The World Economy (2007)
doi: 10.1111/j.1467-9701.2007.01013.x

The Regulation of Professional Migration: Insights from the Health and IT Sectors in ASEAN

Chris Manning and Alexandra Sidorenko

The Australian National University

1. INTRODUCTION

SEVERAL observers have drawn attention to the potentially large welfare gains to be reaped from greater international labour mobility, as the multilateral trade liberalisation agenda has become bogged down.[1] Economic differentiation and participation of several countries in niche markets in the world economy is increasingly manifested in skill shortages and surpluses in the same occupational categories, often among neighbouring countries. This has increased the interest in facilitation of international mobility on a multilateral basis as well as within regional groupings.

Specifically related to trade in services, greater trade intensity has been linked to the increased mobility of professionals. This is a vital topic in negotiations on Mode 4, which deals with the international migration of labour on a temporary (contract) basis under the General Agreement on Trade in Services (GATS) and its regional counterparts. Mode 4 has been increasingly viewed as complementary to other modes of service sector supply – cross-border supply to consumers abroad (e.g. call centres), consumption abroad (e.g. health tourism) and commercial presence abroad (Mattoo and Carzaniga, 2003). Gains from liberalisation in all of these other 'modes' of supply depend partly on progress with Mode 4.

The authors gratefully acknowledge the help of two anonymous referees in improving the first draft of this paper. Special thanks are to co-researchers Pradip Bhatnagar, Yongyuth Chalamwong, Philippa Dee, George Manzano and John Avila for their contribution to the ASEAN REPSF study, on which this paper is based. Sidorenko's contribution to this paper was supported in part by an NHMRC Grant.

[1] See especially Winters et al. (2003) and the World Bank (2003).

This paper examines barriers to migration in one regional grouping, the group of ten ASEAN countries in Southeast Asia. Regulation is evaluated in relation to different stages of development among three groups of countries within ASEAN. We estimate the extent of regulation of temporary movement among professionals, and factors which underpin it, set in the context of efforts to deepen economic integration within this regional grouping. With special reference to the health care and IT sectors, we seek to compare and contrast the regulatory regimes on international migration of professionals both in relation to migration from outside as well as within the region of ASEAN.

While we are interested in the regulatory framework and its welfare implications for professionals (including highly skilled manpower) in general, the paper focuses on two sectors in particular: health care and the information (and communications) technology (IT) sector. The two sectors were chosen partly because they represent close to opposite extremes in the extent of regulation. The supply of health care, much of it supported by the public sector, is typically highly regulated domestically, often with quite country-specific laws and guidelines, and overseen by powerful professional organisations. The regulations provide a powerful barrier to entry for foreign professionals. In contrast, employment in IT tends to be almost entirely private (except for large public sector corporations and e-government), and is more atomistic. Regulation of standards is mainly enforced by private sector organisations, and individual access to jobs (both domestically and from abroad) is easier over a wide range of skills and product types.

These sectors are of specific interest in the ASEAN context, bearing in mind that 'e-ASEAN' and health care have been identified as two priority sectors for the economic integration. The guidelines for action include cooperation in training and skill transfer between more and less advanced ASEAN countries.[2]

The paper is based on data collected from publicly available official data sources, international, regional and country studies. Collection of data and fieldwork interviews with government, the private sector and professional bodies were conducted in six ASEAN countries by a team of researchers led by the two authors in the first two weeks of April 2005.[3]

---

[2] See the *ASEAN Framework Agreement for the Integration of Priority Sectors*, Vientiane, November 2004 (especially Articles XIV and XIX in the 'Roadmap' for greater integration of ICT and health care sectors respectively).

[3] The data were initially collected for a report *The Movement of Workers in ASEAN: The Health Care and IT Sector*s completed for the ASEAN Secretariat, as part of the Australian Government-funded Research on Economic Policy Support Facility (REPSF), located in Jakarta. The authors were co-team leaders in this research effort and prepared the final report. We are grateful for the support of the staff of REPSF and the ASEAN Secretariat that facilitated the study, and the many officials, professionals and academics who assisted the research. Background reports were prepared by the two authors and the five above-mentioned co-researchers on the six major ASEAN economies and one report for the Lao PDR, Cambodia, Myanmar and Brunei. Much of the material for this paper was taken from these country reports. The normal disclaimers apply.

Section 2 of the paper examines the literature on the rationale for and impact of regulation, with special reference to the services sector. Section 3 presents some information on economic, demographic and labour market characteristics pertinent to the migration of professionals and its regulation in the ASEAN countries. This sets the stage for the two main analytical sections which deal with the extent of regulation of labour mobility, both in general and among health care and IT professionals in particular. In the final concluding section, we draw some policy implications from the study.

2. WHY REGULATE MIGRATION AND HOW BEST TO DO IT?

Increased demand for greater and better regulation of migration flows has arisen partly as a consequence of increased demands for the temporary (contract) movement of skilled and professional workers in the past several decades, globally and especially in rapidly growing East Asia (OECD, 2002 and 2003; and Chalamwong, 2004). Both the increased demand for high quality services at home (for example, improved health care and education) and more intensive trade ('globalisation') in goods and internationally traded services have contributed to such movement (Iguchi, 2002). The imbalance between demand and supply of services has also been driven partly by the ageing of populations in the more developed countries in Asia, following trends in Europe.

a. General Principles

Regulation of international migration has multiple goals of seeking to both monitor and control the number of migrants and their quality, as well as facilitating migration. Several characteristics are relevant to this study. Regulations on migration are primarily enacted on a unilateral basis, although international cooperation and facilitation also occur on a bilateral, regional and multilateral basis. Directives include visa and work permit regimes (including the duration and cost of permits), and other quantitative restrictions on the deployment of foreign workers by firm, industry and occupation.[4] They can be both generic and sector-specific (Sidorenko and Findlay, 2003). Generic forms relate to a wide variety of national administrative practices for controlling the inflow of non-nationals, and to a lesser extent the outflow of nationals. Regulation is especially important in the case of service delivery by individuals and enterprises. Thus domestic directives seek to protect domestic producers and consumers from

[4] These include labour market tests and related restrictions, minimum standards of national language proficiency in host countries, and the requirement that foreign professionals transfer skills through training local employees.

market failure, resulting from market power, asymmetric information, negative externalities and other distortions. Sector-specific regulations involve assessment and maintenance of standards among professionals in receiving countries, and efforts to minimise the brain drain and losses of public sector investment in sending countries (as we shall see in the case of migration of health care professionals).

The paper focuses on two key research questions. First, to what extent does regulation vary across sectors and occupations. Host country concerns about potential labour market effects vary, depending on the balance of supply and demand, and the quality, of professionals in the domestic market. Professional associations can also play important roles in the regulation of both domestic and foreign supply of workers, although it is anticipated that this role will vary considerably across professions, as well as according to the nature of services provided. For example, it is presumed that interventions will be less extensive for business professions which are associated with generic managerial skills. They can be expected to be more pervasive in the case of occupations which play important social roles, such as health care professionals, than for most other occupations. They are also likely to vary within broad occupational categories. Within the health care sector, for example, we anticipate regulations to be more pronounced for doctors than for nurses, given the stronger role of professional organisations and social responsibilities attached to the former occupation. Greater regulation of the supply of foreign workers is particularly marked in areas related to national security and where the perceived social and political effects are high.

Second, while legal and regulatory systems differ between common and civil law countries, it can be argued that the extent of regulation is also likely to differ according to the stage of development. Developed countries with more functional legal systems and stronger bureaucracies could be expected to adopt less direct regulatory approaches – relying more on quasi-regulation (codes of conduct, industry group self-regulation) and efficient administration than on primary legislation.[5] In contrast, less developed countries might be anticipated to rely more on national laws and regulations. Since good regulation involves lower compliance costs and efficient administration, we might also expect guidelines to be more effective in developed countries. In the case of migration, regulatory inefficiencies are reflected in the proportion of illegal (unregistered) immigrants or in the low quality and poor supervision of service provision.

b. Health Care and IT

As noted, the health care and IT sectors present extreme cases of regulation of professional standards and migration flows: health care professionals are highly

[5] See Coughlan (2003, pp. 18–19) for a typology of types of regulation, ranging from more to less intrusive.

regulated by governments; IT professionals are largely unregulated. One key aspect of health services makes it distinct from other service sectors: there is a direct link between the provision of health services and human health and well-being. Despite high levels of regulation, there is considerable migration of health care professionals across national borders, both on a permanent and increasingly on a temporary, contract basis. 'Push' factors induce health care professionals to seek employment abroad: an excess supply of professionals relative to demand, inadequate remuneration, and a desire to work in a more conducive working environment, continue education and training, or to work in a better managed health system (Hardill and MacDonald, 2000; and Stilwell et al., 2004). 'Pull' factors in the host countries relate to under-production of physicians/nurses relative to demand, or the low quality of services provided by nationals at the upper end of the market.[6]

In the less regulated IT sector, the knowledge revolution has led to a sharp rise in work opportunities abroad for computer professionals. There has consequently been a significant movement of IT professionals across the world. Many of these movements are unregulated in terms of formal educational requirements and certification procedures in recipient countries. A large pool of engineering graduates combined with adequate English-speaking skills, as well as proven competency in software services, has led to a sizeable movement of Indian IT professionals to the West (Chanda, 2003a).[7] At the same time, brain gain through knowledge networks is facilitated by the migration of highly skilled professionals (Meyer, 2001). Diaspora networks with the sending country are also common (Ouaked, 2002). Outsourcing across national borders (e.g. call centres) through Mode 1 in IT services has also become a major source of employment in countries like India and the Philippines (*The Economist*, 2004).

3. DOMESTIC DEMAND AND SUPPLY AND MIGRATION OF PROFESSIONALS IN ASEAN

Regulation of migration of professionals in the health and IT sectors needs to be viewed in the context of patterns of demand and supply of skilled manpower and international migration. To simplify the discussion, the ten ASEAN countries are divided into three groups:

[6] Although we do not deal with regulation and costs of out-migration in this paper, it has been argued that current 'brain circulation' has been asymmetrical, with developing countries losing valuable human resources and investment in human capital, both in the case of doctors and nurses (Marchal and Kegels, 2003).

[7] Movement of generic information communication practitioners and students from India is a major subject of study in the literature on IT, including changing patterns of international deployment (Khadria, 2001).

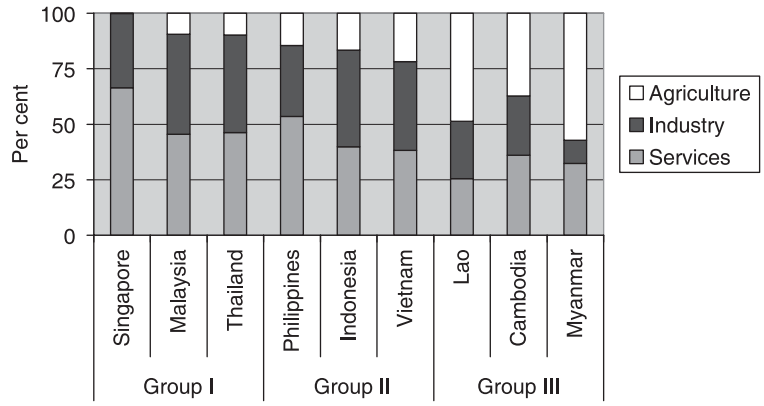
- Group I: High income Singapore and Brunei, and more developed Malaysia and Thailand which all have relatively open regimes with regard to the import of professional manpower, and are the major suppliers of health care through Mode 2 (consumption abroad) and to a lesser extent Mode 3 (investment abroad). All of these countries have major strategies to become major exporters of IT services.
- Group II: The middle to low income countries, the Philippines, Indonesia and Vietnam which have more protective regimes with regard to professional manpower. They have largely domestic-oriented IT industries which rely only to a limited extent, if at all, on the temporary in-migration of professionals. The Philippines is the major labour exporting country in the region, involving both skilled and unskilled manpower. Both Indonesia and Vietnam are also exporters of labour on temporary contracts, but these flows consist largely of unskilled workers. All countries are heavily involved in, or seeking to expand, the export of nurses.
- Group III: The low income countries of Cambodia, Lao PDR and Myanmar which import a relatively small number of professional workers. Cambodia is more open with regard to the import of professionals, mainly associated with FDI. All are exporters of unskilled manpower to neighbouring Thailand, and Myanmar exports a small number of professionals in the region, partly related to better English-language skills.

The demand for service sector professionals depends to a considerable extent on the level, growth and structure of GDP. Services account for a significant share of the economy in the more developed countries of the region (Figure 1). Thus although the Singapore economy grew slowly relative to most other economies in ASEAN over 1999–2003, services accounted for about two-thirds of the economy and the sector's absolute value was roughly equivalent to that in the much more populous countries of Indonesia, the Philippines and Vietnam (Table 1). On the other hand, services made up a much smaller share of GDP (around one-third) and also exports in the more rapidly growing, formerly closed, socialist economies (Vietnam, Cambodia and Lao PDR) in Groups II and III.[8] Other countries in ASEAN were intermediate between these extremes, although services were more prominent in terms of both output and employment in the Philippines (in both cases close to 50 per cent of the total).

Demographic structure and change underpin the supply of manpower on the one hand and the demand for health care services in particular on the other (see Figure 2). Singapore and Thailand in Group I, and Vietnam in the second group

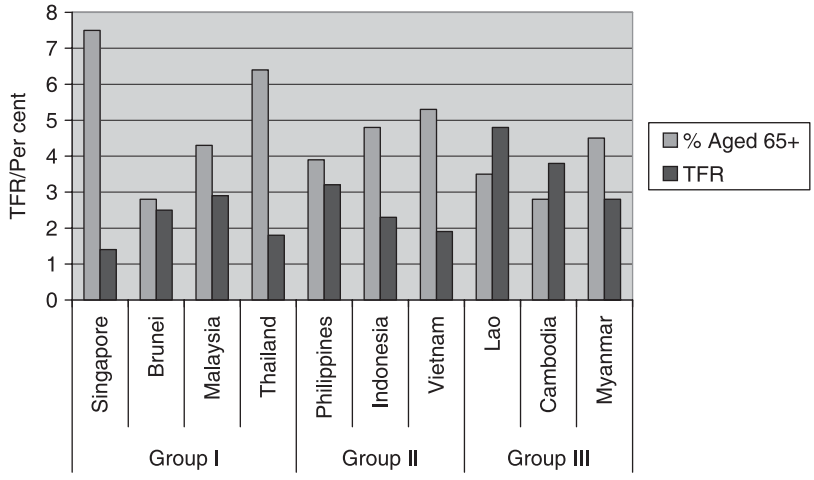
[8] Growth rates are based on domestic currency data collected by the ASEAN Secretariat (www.ASEANSec.com). The data for Myanmar are indicative only.

FIGURE 1
Share of GDP by Major Sector, ASEAN 2003



Source: *Asian Development Bank, Leading Indicators of Development* (2004).

FIGURE 2
Demographic Dynamics: Per Cent Aged 65+ and the Total Fertility Rate, ASEAN Countries, 2003



Source: *Asian Development Bank, Leading Indicators of Development* (2004); World Bank, *World Development Indicators 2004* (for Brunei).

of countries, are characterised by total fertility rate (TFR) of below the replacement level, and a higher share of people aged 65 and above than the rest of the region. In demographic terms, several of the higher income countries are following the pattern of the developed ageing societies and are already (as e.g. Singapore) net

TABLE 1
Indicators of Economic Size, Growth and Service Sector Importance, ASEAN 1999, 2000 and 2003

	GDP and Population				*Services*		
	GDP Per Capita	*Population*	*Value of GDP*	*Growth of GDP*	*Share of Services in GDP*	*Value of Services*	*Service Sector Exports*
	2003 US$	*2003 Million*	*2003 US$ Billion*	*1999–03 Per Cent p.a.*	*2003 Percentage*	*2003 US$ Billion*	*2000 US$ Billion*
GROUP I							
Singapore	20,987	4.3	91.4	2.7	66.4	60.7	29.1
Brunei	12,971	0.4	4.7	2.9	n.a.	n.a.	n.a.
Malaysia	4,198	24.8	103.2	4.6	45.5	47.0	13.9
Thailand	2,291	62.0	143.3	4.6	46.3	66.3	13.9
GROUP II							
Philippines	973	81.5	80.4	4.1	53.5	43.0	4.0
Indonesia	973	214.5	208.5	4.0	39.9	83.2	5.2
Vietnam	481	81.3	39.9	6.8	38.2	15.2	2.7
GROUP III							
Lao	362	5.7	2.0	5.0	25.5	0.5	0.4
Cambodia	310	13.4	4.2	5.6	36.0	1.5	0.2
Myanmar[1]	179?	49.4	9.6	n.a.	32.4	3.1	0.5

Notes:
[1] Data are illustrative only.

Source: *ASEAN Statistical Yearbook*, (Jakarta 2004); *Asian Development Bank, Key Indicators of Development* (2004), UNCTAD (June 2004).

importers of labour, or are likely to become (as e.g. Thailand) net importers in the near future.[9]

a. The Domestic Demand and Supply of Health Care and IT Services

While most countries in the region have placed a high priority on the development of higher education to meet the growing demand for professional workers, the supply of both medical and IT professionals has not always been able to keep up with demand. On the demand side, the rise in per capita income is one long-term influence on demand, especially for many discretionary health services. Besides responding to the influence of rising per capita income, the demand for IT services has also expanded dramatically among households and business in response to changing technology, especially in the past decade.

(i) Health

Several higher income countries have responded to projected rising international demand for health services through expansion in the supply of medical professionals.[10] Consistent with much higher levels of per capita incomes, Singapore and Brunei have the largest number of medical personnel per capita (around 400 and 250 doctors and nurses per 100,000 population, in each country respectively).[11] In contrast, Malaysia and Thailand only had around 150 nurses per 100,000 population, although there was less difference in the number of doctors per capita. All other countries had a much lower medical personnel to population ratio, although figures for nurses in the Philippines were high because of the large number of people working overseas. However, it is worth noting that a shortage of nurses had emerged as a major problem (as in many other developed countries), as demand has tended to outstrip the supply in the high income countries in ASEAN, most notably Singapore.[12]

(ii) Information technology

The IT sector has also expanded rapidly, as in other relatively rapidly growing countries in the Asia Pacific. Like health care, demand of IT services is closely

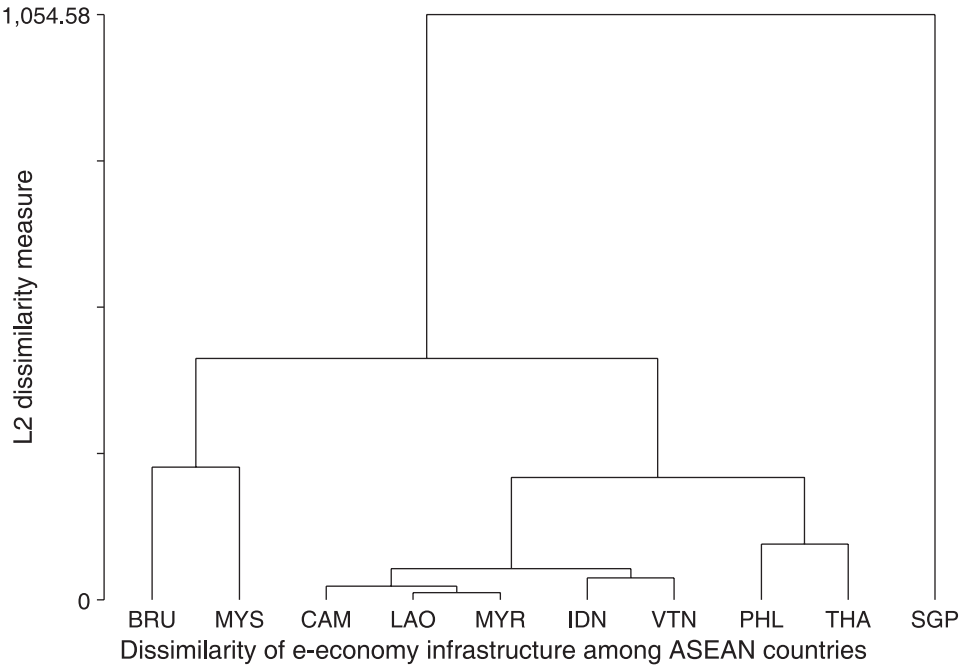
[9] The most dramatic changes have been in Singapore where the median age of the population (both residents and non-residents) had risen from 31.0 years in 1993 to 35.3 years in 2003.

[10] Malaysia and Thailand have promoted their countries as 'medical hubs' for overseas patients, especially from Japan and the Middle East.

[11] WHO Global Atlas 2004 data. In the case of doctors the figures provide only a rough picture given the greater importance that specialists tend to play in more developed countries. The 'Full-time Equivalent' workforce measure is not available.

[12] For example, the output of graduates from Singapore's polytechnics with qualifications in health sciences (diplomas in nursing, physiotherapy, occupational therapy, radiography, etc.) grew steadily around ten per cent p.a. over 1998–2003, less than the implied growth in demand of 20 per cent over the same period. A similar problem is becoming evident in Malaysia.

FIGURE 3
Cluster Analysis of ASEAN Economies Based on Major Telecommunications Indicators



Sources: *World Development Indicators*, data for 2002.

related to levels of per capita income and information and communication technology (ICT) penetration. To compare ten ASEAN countries, we used several ICT indicators such as per capita penetration of telephone main lines, mobile phones, personal computers and the internet, and added a human capital component measured in terms of the tertiary gross enrolment rate. The simple cluster analysis calculates the sum of squared differences between countries' indicators, and groups them by proximity. Results are presented in Figure 3.

In Group I, Singapore again stands out in terms of major telecommunications indicators and IT infrastructure, followed at some distance by Brunei, Malaysia, Thailand and the Philippines. The supply of IT services is much more limited among the group of lower income countries. However, unlike high quality health care, some IT services (such as cellular phones) can be accessed by a significant share of the population at relatively low levels of income. The use of mobile phones and the internet in Indonesia and Vietnam, among Group II countries, has been estimated to have increased rapidly, and there has also been a significant increase in the demand for IT services and professionals among Group III countries.

b. International Migration

What patterns of international migration were accompanied by the excess demand for both health and IT professionals, especially in the more developed countries? Quantitative data are limited, especially for comparisons across countries. The following estimates are based on information compiled by Bhatnagar and Manning (2005) and field studies conducted in ASEAN in April–May 2005 on migration among professionals in health and IT sectors.[13]

In the four higher income countries, high levels of FDI and slower development of national talents than in some other countries (such as Taiwan or Korea) help explain an imbalance between the domestic demand and supply of skilled manpower. In contrast, in all the other countries in the region the deployment of professional manpower from abroad was small, limited partly by low demand in more capital- and skill-intensive industries, and partly by stringent regulations governing the employment of foreign manpower (see below). With the exception of the Philippines, the 'brain drain' has not been important, partly related to the low quality of domestic educational institutions (including English-language skills). The lower income countries rely almost exclusively on domestic supply for manpower in the health sector. Several of the latter do, however, export nurses, with the Philippines being by far and away the largest supplier within ASEAN and beyond.

Group I. Singapore, Brunei, Malaysia and Thailand accept service sector professionals from many developed and developing countries, partly related to the diverse sources of foreign capital investment (Bhatnagar and Manning, 2005). Three of the four more developed ASEAN economies, Singapore, Malaysia and to a lesser extent Brunei, are significant importers of skilled manpower in the health sector. Thailand was an outlier with only 31 foreign doctors and 15 foreign nurses registered as working in the health care sector.[14]

In Singapore, Malaysia and Thailand, local IT companies actively recruit foreign workers, especially from India (Manning and Bhatnagar, 2004). Currently, there are no centralised processes in place to recognise foreign IT qualifications – it is up to individual employers to investigate the qualifications of the foreign IT workers they hire.

Group II. The middle-income countries in ASEAN were mainly labour exporters, but also imported small numbers of professionals. The Philippines and Indonesia

[13] See ANU-ASEAN Migration Research Team (2005), both the main report and individual country studies for the ten ASEAN countries.

[14] For example, data from the Singapore Nursing Board suggests that 23 per cent of nurses were overseas residents in 2004.

hosted a much smaller number of professional and managerial employees (a stock of approximately 10,000–20,000 in each country in 2002–2003), one-third or less the number working in Singapore, Malaysia and Thailand in the same years (around 50,000–60,000 in each of these three countries; Bhatnagar and Manning, 2005, p. 181).

In the health care sector, the Philippines is closed to foreign doctors and nurses, and in Indonesia a minuscule number of 199 foreign doctors were recorded as employed mainly for work as administrators and managers in several foreign hospitals and teachers in overseas twinning programmes for nurses in 2004.[15] While the health sector in Vietnam has traditionally been closed to foreign health professionals, a limited number of foreign health workers have been allowed to enter as part of FDI in health services.[16]

In IT, the Philippines has a comparative advantage compared with Indonesia and Vietnam, owing to better English-language skill and general educational standards, and hence almost all of these services are provided by Filipino nationals rather than foreigners. Neither Indonesia nor Vietnam supply significant numbers of IT graduates to work abroad, nor are there internationally oriented investments at home that provide significant opportunities for IT professionals from abroad.

Group III. In Group III countries, the movement of professional into and out of the country was reported to be even smaller than in Group II countries, although Cambodia differed considerably from Lao PDR and Myanmar owing to relatively robust growth in FDI and some associated migration of professionals from the late 1990s.

4. REGULATION AND THE INTERNATIONAL MIGRATION OF PROFESSIONALS: GENERAL BARRIERS AND REGULATIONS

Temporary migration of skilled workers in ASEAN discussed above occurs within the regulatory framework that differs across countries. Major regulatory measures affecting international mobility are visa requirements and procedures, and labour market tests and other regulations necessary to justify the need for employment of foreign professionals (including language requirements). In the remainder of the paper we focus on quantifying, where possible, the extent of

[15] A small number of foreign doctors from Singapore, Australia and other countries visit on a temporary basis ostensibly as advisers to Indonesian doctors but are reported to be engaged in specialist operations, mainly in foreign hospitals.
[16] The number of foreign medical personnel in these 12 foreign clinics was estimated to be around 200 in 2004.

government regulation which may act as a barrier to international mobility of professionals in the ASEAN region.[17] While there are well established quantitative measures of barriers to entry in trade in goods and services, internationally comparable indices are yet to be developed for the movement of workers. This paper makes a preliminary attempt to develop such indices. We start with impediments inherent in international and regional commitments, and examine migration rules and procedures for business in general. In the final section of the paper, an assessment is made of the restrictions which apply to the two occupations under investigation.

Most of the impediments to trade in services, including trade conducted through professional mobility (Mode 4), take the form of the domestic regulatory measures. Quantifying the impact of various forms of regulation on market outcomes (such as prices of final services, costs of service production or profit margins) is an essential preliminary component of the economic modelling, including application of the computable general equilibrium (CGE) models. Methodologies for measuring the level of restrictions on trade in services are based on converting qualitative information into a comparable quantitative measure, typically represented by an index (McGuire, 2003). Construction of an index involves assigning scores to a particular regulatory measure/restriction, and creating a composite measure across a suite of policies using weights. The choice of scores and weights is often subjective, reflecting the researchers' beliefs about the relative importance of chosen measures. Application of more sophisticated statistical techniques such as principal components or factor analysis is often limited by data availability.

There is now a well developed literature on constructing indices to measure restrictions in various services sectors and their further application for economic modelling (Findlay and Warren, 2000; and Sidorenko and Findlay, 2003). Chanda (2001 and 2003b) summarises broad regulatory measures restricting mobility of service providers in the GATS Mode 4 context, using both formal GATS commitments and actual migration policies. In this paper, we follow Chanda's approach in selecting indicators of restrictiveness of temporary migration policies (including both committed and actual policies). Weights are assigned (subjectively) to indicators in order to construct a summary measure of general barriers to professional mobility, and of sector-specific barriers in health services and IT. This approach could be extended to compile a similar index for each of the countries of interest, to be used in the subsequent CGE modelling analysis.

[17] In addition to government regulations, the international market for professional labour is mediated by various intermediaries (such as recruitment agencies) providing services but also often exerting market power which results in the higher cost of foreign professionals. Their impact is difficult to quantify owing to a lack of systemic data.

It is one approach to quantifying changes in the regulatory regime, as captured in the restrictiveness index.

a. International Commitments under GATS and AFAS

The rules regulating the entry of foreign professionals are rarely imposed on a Most-favoured Nation (MFN) basis (i.e. in a non-discriminatory fashion between the foreign nationals). Among the ASEAN members there are often preferences for labour from 'traditional sources' (for example, Brunei's preference for Singaporean and Malaysian workers). In this paper we use the current level of commitments made under the WTO General Agreement on Trade in Services (GATS) and the ASEAN Framework Agreement on Services (AFAS) to construct the measure of the openness to mobility of professionals in each of the ten countries.

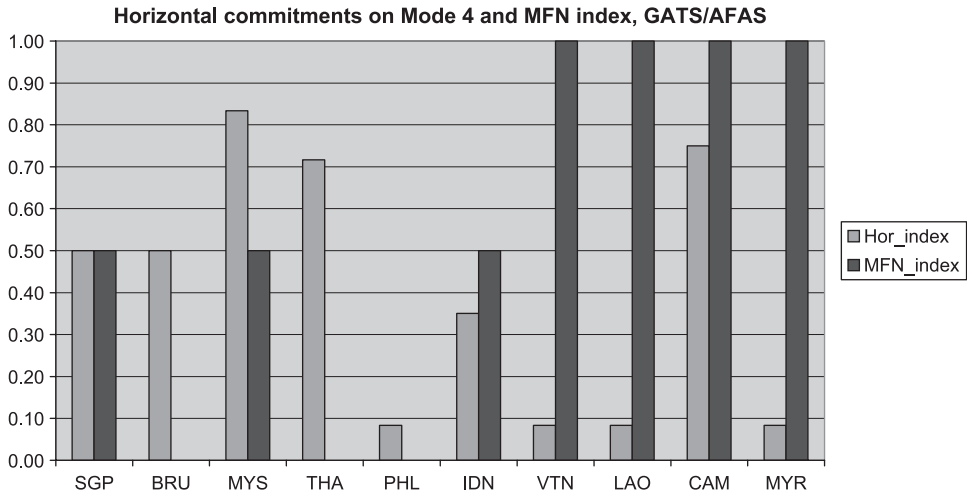
GATS and AFAS schedules contain horizontal (cross-sectoral) commitments on Mode 4 made for intra-corporate transferees (including managers, executives and specialists), and for business visitors.[18] Based on the horizontal commitments on Mode 4 in the current GATS schedules, we have constructed a policy index measuring the scope and the depth of commitments in Mode 4 for the ASEAN countries that are GATS members.[19] The index included three categories with listed horizontal commitments: business visitors, professionals and intra-company transferees. Half of the weight was allocated to the latter category. Within the intra-company transferees category, the position of the transferee (manager, executive or specialist), the total maximum stay and the applicability of Economic Needs Tests (ENT) or quotas/caps were quantified. The scores and weights attached to particular categories are listed in the Appendix. The index (labelled Hor_index) is scaled to range from 0 (most restrictive/no commitments) to 1 (most liberal commitments within the group of ASEAN countries).

The results are presented in Figure 4. In general, we find that the more developed ASEAN countries led by Malaysia have made the most extensive horizontal commitments on Mode 4. Among the second-tier countries, Indonesia is well ahead of the Philippines and Vietnam. Among the less developed ASEAN members, Cambodia scored well with regard to the horizontal index while the other two countries (Myanmar and Lao PDR) both recorded low scores. Malaysia is the only ASEAN countries listing professionals as part of their

[18] Only Malaysia has made an additional commitment for professionals (defined as persons with necessary academic credentials, professional qualifications, experience and expertise, recognised by and registered with appropriate professional bodies in Malaysia).

[19] For the non-WTO members (Lao PDR and Vietnam), we used the corresponding AFAS schedules to construct the index.

FIGURE 4
Horizontal Commitments on Mode 4 Under GATS* and Article II (MFN) Exemptions, ASEAN Members (June 2005)



Source: Authors' calculations. AFAS (fourth package of commitments) used for Laos and Vietnam.

horizontal commitments in Mode 4, while Thailand does not impose Economic Needs Tests and/or caps on intra-company transferees, which explains their high index score.

We have also calculated the index (labelled MFN_index) for the limitations to Article II (MFN) listed in the GATS schedule pertaining to Mode 4, and the extension of these limitations to high-skilled foreign workers, each given equal weights (see the Appendix). It is worth mentioning that the pattern for MFN exemptions was more complicated and related less to the stage of economic development than to the historical preferences (see Figure 4). While Singapore and Malaysia among the high income countries, and Indonesia, scored half-way for the MFN index, Brunei, Thailand and the Philippines all recorded a zero score, owing to the inclusion of Mode 4 (for both general and skilled manpower) in exemptions to the MFN principle. Together with Vietnam, none of the low income countries scheduled any MFN exemptions and recorded a maximum score on this count.[20]

[20] In part this is because the lower income countries did not anticipate unskilled migrants, among whom religious and ethnic differences from the local work force tend to be of greater concern for host country governments.

b. Actual In-migration Rules and Procedures (Business Visitors and Work Permits)

Temporary movement of professionals in ASEAN takes two main modes: short visits that fall into the business visa category, and longer term employment contracts that require issue of a working permit or an employment pass. Short-term business visits and movement of managers, executives and employees as intra-corporate transferees associated with commercial presence (Mode 3) are the most liberalised types of Mode 4 movements, both within GATS and AFAS (Manning and Bhatnagar, 2004).

GATS commitments represent the lower bound to the actual degree of liberalisation of migration policy, hence it is important to evaluate actual policies and procedures governing the movement of people. Using the data collected by Manning and Bhatnagar (2004) on rules and procedures for obtaining business (non-immigrant) visas and work permit regimes, we have constructed an index measuring the degree of openness in these two categories (applied to all sectors, including the two sectors considered in the current paper).

The Business Visa index takes into account factors such as average cost of a visa (single and multiple), whether the double-entry visa only is issued instead of a multiple entry visa, the complexity of the application procedure (including the number of pages on the form, number of entries to complete and the number of supporting documents), visa processing time, an additional security deposit requirement for a sponsor, and concessions to ASEAN member countries, if any.[21]

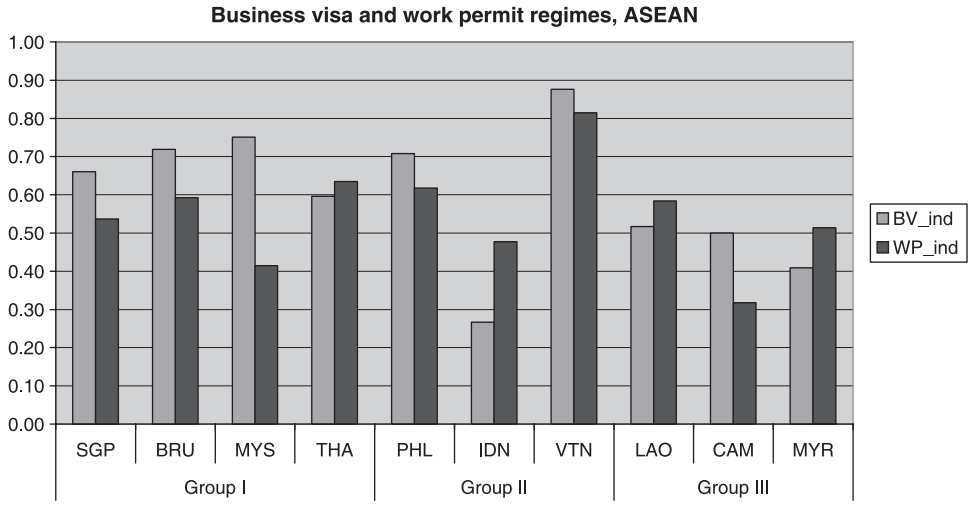
Similarly, we evaluated the Work Permit regime in the ten ASEAN countries. Items taken used in the construction of the index include the number of agencies involved in issuing work permits, average processing time, permitted duration of stay, the legal status of the employer, skills-transfer requirements, a pre-employment requirement, foreign worker levies (differentiated for unskilled, skilled and highly skilled manpower), and MFN concessions if any (see the Appendix for scores and weights).

The resulting indices for business visa and work permits (labelled BV_ind and WP_ind, respectively) are presented in Figure 5, ranging from 0 (most restrictive) to 1 (most liberal within the group of ASEAN countries).

Again, the more developed countries score better, on average, with respect to the business visa index. However, the pattern of cross-country differences is not so clear with regard to work permits. Perhaps surprisingly, Vietnam emerges as the country that has succeeded in liberalising their rules and procedures pertaining to the business travel and work permits applicable to other ASEAN members,

[21] As for Figure 4, see the Appendix for details on scores and weights assigned to each category.

FIGURE 5
Comparison of Immigration Regimes for Business (Non-immigrant) Visa (BV) and Work Permits (WP) in ASEAN Countries



Source: Authors' calculations.

followed by Malaysia, Brunei, the Philippines and Singapore.[22] Vietnam's eagerness to attract foreign investment as a latecomer helps to explain its more open stance (Leproux and Brooks, 2004). While Singapore scores just below an ASEAN average of 0.55 in the work permit index, its procedures and rules pertaining to the employment pass procedure are among the most transparent.

However, in general the inward movement of professionals seems to be the most restrictive in lower income countries, notably Indonesia, Cambodia, Laos and Myanmar. All of these countries require an employer hiring a foreigner to ensure that some capacity-building and skills transfer activities are conducted to eventually replace the foreigner with local staff. Other barriers to the inward mobility of professionals include a minimum salary requirement,[23] levies for employment of a foreign worker, restrictions on employment (linked to a specific company or a geographic location/office, as in Thailand), the requirement for pre-employment with the company, a minimum education/job experience requirement, lack of recognition for the education/professional training, as well as Economic Needs Tests and language requirements.

[22] Note that the 'preference for traditional sources' of labour, which is in effect a restrictive condition for an inward mobility of a professional from an excluded nationality, serves as a liberalising measure in calculating the within-ASEAN index (Brunei and Malaysia provide such an example).
[23] For example, in Singapore the minimum salary requirement applies to S and Q Passes for professional and skilled/managerial manpower.

5. REGULATION AND THE INTERNATIONAL MIGRATION OF PROFESSIONALS: BARRIERS IN HEALTH AND IT SECTORS

As discussed above, the fundamental difference in practices applicable to the health and IT professionals is that of a quite highly regulated versus an unregulated occupation (Sidorenko, 2003).

a. Health Services

In the case of health professionals such as doctors and nurses recruited from abroad, a professional body (e.g. a local Medical Council or Nursing Board) is usually involved in the pre-employment confirmation of the applicant's qualifications and skills.[24] Applicants are required to be registered with their home professional councils/boards. If the professional training and experience of the applicant are recognised, a temporary registration/practising certificate is issued that allows the health practitioner to practise the occupation in the receiving country.

As a rule, the Ministry of Health is involved in assessing the applications from the hospitals (employers) that sponsor the foreign professional, and in most cases the unavailability of a local specialist to fill the post should be confirmed before the approval to hire a foreigner is given. Economic Needs Tests are often time consuming and create an extra cost for an employer through additional advertising and administrative expenses as well as through the delays in making an offer to the foreign applicant. After the approval of the Ministry of Health is obtained, the normal immigration application procedures follow, with the time taken to gain a visa varying widely by country.

(i) International commitments in the health sector (GATS and AFAS)

To evaluate regulatory barriers to professional mobility in health services, we first analysed formal international commitments on the movement of health professionals under GATS and AFAS.[25] The index is based on the summary of GATS commitments in professional health services and health-related (hospital) services (and the fourth package of AFAS commitments of those ASEAN members that are not in the WTO). It measures liberalising commitments under GATS/AFAS in the ten ASEAN member countries. The resulting health index was

[24] Where such a body is constituted; not all countries (e.g. Indonesia) have established nursing boards.

[25] Sectors included in the analysis are professional medical and dental services (CPC 9312), and services provided by midwives and nurses (CPC 93191). Commitments in hospital services CPC 9311, although not immediately related to Mode 4, are relevant to the sectoral analysis and are therefore included in the analysis.

calculated as a simple average of the horizontal index, the MFN index (discussed in Section 4*a*), the health sector-specific index and the index of Mode 4 commitments in all professional services sectors based on Manning and Bhatnagar (2004, Table 3).[26] The resulting index is labelled Health_ind (see the Appendix for the scores and weights).[27]

(ii) Actual policies, registration and licensing requirements and procedures

Before discussing the findings on the health care index related to GATS and AFAS, it is useful to take note of various registration and licensing arrangements. A number of restrictions apply. First, in terms of the professional registration of doctors and nurses, the language requirement (such as in Thailand) often serves as a major barrier to the recognition of the previous training, even if the standards of clinical care are similar. The language requirement is usually justified on the basis of a consumer (patient) protection argument. Second, an extreme form of discrimination includes citizenship requirement to practise an occupation (a permanent residency requirement is a milder form of such a limitation). Examples are Indonesia and the Philippines.[28] In the latter case, the existing regulatory framework requires that professional practice, including health professionals, be limited to Filipinos. Third, for certain cases, the regulatory regime uses an economic needs test for foreign doctors and nurses, under rules of reciprocity.

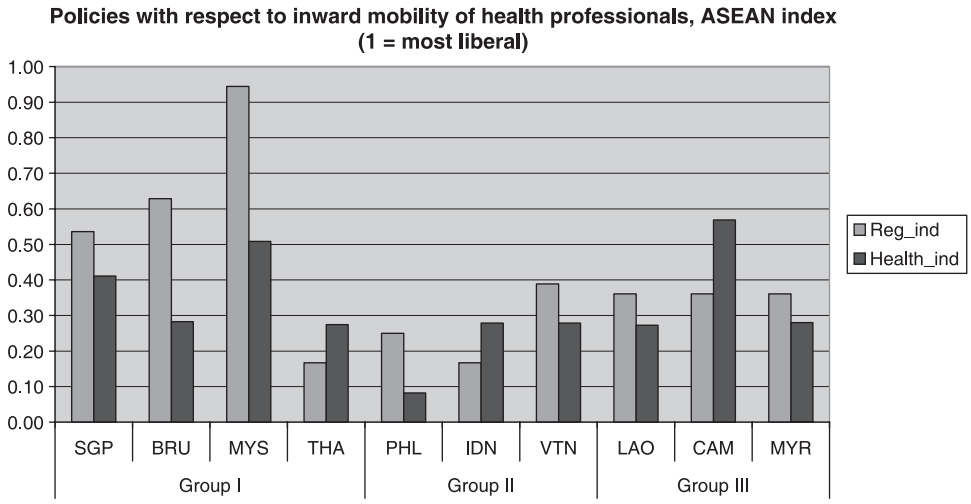
Finally, among several ASEAN members there are cross-sectoral quantitative restrictions on foreign employment. In Thailand, the number of foreign workers allowed in a company is determined by its registered capital: two million baht per foreign worker with a maximum of ten million baht (that is, a cap of five foreign workers). In Vietnam, the number of foreign workers is limited to three per cent of a firm's full-time workforce, which could act as a significant constraint to the entry of foreign professionals into services sectors such as health. Cambodia's labour regulations place a cap of ten per cent on the number of foreign workers in a firm. This condition is restrictive for the health sector in particular. Foreign hospital chains attempting to establish commercial presence are not able to employ doctors with the required level of expertise and specialisation, if the doctors are not available locally.

[26] The health sector-specific index was measured by the degree of commitments in professional medical services and hospital services sub-sectors. Note that there were no commitments made by ASEAN countries for midwives and nurses (CPC 93191), hence this sub-sector was excluded from computation of the index.

[27] Note that in all cases, sectoral Mode 4 commitments were limited to horizontal sections, and the health policy index reflects the degree of liberalisation in other modes of trade in health services, rather than only through the movement of professionals.

[28] In the case of Indonesia, foreign doctors and nurses are not permitted to practise in local hospitals (with the exception of temporary service provision as senior medical officers or medical specialists in corporations in selected sectors such as in oil, gas and mining).

FIGURE 6
Inward Mobility of Health Professionals: Policy and Registration Indices, ASEAN



Source: Authors' calculations.

To compare policy impediments with other administrative barriers such as the complexity of the registration procedure for foreign specialists in health (here, doctors) as well as the broader policy environment with respect to attracting foreign labour, we calculated a medical practitioners' registration procedure index. The registration index (Reg_ind) is based on the set of criteria, which include, for example, the requirement of registration, acceptability of English language training, the number of accepted foreign medical degrees if any, and the number of accepted ASEAN degrees (see the Appendix for details and scores and weights).[29] Scores on this measure, and Health_ind discussed above, are shown in Figure 6.

Figure 6 shows that there is no clear relationship between the *general* index of international barriers to health professionals (Health_ind) and per capita incomes in ASEAN. One Group III country, Cambodia, has scheduled more liberalising commitments in professional medical and health services in its WTO accession schedule than the rest of the ASEAN. However, as might be anticipated, Singapore, Brunei and Malaysia all appear to have the more liberal policies towards the employment of foreign medical professionals, as reflected in their

[29] Other criteria included in the index consist of the following: whether an examination is required, what language it is conducted in, whether temporary registration can be granted, the permanent residency or a citizenship requirement to practise a medical occupation, and whether foreign doctors are permitted to practise in public hospitals (see the Appendix).

commitments and actual professional registration procedures (Reg_ind, see Box 1). For most of the other ASEAN countries, professional health services have been shielded from foreign competition by stringent registration procedures (including the local language requirement such as in Thailand and citizenship requirement in Indonesia and the Philippines).

Progress under the regional services trade agreement (AFAS) has been very limited. There have been no additional liberalising steps undertaken in the area of professional health services to date. Bilateral discussions within ASEAN and with other countries have been initiated by a number of ASEAN members, covering the temporary movement of health professionals. For example, Malaysia has commenced bilateral free trade area (FTA) negotiations with Japan, the USA, Australia, New Zealand, India and Korea. Based on the latest publicly available information, most of the proposed agreements are likely to include an item on mobility of professionals and human capital development (including through twinning education programmes and enhanced recognition of degrees), and collaboration in IT-intensive sectors (including outsourcing).[30]

b. IT Services

Impediments to the mobility of IT workers are not nearly as restrictive as those in the health care sector, as there are no professional registration and licensing requirements in IT. The private market seems to be efficient in assessing the quality of the applicants based on their education and experience.

(i) International commitments in the IT sector (GATS and AFAS)

Similar to analysis of the health sector, we constructed an index of international commitments to the movement of IT professionals under GATS, and under regional arrangements in AFAS.[31] There has been some success in deepening the liberalisation of IT services through AFAS compared to GATS. In the fourth package of commitments under AFAS, Indonesia, Malaysia and Thailand have offered GATS-plus measures on Mode 3, by removing or relaxing a foreign ownership limit in the Computer and Related Services sub-sector. More liberal commitments were included in the calculations.

[30] Recent bilateral arrangements concluded by the ASEAN members include the New Zealand-Singapore Closer Economic Partnership (ANZSCEP) (2000), Japan-Singapore 'new-age' economic partnership agreement (JSEPA) (2000), the US-Singapore FTA (2003), US-Vietnam FTA (2000), the Singapore-Australia FTA (SAFTA) (2003), and the Thailand-Australia FTA (2005). The New Zealand-Singapore ANZSCEP has undertaken to facilitate the establishment of dialogue between experts in the priority areas of professional health services with a view to achieve recognition of professional qualifications or registration, although no additional liberalising measures have been achieved yet.

[31] Sectors included in the index calculation are computer and related services (CPC 84), as well as value-added telecommunications services (CPC 7523 and 7529) that are IT-labour intensive.

BOX 1
ASEAN Importers of Health Professionals

Singapore has needed to recruit foreign doctors and nurses in recent years because local training institutions have not been able to meet demand. In addition to meeting the requirements for an Employment Pass or S Pass, foreign nurses must meet the requirements for registration by the Singapore Nursing Board, doctors must meet the requirements for registration by the Singapore Medical Council (or Traditional Chinese Medicine Practitioners Board), and dentists must meet the requirements for registration by the Singapore Dental Council. The S Pass does not allow the migrant worker to bring in a spouse or dependent children. Depending on qualifications, it is possible for a foreign recruit to exceed the S$2,500 per month threshold to be eligible for the higher level Q1 pass, which allows the foreign worker to bring in dependants. In most cases, the starting salary for the foreign-trained nurses is much lower, and the no-dependants rule applies.

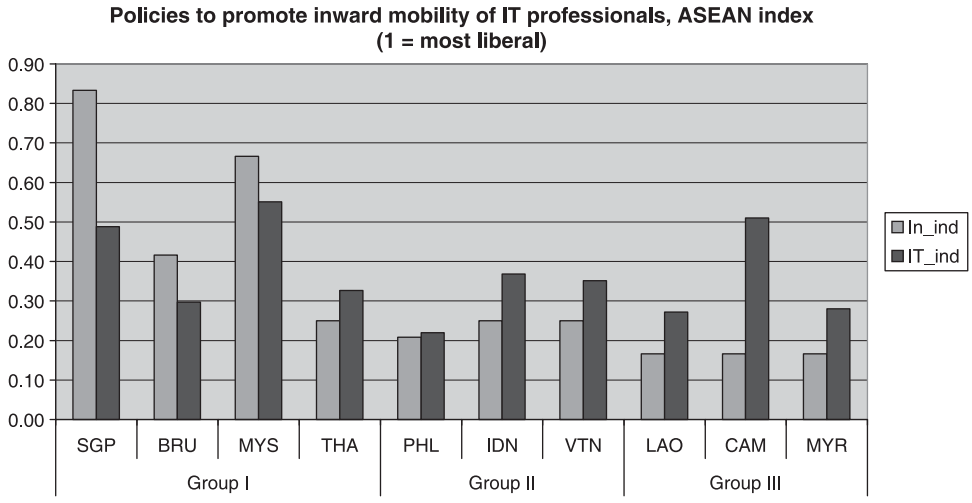
In Malaysia, foreign specialists can be employed in private hospitals and in public hospitals with fewer than two specialists, with the approval of MOH. Private GPs are not allowed, but there are foreign medical officers (MOs) in government clinics. A basic medical degree and at least three years (usually five years) of clinical experience is required. Foreign-trained nurses from seven countries nominated by the government (Myanmar, Philippines, India, Pakistan, Bangladesh, Albania and Indonesia) should obtain a Temporary Practice Certificate (TPC) from Nursing Board Malaysia; only then are they allowed to be employed in a private hospital.

(ii) Actual policies in the IT sector

A policy index reflecting the scope and depth of GATS/AFAS commitment as well as the actual telecommunications policies (based on Findlay et al., 2005) was constructed (labelled IT_ind). The policy index was supplemented by the general 'inward mobility' index (labelled In_ind) reflecting cross-sectoral policies towards manpower planning in the high-skills sector, policies to develop a knowledge-based economy, policies to ensure continuous upgrade of skills of workers, development of IT competencies and promotion of the IT sector through technology parks etc., proactive overseas recruitment, and policy priority attached to the high-skilled sector and R&D (see the Appendix for scores and weights).

The results are presented in Figure 7. Again the more developed countries (Singapore, Brunei and Malaysia) have adopted more liberal policies towards the in-migration in general, although much less so for IT professionals in particular. Conversely, although Thailand and Indonesia scored low on the general index, both scored highest on the IT index. The Philippines score was low on both In_ind and IT_ind, and close to the indices for Vietnam and the three lower income countries. This is not very surprising, taking into account the surplus of skilled labour in the Philippines and the country's role as a global exporter of professionals, including those in IT.

FIGURE 7
Inward Mobility of IT Professionals: Policy Indices, ASEAN



Source: Authors' calculations.

c. Facilitation of International Mobility of Health Professionals through Mutual Recognition Agreements (MRAs)

Mutual recognition agreements (MRAs) seeking to facilitate the mobility of professionals are important means of enhancing services trade (Stephenson and Yi, 2002). The potential contribution of MRAs is likely to be very different between health and IT professionals. Two important developments in health sector MRAs are (i) the discussion of skills standardisation for general nurses, launched by Indonesia in the APEC forum and (ii) the ASEAN discussion of the MRA in nursing through the Medical Association of South East Asian Nations (MASEAN). The first draft MRA on nursing in ASEAN has been circulated for comments from ASEAN members. In the preliminary draft, the agreement leaves the decision on recognition of foreign nursing qualifications to a nursing board/council in the host countries. Foreign-trained nurses are also required to work with a local nurse in the host country. As long as the registered nurse continues to be registered in her home country she can practise as a nurse in a host country (under supervision of a local nurse) without the need to be fully registered with the host country nursing board or council. This arrangement seems to lessen the impact of the local language requirement, in those cases where another language (such as English or Chinese) is appropriate for the actual working conditions of a foreign nurse.

These efforts within ASEAN are likely to be supported by initiatives within the wider APEC community, in which the ASEAN nationals are members. An APEC project to develop a regional competency standard of nursing skills is ongoing, with the results of the report expected at the end of 2006. While the regional harmonisation of standards in nursing education may not be feasible, assessment of nursing education curricula and core competencies across APEC economies is important. Overcoming the deficiencies in theoretical training or in clinical practice is likely to enhance mobility of nurses between the APEC members, and to facilitate the channelling of excess supply to countries with excess demand.[32]

6. DISCUSSION AND CONCLUSIONS

This paper has compared and contrasted the regulatory regimes with respect to international migration of professionals. Arrangements in the regional grouping of ASEAN countries were examined as a case study, with special reference to the health care and IT sectors, set in the context of efforts to deepen economic integration within the ASEAN region. We outlined the intra-regional patterns of professional migration in these sectors and analysed the impact of the regulatory regimes on the actual flows. The analysis compared the experience of countries at very different stages of economic development, organised into three broad groupings according to levels of per capita income and contrasts in industrial structure.

We have found that the intensity of regulation is broadly inversely related, and intensity of migration positively related, to the level of economic development within ASEAN, although there were some important exceptions. The more developed, Group I countries (mainly Singapore, Brunei and Malaysia) have adopted more liberal policies towards the in-migration in general (including business visas and to a lesser extent work permits, and horizontal commitments under AFAS). This applied specifically to the registration of health professionals, as well as to broader policies towards the migration of highly skilled manpower. In contrast, several of the less developed countries (Group III) made commitments allowing professional movements into their countries, through international agreements such as GATS or AFAS. But at the same time, they maintained relatively restrictive visa and work permit, and registration regimes to outsiders. Thailand, and Vietnam

[32] International examples of regional recognition in the health sector include a 'Trilateral Initiative' for North American Nursing under NAFTA, harmonisation of nursing standards and cross-border professional recognition in the English-speaking Caribbean countries, the East, Central and South African College of Nursing (ECSACON), as well as extensive European experience with MRAs among health professionals (Oulton, 2003).

and Indonesia (the latter two among Group II countries), developed arrangements that were intermediate on both international agreements and permit regimes. In contrast, the Philippines' score was low on both counts.

Besides contrasts related to the stage in economic development, the paper has drawn attention to other differences across countries in policies and national circumstances, which underpin migration among professionals in the region. Size, openness and specific historical circumstances also play a part. Thus, for example, poorer, more recent entrants to the regional grouping in ASEAN and more recent participants in international trading arrangements (Cambodia, Vietnam and even Myanmar) were potentially more open than Indonesia and the Philippines, where nationalist 'baggage' tended to limit potential gains. This is partly related to latecomer 'learning effects'. International commitments have supported domestic reform in the former countries. In contrast, there is a greater domestic political focus on pressing labour market problems in Indonesia and especially the Philippines.

As we expected, there was substantial variation in the extent and type of regulation across sectors and occupations. Regulation is much more important for both sending and receiving countries in the sectors where social and distributional impacts are large (e.g. in health care). All countries in the region tend to have more open regimes with regard to the movement of temporary migrants in the IT sector than in health care. Because of the social dimension of health care, professional bodies regulate standards of national and overseas professionals, and in several of the countries restrictions on deployment of foreign professionals severely limit their access to the domestic market. Accreditation and mutual recognition agreements were also more important in health than IT, whereas there are no professional registration and licensing requirements in IT. The language requirement is a major barrier, and the citizenship requirement is even more restrictive, for the professional registration of doctors and nurses. At the same time, private costs associated with job search and gaining foreign employment appear to be higher in the IT sector.

We sought to document the main restrictions to mobility of professionals in general, as well as those pertaining specifically to the two sectors. Besides restrictions related to trade policies, other barriers to the inward mobility of professionals include the minimum salary requirement (Singapore), levies for employment of a foreign worker (several countries), restrictions on employment (linked to a specific company or a geographic location/office), the requirement for pre-employment with a company, a minimum education/job experience requirement (Indonesia), and non-recognition of educational qualifications and professional training. Economic needs and labour market tests applied in several countries.

Given the level of restriction on international movements of professionals found in this study, removal of the barriers to inter-regional mobility in health

care and IT may potentially bring major benefits, although appropriate policies will differ between these two sectors. Further study is required for quantification of these potential benefits (and also possible costs). However, our study has suggested that policy measures might include the following: streamlining visa and work permit regulations for professionals across the region (including short-term entry of independent service providers); improved education and professional standards (for example, using the recent APEC and ASEAN initiatives to examine nursing standards and develop a regional MRA in nursing); overcoming the language barrier to mobility by allowing foreign-trained doctors/nurses employed in export-oriented hospitals to be exempt from the language tests for the temporary registration purposes; promotion of industry self-regulation and certified training programmes in IT; and a more systematic approach to data collection on international stocks and flows of professional manpower.

APPENDIX
Indicators and Weights Used in the Calculation of Indices

Index	*Indicator*	*Value*	*Weight*
Horizontal index calculation (Hor_index)			
Categories for which horizontal commitments on Mode 4 are made in GATS SC			
	Business visitors	0 or 1	0.25
	Professionals	0 or 1	0.25
	Intra-company transferees sub-index	[0;1]	0.50
Intra-company transferees sub-index			
Categories for which horizontal commitments on Mode 4 are made in GATS SC: Intracompany transferees			
	Manager	0 or 1	0.11
	Executive	0 or 1	0.11
	Specialist	0 or 1	0.11
	Total maximum stay (initial + extension), scaled down by 5	[0;1]	0.33
	No quota or cap applied	0 or 1	0.17
	Economic Needs Test not applied	0 or 1	0.17
MFN index calculation (MFN_index)			
Based on GATS SC	No MFN exemption on Mode 4	0 or 1	0.5
	High skilled labour excluded from MFN exemptions	0 or 1	0.5

APPENDIX *Continued*

Index	*Indicator*	*Value*	*Weight*
Business visa index calculation (BV_ind)			
	One minus the following index:		
	Average cost (AUD, single entry and multiple entry), scaled down by 475	[0;1]	0.2
	Double entry only available	0 or 1	0.2
	Shortfall of permitted stay (days), scaled down by 180 days (max.)	[0;1]	0.2
	No concessions to ASEAN members	0 or 1	0.2
	Processing complexity total, scaled down by 14.5 (observed max.)	[0;1]	0.2
Processing complexity sub-index for BV_ind			
	Processing time (business days)	[3;10]	0.33
	Security deposit required	0 or 1	0.33
	Number of pages in visa application form	[0.75;3]	0.11
	Total number of entries in visa application form	[23;106]	0.11
	Number of additional supporting documents	[0;4]	0.11
Work permit index calculation (WP_ind)			
	One minus the following index:		
	Administrative sub-index	[0;1]	0.50
	Operating sub-index	[0;1]	0.50
Administrative sub-index for WP_ind			
	Number of agencies involved in issuing visa, scaled down by 2	[0;1]	0.33
	Processing time (days), scaled down by 63	[0;1]	0.33
	Shortfall in validity (years), scaled down by 6	[0;1]	0.33
Operating sub-index for WP_ind			
	Only firms are allowed to hire foreigners	0 or 1	0.125
	Skills transfer requirement	0 or 1	0.125
	Temporary employment requirement	0 or 1	0.125
	Foreign worker levy unskilled	0 or 1	0.125
	Foreign worker levy skilled	0 or 1	0.125
	Foreign worker levy high-skilled	0 or 1	0.125
	Security bond required	0 or 1	0.125
	MFN concessions	0 or 1	0.125
Registration index calculation, health professionals (Reg_ind)			
	One minus the following index:		
	Recognition of medical degrees sub-index	[0;1]	0.5
	Registration of doctors sub-index	[0;1]	0.5
Recognition of medical degrees sub-index for Reg_ind			
	Shortfall of recognised medical degrees (max. 280)	[0;1]	0.5
	Shortfall of recognised ASEAN medical degrees (max. 18)	[0;1]	0.5
Registration of doctors sub-index for Reg_ind			
	Registration examination necessary	0 or 1	0.06
	Language other than English	0 or 1	0.17
	Permanent residency requirement	0 or 1	0.33

APPENDIX *Continued*

Index	*Indicator*	*Value*	*Weight*
	Citizenship requirement	0 or 1	0.33
	Temporary registration not available	0 or 1	0.06
	Foreign trained MDs not permitted in public hospitals	0 or 1	0.06
Inward mobility of health professionals policy index calculation (Health_ind)			
	GATS sectoral commitments on Mode 4 (scaled down by 155)	[0;1]	0.25
	Horizontal index Hor_index	[0;1]	0.25
	MFN index MFN_index	[0;1]	0.25
	GATS commitments on health sub-index	[0;1]	0.25
GATS sectoral commitments on health sub-index for Health_ind			
	Commitments on professional medical services	[0;1]	0.5
	Commitments on hospital services	[0;1]	0.5
Inward mobility of IT professionals policy index calculation (IT_ind)			
	GATS sectoral commitments on Mode 4 (scaled down by 155)	[0;1]	0.25
	Horizontal index Hor_index	[0;1]	0.25
	MFN index MFN_index	[0;1]	0.25
	Actual telecommunications policy index (Findlay et al., 2005)	[0;1]	0.25
Inward mobility index calculation (In_ind)			
	Public policies sub-index	[0;1]	0.67
	Private facilitation sub-index	[0;1]	0.33
Public policy sub-index for In_ind			
	National manpower planning strategy	0 or 1	0.125
	Knowledge-based economy strategy	0 or 1	0.125
	Continuing learning plans	0 or 1	0.125
	IT competencies	[0;1]	0.125
	IT promotion	0 or 1	0.125
	Overseas recruitment (government initiatives)	[0;1]	0.125
	High-skilled sector priority	0 or 1	0.125
	Support of R&D	0 or 1	0.125
Private facilitation sub-index for In_ind			
	Overseas recruitment (private sector)	0 or 1	0.5
	No upfront fees	0 or 1	0.5

REFERENCES

ANU-ASEAN Migration Research Team (C. Manning, A. Sidorenko, P. Bhatnagar, Y. Chalamwong, P. Dee and G. Manzano) (2005), 'Movement of Workers in ASEAN: Health Care and IT Sectors', Final main report, REPSF Project 04/007, December 2005 (Jakarta: Regional Economic Policy Support Facility, ASEAN-Australia Development Cooperation Program, http://www.aadcp-repsf.org/docs/04-007-FinalMainReport.pdf).

Bhatnagar, P. and C. Manning (2005), 'Regional Arrangements for *Mode 4* In Services Trade: Lessons from the ASEAN Experience', *The World Trade Review*, **4**, 2, 171–99.
Chalamwong, Y. (2004), 'The Migration of Highly Skilled Asian Workers in OECD Member Countries and its Effects on Economic Development in East Asia', Unpublished Paper, presented at an 'Experts Seminar' (OECD, Paris, 10–11 June).
Chanda, R. (2001), 'Movement of Natural Persons and the GATS', *The World Economy*, **24**, 5, 631–54.
Chanda, R. (2003a), 'Movement of Service Suppliers and India. A Case Study of the IT and Health Sectors', Working Paper No. 206 (April, Bangalore: Indian Institute of Management).
Chanda, R. (2003b), 'Movement of Natural Persons', in S. Stephenson, C. Findlay and S. Yi (eds.), *Services Trade Liberalisation and Facilitation* (Canberra: Asia Pacific Press, ANU), 58–88.
Coghlan, P. (2003), 'The Principles of Good Regulation', in A. Sidorenko and C. Findlay (eds.), *Regulation and Market Access* (Canberra: Asia Pacific Press, ANU), 17–39.
Findlay, C. and T. Warren (eds.) (2000), *Impediments to Trade in Services: Measurement and Policy Implications*, Routledge Studies in the Growth Economies of Asia (London and New York: Routledge).
Findlay, C., R. C. Lee, A. Sidorenko and M. Pangestu (2005), 'Telecommunications', in E. M. Medalla (ed.), *Competition Policy in East Asia* (London: Routledge), 111–44.
Hardill, I. and S. MacDonald (2000), 'Skilled International Migration: The Experience of Nurses in the UK', *Regional Studies*, **34**, 7, 681–92.
Iguchi, Y. (2002), 'The Movement of the Highly-skilled in Asia: Present Situation and Future Prospects', in OECD (ed.), *Migration and the Labour Market in Asia: Recent Trends and Policies* (Paris: Organisation for Economic Co-operation and Development), 29–57.
Khadria, B. (2001), 'Shifting Paradigms of Globalization: The Twenty-first Century Transition Towards Generics in Skilled Migration from India', *International Migration*, **39**, 5 (Special Issue 1), 45–71.
Leproux, V. and D. H. Brooks (2004), 'Viet Nam: Foreign Direct Investment and Postcrisis Regional Integration', Economics and Research Department Working Paper No. 56 (September, Manila: Asian Development Bank).
Manning, C. and P. Bhatnagar (2004), 'Liberalizing and Facilitating the Movement of Individual Service Providers under AFAS: Implications for Labour and Immigration Policies and Procedures in ASEAN', Draft Report REPSF Project 02/004 (Jakarta: ASEAN Secretariat).
Marchal, B. and G. Kegels (2003), 'Health Workforce Imbalances in Times of Globalization: Brain Drain or Professional Mobility?', *International Journal of Health Planning & Management*, **18**, Suppl. 1, S89–S101.
Mattoo, A. and A. Carzaniga (eds.) (2003), *Moving People to Deliver Services*, OUP, The World Bank.
McGuire, G. (2003), 'Methodologies for Measuring Restrictions on Trade in Services', in A. Sidorenko and C. Findlay (eds.), *Regulation and Market Access* (Canberra: Asia Pacific Press, The Australian National University), 40–77.
Meyer, J. B. (2001), 'Network Approach versus Brain Drain: Lessons from the Diaspora', *International Migration*, **39**, 5, Special Issue 1, 91–110.
OECD (2002), *International Mobility of the Highly Skilled* (Paris and Washington, DC: Organisation for Economic Co-operation and Development).
OECD (2003), *Migration and the Labour Market in Asia: Recent Trends and Policies* (Paris: Organisation for Economic Co-operation and Development).
Ouaked, S. (2002), 'Transatlantic Roundtable on High-skilled Migration and Sending Countries Issues', *International Migration*, **40**, 4, 153–66.
Oulton, J. (2003), 'Trade in Health Services: International Council of Nurses Perspective', APEC Seminar on Trade in Health Services (16 August, Phuket: APEC Group on Services).
Sidorenko, A. (2003), 'Regulatory Impediments to International Trade in Health Services', in A. Sidorenko and C. Findlay (eds.), *Regulation and Market Access* (Canberra: Asia Pacific Press, ANU), 276–323.
Sidorenko, A. and C. Findlay (eds.) (2003), *Regulation and Market Access* (Canberra: Asia Pacific Press, ANU).

Stephenson, S. and S. Yi (2002), 'Recognition', in S. Stephenson, C. Findlay and S. Yi (eds.), *Services Trade Liberalisation and Facilitation* (Canberra: Asia Pacific Press, ANU), 195–220.
Stilwell, B., K. Diallo, P. Zurn, M. Vujicic, O. Adams and M. Dal Poz (2004), 'Migration of Health-care Workers from Developing Countries: Strategic Approaches to Its Management', *Bulletin of the World Health Organization*, **82**, 8, 595–600.
The Economist (2004), 'A Survey of Outsourcing' (13–19 November).
UNCTAD (2004), *Development and Globalization* (Geneva: UNCTAD).
Winters, A., T. L. Walmsley, Z. K. Wang and R. Grynberg (2003), 'Liberalising Temporary Movement of Natural Persons: An Agenda for the Development Round', *The World Economy*, **26**, 8, 1137–61.
World Bank (2003), 'Labor Mobility and the WTO: Liberalizing Temporary Movement', Chapter 4 in *World Economic Prospects* (Washington, DC: The World Bank), 143–76.