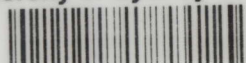


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Southeast Asia

*What happens to industrial structure
when countries liberalise?*

Indonesia since the mid 1980s

H H Aswicahyono, Kelly Bird and Hal Hill

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The authors wish to acknowledge with thanks the assistance of officials from Indonesia's Central Bureau of Statistics (BPS, *Biro Pusat Statistik*), Jakarta for kindly providing access to firm-level tapes of the country's annual Industry Statistics, 1975-91. Without the cooperation and assistance of the Bureau, this paper obviously could not have been written. We also wish to thank M. Chatib Basri and Neng and Wendy Hartono for much valuable computational assistance, the staff of the International Economic Databank, the Australian National University for assistance with the trade statistics, and participants at the Fourth Convention of the East Asian Economic Association (especially Sjafrizal and Peter Lloyd), to which an earlier draft of this paper was presented, for useful comments.



abstract

In the large amount of literature on the consequences of economic liberalisation, few studies have examined the impact on industrial structure. Indonesia provides a suitable case-study. Its policy reforms from the mid-1980s were decisive, and its industrial data base is relatively sophisticated. This paper briefly develops a framework with which such issues may be examined, and then assesses the impact of policy reforms on seller concentration, ownership, size distribution, spatial composition, and total factor productivity growth over the pre and post-reform periods. The main conclusion is that, unlike the liberalisation-efficiency nexus, the effects of the policy changes on industrial structure appear to be limited. Our conclusions are necessarily tentative, given the short period of time under examination, and given the difficulties—both empirical and theoretical—of establishing the direction of causality.

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Abstract

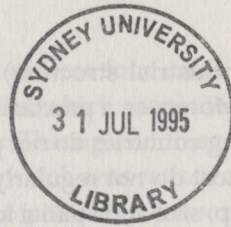
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What happens to industrial structure when countries liberalise?

Indonesia since the mid 1980s

There is now a very large amount of literature assessing the impact of liberalisation—of international trade, finance, regulations and licensing, and ownership requirements—on economic performance.¹ The main conclusions of this literature are broadly consistent. Liberalisation generally facilitates an outward-looking economy, and rapidly increasing export and economic growth. The linkages between policy reform and outcomes are still not properly understood. There is debate over how much of the gains in performance are due to static factors (the triangle story) and how much to dynamic factors which result from exposure to international commerce. Professional opinion now increasingly emphasises the latter. There is also debate over the sequencing of liberalisation, over the speed at which it should proceed, whether political liberalisation is a prerequisite for durable economic reform, and whether governments should guide the reform process and intervene selectively while emphasising the export thrust.

Much less research has been undertaken on the impact of liberalisation on industrial structure. As barriers to domestic and international commerce fall, are there likely to be major changes in the structure of industry? For example, is ownership likely to become more or less concentrated, and will the share of multinational corporations (MNCs) rise? What of the size distribution and spatial dimensions? Are there likely to be any major effects on productivity, separate from such indicators of revealed performance as export and economic growth?

There is no rigorous study which addresses these questions for developing countries, empirically or theoretically.² Indeed, theory provides little guidance. Empirically, also, there are obstacles to be overcome in addressing this question. It is inherently difficult to demonstrate conclusively a causal relationship, not to mention questions such as the direction of causality and the presence of lags. It is also not easy to address the counter-factual what if question: for example, would the observed changes (in this

case in industrial structure) have occurred independently of the changing policy regime? Moreover, a practical obstacle to empirical research on this topic is that most developing countries do not publish timely industrial statistics of reasonable quality. In fact, most do not regularly collect series on such key variables as manufacturing ownership, size and spatial location.

It is therefore instructive to examine the case of a country which exhibits reasonably distinct policy episodes and outcomes, and for which comprehensive, disaggregated industrial statistics are available. One such country which meets both prerequisites (one of the few we venture to suggest) is Indonesia. Following the decline in international oil prices from 1982–6, the government introduced a series of significant policy reforms. The strategy of oil-financed heavy industrialisation was de-emphasised, the trade regime liberalised, foreign investment procedures simplified, and other significant reforms enacted. The change in direction produced significant results. Economic growth had slumped to 3 to 4 per cent by the mid 1980s, but accelerated again to around 7 per cent by the end of the decade. Manufactured exports emerged as a significant new engine of growth, growing in real terms by almost 30 per cent per annum over the decade, and from a total of \$500 million in 1980 to \$16.1 billion in 1992.

It is not the purpose of this paper to debate the merits of these reforms, nor examine the direction and nature of the causality between the reforms and general economic outcomes. That is the domain of the references cited in footnote 1. Rather, our attention is directed towards the more focused topic of the impact of these reforms on industrial structure. Industrial output grew rapidly over this period, and exports accounted for much of this growth. What effect did this have on the usual indicators of industrial structure and productivity?

Indonesian policy reforms and performance since the 1980s

It will be useful first to briefly review the background, content, and effects of Indonesia's policy reforms of the 1980s.³ Indonesia was a significant beneficiary of the buoyant international oil prices over the period 1973–84. It maintained generally responsible macroeconomic policies over this period, largely the result of its bitter experience of hyper-inflation in the mid 1960s. It also invested the proceeds of the oil boom revenue more effectively than any other country in a similar position, a point emphasised in the cross-national study of Gelb and Associates (1988). In the early period of the oil boom, the government adhered to reasonably open trade and investment policies—also a legacy of the abrupt change in economic policy beginning in 1966.

By the late 1970s a change in strategy was evident. There was tremendous pressure on the government to embark on a more interventionist path, especially in the area of

industrial policy. Such intervention was manifested in at least four areas: first, the banking system was dominated by the state-owned banks, which accounted then for around 80 per cent of loans by the formal financial sector. Throughout this period, the government maintained a regime of subsidised credit, which was rationed through selective allocation to favoured clients, particularly the politically powerful, those willing to pay extensive facilitation costs, and indigenous (*pribumi*) borrowers.

Second, the government itself became a major actor in the economy as it undertook large investments in state-owned enterprises. In the industrial sector, this mainly took the form of heavy industry—oil refining, cement, steel, aircraft and fertilizer. Government equity investments over this period rose sharply, with a lag, from Rp 41 billion in 1973 to Rp 218 billion in 1976. Over the period 1980–5, these investments averaged over Rp 400 billion annually.⁴

Third, barriers to imports rose steadily, taking both the form of selective, tailor-made non-tariff barriers—especially for the planned heavy industries—and *ad hoc* measures in other industries as the government found it difficult to resist demands for rising protection. The inter-sectoral effects of the Dutch disease, that is the squeeze on non-oil tradables, made it particularly difficult to resist such demands.

Fourth, there was a complex set of regulations designed to promote the government's industrial policy objectives, including spatial dispersion, small industry development, *pribumi* business development, and others.

Oil prices began to decrease in 1982, and then decline sharply 1985–6—taking 1980 as a base year, the index of Indonesia's real oil export prices fell to 84 in 1983 and 37 in 1986. The corresponding terms of trade index figures were 93 and 63. Economic growth began to slow appreciably, from over 7 per cent during the oil boom period to 3 to 4 per cent. The current account deficit rose sharply, to over 7 per cent of GDP in 1983. This sharp exogenous shock was the precipitating factor for the reforms which followed.

The government responded promptly and prudently in its macroeconomic management. Both fiscal and monetary policy were tight, with the result that inflation remained below 10 per cent. Two large devaluations, in March 1983 and September 1986, provided a significant competitive spur, since combined with the low inflation, they translated into large real effective devaluations.⁵ The response in the arena of microeconomic policy was initially more hesitant, but by the mid-1980s was increasingly effective and wide-ranging. Major banking reforms in 1983 and 1988 removed entry barriers and most credit subsidies. In 1985 the corrupt customs service was in effect put out of business, as its major functions were taken over by the Swiss company Société General de Surveillance. In 1986, a particularly efficient and clean duty draw-back system was introduced, placing exporters on a free-trade footing. Foreign investment regulations were liberalised significantly, and most restrictions

were gradually removed. There was a series of major, liberalising policy reforms from the early 1980s, and a strong shift towards outward orientation (Table 1). The country became a great deal more accessible to imports. Import penetration among non-oil sectors almost doubled 1985-91 (column 6), while the incidence of non-tariff barrier fell sharply, from 68 per cent of manufacturing in 1986 (as measured by output value) to 33 per cent four years later (column 7).

Table 1 Indicators of trade and industry, 1980-92

	Output growth ^a (%) (1)	Manufactured exports total (\$ million) (2)	Export growth (% real) (3)	Export shares (%) ^b non-oil manufactures (4) (5)		Import penetration ^c (%) (6)	Coverage of NTBs ^d (%) (7)
1980	19.7	501		10.3	2.3	15.1	
1981	10.1	673	21.2	6.3	3.0	16.2	
1982	0.9	809	17.2	5.2	3.6	17.5	
1983	2.7	1,373	67.8	7.4	6.6	18.0	
1984	13.0	1,839	31.1	8.3	10.1	15.8	
1985	12.5	2,044	10.7	7.8	13.1	12.0	
1986	11.1	2,639	34.0	9.2	19.3	13.6	68
1987	11.4	3,895	43.8	13.1	25.0	17.3	58
1988	12.8	5,476	35.6	15.6	29.8	16.7	45
1989	11.6	7,018	22.1	16.4	32.0	18.5	38
1990	13.0	9,041	24.2	15.9	35.4	21.7	33
1991	10.9	11,816	29.9	18.3	40.8	23.6	32
1992	10.7	16,061	35.0	21.0	47.5	23.0	31

a annual growth of real non-oil manufacturing value added

b data refer to non-oil exports as a percentage of non-oil GDP (column 4), and manufactures as a percentage of total merchandise exports (column 5).

c non-oil imports as a percentage of non-oil GDP.

d percentage of non-oil manufacturing output covered by non-tariff barriers, based on unpublished World Bank estimates.

Source: Biro Pusat Statistik (Central Bureau of Statistics), *National Accounts, Exports, Statistical Yearbook*, Jakarta, various issues.

The effects of these reforms on output and trade growth were impressive. This story is not central to the paper, but by way of background information Table 1 presents trends in a number of key variables over the period 1980–92, that is, beginning some 3–6 years prior to the commencement of the reform phase, and extending for some 6–9 years over the course of this period.⁶ As noted, the economy recovered to growth rates of around 7 per cent by the end of the decade. Non-oil manufacturing output⁷ grew strongly for most of the period (column 1), apart from a short, sharp recession in 1982 and 1983, the years when oil prices were declining but exports had yet to become a major engine of growth. The growth of manufactured exports was particularly evident from the early 1980s. In absolute terms, they increased from US\$501 million in 1980 to US\$2.6 billion in 1986 and US\$16.1 billion in 1992 (column 2). Throughout most of this period, they grew at an annual average rate of about 30 per cent in real terms (column 3), although in the very recent period (1993–4) they appeared to have slowed down. Non-oil exports as a share of non-oil GDP expanded, by about 400 per cent from the low-point in 1982 to 1992 (column 4). Correspondingly, the share of manufactures in merchandise exports rose from 2.3 per cent in 1980 to 47.5 per cent in 1992 (column 5).

The impact of the reforms in pushing resources towards sectors in which Indonesia would be expected to possess a strong comparative advantage is documented in Table 2. Indonesian manufacturing exports consist overwhelmingly of the natural resource-intensive and labour-intensive categories⁸, totalling 85–90 per cent in most years (columns 1–3). The high value added group displays no clear trend; most of the items—for example, paper products, cement—are marginal candidates for the resource-based category in any case. For a period in the early stage export thrust, the natural-resource based group was the largest. This was principally because of the government's decision to ban the export of unprocessed logs at the beginning of the decade, and the resulting boom in plywood exports. As export growth intensified, a range of labour-intensive manufactures—garments, textiles, footwear, electronics, furniture, toys, sporting goods—assumed greater importance, and by 1992 this group constituted over 60 per cent of the total. There was a strong commensurate rise in export specialisation ratios, which by the end of the period exceeded 1.5 and 4.5 for labour-intensive and resource-based categories respectively (see Table 2, columns 4–6). The strong comparative advantage story is not so evident in the case of output shares (columns 7–9) for a number of reasons. A number of high value added industries—for example, automobiles—continue to be heavily protected. The export shares overstate the value added shares for many labour-intensive industries, since a number of these activities remain quite import-intensive. Finally, home goods, those which are partially traded, constitute a significant share of output, although not of exports.

Table 2 A factor intensity decomposition of manufacturing output and exports, 1980-92

	Export Share (%)			Export Specialization ^a			Output Shares (%)		
	labour	natural resource	high VA	labour	natural resource	high VA	labour	natural resource	high VA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1980	57	24	19	0.10	0.20	0.01	19	45	35
1981	35	38	27	0.09	0.49	0.02	20	46	34
1982	40	44	16	0.11	0.70	0.02	20	47	33
1983	34	56	10	0.15	1.49	0.02	20	47	33
1984	45	45	10	0.23	1.60	0.07	21	45	34
1985	38	49	13	0.27	2.24	0.09	21	45	34
1986	40	46	14	0.41	3.11	0.10	22	44	34
1987	33	52	14	0.45	4.46	0.11	23	44	34
1988	38	47	15	0.63	4.51	0.13	22	42	36
1989	43	40	17	0.78	4.41	0.13	24	40	36
1990	51	37	12	1.04	4.64	0.11	24	39	37
1991	58	30	13	1.29	4.47	0.14			
1992	62	26	13	1.53	4.72	0.16			

a sometimes referred to as 'indices of revealed comparative advantage', that is, the share of commodity *j* in country *i*'s total exports, divided by commodity *j*'s share in world exports.

Sources: As for Table 1, and International Economic Databank, The Australian National University.

Some conceptual issues

Theory provides very little guidance in addressing the issue of the nexus between liberalisation and industrial structure. It is important to emphasise—though difficult to detect—the interactive nature of these relationships. For example, changes in levels of concentration and foreign ownership are likely to be positively associated. Equally, to the extent that state enterprises exhibit poor commercial performance, a declining share of this sector and improved total factor productivity growth are likely to go hand-in-hand. The reform process is typically multi-faceted, rendering separate identification of the impact of one major component—for example, trade

liberalisation—especially difficult to discern. However, of necessity, each variable is considered separately. On the basis of data availability and analytical considerations, five variables are identified.

Concentration

It is most difficult to predict likely trends in concentration. Liberalisation implies freer entry, of both imports and new domestic firms, both of which would imply lower concentration levels. Moreover, to the extent that liberalisation in developing countries re-allocates productive resources to labour-intensive industries, which are also generally characterised by lower concentration levels, the industry-wide aggregate might be expected to fall. But concentration may not fall in the manner expected for at least two reasons. First, typically in the reform process most of the liberalisation occurs on the export side; import barriers fall, but not as fast. This is certainly a feature of the Indonesian experience post-1985. Second, and focusing in particular on the possibility of rising MNC participation, there is a persuasive literature which argues that such entry may initially be associated with lower concentration (in a purely statistical sense, since there are more firms), but subsequently concentration levels may rise. The latter possibility—difficult to verify empirically without extensive time series data—arises as MNCs exploit firm-specific competitive advantages over time and drive out local competitors.⁹

Ownership

To the extent that liberalisation is generally associated with privatisation, or at least slower expansion of the state enterprise sector, the share of the private sector can be expected to increase. But it is unclear whether foreign or domestic entities would be the primary beneficiaries. A more liberal foreign investment code would be expected to encourage greater foreign investment. Similarly, rising export orientation might lead to a larger foreign presence, with the result that this group possesses firm-specific advantages in international marketing. Conversely, the more liberal environment may also attract greater domestic investment activity. Much will depend on the strength of local capitalists, on whether there is denationalisation of the Latin American variety (Newfarmer 1985) or withering of so-called 'ersatz capitalists' (Yoshihara 1988) occurs. Prior to the mid-1980s, Indonesia possessed a very small independent capitalist class (Robinson 1986), although foreign investment was generally small as well (Hill 1988). The state presence was quite pervasive, as owner, financier, and regulator.

In Indonesia two specific factors accompanying the reforms need to be considered: the more liberal foreign investment regime after 1986; and the government's fiscal austerity in the wake of declining oil prices, resulting in declining state enterprise

investments. All things considered, the share of foreign ownership might be expected to increase, albeit in many cases taking the form of joint venture arrangements with domestic firms. The state share would almost certainly be expected to decline.

Size distribution

The evidence concerning the impact of the policy regime on size distribution is varied.¹⁰ It is generally recognised that there are pecuniary economies of scale associated with exporting, while a more liberal foreign investment regime may encourage the entry of larger firms from abroad. A less interventionist regime may also be associated with a scaling down of special government programs designed to assist small firms. All these factors suggest that there might be a trend towards agglomeration. Conversely, a more liberal policy regime may also entail the dismantling of regulatory barriers which impede the growth of efficient small firms, a problem which arises because regulations tend to be fixed cost in nature, and therefore translate into higher unit costs for smaller firms. Also underlying this issue is the inexorable trend towards units of larger scale over the course of early stage industrialisation, which proceeds more or less independently of the policy regime. On balance, a trend towards agglomeration would appear to be the most likely outcome.

Spatial distribution

Again, it is difficult to predict the impact of liberalisation on spatial distribution. There is little doubt that a complex licensing regime exerts a powerful centralising bias on firms' locational decisions. Owners need to be close to the dispensers of patronage, who are located overwhelmingly in the seat of government. But it is not clear how important this pull factor is in relation to other forces. Where capital cities are also the largest and richest urban centres, as is the case for Indonesia (and most less developing countries), superior infrastructure and higher purchasing power are likely to be equally significant. For example, Bangkok is one of the world's pre-eminent primate cities, yet the Thai economy has traditionally been one of the more open in the developing world. A more liberal, export-oriented drive may lessen the need to be close to bureaucrats, but correspondingly airports and harbours become more important determinants of location decisions, and these facilities are usually better supplied in the capital city.¹¹

Total factor productivity (TFP) growth

This is the variable for which *a priori* expectations are least ambiguous. The exposure to international competition, the removal of capital subsidies and, to the extent present, improved efficiency in the state enterprise sector, would all be expected to result in higher TFP growth. There may be lags in the adjustment process. Where the reforms

impinge mainly on the export-oriented firms, a partial liberalisation may not have such far-reaching effects (especially if economic agents perceive that the policy regime lacks credibility or durability). Indeed, initially margins for exporters may be squeezed in the transition from protected, high-rent domestic markets to the intensely competitive international arena. The TFP results will also depend to some extent on the stage of the business cycle. Finally, the postulation of a positive nexus between policy reforms and X-efficiency depends in part on the assumptions of certain managerial, firm-level responses to the changed environment, which may not always be valid. But the proposition that, long-term, a more competitive environment is likely to induce greater efficiency and higher TFP seems very powerful.

Empirical findings

To examine these issues, we have access to an unusually rich data base. Each year, Indonesia's Central Bureau of Statistics (BPS) conducts a survey of firms with twenty or more employees, excluding those firms in the state-run oil and gas processing industry. The survey includes the standard questions on output, employment, location and so on, and in addition some items less commonly enumerated, such as ownership. This section of the paper draws primarily on this data set, made available on disk at the establishment level.¹² Clearly, data as rich as this could be employed for many analytical purposes, and this exercise is merely a first attempt at addressing one particularly topical issue.

Concentration

The reforms impact on concentration through rising import competition, although one of the measures of domestic competition, the Herfindah Index, shows a significant decline post-1986. There has not been a clear trend in the other domestic concentration index, the weighted average concentration ratio (Table 3). Most series show a gradual decline since the mid-1970s—an indication of Indonesia's growing industrial sophistication and depth. The changes appear to be more pronounced if, to capture more accurately trends in the extent of market power, adjustment is made for international trade. There is a downward trend in concentration according to the trade-adjusted series, with the average four-firm ratio falling by 10 per cent 1987–90.

This latter finding, though at best suggestive, has important general implications. Trade liberalisation is almost certainly the most effective means of reducing industrial concentration in developing countries. High levels of concentration in small economies¹³ are the norm rather than the exception (Kirkpatrick, Lee and Nixon 1984: Chapter 3). Political power tends to be heavily concentrated, thereby increasing the scope for collusive, anti-competitive activities.¹⁴ There is much discussion, in Indonesia as

elsewhere, of the desirability of competition policy, however defined. While there is scope for government initiatives to discourage various forms of restrictive practices, the results are likely to be limited in view of bureaucratic resistance and deficiencies in the legal system. Trade reform is invariably cleaner and quicker.

Table 3 Concentration indicators, 1980-90

	Four-Firm Concentration Ratios		Herfindahl Index
	Domestic market	Trade adjusted	
1980	55	48	1288
1981	54	46	1369
1982	53	44	1286
1983	52	44	1262
1984	51	44	1204
1985	51	45	1217
1986	52	45	1226
1987	52	44	1157
1988	51	43	1137
1989	51	42	1123
1990	50	40	1109
			(x)

Notes: CR4 40 per cent data refer to the share of output of industries in which the four largest firms produce at least 40 per cent of output. The trade-adjusted CR4 data are calculated as $\frac{P-X}{P-X+M}$ where P, X, and M refer to production, exports and imports.

The average CR4 and Herfindahl figures are weighted averages using own-year weights.

In this and the following tables, (x), (xx) and (xxx) at the end of the rows/columns indicate that the slope of the trend line for the period 1986- differs from that of the entire period at 10 per cent, 5 per cent and 1 per cent levels of significance respectively.

Ownership

Trends in ownership patterns mirror quite accurately the government's policy priorities (Table 4). The regime inherited a sizeable industrial state enterprise sector, mainly the result of the nationalisations of foreign property in 1957-8 and 1963-4. Through to the mid-1970s, the government maintained but did not significantly extend this sector,

except for the special case of oil and gas refining. However, the 1970s oil boom provided the basis for a state-led industrial strategy, with large government investments in heavy industry. There was a considerable gestation period between planning and implementation, especially for non-oil enterprises. Consequently, the share of (non-oil) state enterprises was broadly constant in the 1970s, actually declined in the early 1980s, but then rose strongly as these investments came on stream. The trend is much more pronounced if the state-controlled oil and gas sector is included, especially as the latter's share of manufacturing output was increasing quickly (from 11.2 per cent to 28.4 per cent 1978–84). The foreign and (domestic) private sectors showed little clear trend over this period.

Table 4 Manufacturing value added by ownership, 1975–90 (percentage of total)

	Excluding oil and gas			Including oil and gas		
	Govt	Foreign	Private	Govt	Foreign	Private
1975	27	21	50	35	19	45
1976	25	28	46	34	25	41
1977	26	29	46	34	26	41
1978	25	26	50	33	23	44
1979	26	25	48	39	21	40
1980	18	28	54	35	22	43
1981	19	28	53	36	22	42
1982	20	26	54	39	20	41
1983	22	24	55	39	19	43
1984	26	19	56	47	14	40
1985	25	18	57	46	13	41
1986	25	18	57	42	14	44
1987	26	18	57	40	15	46
1988	26	17	57	40	14	46
1989	24	19	56	38	16	46
1990	22	19	59	37	15	48
				xxx		xx

Notes: 'Govt' refers to wholly government owned enterprises, together with firms in which the government has a major equity stake. 'Oil and gas' refers to oil and gas processing (ISIC 353)

The major impact of the reforms was through the shrinkage of the oil and gas sector and, as a corollary, the state share in aggregate output. In the face of state fiscal constraints, a reluctance to allow private interests to enter the industry, and low world prices, the absolute size of the oil and gas sector remained constant—given the rapid growth in the non-oil sector, the former's share of manufacturing output declined sharply, to 18.7 per cent in 1990. This trend was the principal determinant of the declining state share, which is highly significant post-1986 as compared to the earlier period. There was a decline in the state share of the non-oil series as well, but it was small by comparison. The share of foreign firms rose over this period, but the increase was marginal. Despite the major liberalisation in foreign investment regulations, (domestic) private firms have been the principal beneficiaries of the reforms, their share rising significantly. The fear that foreign-owned firms would establish a dominant position in the new liberal, export-oriented environment is therefore unfounded.^{15 16}

Size distribution

It needs to be emphasised that data relate only to firms with at least twenty employees, and therefore trends can not be examined for very small firms. However, trends for the firms a little larger than the 20 employees threshold should give a reasonably clear picture of what is happening to the smaller ones, at least those that might be regarded as being in the formal sector. Again, the picture is one of remarkably little change (Table 5, current year series). The share of the smaller firms, those with a workforce of less than 100 employees, has declined marginally since the late 1970s, but there was no clear trend during the liberalisation period.¹⁷ Similarly, for the largest group of firms, with a workforce over 500, the shares fluctuate around a broadly constant trend line. A similar conclusion holds for the medium-sized group. None of the changes is significant. It should be noted that these data exclude the oil and gas processing sector. Data on the size distribution of these firms are not available, but they almost certainly belong to the largest group. The inclusion of this declining sector would therefore result in a falling share for the large firms.

One important qualification to these data, somewhat peripheral to this paper, is that the results are sensitive to the manner in which size is defined. The first three columns (current year) follow the conventional approach and classify firms by their size in the year of enumeration. This is the simplest approach empirically, but analytically it is rather deficient. Ideally, one needs to know more about the industry dynamics: whether the changing size shares, small as they are, are explained mainly by differential growth rates among firms of different size, or whether they are the result of firms shifting among the size groups. The second set of columns offers insights on this issue. Firms in this case are classified throughout by their size in the base year (1975—the year the data set commences—or, if later, the year the firm commenced operations). That is, regardless of their size subsequently, for the purposes of measuring

shares of the three size groups, firms remain in their initially classified group. The second set of data, *prima facie*, reveal a good deal of dynamism on the part of smaller firms, as shown by the fact that the share of the 20-99 group is consistently higher in the initial year series. The liberalisations appear to have had no perceptible effect on these firms, in either series; in the latter series, the share has in effect levelled off. However, the medium group (100-499 workers) has expanded significantly since the mid 1980s, mainly at the expense of the larger firms. For all three series, the differences between the two periods are highly significant.

Table 5 The size distribution of manufacturing, 1977-91 (percentage of total value added)

	(A) Current Year			(B) Initial Year		
	Size Group (employment)			Size Group (employment)		
	20-99	100-499	500+	20-99	100-499	500+
1977	9.0	24.2	66.8	15.9	35.8	48.2
1978	8.8	25.2	66.1	16.7	34.3	49.1
1979	8.1	25.7	66.3	18.9	36.1	45.0
1980	7.3	25.0	67.7	20.3	33.6	46.1
1981	6.6	23.8	69.6	20.9	31.9	47.2
1982	6.9	25.1	68.1	23.1	32.4	44.5
1983	6.4	23.3	70.3	23.7	30.0	46.3
1984	6.4	22.7	70.8	25.4	28.8	45.8
1985	12.0	30.3	57.6	27.3	28.6	44.2
1986	8.4	27.3	64.3	27.5	28.3	44.2
1987	7.4	27.0	65.7	25.7	29.3	45.0
1988	9.1	28.6	62.3	27.3	30.8	42.0
1989	7.6	27.4	65.0	26.0	30.7	42.3
1990	7.0	27.3	65.7	25.4	32.9	41.7
1991				25.4	36.4	38.3
				(xxx)	(xxx)	(xxx)

Note: Shares of value added are based on the three size groups.

'Current Year' refers to shares for the relevant years.

'Initial Year' refers to the shares of firms based on their size distribution at the commencement of the data series (1975) or when the firm commenced operations.

Spatial distribution

The reforms appear to have had little impact on the spatial economy, at least in regard to the industrial sector. We follow Indonesia's administrative classification of provinces, and report shares for the major island groups in Table 6. Table 7 provides estimates of dispersion indices, based on trends in per capita manufacturing value added for each of the country's 27 provinces. The regional accounts data are employed in this section, since in principle they include all firms, except again for the oil and gas processing sector, data for which became available for all provinces only in 1986 (Table 6, Part B). The dispersion indices have also been calculated from the *Statistik Industri* series, that is for firms with twenty or more workers.

The dispersion indices decline in all three series, and in most sub-periods. As would be expected, they are higher when oil and gas is included, since these large installations are location-specific. For the two non-oil series, the indices are broadly comparable. All three sets of indices decline during the reform period, marginally so for the firms with twenty-plus workers. However, this trend was discernible prior to liberalisation, the trend lines do not differ significantly in either case, and so it would not be plausible to argue for a correlation between the two events. The strongest statement that can be made is that the reforms do not appear to have reversed the continuing trend towards less spatial concentration.

There was no clear trend in the shares of industrial output among major regions and provinces (Table 6). Java, of course, dominates the industrial sector, and within it the provinces of Jakarta/West Java and East Java are by far the most important. According to these data, Java's share rose through to the mid 1980s, and then was more or less constant, resulting in a highly significant difference between the two periods. Its share, if oil and gas are included, rose slightly. This is to be expected since most of this sub-sector is located off-Java. The Jakarta/West Java share also rose through to the mid 1980s then levelled out, confirming again the conclusion that liberalisation and spatial distribution are seemingly unrelated. These aggregate groupings, of course, conceal important trends at the sub-regional level. For example, there has almost certainly been a rising concentration of industrial activity on the fringes of major urban concentrations, such as Jakarta and Surabaya. But such a trend does not invalidate our overall conclusion.

Table 6a Regional distribution of manufacturing, 1977-91 (percentage of total value-added)

Region/Province	1977	1978	1979	1980	1981	1982	1983	1984	1985
(A) Excluding Oil & Gas Processing									
Java	68.0	70.4	68.2	68.4	69.9	71.1	73.5	73.9	74.7
Jakarta/West Java	35.0	37.1	34.4	33.9	35.1	35.3	38.1	38.6	40.5
East Java	21.7	21.8	22.8	24.4	24.6	24.8	23.8	23.1	21.7
Sumatra	23.6	21.5	23.3	22.7	21.0	18.8	18.3	18.2	17.4
Kalimantan	5.0	4.7	5.1	5.8	5.4	6.4	5.1	5.1	5.0
Eastern Indonesia	3.4	3.5	3.4	3.1	3.7	3.7	3.1	2.8	2.9

Source: BPS, *Regional Accounts of Indonesia*, various issues.

Table 6b The Regional Distribution of Manufacturing, 1977-91 (percentage of total value-added)

Region/Province	1986	1987	1988	1989	1990	1991
(A) Excluding Oil & Gas Processing						
Java	75.7	74.4	73.0	73.1	74.6	74.8
Jakarta/West Java	44.1	43.4	43.4	42.4	42.3	41.3
East Java	20.0	19.1	18.7	19.5	20.7	20.9
Sumatra	15.5	15.8	16.8	17.2	15.5	15.2
Kalimantan	5.8	6.5	6.8	6.4	6.5	6.7
Eastern Indonesia	3.1	3.4	3.4	3.3	3.4	3.3
(B) Including Oil & Gas Processing ^a						
Java	61.1	62.4	61.6	64.0	65.5	65.7
Jakarta/West Java	32.7	33.5	33.0	32.8	33.8	33.0
East Java	14.9	14.4	14.3	15.5	16.5	16.7
Sumatra	24.4	21.7	22.0	21.8	19.9	19.3
Kalimantan	12.3	13.2	13.8	11.6	11.9	12.4
Eastern Indonesia	2.3	2.6	2.6	2.7	2.7	2.6

^a Data available only commencing 1986.

Source: BPS, *Regional Accounts of Indonesia*, various issues.

Table 7 Dispersion indices^a for manufacturing, 1977-91

Year	All Firms		Firms n-20
	Excluding oil and gas	Including oil and gas	Excluding oil and gas ^b
1977	1.01		1.10
1978	1.01		0.88
1979	0.94		0.92
1980	0.99		1.08
1981	1.01		1.13
1982	0.99		1.14
1983	0.79		1.02
1984	0.78		0.93
1985	0.72		0.74
1986	0.93	1.27	0.81
1987	0.91	1.25	0.74
1988	0.87	1.26	0.73
1989	0.83	1.06	0.75
1990	0.80	1.05	0.75
1991	0.74	1.04	

a Defined as the weighted coefficient of variation, CV_w

$$CV_w = \frac{1}{\bar{o}} \sqrt{\sum_{i=1}^{27} (o_i - \bar{o}) \frac{P_i}{P}}$$

where \bar{o} national manufacturing value added per capita,

O_i manufacturing value added per capita in province i ,

P national population,

P_i population of the i th province (Indonesia has 27 provinces)

b That is, firms with twenty or more employees, excluding oil and gas processing.

Source: BPS, *Regional Accounts of Indonesia*, various issues, and *Industrial Statistics*, data tapes.

Total factor productivity (TFP growth)

The growth of TFP displays considerable year-to-year fluctuation, and is therefore best analysed for selected sub-periods. We select those which, as explained above,

correspond to reasonably distinct policy periods, 1976–81, 1981–6, and 1986–91. It is important to emphasise that the data quality on which the calculations are based improve with time. For the first period, 1976–81, the data are estimates, especially so in the case of the capital series.

Growth over the period 1976–81 was sluggish, conforming to *a priori* expectations. Subsidised credit from the dominant state banks was readily available, there was little spur to efficiency as levels of protection rose, and the state enterprise sector began to expand rapidly, including a number of dubious heavy industry projects. During the recession, 1981–5, growth accelerated in response to the tougher commercial environment which forced firms to compete more vigorously. There may also have been 'learning effects' operating over this period, in contrast to the very early stage 1970s industrialisation. Growth accelerated still further after 1986, as more companies were exposed to international competition.

Table 8 Growth of total factor productivity, 1976–91 (annual average, per cent)

	1976-81	1982-5	1986-91
(31) Food, beverages, tobacco	-0.2	0.4	3.2
(32) Textile, clothing, footwear	2.1	3.0	2.3
(33) Wood products	4.2	5.2	2.0
(34) Paper products	-2.5	4.0	6.2
(35) Chemicals	-2.0	-0.4	3.4
(36) Non-metallic minerals	10.3	-2.0	1.0
(37) Basic metals	19.0	7.4	-3.0
(38) Metal goods	2.7	-1.0	0.4
(39) Miscellaneous	-1.1	2.4	1.9
All industries (excl. oil & gas)	0.7	1.1	2.1

Source: Aswicahyono, H.H. (forthcoming), Total factor productivity growth in Indonesian manufacturing, PhD dissertation, The Australian National University, Canberra.

Two additional observations on these data are pertinent. First, the increases in the latter period were also more evenly distributed across industries. In the first period, much of the increase in TFP was concentrated in two industries, non-metallic minerals and basic metals. In both cases a virtual technological revolution occurred, as new

production technologies were introduced, in a number of cases through the state enterprise sector. During the third period, TFP increases in all industries except the special case of basic metals. It is of significance to note that the only two industries to record positive TFP growth in all three periods are those in which Indonesia has its strongest comparative advantage, namely textile, clothing and footwear, and wood products. The second observation concerns the distinction between the growth of TFP and labour productivity. The latter (data for which are not presented in the paper) also increased at an accelerating rate in all three periods, as would be expected. However, the numbers are to some extent illusory, since they give no indication of how efficiently all resources were employed over these periods. In contrast to the TFP estimates, for example, there are very few instances of negative productivity growth. For this reason, we prefer to focus on TFP as a more accurate indicator of the impact of reforms.

It is beyond the scope of this paper to examine the determinants of variations in TFP growth over time among major industry groups. One might hypothesize a positive and significant correlation between TFP growth and a number of variables examined in this paper, and this is broadly the case. For example, the 'unreformed' industries, particularly basic metals and metal products, perform the most poorly in the third, reform period (negative growth, and the lowest positive growth respectively). Conversely, industries which have been the subject of most reform or which lie within Indonesia's comparative advantage above average rates. Results of regression analysis, taking TFP growth and levels as the dependent variables, are not presented here, but the following observations are relevant to our discussion: the export share variable performs strongly in all cases, and is significant at the 5 per cent level or better in all cases; various measures of competition (although not import penetration) also appear to be significant determinants in all instances; foreign ownership is another significant variable. Conversely, some credence to the notion that learning effects are an important determinant of TFP growth and levels is derived from the fact that the age of the enterprise also performs significantly in most cases. Clearly, however, the relationship between TFP growth and reforms is a complex and subtle one, which for complete analysis deserves a separate paper.

Summary and implications

The purpose of this paper has been to focus on a hitherto unexplored topic of considerable policy and theoretical interest, with the aid of an unusually rich data base and from a country with reasonably well defined sub-periods of policy orientation. Our results suggest that liberalisation does not have the major effects on industrial structure that its opponents—or in some cases proponents—maintain. First, in the case of concentration, there is not a clear trend in the domestic market. Where there has

been a decline it appears to represent little more than a continuation of previous trends. However, once international trade is taken into account, there does appear to have been a significant decline in concentration. Second, the principal change in ownership shares is the decline in the state enterprise sector. This follows directly from the government's policy of freezing the absolute size of the state sector, in the context of rapid private sector expansion. Certainly there was no evidence of rising *relative* foreign participation, which is frequently asserted to be a corollary of liberalisation. The strongest expansion appeared to be in the domestic private sector. Third, the changes in size distribution have been rather slight. An alternative series, which attempts to capture the effects of business dynamics, shows a steady growth in medium-sized firms, largely at the expense of larger units. Fourth, there appears to be little connection between the reforms and the spatial distribution of manufacturing activity. A number of trends were evident prior to the mid-1980s, and the reform process does not appear to have had a major impact on them. Although the paper is not primarily concerned with an examination of the impact of the reforms on efficiency, we have included some recent estimates of TFP growth for selected industries over the three principal policy sub-periods since the mid-1970s. The results indicate that TFP was increasing over the three sub-periods. The rate of growth was actually fastest during the reform period. But this acceleration could just as much be a continuation of the previous trend as it could indicate a correlation between reform and higher TFP growth.

It needs to be emphasised again that the conclusions are necessarily tentative. A longer time period is needed to examine authoritatively the effects of the reforms. In some instances, such as the decline in the state enterprise sector, the direction of causality is clear enough. In other cases we are more hesitant to propose cause and effect. More analysis could be undertaken of changes at the sector level. Yet, notwithstanding these limitations, the topic does appear to be one of sufficient importance to deserve a public airing, especially as more and more countries embark on liberalisation experiments.

Notes

- ¹ Much of this literature has been sponsored by international organisations such as the World Bank and the Organisation for Economic Cooperation and Development (OECD). Many of the studies have been cross-country and comparative. Among the major ones, all of which synthesise a much larger number of country case studies, are Little Scitovsky and Scott (1970), from the OECD study, Bhagwati (1978) and Krueger (1978) under an National Bureau of Economic Research (NBER) program, and Papageorgiou et al. (eds) (1991) containing the results of a large 5-volume study sponsored by the World Bank. Greenaway (1993) provides a detailed critique of the latter study.

- ² Illustrative of this proposition is the fact that one of the standard texts in the field, Kirkpatrick, Lee and Nixson (1984), has no discussion on this issue. Nevertheless, liberalisation was much less in vogue in the early 1980s when this book was written.
- ³ For more details, see Booth (ed; 1992), Hill (1995), and the 'Survey of Recent Developments' published three times a year in the *Bulletin of Indonesian Economic Studies*.
- ⁴ Exchange rates against the US dollar over this period were Rp 415 to November 1978, approximately Rp 630 to April 1983 and Rp 950-1150 to September 1986 (IMF, *International Financial Statistics*, various issues).
- ⁵ According to the widely used Morgan Guaranty series, Indonesia's real effective rate (using a 1980-2 base) from 1985 was lower—and hence more competitive—than that of any other major developing country.
- ⁶ In passing it is important to emphasise that, as with most reforms, there is no clear demarcation of the reform period. We take 1983 as the beginning point, as it was in this year that the government introduced its program of fiscal stringency and effective exchange rate management. However, the microeconomic reforms, especially as they affected trade policy, really began only in 1985-6.
- ⁷ We follow conventional Indonesian practice and separate non-oil from total manufacturing. Oil and gas processing, accounting for 20-30 per cent of manufacturing value added but declining, is analytically distinct in nature. It is mainly state-owned, and entirely state-directed. Its fortunes are closely linked to the international oil markets, and to government investment decisions.
- ⁸ Details of the classifications, ISIC-based for production and SITC-based for exports, are available on request. They draw on the seminal contribution of Lary (1968), who demonstrated that rankings of value added per worker are a robust, internationally-transferable indicator of factor proportions. They also employ the important additional distinction introduced by Krause (1982), who identified those products whose production location is significantly determined by the availability of natural resources. Our classification follows closely that used by Ariff and Hill (1985).
- ⁹ Lall (1979) was one of the first to examine this issue systematically, in a Malaysian case study. Dunning (1993:429-435) summarises this literature comprehensively.
- ¹⁰ For discussion of these issues, see the survey of small industry by Berry and Mazumdar (1991), and the papers presented to a World Bank conference 'Can Intervention Work? The Role of Government in SME Success', Washington DC, February 1994.

- ¹¹ One often neglected aspect of export orientation is the rising intensity of contact with foreign buyers, who in tight international travel schedules wish to minimise in-country travel. Many Indonesian textile, garment and footwear exporters, for example, cite this as a reason for locating in the greater Jakarta area, even though its labour and land costs are the highest in the nation (see Hill 1992). It also needs to be remembered that exports of textiles and garments, which are major early-stage export industries, have entailed intensive administration through the allocation of quotas to export markets under the Multi-Fibre Arrangement.
- ¹² The published version of this survey (*Statistik Industri*, Industrial Statistics) includes only a small fraction of the data collected. For example, data on ownership, size and location are not included. In addition to the data tapes, three other data sources have been used in our study. These are, firstly, the country's regional output accounts (also produced by BPS); secondly, data on the oil and gas processing sectors, which are incorporated where possible; and thirdly, the research below on trends in total factor productivity, which is also based mainly on the same set of industrial statistics. It should be noted that BPS has recently released a revised set of manufacturing statistics which has corrected for the Surveys' past under-enumeration. We have used the revised series, which however does not include all the variables analysed in this paper, wherever possible.
- ¹³ Even Indonesia, the fourth most populous country in the world, is small—its manufacturing output is about 1 per cent of the global total.
- ¹⁴ An indication of the extent of aggregate business concentration in Indonesia is that in 1993, the country's largest conglomerate (the Salim group) had sales equivalent to 6 per cent of GDP. Sato (1993) provides an illuminating account of the group, which is also Southeast Asia's largest business conglomerate.
- ¹⁵ An additional illustration of the vigorous participation of domestic firms in the newly liberalised environment is revealed in investment approvals data. For the period 1985–90, these rose from \$850 million to \$7.7 billion for foreign investments and from \$3.4 billion to \$28.5 billion for domestic investments (all data in constant 1985 prices). There was therefore very little change in the relative importance of the two groups. It needs to be emphasised, of course, that the definition of these ownership groups is empirically somewhat slippery. Given extensive joint ventures, widespread licensing arrangements and a fluid international capital market (Indonesia's capital account is completely open), the distinction between the two groups is sometimes imprecise.
- ¹⁶ It is also worth observing that a similar, even more clearly identifiable trend has emerged in the formal financial sector following the 1980s banking reforms. For example, the share of deposits of the state banks fell from 81 per cent to 49 per cent over the period 1980–92. Despite liberalised entry, the foreign banks' share also

declined, from 10 per cent to 7 per cent. By contrast, the share of the domestic private banks expanded dramatically over this period, from 9 per cent to 45 per cent.

- ¹⁷ The sharp jump in the share of the smaller firms in 1985 in the current year series is almost certainly a statistical artefact, and data for this year should not be regarded as part of the trend series.

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