances and audio-video (such as CD/radio-cassette) products are produced overseas.

The word 'Sanyo' means 'three oceans' — the Pacific, the Atlantic and Indian Oceans — symbolising its international orientation resembling Western MNEs. This was

¹³ Toshio Iue had spent time in China before the Second World War. This experience explains the particularly active investment expansion policy of the Sanyo Group in China since 1983 (Abo 1996: 194–96).

uncommon among Japanese large firms before the 1980s. Sanyo's early overseas production strategy was moulded by Kaoru Iue (president of SEC, 1971–86). It has been characterised as 'forward-looking' and 'aggressive' in extending its overseas production activities because of its relative late establishment in 1950. Unlike other consumer electronics giants such as MEI, Sharp, and even Sony (see Table 8.1), this places it in the Japanese electronics industry as a latecomer (Abo 1993: 181).¹⁴ Sanyo made an early start by establishing a subsidiary in Hong Kong in 1961. By 1965, Sanyo had begun exporting colour TVs to Asia. Together with Sony and Matsushita, it is among the most localised and decentralised of MNEs in the Japanese manufacturing industry. Each of Sanyo's product divisions has considerable independence in controlling its own overseas marketing and operations divisions and its Japanese headquarters did not have any integrated overseas operations divisions before 1990 (Abo 1996: 198).

In 1991, Sanyo reformed its organisational structure into multiple production divisions with the autonomy to develop their own overseas manufacturing facilities but continued the division between overseas manufacturing operations and marketing operations run by Sanyo Electronics Co., Ltd. and Sanyo Electronics Trading Co., Ltd. However, Sanyo has restructured its international production from a product division-led strategy to a general 'location business headquarters'-led strategy. The four RHQs are to oversee Japan, Asia, Oceania (Australia and New Zealand), Europe (including Africa, Russia and the Middle East) and North America. Each RHQ is to coordinate the management of manufacturing, sales and service centres of product lines for each local plant, with the Japanese parent plants covering technological aspects, parts procurement and day-to-day management. Sanyo Electric Trading Co. Ltd is a general trading company that distributes electronics products as its core business.

As part of its globalisation plan for the 1990s, like other Japanese MNEs, the Group aims to focus more on high value-added non-consumer and industrial products in its home plants, while in markets it regards as 'strategic' in countries such as Thailand, Indonesia and Malaysia, it plans to consolidate the plants as principal bases for its basic products. Sanyo's video equipment business relies heavily on overseas markets; by 1995, about three-quarters of sales were from foreign countries. In 1990, the Sanyo Group restructured its business organisation and established an industrial equipment system business headquarters in Japan to mark a bold reorientation in its overall strategy. A comparison of the total sales breakdown between 1991 and 1995 suggests that the overall strategy of moving away from consumer to industrial electronics has been successfully implemented. The proportion of sales in May 1991 against their respective percentages in September 1996 is: video equipment (14 to 8 per cent), audio equipment (5 to 3 per cent), home electrical equipment (25 to 23 per cent), industrial and commercial equipment (19 to 23 per cent), information systems and electronic devices

¹⁴ By 1994, the top five Japanese firms in terms of sales earnings in the consumer electronics segment in Japan were: MEI, Sharp, Sony, Sanyo and Pioneer (Yamamoto *et al.* 1994: 36).

(28 to 30 per cent) and batteries and others (9 to 13 per cent) (Toyo Keizai Inc. Spring 1992: 699; Spring 1997: 748). By 1999, the Sanyo Electric Group had consolidated annual sales exceeding \$17 billion, with nearly 140 subsidiaries and affiliates in 27 countries, and employed more than 70,000 people (as of March 1998, <http://www.sanyo.com/global>, 2 September 1999).

Sanyo's operations in Indonesia

In Indonesia, during the latter half of the 1950s and the whole of the 1960s, Sanyo exported bicycle dynamos, water pumps and some household appliance electronics through local distributor and then assembler PT Sanjaya. Responding to the liberalisation of foreign investment in Indonesia in 1967 (with the decree *UU PMA* 1967), the Sanyo Group established PT Sanyo Industries Indonesia (SII) as a joint venture (Table 8-3a). The then President of SII, claimed that Sanyo was the first Japanese (and the second foreign electronics company after the Dutch firm Phillips) to receive approval from the Indonesian government in September 1969, and commenced production in October 1970 with an initial investment of \$1.0 million.

Although Sanyo obtained its investment approval earlier than PT National Gobel,¹⁵ it began production later (January 1971). NABEL was said to have had a better advertising and marketing campaign and was able to obtain more capital support from Japan during 1971–86, which coincides with the period when Mr Kaoru Iue was president of SEC (interview, former President of SII, 1995).¹⁶ Using the Sanyo brand name, SII also had a narrower initial product range, consisting of air conditioners, refrigerators, fans, rice cookers, B&W and CTVs and recorders.¹⁷ In January 1977, PT Sanjaya Sakti was established as the sole distributor of SII.

Unlike Matsushita's indigenous partner, PT National Gobel, Sanyo's initial joint-venture partners were Chinese-Indonesians who controlled 35 per cent and were unwilling to allow the Japanese side to increase their capital. In this respect, they behaved quite differently from NABEL's partners. Matsushita's share in the latter firm was 60 per cent, while in Sanyo's in SII was only 32.5 per cent. The remaining shares were held by the Sanyo Electric Trading, Singapore (20 per cent). During the 1970s, the SII's President Director was a Chinese-Indonesian and Sanyo's Director only functioned as an observer. Unfortunately, Sanyo's CEO Iue in Japan was initially not interested in

¹⁵ NABEL, Matsushita's affiliate with a larger initial investment of \$2.2 million obtained its investment approval in May 1970 but commenced its production in October 1970.

¹⁶ Mr Kaoru Iue was president of Sanyo during 1971–86. He succeeded the founder, Mr Toshio Iue, and followed the latter's policy of encouraging *ad hoc* local sourcing of components (Abo 1996: 181).

¹⁷ Shareholders of PT Sanyo Industries Indonesia were Sanyo Electrical Co., Ltd. of Japan (45 per cent), Sanyo Electrical Trading Co., Ltd. of Japan (20 per cent), Mr Harry, Agus and Carrel Korompis (26.25 per cent) and Mr Setiawan Wongsowidjojo (8.75 per cent), resulting in local and foreign ownership shares of 35 and 65 per cent, respectively.

increasing the capitalisation of the company. He was more interested in product earnings than in expanding the business (interview, former President of SII, 1995).

Table 8-3 Subsidiaries of Sanyo Electronics Corporation in Indonesia, 1971 to 97

(part a)

Name of subsidiary	PT Sanyo Industries Indonesia (Jakarta, SII)	PT Sanyo Jaya Components Indonesia (Cimanggis, SJCI)	PT Sanyo Energy Corporation (Batam, SEC)
Establishment and production date	1971, expanded in 1975, 1980, 1986, 1989, 1991, 1993, 1994	Sept. 1989, expanded in 1991 and 1992	April 1992, expanded in 1994
Investment size	\$1m, and \$2.5m, 5m, 9.3m, 15.0m, 15.45m, 25.45m, after respective expansions	\$8.0m, 41m and 69m after respective expansions	\$243,000 expanded to 2.2m
Domestic-foreign ownership ratio	35:65	41:59→32:68	0:100
Local and foreign workforce	1,131/5, 1970 11,883/12, 1997	1185/18, 1989 2,334/30, 1991 4386/38, 1992	220/2, 1992 500/5, 1994
Products/services	Refrigerators, AC, B&W and CTVs, fans, gas stoves, rice cookers, tape/ cassette recorders Expansion: Washing machines, water pumps and audio	Video head, flyback transformers, electronic tuners for TVs and VTRs expanded to include: cylinder video tapes, PC board assembly and VTRs	Nickel cadmium batteries and battery packs, other light batteries, electric shavers and rechargeable lights
Market-orientation	Domestic	domestic/export	domestic/export

(part b)

Name of subsidiary	PT Sanyo Compressor Indonesia (Bekasi, SCI)	PT Kumagaya Precision Motor (Batam, KPM)	PT Sanyo Electronics Indonesia (Bekasi EJIP) (SEI)	PT Sanyo Video System Indonesia (Karang Assam Utara) (SVSI)	PT Sanyo Precision Batam (SPB)
Establishment and production date	Oct. 1992, Expanded in 1995	June 1993	June 1996	April 1998	Dec. 1998
Investment size	\$27.0m and 38.0m after the expansion	\$2.4m	\$35m (100 %)	\$60.109m (100 % SEC)	\$1.0m (100 % SEC)
Domestic-foreign ownership ratio	5:95	0:100	0:100	0:100	0:100
Local and foreign workforce	424/14 825/16	200/16, 1993	800/4, 1995		
Products/services	Rotary compressors parts for refrigerators and cooling equipment; expanded to include parts of compressor for air-conditioners	Drum and capston motors for VTRs, and spindle motors for floppy disk drive units	CTVs, CTV-VCR joint units, PCB, cabinet assembly	previous products of the VTR division of SCI	previous products of KPM
Market orientation	domestic/export	domestic/export	domestic/export	export	export

Source: *Sanyo 25 Years in Indonesia*, Jakarta, 1995; Nikkei Database, Corporate Profile, various years; Dataconsult, *Indonesia Commercial Newsletter*, No. 109, 12 October 1992.

An external factor, the rise in the yen, led to a rise in the capital assets of the first Indonesian proprietor (Mr Agustinus Halim) of SII between 1970 and 1989, but these were only relatively minor increases: in 1975 to \$2.5 million, in 1980 to \$5.0 million, in 1986 to \$9.3 million, and \$15 million (*Sanyo 25 Years in Indonesia*, 1994). On the other hand, NABEL continued to expand its investment to reach \$15 million, a much higher level. According to a former president of SII who was in charge at time, since the Singapore representative of Sanyo Electric Trading was also Chinese, SII was forced to accept this situation. However, in the aftermath of Plaza Accord in 1985, there was a

change in SII's local and foreign shareholders. From being a minority partner, Sanyo Electronics Co. (SEC Japan) became a majority shareholder by purchasing the Singaporean shares so that SEC's shares increased from 32.5 to 62.5 per cent. At the same time, the local partners were changed to another Chinese-Indonesian group (Korompis brothers and S. Wongsowidjojo), who were 'more understanding'. By 1993, SII capitalisation reached \$15 million (interview, former President of SII, 1995).

Another expansion of Sanyo's activities occurred as a consequence of the yen appreciation after 1985. Formed partly with SII's locally-owned supplier, PT Jaya Ital Indonesia (established in November 1971), a new entity, PT Sanyo Jaya Components Indonesia (SJCI), with foreign company status and total foreign control of 65 per cent of total shares was established in 1989.¹⁸ This affiliate had an initial paid-up capital of \$7 million and was 100 per cent oriented towards exporting, mainly to the US market, with some exports to other Sanyo affiliates in East Asia, the United Kingdom and China. SJCI initially produced electrolytic capacitors, flyback transformers and electronic tuners. More production lines for video heads, flyback transformers, electronic tuners and video tape recorders were added later.

At the same time, SII, which was exclusively domestically oriented, received a boost in its capitalisation to \$15 million. Despite its large population and rapid growth, Sanyo regarded Indonesia's domestic market as having only a 'modest' level of demand for electronics.¹⁹ Nevertheless, during the early 1970s, the motivation of the two Japanese affiliates was identical, both attempting primarily to capture the growing domestic market. They might have obtained similar investment advice, as they have similar institutional links to the Sumitomo Group, and in Indonesia they have identical banks, the Bank of Tokyo, PT Bank Perdania and Bank Bumi Daya.

The primary reason for Sanyo's investment in SJCI was that Indonesia, notwithstanding its geographic isolation from other ASEAN countries and its relatively poor infrastructure and investment incentives, has relatively low wages and land costs (interview, former Vice-President, VTR division, SJCI, 1995). Sanyo previously operated two similar component factories in China and the United States. By 1988, Sanyo had many final assembly subsidiaries around the world. With increasing demand for components, Sanyo needed a third components plant.

Sanyo weighed up the relative benefits of Malaysia, Thailand, Singapore and Indonesia. While Malaysia was considered to be the best place at the time, there were expectations that its factor costs would rise. Consequently, Sanyo chose Indonesia as it

¹⁸ The shareholders of PT Sanyo Jaya Components Indonesia are A. Korompis (13.5 per cent), C. Korompis (13.5 per cent), S. Wongowidjojo (14 per cent), Sanyo Electric Co., Ltd. (42 per cent) and Sanyo Electric Trading Co., Ltd. (17 per cent). Hence, local and foreign parties hold 41 and 59 per cent of the total shares, respectively.

¹⁹ For example, it was estimated that the total demand for TVs for 1993 was around 1.2 million units. There were no official statistics for such important figures. SII's plant alone produces around 100,000 units a month and many local domestic competitor firms are selling well, including Polytron, Star Cosmos and others, not to mention other Japanese and Korean companies in Indonesia. Roughly half of the TV market is supplied by Japanese companies (interview, N21, 1993).

has the GSP facilities to enter the US market. While in 1993 about 10 per cent of SJCI's total output was exported to the United States directly, about 30 per cent of its output is used for VTRs (produced by its VTR Division) which are exported to the United States. In 1993–94, Sanyo considered labour costs in Tijuana (Mexico) to be about five times higher than in Indonesia. While NAFTA could bring a tariff reduction of 3–4 per cent, it is still more profitable to produce components in Indonesia than in Mexico for products aimed at the US market.

Development of local suppliers

While Sanyo considers Indonesia to be the most competitive ASEAN country in terms of labour and other costs, one of the major problems it faces there is the lack of local suppliers. For example, in 1993, only of 2 per cent of materials used in the SJCI plant were purchased locally with the rest imported from other ASEAN countries (60 per cent) and Japan (38 per cent). Over 50 per cent of the Japan-based affiliates' supply of components come from Singapore, which means that about 75 per cent come from countries affected by the AFTA agreement (interview, former President, SJCI, 1995).

In April 1991, Sanyo expanded SJCI's operations to include a VTR plant to supply the US market with low to mid-priced models (OEM contracts for Walmart, A&A, Montgomery, Ward and Sanyo Fisher USA) at a time when Indonesia's domestic VTR market had entered a very sluggish period. Between 1989 and 1991, VTR production in Indonesia declined from 64,331 to 21,165 units due to the emergence of private TV networks and the growing popularity of competitors including laser disk players (Dataconsult, *Indonesian Commercial Newsletter*, 9 November 1992: 92). The motivation to set up the VTR division was again largely low labour and training costs relative to Malaysia.²⁰ While Sanyo initially enjoyed GSP facilities to export to the US market, by 1993 it no longer received any of Indonesia's quota. SJCI began to relocate its video production outside Japan in 1990 and by 1993, all video models with prices in the middle range and below had been relocated to Indonesian and other plants. SJCI's production of VCR-use magnetic heads and tuners was increased by 50 per cent in 1992, in response to electronic equipment makers overseas. Consequently, 50 per cent of the Group's production of tuners has been transferred overseas. A production rise in VCRs and air conditioners was scheduled for 1992. Subsidiaries in Indonesia, Singapore and China, which produce VTRs, began to export to Japan (Dodwell Marketing Consultants 1995: 186).

²⁰ Malaysia has been an attractive investment location but its labour supply is becoming increasingly costly and skills have become shorter. Sanyo had also to spend increasing amounts on training foreign workers in Malaysia (from Sri Lanka, Bangladesh or Malaysian native tribes sources), without much success. For these reasons, Sanyo chose Jakarta instead of Johore (Malaysia) for the location of its VTR plant.

In April 1992, PT Sanyo Energy Corporation (SEC Batam) was established in Batam Island as a 100 per cent foreign-owned affiliate with Sanyo Energy Hong Kong (90 per cent) and Sanyo Energy Singapore (10 per cent). The last two affiliates were run by a separate divisional organisation from Sanyo Electric Corporation. SEC Batam was capitalised at \$2.2 million with 200 employees but was closely linked with its Singapore parent which, in turn, was a subsidiary of Sanyo Electric Co. Ltd., Japan.²¹ The Batam subsidiary commenced production of amorphous silicon solar cells and rechargeable nicad and other batteries for communication equipment and cordless phones. SEC Batam aimed to export all battery products to markets exclusively in Southeast Asia. After 1993, the Sanyo Group aimed at relocating its low-end batteries production overseas and the production of all low-end batteries to Batam, Hong Kong and Tijuana (Mexico).

In October 1992, PT Sanyo Compressor Indonesia (SCI) was established as a foreign company with Sanyo Electric Co., Ltd., (90 per cent) and domestic partners (H. Korompis, 7.5 per cent, and S. Wongsowidjojo, 2.5 per cent of shares, totalling 10 per cent) as shareholders. These domestic partners were shareholders in other Sanyo subsidiaries in Indonesia but in this and other component subsidiaries, they did not directly participate in management. The reason for domestic participation was that SCI had a paid-up capital of \$27 million and this was below Indonesia's minimum of \$50 million required for 100 per cent ownership. The SCI plant was established in May 1993 and started full production in September 1994 with 440 local employees to manufacture rotary compressor pumps and other parts for cooling equipment. The SCI plant is Sanyo's fourth overseas production facility, following the establishment of similar subsidiaries in Thailand, Singapore and Taiwan managed by Sanyo's Air Conditioning and Refrigeration Headquarters division. Sanyo regards compressors as its core business. Some of products from the SCI are destined for the Indonesian market but most are exported to Sanyo's compressors subsidiary in Singapore. In December 1995, SCI increased its paid-up capital to \$38 million and started the manufacture of compressor parts for air-conditioners.

In December 1992, PT Kumagaya Precision Motor (KPM) Batam was established by Kumagaya Seimitsu Motors (KSM, Japan) Co. Ltd with 90 per cent of the shares and Kumagaya Precision Motors (Singapore) Pty. Ltd. with 10 per cent to produce drums and DC brushless capston motors for VCRs and spindle motors for floppy disk drive units, partly to supply the SJCI plant. KSM is a small firm (with around 420 employees and paid-up capital of ¥300 million) and operates as a supplier and parts manufacturer for the Sanyo Electric Group in Japan. As in the case of Sanyo Energy Corporation of

²¹ As detailed in Chapter 7, Indonesian regulations since 1989 only allowed 100 per cent foreign-owned investments initially for firm operating only on Batam Island. This restriction and other divestment requirements were further relaxed in April 1992 for investments in the rest of Indonesia but the amount investment must be at least \$50m. In 1993, 100 per cent foreign ownership was allowed for investors with a minimum capital of US2m to attract specialised and SME component suppliers and, finally, in June 1994, restrictions were removed for all sectors, except the nine essential sectors.

Batam, KPM was established as a result of the 'post-bubble' yen appreciation as well as the additional incentives given by the Singaporean Government to relocate to Batam.

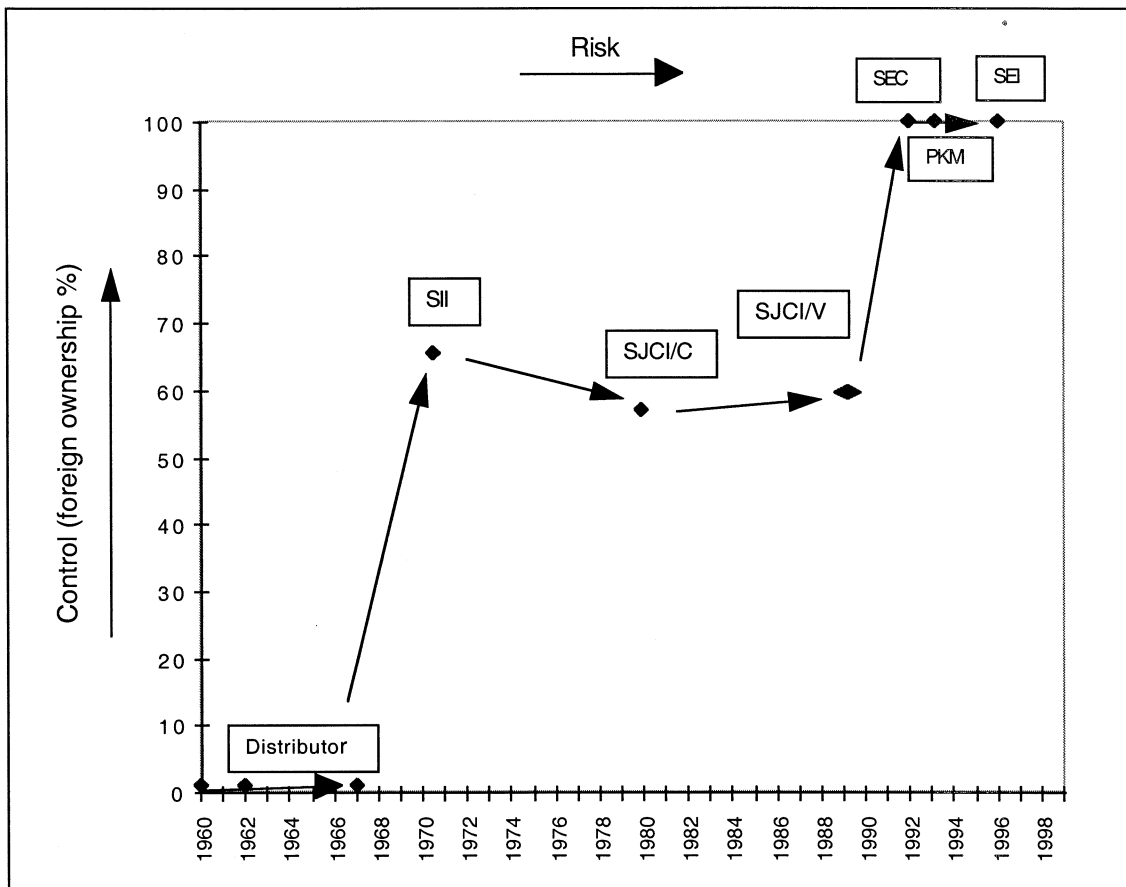
Another of Sanyo's supplier firms to establish a plant in Indonesia is Showa Plastics, also not part of the Sanyo Electronics Group. In January 1991, PT Showapla Indo (SPI) was established with a paid-up capital of \$15 million with 100 per cent foreign ownership to supply moulded plastic components of audio visual, TV sets and VTRs. Like Kumagaya's subsidiary KPM, Showa's affiliate SPI relocated to Indonesia to follow the end-user customers, namely Japanese electronics MNEs. SPI is the only Japanese plastic injection moulding firm in Indonesia and supplies Sanyo's SII and SJCI, Matsushita's Nabel and KEI, Toshiba, Mitsubishi Electric and Sony subsidiaries as well as other domestic electronic firms in Indonesia. Its only competitor is a Taiwanese firm. SPI's shareholders are Showa Plastics Singapore (64 per cent — partly owned by Sanyo Electronics Co., Ltd. and Sumitomo Corporation), Nomura Japan Finance Corp. (20 per cent) and Itochu Group (16 per cent — also a Nabel shareholder). Hence, SPI has shareholding links to both the Sanyo and Matsushita Group. SPI's three largest clients are export-oriented Japanese subsidiaries of the two groups and Sony. The presence of such 'indirect exporter' suppliers suggests that SPI is primarily engaged in supplying to export-oriented Japanese subsidiaries so they can meet a minimum scale of efficiency (interview, former1993).

In December 1993, March and July 1994, PT Sanyo Industries Indonesia increased its paid-up capital to \$15.45 million, \$20.45 million and \$25.45 million, respectively, to meet increasing demand from the domestic market as well as to achieve an overall growth of almost 20 per cent per year. Shareholding by the Sanyo Group, however, remained at 65 per cent of the total while 35 per cent is held by local partners. Since 1995, SII also began exporting its products from a new refrigerator plant which was completed in Bekasi near Jakarta in early 1995.

In 1995 a new subsidiary, PT Sanyo Electronics Indonesia (SEI), was established to focus on exporting activities in electrical home appliances. This plant has been planned since 1993–94 when the yen soared to a record level. Initially, its paid-up capital was \$35 million and its workforce consisted of 800 Indonesian and four expatriate employees. The line of products to be manufactured by the new subsidiary consists of CTVs, CTV and VCR joint units, and PCB and cabinet assembly. About 20 per cent of its output was set aside for the Indonesian market, with the remainder to be exported.

The internationalisation of the Sanyo Group can be conceptualised as following a sequential process (as illustrated by the summary of investments, 1970s – 90s). Its long-term investment pattern in Indonesia also progressed in a sequential fashion, from only possessing distributors to sole ventures.

Figure 8-3 Development of Sanyo Electronics Group in Indonesia, 1960s to 1990s



Note: The control (percentage of foreign equity) variable is the sum total of shares owned by foreign affiliates; licensing and agent/distributor affiliates were wholly owned by the Indonesian domestic partner; the initials inside the rectangles are those of affiliates of the Sanyo Group in Indonesia and the arrows indicate the origins of affiliates established in later years; SJCI/C and SJCI/V refer to the Sanyo Jaya Component Indonesia (Components Division) and the Sanyo Jaya Component Indonesia (VTR Division), which have separate manufacturing plants and can be regarded as separate investments.

Source: Constructed from Tables 8.3a and 8.3b and from Sanyo company reports.

By the end of 1997, the Sanyo Group had established five manufacturing subsidiaries and several associated marketing and distributor firms in Indonesia of a total of 77 manufacturing firms around the world. Its long-term investment strategy in Indonesia has expanded with its overseas production network in the region in a systematic and sequential process. The gradual change from early exporting activities in the 1950s and 1960s to joint-venture operations to meet Indonesia's domestic demand since 1971 and then to near wholly-owned manufacturing of components and VTRs suggests that the Sanyo group cumulatively expanded and attempted to match the resource capabilities of its Indonesian subsidiaries with external market opportunities, particularly those in the US market. Aside from a subsidiary that was initially oriented to meet Indonesia's domestic market, most of Sanyo's more recent operations in Indonesia have been aimed at exports, particularly to the United States.

While the total size of their investments was not as large as that of the Matsushita Group,²² Sanyo has no doubt been expanding the local production capabilities of its subsidiaries with the recent relocations of its compressor and other components subsidiaries. In addition, Sanyo has also brought about the 'pulling' of later stage FDI of its affiliated Japanese supplier firms which are specialists in areas including plastic moulding and precision motors.²³ Specifically, among all foreign electronics in Indonesia, the Sanyo group is the only one that has relocated its compressor component plant for refrigerators. While Sanyo has also chosen to relocate its battery products to Batam, this operation appears to be much smaller than that operated by the Matsushita Group and it is managed separately from the plants on and near Jakarta by the Singapore-based Sanyo Energy subsidiary.

The Sanyo Group is known for its *ad hoc* adaptability to various regulatory and working environments. This flexibility is observed in many Japanese firms, especially those located in the Kansai area centred around Osaka. Sanyo, Matsushita and Sharp all originate from this locality (Abo 1996: 198). Sanyo's Indonesian operations reflect such flexibility in the ownership and control of its component subsidiaries. Over time, the Sanyo Group has assumed greater control through increasing its shareholding in more recent component and final-assembly subsidiaries in the early to mid-1990s, as anticipated by the theory outlined in Figure 8-5. However, Sanyo continued to employ as silent partners in their export-oriented operations the same local partners who became managers of the domestically-oriented subsidiary in 1989.

A review of the Sanyo Group's choice of product lines for its investments in Indonesia between 1970 and 1997 suggests that, while the initial pattern of FDI was in basic audio, TV and household appliance products, subsequent investments followed a different choice of products from the Matsushita Group, with the exception of VTRs. The focus of the later-stage FDI to Indonesia was in the manufacture of battery and other key components for products such as compressors, videos, precision motors and plastic moulding rather than semiconductors. In contrast to Matsushita, Sanyo's operations in Indonesia do not involve much modification or R&D. Such activities are mainly conducted in Japan and elsewhere.

Sanyo's subsidiaries in Indonesia are part of a more integrated, self-contained value chain in the Southeast Asian region. Since the early 1990s, Sanyo has been attempting to reorganise its business structure from one led by a 'product business headquarters' (division) to one led by a 'location business headquarters' (geographic). The split between overseas manufacturing and marketing operations run by Sanyo Electronics Co., Ltd. and Sanyo Electronics Trading Co., Ltd., respectively, may fragment Sanyo's efforts to develop a coherent global localisation strategy. While the

²² The permits to establish and expand were issued a year earlier. For example, the initial permit issued by the government to establish Sanyo's plant was in September 1969, which was earlier than that granted to PT National Gobel in May 1970. Sanyo's first plant in Indonesian was established in March 1970.

²³ Another related firm which specialises in iron casting and other metallic moulding is PT Jaya Indah Casting.

number of Sanyo's manufacturing subsidiaries in Indonesia (5) is comparable to Malaysia (4) and Singapore (6) and larger than that in Korea (4), Taiwan (2), the Philippines (1) and Thailand (2), the audio and video product lines that Sanyo subsidiaries produce for export from Indonesia, with the exception of batteries and compressors, are products that have been suffering from revenue declines in terms of the overall consolidated earnings of the Sanyo Group. Nevertheless, until 1995, several increases in the paid-up capital of Sanyo's previously domestically-oriented subsidiary, PT Sanyo Industries Indonesia, were made to meet rising demand both in Indonesia and for export of colour TVs and video equipment (to mid-1997). Its export component became large enough to lead to the establishment of the wholly-owned PT Sanyo Electronics Indonesia.

In the aftermath of the Asian crisis Sanyo, like Matsushita, cut and rationalised its production and raised its imported products but did not close down any manufacturing plants in Indonesia (Reuters, 9 February 1998). On the contrary, in May 1998, Sanyo announced a plan to construct a new electronics goods and component plant (PT Sanyo Video System Indonesia) as well as to expand an existing electronic precision plant (PT Sanyo Precision Batam (Table 8-3, *Business Times*, 18 May 1999). Sanyo's strategy then can be seen to follow Matsushita's.

While the Sanyo Group was a latecomer in the post-war Japanese domestic market, its early entry and sequential investment strategy in Indonesia suggest some similarities with the early-entering Matsushita Group. The next case study, which reviews a late-entering MNE's activities in Indonesia, provides an interesting contrast to the two previous MNEs in terms of the character of its Indonesian investment and parent profile.

Case Study 3: Sony Group

Sony was a post-war company like Sanyo but, in the five decades since its establishment in 1946,²⁴ it has developed extensive production facilities, marketing networks and unsurpassed brand name recognition among Japanese electronics MNEs in Europe, America and Asia. By the late 1990s, this innovative and visionary company had developed into a leading manufacturer of audio, video, communications and information products for the consumer and professional markets.²⁵ With its acquisition of CBS

²⁴ In 1946, the company was established as Tokyo Tsushin Kogyo Kabushiki Kaisha (Tokyo Telecommunications Engineering Company) by Akio Morita and Masaru Ibuka. The firm began using the name Sony in 1955 and officially changed its name to Sony Corporation in 1958 because 'it was easy to remember' and 'does not mean anything but "Sony" in any language' (Morita 1986: 69–71). The name is derived from the Latin word 'sonus', which means sound, and the English term 'sonny' referring to bright young men in the 1950s (Corporate Information, <http://www.sony-asia.com.sg>, May 1996).

²⁵ From its early days, Sony had developed a long line of innovative products. Some outstanding examples are the transistor radio (1955), transistor TV (1960), Triniton CTV (1968), Walkman (1979), Compact Disk player (1982), Betacam for broadcast use (1982), Floppy Disk (1983), Handycam (1985), and the Playstation games software and machine (1994), the Play Station 2 games, work and internet link machine (1999) (<http://www.sony-asia.com.sg/news.html>, 28/5/99). Some outstanding failures: Betamax VTR (1975).

Records (1968) and Columbia Pictures (1989), Sony was also the first to diversify outside the electronics hardware business and became one of the world's most comprehensive entertainment companies. Sony is now entering a fourth phase of development 'beyond the era of the hit products' where it is likely to place greater importance on the 'digital convergence' of its 'digital content' software and electronics hardware products rather than on its hardware businesses *per se*.²⁶ Sony achieved spectacular growth largely through innovative product ideas, the 'drive to expand its business globally'²⁷ and 'internal growth in a fiercely competitive electronics and computer industry' (Humes 1993: 336). By 1997, Sony had become the third largest company (in sales) after Hitachi and Matsushita in the 1,000 largest Asian companies (Appendix ?). It has been in the top Global 50 list of corporations since 1990.

Sony first entered manufacturing as a late entrant in Indonesia in 1991 after a lengthy period of exporting and licensing its products distributed by a 'second-tier' local affiliate owned by Sony's licensee based in Singapore and with distribution of its professional products by a domestic firm.

This survey of Sony's global activity and its penetration into the Indonesian market traces some of the global milestones of Sony's transition into a multicontinental firm and relates its global and Asian operations to its activities in Indonesia. By examining Sony's pattern of market servicing in Indonesia, it argues that Sony follows a sequential and staged entry process but with a prolonged initial distributor stage. After a long period of licensing via a distributor and exporting through a sales company, Sony entered limited low-end technology consumer electronics manufacturing because its initial development was more focused on the United States and Europe than on Asia. Nevertheless, the dramatic drop in the dollar and the accompanying rise in the yen after 1985, combined with the impact of the Single European Act in Western Europe and other protectionist measures in the US market, led Sony to expand its manufacturing platform in Asia, including Indonesia, in the late 1980s until the mid-1990s. In the aftermath of the Asian crisis, Sony has been consolidating its production bases in the Southeast Asian region around Malaysia.

²⁶ Sony's costly acquisition and subsequent development of the two entertainment firms has resulted in a growing library of movies, music, electronic games, other software and financial services. This library makes up the content software businesses. This will be 'linked' to its line of audio-video devices and computers which make up its hardware business (George Wehrfritz, Sony: Play as Work, *Newsweek*, 23 October 1999, <http://www.newsweek.com>).

²⁷ Many of Sony's innovative products can be 'credited to Akio Morita's creative ideas'. Sony was the first Japanese company to raise foreign capital by listing on the New York Stock Exchange in 1961 (Richard Rongstad, <http://www.mail-archive.com/fukuzawa, 20/10/99>).

Sony's global and regional milestones

Like Matsushita, Sony is a pioneer in overseas production. But unlike the previous two Osaka-based MNEs, Sony is 'more Westernised' in its corporate culture and approach to management than any other Japanese multinational (Humes 1993: 342).²⁸

The development of Sony Corporation can be divided into several phases. The initial phase was establishing its distributor network for overseas sales from the 1960s to the 1970s. Unlike most traditional Japanese firms, Sony chose not to depend upon one of the major trading firms. It began an international operations business group to develop its own network with the founding of a sales and service organisation (Sony Corporation of America) for the United States in 1960 and Sony Overseas SA (Switzerland) for Europe. Sony first entered Asia in 1962 with the establishment of a sales company in Hong Kong, which was soon followed by companies in key Asian countries.

By the late 1960s, Sony started to transform its distributor network into sales and service affiliates and by the late 1970s, these affiliates became 'first-tier' affiliates working directly with Sony headquarters. As early as 1967, Sony began to build its first manufacturing base for radios in Taiwan (Taiwan Toyo Radio Co., Ltd.), assembling TVs in the United States (1972) and manufacturing CRTs in Wales (1974).

The third phase began in the early 1980s when the 'active thrust' developments of plants overseas accelerated with the establishment of subsidiaries in the Netherlands (1968), Spain (1973), Germany (1975), the United Kingdom (1978) and France (1980 and 1984). Between 1974 and 1984, four plants were added both in the United States and in Asia to manufacture radio cassettes in Korea (1973), radios and tape-recorders in Malaysia (1984) and half-inch VCRs in Taiwan (1984).

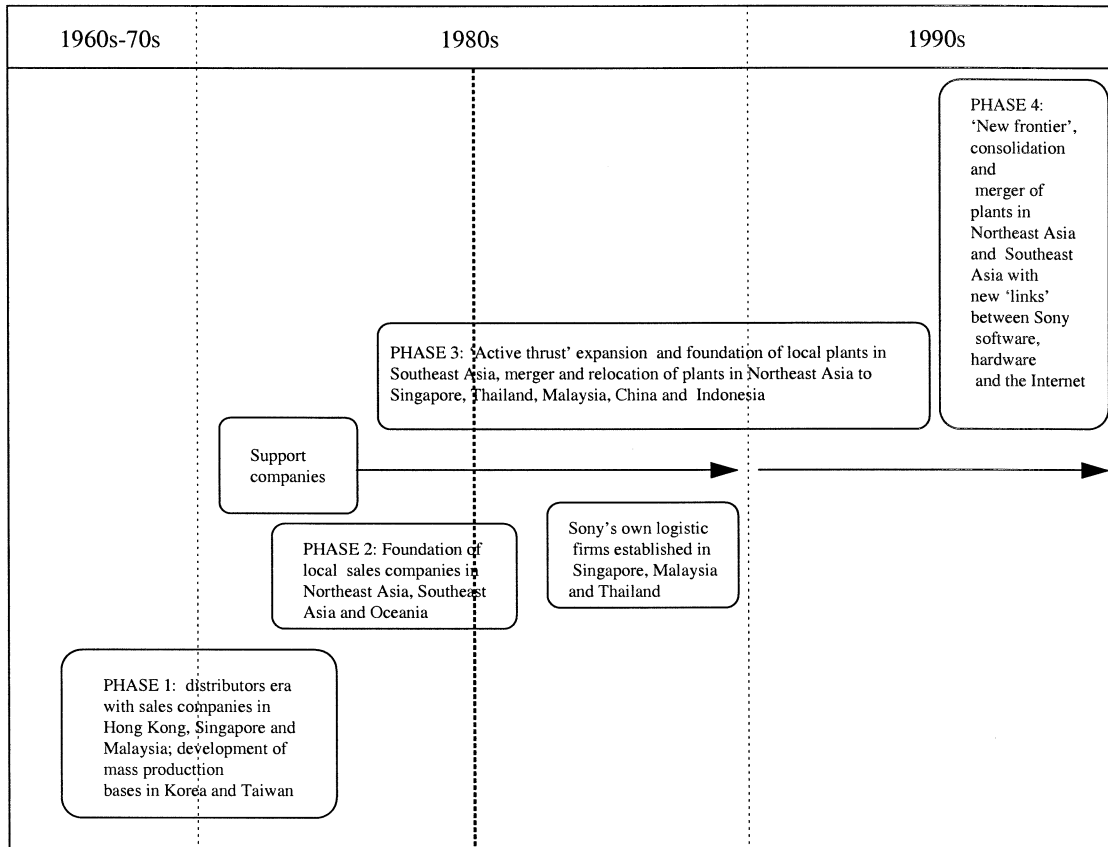
Like many other Japanese firms, the corporate organisation that Sony adopted until the early 1980s was a function-split organisation. This meant that representatives of the production sectors ('product kings') and heads of the sales companies ('country kings') negotiated the quantity and transfer price of the goods to be delivered. By 1982, however, Sony expanded the role of its production divisions (renamed business groups) to include the task of managing its global marketing strategy (Humes 1993: 338).

In the aftermath of the Plaza Accord in 1985, the rise of the yen, combined with increasing protectionist measures in Europe and the United States, Sony consolidated its manufacturing globally. By the mid-1980s, more than 80 per cent of Sony's sales were made overseas and 80 per cent of its manufacturing was carried out in Japan. After the yen appreciation, Sony rationalised its manufacturing globally by accelerating the pace of localisation and redressing the balance of power between the global product and the local sales perspective. Sony's electronics business sectors, consumer video equipment,

²⁸ Unlike most Japanese firms, Sony promotes more on the basis of merit than of seniority and promotes non-Japanese on its board. The official languages used in the company are Japanese and English (Magoshi 1994) and it adopts a Western system of consolidated financial reporting.

audio equipment, television, recording media, professional products and components are based in Tokyo while its multi-media and entertainment business is Los Angeles-based.

Figure 8-4 Sony's operations in Asia, 1960s to 1990s



Source: Material courtesy of Sony Corporation (1996–97) and modified with more recent information from the text.

In the late 1980s, Sony expanded its Asian operations just as it did in Europe and in the United States as its total profit performance (operating income) started to soar, peaking in 1991 (Domicity 1994:1–2). In Asia, more production plant and sales subsidiaries were built in Singapore (to manufacture precision components, Sony Precision Engineering Centre, 1988; CRT, Sony Display Device, 1992), in Malaysia (hi-fi audios, radio-cassettes, CD/RC, Sony Electronics, 1988; CTVs, TV tuners, deflection yoke, Sony TV Industries, 1988; 3.5" magnetic fixed disk drives, Sony Mechatronic Products, 1990) and Thailand (video and audio cassettes, Sony Magnetic Products, 1988; semiconductors, Sony Semiconductors, 1989). The Southeast Asian region appears to be the preferred location for manufacturing branch plants since in North Asia, Sony confronts strong competition from local producers such as Samsung, Lucky–Goldstar and Tatung, combined with trade barriers that require cooperation with local vendors. Like its competitors, after the sharp appreciation of the yen in 1987, Sony made a commitment to offshore cost reduction, particularly by expanding its base for low-end

manufacture in Southeast Asia. During the same period, Sony established sales and marketing subsidiaries in promising markets throughout Asia. Where a subsidiary had not yet been established in a country, Sony delegated responsibility to Japanese subsidiaries or deals with local distributors (Domicity 1994: 2–46).

Sony's operations in Indonesia

Prior to the opening of its 'second-tier' affiliate in Indonesia in 1987, PT Amcol Graha Electronics Industries (AGEI), Sony had two local distributors to oversee the sales and marketing of consumer electronics (PT Ratu Irama from 1977) and professional and educational electronics (PT Galva Corporation from 1980). Like Sony Corporation, the latter company has ties with the Sumitomo Corporation.²⁹

The establishment of a semi-knocked down (SKD) assembly plant managed by AGEI marked the beginning of a consolidation of Sony brand recognition in Indonesia. The affiliate was a joint venture between PT Graha Seruni Indonesia (50 per cent) and Amcol Electrical Industry Ltd of Singapore (50 per cent). The latter company is partly owned by Sony Corporation. As a domestic firm, AGEI was initially licensed to produce Sony's products including VTRs, CD players, radio components, tape recorders, radio cassette players, car audios, colour TVs and camera recorders solely for the domestic market. These well known products are Sony's 'strongest' lines and are readily marketed by AGEI's sole distributor and service provider, PT Graha Seruni Group which replaced PT Mulia Eltra Wahana, which, in turn, took over from PT Ratu Irama. Both AGEI and its principal plastic moulding parts supplier, PT Amcol Plastic Moulding Industries (APME), take no part in direct export activity, since they solely serve the domestic market and both are bound by their agreement with Amcol Singapore and later Sony's subsidiary not to export. However, on occasion, APMI has been granted permission 'under licence' status to supply a Taiwanese company on an OEM basis with computer monitor casings for export to the United States (interview, former assistant general manager both at AGEI and APMI, 1995).³⁰

AGEI went on to become the biggest producer of VTRs for the domestic market, which for a long time produced Betamax instead of the now popular VHS format. In

²⁹ PT Galva Corporation was appointed sole agent of Sony Corporation (Japan) for the sales and marketing of professional electronics for products such as professional/broadcast audio and video equipment, institutional video equipment and language laboratory systems. This domestic firm is also sole agent of TOA Corporation (Japan) to distribute sound and communication products. It established PT Toa Galva Industries, a joint venture with TOA Corporation and Sumitomo Corporation (Japan) to manufacture professional sound equipment. PT Galva Corporation (formerly NV Galva Trading Corporation established in 1953 and Galva Radio Electric Service in 1946) was established by one of Indonesia's pioneers in the electronics industry, Mr Uripto Widjaja (PT Galva Corporation, *45th Anniversary Report* 1991: 8). Sumitomo Trust holds a 2.1 per cent share in Sony Corporation (Toyo Keizai Inc. Spring 1997: 743).

³⁰ For AGEI, APMI supplies plastic moulds exclusively for the Sony brand, but under the agreement with Amcol Holding (Singapore); in the case of moulds supplied to other clients their final products bears various brands. The APMI plant was established in December 1992 and is exclusively owned by the Graha Seruni Group without Amcol's participation and employs around 400 people.

1990, AGEI had the largest market share at 46.1 per cent of the domestic market, even though in that year it was only utilising 25.8 per cent of its production capacity (PT Data Consult Inc. 1991: 81). In the late 1980s and early 1990s, the growth of video tape and cassette recorders has not been as fast as that of other consumer electronics products in Indonesia. Even though VTR production and demand declined at that time due, among others factors, to the change from Beta to VHS format, the introduction of new private TV channels and new competing devices such as laser disc players, a number foreign firms such as Matsushita, Sanyo, LG Electronics, Toshiba and Mitsubishi established production facilities.

PT Sony Electronics Indonesia (SEI) was the first manufacturing joint-venture plant established in 1991 by Sony in Indonesia. Its shareholders were PT AGEI (5 per cent) and Sony Corporation (95 per cent). This plant specialised in the manufacture of low-cost audio products (hi-fi stereo sets, cassette recorders) and only in certain models only of the latter. Other audio products are produced elsewhere, according to the head office plan. Sony uses each production centre to produce only a narrow range of product models for the global market and a few other centres produce the same models (interview, 1994). SEI initially exported its products to the US/Canada market (30–35 per cent), Europe (including Russia and Eastern Europe, 33 per cent) and the Middle East and Asia (33 per cent).

The SEI plant initially had a paid-up capital of \$20 million (2.5 billion yen) but it was increased to \$55 million by 1993 with increased production and more models of audio products transferred from the Malaysian plant (Sony Electronics Malaysia). Since that time, SEI has expanded to produce for the world market, maintaining a just-in-time system and ISO 9000 standards like other Sony plants. The other Sony plant producing similar audio products was opened in China in 1994, a development that affected SEI's production and export levels (interview, manufacturing engineer, SEI, 1994). Thus the rationale for its establishment appears to be to utilise Indonesia's low-cost labour and GSP facility for penetration into developed countries.

SEI only supplies a very small portion (less than 5 per cent) of its total production to the local market, according to demand from the local importer/assembler PT Amcol Graha. This firm is the sole licensee of all Sony consumer products for the local market and generally imports CKD kits and assembles them. After the deregulation package in October 1993 (*Pakto 93*) which stipulated that MNEs can supply up to 20 per cent of their products to the local market, SEI tried to sell some of its products to the local market for a few months but it could not meet the local regulations that this would have entailed, or the additional cost in bureaucratic payola. In 1994, Sony's plant was already producing more radio-cassettes and hi-fi sets than the plant in Indonesia even though labour costs in Indonesia were cheaper (interviewee, 1994). Ultimately, they stopped this practice and returned to export 100 per cent of their product, even though they had the facility to supply the local market. SEI eventually exported to Singapore and re-imported

to avoid administrative problems. One local assistant general manager of SEI commented:

The irony is that the government is still promoting the potential of the large domestic market to attract foreign investors when large firms like Sony can no longer be bothered to serve this market directly. It prefers to have its assembler/distributor AGEI do this job. Japanese investors often consider the large domestic market to be important, so the government (would be) better (off to) further deregulate the licensing and administrative procedures. (interview, assistant general manager both at AGEI and APMI, 1994)

Such administrative difficulties might also, according to the same manager, have driven other foreign firms to relocate to China instead of Indonesia, partly due to the higher overall costs in Indonesia. He added:

...so that it is only the GSP facility which is the main attraction for Indonesia. Also, there are doubts that if the GSP facility is under question with the possibility of the United States withdrawing Indonesia's MNF status for human rights related reasons. The crucial question will always be whether the Indonesian Sony plant(s) can compete with the other Sony plants in China and in other ASEAN countries.

Sony in many ways is a unique company since it has several key propriety technologies for critical components. For example, Sony's 'Trinitron' CRT is exclusively used for its own brand of TVs. In 1994-95, Sony had five CRT plants, with the largest in Singapore. The prospect of Sony setting up a CRT plant in Indonesia is almost nonexistent. Others may take up this challenge, although if local production of CRTs is to be cost-effective it must produce large volumes (1-2 million tubes per year) and it may not be possible for this quantity to be absorbed by the local market. Thus, some of the output, at least initially, must be exported. Issues relating to CRTs are discussed in the case study of LG Electronics, which established one of the two CRT plants in Indonesia in the late 1990s. The case of Sony illustrates one of the main issues confronting all MNEs considering the relocation of critical components to Indonesia: the question of scale of production and whether Indonesia's domestic market can sustain the initial production runs.

Development of local suppliers

With the advent of the high volume production of a narrow range of audio products, SEI has mainly relied on a Korean company, PT Daidong Indonesia, for its plastic mould components. This firm has been Sony's main plastic component supplier in Malaysia. Since 1994, as Daidong can no longer cope with the demand, Sony has requested Daidong to organise additional suppliers to Sony. These suppliers are known as the 'second-tier' suppliers.

Sony maintains a range of supplier firms from Japan, a range of other foreign firms and domestic firms for plastic moulding, electrical, mechanic and packaging parts.³¹ Sony has a policy of minimising its involvement in the making of non-critical

³¹ For example, some of Sony's suppliers in plastic moulds are Sari Multi Utama, Yasunli Abadi (Taiwan), Showa Plastic Indo (Japan), Dai Dong (Korea), KMK Plastics (Japan); in electrical parts Singamip (Singapore), Sukma Beta Sempurna, Vanadium (domestic), KDS, Dai Hwa Speakers (Korea), National

components such as plastic moulds, jigs, audio and video heads. They have no specialist engineers in the manufacture of non-critical components. In this respect, Sony is quite different from PT National-Gobel (a Matsushita subsidiary), which previously made many of its components 'in-house'. Sony believes that Daidong has better know-how in plastic technology and supplies than it does itself and, in giving Daidong the task to seek additional suppliers, it is reducing the risk of dealing with additional problems of quality control and pricing. Daidong therefore signed on PT Amcol Plastic Moulding Industries and Showa Plastics Indonesia (interview, 1995). Nevertheless, SEI's local component sourcing only amounted to 15 per cent of the total production value due to the low supply of locally produced components and the quality and continuity problems that SEI has been experiencing. SEI plans to increase this ratio to 45 per cent as it sees the importation of components as inefficient due to the reduction in the competitiveness of SEI's finished products resulting from transportation and packaging costs and lead time (interview, 1995).

Since the introduction of the *EPTE* (Chapter 3) facility for suppliers, there has been a push from subsidiaries of MNEs such as SEI to obtain this *EPTE* facility.³² Some of Sony's suppliers such as Showa Plastics, Jig Astra, Kepsonic (Korea) and KMK (Japan) did not take up this facility, and SEI dropped them (interview, 1994).

Sony had planned (circa 1994) to turn Indonesia into a production platform to consolidate its export markets of low-end technology consumer electronics, particularly for the North American and European markets. In 1995–96, output was about one million units per year and expanding. By 1997, Sony planned to produce four million units in Indonesia, with an export value of \$US400 million, which was to amount to 20–25 per cent of Sony audio sales worldwide. While current product lines only cover radio cassettes and home audio equipment, the firm plans to produce walkmans and minidisks in the near future (Harianto and Safarian 1997: 216).

Gobel, Shinmei Electric (Japan), Tai Ping PCB (Taiwan); in mechanic parts and metal stamping (Nugra Tata, Menara Alam Teknik, Daya Cipta, Tanah Sumber Makmur, Pasaco (domestic), Denko Wahana (Japan); in packaging and printing Aneka Karton, Sarana Kemas, Panama Label Printing, Dinar Makmur, Setia Usaha Printing (domestic) and Dai Nippon Printing (Japan); and in power transformers (Shimoda).

³² The *EPTE* facility has a main advantage that it takes only five days to clear shipments instead of more than 17 days through the duty-exempt facility but only for firms that (directly or indirectly through a main assembler) export at least 75 per cent of their output. This facility makes it easier for indirect exporters with this status to be subcontracted by final goods exporters/assemblers.

Table 8-4 Subsidiaries of Sony Electronics Corporation in Indonesia, 1997

Name of subsidiary	PT Amcol Graha Electronics Industries (AGEI)	PT Sony Electronics Indonesia (SEI)	PT Sony Manufacturing Indonesia (SMI)	PT Sony Indonesia (SI)
Establishment, production and expansion dates	Oct. 1986, Jul. 1987, expanded in Mar. 1991	Mar. 1991, Mar. 1992, expanded Mar. 1993	May 1995	August 1995
Initial and expansion investment	\$14.3m, \$22.0m	\$20m, \$56m	\$18.5M. (Cibitung Bekasi, W. Java)	\$10m (Jakarta)
Local (and foreign) workforce	1,100 (20) employees	1,230 (15) employees	1,000 (13) employees	650 (5) employees
Shareholders	PT Graha Seruni Indo. (50 %) and Amcol Electrical Industry Ltd of Singapore (50%)	PT Seruni Jati (5 %) and Sony Corporation (95%)	PT Seruni Jati (5 %) and Sony Corporation (95%)	Sony Corporation (100%)
Domestic-foreign ownership shares	50:50	5:95	5:95	5:95
Products/services	Initial: VCR, CD player, radio compo, tape recorder, radio cassette, car radio, CTV, camera recorder; Expansion: CTV, audio, car audio, VCR, camera, MD/CD player	radio, Walkman, Multidisc CD & radiocas. players, HiFi stereo audio products	CTV receiver sets	Sole sales and marketing for all Sony products and components through over 600 dealers and over 50 service centres
Market-orientation	100% domestic	95% export 5% domestic	95% export 5% domestic	95% export 5% domestic

Source: Interviews and Sony Corporation (<http://www.sony.co.jp>, 1999).

In 1994, reeling under a mountain of ‘bubble era’ debt, Sony reorganised its corporate structure whereby the parent company was transformed into eight autonomous integrated companies to replace 27 product and sales divisions and decentralised control (*Tokyo Business*, August 1994: 20). In the same year, Sony also decided to freeze new domestic investments in its mainstay AV equipment such as audio equipment, TVs and VTRs and to advance R&D investment in each unit. With the aim of establishing a new production system compatible with the rapid yen appreciation, in fiscal 1994, Sony’s investment in both domestic and overseas restructuring was US¥240 billion (about \$2.4 billion) up 22.5 per cent from a year earlier. Of the overseas restructuring fund, about 10 per cent was directed to relocation to Southeast Asia. This relatively large new investment can be understood in the light of the fact that until 1994, Sony produced 45 per cent of its AV equipment overseas, whereas overseas AV sales amounted to over 80 per cent of total AV sales.³³

Partly as a result of the above restructuring within Sony Corporation, partly as a consequence of more liberal investment rules (the lifting of FDI divestment requirements and restrictions in distribution) and partly as a result of domestic rises in production and sales since 1992,³⁴ two new subsidiaries were established in Indonesia in 1995. Firstly, in

³³ Each of Sony’s autonomous units functioned as a separate ‘company’ (a version of a more radical Japanese downsizing program called *bunsha*) and varied in size, ranging from the Consumer Audio-Visual unit with sales of \$15 billion (¥1.5 trillion) down to units with sales of around \$1 billion (¥100 billion) (*Nihon Keizai Shimbun*, Sony freezes new investment, 23 August 1994: 1, in Japanese).

³⁴ Sony’s Indonesian audio plant, SEI, enjoyed increased production significantly, from 980,000 audio sets in 1992 to 2 million sets in 1993, 3.15 million sets in 1994, and 3.9 million sets in 1995, while sales

May, PT Sony Manufacturing Indonesia (SMI) was set up and capitalised at \$18.5 million and located near SEI's plant in the MM2100 Industrial Park Cibitung, Bekasi. In December 1995, it started to produce CTV receiver sets, mainly for export, but also for the local market. Its shareholders were, as in the earlier case of SEI, PT Seruni Jati (5 per cent) and Sony Corporation (95 per cent). Secondly, in August 1995, PT Sony Indonesia (SI) was established as the sole sales and marketing company throughout Indonesia authorised and fully controlled by Sony Corporation. Its paid-up capital was \$10 million, with 850 employees. In January 1996, Sony Corporation cancelled the licence of PT Amcol Graha, which produced many of the AV products for imported components from 1987. While there was never any serious commercial conflict of interest between AGEI and Sony (interview, former senior manager, SEI, 1994), SMI and SI were starting to produce TVs and import other audio products and VTR models for Sony's subsidiaries in Malaysia, Thailand and Singapore. These changes were accompanied by an increase in local content to 45 per cent for radio/tape recorders and CD players, and 35 per cent for hi-fi stereo sets in 1995. In the same year, about 15 per cent of the components in hi-fi stereos were imported from Japan and 50 per cent from Malaysia and Singapore (interview, President of PT Sony Indonesia, 1995).

In 1996, Sony Corporation made a turnaround in its internal organisation with a return to greater centralisation. At the same time, the eight autonomous 'companies' were expanded to ten to include new home audio-visual and personal computer divisions with a revamping of the R&D and headquarters operations, following the installation of a new CEO, Nobuyuki Idei (*Variety Inc*, 28 January 1996). With booming exports to the US and Asian markets, Sony sales world-wide climbed from ¥1.70 trillion in 1993–94, to ¥1.88 trillion in 1994–95, to ¥1.93 trillion in 1995–96, to ¥2.17 trillion in 1996–97 (all financial years ending in March) in Japan. Sales in audio equipment and video equipment, including video cameras, rebounded (Toyokeizai, Spring 1997: 743).

In the aftermath of the Asian crisis in 1997, the lower yen (estimated at ¥105/\$1 for the first half and ¥110/\$1 for the second) initially brought about noticeable benefits for the Sony Corporation as a whole, increasing consolidated sales from \$2.41 trillion in 1997–98 to \$2.45 trillion expected in 1998–99.³⁵ However, following falling operating profits in its manufacturing business, Sony commenced another restructuring program in 1998–99, with plans to close 15 factories and shed 17,000 workers worldwide by 2003. This is to be achieved through plant mergers, simplifying its organisational structure (Wehrfritz 1999: 2) and doing away with some of its previous 'tangled power structure' resembling those of the Korean *chaebol*, where individual families and favoured business contacts control vast networks of subsidiaries.³⁶

revenues also increased from \$76.5 million in 1992 to \$160.3 million in 1993, \$285mil in 1994, and \$348 million in 1995 (*Jakarta Post*, 23 October 1995).

³⁵ Sony's sales data from <http://www.toyokeizai.co.jp/english/jch/index.html>, 1999.

³⁶ Sony has a number striking similarities to Korean *chaebol* such as Samsung and LG: rapid expansion largely due to charismatic powerful CEOs but chaotic internal organisation; 'rapid formation and

In Indonesia, the immediate effect of the most recent reorganisation within Sony has been the closing down or 'freezing' (*touketsusuru*) unprofitable operations. When faced with burgeoning audio and video equipment inventories back in 1991 (the year in which Sony Corporation declared a loss for the fiscal year for the first time since 1958), Sony ran down its stocks with price reductions and restructured its production plants to keep costs down. As a consequence of the 1997 financial crisis in Asia, a similar strategy was employed. The SEI and SMID plants were closed and the new distributing subsidiary PT Sony Indonesia (SI) took over the remaining audio plant ran by PT SEI and moved some of the production to the audio and TV plants in Malaysia. (*Jiji Press Newswire*, 4 April 1999).

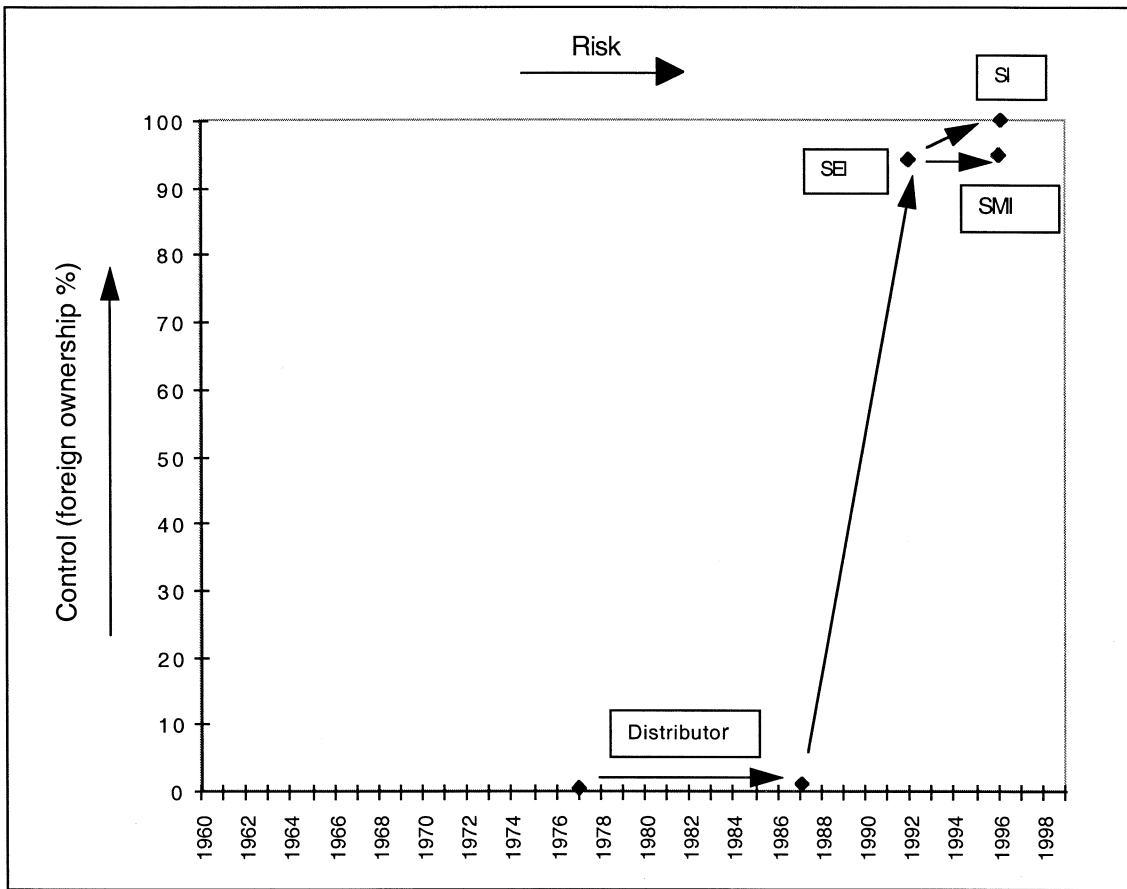
Sony appears to have a stronger supplier base in Malaysia than in Indonesia. For Sony's Malaysian plants, Sony's own critical component plants are also geographically closer to the CRT plant in Singapore, other audio and TV component plants in Malaysia and the semiconductor plant in Thailand as well as sophisticated local and foreign component suppliers (Domicity 1994: 4–26; <http://www.sony.co.id/indexx.htm>). Finally, Malaysia's greater political stability and more streamlined administrative requirements also made it a more desirable location for Sony than Indonesia. Nevertheless, despite producing 5–10 per cent of its capacity and flat sales for 1997–98, Sony is maintaining its radio cassette and tape recorders plant in Indonesia (*Asia Pulse*, 16 June 1999).

Like the other MNEs up to the onset of the Asian crisis, Sony's investment strategy in Indonesia can be characterised as sequential albeit using different path of licensing its product manufacturing for some time before embarking on direct manufacture. Sony's internationalisation had been highly successful due to its innovative products, marketing as well as supporting international conditions. Sony is not like many other large Japanese electronics MNEs in that Sony has for some years in the 1970s and 1980s obtained a majority of its revenues from overseas markets and has engaged in unconventional management and financing practices.³⁷ But despite its latecomer status, it became strongly competitive in a number of consumer products against more entrenched rivals in Japan. Nevertheless, Sony still has to rely on offshore markets. Following its entertainment acquisitions in the late 1980s and early 1990s, North America became Sony's most important market. Its organisational structure has evolved several times into a bipolar one with its entertainment business centred in the United States and its electronics business centred in Japan, while it holds extensive marketing and production networks in Europe and Asia. Sony's East Asian manufacturing network appears to be consolidating and has become more concentrated in Singapore, Malaysia and Thailand following the sharp appreciation of the yen the early 1990s and as a result of the recent Asian financial crisis since mid-1997. From this time in Indonesia, Sony only manufactures a limited range of audio products and a distributing subsidiary.

execution of business plans; the use of funds from today's profitable businesses to fund risky new ventures into higher value-added products that will be the source of tomorrow's growth' (Domicity 1994: 2–19).

³⁷ In fiscal 1993, Japan constituted just 26 per cent of Sony's revenues.

Figure 8-5 Developments of Sony Corporation in Indonesia, 1970s to 1990s



Source: Constructed from Table 8-44 and from Sony internal company reports.

Sony's market servicing and direct investments in manufacturing plants in Indonesia (Figure 8-5) came at a later time than most of its competitors. It built production plants in distinct stages after a long product presence through its distributor second-tier affiliate, AGEI. For a long time, Sony only had indirect control, but this changed when it established SEI in 1992 and SMI in 1995. When in 1992 Sony began manufacturing in Indonesia, it focused on its most suitable labour-intensive lines of analog low-cost audio products. This move was carried out to counteract low-cost competition from Korean and other East Asian producers mainly in the US and Asian markets.³⁸ For most of these products, it was never viable to develop automated production systems, and human 'flexible manufacturing systems' are still used. Further investments in Sony's own sales and marketing and in a TV receiver manufacturing subsidiary SMI in 1995 suggest that Sony was taking advantage of Indonesia's rapid market growth as well as its continued exports from a low cost base. Recent efforts to

³⁸ Sony has for a long time centred its efforts on its most important market, the United States. Since 1991, it has been Sony's biggest market, accounting for 28.6 per cent of sales, surpassing Japan (27.7 per cent), Europe (27.5 per cent) and other areas of the world (16.2 per cent). In 1994, consolidated sales by area are the United States (30.9 per cent), Japan (27.4 per cent), Europe (22.3 per cent) and other areas of the world (19.4 per cent). Consolidated sales peaked in 1991 for video equipment, in 1992 for audio equipment, in 1993 for televisions (Sony, *Annual Report*, Tokyo, 1994).

unify production bases in Malaysia have meant a (temporary) freezing of the two manufacturing subsidiaries. This has resulted in a return of the Indonesian market to one served only by a sole sales and marketing representation, albeit wholly owned by Sony.

Summary

Over the different periods of their involvement in Indonesia, these three Japanese MNEs and their group affiliates' investment strategies appear to have been shaped by their initial time of entry. Being a leading 'early entrant' rather than a 'late entrant' is more significant than country of origin.

The Matsushita and Sanyo groups initially entered similar lines of business with similar types of joint-venture affiliates serving the Indonesian domestic market until the mid-1980s. The later entries of other affiliates, particularly during the 1990s, which supply the region and world market, meant that their respective affiliates have had to develop their own technological and marketing capabilities. The Sanyo group adopted a similar strategy in expanding its operations in Indonesia in an incremental 'follow-the-leader' fashion. In doing so, both extended their operations by relocating some principal components production to Indonesia and by building the technological capabilities of their own 'in-house' production and that of the suppliers — within their own group and other foreign and domestic firms.

In the aftermath of the Asian crisis in Indonesia, Sanyo like Matsushita rationalised its production and raised its prices, and attempt to expand its markets in the United States and Europe. In Indonesia, Sanyo did not close down any subsidiaries and even set up a new electronics goods and component plant in Batam. On the other hand, as a late entrant, the Sony group took on a different investment mode — initially in 1976 by licensing its distributor to enter into assembling manufacturing to supply the Indonesian market. After successfully building its brand name presence in Indonesia for a decade, Sony established local manufacturing of a limited number of products by its wholly-owned subsidiary in 1991 for five years before establishing another subsidiary. After the Asian crisis, Sony closed down and relocated most of its manufacturing operations in Indonesia except in a restricted range of products. Like the other two MNEs studied, until the onset of the crisis, Sony's investment strategy in Indonesia can be characterised as sequential, albeit using the different path of licensing its product manufacturing for some time before entering directly into manufacture.

Comparison between Sony and other MNEs suggests that its investment strategies up to mid-1997 were sequential, but differed from the other two groups after 1997–98. Hence, the common nationality of ownership of the three groups on their own may not be sufficient to explain these firms' approaches to FDI over time. The development of Japanese MNEs' operations in Indonesia and comparisons with Korean MNEs will be discussed in the next chapter.

9 Case studies of Korean MNEs

Latecomer firms usually are smaller and enter a host country later than leading firms but over time they likely to face similar competitive forces and take similar strategy of market servicing. Latecomers as late entrants might take on a different initial investment strategy by being more ambitious in their market-share goals and by making larger investments which require considerable capital. By taking a more risky initial approach, latecomer firms may take on their competitors. But long-term investment patterns by latecomer MNEs, as late-entrants to a host country, often establish multiple foreign market entry over time as do leading firms and latecomers' decisions to enter through the mode of exporting, licensing and FDI is also based on a trade-off between control and risk. It is argued that over time latecomers tend also to favour control as their strategies over time become more like those employed by incumbent firms.

The chapter explores whether there are systematic differences in the timing, mode choices and market orientation between major Korean electronics firms in Indonesia and their Japanese counterparts.

The chapter is divided into two parts. First, a review of the literature on leader, follower and latecomer firms is presented. Second, the case studies of the investment behaviour of the two major Korean MNEs and their affiliates in Indonesia are set out. An examination of their choice of location, timing of entry, local partner, product line, market orientation and other operational aspects allows the development of their investment strategies in Indonesia over different time periods to be assessed. The chapter ends with a summary outlining a comparison of key features of the development of the evolution of Japanese and Korean firms' market servicing strategy in Indonesia.

Leader, follower and latecomer firms

The nature of FDI entry and other forms of foreign market servicing may depend on whether a particular MNE originates from a developing or mature economy. Korean firms, often described as 'latecomer' firms, may employ different foreign market servicing from their Japanese counterparts, often categorised as 'leaders' or 'follower' firms.

Latecomer foreign market entry can be summed up in two alternative views.

First, that multiple foreign market entries are not random but follow a sequential logic based on resource or capability development (Montgomery 1995). From a practical perspective, such findings underscore the importance of building local capabilities in foreign subsidiaries. Typically, developing country MNEs internationalise in a sequential process, despite their lack of market power and ownership advantages arising from superior technology, brand name, capital or management expertise (Casson 1983). In addition, they face the handicap of a small domestic market in developing ownership advantages so that early-mover firms, mostly from developed countries, possess ownership advantages that are difficult to surpass.

To compete successfully, the literature suggests that MNEs from developing countries tend to occupy niches that may not have been of interest to their more established rivals from developed countries. While they do not possess their own technological capabilities, they have an outward orientation (Chapters 2 and 4). In recent years, two additional successful 'latecomer' strategies have been adopted, mainly by Asian MNEs. The first is to outsource technology through a variety of means including licensing arrangements, Original OEM, own-design manufacture (ODM) arrangements and other strategic alliances, mergers, acquisitions and formal joint ventures prior to being able to produce OBN products.¹ The second is to adopt an outward (international) orientation (Young *et al.* 1996) through early entry to international markets, which allows firms to overcome the initial disadvantage of lack of scale.

A second view of latecomer foreign market entry suggests that MNEs from developing countries can leapfrog different stages of internationalisation (Johanson and Vahlne 1977) by undertaking FDI which exposes them to new technologies and marketing ideas (Hwang 1994). As discussed above, traditional FDI theories advanced in the context of MNEs from developed countries maintain that the presence of ownership advantages precedes international expansion. Hence, there is evidence that suggest that some Korean firms have entered international markets in a few large steps rather than many small steps.

More recent studies, however, contend that MNEs from developing countries expand overseas before obtaining some form of market power based on superior technological capabilities (Oh *et al.* 1998). Successful MNEs from East Asia were able — simultaneously — to have an outward orientation while creating their own technological capabilities (Pangankar 1998: 111). For example, Samsung from Korea developed its growth strategies simultaneously: (1) by investing and expanding its production systems; (2) by internally developing the necessary technology though

'reverse product life cycle' or reverse engineering and imitation, and externally acquiring technology through purchase of firms with specific technologies (Yu 1998: 69); and (3) by expanding export target markets and building competitive advantages. Samsung's strategic choices in terms of FDI were related to choice of investment in production systems which, in turn, was determined by choice of products and manufacturing scale and scope. These decisions cannot be separated from choices relating to acquisition of production know-how and learning critical technologies (Yu 1998: 59). Similar arguments have also been made in the case of Acer from Taiwan, which became a leading producer in the global personal laptop computer sector (Zysman 1994). Hence, the general rationalist assumption holds for MNEs from developing countries: their internationalisation is a gradual, sequential and cumulative process — albeit different from MNEs from developed countries — whereby firms exploit externally available opportunities in international markets matched with their internal development of technological and marketing capabilities.

The following case studies on the timing and mode of entry decisions of latecomer Korean MNEs outline their investment profiles as late-entering firms in the Indonesian electronics industry. Their investment behaviour can be compared over time against the Japanese MNEs in the previous chapter. Do they reflect different ways in which developing country MNEs or developed country MNEs internationalise? Does this matter?

Case Study 4: Samsung Group

Samsung Electronics is the most well-known Korean fully integrated manufacturer of electronics-related items, with four main areas of activities: consumer audio and video products, information technology systems and telecommunications hardware and electronic components, including semiconductors. In 1996, it consisted of 26 Korea-based core affiliates with 390 overseas facilities in 63 countries. Samsung-affiliated firms employed over 267,000 world wide and had a unconsolidated revenue of \$96.1 billion in 1997. Samsung's flagship business, Samsung Electronics, accounted for 27.4 per cent of total sales.²

In 1969, Samsung Electronics Co., Ltd. (SEC) was founded by Samsung (Trading) Co., which has been engaged in general trading, light industry, finance and

¹ The term OEM sometimes broadly includes the concept of ODM. The latter was initially used in 1989 (Hobday 1997).

² Samsung Electronics aims to export goods worth of \$13 billion in 1998, accounting for over 9% of Korea's total exports. Source: <http://www.sec.samsung.co.kr>, 27 October 1998.

retailing since 1948 (*The World of Samsung*, 1993, Seoul).³ From its inception, the Samsung Group has placed an emphasis on penetrating overseas markets and acquiring technology. Its international expansion has followed several stages since 1970 when it began its transformation into a global competitor. Like other MNEs, Samsung exported its products to Indonesia through a distributor since 1975 before establishing a joint venture to manufacture in 1990, and establishing sole ventures from 1997.

Despite its latecomer status in terms of its technology and marketing capabilities and the later stage of its entry into Indonesia compared with Japanese MNEs, Samsung eventually developed specialised low-end assembly operations in much the same fashion as other MNEs built their export-oriented subsidiaries there. The following survey of the Samsung Group's global and regional milestones traces some of the key developments of its international expansion and relates them to Samsung's activities in Indonesia until the onset of the Asian crisis in mid-1997. An additional issue will also be explored: whether Samsung's investments reveal a strategy that is essentially similar to or different from its main Japanese competitors in Indonesia and whether it exhibits different entry timing and modes.

Samsung's global and regional milestones

The international operations of the Samsung Group were pioneered by its trading company. This continues to be the case, with the trading firm playing the role 'closest to that of the mother company' in the Group (Humes 1993: 287).

After the Korean War, Samsung Co. began its dramatic overseas expansion, accompanied by a growing manufacturing capacity in Korea. During the 1950s and 1960s, with the encouragement of the Korean government, it started to diversify into a wide range of disparate businesses, including several manufacturing activities (sugar, wool, paper and fertiliser), life insurance, department stores and other services. The extremely diversified businesses was motivated 'partly to insure against the risk that the government may restrict entry to a new industry, [and] partly to satisfy the founder's vanity' (*Economist* 1990: 18).

At its inception in 1969, SEC started its involvement in electronics with 'virtually no accumulated technology' in Korea and the timing of its entry 'was significantly influenced by... the introduction of the Electronics Industry Promotion

³ The late Byung-Chul Lee founded Samsung General Store in Taegu in 1938 and led the Samsung Group for five decades until his death in November 1987. The company grew rapidly by trading with partners in Manchuria and Beijing and, later, by venturing into small-scale manufacturing. In 1948 the company started using the name Samsung Trading Co. and its operations expanded to include Southeast Asia and the United States. By 1950, it had grown into

Law' in 1968. Samsung established two joint venture partner companies: in 1969 with Sanyo and Sumitomo Trading; and in 1970 with NEC and Sumitomo Trading. SEC went on to set up similar joint ventures with foreign partners to manufacture picture CRTs and electronics components in 1973, and acquired a semiconductors plant in 1974 and two telecommunication exchange firms in 1977. The purpose of this electronics diversification was to secure its domestic market, since most of these joint-venture agreements only allowed SEC local market sales rights. They were also carried out to imitate Japanese strategies (Kim 1997: 40–47).⁴ In its early days, SEC was a market follower of LG Electronics, but overtook its rival in terms of sales turnover in 1984 (*Far Eastern Economic Review*, 2 November 1995).

During the 1970s, it was the trading company rather than SEC that played the leading role in globalisation by establishing branch offices that paved the way for a few of the individual product companies to organise their own affiliates. It was only in 1977 that SEC established its own independent export department and in 1978 it established a US sales affiliate. When SEC located its subsidiaries or affiliates overseas, they were generally near Samsung Co. offices. SEC was not able to 'accumulate foreign marketing knowledge independently' until the early 1980s and this may have led to a 'lack of international marketing capability during the 1980s and 1990s' (Kim 1997: 54). From 1974, The Samsung Group continued its diversification efforts by establishing new firms to venture into heavy industries, shipbuilding, petrochemicals, precision and aerospace. Meanwhile, the group's electronics subsidiaries rapidly diversified their product line-up and enhanced their technological capabilities.

The 1980s saw SEC enter into its first foreign manufacturing of CTVs in Portugal in September 1982, partly as a response to increasing trade barriers (voluntary export restraints) in the United States and partly as a strategic response to LG's action of setting up a US-based CTV plant in Alabama in March 1982. Such external factors forced SEC to take a defensive strategy in response to LGE's action, and the 'follow-the-leader' pattern of overseas expansion would continue between the two leading *chaebol*. Meanwhile, since 1983 SEC has continued to invest aggressively in technology, entering into the DRAM business which it combined with foreign licences and OEM agreements. This allowed SEC to progress further in its internationalisation efforts.⁵ SEC's primary

Korea's largest trading company (*The World of Samsung*, Office of the Executive Staff of the Samsung Group, Seoul, Korea, 1993).

⁴ Samsung's founder, B. C. Lee, attended Waseda University in the 1930s and 'drew heavily on the Japanese model, paying little attention to the US or Europe'. Samsung's main ties are 'with Matsushita for training and Toshiba for technology' (Domicity 1989: 4-39-4-47).

⁵ OEM allowed technologically weak firms such as Samsung to reduce their need for capital investment in the establishment of international marketing and distribution channels as well as in 'in-house' product design and development capability. During the 1980s, Korean firms, including Samsung, improved their assembling capability and transformed themselves from being subcontractors of foreign technology suppliers to OEM suppliers for major

focus at this stage of development was on a handful of strategic and lucrative export products such as DRAMs, computer monitors, key telephone systems, TVs, VCRs and microwave ovens (MWOs). Meanwhile during the 1980s, the Samsung Group continued to diversify further into genetic engineering, the precision industry and petrochemicals.

At the end of the 1980s, SEC had expanded its international production network in two different geographical directions with similar products. Firstly, its expansion was in high-cost developed countries such as the United States (CTVs) in 1984 and the United Kingdom in 1987 (microwaves, later replaced by CTVs) in response to increasing trade barriers and LG's moves. Secondly, following two unsuccessful previous operations⁶ and in response to increasing cost pressures due to the appreciation of the won and wage increases from the mid-1980s, SEC established plants in low cost countries including in 1988 in Mexico (CTVs) and Thailand (VCRs and CTVs); in 1989, Hungary (CTVs), Spain (VCRs), Turkey (CTVs), Malaysia (MWOs) and Indonesia (refrigerators). Investments in such plants to make similar standardised products can be classified as horizontal diversification overseas.

In the late 1980s SEC's profits declined as these products became uncompetitive as a result of the appearance of similar but better quality low-end products from Japanese transplants in lower wage Southeast Asian countries. From the beginning of the 1990s SEC, like the other big four Korean *chaebol*, started their late entry into Southeast Asia in earnest. Their entry into manufacturing operations in this region came about two decades behind those of their Japanese competitors. The Korean firms were motivated by similar strategic responses to the forces of regionalisation (see Chapter 5) and in major global markets. In particular, the slowing of demand for electronics products in the United States and Europe drove both Japanese and Korean firms to target markets in Asia, while price competition in all markets continued to be important (Ernst and O'Connor 1992: 143).

distributors in the United States, and for Japanese buyers who had established their own international sales channels and brand names (Ernst 1994).

⁶ The failure of SEC's earlier operations in the US and UK was attributed to its inability to establish strong local linkages with its affiliated components subsidiaries Samsung Electronics Mechanics Co., Ltd and Samsung Electron-Device Co., Ltd. In contrast to Samsung, Matsushita was able to sell high end and high quality products in the US as well as quickly forging local links with component suppliers. In addition, Samsung's competitive advantage was in temporary 'easy-to-imitate capability' in mass production. Its weakness in design and development capability as well as in international management and marketing capability led Samsung to intensify its efforts in technology acquisition (Kim 1997: 92-94).

Samsung's operations in Indonesia

In March 1989, Samsung Electronics established a joint venture, PT Samsung Maspion Indonesia (SMI). This occurred after a considerable period of exporting activity of various products into Indonesia. Products such as iron, steel and timber, shoes, textiles and clothing and electronics were distributed by Samsung's affiliates and the branch office of Samsung (Trading) Co, which had been in operation in Indonesia since 1975 (Table 9-1). Initially, SMI aimed to serve the local market as a response to optimistic internal market research that claimed that local market demand was increasing and that Samsung's Japanese competitors were growing consistently (Kim 1997: 136).

The joint venture partners in SMI were Samsung Electronics (50 per cent) and PT Maspion Indonesia (50 per cent) with an initial paid-up capital of \$11.8 million. They went into production a year later to manufacture refrigerators, air conditioning components, microwaves, vacuum cleaners, commercial showcase refrigerators, freezers, water coolants and washing machines. The plant employed 400 Indonesian and three foreign employees, and began production to supply the domestic Indonesian market with a total of 95,000 refrigerators and total sales of \$18 million.

Table 9-1 Samsung's group trading and manufacturing presence in Indonesia, 1994

Segment/ mother company	Type and name of affiliates	Establishme nt year and month	Expatriate employment	Indonesian employees	Sales (billion won)	Item products
Exports/ Imports	Trading Co.	Mar. 1975	11	67	665	Iron, steel and timber
	Starwin	Dec. 1988	7	3,700	38	shoes
	Nesia	May 1989	4	1,200	12	Textiles and clothing
	Sisam	Jan. 1983	4	7	28	Home electronics
Electronics Manufacturing	SMI	Mar. 1989 ^e July 1990 ^p	4	383	17	Refrigerators, Home appliances
	SME	Aug. 1991 ^e Aug. 1992 ^p	12	1,200	72	VTRs, audio, PCBs
Textile/fabric manufacturing	YASAN	Jan. 1990	5	479	11	Clothing and fabric
Machinery	Subsidiary	Jun. 1990	1	300	53	
Construction	Subsidiary	Aug 1991	1	400	n.a	
SECL	Subsidiary	Feb. 1990	1	10	n.a	
Insurance	Subsidiary	Apr. 1994	1	10	n.a	Insurance and market Research
Total			51	7,045	896	

Notes: The above companies are legally listed entities registered in Indonesia; sales are as at December 1993; SMI and SME are abbreviations for Samsung Maspion Indonesia and Samsung Metrodata Electronics; 'e' denotes the date of establishment while 'p' denotes the date production commenced.

Source: Chung and Park (1994: 12).

Indonesia's local market for refrigerators did not grow as expected. SMI's production, which began by utilising less than 30 per cent of its initial production

capacity, did not expand much beyond this level for the first three years. As a result, Samsung Electronics had to redistribute SMI-made refrigerators to the global market and SMI's local partner was forced to concentrate on the local market. SMI's capitalisation was expanded to \$19.2 million in 1991 to respond to the increase in external demand. As Samsung's market survey data show, there are six leading manufacturers of consumer refrigerators in Indonesia (Table 9-2). It appears that SMI was highly optimistic to think that by aggressive pricing it could secure a rapid increase in market share from fifth position (with 8.6 per cent of the total estimated market in 1993) to gain equal first position in 1998 with National Gobel (Matsushita's affiliate). While SMI's unplanned export activity was highly unusual for a firm with domestic investment status, it was only made possible because Samsung Electronics did not wish to see a continuation of SMI's low returns for three years. SMI was able to export under an agreement with SEC's marketing department, which distributed the product globally (Kim 1997: 136).

Table 9-2 Refrigeration market shares and position: Samsung and major Japanese subsidiaries, 1994

Company name	1993	1994*	1995*	1996*	1997*	1998*
Samsung	30	50	65	85	110	140
Market share (%)	8.6	11.9	13.0	14.2	15.3	16.5
Market position	5	=4	3	2	2	=1
National Gobel	70	85	100	110	125	140
Market share (%)	20.0	24.3	28.6	31.4	35.7	40.0
Market position	1	1	1	1	1	=1
Sharp	54	60	70	80	90	100
Market share (%)	15.4	14.3	14.0	13.3	12.5	11.8
Market position	2	2	2	3	3	2
Sanyo	50	55	60	70	80	90
Market share (%)	14.3	13.1	12.0	11.7	11.1	10.6
Market position	3	3	=4	=4	=4	=3
Toshiba	40	50	60	70	80	90
Market share (%)	11.4	11.9	12.0	11.7	11.1	10.6
Market position	4	=4	=4	=4	=4	=3
Mitsubishi	30	35	40	45	50	60
Market share (%)	8.6	8.3	8.0	7.5	6.9	7.1
Market position	6	5	5	5	5	4
Other companies						
Market share (%)	76	85	105	140	185	230
Estimated total demand	350	420	500	600	720	850

Note: * Projected market share and position; market position of equal rank is represented by the symbol '='.
Source: Chung (1994: 5).

While SMI was engaged in the manufacture of home appliances, Samsung (Trading) Co. continues to export TV sets produced in Samsung's Malaysian plant into Indonesia, with some success. The results of a field survey in Surabaya (Indonesia's second largest city) in 1991 suggest that in the smaller 14- and 16-inch categories, Samsung's low-priced CTVs gained the third largest market share after Polytron and

Digitec (both domestic brands), followed by Japanese brands.⁷ Since 1988, the distributor and sole agent of Samsung products in Indonesia has been PT Metrodata Industry Pratama, a member of the Metrodata Group. The products imported include computers, printers, telephones, facsimiles, TV sets, tape recorders and VCRs.

Table 9-3 Market survey of CTV market shares in Surabaya, 1990–91

Rank	Brand name	Share (%)	Rank	Brand name	Share (%)
1	Polytron	17	5	JVC	6
2	Digitec	13	6	Toshiba	5
3	SAMSUNG	11	7	National	5
4	Sony	9	8	Others	34

Source: PT Capricorn Indonesia Consult Inc. (1991: 86).

In 1991 Samsung Electronics established PT Samsung Metrodata Indonesia (SME), its first export-oriented plant. This subsidiary was to initially export all of its radio cassette player, VCR and video cassette player production to markets in the United States and Europe (Table 9-4). Most of these exports are to meet OEM arrangements with third-country firms such as SEG and AMFO (Germany), GE, Thompson and RCA (US) and Akai (Japan).⁸ The joint venture, with a capitalisation of \$36.3 million, had foreign investment status and the share holders were Samsung Corporation (80 per cent) and PT Metrodata Epsindo (20 per cent, another member of the Metrodata Group).⁹

The motivating factors for initially establishing SME were Indonesia's low labour costs together with GSP ('re-exporting') facilities to the US and Europe markets and the potentially large domestic market (interview, 1995). In 1993–94, profits were modest but sales grew rapidly and additional production capacity was added. Since December 1993, SME has begun production of printed circuit boards (PCBs) for its own use and for exports in CKD state to manufacture CD players at Samsung's subsidiary in Spain (*Suara Pembaruan*, 24/3/1995).

Meanwhile, during the 1990s, the Samsung Group continues to pursue international expansion characterised by a rise in the number of electronics component subsidiaries, the emergence of R&D seeking foreign acquisition and the beginnings of a regionally integrated production system (Chapter 5, Kim 1997 and Hobday 1998). Partly as a response to the emergence of regional trade blocks such as NAFTA, the EU and AFTA and partly to overcome its decentralised 'profit centres' system, Samsung

⁷ Up to the early 1990s, the CTV market in Indonesia was dominated by the small size category (less than 16 inches) with a market volume of 57 per cent in 1991 (PT Capricorn Indonesia Consult Inc. (CIC) 1992: 2).

⁸ Samsung Electronics had a long-term (over 10 years) OEM arrangement with GE and RCA in VCR transactions (Domicity 1988: 4–50).

⁹ PT Metrodata Epsindo was initially incorporated as PT Sara Hitech Systems in February 1983 and changed its name in October 1989. The company was part of the Metrodata Group, which has been involved in the sales and distribution of a range of computers (Hitachi, Apple, Sun and Wang), peripheral and software (Epson, Tandem, Hypercom, Sierra, System Center, Cincom).

introduced a new strategy of globalisation with a centralised procurement system in 1993. The resulting arrangement for the Southeast Asian production sites was that purchasing of components was centralised through the IPO in Singapore.

Table 9-4 Subsidiaries of Samsung Electronics Corporation in Indonesia, 1998

Name of Subsidiary	PT Samsung Maspion Indonesia (SMI)	PT Samsung Metrodata Electronics (SME)	PT Samsung Electronics Indonesia (renamed from SME with the total take over)
Establishment, production and expansion dates	Oct. 1986, Jul. 1987, expanded in Mar. 1991	Mar. 1991, expanded Sep. 1995, Jan. 1997	June 1997 and expanded Dec 1998
Initial and expansion investment	\$14.3m \$22.0m	\$36.6m, expanded to \$41.5m, \$50.2m	increased capital of \$6.8m to \$57m
Local (and Foreign) Workforce	1,100 (20) employees	1,110 (15) expanded to 1,476 (12), 1,608 (10) employees	2,000 (15) employees
Shareholders	PT Maspion Indonesia (50%) and Samsung Corporation (50%)	PT Metrodata Epsindo Indonesia (20 %) and Samsung Corporation (80%)	Samsung Corporation (100%)
Domestic-Foreign Ownership Ratio	50:50	20:80	0:100
Products/ Service	refrigerators, controllers for air conditioners, MWOs, vacuum cleaners, showcase refrigerators, water coolants, washing machines	CTVs, radio cassettes, music centres, CD players, PCBs, VCRs, camera video recorders, car radios, key phones, telephones, tuners, flyback transformers, speakers, colour picture tubes (CRTs)	VCRs, CTVs (discontinued in 1997), CD-ROMs, washing machines, MWOs and air conditioners
Market-orientation	domestic and export	Domestic and export	domestic and export

Source: Various internal Samsung Electronics company reports and BKPM lists.

As a consequence, Samsung Electronics reorganised its affiliates to create specialised production centres throughout Southeast Asia, producing refrigerators and low-end VCRs in Indonesia and China, microwaves in Malaysia and CTVs in Thailand. In 1995, SME built a new VCR plant and started production, largely for the local market. The establishment of this plant was also a response to LG Electronics' success in penetrating the local market with shares of about 20 per cent. As Indonesia still restricted direct marketing in the local market, a new local marketing subsidiary was set up for the distribution of VCRs in the form of a 52:48 joint venture with Metrodata. The initial production of 600,000 VCR units per year was increased in the following years and plant utilisation reached 80 per cent. However, these activities at SME were surpassed by Sanyo's VCR plant (SCJI), which operated to full capacity with two or three shifts per day and showed superior international marketing capability (interview, president director SME, Park Byung-moon, 1995). In contrast to Matsushita's subsidiaries in Indonesia that introduced some product change R&D capabilities, SME continued to rely on SEC Korea for design and development since its key exports (VCRs and CDPs) were targeted at the global market.

Development of local suppliers

The production categories undertaken by SMI and SME include flyback transformers, PCBs, CRTs and other components, suggesting at least initially a low level of localisation of production. In 1992, SME's local content ratio was 15 per cent for audio components and 5 per cent for VCR components. As part of the 'new management' globalisation strategy, a greater effort was made towards localisation to take advantage of the increasing number of SEC's components subsidiaries in ASEAN countries, as well as Korean (Dai Dong, Kepsonic, Jee Won and others) and other foreign parts suppliers that had relocated to Indonesia. By mid-1995, there was an improvement in SME localisation with 55 per cent for audio components and 45 per cent for VCR components. An on-line computer system for parts procurement which came with the 'new management' reorganisations improved the ability of SME and the IPO in Singapore to source more efficiently from SEC's regional production network.

A main feature of the development of Samsung's reorganisation of its production network in Southeast Asia from the time it established its first plant in Thailand in 1988 was its reactive nature to external factors. This FDI pattern in Southeast Asia was largely similar to the pattern of SEC's FDI in the United States and Europe in the mid-1980s and it can be divided into three stages (Kim 1997: 145–73). Firstly, during 1988–92, a number of end-product subsidiaries were established in Indonesia, Malaysia and Thailand to focus on manufacturing the 'strongest' product lines, such as CTVs, VCRs and MWOs, for export to the global market. This was made in response to the lowering of Korea's locational advantage due to the increasing value of the won,¹⁰ greater competitive pressure from Japanese MNEs and GoldStar's move to Southeast Asia.

During 1992–93, SEC began a second phase of foreign investment, largely motivated by the expectation of the formation of AFTA with its CEPT mechanism, leading to greater investment competitiveness in ASEAN countries.¹¹ Consequently in 1992, SEC started establishing its standardised components manufacturing plants in Thailand (CRTs, microwave components) and Malaysia (components for CRTs) rather

¹⁰ The won appreciated 30 per cent during 1986–88 from 890 won to the US dollar at the beginning of 1986 to 684 at the end of December 1988 (Domicity 1988: 2–12). The most important factor in the decision of Korean firms to relocate to Southeast Asia was the relatively cheap labour (Ryou and Song 1993: 14) and the more outward looking export orientation approach (Sekiguchi 1991: 8–12), but without the export facilities to access the US and European markets, Korean firms would not have been able to reap the other two locational advantages.

¹¹ The Common Effective Preferential Tariff (CEPT) proposal adopted in 1992 had meant significant tariff reductions, such that the establishment of separate affiliated parts subsidiaries was no longer necessary. Rather a single plant could be set up in the best location to achieve economies of scale and its component products could be exported to neighbor ASEAN countries without the burden of tariff payments (Takeuchi 1993: 23).

than Indonesia, largely because of more favourable investment laws and better infrastructure.¹² From 1993, SEC greatly expanded its overseas production to China and, to a lesser extent, to India and Vietnam largely due to the increasing attractiveness of China, coupled with a loss of competitive advantage by some of Samsung's subsidiaries in ASEAN, particularly Indonesia.¹³ The third phase of Samsung's foreign investment in Indonesia and ASEAN, which started in 1995, was associated with the growing importance of the local market and to make use of the low-cost components supplied by affiliated firms in the region. New end-products were introduced and production was increased by subsidiaries in Thailand (washing machines), in Malaysia (MWOs) and in Indonesia (VCRs and refrigerators). These end-product subsidiaries continued to supply the rapidly changing global markets as well.

In the face of Korea's financial turmoil in the late 1997 and the changed economic environment, Samsung re-organised its 40-year old centralised group structure in early 1998 to bolster the competitiveness and management responsibility of Samsung's affiliated companies. Samsung's affiliate-wide operations now focus only on the development of corporate culture and overall coordination management, leaving the total responsibility of managing Samsung affiliates to each independent company. The total revenue of all Samsung affiliates rose on average by 23 per cent in 1997 against the same period in 1996 and exports were up 28 per cent in 1997 compared with 1996, indicating that the 1997 performance of Samsung affiliates was satisfactory despite the economic turmoil at the end of the year. But Samsung began a new round of restructuring which means that Samsung affiliates are now focusing on their core growth businesses and shedding non-mission-critical layers and under-performing units.

New integrated manufacturing centres have been created with a twin global as well as regional orientation. The result was five large-scale and integrated manufacturing complexes in Tijuana (Mexico), Manaus (Brazil), Teesside (UK), Seremban (Malaysia) and Tianjin (China). SEC has also established Samsung China Headquarters in Beijing and Samsung Japan Corporation in Tokyo to totally localise manufacturing, sales, distribution and other operations in China and Japan. At the same time, all 14 production

¹² Approval for 100 per cent foreign ownership was permitted in Thailand and the Philippines in 1983 and Malaysia in 1988, much earlier than Indonesia's restricted approval in July 1992 and unrestricted approval only in 1994. Foreign companies such as Samsung often cite Indonesia's relatively unfavourable investment restrictions (including the prohibition of ownership of local distribution) and Indonesia's inferior port and export processing zone infrastructure as obstacles (see Chapter 7). A survey by Nomura Research Institute suggests that from 1995, large MNEs such as Matsushita, Sony, JVC, Hitachi, Sharp, and Toshiba were more attracted to relocate new plants to China while the only MNE that chose Indonesia was Sanyo Electric, but this was a relocation only of its compressor plant (see above) while its new subsidiaries to produce CD radio cassette players were relocated to Singapore and Thailand.

¹³ As a result of the 'new management' movement from 1993 (which encouraged closer coordination between the group's affiliated companies), 'organisational learning' about deficiencies in its Southeast Asian production network and the opening of the Chinese market after 1992, Samsung rapidly expanded its network of subsidiaries in China. By 1996, 10 subsidiaries were established involving the production of a wider range of products than in Indonesia — not

plants in Indonesia, Malaysia, Vietnam, Philippines, Thailand and India and the 16 plants in China were instructed to reduce their production output.

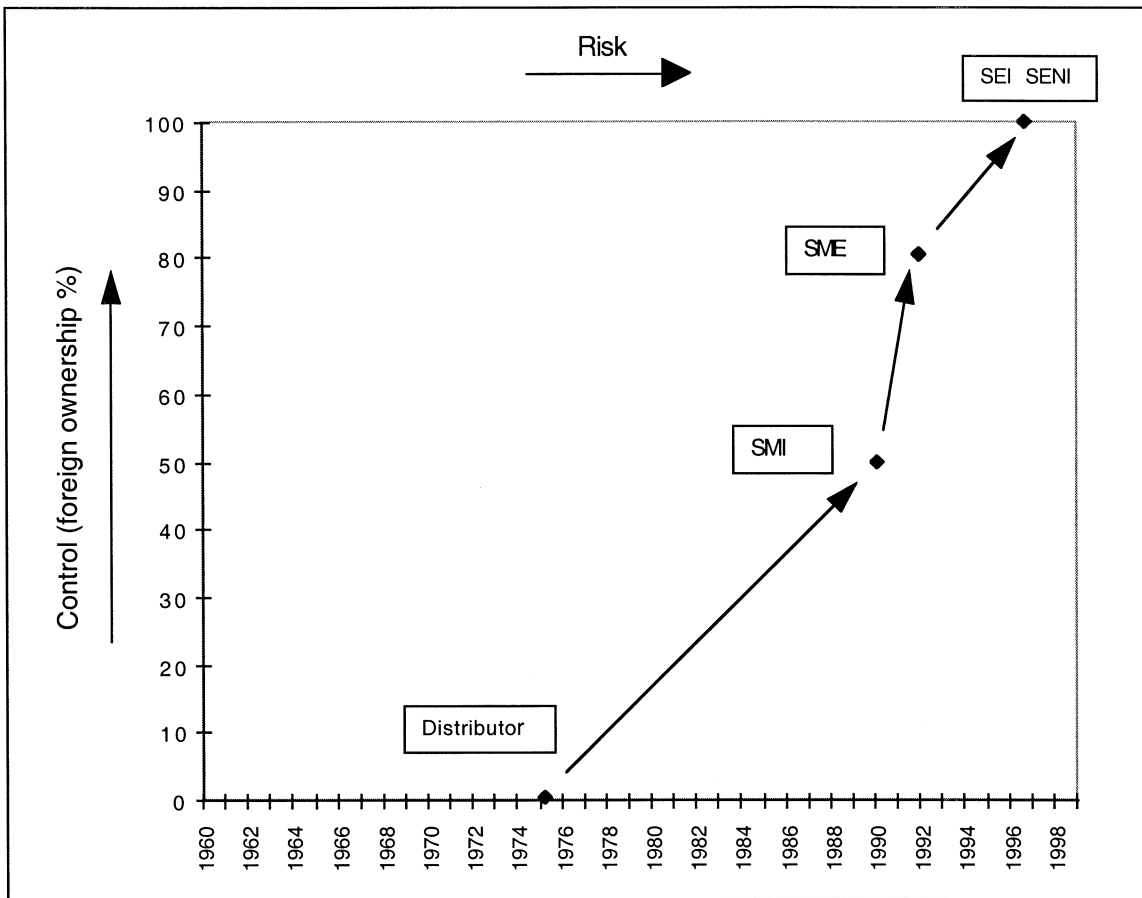
As part of the restructuring in the aftermath of the Indonesian financial crisis, Samsung Electronics has taken control of 100 per cent of the share of the two joint-venture subsidiaries in Indonesia. The production of TV sets was also suspended.¹⁴ The new company, PT Samsung Electronics Indonesia (SEI), was formed in December 1997 and its capitalisation was increased to \$73.1 million in December 1998 (Table 9-1). While the financial crisis in Indonesia has resulted in a significant lowering of production volume in 1997, in January 1998 SEI expanded its production capacity to produce VCRs and CD-ROMs and maintained its mainstay products including air conditioners, washing machines and MWOs (*Bisnis Indonesia*, 15 January 1998). At the same time, PT Samsung Electronics Nusantara Indonesia, a new distributor, was established to oversee wholly-owned domestic sales and marketing.

To summarise Samsung's case study, its internationalisation and entry into the Indonesian market can be described as a sequential process (Figure 9-1). During the 1990s, Samsung's expansion in Southeast Asia underwent three distinct stages. Similarly, in Indonesia, the Samsung Group entered after first exporting through a local distributor with the establishment of a joint venture, SMI. This was to focus on the domestic market so that risk was kept low, with a 50:50 arrangement with the local partner. In the second stage, SEC relocated component plants to other ASEAN countries and Indonesia was by-passed due to unfavourable investment rules and infrastructure compared with its ASEAN neighbours. Instead, SEC invested in a plant to meet its OEM arrangements in developed markets.

just audio-video and home appliances products but also TV and VCR components, telecommunications equipment and non-memory ICs products (Kim 1997: 175-214).

¹⁴ SEI plans to restart the production of TV sets with an annual capacity of 400,000 sets in January 1999. At the same time, Samsung also plans to produce CD-ROM drives for export, mainly to the United States and Europe. To support its CD-ROM plant, SEC will relocate three components suppliers of injection moulding, turners and basic materials. The company has also relocated its VCR deck mechanic production line from China to Indonesia, citing the availability of basic materials, cheap labour and adequate infrastructure as reasons (PT Data Consult Inc., Indonesia Commercial Newsletter, 12/1/1999).

Figure 9-1 Development of Samsung Electronics Group in Indonesia, 1975–98



Source: Constructed from Table 9-1 and from various Samsung Electronics company reports.

While such expansion was strongly influenced by external factors outside Samsung’s control, the internal reorganisation of production of end-product subsidiaries which occurred after the 1993 new globalisation management movement relegated the subsidiaries in Indonesia to roles secondary to the integrated production centres in other ASEAN countries such as Thailand, Malaysia and Singapore. The upsurge of domestic demand in Indonesia, as in other ASEAN countries after 1995, led to the increasing specialisation of the Indonesian subsidiaries. In the aftermath of the economic crisis of 1997, SEC further consolidated its integrated production centres in fewer locations outside Indonesia whilst in Indonesia, due to changed investment rules, SEC was able to increase its shareholding in its subsidiary and reduce its production and product lines as well as establishing its own distributor. SEC also sold all of its interest in the domestically-oriented subsidiary. Unlike its Japanese competitors in Indonesia, SEC had not developed a wide network of its own component subsidiaries but fostered Korean and local suppliers in Indonesia. After 1995 its subsidiaries started to specialise in the

production of VCRs and refrigerators — a strategy applied by its Japanese counterparts such as Matsushita and Sanyo.

Case study 5: LG Electronics Group

Known until 1996 as GoldStar Co. Ltd., LG Electronics was founded in 1958.¹⁵ The LG Group was the first of the Big Four *chaebol* to enter electronics. Despite the fact that Samsung has generated larger total electronics revenues since 1984, LGE is highly regarded in Korea and enjoys the highest reputation for product quality, especially in consumer electronics. LG Electronics (LGE) has expanded horizontally into the production of a complete range of consumer appliances and electronics as well as the manufacture of computers, telecommunications equipment, and electronics instrumentation. As of December 1997, LGE operates in 47 countries with 56 branch offices and 54 local subsidiaries, of which 29 are manufacturing plants, with overseas sales amounting to \$6 billion or 62 per cent of the Group's total sales.¹⁶

While GoldStar was a pioneer in Korean electronics, Samsung Electronics became, in sales terms, Korea's leading electronics producer as a result of its more centralised organisation and more export-oriented strategy following the oil crisis of the 1970s.¹⁷ GoldStar was the first to establish an overseas plant in 1982 but later followed Samsung's lead in its expansion into Southeast Asia. Unlike Samsung, however, since the mid-1990s, the newly formed LGE relocated some of its principal components production to Indonesia prior to the Asian crisis.

The following survey of LGE's global and regional milestones traces some of the key developments and stages of its international expansion and relates them to LGE's activities in Indonesia until the onset of the crisis. As in the Samsung case study, an additional issue is also explored: whether LGE's investments in Indonesia reveal essentially similar or different patterns and whether entry timing and modes are different from Samsung's and its main Japanese competitors in Indonesia.

¹⁵ The initials LG stands for Lucky Goldstar to illustrate the combination of the two core businesses of the conglomerate: the Lucky brand name originally covered the chemical business and the Goldstar name covers the newer electronics. The founder of the Group, Koo In-Hwoi, established his first business in 1931. By 1947, he set up Lucky Chemical Co. Following the lifting of restrictions imposed by the pre-war Japanese occupational government on business activities, the firm was producing a wide range of toiletries by 1952. Goldstar was set up in 1958. Its initial product was Korea's first radio and it has since diversified both its electronics and chemical business as well as expanding into engineering, financial and advertising, in tandem with the trading growth of LG International Co., which was established in 1958 (Domicity 1988: 4-33-4-39). In February 1996, both the chemical and electronics affiliates changed their name to LG across the world and a new LG 'face of the future' logo was adopted.

¹⁶ Source: <http://www.lge.co.kr/english/IR/shareholders.html>, 28/5/99.

¹⁷ Founder Koo's collective decision-making style, which is less 'top-down', meant that the then GoldStar was less prone to make big mistakes, but it was also slower to react to new opportunities than Samsung. As both *chaebol* entered the 1980s, GoldStar was more domestically-oriented, 'acting as the government's agent in providing electronics for the domestic market'. The distant third and fourth largest electronics producers in Korea, Daewoo

LGE's global and regional milestones

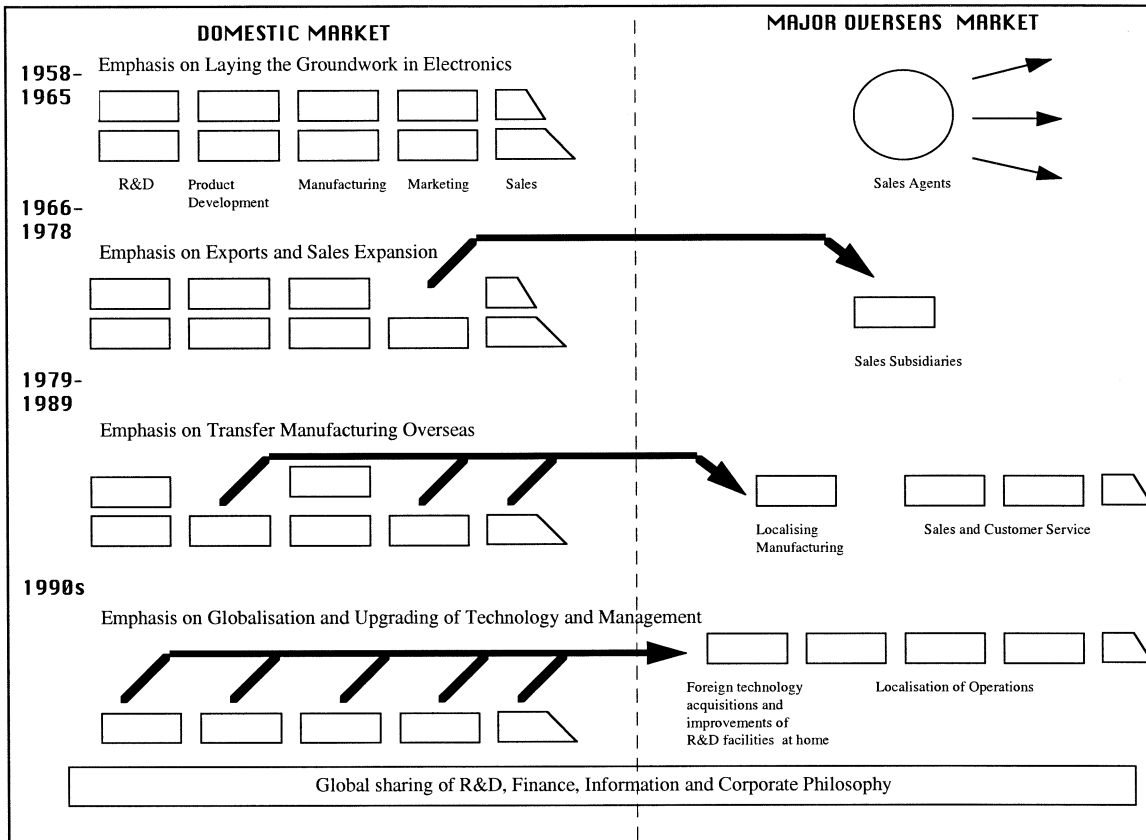
LGE was a pioneer in international expansion amongst the Big Four Korean *chaebol* with the establishment of a production plant in the United States in October 1982 and in Europe in October 1986. Since the mid-1970s Samsung embarked on a rapid outward orientation strategy with aggressive pursuit of foreign markets and acquisition of foreign technology, combined with integrated production facilities (Bloom 1992: 29). Meanwhile, within Korea, LGE was perceived as being the strongest financially of the Big Four in the late 1980s as a result of its 'conservative' approach with its financial structure 'reminiscent of Toshiba or NEC' (Domicity 1989: 4–39).¹⁸ Like other Japanese MNEs and Samsung, LGE began the first phase of its overseas expansion by establishing sales agents from 1962 (Figure 9-2).¹⁹ During the pre-Plaza Accord era, a second phase ensued where LGE placed emphasis on fostering exports and opening sales subsidiaries with branches in the Americas (USA, Canada, Panama), Europe (Germany, UK, France and Hungary), Asia (Japan, Indonesia, Thailand, Philippines) and the Middle East (UAE).

In the third phase during the late 1980s, GoldStar began to establish overseas production plants and expanded its sales activities to include customer service. Manufacturing subsidiaries were established in the Americas, Europe, Asia (Thailand 1988, Indonesia 1990, Philippines 1989) and the Middle East (Table 9-5). During this phase of development, the focus was on the transfer of manufacturing plants overseas. GoldStar was motivated: 'to put the company behind trade barriers, real or anticipated; to take advantage of lower priced labour costs; or a combination of the two' (Domicity 1989: 4-36). The internationalisation of GoldStar and its arch-rival Samsung can be characterised as a 'follow-the-leader' strategic response in locating production activities as they were very sensitive to each other's expansion to new host countries (Jun 1995: 169). As a result, a 'bunching' pattern of Korean FDI occurred, where one company followed the other into the same overseas region (Jun 1992: 196, Kim 1997: 172). In particular, with their expansion into Southeast Asian countries and China, the difference its timing of entry between the two *chaebol* appears mostly to be less than one year (Table 9-5).

Electronics (established in 1971) and Hyundai Electronics, have followed Samsung's style of organisation (Domicity 1988: 4-34).

¹⁸ The term conservative here to describe any of the leading four *chaebol* has to be taken in the most relative of contexts, relating to their high debt-to-equity ratios (see Table 5.13).

Figure 9-2 Phases of globalisation of LG Electronics, 1962–93



Source: *GoldStar Welcomes You*, Public Relations Department, GoldStar Co. Ltd. Seoul, 1993.

The pattern of the geographic location of investments by LGE and SEC is a systematic sequencing of plants (rather than random scattering), following the pattern set by the other. LGE has put emphasis on a different set of countries within a region and different product lines, partly due to its large investments in and capacity to serve the domestic market and partly due to its less aggressive expansion (Kim 1997: 5). The plants in Indonesia, Thailand, and in Mexico provide LGE with low-cost assembly and preferential access. In these cases, however, it is not primarily in the domestic markets but the US market that LGE wants preferential access to (Domicity 1989: 4–36).

LG Electronics' operations in Indonesia

The follow-the-leader tendency amongst the two biggest Korean *chaebol* was evident in Indonesia. In the early 1990s, GoldStar made many moves similar to

¹⁹ GoldStar claims to be Korea's first firm to manufacture radios, B&W TVs, washing machines, pulse dial phones, CTVs, microwave ovens, VCRs, camcorders, CD players, microcomputers and the unsuccessful Matsushita/Philips product digital compact cassettes (DCCs).

Samsung's in Indonesia but after 1995, the strategies of the two *chaebol* began to diverge.

Table 9-5 Follow-the-leader behaviour and time difference of overseas relocation between LG Electronics and Samsung Electronics Corporation, 1982–90

Region	Location	LGE	SEC	Time difference (years)
North America	United States	1982	1984	2
	Mexico	1988	1988	0
Europe	West Germany	1987	–	2
	United Kingdom	1989	1987	1
		1990	1989	1
		–	1982	–
	Italy	–	1990	–
	Portugal	–	1989	–
Southeast Asia and China	Thailand	1988	1989	1
	Indonesia	1990	1990	0
	Philippines	1989	–	–
	Malaysia	–	1990	–
	China	1992	1992	0
Others	Hungary	–	1989	–
	Egypt	1990	–	–
	Turkey	1987	–	–
	Slovakia	–	1992	–

Source Jun (1992: 196).

Firstly, in May 1990, GoldStar applied for a licence to establish a plant to manufacture consumer and home appliance products for the domestic Indonesian market, some fifteen months after its rival Samsung Electronics made its application for a home appliances plant (Table 9-6). This suggests that while GoldStar may have followed Samsung's lead in entry timing, initially it had chosen a wider product range solely directed at the local market.²⁰ Secondly, as with the other MNEs that invested in Indonesia in the early 1990s, GoldStar established a 50:50 joint venture, PT GoldStar Astra Indonesia (GAI) with its distributor (which continued marketing other GoldStar imported products). It had a paid-up capital of \$21 million and employed 1,000 Indonesian workers and 34 Korean managers and technicians. Thirdly, like Samsung, GoldStar chose a partner, PT Astra Graphia, a specialist electronics firm that is part of a highly diversified conglomerate, the Astra Group, with its nucleus PT Astra International Inc.

Fourthly, like Samsung, GoldStar started production with similar products (refrigerators and CTVs) in the first year of production runs. As with Samsung and other MNEs, GoldStar had since 1981 imported its home appliance, consumer and computer

²⁰ In March 1989, Samsung Electronics established a joint venture, PT Samsung Maspion Indonesia (SMI) which went into production in November 1992. Goldstar obtained the permit only in November 1990 and, after considerable delay,

products through distributors such as PT Astra Graphia. In 1990, this firm began marketing GoldStar's line of personal computers and monitors.

While both *chaebol* had a domestically-oriented subsidiary in Indonesia, an initial difference between GoldStar's and Samsung's operations was that GoldStar did not establish an export-oriented end-product subsidiary. Another difference was that, subsequently, LGE established two export-oriented components plants while Samsung preferred to source its components from subsidiaries in neighbouring countries. LGE's entry to set up two large component manufacturing affiliates will be discussed further below.

As GAI's production was largely geared towards Indonesia's domestic market, it initially did not plan to export. The reason for this was that GoldStar's plants in Thailand and Mexico were already supplying the US and European markets, respectively. In contrast, Samsung had set up a second subsidiary (SME) which produced CTVs, VCRs and other audio products, mainly for export (see Samsung case study). GoldStar's stated motivations for its initial investment in Indonesia were the size of Indonesia's domestic market and the low cost of labour. A senior manager of GAI suggested that Indonesia's additional locational advantage was its GSP facility to export to the US and European markets (interview, general manager GAI, 1995).

LGE entered into export-oriented production in Indonesia at a much later stage. In November 1995, GAI completed a second plant with an additional investment of \$15 million to manufacture washing machines and air conditioners to meet increasing local market demand and a rapidly increasing demand for electronics in Asia while major global market were slowing down. Indonesia's locational advantages and its GSP facility, as well as its aim to build three major production centres in Asia were cited as motivations for GoldStar to expand its Indonesian operations. Since the mid-1990s the aim was for Indonesia to become one of its three major production centres in Asia, along with South Korea and China (*Reuter News Service*, 9/2/96).

From the beginning of 1995, GoldStar began a radical organisational transformation. In February 1996, a new name, LG Electronics, was adopted, together with a fuller integration within the LG Group.²¹ There are some indications, however, that LGE's renewed push for overseas expansion was more motivated by domestic market concerns than was the case for Samsung's 'New Management' credo, which

began operation in November 1992, about the same time as SMI (Investment Coordinating Board (*BKPM*) unpublished data, 1994).

²¹ LGE's main rival, Samsung, began its organisational reform along the lines of its major Japanese competitors beginning in 1993 and in earnest from October 1994 when Kwang-Ho Kim was appointed to head the newly created electronics sector group (consisting of SEC and its components subsidiaries). Earlier, major organisational changes were implemented in major Japanese electronics MNEs. For example, Sharp (April 1993), Mitsubishi Electric (June 1993), Hitachi (Aug. 1993), Sony (Sept. 1993), MEI (Nov. 1993) and Sanyo Electric (Dec. 1993) (Kim 1997: 100).

explicitly cited wider globalisation objectives²². As an example, part of LGE's 'New Vision Statement' mentions that:

LGE is responding to rapidly falling prices in the domestic electronics market by accelerating its advance overseas. This advance is supported by efforts to lower production costs and develop hit products for specific overseas markets. The company's vision is to make major inroads in global markets while maintaining its leading position at home. (*Corporate Overview*, LG Electronics Inc., <http://www.lge.kr>, 1996).

Table 9-6 Subsidiaries of LG Electronics Corporation in Indonesia, 1998

Name of Subsidiary	PT GoldStar-Astra Indonesia (GAI)	PT LG Astra Electronics Indonesia (LGAI)	PT LG Elec. Display Devices Ind.(LGE- DDI)	PT Video Display Glass Ind. (VDGI)
Establishment, production and expansion dates	Oct. 1990, in operation in Nov. 1991, expanded in Nov. 1995	February 1996	Dec. 1997	Jan. 1996 (to start in Oct. 1997)
Initial and expansion investment	\$21m expanded to \$35m	\$35m	\$250m (planned with additional \$450m by 2000)	\$300m (with additional \$450m by 2000)
Local (and foreign) workforce	1,000 (34) employees; expanded to 1,500 (22)	1,800 (25)	2,000 (15) employees	1,000 (9) employees
Shareholders	PT Astra International Inc. (50%) and GoldStar Corporation (50%)	PT Astra Indonesia (50%) and LG Elec. (80%), later taken over by LG Elec.	LG Electronics Indonesia (100%)	LG Elec. (64%) and Asahi Glass of Japan (36%)
Domestic-foreign ownership ratio	50:50	50:50 → 0:100 (PMA) in Jan. 1998	0:100	0:100
Products/Service	CTVs, B&W TVs, refrigerators, radio/ cassettes recorder, video cassettes, vacuum cleaners, MWOs. Expanded to produce washing machines and air conditioners in the second factory	CTVs, and audio equipment, refrigerators and freezers, air conditioners and washing machines	CRTs for TVs and monitors, VCRs, other electronics components	glass bulbs for CRTs,
Market-orientation	domestic	domestic and export	domestic and export	domestic and export

Source: Various internal LG Electronics company reports and BKPM lists.

As with LGE subsidiaries elsewhere, its subsidiary in Indonesia (GAI) adopted a new name, PT LG Astra Electronics (LGAE), in February 1996. The subsequent development of LGE's activities in Indonesia was focused on adding two subsidiaries which manufacture critical parts in Indonesia, expanding on its existing associated

²² Samsung's globalisation drive went beyond the expansion of overseas production facilities by means of forging acquisitions and joint ventures to mention explicitly mental, physical and cultural adaptation to the local environment (<http://www.samsung.co.kr>, 1996).

specialised component joint ventures. At the same time, the marketing of LGAE's products has now been taken over by the sole distributor and a wholly owned subsidiary, PT Graha Kartika Kencana from PT Astra-Graphia.

Development local suppliers

Since LGE entered manufacturing in Indonesia, it has established small-to-medium sized specialised joint-ventures in Indonesia and encouraged its associated supplier firms to follow. The idea is that cost reductions will emanate if they can continue to supply LGE with plastic moulding and other electronic components for its end-product assembler in Indonesia while at the same time they can directly or indirectly (through other end-product firms) export to third countries (interview, 1/12/1993).

One such supplier joint venture is PT Buk Doo Indonesia, a joint venture between Buk Doo Co. of Korea (45 per cent), PT Astra Graphia (45 per cent) and LG International (10 per cent). This affiliate was established in February 1991 and began to operate in July 1991 with a paid-up capital of \$2 million and 160 employees to manufacture speaker drivers and cone paper for speakers, mainly for export. Another affiliate that was established in the same year is PT Graha Electrotama (GE) with the main principals being Hung Chang Products Co., Ltd. (45 per cent), GoldStar Electron Co. (10 per cent) and the Philips Components Group. (45 per cent). GE markets test instruments and electronics components for the educational sector and the electronics industry.

As part of LGE's attempt to build integrated production bases in the region, two active components plants were established in Indonesia. Firstly, PT LG Electronics Display Devices was established in July 1996. With a paid-up capital of \$250 million, the plant initially produced 3 million CRTs, 1.5 million VCRs and other electronics components. This was the first CRT plant in Indonesia. It was quickly followed by a second plant under PT Tosummit Electronic Devices (TEDI) with an investment of \$100 million.²³ As a result of the building of the second CRT plant, LGE and Japan's Asahi Glass was able to form a \$300 million joint venture to eventually produce 17 million glass bulbs, a principal part for CRT or computer display screens. It was to start operations in October 1997 and to employ some 1,000 people (*Korea Economic Weekly*, 1/8/1996). In a related event, Samsung Display Devices Co. (Korea) announced that an agreement was made in August 1996 with Toshiba and Orion Electric (a partner in

²³ The principal investors of TEDI are: PT Tabung Gambar Indonesia (35 per cent), Toshiba Co. (28 per cent), Sumitomo Corp. (22 per cent), and Orion Electric Co. (15 per cent) (*Jakarta Post*, 27/1/97). The last firm is Korea's first supplier of CRTs and supplies most of its output to Daewoo Electronics (*Korea Company Handbook*, Autumn 1994: 414).

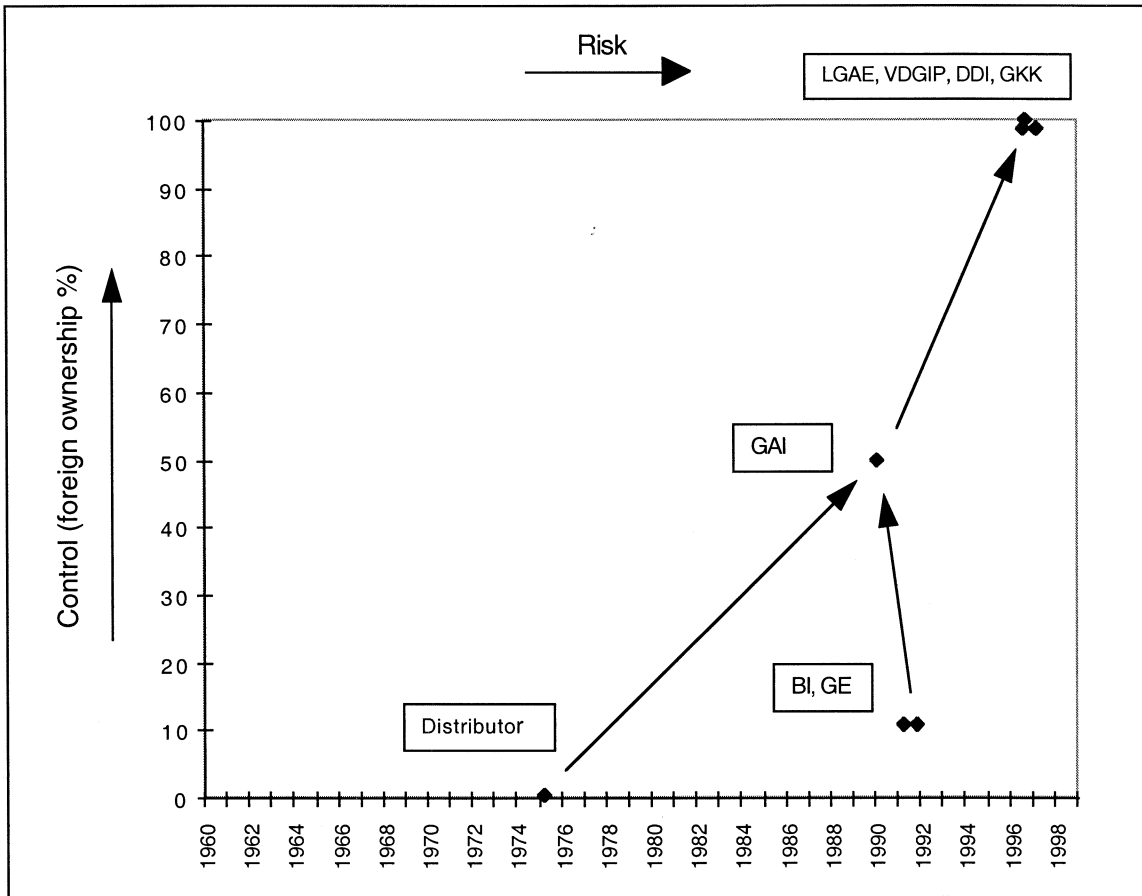
TEDI) and the Daewoo Group to establish a joint venture to manufacture monitor shadow masks (another component for CRTs) in Indonesia.²⁴ This suggests that Samsung, which owns a CRT and glass bulb plants in Malaysia, took the opportunity to participate in the production of a related complementary component for CRTs in Indonesia.²⁵ Its objective, like that of LGE, is to maximise competitiveness and efficiency through regional consolidation of different component production. In addition, this chain of events illustrates that the industrial location of component production can be driven by the logic of self-reinforcing concentration in Indonesia, which at the time was perceived to have the added advantage of large and rapidly expanding domestic market (Chapter 3: Endogeneity of factor location).

The onset of the Asian crisis has affected the sales and profits of many electronics MNEs. As a result, some firms such as Matsushita and Sony have reduced their output and Sony and Samsung ceased some of their operations in Indonesia, particularly after May 1998. To cover for the reduction in sales in Indonesia and the rest of Southeast Asia, MNEs are seeking new markets in the United States and Europe (*Asia Pulse*, 22/07/1998). Likewise, LGEDI has reduced its export target by 20 per cent of its total production and refocused its export markets away from ASEAN countries to North American markets. Its CRT products have been targeted towards the ASEAN countries while its VCRs and monitor products are now aimed at the US market (*Bisnis Indonesia*, 13/7/98).

To sum up, this case study of LGE's operations, like the previous ones, shows that the internationalisation of the LG Group follows a sequential development cycle. The resulting pattern of market servicing in Indonesia also progressed in a systematic and sequential way, starting with a distributor and ending up with several sole ventures (Figure 9-3). Similar sequential development, to some extent, reflected LGE's evolution through the four phases of its global development (Figure 9.9). In Indonesia some of LGE's patterns of expansion were similar to those of Samsung Electronics but with different choices of product lines, market orientation and supporting industry development. Firstly, during its initial period of local production (1991-94), LGE did not follow Samsung in establishing an export-oriented end-product subsidiary in Indonesia but rather focused its activities initially on Indonesia's domestic market. LGE was early to focus on forming joint ventures with components manufacturers. Latter additions of CRTs and CRT component plants suggest that it was building an integrated production platform for some components in Indonesia.

²⁴ Shadow masks for televisions and monitors are components for CRTs. Projected electron beams pass through hundreds of thousands of holes on the shadow mask to produce natural colours in colour CRTs.

Figure 9-3 Development of the LG Electronics Group in Indonesia, 1975–98



Source: Constructed from Table 9-6 and from LG Electronics internal company reports.

As with the other MNEs selected for this study, at the international level, the LGE Group appears to have evolved in a sequential pattern to become an integrated production, marketing and R&D entity with multiple production plants serving key main markets as well as host country markets. The pattern of market servicing adopted by LG Electronics in Indonesia was formed very much in response to its rival Samsung's earlier expansion into local manufacturing in Indonesia and neighbouring countries. In Indonesia, both Korean *chaebol* moved from the exporting stage to the joint-venture stage and eventually to the sole-venture stage in a sequential manner. During the first stage, after exporting through a local distributor, LGE initially established a joint venture, GAI, which was to focus on the domestic market so that risk was kept low with a 50:50 arrangement with the local partner (Figure 9-3). In the second and subsequent stages, LGE relocated component plants to Indonesia (rather than Malaysia, Thailand

²⁵ The proposed Samsung–Orion–Toshiba joint venture, which was to start operations in August 1997, was never implemented.

and Singapore as in the case of Samsung) and at the same time assumed 100 per cent control of these affiliates as was then permitted under Indonesia's investment rules.

As shown above, subsequent LGE operations in Indonesia were strongly influenced by external factors (the appreciation of the won and trade barriers in developed markets) as well as internal factors (reorganisation after the 1995 'New Vision' Statement). At the same time, the upsurge of domestic demand in Indonesia, as in other ASEAN countries since 1995, led to increasing specialisation by the Indonesian subsidiaries. With the onset of the financial crisis, LGE further consolidated its global production centres in fewer locations but kept those in Indonesia. It increased its shareholding in all subsidiaries and reduced some of its production and product lines. By the end of 1998, LGE had developed a network of local subsidiaries of specialised components in Indonesia — a strategy applied in a manner reminiscent of Matsushita and Sanyo rather than Samsung.

Summary

Indonesia's position as an electronics outlet and then as a workshop for MNEs followed a sequential path of market servicing. Initially, the actual and future potential domestic market may have attracted similar small-scale exports, followed by production or licensing operations for the Indonesian market. Later operations suggest a variation of strategies for the export of end-products and components. When the actual and potential future sales volume in this domestic market diminished as a result of the economic crisis coinciding with other strategic considerations, MNEs could either turn their subsidiaries into specialised production centres as part of their production network or simply rationalise them to mere electronics outlets.

Given conducive exchange rates and investment climate, market entry into Indonesia appears to follow a sequential process. It also shows that uncertainty, economic and industry effects are more important than country-of-origin effects. In the case of the industry effect, sequential entry is observed from distributor to sole venture affiliates that are export-oriented (direct and indirect). A focus on Indonesia's domestic or external market reflects differences amongst MNEs in their speed of response to changes in the major global markets in various segments of electronics.

Chapter 8 presented case studies of the first two Japanese incumbent firms, Matsushita and Sanyo, both of which opened their production plants in 1970. These were followed by case studies of latecomers Sony (Chapter 8) and Samsung and Lucky-GoldStar Electronics. These five case studies suggest that, without exception, all MNEs

followed market servicing strategies that were sequential in their pattern of exporting to sole ventures. The movement from one stage to another was driven by factors external and internal to the MNEs and the direction over time was generally towards greater managerial control and greater risk, as illustrated by the graphic representations of the development of the operations each of MNEs studied (Figures 8-2, 8-3, 8-4, 9-1 and 9-2).

The activities of the selected East Asian MNEs operating in Indonesia's electronics industry suggest that, for each firm, external factors were more immediate and influential in shaping the development of their activities in Indonesia. But internal reorganisation also meant moving emphasis away from this potentially large market to much more important markets in the United States and Europe. Other factors within each of the MNE groups were the result of idiosyncratic firm-specific factors which shaped the life cycle of each of the MNE groups, resulting in a different timing of entry for each of the consecutive modes of export through local distributors, FDI to serve the local market, export-oriented FDI and so on (Table 9-7).

Table 9-7 Summary of market-servicing strategies of selected MNEs in Indonesia, 1960-97

MNE or business group name	Year of commencement of various market servicing stages:				
	agency for marketing and distribution	Domestic-oriented FDI (joint-venture or licensing)	export-oriented FDI	next to last 'later stage' end-product and components FDI # (and total number of subsidiaries)	'later stage' components FDI by associated firms*
Matsushita	1962	1970 (jv)	1987	1991-96 (11)	yes
Sanyo	1961	1971 (jv)	1989	1992-98 (6)	yes
Sony	1977	1987 (lic)	1991	May-Aug. 1995 (3)	yes
Samsung Electronics	1983	1990 (jv)	1991	1995-97 (3)	yes
LG Electronics	1981	1990 (jv)	1996	1996-97 (3)	yes

Note: # refers to investments by firms in the manufacturing of critical components or parts which are directly owned or controlled by principal MNEs or one of their subsidiaries from the same home country or within the same business group as at the end of 1998; * refers to investments by firms in the manufacturing of critical components or parts which are indirectly owned or controlled by principal MNEs or have a close association (as supplier) either in their home or third countries as at March 1999.
Source: Tables 8-3, 8-5, 8-7, 9-1, 9-3, 9-6.

Initially, all of the selected MNE groups commenced their engagement with the Indonesian market through export activities assisted by agent distributors or by their trading companies. All MNEs, with the exception of Sony, initially entered manufacturing in Indonesia behind high protection. Such operations usually started with SKD assembly which graduated to CKD assembly. There is much evidence to suggest that LG Electronics followed in Samsung's footsteps in 1990 in much the same way that Sanyo followed Matsushita in 1970. After a long period of servicing Indonesia through licensing its product to a joint venture partly owned by its second-tier end-product maker affiliate, Sony became a late entrant and relocated its audio plant to Indonesia in 1990 to

meet its need for a low-cost production base for a narrow range of audio products with preferential access to the US and European markets.

When Matsushita and Sanyo entered into export-oriented production in Indonesia in the late 1980s, they were also motivated by cost reduction due to the appreciation of the yen and preferential access to major developed-country markets as well as the potential size of the local market. Samsung was similarly attracted to set up its export production platform in 1991. Such subsidiaries were further consolidated to become specialised producers of a narrow range of end-products in the cases of all MNEs. While LGE continued to focus on the local market, it set up an export-oriented subsidiary in 1996. LGE went further to establish two large critical components subsidiaries.

The cases of these East Asian electronics firms in Indonesia have interesting implications for theories of international production.

Firstly, 'later stage' FDI in a number of components plants was carried out by Sanyo from 1989, Matsushita from 1993 and LGE from 1996, but all MNEs were concerned to affect cost reductions by increasing local sourcing through building a stronger network of regional and local suppliers, both their home-country first- and second-tier suppliers and their domestic suppliers. Matsushita, Sanyo, and LG Electronics were more committed to relocating their component suppliers to Indonesia than were Sony and Samsung. The fact that investments by selected major Japanese and Korean MNEs led to 'later stage' FDI of all kinds suggests that the resulting multiple entry of affiliates and suppliers over time raised the importance of large MNEs in determining the overall size and industrial 'depth' of FDI into the electronics sector. Once the critical mass necessary to develop a local supply network has been achieved, more FDI can be expected to take advantage of such a network. There is strong evidence to suggest that 'in-house' or same-business-group component makers and associated suppliers are following the lead of the MNEs. This phenomenon underscores the importance of the 'pulling' of later stage FDI to the sites of initial investment, resulting in a more integrated production and marketing bases (Craig 1997).

Secondly, in a related development, multiple investments made by multi-division and multi-product MNEs in a host country could affect the nature and timing of subsequent investment (Chang and Rosensweig 1988: 798). Such investment could also increase the likelihood of further investments in that country.

Thirdly, MNEs' decisions about entry through the different modes of exporting, licensing and FDI in particular product lines can be described as a systematic and sequential process rather than a random or bunching process. As a result of the ongoing

and evolving investment strategy, price (e.g. cost-reduction) and non-price (e.g. tariff-jumping) determinants for FDI can become intertwined. The two Korean firms have matured in their pattern of investments in Indonesia and in Southeast Asia in that they too have followed the strategies employed by their Japanese competitors to maintain specialised production bases as well as aiming at multiple sourcing of products and markets. Differences in entry mode and other aspects of investment strategies are observed amongst the three Japanese MNEs as well as between the two Korean MNEs studied suggesting that uncertainty, economic and industry effects are more important than country-of-origin effects. Patterns in the mode of entry of the five MNE groups studied suggest similar incremental moves in investments and strategic responses to international competitive pressure and to domestic influences in Indonesia at least until mid-1997.

During periods of economic growth, there is a propensity for MNEs to expand their operations or gradually change their choice of investment mode during the various phases or modalities in a sequential fashion. At the individual MNE group level, the large and spectacular strides (bunching) pattern of investment was not observed for the MNEs studied since all had various distribution or licensing outlets in Indonesia. 'Follow-the-leader' behaviour was associated equally with trends in the investment decisions of the two Japanese 'early entrants' (Matsushita and Sanyo) establishing manufacturing in 1970, as well as with the two Korean 'late entrants' (Samsung and LGE) setting up production plants in 1990. The Japanese 'late entrant', Sony, which happens to be a 'leader' firm in terms of technology and innovation, was also following the trend in establishing platforms to export to the major global markets set in train by the two Japanese 'early entrant' firms.

During periods of economic contraction, there is a propensity for MNEs to freeze or gradually to wind down their operations or dramatically change their choice of investment mode, depending on the idiosyncratic firm-specific preferences for a specific trade-off between control and risk. Events since the economic crisis of mid-1997 suggest that Sony and Samsung determined that Indonesia's domestic market was once again too small to sustain the growing risks of continued operation there. As end-user and end-product maker customers increasingly want goods at their home or plants within days or even hours of placing orders, these MNEs relocated their plants to locations with higher productivity even at higher labour cost (such as Malaysia) or to locations such as Mexico or Hungary which combine proximity to major global (US or EU) markets with wage and land costs similar to those in Indonesia or Southeast Asia.

The fourth interesting implication for theories of international production from the case of these East Asian electronics firms in Indonesia is the finding that sequential investment movement from joint-venture production or licensing/distributorship to sole venture market servicing has been prolonged in Indonesia. The reason for this market 'distortion' is that Indonesia has lagged in the adoption of a market-oriented legal framework. Such a framework, which includes basic property, bankruptcy, and securities laws, is weak compared with other ASEAN countries (Fitzpatrick 1998). Indonesia has also adopted different 'rules of the game' which lower its attractiveness to electronics MNEs. In particular, official attitudes (lack of action in reducing high 'transaction costs') in Indonesia towards foreign investment during the Suharto regime seem to account for much of the reluctance of many MNEs to make a greater commitment, despite Indonesia having the potentially largest domestic market amongst ASEAN nations (Hill 1998).

Further, previous regulatory constraints, such as requirements about equity size and long-term divestment, also discouraged foreign investment. MNEs such as Matsushita and Sanyo were restricted to assembling joint ventures and branch/subsidiary export up to the early 1980s, mainly to serve the domestic market. Only after improvements in domestic liberalisation and the achievement of conducive external conditions, did existing and other large MNEs such as Sony, Toshiba and Mitsubishi move on to form joint ventures and sole ventures in local production of export-oriented final specialised products and high value-added components. Since the sole venture mode was not available to early entrant MNEs, much of the large-scale specialised single-product FDI was concentrated in Singapore and Malaysia rather than Indonesia.

Fifthly, at the national and industry level, traditional theories of foreign investment (Dunning 1988, 1993) dealt systematically with firms' OLI advantages as if each foreign investment decision were a discrete activity separate from previous activities serving this market, without a clear distinction between the first and subsequent investment and without regard to the network of affiliates already present in the same host country or nearby region. This chapter presents a comprehensive analysis of individual firms' strategies, paths and processes of foreign market servicing, particularly their first and subsequent investment and with regard to the network of affiliates already present in the same host country or nearby region. Such an approach provides a richer analysis. By comparing both leader and latecomer firms (after the terminology of Hobday 1997) and early and later entrants into Indonesia, the chapters provide a deeper understanding of various forces driving investment behaviour at the firm-group level. It is not possible from the limited evidence of five case studies presented above to

10 Conclusions and implications

A central theme throughout this dissertation is the inquiry into variations in East Asian MNE behaviour by corporate nationality. The challenge is to integrate concepts on the internationalisation of MNEs to explain the investment behaviour of MNEs from East Asia with manufacturing facilities in Indonesia. By combining concepts from international production and strategic management theory and then applying them to empirical data, the study has analysed the characteristics of investments from East Asian sources and the profile of selected MNEs to examine their behaviour in Indonesia at specific periods and over time —bearing in mind factors in their home countries and competitive forces working at the regional and global level.

A brief background survey of Indonesia's locational advantages was given, outlining the structure and comparative performance of the Indonesian electronics industry and addressing positive changes in the investment climate which led to the remarkable investment surge in the 1980s and 1990s. Though liberalisation measures lagged behind those of its ASEAN neighbours, improvements in Indonesia's regulatory environment have led to growth and development in the electronics industry. They have encouraged export-oriented investments of the relocation type, mainly from Japan and other East Asian NIEs, especially Korea (Chapter 3).

This chapter summarises the main findings of the study and discusses its limitations. It then considers, the implications for policy towards MNEs and suggest some areas for future research on their operations in Indonesia.

Main findings

This study examined the investment behaviour and characteristics of East Asian multinationals from Japan and Korea. Many similarities as well as some important differences were uncovered in the characteristics and performance of the affiliates of these MNEs.

The principal finding of the study is that country-of-origin differences do not significantly account for variations in the behaviour of MNEs after taking account of vintage or stage-of-development effects. This argument is supported by examination of five related sub-hypotheses. More detailed findings can be outlined as follows.

Characteristics of affiliates

First, the analysis of a cross-sectional profile of investment by East Asian MNEs in the Indonesian electronics industry reveals significant differences between Japanese and other East Asian investments.

Not unexpectedly, Japanese firms tend to invest earlier in larger projects with correspondingly larger investment, equity shares, export ratios, import ratios, land use, larger construction time, larger product range, and more expatriates employed in their workforce. More surprisingly, Japanese firms appear to have a lower realisation rate of their investments than their East Asian NIE competitors and their higher level of imports runs against expectations. Among the NIE affiliates, the overall investment realisation rate for Korean and Singaporean affiliates appears to be the lowest and highest, respectively, among the pooled NIE affiliates (Chapter 4).

Analysis using multinomial modelling suggests that incumbency followed by investment, equity and import levels are the most critical variables in differentiating pair-wise comparisons between Japanese and other East Asian NIE investments (Chapter 4). The high significance of the incumbency variable suggests that, over time, if these firm-specific advantages of Japanese firms in Indonesia diminish, then the incentives to form joint ventures with non-Japanese East Asian NIE firms could increase. These cross-sectional quantitative results confirm the first of the five sub-hypotheses of this thesis, that there are significant differences in the characteristics of Japanese and the East Asian MNE affiliates in Indonesia but over time the difference diminishes.

There is strong evidence from both approved and realised investment datasets that significant quantitative differences exist among Japanese and East Asian NIEs' investments. Both planned and actual variables suggest that mean investment and equity sizes differ significantly. Even given wide variation in investment and employment size, Japanese firms appear to undertake larger investments than their NIE competitors. But both actual and planned data suggest that there is greater diversity of firm characteristic variables within the Japanese group than within the East Asian NIE group, with the majority of the latter mostly medium-sized firms.

There is no simple explanation for differences in the characteristic variables within the two groups of firms. Size of affiliates in terms of investment and employment appears to be a significant differentiator as large Korean affiliates (mainly end-product assemblers) appear to have much the same characteristics as their Japanese competitors. Very few Japanese firms fall into the category of small firms (with investment of less than \$1 million) and the majority of firms from both origins are

medium-sized firms (with investments of \$1–50 million). The investment level of most Japanese SMEs appeared to be less than \$30 million while most of the East Asian NIEs firms appeared to invest less than \$10 million (Appendix Chapter 4). Often firms from both origins have a direct equity relationship with larger Japanese firms mainly engaged in end-product assembly. Many have been given incentives by associated large MNEs to come to Indonesia to bolster component supplier networks. In both cases, they tend to sell their products mostly to the larger firms as well as export them to their home countries. As a result, the investment strategies of the medium-sized firms from both origin often converge.

Similarity of Japanese and Korean electronics investments

The second finding of this study relates to the changing competitiveness of labour-intensive segments. By narrowing the comparison between Japanese and Korean firms, we examine investment determinants relating to the impact of changing international and home-country conditions that influence the way parent firms invest or expand operations overseas. Our analysis of the competitiveness of the main electronics segments in their home countries suggests that Japan experienced growth and decline of trade specialisation in labour-intensive segments earlier than Korea but Korea has become more competitive in more capital-intensive segments in recent years. On the other hand, there is evidence that there was a corresponding growth of both Japanese and Korean outward investment in labour-intensive overseas production, but the latter at a later time. Aside from differences in their stages of development, both Japanese and Korean firms responded to changes in external conditions, such as currency appreciation and protection in the world's major markets in a similar manner (Chapter 5). The overview of the changing competitiveness of electronics sub-sectors in Japan and Korea confirms the second sub-hypothesis of this thesis that the outward investment experiences of Japanese and Korean electronics firm are similar after taking account of their stage of development.

Convergence of production network structures

The third finding of the study, based on a comparison of the emergence of Japanese and Korean overseas production networks in the late 1980s and 1990s, suggests that Korean electronics MNEs have been able to proceed step by step in a pattern roughly similar to the pattern of international production established earlier by their Japanese competitors. Once vintage and stage-of-development effects were taken into account it was found

that there are no systematic differences in their production network configuration nor in the patterns of intra-firm trade proxied by the intra-industry trade of Japanese and Korean exports in electronics segments. The production networks of Korean firms are found to be increasingly integrated and to take on similar structures to those of the Japanese firms as they gradually catch up in producing higher value-added products. Both groups of firms have been subject to similar international market conditions (Chapter 6). This finding lends further support the third sub-hypothesis of the study, that internationalisation of Japanese and Korean electronics MNEs came to take on similar organisational structures after taking account of their respective stage of development.

Profile affects timing and mode of entry

The fourth finding of the study relates to the profile of parent MNEs, and their strategies on timing and mode of entry.

The profile of the principal Japanese and Korean MNEs parent firms, in terms of resources and organisation attributes, is found to affect the entry timing of investments in Indonesia during corresponding investment cycles. In particular, if the specific home-country factors and Indonesian domestic influences (regulations, political stability and other domestic factors) can be assumed to be related to a specific investment development cycle (or FDI 'wave'), the major characteristics of MNE investments in Indonesia can be shown to be significantly determined by parent firm characteristics and life cycles. Medium-sized MNEs such as Matsushita and Sanyo first entered Indonesia in the early 1970s during the first FDI wave. They were smaller and less diversified than larger firms in the Japanese electronics industry such as Hitachi, Mitsubishi and Toshiba. This finding supports the fourth sub-hypothesis of the study, that parent characteristics affect the timing and mode of entry of MNE investments in the Indonesian electronics industry.

FDI motivation

The fifth finding of the study concerns FDI motivations by the Japanese and Korean investors in Indonesia.

By statistically comparing survey results of FDI motivation between the two groups of firms sampled in the mid-1990s, it was found that there were no significant differences in investment motivations between the two groups. Both Japanese and Korean firms established production facilities in Indonesia with a strong focus on

enhancing their international competitiveness by exploiting their production capabilities and management know-how. There are, however, differences in perceptions of firm-specific advantage in investing in Indonesia. For Japanese firms, brand name and prior knowledge of domestic market conditions were rated highly as enabling them to be competitive in the market, while for Korean firms, production experience and market channels in third markets and their home country were more important. Nevertheless, both groups appear to agree that in order to invest successfully in Indonesia, most importantly the investment climate, regulation and physical infrastructure must be suitable, no matter how attractive the wage and other costs might be (Chapter 7). The finding validates the fifth sub-hypothesis, that motivations for investment in Indonesia by Japanese and Korean firms are not significantly different.

Long-term investment strategy

The last finding of the study comes from case studies of the five major MNE groups. These were undertaken to examine whether there are similarities and differences over time in the overall investment and market-servicing strategies of Japanese and Korean firms in Indonesia during the three decades from the 1970s. The three selected Japanese MNEs — the Matsushita, Sanyo and Sony groups — and their group affiliates appear to have similar incremental investment strategies which are driven by their accumulation of local knowledge, and the direction over time is generally towards greater equity and greater management control. However, over the different periods of their long involvement in Indonesia, the subsequent strategy of these MNE groups was shaped invariably by their initial time of entry. Being a leading ‘early entrant’ rather than a ‘late-entrant’ appears more significant than country of origin. The Sanyo Group adopted a similar strategy to the leader Matsushita Group. Both established their initial manufacturing plant in the 1970s and expanded their operations in Indonesia in an incremental fashion. The Sanyo Group’s strategy in Indonesia, as elsewhere, appears to be that of ‘follow-the-leader’. Both Osaka-based groups expanded their operations by bringing additional principal component production to Indonesia along with the technological capabilities of their ‘in-house’ production and those of their suppliers — within their own group, and from other foreign and domestic local firms.

The late entrant Sony’s investment mode was different. In 1976 Sony granted license to a joint venture which was based in Singapore to manufacture a limited range of products with an Indonesian local distributor firm to supply the Indonesian local market. After building its brand name presence in Indonesia for a decade, Sony

manufactured a limited number of products locally through its wholly-owned subsidiary from 1991 for five years before establishing another subsidiary (Chapter 8).

It might be expected that Korean MNEs as late entrants in Indonesia would take on an initial investment strategy that was more ambitious in market-share goals and make larger investments which required considerable capital. But the long-term investment expansion by Samsung and LG Electronics Groups over time was found to follow an incremental pattern driven by local market experience, and the direction was generally towards greater equity control and management. While they compete closely with one another in similar domestic and international markets, differences were found in the investment strategy of the two Korean firms. After internal reorganisation in 1993, Samsung relegated subsidiaries in Indonesia to roles secondary to the integrated production centres in Thailand, Malaysia and Singapore and did not develop critical components production in Indonesia. LG Electronics, on the other hand, focused more on Indonesia's domestic market and endeavoured to establish an integrated production base in Indonesia with the establishment of TV-tubes/display-devices and their component production — a strategy closer to that employed by Matsushita and Sanyo than Samsung (Chapter 9).

The case study evidence suggests that firms regardless of origin follow a sequential pattern of long-term investment and market servicing in Indonesia through a steady generation of ownership advantages via technology accumulation and learning. In adapting to Indonesia's regulatory and market environment, in developing the capacity to manage regional production and the ability to market in the world's major markets, firms require time to adapt and adopt the 'uncertainty-minimising' approach. The role of learning at the headquarters and in foreign affiliates is equally critical (Chapters 7, 8 and 9).

The ownership–location–internalisation paradigm suggests that MNEs need firm-specific advantages to internationalise. Trade-related factors and macroeconomic factors such as changing international competitiveness, the appreciation of home-country currencies and other cyclical factors explain the rise in FDI. But there are longer-term microeconomic considerations driving firm-specific ownership and internalisation factors relating to the internationalisation of firms.

Vintage effects are factors related to an MNE's resource and organisational development and exposure to international production, where critical 'learning' occurs both at the headquarters and foreign affiliates. It was found in this study that once vintage effects are taken into consideration, similarities appear in the expansion of the overseas affiliates of the Japanese and Korean firms under study. The production

networks of firms from both origins appear to have similar structures and there is some convergence in the choice of strategic locations for production, regional IPO and R&D centres as part of their integrated facilities.

By tracing the investment expansion of major Japanese and Korean electronics firms, it appears that while over time both groups investment decisions follow control and risk trade-offs, the tendency is generally towards greater equity and management control, provided that the investment climate, regulation and physical infrastructure is suitable. While attractive wages and other costs might be important considerations, MNEs perceived investment restrictions on 100 per cent foreign ownership of domestic distributors as important barriers to foreign investment, regardless of origin.

The experience of manufacturing in a host country appears to be based on 'learning-by-doing' and knowledge of local conditions. Firms may obtain knowledge about appropriate foreign market servicing by other means. But in the 1990s, with changing international market conditions and increasingly integrated production network structures, globalisation of markets increased uncertainty and MNEs adopted similar 'uncertainty-minimising' investment strategies. This applied equally to trends in the long-term investment decisions of the two Japanese 'leader' firms and 'early entrants' establishing manufacturing plants in the 1970s, and the 'late entrant' Korean and Japanese firms setting up plants in the in the late 1980s and 1990s. Once vintage effects are taken into consideration, these MNEs regardless of their national origin, generally take an approach to market entry in Indonesia. They appear to opt for entry modes that provide greater control over their operations when the investment climate was favourable. With the onset of the Asian crisis and as investment was further deregulated, most made efforts to gain greater control by assuming larger equity shares in their joint ventures in Indonesia.

All the case studies of East Asian MNEs, with the exception of the Matsushita Group to some extent, exhibit 'follow-the-leader' behaviour in imitating the pattern of investment of their competitors and in their responses to Indonesia's regulatory changes (Chapters 7, 8 and 9). This is illustrated by the experience of large parent firms such as Sanyo which followed Matsushita in entering Indonesia in the late 1970s, and that of LG Electronics which followed Samsung in entering Indonesia in the early 1990s. As the Korean firms matured, entering into production of similar high-value added electronics goods after the early 1990s, there are increasing signs that they are improving their technological resources and integrating their production network, notwithstanding their large debt burden even prior to the Asian crisis.

Events after the crisis of mid-1997 suggest that Sony and Samsung consider that Indonesia's domestic market is once again too small and the competitiveness of manufacturing there not sufficiently favourable to sustain the growing risks of continued operation. Sony closed down and relocated most of its manufacturing operations in Indonesia leaving only a limited range of products. Matsushita, Sanyo and LG Electronics cut and rationalised their production and raised their imported products but did not close down any manufacturing plants in Indonesia. All MNEs have taken over or increased their equity in most of their pre-crisis joint-venture operations and rationalised their product range and volume of production. Nevertheless, given Indonesia's improved wage competitiveness, Indonesian affiliates survived the years after the crisis amid sluggish domestic sales because a high proportion of their products is exported to East Asia and major world markets.

Investigation of East Asian electronics investments and multinational enterprises in the Indonesian electronics industry unambiguously indicates that FDI behaviour is influenced by a combination of strategic external and domestic factors. In the face of fiercer global competition after the mid-1980s, FDI determinants are driven more by the size and vintage characteristics of firms than their national origin. Notwithstanding shortcomings in Indonesia's inward investment policies, increasing liberalisation during the last three decades has meant greater relocation by both Japanese and Korean firms, particularly smaller and medium component makers, and increased export-orientation of the electronics industry.

Limitations of the study

The study includes concepts and empirical methods from recent studies in industrial organisation, international economics, strategic management and international production. It has sought to provide new insights into ways of tackling the issue of quantifying affiliate characteristics of two groups of firms, the global competitiveness of firms from two national origins and the long-term investment strategies of MNEs. Employing standard methods of quantitative statistics and by deflating monetary variables, the study analysed firm-level characteristics of MNE investment in Indonesia. It compared systematically the characteristics of Japanese and East Asian NIE subsidiaries, specifically those related to investment size, employment, estimates of trade activity and other investment variables. It proposed a new technique to estimate the accumulated total investment capital for each firm to enable the estimation of realisation rates.

It was not possible to conduct sophisticated econometric modelling on the performance of these operations due to the fact that sales, capital equipment and labour utilisation ratios, defect rates and other confidential data were not available. First approximations of capital depreciation to deflate planned investment rates were based on national aggregates. These limitations affect the strength of the conclusions that can be drawn.

The second limitation of the study is that it was not possible to evaluate fully the results of motivation to invest in Indonesia across time. While 1994–95 were favourable years in terms of Indonesia's investment climate, an evaluation of post-crisis conditions after mid-1997 might well lead to different conclusions.

The third limitation of the study is that the argument that country-of-origin differences are insignificant after taking account of vintage or stage-of-development effects may be due to the fact that Japanese and Korean commercial institutions may have their origins in a similar history and culture. While it must be acknowledged that these two countries may exhibit greater similarities than other Asian countries, and that Korea modelled its large firms and regulatory institutions on those of Japan in the high-growth era, including large *chaebol* that mirror *zaibatsu*, it can be argued that this does not seriously qualify the analysis. Even considering this limitation, this study represents the first step in analysing the evidence on this question. Other East Asian NIE firms such as those from Taiwan, Hong Kong and Singapore, to some extent, also learned process and product skills and know-how in the electronics industry from Japan. Using one case study from each country, it has been argued that firms from these other OEMs acted as a training school for latecomers, enabling them to overcome entry barriers and to assimilate manufacturing and design technology. They generally adopted a latecomer strategy which began with incremental improvements to manufacturing processes which led on to minor product innovations (Hobday 1995).

Notwithstanding the above limitations, some implications for policy and research can be drawn.

Policy implications

Understanding MNE characteristics and behaviour over time can inform policy on investment and assist in attracting. The similarities and variations identified in MNEs' behaviour by corporate nationality can be the basis on which to investigate whether firms are more disposed to establish a network of affiliates and suppliers in a host country.

Locational advantages include the attractiveness of a host country in terms of host government policies and support for inward investment, the relative cost of employing local factors of production and the 'fit' between local strategic assets and the MNE's global pool of resources.

In contrast to Malaysia, which welcomed foreign investment much earlier, the Indonesian position has been somewhat changeable. It has been likened to a 'swinging pendulum' (Hill 1998). During the early 1960s the policies of the Soekarno government made the climate inhospitable to foreign investment, a situation that changed considerably when the Soeharto government came to power in 1966. There was a swing towards decreasing restrictions on FDI from the mid-1980s which corresponds with the high levels of FDI recorded in the Indonesian electronics industry. At the beginning of the 1990s, the outlook was promising, but there have been problems since late 1996. Indonesia will need to maintain a favourable policy stance to retain its investment attractiveness for both large and small firms.

One of the findings relating to Indonesia's locational advantages as perceived by both Japanese and Korean MNEs is that in order to invest in Indonesia, the investment climate and the regulatory environment and physical infrastructure must first be favourable (Chapter 7). This confirms anecdotal information reported in the financial press even prior to the 1997 Asian crisis. Events after the crisis provide further confirmation. Indonesia has become the least favourable destination for Japanese electronics firms among the ASEAN-4 countries in the financial year 1997-98 despite the massive devaluation of its currency (Electronics Industry Association of Japan 1998). As political and economic stability returns, improvements in the regulatory environment will go a long way to address the very issue at the crux of this current crisis: the lack of investor confidence (Viravan 1998).

On Indonesia's attractiveness as an investment location for SMEs, the deregulation of investment and regulations governing maximum investment levels had a decisive effect, removing the bias on inward investment activity that favoured investments by large firms. Further efforts to follow up on Indonesia's earlier commitments to deregulate in line with the APEC's trade and investment liberalisation agenda is critical to smooth recovery from the crisis in Indonesia as elsewhere in the East Asia economy (Drysdale, Elek and Soesastro 1998).

The regulatory environment affects FDI flows into Indonesia. Rapid development in the electronics industry in response to liberalisation, particularly after 1990, provides a vivid illustration of this. The embryonic industry enjoyed spectacular

growth and gradually became more export oriented. This was achieved mainly through the inflow of FDI in the form of relocation from Japan and the Asian NIEs.

The early 1990s until the onset of the Asian financial crisis saw some encouraging developments in the industry. Improvements in terms of growth of output and exports came mainly from the influx of FDI and policies seemed to be moving in the direction of greater liberalisation, including the establishment of EPZs with a protected domestic industry outside them. Indonesia became a much more attractive place for foreign investment, particularly after the policy changes of 1994 when restrictions of 100 per cent investment and divestiture were removed. The recent liberalisation of the ownership of distribution networks in Indonesia and the lifting of other investment restrictions should make Indonesia a more attractive location.

There has been a dramatic decline in investor confidence and a slump in the domestic electronics market since mid-1997, but as demand gradually picks up in the domestic and export markets, it is expected that there will be a return to full production. While there are still infrastructure problems and administrative delays, particularly in processing tax 'drawback' claims, customs clearance and other operations, the abundant of low-cost unskilled labour cannot be fully utilised. The major production cost in the electronics industry is raw materials (80–90 per cent). The remaining 10–20 per cent is the cost of production and labour, and overhead costs making up 3–5 per cent of the total. At 11 per cent, the labour production component is higher in low value-added electronics production such as audio equipment. Indonesia's low labour costs relative to other ASEAN countries provide it with a comparative advantage in more labour-intensive production of such products.

Our survey showed that while there are some differences in their ordering, both Japanese and Korean scored negative perception of domestic shipping and land transport facilities in Indonesia. Infrastructure problems and administrative delays particularly disadvantage SMEs.

Recent lifting of the investment restrictions on foreign ownership of domestic distributors and other divestment requirement to increase local ownership in joint ventures and others have been seen as positive responses by all foreign firms and as an important step towards deregulating local markets.

The challenge for the authorities is to ensure that in relation to other ASEAN countries, Indonesia overcomes all perceived infrastructure and administrative hurdles, and for foreign and domestic electronic companies to move 'up market' in terms of product quality and to go 'upstream' in terms of component and parts manufacturing. Meeting these challenges requires further efforts to raise the skills and educational

levels of the workforce. Unfortunately, Indonesia has not pursued vigorous educational improvement policies and programs as some of its neighbours.

In this review of the impact of Indonesia's regulatory changes on investments by Japanese and Korean MNEs, there appear few differences by corporate nationality *per se* in the consumer and component electronics segments, and both groups appear to regard Indonesia's locational advantages in a remarkably similar way. Foreign firms from both origins rank variables relating to Indonesia's political, economic and regulatory advantages high and above those for the cost of labour. If significant improvement in Indonesia's political, economic and regulatory framework is realised with a rise in electronics demand in both the domestic and export markets, it can be expected that there will be a return to pre-crisis investment growth.

Policy needs to be informed by the needs of key market players rather than what bureaucrats think is good for the players. The government could employ a range of tools such as regular company surveys, polling, business-government forums and other non-conventional tools to obtain up-to-date information on market trends and major investors' needs could attract substantial 'associated' investments from their network of suppliers.

The questions posed here relate to the timing and characteristics of relocating firms within national groups, based on case studies of early and late entrants to the Indonesian market. The evidence suggests that there are significant variations in the investment strategies of the five firms and that these can be traced to various aspects of their parent vintage and factors related to their parent profiles. Further, differences in entry strategies, including motivation for first and subsequent entry and entry mode, partner and product-line choice in the establishment of affiliates in Indonesia, are found to correspond to different phases in and situations associated with, the entry of both Japanese and Korean firms (Chapters 7, 8 and 9).

The case study findings suggest that, in the absence of regulatory change, foreign market entry appears to follow a sequential process. They also show that uncertainty, economic and industry effects are more important than country-of-origin effects. In the case of industry effects, sequential entry is observed more strongly among electronics firms that are export-oriented (both direct and indirect exporters) than among those that focus on the domestic market, reflecting differences in the speed and extent of globalisation in these two broad segments of electronics.

The division of labour networks of MNEs from Japan, Korea, the United States and the 'Overseas Chinese' sources have contributed to mutual benefit and provide a greater long-term sustainability than those in other regions (Itami 1998; Borrus 1997).

The fact that this study has shown that there is sequential long-term investment among principal Japanese and Korean MNEs in the Indonesian electronics industry underscores the long-term nature of FDI in the electronics. This provides a sharp contrast with the volatile activity in the (portfolio investment) financing of local firms (Hill 1999).

Firms must overcome their reliance on old, uncompetitive practices or they will forever be caught in a strategy of 'playing catch up'. While some of the leading Korean firms have become global players, they have also been forced to stop 'playing catch up' and to adopt marketing practices similar to those of other global corporations such as Japanese firms. In particular, this means paying attention to the domestic market in which they are operating and increasing the localisation of management and suppliers.

Whether it is called *kong-dong-hwa* by the Koreans or *kudouka* by the Japanese, the processes of hollowing out are remarkably similar. In Indonesia, the Koreans are more 'Japanese' (in Kojima's sense) than the Japanese firms (in the sense that the latter had to orient themselves to domestic markets rather than being export-oriented at the outset). As the world electronics industry is exposed to fiercer competition, nationalities or origin of firms matter less while vintage factors such as technological- and organisation-based advantages matter more.

Research implications

There are three main directions in which future research might contribute to study in this field.

In analysing the characteristics of FDI at the firm level in the Indonesian electronics industry, previous studies have been limited by two shortcomings: calculations made only on the basis of approved (or planned) data and lack of consideration of the stock of accrued investments. This study overcame these problems by using the realised (or actual) investment data to calculate rates of investment realisation of different group of firms. Further, albeit as a first approximation, our study demonstrates a methodology to derive an adequate deflator to calculate a profile of investment stock for different groups of firms and derive the comparative realisation rates of FDI from different sources.

Assessment of the characteristics of foreign (and domestic) firm affiliates would be easier if country of origin or ownership nationality of firms were available. The Indonesian Central Bureau of Statistics in cooperation with the Investment Coordinating Board could jointly conduct a survey of foreign firms along the lines of

the existing *Survei Ekonomi*, a survey of medium and large Indonesian manufacturing establishments with a wide range of variables on establishment status and ownership structure, nationality composition of executive and board members, composition of labour force, wage bill, capital addition/subtraction, machinery and other input variables.

Another possible direction for research would be to undertake more quantitative studies on the basis of subsidiary data gathered from the banking authorities in Indonesia and home countries of MNEs. With increasing regional cooperation between East Asian governments and firms, such research could be undertaken by one of the many regional research institutions.

Secondly, a study of the investment behaviour and characteristics of parent MNEs and their affiliates could be carried out, focusing on the comparative factors that affect Japanese and East Asian NIE foreign investors in the Indonesian electronics industry. Parallel work could also be undertaken in some of the ASEAN economies and China where this industry has assumed some importance. >From the perspective of host countries where their electronics has yet to reach take-off stage, the principal objective may still be export generation, followed by employment and technology transfer. This perspective is frequently qualified to mean net foreign exchange earned or the value-added contributions to the economy rather than exports *per se* without considering imports.

Finally, in-depth case study work to identify changing factors explaining the main investment challenges faced by principal MNE and their home-country and local suppliers could be based on the examination of their respective short- and long-term investment strategies. Differences of levels of technical or other support and the evolution of linkages that affiliates of large MNEs in Indonesia develop with their respective network of suppliers and subcontractors in Indonesia and elsewhere in the region could be examined. The extent of local sourcing by principal MNEs, the extent of whether the relationship with suppliers is exclusionary and the extent of variation in the structure of local and regional network could be outlined in terms of technological capabilities of local partners and of special industrial estate areas. Some recent literature offers new approaches which discuss investment determinants in the light of production (regional and local) networks and the geographical sources of the competitiveness of firms and new non-equity and equity strategic alliances as the determinants of MNE activity (Dunning 1997 and 1998).

Concluding remarks

This study of some key electronics MNEs and FDI from two East Asian countries suggests the importance of sequential investment behaviour and vintage or stage-of-development effects in the variations of the investment behaviour of MNEs. Large MNE groups plan with a long time horizon and significant associated investments follow them in relocating to Indonesia, drawn by its abundant labour force and large domestic market.

Current Indonesian authorities, therefore, should develop a long-term policy perspective with a focus not on more regulation, but rather more balanced regulation that will allow the industry remain competitive while facilitating greater local participation in research and development. The pressures to deliver a range of development needs such as employment provision, greater local manufacturing content, local participation in management and other must be met. But in the interests of further industrial upgrading of local affiliates of MNEs and to enable the local industry to make some headway towards the 'take-off' stage of development, it is vital that the regulatory and institutional framework be responsive to the twin requirements of both MNEs and the local industry. Firstly, the knowledge that MNEs engage in long-term investment planning should guide the Indonesian authorities to ensure a stable and transparent regulatory framework. This can be partly achieved by closely monitoring concerns in the existing MNE community in Indonesia. The government must also act decisively to overcome identified bottlenecks. This study indicated the paramount importance for MNEs with affiliates in the region to operate in a stable regulatory and political environment. Indonesia's position in the regional competition for FDI will be determined by its success in meeting these needs. Secondly, supporting institutions which ensure scientific standards/quality control, intellectual property and educational/training institutions must be well sustained to bring about improvements in technical support/R&D capability, particularly those relevant for supplier SMEs. Third, investment rules must remain competitive with those of Indonesia's neighbours and regular consultations and reviews of industry-specific regulations should be undertaken.

There are grounds for cautious optimism for Indonesia's electronics industry in the near future. The case studies suggest that most large established MNEs maintained their operations in Indonesia after the Asian crisis. Given that a certain concentration of firms is retained, these firms will reinforce Indonesia's viability as a location of labour-intensive processes when the next FDI wave occurs. With its large domestic market, Indonesia can become an important regional production centre and once growth in domestic demand picks up, the subsequent expansion of operations of the existing firms could once again increase Indonesia's investment attractiveness.

APPENDICES

CHAPTER 3

Table A3-1 Major regulatory changes in FDI policy of ASEAN-4 countries in the late 1980s and 1990s

Year of policy change	Policy measures
Indonesia	
December 1987	Opened participation in exporting industries to foreign firms; relaxed the regulation on the ratio of foreign equity and obligatory localisation of equity capital; abolished import restrictions for firms exporting 65 % or more of their products; liberalised the hiring of expatriates by firms exporting 65% or more of their products.
December 1988	Lowered the minimum required amount of foreign investment from \$1m to \$200,000.
November 1990	Approved the establishment of 100% foreign capital. However, 5% of the equity had to be sold to local entities within five years of the commencement of production.
June 1991	Lowered import duties and import surcharges.
July 1992	100% ownership was permitted in three types investment: projects worth at least \$50 million; projects located in primarily in Eastern Indonesia; projects worth less than \$50 million and located outside one of 14 provinces but situated in bonded zones with 100% of production to be exported (Tan 1995:62).
October 1993	Further relaxed ownership restrictions, lowering the investment threshold for 100% foreign-owned firms from \$50 million to \$4 million, provided that these firms produced inputs or components for other industries (Tan 1995:62).
June 1994	Abolished the need for a minimum amount of foreign investment capital; foreign ownership of up to 95% allowed in public sector projects such as telecommunication services, potable water supply and ports (<i>Business Times</i> , 2 August 1995).
Malaysia	
1986	Amended incentive measures for investment and exempted firms from obtaining a licence for expanding export-oriented production. Relaxed hiring of expatriates.
1988	Approved 100% foreign ownership of firms selling to the domestic market. Extended the approval of 100% owned firms to 1992.
1993	Trade and investment liberalisation was launched as well as the domestic investment initiative (Tan 1995:63).
Thailand	
1983	Strengthened incentives for labour-intensive export-oriented industries (approved 100% foreign ownership of firms).
1987	Exempted import duties on imported machinery and parts.
1989	Revised the priority area system, and implemented incentives for part-producing industries.
1990	Relaxed the regulation of foreign exchange controls.
1993	Adopted a policy of strengthened preferential measures aimed at encouraging foreign firms (<i>Daily Yomiuri</i> , 8 August 1995).
Philippines	
1983	Approved 100% foreign ownership of export-oriented firms.
1991	Approved 100% foreign ownership of firms in areas other than specified industries.

Source: Compiled from Takeuchi (1994b:36–53) and Tan (1995:62–63).

Table A3-2 Incentives and restrictions on foreign investment in the ASEAN-5 countries in 1991

INCENTIVES	Indonesia		Malaysia		Thailand		Philippines		Singapore	
Tax incentives and Holidays	No	5-10 year tax holiday for pioneer status	3-8 years tax holiday in Investment Promotion Zones and Targeted Industries	Yes in Investment Promotion Zones and Targeted Industries	Up to 4 years for non-pioneer, 6 years for pioneer status	5-10 year tax holiday for pioneer status				
Import duty exemption/reduction on machineries and equipment	Yes for Export Oriented Firms only	Only for M & E not produced locally and directly used in manufacturing process	Yes, with some restrictions	Yes in Investment Promotion Zones and Targeted Industries	Only in EPZs	Import duty levied only on a few selected items				
Import duty exemption/reduction on material components	Yes for Export Oriented Firms only	Yes, with some restrictions		Yes, 50% reduction for up to 5 years for export oriented industries	Yes	Import duty levied only on a few selected items				
R&D Incentives	No	Double reductions for R&D expenditures granted in certain cases with Allowance for R&D Buildings	Yes	No	No	Double reductions for R&D (up to 5 years). Tax depreciation allowance on R&D buildings.				
Incentives for expansion of existing firms	No	Investment Allowance (up to 100% of capital expenditures)	Industrial Adjustment Allowance.	5 year loss carry-over. Tax exemption for fees received for goodwill, copyright and other rights.	Yes	5 years tax relief on S\$ 10M of new investments				
Other Investment Incentives	Exemption from VAT for export oriented firms	Investment Allowance (up to 100% of capital expenditures)	Industrial Adjustment Allowance.	5 year loss carry-over. Tax exemption for fees received for goodwill, copyright and other rights.	Additional deduction from taxable income on labour expenses and public infrastructure facilities constructed, etc.	Accelerated depreciation on M & E. Post-pioneer incentives with 5 year lowered tax rates Investment Allowance				
RESTRICTIONS										
Foreign Ownership	Yes, with divestment and other restrictions from 1992, 100% foreign investment allowed in 1994	No, 100% foreign ownership allowed on export oriented manufacturing	No, up to 100% allowed if over 80% output exported	No, 100% foreign ownership allowed in certain pioneer industries and EPZs. 40% max foreign ownership in most other areas	No, 100% foreign ownership allowed in certain pioneer industries and EPZs. 40% max foreign ownership in most other areas	No				
Profit Remittance	No	No	No	No	Subject to CB approval	No				
Exchange Controls	No	Yes	No	No	Yes	No				
TAX REGIME										
Nature of Corporate Tax Regime*	Classical	Imputation	Classical	Classical	Classical	Imputation				
SPECIAL PROMOTION										
Electronics Industry singled out for investment promotion?	No	Yes	Yes, particularly to upstream electronics industry	Yes, particularly to upstream electronics industry	Yes	Yes, particularly for advanced electronics and wafer fabrication				

Note: *In classical tax regimes taxes are imposed on both the corporate level (on corporate profits) as well as on the personal level (when corporate profits are distributed in the form of dividends). An imputation system rules out taxes on dividends and is therefore more attractive to investors.

Source: SRI International (1991: 172) and the Investment Coordination Board (Indonesia), various issues.

CHAPTER 4

Statistical tests for group samples in the approved investment data

The underlying hypothesis to be tested in the descriptive univariate analysis posits that all Japanese owned and non-Japanese owned firms possess the same characteristics in their (actual or approved) investment projects, and, hence, that there is no statistically significant differences between firms with different majority ownership.

In order to test the differences in means (or averages) of variables, a pair-wise comparison is made between the Japanese affiliates and the other three groups of firms for each of the eleven variables using the standard student's t-test¹. A similar method is used also to test differences in variance by examining whether statistically significant differences appear in the variances of characteristic variables. In either case when a pair-wise comparative result suggests 'Unequal' or 'Equal' variance between two samples of firm-groups, then appropriate two-tail t-tests are applied to determine whether the mean differences are significant. For each variable in Table A4-1, the procedure to determine whether the means are significantly equal starts by comparing P (or probability) values of the Levene variation tests value,² then by using the appropriate t-values, the statistical significance of the mean differences is determined. The table provides a pair-wise comparison between two group of firms. Similar techniques have been used in other comparative studies of multinational firm affiliates from different origins (Beechler, M. Najjar et al. 1996; Beechler and Taylor 1996).

Since the t-test depends on the assumption that the population variances in the two groups are equal, two tests are conducted for each two-sample comparison: firstly, the observed significance level t-test which assumes that the variance of the population is unequal; and secondly, the pooled-variance t-test, based on the assumption that the population variances in the two groups are equal.

To determine the nature of the distribution of the above 11 variables, two statistical tests were carried out by applying both the Shapiro-Wilks (S-W) and the Lillefors test (KML) test statistics for all variables in the pooled- and grouped-samples (Conover

1 A two-tailed significance level tests a null hypothesis in which the direction of an effect is not specified in advance. In general, the null hypothesis is that the mean difference is equal to zero, where the hypothesis of interest is that the coefficient is actually not zero (either greater or less than zero). A null hypothesis is a precise, testable statement about the population from which a sample of cases is derived and, hence, the null hypothesis is the opposite of the real hypothesis of interest. In our case, for example, the null hypothesis would be that the means of two groups of foreign firms are identical in the population of foreign firms in Indonesia. The statistical significance level is the probability that the pattern observed in the sample data would exist if the null hypothesis is true. If this probability (P) is sufficiently low (usually less than 0.01, 0.05, 0.1), the null hypothesis is not rejected. In Table 3-4, the order of analysis for each variable is as follows: first, the P values of the variance comparison test are observed to determine whether the variances of the population is equal, then from the significance level value of the two tail t-test, it is determined whether the mean difference is significant at 0.01, 0.05 and 0.1 per cent which is marked by the ***, ** and * symbols, respectively.

2 Caution must be exercised in interpreting the results for the four pair-wise comparisons of the means of the variables. The question here is not whether the two sample means are equal, but whether the two population means are equal. The population here could be interpreted as the total population of electronics firms from which the particular category of ownership is derived.

1977; SPSS Inc. 1994: 92).³ The results of these tests suggest that none of the variables have distributions which can be assumed to follow the normal distribution. This also determines the choice of the modelling technique employed in the next chapter.

The homogeneity of the variance test to be applied to the distribution of all variables is one which follows a test of the null hypothesis that two population variances are equal regardless of whether the samples come from normal populations. This is known as Levene's test.⁴ If the observed significance level for this test is small (with a probability value of less than 0.05), the hypothesis that the population variances are equal is rejected and the unequal-variance t-test for means is used. The probability (P) values are obtained by computing the corresponding F statistics which in turn are calculated, for each case, from the absolute difference from their cell mean and performing a one-way analysis of variance on these differences. By using the univariate t-tests on the individual monetary and non-monetary variables, we can determine whether the differences in the observed mean values of the different groups are statistically significant (at the 5 per cent level). The following trends can be observed from the results in Table A4-1.

Another important aspect of the preliminary data analysis is the examination of the distribution of variables. Differences among the groups of firms from different origins can be further contrasted by the shape of their distributions are shaped and whether there are many extreme or outlier values in a particular variable.

The distribution of variables that lie in the outlier and extreme range can be objectively identified with boxplots (or 'box-and-whisker' plots) based on well-defined statistical criteria based on Tukey's 'hinges' principles. Such plots do not map out the actual values but provide only summaries of the key elements of the distribution of a variable using a box that identifies the 25th, median, and 75th percentiles, and, in addition, clearly plots values that are classified as outliers and extremes based on pure statistical principles.⁵

³ The Lilliefors test is based on a modification of the Komolgorov-Smirnov test.

⁴ The test statistics for the SW and KSL tests for all 11 variables turned out to be below the 1 per cent significance level, suggesting that the null hypothesis that these variables follow a normal distribution can be rejected. While many econometric and statistical procedures assume that all groups come from normal populations with the same variance, the Levene test allows for departures from normality (SPSS Inc. 1994: 167). This test determines which of the two means equality tests is to be used for each variable (SPSS Inc. 1994: 89).

⁵ The thinnish box that stretches from 'hinge' to 'hinge', crossing it with a bar at the median, is complemented by a 'whisker' from each end of the box to the corresponding extreme. There are set definitions for the 25th, 50th, and 75th percentiles which follow the 'Tukey hinges' principles and which are calculated differently from ordinary percentiles (see Appendix 5.8.5). The horizontal line inside the box represents the median. Fifty percent of cases have values within the box. The length of the box corresponds to the interquartile range, which is the difference between the 75th and 25th percentiles. Using the SPSS (version 6.1.1, 1995: 87) definitions, outlier values (marked * in the figures below) are defined as cases with values between 1.5 and 3 box-lengths from the right or left edge of the box, while extreme values (marked ° in the figures below) are defined as cases with values more than 3 box-lengths from the right or left edge of the box. The largest and the smallest observed values that are not outliers are also represented by lines drawn from the ends of the box to these values.

Table A4-1 : Pair-wise group comparisons using Levene test for variances equality to test means equality of firm-group samples using the approved investment data, 1995

(a) Japanese vs. East Asian NIEs affiliate group

Variable	Mean Diff.	Variances	t-value	Df	2-Tail Sig	Variance test
EQTSIZ	*** 6.4096	Unequal	3.22	70	0.002	P=.000
EXPEST	10.898	Unequal	1.42	39	0.165	P=.000
IMPEST	3.1053	Equal	1.6	120	0.111	P=.155
INVSIZ	*** 19.298	Unequal	3.18	71	0.002	P=.000
LNDRQD	1.2753	Equal	1.5	137	0.137	P=.290
EMPINA	110.06	Equal	1.15	227	0.250	P=.074
EMPXPT	-2.42	Equal	-0.81	227	0.418	P=.163
CNSTIM	3.4646	Equal	1.48	141	0.140	P=.495
PRDNUM	1.0889	Unequal	1.83	73	0.072	P=.000
YRESTD	0.5721	Equal	1.33	227	0.184	P=.149
PEQTINV	** -6.714	Equal	-1.01	226	0.031	P=.256

(b) Japanese vs. 'Rest of the World' affiliate group

Variable	Mean Diff.	Variances	t-value	df	2-Tail Sig	Variance test
EQTSIZ	*** 6.8228	Unequal	3.36	75	0.001	P=.000
EXPEST	14.804	Unequal	1.91	40	0.063	P=.009
IMPEST	*** 5.4785	Unequal	3.12	27	0.004	P=.000
INVSIZ	*** 20.92	Unequal	3.42	73	0.001	P=.000
LNDRQD	-9.033	Equal	-0.85	55	0.397	P=.055
EMPINA	** 274.27	Unequal	2.32	110	0.022	P=.020
EMPXPT	** 5.6046	Equal	2.14	113	0.034	P=.532
CNSTIM	** - 2.90	Equal	-1.12	57	0.269	P=.006
PRDNUM	1.1831	Unequal	1.83	93	0.070	P=.025
YRESTD	0.3138	Equal	0.43	113	0.667	P=.722
PEQTINV	-3.709	Equal	-0.74	113	0.463	P=.166

(c) East Asian NIEs vs. 'Rest of the World' affiliate group

Variable	Mean Diff.	Variances	t-value	df	2-Tail Sig	Variance test
EQTSIZ	0.413	Equal	0.52	211	0.605	P=.489
EXPEST	3.906	Equal	1.19	140	0.236	P=.098
IMPEST	** 2.373	Unequal	2.46	118	0.016	P=.020
INVSIZ	1.622	Equal	0.62	212	0.533	P=.365
LNDRQD	-10.313	Unequal	-0.99	28	0.329	P=.000
EMPINA	164.22	Equal	1.77	212	0.079	P=.188
EMPXPT	** 8.0249	Equal	2.37	212	0.019	P=.096
CNSTIM	*** -6.365	Equal	-2.8	141	0.006	P=.002
PRDNUM	0.0941	Equal	0.29	212	0.770	P=.429
YRESTD	-0.258	Equal	-0.56	212	0.573	P=.466
PEQTINV	-0.294	Equal	-0.07	211	0.95	P=.482

Note: The symbols ***, **, and * denote 1, 5, and 10 per cent significance level, respectively.

Source: author's calculation from data from the BKPM, 1995

Statistical tests for group samples in the realised investment data

Using similar robust tests as applied in the approved data analysis, the statistical significance of differences in the mean and variance are tested. The results show some outstanding statistically significant differences in the characteristics of the Japanese and NIE affiliates (see Table A4-2).

Table A4-2 Means and variances pair-wise tests of variables of affiliates from Japan and East Asian NIE group of firms, 1994

Variable	Mean Diff.	Variances	t-value	df	2-Tail Sig	Levene's Variance Test
RINCIP	*** 1.25	Unequal	2.94	26	0.007	P= .000
RINCUSP	*** 1.11	Unequal	2.90	26	0.007	P= .000
RINNOM	*** 1.64	Unequal	3.02	26	0.006	P= .000
PRINCIP	** -16.97	Unequal	-0.81	80	0.042	P= .001
PRINCUSP	** -13.29	Unequal	-0.63	80	0.033	P= .002
PRINNOM	** -4.16	Unequal	-0.19	80	0.035	P= .004
REQTSIZ	11.88	Unequal	2.09	15	0.054	P= .000
REXPEST	28.71	Unequal	1.26	10	0.234	P= .000
RIMPEST	** 11.19	Unequal	2.32	13	0.038	P= .001
RLNDRQD	2.54	Equal	1.19	50	0.241	P= .407
RCNSTIM	5.25	Equal	1.41	52	0.163	P= .503
RPRDNUM	3.14	Unequal	1.27	14	0.226	P= .021
RYRESTD	*** -3.63	Unequal	-2.98	26	0.006	P= .000
PEMPINA	524.3.0	Unequal	1.08	27	0.289	P= .021
REMPINA	676.9	Equal	1.11	26	0.279	P= .190
PEMPXPT	2.4	Equal	0.51	78	0.608	P= .181
REMPXPT	-2.0	Equal	-0.1	66	0.952	P= .386

Source: See Table 4-4 in the text. Note: The symbols ***, ** and * denote 1, 5 and 10 per cent significance level.

First, the Japanese and NIE group of affiliates appear to have significant differences in six investment variables (RINCIP, RINCUSP, RINNOM, PRINCIP, PRINCUSP, PRINNOM) at the 5 per cent level.

Second, in contrast with the findings in the approved investment analysis (see Table 4-3), the two groups appear to possess significantly different means in the realised imports (RIMPEST) variable.

Third, a different finding to the approved data case is found in the realised equity size variable (REQTSZE) in the two groups.

Fourth, in the case of the means of all non-monetary characteristic variables, the two groups do not appear to have means that are significantly different at the 5 per cent level. Similar results also are also obtained in the approved data.

Finally, the results of the means and variance homogeneity tests above suggest that there is an overall difference in the results for the monetary and non-monetary variables. While the variance equality tests shows that for the monetary variables, the two groups possess significantly different variances while for the non-monetary variables, the opposite is the case, with the exception of the planned numbers of Indonesian employees (PEMPINA) and the realised number of products (RPRDNUM) variables.

The results for means test of non-monetary variables suggest that the two groups of firms have variable means that are not statistically different.

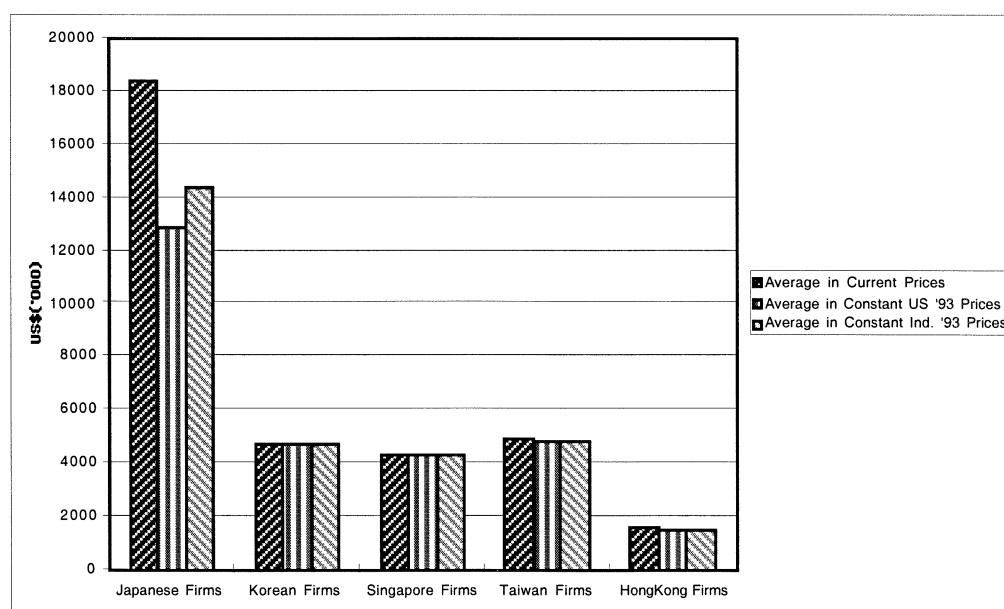
Caution needs to be exercised in interpreting test results of differences in the means and variances of variables. First, the realised investment data set has a lower number of observations than the approved set. Second, while the realised investment data set has complete numbers of observations for the key monetary variables with the exception of the actual size of equity (REQTSIZ), the estimated exports (REXPEST), and estimated imports (RIMPEST), the numbers of observations for the non-monetary variables are less complete. However, the number of observations for all variables in the realised investment data set is well above the number which is considered to be sufficiently large ($n \geq 30$) for meaningful statistical analysis and inference.

In summary, the above univariate tests show clear differences between the characteristics of the monetary and non-monetary variables in a comparison between the Japanese and NIE affiliates. It appears that the two groups possess significantly different monetary variables but more similarities in the non-monetary or physical dimensions of their investments. A further investigation of this dichotomy will be conducted by examining the distribution of characteristic variables below.

Comparisons among NIEs samples in the realised investment data

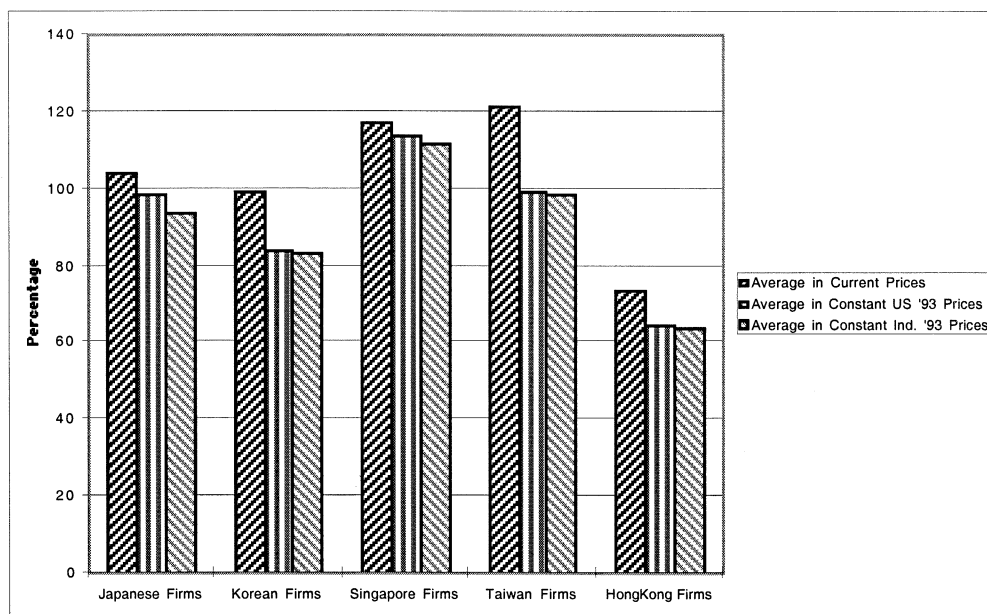
The following figures are detailed comparison of the average capital stock, investment realisation rates as measured by the nominal current prices and the deflated 'constant' prices as calculated using the US and Indonesian investment price indices.

Figure A4-1 Average capital stock of East Asian firms in the Indonesian electronics industry, 1995 (in current and constant 1993 prices)



Source: author's calculations from BKPM data, 1995

Figure A4-2 Average investment realisation by East Asian firms in the Indonesian electronics industry, 1995 (in current and constant 1993 prices)



Source: author's calculations from BKPM data, 1995

Capital stock calculations for the realised investment data

The collected data from the Indonesian Investment Coordinating Board (*BKPM*) for the approved and realised investments for individual firms are given in current nominal US dollars. In order to calculate the approximated investment stock of individual firms, the constant 1993 values for the investment were calculated and these were aggregated by firm group as at 1993 deflated by using the US and Indonesian investment price indices. The latter index is based on the Indonesian National Accounts (rather than the Indonesian Industry Survey, IIS) which is listed below for comparative purposes. However, since the latter Indonesian series is only available from 1975, it is of limited use.

The use of the alternative indices can be explained as follows: When column 1 is compared with the IFS series, there are some differences. First, that the index increases in the early 1980s and then falls again. That is largely due to the fact that the rupiah exchange rate and price index do not move in line so that they 'mimic' the US price index. One would expect that the effect would be obvious but here it is due entirely to Indonesia's exchange rate movements.

Secondly, observing the trends in column 1 in Table A4-1 below, it should be noted that the applicability of the index to the data depends on: what foreign investors in Indonesia did with the funds they brought into the country. If they mainly purchased labour and materials in Indonesia, the Indonesian index would be appropriate. On the other hand, if these firms used the money to purchase imported goods, the index is only appropriate in a situation in which the company had brought US dollars into Indonesia in an earlier year and exchanged it for Rupiah, then exchanged it back to dollars in a later year to import goods. In other words, a company would have lost or gained dollars over time, according to the impact of Indonesia's foreign exchange policies on the exchange rate, relative to domestic inflation in Indonesia. The latter case is not likely as foreign

relative to domestic inflation in Indonesia. The latter case is not likely as foreign investors only release funds for investment in the year when such funds are actually required.

The issue is the nature of the purchasing power of dollars spent in Indonesia and outside Indonesia. If dollars were spent on, for example, machinery that was brought to Indonesia, the US price index of capital formation could be more appropriate. If dollars were spent on Indonesian labour and cement or other locally available materials to build plants and its machinery, the Indonesian price index in would be appropriate.

Since we do not have information on the destination of foreign investment funds, we need to see whether the use of the alternative index makes a difference in terms of the statistical significance of the parameters.

Table A4-3 US and Indonesian Investment Price Indices

Year	INA Price Index ¹	US Price Index ²	INA Price Index ³
1960	0.343	0.250	
1961	0.375	0.251	
1962	0.238	0.251	
1963	0.405	0.251	
1964	0.539	0.254	
1965	0.294	0.257	
1966	0.083	0.264	
1967	0.243	0.273	
1968	0.194	0.282	
1969	0.325	0.292	
1970	0.351	0.306	
1971	0.335	0.318	
1972	0.416	0.326	
1973	0.501	0.337	
1974	0.625	0.384	
1975	0.780	0.443	0.314
1976	0.917	0.473	0.346
1977	0.945	0.503	0.384
1978	0.744	0.543	0.412
1979	0.912	0.591	0.516
1980	1.172	0.654	0.550
1981	1.155	0.721	0.610
1982	1.492	0.762	0.635
1983	1.154	0.783	0.720
1984	1.102	0.801	0.764
1985	1.055	0.819	0.799
1986	0.930	0.836	0.846
1987	0.860	0.851	0.937
1988	0.894	0.871	0.975
1989	0.931	0.905	0.918
1990	0.951	0.936	1.069
1991	0.969	0.964	1.061
1992	0.984	0.982	1.045
1993	1.000	1.000	1.000
1994	1.028	1.022	
1995	1.069		

Notes:

1. The first Indonesian investment price index is based on the National Income (Accounts) of Indonesia (*Pendapatan Nasional Indonesia*), 1960–1995 published by the Central Bureau of Statistics, Jakarta. This series is based on the implicit deflator of gross capital formation obtained from the Accounts, linked for 1960–71 (1960=100), 1971–83 (1972=100), 1983–93 (1983=100), 1993–94 (1993=100) and uses the official export exchange rate US dollar for 1960–77.

2. The investment price index for United States is calculated based on *International Financial Statistics (1993) Yearbook* pp. 724–5 and *International Financial Statistics (1993) Vol. XLVI*, pp. 730–731 both published by the International Monetary Fund, Washington, DC. This series is used to deflate when it is assumed that the investment capital was spent outside Indonesia.

The current US dollar value as at 1993 levels of the flow of all realised investments was calculated using the deflator obtained from the US data on Capital Equipment Prices from the *International Financial Statistics* published by the International Monetary

Fund. In addition, for comparative purposes, an alternative Indonesian (perhaps theoretically more appropriate) deflator was derived from the capital stock measurement used in industry-level studies. This deflator is based on the unpublished data implicit in the publication *Incremental Capital Output Ratio, 'Sektor Industri', 1980–1990, (Manufacturing Industries by Sectors 1980–1990)* published by the Indonesian Bureau of Statistics (BPS), Jakarta, 1991. Unfortunately this series is too short to be useful.

It has been argued that measuring business transactions and, in the same way, foreign direct investment is misleading in terms of historical figures. This has been pointed out to accountants by economists for decades (Wolk et al. 1991: 236). In a developing country such as Indonesia, which has had relatively high inflation rates by developed countries standards (around the 10 per cent mark over the last two decades until 1996), there is a need to depreciate current investments and a strong argument for a system for discounting current values.

There are two ways to achieve this. The first method is the current-cost-adjusted income whereby the historical investment figures are discounted by their discount rate using a perpetual method. However, while there are several different discount rates for the machinery, building and transport components of investments, there are no such data available for the Indonesian manufacturing sector or for its electronics sector specifically.

The second method which this study uses is the 'constant dollar' method of measurement of investments which is obtained by discounting the historical investment figures by the capital stock deflators. This in fact what has been undertaken by this study. However, the measurement error associated with this method is the fact that technological obsolescence is not taken into account (Wolk, et al. 1991: 237).

The total capital stock or the net accumulated investment (NAI) is the total sum of investments at constant price (using 1993 as a base) at various points in time during the life of the firm. Thus the value of NAI is assumed to take account of the effect of inflation and is the total sum of all nominal investments from the start of the project.

Further investigation of the distribution of firm-level characteristic variables provides further insights into the mean value comparisons above.

Japanese affiliates appear have greater variance in the RINCUSP variable, namely the net stock of the total investment (s) size by firms as aggregated as at December 1995 (Figures A4-5 and A4-6 for the boxplots of the same variable at different scale). These figure suggest that, despite the presence of a handful of large Japanese affiliates (firms which have been manufacturing in Indonesia much longer than any of other firms with the exception of one Dutch firm). However, most Japanese firms are new medium sized firms which make electronics components.

CHAPTER 5

Table A5-1 Number of all categories of electronics firms establishing subsidiaries in Asia by country, 1959-93 (unit: number of firms, per cent)

Host Country	to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90	91	92	93	to 93 (X)	Y
Korea	1	1	30	6	5	19	1	5	9	3	1	2	61
Taiwan	4	24	30	10	13	16	1	6	6	1	1	1	3
Hong Kong	2	1	4	1	1	11	1	3	4	2	4	1	24
Singapore		2	16	27	3	19	1	3	10	3	3	2	71
Malaysia		2	15	4	7	64	1	6	16	14	29	23	10
Thailand	2	2	2	2	5	38	1	12	16	13	6	5	2
Philippines		1	1	2	2	8		3	5	5	4		19
Indonesia		2	2	1	1	2	2	2	2	1	1	1	6
China				7	20	3	3	5	8	4	3	10	16
Other Asia		1		3	4	1	1	1	1	1	1	1	5
All Asia (AA)	2	9	34	100	63	61	180	4	24	65	51	61	44
													33
													30
													11
													558

Source: Electronics Industries Association of Japan (1994), 'List of Japanese Industries located overseas' (in Japanese), EIAJ Publication, Tokyo.

Table A5-2 Number of appliances end-product assembly electronics firms establishing subsidiaries in Asia by country, 1959-93 (unit: number of firms, per cent)

Country	60	65	70	75	80	85	86	87	88	89	90	91	92	93	to 1993 (X)	AA as % of X
Korea	2	2	5	1	2	1	2	2	2	2	2	4	4	3	8	5
Taiwan				2	13	1	3	1	3	1	2	1	1	21	14	14
Hong Kong	2	2	2	1	2	13	1	1	1	2				4	3	3
Singapore	2	6	5	6	2	2	2	2	2	2	2	2	19	19	12	12
Malaysia	2	2	3	2	24	1	2	4	5	11	5	3	39	25	25	25
Thailand	2	2	2	1	2	13	3	5	5	5	2	2	1	25	16	16
Philippines	1	1	1	1	2					1	1	1	5	5	3	3
Indonesia			2	1	2		1	1	1	1	1	3	3	13	7	7
China				4	1					2	2	4	3	15	10	10
Other Asia	1	3	1	3	1	3	1	1	1	1	1	1	7	7	5	5
All Asia (AA)	4	11	27	8	15	58	1	6	17	13	20	8	10	9	3	153

Note: AA as percentage of X denotes the percentage of the amount that a host country receives from the total amount of cumulated investments up to the end of the financial year 1993. Source: as in Table A5-1

CHAPTER 7

Table A7-1 Parents of Japanese and Korean consumer electronics multinational affiliates in Asia: ranking by sales and profits in the *Asiaweek* 1000 largest companies, 1996–97

Sales '97	Rank '96	Company	Country	Sales		Profit		Profi t 1000	Rank E48*
				\$ Million	% Change	\$ Million	% Change		
9	8	Hitachi Ltd. ¹	Japan	78,351	4.9	812	-37.7	25	1
10	10	Matsushita Elec. Ind.	Japan	70,563	13.0	1,267	-	11	2
12	17	Sony Corp.	Japan	52,060	23.3	1,282	157.1	10	3
13	13	Toshiba Corp.	Japan	50,132	6.5	617	-25.8	44	4
17	18	NEC Corp. ²	Japan	45,490	12.5	842	18.7	23	5
21	23	Mitsubishi Elec. Corp.	Japan	34,245	6.1	78	-85.6	322	6
38	37	Samsung Elec. Corp	S. Korea	19,733	-1.9	204	-93.4	148	7
52	46	Sanyo Elec. Corp.	Japan	16,972	6.0	162	13.7	185	8
55	52	Sharp	Japan	16,461	8.5	446	7.2	63	9
126	136	LG Electronics	S. Korea	9,326	13.8	81	-18.2	318	10
143	134	Victor Co. of Japan	Japan	8,185	10.4	42	5.6	466	11
170	166	Kyocera Corp ³	Japan	6,571	10.4	420	-44.7	65	12
208	182	Seiko-Epson ²	Japan	5,726.2	3.7	32.2	40.0	528	13
209	258	Matsushita-Kotobuki	Japan	5,714	30.3	194	212.7	158	14
217	224	Yamaha ⁴	Japan	5,559	13.8	129	49	217	15
224	226	Omron ³	Japan	5,463	13.1	145	7.9	199	16
241	236	Pioneer	Japan	5,079	9.1	23	-	606	17
280	323	Daewoo Electronics	S. Korea	4,438	14.2	60	2.6	373	18
281	261	Matsushita Electron. ⁵	Japan	4,431	1.4	66	-34.3	348	19
286	291	Asia Matsushita El.	Singapore	4,336	4.5	45	-96.44	815	20
299	318	Alps Electric ⁴	Japan	4,195.1	18.3	44.5-	-	451	21
322	260	Hyundai Elect. Inds. ³	S. Korea	3,937.2	-18.8	88.4	-91.5	306	22
334	388	Matsushita E. Compo.	Japan	3,741.8	8.6	71.5	35.2	336	23
387	385	Kyushu Matsushita ⁴	Japan	3,171.6	24.5	-0.3	-	878	24
390	408	Hitachi Asia	Singapore	3,164.5	-0.8	3.5	-87.2	822	25
397	412	Aiwa	Japan	3,127.9	14.7	58.5	19.9	380	26
409	544	Samsung Display D. ⁴	S. Korea	3,058.8	27.3	204.1	61.0	147	27
412	384	Murata Mfg. ⁴	Japan	3,039.3	2.7	299.6	-12.5	96	28
421	-	Sanyo Life Electro. ⁴	Japan	2,969.8	1.9	4.7	98.5	806	29
469	503	Mitsumi Electric ⁴	Japan	2,720.3	16.1	36.6	26.0	502	30
494	481	Kenwood	Japan	2,590.9	7.7	-28.0	-	923	31
523	397	LG Semicon	S. Korea	2,498.4	-20.1	113.3	-88.3	251	32
556	500	Texas Instrument Jp. ³	Japan	2,351.1	0.0	48.3	-66.0	425	34
571	471	Matsushita Battery I.	Japan	2,295.9	5.1	121.7	5.9	231	35
679	842	Toshiba Electr. Asia ³	Singapore	1,951.8	-1.3	-1.9	-	886	37
716	796	Samsung El.-Mech. ⁴	S. Korea	1,851.5	10.9	44.0	0.4	455	38
791	793	Clarion	Japan	1,675.6	10.7	13.9	-	691	39
795	831	Hitachi Maxwell	Japan	1,664.4	16.8	52.3	23.8	406	40
809	763	Toshiba Ligthing &T.	Japan	1,638.2	4.7	NA	-	-	41
847	725	Fujitsu General	Japan	1,559.6	-4.1	30.0	-19.0	548	42
961	941	Sanken Electric ³	Japan	1,334.8	6.7	42.6	14.2	464	44
978	-	Teac Corp.	Japan	1,300.4	25.1	34.8	126.2	512	45
980	991	Tae Kwang Indl. ⁵	S. Korea	1,294.1	-0.5	36.2	62.5	507	46
999	849	Tottori Sanyo Electr. ⁴	Japan	1,264.5	-10.1	10.2	21.6	732	47

Note: Some companies listed above are electronics firms with significant activity in: ¹ electric machinery; ² computers; ³ semiconductors and parts; ⁴ electronics parts; ⁵ electronics and watches; ⁶ electronics parts and textiles. The above-listed firms are all electronics manufacturing (excluding electronics trading and firms fully specialising in computers) firms with origins in Japan and Korea, and among the top 1000 firms;* E48 is a ranking constructed by this study to compare the relative number of assemblers and parts makers of electronics-related manufacturing firms of Japanese and Korean origin that were included in the top 1000 firms. The missing ranks have been assigned to firms based in Singapore (Philips, ranked 33rd) and Hong Kong (Semi-tech, ranked 43rd); and data are for the fiscal years ending between July 1996 and June 1997 and with financial results incorporating subsidiaries. Sales also refers to turnover, gross income or revenue and all monetary values are rounded in US dollars. Source: *Asiaweek*, December 1997: 54–60.

CHAPTER 7-9

Survey Questionnaire And Questions For Japanese And Korean Electronics Firms Manufacturing In Indonesia

(I) INFORMATION ON THE PARENT COMPANY

(1) Basic corporate company data for 1994-95

1.1 Name of company:

1.2 Headquarter location:

1.3 Establishment year:

1.3 Paid-up Capital:

1.4 Total employment in home-country:

1.5 Total employment overseas

1.6 Yearly sales in home-country:

1.7 Yearly sales overseas:

1.8 After-tax profit in home-country:

1.9 After-tax profit overseas:

1.10 Number of overseas affiliates:

1.11 How many subsidiaries does your firm have in Indonesia?

1.12 Basic details of subsidiaries have been established:

Name of subsidiary	Month and Year established	Products	Investment and share of investment	Employment

(2) What are the motivations of your Company/Group's involvement in manufacturing in Indonesia in the 1990s?

This study attempts to identify the factors which explain the investment by Japanese and Korean companies in Indonesia. The following list of motivations why companies choose to establish manufacturing operations in Indonesia. Can you indicate which of these applied to your decision to operate directly in Indonesia?

Please rank the following listed motives on a range scale as follows as very important/positive (5), important/positive (4), undecided/neutral (3), unimportant/negative (2) and very unimportant/negative (1) at the appropriate place to answer the following questions.

2.1. What factors does your company perceive to be your company- or firm-specific advantages to compete in Indonesia?

	Rank
ability to influence decision makers at different levels of government in Indonesia	
business partners (distributor, licensee, etc.) in the pre-production stage	
'cost advantages' by enhancing international arbitraging (due to value changes of home-country currency for example yen rise or decline in terms of US dollar or differences in factor endowment and in markets, etc.)	
experience in similar countries	
management know how of the parent firm	
marketing knowledge within firm	
production capability of the parent firm	
quality parts supply from affiliated firms	
well-known brand names	

2.2. Why did you choose to establish in Indonesia rather than service this market by exporting or by licensing (or engaging in other contract with) an already established company?

	Rank
avoiding costs of tariff and non-tariff barriers	
defending and/or expanding the existing market share by directly investing there to counter competitors	
difficulties in finding appropriate local licensee	
facilitating control of exports to third countries or re-exports to home country	
maintaining control of production quality	
preventing disruptions of the flow of inputs from home-country or third-country affiliates	
protecting trademark and proprietary technology	

2.3. Why did you choose to locate in Indonesia?

	Rank
absence of foreign exchange control and equity limits	
availability of technicians and managers	
domestic market size and growth	
expatriate staff restrictions	
GSP facility for marketing in the European Union	
GSP facility for marketing in the United States	
infrastructure (cost of electricity, industrial parks and telecommunications)	
investment restrictions (ownership of product distributor, divestment and minimum capital requirements, etc.)	
labour productivity	
language and cultural issues with local workforce	
low cost and availability of unskilled labour	
low material and land costs	
macroeconomic stability	
political stability	
shipping and land transport	
waiving of import duties by government (in FTZs and EPTs) to facilitate procurement, imports and exports	

ADDITIONAL QUESTIONS FOR CASE STUDY AND FOLLOW-UP INTERVIEWS

(3) Basics on how the company operates - business structure and past strategies.

3.1 What is the name of the business group of your company?

3.2. Does the company have any Vertical Business (Manufacturing/*Shosha*) Group affiliation? Note the position of the companies within the interlocking pyramids and the strength and weaknesses of the keiretsu and their companies, especially the vertical ones. Note that in general consumer electronics keiretsu are weakening through attrition of their members.

3.3. Does the company have any Horizontal Business (Bank/*Ginko*) Group affiliation and origins?

3.4. Who are its Top Shareholders?

3.5. What is the current level of Stable Share Holding?

3.6. What is its Directors' Connections?

3.7. What is its range of products?

3.8. How does the Company/Group operate different production lines?

3.9. How does the Company/Group operate in different geographical regions?

3.10. Which government agencies directly affect the firm's operations and how far will they get involved?

3.11. What is its basic organisational charts? Where are parts obtained, processed and assembled and how are they delivered to distributors in the subsidiaries in the ASEAN countries in particular?

3.12. What were the trends of the sales Fiscal Year 1970-1993?

3.13. What were the proportion of overseas earnings compared to domestic sales in these years?

3.14. What were the consolidated capital spending by parent company, the proportion of R&D spending as a proportion of total sales and the stated spending for overseas investment for Fiscal 1970-1994?

3.15. What were the number of employees in Japan as a proportion of those abroad and their categories for fiscal year 1970-1994?

3.16. What is the record of the industrial relations? For example, were there any major labour disputes and production delays for fiscal year 1985-93?

3.17. What do analysts think of the companies' current and future prospects? why?

3.18. What do analysts think of the performance of the overseas subsidiaries in Indonesia and South East Asia? For example, were there any problems with who the Company/Group do their main business with in these markets? who supplies them? how they pay for parts (in local or US dollars), where are the strength and weak links in their procurement systems in terms of the 'geographical distribution' of their business group?

(4) The Process of Internationalisation

4.1. What are the stated Ideals and Basic Policy Motivating the internationalisation process and did the founder played a significant initial push towards internalisation?

4.2. What is the history of Overseas Expansion prior to the 1960s?

4.3. What is the history of Overseas Expansion in the 1960s?

When did the Company/Group started with the establishment of its own marketing networks in the US and Europe and the creation of local manufacturing bases in Asia and Latin America?

Did the Company/Group possess a specific policy of marketing such as a "single exclusive sales agency in each country"?

4.4. What is the history of Overseas Expansion in the 1970s?

What were the effect of the "Nixon Shock" of 1971 on Company/Group?

When did the Company/Group started establishing overseas subsidiaries to produce export products?

When did the Company/Group started establishing overseas subsidiaries to produce parts locally?

4.5. What is the history of Overseas Expansion in n the 1980s?

What were the effect of the Japanese yen rose after the Plaza Accord of 1985 on the Company/Group?

When did the Company/Group started establishing overseas subsidiaries to produce parts locally?

When did the Company/Group started expanding the operation of overseas subsidiaries to procure parts local and overseas suppliers?
.....

When did the Company/Group started expanding the import and marketing in Japan of consumer goods produced by your overseas subsidiaries?
.....

When did the Company/Group started transferring the manufacture of high-tech products such as audio-video (AV), semi-conductors/parts and information-processing devices to overseas plants?
.....

When did the Company/Group started decentralising some of the headquarters function overseas by the establishment of regional headquarters in Europe, the US and Asia?
.....

4.6. What is the history of Overseas Expansion in the 1990s?

How can the internationalisation process of the Company/Group's be characterised?

4.7. When did the Company/Group started expanding the existing subsidiaries or establish new subsidiaries to primarily manufacture goods for export to Japan? For example, air conditioner plants, colour and electric motor plants.

4.8. When did the Company/Group started to transfer its R&D functions overseas, including facilities for developing new products and designs? For example, home automation, computer software, satellite communications and the next generation TV.

4.9. What is the present total number of the consolidated subsidiaries overseas and their individual and total number of employees?

4.10. What is the present total number of the joint-venture firms overseas?

4.11. What is the absolute and proportional earnings of the respective Asia/the Mid-East, American and European Business Divisions?

4.12. Are each of the Business Division within the Company/Group companies responsible for its products' manufacture, marketing, R&D, technology and after-sale service?

4.13. Does the Company/Group have a specific equity policy whenever a business division of the Company/Group sets up a subsidiary overseas? For example one large electronics parent company always holds 40% of the equity, while the group company takes 60% *or* for example that if an overseas operation is export-oriented then the Company/Group has to have a majority shareholding.

4.14. Who holds the primary responsibility within the Company/Group for deciding upon locating a plant overseas or expanding an existing one? Does it reside with the parent company's business unit (corporate headquarters) or within the Product Division or Regional Business group company?

4.15. What is the function of your Regional Headquarters in Asia? For example, to offer advice, adjust differences among the overseas subsidiaries, and exercise supervisory control over them.

(5) What are the details of your Company/Group's perception of the investment climate in Indonesia during the early to mid 1990s?

5.1. Does the recent deregulation announcement of June 1994 in Indonesia, which amongst other things, permits 100% foreign ownership subsidiaries, make the country more attractive as a destination for your company's new investments? If not, why not?

5.2. Please state further the main problems with the investment climate in Indonesia which led your company choose countries other than Indonesia as a destination of new investments or expansion of existing production facilities?

5.3. What is your company's reaction to the recent appreciation of the Yen currency in terms of a greater (or lesser) shift of production to overseas locations?

5.4. What are the implication of the recent yen appreciation to below 100 to the US dollar in the summer of 1994? Does this imply a lesser or greater commitment to Indonesia in particular or the region of South East Asia in general?

5.5. How is the above reaction different to that during the previous Yen appreciation which took place currency after the Plaza Accord of 1985?

5.6. Does the recent Yen appreciation lead your company to relocate more manufacturing plants or facilities or to urge your suppliers to relocate to or built new plants in China, Vietnam, India or elsewhere rather than Indonesia or Southeast Asia in general? Please rank the top three countries for new investment from the perspective of your company in this financial year.

5.7. Could you please outline some of your company's perceptions of the advantages of and difficulties with the implementation of the ASEAN Free Trade Agreement (AFTA) from the point of view of making Indonesia or ASEAN more attractive as a destination for your company's recent investments?

5.8. Could you please outline some of your company's perceptions of the advantages of and difficulties with the implementation of the North American Free Trade Agreement (NAFTA) from the point of view

of making NAFTA countries rather than Indonesia or ASEAN countries more attractive as a destination for your company's recent investments which supply the North American market?

(6) GENERAL INFORMATION ON SUBSIDIARIES

6.1 Type of company / firm:

- (a) Capitalisation
 - Statutory Capital
 - Ordinary Share
 - Preferred Share
 - Issued Capital
 - Paid Up Capital

- (b) Total Level of Foreign participation _____ %
 - (Shares Of Foreign Equity%)
 -%
 -%

- (c) Level of Domestic Private participation in firm _____ %
 - (Shares Of Local Equity%)
 -%
 -%)

- (d) Level of Government participation in firm _____ %

- (e) Participation in the Foreign Investment Scheme (PMA)

- (f) Participation in the Domestic Investment Scheme (PMDN)

- (g) Non-facility company

(h) The major sources of capital for setting up your company/subsidiary are:

- (a) From the existing capital of the
 - home/third-country parent firm
- (b) From loans raised in home/third-country
- (c) From loans raised in Indonesia
- (d) From ("soft") loans raised through
 - international/regional financial bodies
- (e) Others
- _____
- _____
- _____

6.2 Nature of Ownership

(a) Majority Ownership of the Company / Firm

- 1 = Family Owned
- 2 = Domestic Limited Company
- 3 = Joint-Venture
- 4 = 100% Foreign Subsidiary

(b) Stock Market Listing

- 1 = Jakarta
- 2 = Surabaya
- 3 = Overseas, location of stock market(s).....

6.5. Employment

(a) Management and Workforce (Male/Female):

	Foreign	Indonesian	Total
Management Board	/	/	/
Management	/	/	/
Advisor&Technician	/	/	/
Foreman& Production Workers	/	/	/
Administrative Workers	/	/	/
Grand Total	/	/	/

(b) Total Size of your Company / Firm

- 1 = Very Small (Less Than 20 Employees)
 2 = Small (More Than 20 & Less Than 50 Employees)
 3 = Medium (More Than 50 & Less Than 200 Employees)
 4 = Large (More Than 200 & Less Than 500 Employees)
 5 = Very Large (More Than 500)

(c) Level of Starting Monthly Salary in Rp./US\$ (Excluding Benefits)

Management Board	
Management	
Advisor&Technician	
Foreman& Production Workers	
Administrative Workers	

(d) Bonuses:

Type of Bonus	% added
End of Moslem Fasting (Tunjangan Hari Raya)	
End of the Year (December)	
Common Labour Agreement (Kesepakatan Kerja Bersama)	
Union Fees (SPSI)	
Pension Social Fund (Jamsos)	
Others Syaker	

(e) Other Fringe Benefits Provided:

	Yes / No
Lunch Canteen	
Uniform and Shoes	
Medical Care	
Death or Marriage in the Immediate Family	
Company Loans	
Internal Sales of Company Products	
Cultural, Physical Education and other Company Activities	

6.6. Total sales in your last financial year was Rp. / US\$ _____.

6.7. Production Costs in your last financial year was Rp. / US\$ _____ which is comprised of:

6.8. Total after-tax profit / loss in your last financial year were Rp. / US\$ _____.

6.9. Proportion of production for export _____ %.

6.10. Major export markets and % of firms' total export

(i) _____ %	(ii) _____ %
(iii) _____ %	(iv) _____ %
(v) _____ %	(vi) _____ %
(vii) _____ %	(viii) _____ %
(ix) _____ %	(x) _____ %
(xi) _____ %	(xii) _____ %

6.11. Current book value of fixed assets (which should include land, building, machinery and tools, furniture and fixture, and transport vehicles) is Rp. / US\$ _____.
(If factory buildings are rented, please assess their market value and include it in the current book value.)

6.12. Approximately what percentage of your machinery and equipment are made and purchased locally _____ %.

6.13. Approximately what percentage of total your materials or compents used in production are purchased locally (in value terms) _____ %.

6.14. Approximately what percentage of total your materials or compents used in production are purchased overseas (in value terms) _____ %.

(7) PARENT MULTINATIONALS SUBSIDIARIES IN VARIOUS HOST-COUNTRIES:

GENERAL

7.1. How many subsidiaries does your firm have in the world and in South East Asia in particular?

7.2. Countries in which subsidiaries have been established and the year of establishment:

7.3. Your overseas subsidiaries are mostly

Joint-ventures with local firms

Joint-ventures with other foreign firms

Wholly-owned

7.4. The production of your subsidiaries is mainly

(a) Components/intermediate products for exporting

(b) Components/intermediate products for the home/third-country parent firm

(c) Final products for exporting

(d) Final products for the Indonesian market

(e) Components/intermediate products for the Indonesian market

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