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Editorial Statement

The *Asia-Pacific Development Journal* is published twice a year by the Economic and Social Commission for Asia and the Pacific.

Its primary objective is to provide a medium for the exchange of knowledge, experience, ideas, information and data on all aspects of economic and social development in the Asia-Pacific region. The emphasis of the *Journal* is on the publication of empirically based, policy-oriented articles in the areas of poverty alleviation, emerging social issues and managing globalization.

The *Journal* welcomes original articles analysing issues and problems relevant to the region from the above perspective. The articles should have a strong emphasis on the policy implications flowing from the analysis. Analytical book reviews will also be considered for publication.

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Announcement

This issue marks the retirement from the United Nations of Shahid Ahmed, Editor of the *Journal.* As Editor from 1997 to 2004, Shahid Ahmed served the *Journal* with skill, dedication and commitment, contributing to its success in numerous ways. We wish to thank him for his valuable contributions over the years. I am pleased that Shahid Ahmed has accepted our invitation to be a member of the Editorial Board of the *Journal*, with effect from the next issue to be published in June 2005, to provide continuity and lend his experience.

Raj Kumar

Chief Editor

A note from the Editor

This issue is devoted to an eclectic mix of topics. Nonetheless, all have the common property of relevance from the perspective of development policy issues currently facing the region. In the first paper the authors examine corporate governance. As we know, the agency problem involving a conflict of interest between shareholders and management does not exist in the region with the same potency as in the developed economies where disputes between major shareholders and management are far more common. However, several disturbing features relating to corporate governance came to light following the 1997 economic crisis that gave a new twist to the agency problem in the region. In many regional economies, much of the corporate sector long dominated by traditional family shareholdings became effectively insolvent in 1997. It then transpired that in both the events leading up to the crisis and the post-crisis corporate restructurings that subsequently took place, the interests of minority shareholders, not to speak of the wider group of stakeholders in particular firms, had been largely ignored. It seemed that family concerns had gone public to use the general public merely as a cash cow for their companies. Little was done to protect minority shareholders from the lack of managerial competence and, indeed, of predilection to outright fraud that many of these companies had displayed over the years. Given much ambitious talk of regionally integrated capital markets, the authors strongly recommend that countries should first concentrate on strengthening national standards of corporate governance before trying to achieve greater capital market integration in the Asia-Pacific region.

On a connected theme, the next paper examines the impact of capital and financial sector reforms of the early 1990s in India. The author postulates that despite progress in several areas the capital markets of India remain shallow. The debt markets, for instance, are still unable to distinguish between high-quality and low-quality firms so that, while the former have been able to substitute their dependence on bank loans with bonds to some degree, bank finance continues to predominate as a source of debt finance for the Indian corporate sector as a whole. This dependence reduces the variety of financial instruments available to firms, on the one hand, and encourages relationship banking, discourages arm's length business dealings while placing an onerous burden of risk evaluation on the banking system, on the other. The author suggests that the Indian Government should improve the country's financial infrastructure but does not address the question of whether such institution building can be regarded as a supply-driven phenomenon. Will supply create its own demand or will it be the other way round? On the evidence in the paper this remains difficult to ascertain.

In the third paper the authors consider the policy requirements of technology-driven economic growth. Most developing economies in the region, with the exception of the newly industrializing economies (NIEs), have thus far been users rather than developers of new technology. This process certainly has positive externalities

in that it allows countries at relatively low levels of development to familiarize themselves with new and fairly complex applications of technology. However, movement further up the curve where technological innovations become indigenous is only possible when sufficient numbers of skilled personnel can be produced by the educational systems of the countries concerned and their energies harnessed in a critical mass in properly funded and mandated government research institutes. The authors are of the view that while Malaysia has successfully emulated the NIEs in many respects, such as the promotion of high-technology exports, it has lagged behind in promoting technological innovation per se and needs to do more, in a more systematic way, to overcome past policy shortcomings in this vital area.

The 1997-1998 economic crisis in East and South-East Asia will continue to be examined and re-examined, such was its economic and social impact on the affected countries. With the passage of time the ability of policy makers to deal with any recurrence of the events that precipitated the crisis in 1997 has certainly improved, judging by the huge accumulation of international reserves. Nevertheless, will the next crisis be the same or will it come from some other entirely unexpected source? In the fourth paper the author considers anew the vulnerabilities that built up in the affected countries and demonstrates that in general the policy lessons have been learned and remedies put in place. It is also true, however, that, while at the national level Governments are better prepared, none of the underlying systemic issues have been tackled in a meaningful way and reform of the international financial architecture has faded into the background.

Lastly, the paper on public health spending in Thailand examines the pattern of spending on this important sector by the Thai Government and its impact on poverty in the country. In a detailed analysis, the author shows that public resources remain disproportionately concentrated on the upper quintile of the population and on the curative aspects of health care. Thus, although public spending on health on a per capita basis has increased over the years its impact on poverty alleviation has been minimal. In view of the fact that health spending on preventive rather than curative care is more cost-effective, there is a case for giving higher priority to spending on preventive facilities and on the bottom quintile of the population on the grounds of both more efficient cost-benefit out-turns and on equity considerations. This would simultaneously improve the health of the poor and have a positive impact on poverty in the country, both highly laudable objectives.

Shahid Ahmed

CORPORATE GOVERNANCE IN ASIA

*Stephen Y.L. Cheung** and *Bob Y. Chan***

This study examines the state of corporate governance in some countries in the Asia-Pacific region. Since the early 1990s, corporate governance has been receiving increasing attention from regulatory bodies and practitioners worldwide. A key aspect of improving corporate governance in the region is that improved investor protection and more transparent information will enhance the development of local capital markets and promote foreign investment to provide funds for long-term economic development. The authors suggest that individual countries should first focus on improving national standards of regulation and corporate practice rather than attempt to reach a common set of matrices from the start. When appropriate governance standards are in place in individual countries, codes of best practice could then be integrated into a consistent framework for all countries to develop more regionally integrated capital markets.

Corporate governance refers to the system through which the behaviour of a company is monitored and controlled. The significance of corporate governance is that in modern economies large corporations are typically associated with a division of labour between the parties who provide the capital (i.e., shareholders) and the parties who manage the resources (i.e., management). Conflict of interest among the two groups might lead to insufficient monitoring of the executive, suboptimal levels of investment in the firm, or some shareholders being expropriated. In these scenarios shareholders might be hurt if there are not sufficient means to ensure that the company is properly monitored.

Interest in corporate governance by policy makers in developed countries had grown significantly by the early 1990s. Three issues were addressed and studied following a general concern with the overall efficiency of the corporate world. First,

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did corporate directors and managers receive a clear allocation of responsibilities and were they monitored in an appropriate manner? Second, did the accounting profession deliver a useful set of information for investors so that investment decisions could be made in an efficient way? Third, how was compensation of corporate executives and directors determined in view of the concern that executives were being paid higher and higher compensation packages, some amidst a significant decline in the firm's performance?

The first large-scale official efforts in the OECD countries resulted in the publication of the Cadbury Report (1992) in the United Kingdom of Great Britain and Northern Ireland. The objective of the Cadbury Committee was to investigate how large public companies should adopt corporate governance guidelines with a focus on the procedures of financial report production and the role of the accounting profession. Issues included the role of the board of directors, standards of financial reporting, accountability of auditors, and directors' pay.

A follow-on study was carried out in the United Kingdom with the Greenbury Report (1995) which was released to address in more detail the remuneration of executives and non-executive board members. The Report recommended the setting up of a remuneration committee in each public company to determine the remuneration packages for the board members. It also provided suggestions on the disclosure of remuneration and the setting up of remuneration policy and service contracts and compensation.

Another major effort resulted in the Hampel Report (1998) in the United Kingdom that supposedly served as a concluding study on the issues raised by the Cadbury and Greenbury Reports. Four major issues were discussed with practical guidelines offered: (a) the role of directors; (b) directors' compensation; (c) the role of shareholders; and (d) accountability and audit.

Separate efforts were made in other OECD countries to address similar issues as in the various studies carried out in the United Kingdom. In general, these efforts addressed the notions that decisions made by the directors and executives of a public company should be consistent with the interest of shareholders, and that investors, especially professional institutional investors, should receive adequate, accurate, and timely information concerning the operations and, hence, the value of the firm.

The foundation of corporate governance concerns lies in the ownership structure of firms listed in stock exchanges and the institutional setting of these capital markets. Typically, there is a clear separation between ownership and control in these companies. Directors and key executives, while responsible for the investment and other corporate decisions of the company, are acting as an "agent" for the shareholders of the company rather than as a "principal". Furthermore, directors and officers as a group usually hold a small portion of the equity of the company. Studies carried out in the United States of America suggest that such corporate insiders hold on

average about 5 per cent of the shares of the company. It is not clear how these parties will make decisions consistent with the interest of shareholders as a whole.

OECD listed companies are also characterized by significant ownership by institutional investors. The online corporate governance resource centre <www.corpgov.net> states that institutional investors hold about one half of all listed corporate stock in the United States and about 60 per cent in the largest 1,000 corporations. In capital markets outside the United States, the top 25 American pension funds account for 42 per cent of the foreign equity held by all American investors.[1]

Table 1 provides pertinent international data of institutional holdings of equity. The table shows that in the period 1990-1991, the holdings by institutional investors, as defined by financial institutions including banks, insurance companies, pension funds, and investment companies, were, respectively, 40 per cent in the United States, 61 per cent in the United Kingdom, 20 per cent in Germany, and 47 per cent in Japan. Pension funds represent the most significant group of institutional investors. In the United States pension funds represent 25 per cent of all equity. This figure is 30 per cent in the United Kingdom. In Germany and Japan, insurance companies represent a large group of institutional investors, 11 per cent and 17 per cent of all equity. These figures suggest that to a significant degree, the ownership structure of corporations in OECD countries is driven by the adoption of universal pension benefit programmes such as ERISA in the United States.[2]

The active involvement of institutional investors implies that fund managers (who are agents of fund beneficiaries) demand information matrices through which they can make their investment decisions and an assurance of proper monitoring of public companies.[3] The globalization of capital markets presents a trend in the pursuit for a common set of policy guidelines and codes of practice. At a higher level, policy makers are more and more aware of the benefits of good governance. For the investment community, institutional investors present a dominant force in making portfolio investment decisions outside the home country.

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1 Source: <www.corpgov.net>.

2 An example of pension fund related institutions is the California Public Employees Retirement System (CalPERS). CalPERS is the largest American pension fund and the third largest in the world. CalPERS recognizes that good governance is associated with lower risk and a higher return on the investment of the institution, and actively involves in identifying and investing in companies with good governance practices.

3 Typically, fund managers actively utilize analysis results in their investment decision process. Hence, fund managers contribute to a storing demand for analysis concerning the value of the companies. Corporate governance structure is a key feature that determines firm value. On a separate consideration, the evidence on whether institutional investors actually participate in corporate governance activities is mixed. While there is strong evidence that institutional investors contribute to (and utilize) corporate governance *resources*, some studies suggest that fund managers in general do not participate in the corporate governance *process*. For example, fund managers might actively participate in the voting process, go to proxy meetings, etc.

Table 1. Institutional ownership structures in selected OECD countries, 1990-1991

	United States	*United Kingdom*	*Germany*	*Japan*
A. Institutional investors				
Banks	0.30	0.90	8.90	25.20
Insurance companies	5.20	18.40	10.60	17.30
Pension funds	24.80	30.40	0.00	0.90
Investment companies	9.50	11.10	0.00	3.60
Subtotal	**39.80**	**60.80**	**19.50**	**47.00**
B. Other investors				
Non-financial businesses	0.00	3.60	39.20	25.10
Household	53.50	21.30	16.80	23.10
Government	0.00	2.00	6.80	0.60
Foreign	6.70	12.30	17.70	4.20
Subtotal	**60.20**	**39.20**	**80.50**	**53.00**
TOTAL	**100.00**	**100.00**	**100.00**	**100.00**

Source: Kester (1997), p. 234.

Over the last few years different country groups have been establishing their own common set of benchmarks for corporate governances, for instance, the OECD Council called upon the OECD to develop a set of corporate governance standards and guidelines and published in May 1999 a common set of guiding principles on corporate governance for all OECD member countries. Members of APEC considered that the OECD guidelines have the problem of 'one size cannot fit all' and some may be applicable to some, but not all. APEC countries therefore called upon the Pacific Economic Cooperation Council (PECC) to develop a set of guidelines which were in line with the OECD principles. The APEC guidelines can be considered as a middle step for emerging markets to achieve a better practice of good corporate governance. This set of guidelines forms the standard for individual Governments, regulatory bodies and professional bodies to develop their agendas and with a view to setting up acceptable codes of practice.

I. INTERNATIONAL STANDARDS AND OECD PRINCIPLES

There are several models that describe the nature of the governance systems in corporations. As stated earlier, such a system is the result of the institutional setting and also the culture within which the corporations are operating. One such classification is the Anglo-Saxon model (that applies to the United Kingdom and the

United States) and, the other, the Rhineland model (that applies to Germany and some other continental European countries).

The Anglo-Saxon model of governance is characterized by widespread shareholding of equity and a stress on financial objectives by the companies. A typical company is one that is represented by a large number of shareholders at arms-length (hence the model is sometimes referred to as the "outsider model"). The objective of the governance system is to set up rules and guidelines so that board members and executives work to maximize shareholder wealth. Shareholders are viewed as the "risk takers" of the company.

The Rhineland model is characterized by a significant holding by a parent company and outside shareholders represent a smaller portion of the equity. This model is based more on a "socially correct" market economy. In fact, individual companies within a particular company group can be viewed as an "internal market", both in terms of financial and other resources such as labour and intellectual properties. Hence, cooperation is stressed. Shareholders in this system are generally stable partners and relatively longer-term investors as compared with the Anglo-Saxon model. Shareholders are viewed as "partners" of the company.

The Rhineland model also presents a difference in the structure of the board of directors. German companies, for instance, are comprised of a dual board system: a supervisory board that is responsible for strategic decision-making, and a managerial board that is responsible for the execution of the day-to-day strategies (a broadly similar system is present in the Japanese corporate system).

The OECD principles cover five aspects of governance: (a) the rights of shareholders; (b) the equitable treatment of shareholders; (c) the role of stakeholders in corporate governance; (d) disclosure and transparency; and (e) the responsibilities of the board. Table 2 provides a summary of the main issues in each of these five areas.

II. CORPORATE GOVERNANCE IN SOME ASIAN COUNTRIES

The OECD principles attempt to act as a common platform from which each individual country starts to build the codes of best practice most suitable for the specific issues faced by that particular country. The OECD also recognizes that corporate governance should be an evolutionary process and be adjusted as new issues emerge in the capital markets.

As corporate governance is the product of a complex set of cultural, economic, and social issues and that the governance structures of corporations differ from country to country, it is appropriate that corporate governance guidelines and practice codes be designed and adopted by each constituent country. In the end, corporate governance should produce an environment within each country that corporations identify with and can adhere to in their decision-making processes. In Asian countries, the interest

Table 2. Summary of OECD principles of corporate governance

Rights of shareholders	1. Recognition of basic shareholder rights 2. Shareholders have the right to participate in decisions concerning fundamental corporate changes 3. Voting rights of shareholders 4. Disclosure of disproportionate voting rights of certain shareholders to obtain a degree of control 5. Markets for corporate control should be allowed to function 6. Shareholders should consider the costs and benefits of exercising their voting rights
Equitable treatment of shareholders	1. All shareholders of the same class should be treated equally 2. Insider trading and abusive self-dealing should be prohibited 3. Board members and managers should disclose material interests
Role of stakeholders	1. Assure that rights of stakeholders are protected by law 2. Stakeholders should have the opportunity to obtain effectiveness redress for violation of their rights 3. Permit performance-enhancing mechanisms for stakeholder participation 4. Stakeholders should have access to relevant information in the corporate governance process
Disclosure and transparency	1. Scope of material information to be disclosed 2. Information should be prepared in accordance with high accounting standards 3. Annual audit should be conducted by an independent auditor 4. Fair, timely and cost-effective means of disseminating information
Responsibilities of the board	1. Board members should act on the best interest of the company with due diligence and care 2. The board should treat all shareholders fairly 3. The board should ensure compliance with the law and take account the interest of stakeholders 4. Definition of key functions of the board 5. The board should exercise objective judgment independent from management 6. Board members should have access to accurate, relevant and timely information

Source: OECD Principles of Corporate Governance (1999).

in corporate governance has been sporadic but has stepped up in the late 1990s following the 1997-1998 crisis. Subsequent to the outbreak of the Asian currency crisis in 1997, the flow of capital from foreign investors suddenly dried up, leading to intense liquidity problems in local capital markets and a real impact on the economy due to insufficient capital and investor apprehensions.

From a national perspective, the promotion of good corporate governance serves two important purposes in the development of local and regional capital markets. First, local equity markets play a central role when there is a lack of foreign capital. Good corporate governance promotes the development of local equity markets and reduces the reliance on foreign debts. Second, institutional investors usually constitute the majority of foreign investors. Improved corporate governance provides a higher level of investor confidence from international investors and thus increases the stability of local equity and other capital markets. There are thus significant benefits flowing from good governance to the Asian corporate setting. The most significant is the reassurance of investor confidence, especially for foreign institutional investors. In the long run, good governance leads to the stable development of local capital markets since foreign capital becomes more "patient".

Studies have stressed several factors that contribute to an environment that nurtures good governance: (a) laws that define and protect private property rights; (b) laws that protect and enforce contractual rights, such as contracts between lenders and borrowers; (c) laws that protect against fraud and unfair and deceptive trade practices; (d) centralized banking laws; (e) bankruptcy laws; and (f) a competent, ethical, politically independent judiciary. Other studies suggest that sound corporate governance enhances stable and low cost capital formation. To preserve this benefit, measures taken should include (a) corporate management to prevent fraud, waste, and inefficient use of corporate assets; and (b) disclosure of relevant information using consistent and comparable accounting and auditing standards.

Value of good corporate governance

Studies have provided evidence in support of the real value of corporate governance to corporations. McKinsey & Company conducted an investor opinion survey on a sample of local and foreign institutional investors in 2000 and 2002. The study was addressed to a large group of institutional investors in each of the economies studied to see if the investors were willing to pay a premium for good governance and if yes, the magnitude of the premium. Table 3 provides a summary of the key results in the McKinsey study. An overwhelmingly large percentage of the respondents stated that they were willing to pay a premium for companies with good governance structures. In 2000, on average, 83.5 per cent of the investors included in the study were willing to pay a premium for well-governed companies while 81 per cent were willing to pay a premium for well-governed companies in Europe and 89 per cent in Asia. These numbers provide a clear indication of the positive value of good corporate governance practice. This benefit of a supposedly higher firm value is even more pronounced in Asia. However, there is sign of improvement in that the percentage of investors that were willing to pay a premium for well-governed companies decreased in Asia in the 2002 survey. With regard to the magnitudes of premiums that investors were willing

Table 3. Investors' willingness to pay a premium for good corporate governance

Panel A – Investors willing to pay a premium (per cent)

Region	*2002 (per cent)*	*2000 (per cent)*
Western Europe	78.0	81.0
Asia	78.0	89.0
North America	76.0	81.0
Latin America	76.0	83.0
Eastern Europe/Africa	73.0	n.a.
Average	**76.2**	**83.5**

Panel B – Average premiums of those investors willing to pay a premium (per cent)

Country/economy	*2002 (per cent)*	*2000 (per cent)*
A. OECD countries		
France	13.0	20.0
Japan	21.0	20.0
Germany	13.0	20.0
United Kingdom	12.0	18.0
United States	14.0	18.0
Average	**14.6**	**19.2**
B. Non-OECD countries/economies in Asia		
Indonesia	25.0	27.0
Republic of Korea	20.0	24.0
Malaysia	22.0	25.0
Thailand	20.0	26.0
Taiwan Province of China	19.0	20.0
Average	**21.2**	**24.4**

Source: McKinsey 2002.

to pay, it appears that there is a pattern that the value of good corporate governance is higher for economies where the quantity and quality of information available to investors is inadequate. For example, in 2000, the average premium in OECD economies was 19.2 per cent, compared with the average premium of 24.4 per cent in non-OECD Asian economies. The highest level of premiums was prevalent in Indonesia (27 per cent) and Thailand (26 per cent), both countries heavily affected by the withdrawal of foreign investment capital during the Asian currency crisis of the late 1990s. In 2002, the average premium for OECD economies was 14.6, compared with

the average premium of 21.2 per cent in non-OECD Asian economies. We observe that there was some improvement in both OECD and non-OECD economies in Asia on the average premiums of those investors willing to pay. The highest level of premiums still applied to Indonesia (25 per cent) and Malaysia (22 per cent). The premium for Thailand had declined to 20 per cent, possibly due to slow progress with corporate restructuring in the post-1997 period.

Convergence and divergence of Asian codes

Given the common awareness and recognition of the benefits of sound corporate governance, many factors exist that stimulate the convergence of corporate governance codes with international standards. A set of factors is suggested by the literature to affect the convergence of governance:

- Enhancing shareholder value as *the* or *a* primary focus of companies
- The need for non-executive and independent non-executive directors to provide an "outside" view on strategic direction
- The usefulness of board committees responsible for audit, nomination and compensation and comprising a majority of independent directors
- The importance of higher levels of information disclosure from listed companies
- Allowing or encouraging institutional investors to act as a check against management

A specific example of convergence in governance standards in Asia is the development of audit committees. The series of events can be summarized as follows:

- 1989 – Singapore mandated the adoption of audit committees following the collapse of a major conglomerate and a market crisis in the mid-1980s
- 1994 – Malaysia followed suit
- 1998 – Thailand announced that all listed companies must form audit committees by December 1999
- 1999 – the Republic of Korea also made audit committees mandatory for the listed subsidiaries of the top 30 conglomerates

There are other examples of divergence, including:

- The "stakeholder" concept: some countries (China, the Republic of Korea, Japan and Thailand) adopt the concept of stakeholders in their governance principles, whereas Singapore and Malaysia stress the social importance of corporations, but do not emphasize stakeholders in the context of governance

- Board structure: some countries have single-tier, and some have two-tier boards. Most countries have the former. Thailand is alone in considering moving from single-tier to a two-tier style
- Different legal systems: Singapore, Malaysia and Hong Kong, China have Anglo-Saxon legal systems, whereas other economies have a variety of roots in their legal systems
- Scope of an economy's practice code: Both Singapore and Hong Kong, China have small codes that are limited in scope. The latter's code is about a page and a half long and is extremely general. Singapore's current code is of similar length and only focuses on audit committees. At the other end of the scale is the new code from the Republic of Korea, which runs to about 40 pages and covers each aspect of governance comprehensively.

III. CHARACTERISTICS OF ASIAN CAPITAL MARKETS

In many aspects, Asian equity markets are very different from major equity markets in the developed, western countries. Characteristics include smaller capitalization, smaller size of capital raised, relatively infrequent turnover and a concentration of ownership. These characteristics have a bearing not only on how corporate governance standards can be raised but limit the impact of reforms on the overall nexus between investors and the development of the economy.

Market capitalization

Table 4 presents summary information for market capitalization of 7 major stock exchanges of OECD countries (including Japan) and 10 emerging stock exchanges in Asian economies. The data are taken from the database of the International Federation of Stock Exchanges, which is a federation of 49 stock exchanges worldwide. As of the end of 2002, the world capitalization of all 49 exchanges was US$ 23 trillion. The largest two stock exchanges as at end-2002 were the New York Stock Exchange (NYSE) and the Tokyo Stock Exchange, representing capitalization of US$ 9.0 and US$ 2.1 trillion, respectively. Taken together, the NYSE and the Tokyo Stock Exchange accounted for US$ 11.1 trillion total capitalization, or 48.6 per cent of world capitalization. The combined capitalization of NYSE, NASDAQ, Tokyo, London, Frankfurt, Euronext, and Toronto was US$ 17.7 trillion, or 77.5 per cent of world capitalization. Within the set of Asian (plus Australia) stock exchanges, Hong Kong, China was the largest with a capitalization of US$ 463 billion, followed by Australia (US$ 380 billion). Other relatively large exchanges were Taiwan Province of China (US$ 261 billion), Republic of Korea (US$ 216 billion), and Kuala Lumpur

Table 4. Market capitalization of domestic shares (millions of US dollars)

Exchange	*End 2002*	*End 2001*	*Change (per cent)*
A. Major OECD exchanges			
NYSE	9 015 271	11 026 587	-18.24
NASDAQ	1 994 494	2 739 675	-27.20
Tokyo	2 069 299	2 264 528	-8.62
London	1 800 658	2 164 716	-16.82
Euronext*	1 538 654	1 889 455	-18.57
Frankfurt	686 014	1 071 749	-35.99
Toronto	570 223	611 493	-6.75
Subtotal	**17 674 613**	**21 768 203**	**-18.81**
B. Other Asian exchanges			
Australia	380 087	375 598	1.20
Hong Kong, China	463 055	506 073	-8.50
Jakarta	30 067	22 998	30.74
Republic of Korea	215 662	194 470	10.90
Kuala Lumpur	122 892	118 981	3.29
New Zealand	21 715	17 736	22.43
Philippines	18 183	20 606	-11.76
Singapore	101 554	117 338	-13.45
Taiwan Province of China	261 311	292 872	-10.78
Thailand	45 406	35 950	26.30
Subtotal	**1 659 932**	**1 702 622**	**-2.51**
World total **	**22 809 564**	**26 904 918**	**-15.22**

Source: International Federation of Stock Exchanges (FIBV).

* Euronext included Amsterdam, Brussels, Lisbon and Paris.

** World total as sum of 49 exchanges reported in the FIBV database.

(US$ 123 billion). Taken together, the 10 Asian exchanges accounted for US$ 1,660 billion, which was less than the size of the London Stock Exchange.

Capital raised

Table 5 presents information on the amount of funds raised in stock exchanges in selected economies in the years 2001 and 2002. It should be noted that the year 1999 was an exceptionally good year for telecommunications, media, and technology (TMT) stocks, and a significant part of equity raising worldwide was related to TMT

Table 5. Total equity capital raised (millions of US dollars)

Exchange	***2002***			***2001***			*Change (per cent)*
	Listed companies	*Newly listed companies*	*Total*	*Listed companies*	*Newly listed companies*	*Total*	
NYSE	18 000	28 300	46 300	49 290	32 100	81 390	-43.11
NASDAQ	11 083	4 500	15 583	23 981	7 840	31 821	-51.03
Tokyo	16 031	n.a.	16 031	16 917	n.a.	16 917	-5.23
London	18 095	8 093	26 189	20 113	9 499	29 611	-11.56
Euronext*	30 794	3 209	34 003	45 297	34 956	80 253	-57.63
Frankfurt	–	203	203	–	2 573	2 573	-92.12
Toronto	8 646	5 808	14 454	5 967	7 624	13 591	6.35
Subtotal			**152 763**			**256 156**	**-40.36**
Australia	9 430	2 880	12 310	5 541	1 115	6 656	84.95
Colombo	10	1	11	2	0	2	360.61
Hong Kong, China	7 499	6 665	14 164	4 964	3 297	8 261	71.46
Jakarta	802	121	923	400	123	523	76.41
Republic of Korea	1 040	5 009	6 049	108	3 938	4 047	49.47
Kuala Lumpur	1 553	1 835	3 388	412	295	707	378.89
New Zealand	570	665	1 235	332	519	851	45.16
Philippines	709	77	786	139	5	143	448.79
Singapore	0	1 208	1 208	0	857	857	40.94
Taiwan Province of China	1 067	655	1 722	1 152	386	1 538	11.97
Thailand	1 606	217	1 823	2 430	777	3 207	-43.15
Subtotal			**43 619**			**26 792**	**58.30**
World total**			**261 984**			**334 813**	**-21.75**

Source: International Federation of Stock Exchanges (FIBV).

* Euronext included Amsterdam, Brussels, Lisbon and Paris.

** World total as sum of 49 exchanges reported in the FIBV database.

companies. Overall, the year 2002 saw a decrease in equity raising activities. The world portfolio (FIBV total) saw a 21.8 per cent decrease in capital raised. The 7 stock exchanges in OECD member countries (NYSE, NASDAQ, Tokyo, London, Frankfurt, Euronext, and Toronto) experienced a 40.4 per cent decrease in capital raised, whereas the 11 Asian stock exchanges (excluding Japan) experienced a 58.3 per cent increase. As a percentage of total capital raised, the OECD exchanges played a very substantial role in 2002. Total capital raised in the 7 OECD exchanges totaled US$ 153 billion, representing 58.3 per cent of the world total. This proportion had shown a significant decrease from the previous year, in which the 7 exchanges raised 76.5 per cent of all capital raised.

The Asian exchanges also showed a significant increase in capital raised. Total capital raised in 2002 was US$ 43.6 billion, representing 16.2 per cent of the world total. This was also a significant improvement from 2001 in which the same group of exchanges raised 8.0 per cent of the total capital raised in all exchanges. NYSE and Euronext both showed decreases in capital raised. In 2002 a total of US$ 46 billion (or 17.7 per cent of capital raised globally) was raised in NYSE, and a total of US$ 34 billion (or 13.0 per cent of capital raised globally) was raised in Euronext. It should be noted that more than 60 per cent of the funds raised in NYSE were raised by newly listed firms in the form of initial public offerings (IPOs), while a majority of the funds raised in Euronext were raised by already listed firms. In Asian economies, the most significant increase was in the Philippines Stock Exchange, with total equity raised of US$ 786 million compared to US$ 143 million in 2001. This increase, however, was mainly attributable to the sharp decline in capital raised by Indonesian companies during the Asian currency crisis. Other than the Philippines Stock Exchange, significant growth in capital raised was found in the Kuala Lumpur Stock Exchange (379 per cent) and the Colombo Stock Exchange (361 per cent). On the other hand, the Thailand Stock Exchange showed a decline in the capital raised. Data presented in table 5 suggest the weak capital raising capabilities in Asian stock exchanges. While 1999 was a banner year for stocks, it appeared that the larger stock exchanges and the ones with more TMT related companies (which were hot during 1999) received the majority of the benefits in capital raising capabilities. A significant number of Asian member economies still lack such capabilities.

Significance of the stock market

Table 6 provides a summary of the importance of national stock markets in 2001 measured by the percentage of stock market capitalization as a percentage of GDP using data from the IMF database. This indicator shows the significance of the finance sector as represented by the stock market in the provision of funding for corporate development. The general rule is the higher is the percentage of the stock market capitalization to GDP, the larger is the share of the stock market in representing the general economy in the country. The sample of six OECD stock markets had a high percentage of the stock market to GDP ratio of 97.9 per cent. The highest ratios were in the United Kingdom (152.2 per cent) and the United States (137.1 per cent). The countries that had lower ratios include Germany (58.1 per cent) and Japan (55.4 per cent). For the sample of 11 Asian member economies, the stock market capitalization to GDP ratio was significantly lower. The average ratio for the 11 was 85.7 per cent. Those with the highest ratio were, respectively, Hong Kong, China (312.8 per cent), Singapore (137 per cent), Malaysia (135.1 per cent), and

Table 6. Significance of stock markets in the economy in 2001 (millions of US dollars)

	Stock market capitalization	*GDP*	*Per cent*
United States*	13 827	10 082	137.14
United Kingdom	2 165	1 423	152.15
Japan	2 294	4 141	55.39
France	n.a.	1 310	n.a.
Germany	1 072	1 846	58.06
Canada	611	705	86.71
Australia	376	358	104.94
Hong Kong, China	506	162	312.76
Indonesia	27	153	17.49
Republic of Korea	194	422	46.07
Malaysia	119	88	135.13
New Zealand	18	50	35.14
Philippines	21	71	28.85
Singapore	117	86	137
Sri Lanka	1	16	8.5
Taiwan Province of China	293	n.a.	n.a.
Thailand	36	115	31.32

Source: IMF, *International Financial Statistics Yearbook 2001.*

* market capitalization and capital raised in the United States includes Amex, Chicago, NASDAQ and NYSE.

Australia (105 per cent).[4] The countries with the lowest ratios were, respectively, Sri Lanka (8.5 per cent), Indonesia (17.5 per cent), and Thailand (31.3 per cent).

A brief conclusion drawn from the figures in table 6 is that certain non-OECD economies are characterized by relative underdevelopment in capital markets. This property is the case even for Japan, which represents the second largest national stock market (after the United States, as indicated in table 4) in the world. The stock market in Japan remains a relatively small representation of the size of the national economy and it was basically a closed market until the late 1980s. The other emerging markets in Asia show a similar pattern of underdevelopment in capital markets. In general, corporate governance develops hand in hand with the capital market system. With relatively underdeveloped capital markets, these economies will

[4] Hong Kong, China should also have a high stock market to capitalization ratio. However, such information was not available in the IMF database.

be faced with additional issues in designing and enforcing the appropriate corporate governance rules.

Stock turnover

Table 7 reports the turnover on the stocks of domestic and foreign companies in 7 OECD stock exchanges and 10 Asian stock exchanges in 2001 and 2002. In 2002, total turnover for this sample was measured at US$ 28.3 trillion, compared with US$ 32.9 trillion in 2001, showing a 14 per cent decrease. The rate of turnover decrease in the OECD exchanges (6.4 per cent) was in contrast to the increase in the

Table 7. Turnover value (millions of US dollars)

Exchange	*2002 Domestic companies*	*Foreign companies*	*2001 Domestic companies*	*Foreign companies*
NYSE	9 410 337	701 696	9 601 548	787 343
Tokyo	1 551 127	518	1 655 695	406
NASDAQ	7 000 343	251 537	10 464 898	469 185
London	1 881 103	2 104 628	1 843 956	2 656 076
Euronext*	1 955 603	18 107	2 056 033	14 099
Frankfurt	1 110 392	101 909	1 288 481	134 890
Toronto	397 187	238	448 462	401
Subtotal	**23 306 092**	**3 178 633**	**27 359 073**	**4 062 400**
All companies		**26 484 725**		**31 421 473**
Australia	290 946	4 453	241 323	3 139
Hong Kong, China	193 685	257	238 145	212
Jakarta	13 050	0	9 410	0
Republic of Korea	596 435	0	379 548	0
Kuala Lumpur	32 623	290	23 585	290
New Zealand	7 514	1 268	8 527	1 308
Philippines	3 045	48	3 050	79
Singapore	n.a.	n.a.	n.a.	n.a.
Taiwan Province of China	633 226	290	541 491	257
Thailand	41 280	0	30 804	0
Subtotal	**1 811 804**	**6 606**	**1 475 883**	**5 285**
All companies		**1 818 410**		**1 481 168**
TOTAL		**28 303 135**		**32 902 641**

Source: International Federation of Stock Exchanges (FIBV).

* Euronext included Amsterdam, Brussels, Lisbon and Paris.

Asian exchanges (4.4 per cent). The stock turnover in OECD stock exchanges represented 88 per cent of turnover for domestic companies in 2002. The same ratio was 87.1 per cent in 2001 (approximately 12 per cent of shares listed on these exchanges were of foreign companies). The most international stock exchange was the London Stock Exchange, which had 52.8 per cent of all turnover from foreign companies in 2002 (59 per cent in 2001). The other exchanges with a high representation of foreign companies include Germany (8.4 per cent) and NYSE (6.9 per cent).

Asian exchanges, on the other hand, are mostly domestic exchanges. The only exception is New Zealand with 14.4 per cent of turnover accounted for by foreign companies. All other exchanges have less than 2 per cent of turnover in foreign companies. As a group, the ratio of turnover in domestic companies was both 99.6 per cent in 2002 and 2001. Two points are noteworthy. First, most of the stock turnover is in the largest OECD stock exchanges. The sample of OECD exchanges accounted for a combined turnover of US$ 26.5 trillion, or 93.6 per cent of all turnover. This percentage was 95.5 per cent in 2001. NYSE and NASDAQ, the largest stock exchanges, together accounted for a turnover of US$ 17.4 trillion or 61.4 per cent of all turnovers. Asian stock exchanges, on the other hand, accounted for a total of 6.4 per cent of all turnover.

A significant number of investors in stock markets can be referred to as "day traders". Typically these investors made their investment decisions not on company fundamentals but on the dynamics of the stock market index or individual stock prices. The implication of the rise of day traders was that a larger portion of the investment community pays little attention to the actual investment value of the underlying company. It is unlikely that these investors would pay much attention to the detail of the governance of the companies. The generalization we can draw from the turnover behaviour is that when short-term stock market performance is good, more investors tend to focus on issues related to investor psychology rather than company fundamentals. The other side of the coin is that when the stock market is behaving poorly, the stock exchanges (which are an integral part of promoting corporate governance) will become resource-constrained as their income is mainly derived from the volume of stock turnover. As far as corporate governance is concerned, the objective is to set a long-term goal, which is independent from fluctuations in the stock market.

Market depth

Market depth refers to the level of liquidity in a stock market and the possibility that a significant block of shares can be sold with a mild impact on the stock price. Market depth is especially significant for foreign investors, who are characterized by: (a) a general lack of knowledge in local, social, political, and

cultural factors that might have an impact of the stock market; (b) dominated by institutional investors that rely heavily on indirect research from their brokers; and (c) generally have substantial holdings of equity that might suffer significant losses in the event of a market-wide decline on their portfolio holdings. Tables 7 and 8 provide some insight on the degree of market depth for various OECD and Asian stock markets. Table 7 reports turnover value by local and foreign investors in 2001 and 2002. Table 8 reports the average amount traded per day, the average number of transactions, and average value of transactions in these markets. Table 7 reports that in 2002 the sample of OECD stock exchanges had a total turnover of US$ 26.5 trillion, or 93.6 per cent of all turnover in the exchanges represented in the table. Among these figures, an average of 12 per cent of turnover was in the stocks of foreign companies (i.e., listed companies from a country other than the country of the stock exchange).

Table 8. Average amount and value of stock trading

	Average amount traded per day (US$ million)		*Number of transactions per day ('000)*		*Average value of transactions (US$ '000)*	
	2002	*2001*	*2002*	*2001*	*2002*	*2001*
NYSE	40 917.3	42 294.5	2 164.94	1 368.75	18.9	30.9
NASDAQ	28 788.1	44 091.0	2 379.18	2 435.97	12.1	18.1
Tokyo	6 358.7	6 747.6	n.a.	n.a.	n.a.	n.a.
London	15 878.3	17 866.3	151.80	129.09	104.6	138.4
Euronext*	7 797.5	n.a.	253.17	n.a.	30.8	36.6
Frankfurt	4 791.7	5 626.0	290.41	372.58	16.5	15.1
Subtotal	**104 531.6**	**116 625.4**	**5 239.49**	**4 306.40**		
Australia	1 167.6	966.3	55.34	52.52	21.1	18.4
Hong Kong, China	785.4	991.8	83.55	99.18	9.4	10.0
Jakarta	53.3	38.3	12.69	14.73	4.2	2.6
Republic of Korea	2 445.2	1 543.2	788.77	643.00	3.1	2.4
Kuala Lumpur	132.8	97.9	51.08	54.39	2.6	1.8
New Zealand	35.4	39.6	2.12	2.73	16.7	14.5
Osaka	504.1	709.4	18.13	14.24	27.8	49.8
Philippines	12.6	12.7	2.03	2.59	6.2	4.9
Singapore	251.2	284.4	n.a.	n.a.	n.a.	n.a.
Taiwan Province of China	2 555.0	2 220.9	690.54	584.45	3.7	3.8
Thailand	168.5	125.8	52.4	39.1	2.3	2.4
Subtotal	**8 111.1**	**7 030.3**	**1 756.66**	**1 506.93**		

Source: International Federation of Stock Exchanges (FIBV).

* Euronext included Amsterdam, Brussels, Lisbon and Paris.

The London Stock Exchange was the most international exchange with US$ 2.1 trillion or 52.8 per cent of turnover in foreign companies. Japan was the least international market with turnover in foreign companies representing US$ 518 million or a mere 0.03 per cent of turnover.

In the Asian stock markets, total turnover in foreign companies was US$ 6.6 billion, representing 0.3 per cent of total turnover. Only New Zealand had a significant portion of turnover in foreign companies. In 2002, 14.4 per cent of turnover in the New Zealand Stock Exchange was in foreign companies, compared with 13.3 per cent in 1998. All other exchanges had a percentage close to or less than 2 per cent. Table 8 shows that stock trading increased significantly in 2002, both in total value and the number of transactions. The number of transactions increased by 36.8 per cent in OECD exchanges and 15.3 per cent in Asian exchanges. NASDAQ was the most active stock exchange by the number of transactions in 2002. The total number of transactions per day was 2,379,180, representing a 2.3 per cent decrease from the figure in 2001. The average value per transaction was US$ 12,100, or a decrease of 33.1 per cent from the figure in 2001. The London Stock Exchange showed the largest average size of transaction. Average transaction value in London was US$ 104,600 in 2002 and US$ 138,400 in 2001, indicating the unique feature of London as a focus for institutional investors.

As for the Asian exchanges, most showed a significant increase in both the total trading volume and the number of transactions. However, most exchanges represented a fairly consistent pattern of small average value per transaction. For example, Jakarta showed the most significant increase in stock trading. The figures for average value per transaction were US$ 4,200 in 2002 and US$ 2,600 in 2001, respectively. The exceptions to the rule of small transaction size included the Osaka Stock Exchange (with an average transaction size of US$ 27,800 in 2002) and the Australian Stock Exchange (with an average transaction size of US$ 21,100 in 2002). Overall, the Asian stock exchanges are characterized by low market depth and small transaction size. These features are also related to the dominance of small individual investors. For example, the Republic of Korea (with 788,770 transactions per day) and Taiwan Province of China (with 690,540 transactions per day) were both heavily represented by local individual investors. Experience has shown that markets, which are heavily represented by individual investors, are often associated with a lack of interest in corporate governance. In general, individual investors are less informed than institutional investors and do not intend to participate in governance activities such as voting in determining corporate matters.

IV. ISSUES IN CORPORATE GOVERNANCE IN ASIA

Regulatory system of stock markets

Table 9 provides an overview of the regulatory bodies and clearing settlement organization for OECD and Asian stock markets. The institutional set-up of the regulatory bodies and the clearing and settlement arrangements provide the framework in which stock trading takes place. Many Asian countries have established regulatory bodies for their stock markets. In addition, many have passed a number of laws with respect to the operations of the capital markets. The objective of setting up the regulatory bodies and enacting the laws has been to facilitate stock trading in the local market. However, such institutional settings have usually focused on the mechanism of stock trading and have given less attention to corporate governance issues such as investor protection.

Family ownership

Unlike the OECD model of diverse ownership and separation of the board (led by the Chairman) and management (represented by the Chief Executive Officer), Asian listed firms exhibit a clear pattern of concentration of ownership and convergence of major shareholding and management. It is conceivable that a number of corporate governance issues that have arisen in the western model do not apply fully in the Asian setting of concentrated ownership. For example, the issue of board composition (such as number of independent non-executive directors) might not necessarily provide a strong system of checks and balances between the interest of the major shareholder and that of the minority shareholders. Since directors are elected by the controlling shareholders, it is unlikely that the number of non-executive directors will provide an adequate degree of monitoring of the majority shareholders or be able to exert a strong influence on major corporate decisions. The role of such non-executive directors, however, may serve an advisory purpose in the decision-making process. Another issue concerns executive compensation in closely held companies. The standard argument in the executive compensation literature is based on the view that the management team, in particular the Chief Executive Officer, normally holds a negligible stake in the equity.[5] As a result, conflicts of interest between the shareholders and management could arise. However, in the event that the controlling shareholders also hold major executive positions, the majority shareholders/managers will bear a larger share of the cost of potentially excessive compensation and lack of monitoring of the management team.

[5] This argument is especially valid in large American corporations. Studies have shown that in these corporations the management team as a whole typically owns less than 5 per cent of the equity.

Table 9. Regulatory bodies of major stock exchanges

Exchange	*Supervisory body*	*Clearing & settlement organization*
New York	Securities & Exchange Commission (SEC)	DTCC – Depository Trust & Clearing Corp.
NASDAQ	Securities & Exchange Commission (SEC)	National Securities Clearing Corporation (NSCC) & Depository Trust Company (DTC)
Tokyo	Financial Services Agency & Securities and Exchanges Surveillance Commission	TSE, Japan Securities Clearing Corp. (JSCC)
London	Financial Services Authority (FSA)	CREST
Paris	CMF/COB	CLEARNET SA
Deutsche Börse-Frankfurt	The market supervisory Office Wiesbaden/German Federal securities affairs supervisory body (BAFin), the local State stock market supervisory authority and the stock market internal trading supervision and monitoring body.	Clearstream International
Toronto	Ontario Securities Commission	Canadian Depository for Securities
Australian Stock Exchange	Co-regulatory regime – ASX and the Australian Securities and Investments Commission (ASIC)	ASX Settlement and Transfer Corporation
Hong Kong, China	Securities & Futures Commission (SFC)	Hong Kong Securities Clearing Co., Ltd.
Jakarta	BAPEPAM (Capital Market Supervisory Agency)	Indonesia Clearing and Guarantee Corporation (PT KPEI)
Republic of Korea	Financial Supervisory Commission (FSC)	Korea Stock Exchange The Korea Securities Depository (KSD) acts as KSE's agent for the settlement.
Kuala Lumpur	Securities Commission	Securities Clearing Automated Network Services Sdn. Bhd.
New Zealand	Self-regulated	FASTER
Philippines	Securities & Exchange Commission (SEC)	Securities Clearing Corp. of the Philippines (SCCP)
Singapore	Monetary Authority of Singapore	The Central Depository (Pte) Ltd. Options Clearing Company (Pte) Ltd.
Taiwan Province of China	Securities & Futures Commission	No independent clearing & settlement organization

Source: International Federation of Stock Exchanges (FIBV).

The difference in the ownership structure has the implication that executive compensation might not be a significant issue as in the case of OECD companies. For example, the major shareholder/manager who singly owns 51 per cent of the equity will have to bear 51 per cent of the wealth effects of corporate decisions. The implication for their personal wealth of excessive compensation and other suboptimal corporate decisions will be much more intense than for the typical CEO in OECD companies who owns a much smaller share of equity. Table 10 summarizes a study on a sample of 1,740 Asian listed companies carried out by *Finance Asia*. This sample covers approximately 78 per cent of companies in the economies studied in terms of market share. The study defines a company as "family-owned" if the percentage of equity owned by the members of a family exceeds 20 per cent.[6] Table 10 shows that approximately 58.0 per cent of all Asian companies (by market capitalization) can be classified as being family-owned. The profile of family ownership is fairly consistent throughout the various countries and economies. Malaysia and Hong Kong, China show the highest degree of family ownership, with 67.2 per cent and 66.7 per cent of total market capitalization controlled by family groups. The lowest level of family ownership is in the Philippines with 44.6 per cent of market capitalization owned by family groups.[7] Table 10 also reports the market value of companies controlled by the top five and top 10 families. The top five families control an average of 27.9 per cent and the top 10 families control 35.6 per cent of market value, respectively. The Philippines show the highest level of control by the top five families with 42.8 per cent. Thus, a very large percentage of the stock market capitalization in the Philippines is in fact controlled by the top five families. The lowest level of control in the top five families is in Taiwan Province of China with 14.5 per cent under family ownership.

Studies in Asian corporate ownership have indicated that if the controlling owner is first generation this is likely to have a significant bearing on corporate governance issues. In general, the first generation majority shareholder/manager is more likely to show a high degree of entrepreneurship and risk tolerance. Since the majority shareholder bears a significant portion of the wealth risks, his/her interests would be better aligned with the overall value-maximizing objective of the company. In the event that the controlling family members are the second or third generation of

6 The figures in table 10 include direct and indirect ownerships by family members. In general, family holding can be direct ownership by individual members, or through a family trust. In the past decade ownership through a family trust is becoming popular in Asian countries. Since the studies on ownership include both direct (through each family member who might individually own less than 5 per cent and may not be required to be disclosed) and family trusts, the efforts in tracing precise ownership figures involve laborious work which can be subject to underestimation of actual level of ownership (e.g., due to the exclusion of some family members).

7 Since table 10 uses market capitalization as the basis of calculation, the percentage of family ownership may tend to be higher since significant family groups may control large capitalized companies.

the family, control of the shares is conceivably more diffused among the various family members. This feature may lead to a number of outcomes. Either the second (or third) generation members are better educated and professionally more trained to further develop the company or they might make a lesser effort to manage the company and attempt to obtain excessive compensation packages. The studies on these intricate issues, however, are still limited and no definitive conclusions are possible.

The most significant corporate governance issue caused by the family ownership of Asian corporations is the alignment of interests between the majority shareholder and the minority shareholders. This issue is even more significant given the lack of uniform accounting standards and sufficient disclosure of information.

State and group ownership

Table 10 shows information on State ownership of corporations in Asian economies. Traditionally, certain industries (e.g., banking, telecommunications, etc.) might be heavily regulated and the State may own a controlling stake in the companies in such industries. The figures presented in table 10 show that Singapore has the highest level of State-controlled listed companies with a market value of 23.5 per cent. The second most significant State ownership is in Malaysia with 13.4 per cent of value under State control. When family ownership and State ownership are both included, the Asian stock exchanges represent approximately 70 per cent of market capitalization under family or State ownership. Not presented in table 10 is State ownership in the Chinese stock exchanges. As of 2001, State-controlled companies represent the majority of listed companies in the Shanghai and Shenzhen exchanges. The corporate governance implication of State ownership is that the Government might

Table 10. Total value of listed corporate assets under family control

Country/economy	*No. of corporations surveyed*	*Share of total market capitalization (per cent)*	*Per cent family-owned (20 per cent + control)*	*State-owned (per cent)*	*Total value of listed corporate assets that families control (per cent)*	
					Top 5 families	*Top 10 families*
Hong Kong, China	330	78	66.7	1.4	26.2	32.1
Indonesia	178	89	71.5	8.2	40.7	57.7
Malaysia	238	74	67.2	13.4	17.3	24.8
Philippines	120	82	44.6	2.1	42.8	52.5
Singapore	221	96	55.4	23.5	19.5	26.6
Republic of Korea	345	76	48.4	1.6	29.7	26.8
Taiwan Province of China	141	66	48.2	2.8	14.5	18.4
Thailand	167	64	61.6	8.0	32.2	46.2

Source: *Finance Asia*, vol. 5, Issue 4, February 2001, page 27.

pursue policy objectives (such as infrastructure development) that are not necessarily aligned with minority shareholder interests.

Another significant issue is group ownership of companies in Japan and the Republic of Korea. In Japan the *keiretsu* present a unique closed system of internally monitored corporate settings. This model closely resembles the *chaebol* in the Republic of Korea. The group companies are characterized by interlocking cross-holdings of equity, and outside monitoring is difficult. Until recently, these models had played significant roles in the stock markets in Japan and the Republic of Korea. Studies have suggested both the merits and deficiencies of the internal monitoring model of group companies. The major advantage of this model is that the internal system and resources allow the group companies to pursue long-term operating goals and not be diverted by the short-run fluctuations in the stock markets. The main drawback, on the other hand, is that there seems to be a lack of monitoring mechanisms in case the goals pursued are inconsistent with economic reality. Traditionally, the *keiretsu* and the *chaebol* have been keen to pursue market leadership and revenue generation rather than short-term profit maximization as such. These objectives might not be consistent with minority shareholders' interests when the overall product market could be changing in ways that require rapid adjustments to the business plan for specific products.

Accounting and audit standards

A common problem in information disclosure is the lack of uniformity in the accounting and audit standards among the Asian member countries. Historically, each member country might have developed its own set of accounting standards. As the accounting system involved both objective and discretionary items, it would be challenging to come up with a common basis of comparison across different economies. The accounting systems of Singapore, Malaysia and Hong Kong, China originated from the accounting system in the United Kingdom. These three economies represent the closest set of accounting standards to investors. Other economies have had a different historical development in their accounting and auditing systems. The relevant issues in disclosure include the quantity and quality of information obtained by investors. The objective of accounting disclosure is to provide investors with an adequate level of information to make investment decisions. One potential problem is that firms may only disclose aggregate profit figures, which do not indicate how the net profits are arrived at. This problem is more significant for conglomerates that have investments in more than one sector. Investors may have no clue on the relative performance of the operating units in the respective sectors. In addition, the net profit figure includes a provision of reserves for doubtful debts, among other discretionary items. The adoption of a different policy on the treatment of such discretionary items can have a significant impact on the net profit figure making cross-country comparisons very difficult indeed.

Second board of stock exchange

Since the market boom of technology companies in NASDAQ beginning in the mid-1990s, the stock exchanges in many countries became interested in developing NASDAQ-style stock exchanges. The objective of setting up these exchanges is to allow growth-oriented companies, particularly technology companies, to raise funds and develop their operations. There are two main features of the companies that attempt to be listed on the second boards of stock exchanges. First, these companies tend to be young companies with a limited operating record. Second, most of the companies are still in their development phase and do not have operating profits.

Table 11 summaries the number of listed companies, market capitalization and turnover in the second boards of three European and seven Asian markets. In terms of the number of listed companies and market capitalization, the London AIM stock market is the most significant. It may be of interest to note that in 2002, there were two second boards in Paris, the Second Marché and the Nouveau Marché. There were 372 listed companies (five of them were foreign companies) on the Second Marché with a market capitalization of US$ 45.2 billion. The Nouveau Marché included 111 companies (seven of them foreign) with a market capitalization of US$ 4.9 billion. The Neuer Markt of the Deutsche Börse had 201 listed companies (33 of them foreign) in 1999 with a market capitalization of US$ 46.6 billion.

Among the Asian countries, Malaysia and Singapore were the pioneers in developing their second boards. In 2002, 292 companies were listed on the Kuala Lumpur Second Board with a market capitalization of US$ 4.2 billion. The SESDAQ in Singapore had 117 listed companies representing US$ 1.7 billion of market capitalization. The emergence of second boards in Asian countries presents a number of corporate governance issues. First, companies listed on the second boards are mainly technology and Internet companies with an intrinsically high level of operating risk. It is conceivable that a fair number of these firms will not survive. In fact, the respective exchanges usually put forth a "buyers beware warning" with respect to second board companies. Hence, it is plausible that the high-risk nature of the second boards will induce investors to be even more cautious in making their investments. Second, these companies are typically young firms with a lack of operating history. Some companies might have a management team that was recently assembled. While a major concern on Asian markets is the usefulness of accounting figures, it is even more difficult to interpret the accounting figures of second board companies and make projections of how the companies would perform in the future. Third, many of the Asian countries were enthusiastic in launching their second boards, but the mechanism of delisting these firms is lacking. Without an effective delisting mechanism, the second board markets may be represented over time by an increasing number of "bad" firms, and investors may further shy away from these markets. Second boards also present a positive message to enhancing corporate governance. In

Table 11. Second boards of stock exchanges

Exchange	Name of the market	2002			2001			Per cent change 2002/01
		Domestic companies	Foreign companies	Total	Domestic companies	Foreign companies	Total	
A. Number of companies								
Deutsche Börse	*Neuer Markt*	198	42	240	272	54	326	**-26.38**
London	*AIM*	654	50	704	587	42	629	**11.92**
Euronext	*New Market*	147	11	158	161	13	174	**-9.2**
Hong Kong, China	*Growth Enterprise Market (GEM)*	166	0	166	111	0	111	**49.55**
Kuala Lumpur	*Second Board*	292	0	292	292	0	292	**0**
Kuala Lumpur	*Mesdaq*	12	0	12	4	0	4	**200**
Osaka	*New Market Section*	4	0	4	4	0	4	**0**
Singapore	*SESDAQ*	116	1	117	106	1	107	**9.35**
Thailand	*Market for Alternative Investment (MAI)*	9	0	9	3	–	3	**200**
Tokyo	*Mothers*	43	0	43	36	0	36	**19.44**
B. Market capitalization (US$ million)								
Deutsche Börse	*Neuer Markt*	10 342	n.a.	n.a.	44 460	n.a.	n.a.	**-76.74**
London	*AIM*	16 433	n.a.	n.a.	16 893	n.a.	n.a.	**-2.72**
Euronext	*New Market*	7 244	n.a.	n.a.	13 604	n.a.	n.a.	**-46.75**
Hong Kong, China	*Growth Enterprise Market (GEM)*	6 696	n.a.	n.a.	7 818	n.a.	n.a.	**-14.35**
Kuala Lumpur	*Second Board*	4 208	n.a.	n.a.	5 299	n.a.	n.a.	**-20.59**
Kuala Lumpur	*Mesdaq*	203	n.a.	n.a.	47	n.a.	n.a.	**335**
Osaka	*New Market Section*	28	n.a.	n.a.	20	n.a.	n.a.	**40.72**
Singapore	*SESDAQ*	1 747	n.a.	n.a.	1 650	n.a.	n.a.	**5.86**
Thailand	*Market for Alternative Investment (MAI)*	89	n.a.	n.a.	9	n.a.	n.a.	**887.21**
Tokyo	*Mothers*	4 128	n.a.	n.a.	**5 312**	n.a.	n.a.	**-22.29**
C. Total turnover (US$ million)								
Deutsche Börse	*Neuer Markt*	23 866	9 815	33 682	68 670	19 412	88 082	**-61.76**
London	*AIM*	2 648	0	2 648	3 500	0	3 500	**-24.34**
Euronext	*New Market*	4 470	33	4 503	7 242	80	7 322	**-38.50**
Hong Kong, China	*Growth Enterprise Market (GEM)*	5 639	0	5 639	5 054	0	5 054	**11.57**
Kuala Lumpur	*Second Board*	3 869	–	3 869	2 567	–	2 567	**50.74**
Kuala Lumpur	*Mesdaq*	0	–	0	1	–	1	**-95.03**
Osaka	*New Market Section*	14	0	14	11	0	11	**27.52**
Singapore	*SESDAQ*	n.a.	n.a.	3 328	n.a.	n.a.	1 550	**114.68**
Thailand	*Market for Alternative Investment (MAI)*	293	–	293	40	–	40	**637.84**
Tokyo	*Mothers*	4 052	0	4 052	2 881	0	2 881	**40.67**

Source: International Federation of Stock Exchanges (FIBV).

general, second boards require that all firms report their financial figures on a quarterly basis. Compared to the more popular semi-annual reporting in most main boards, the second board companies are required to provide more timely disclosure of the financial performance of their companies.

Legal system and enforcement

The Asian stock exchanges have experienced a developmental stage in which the securities laws were derived from the company law and other laws and ordinances. In many cases laws were passed on a gradual basis and a coherent framework of laws governing stock dealing and corporate governance might not be immediately recognizable or available. More importantly, there is a lack of clarity in individual member countries in the areas of enforcement and jurisdiction of certain activities that can lead to a negative impact on minority shareholders. Such activities include illegal practices such as undisclosed related-party transactions, self-dealing (of shares), insider trading and bribery. The legal system in Asian countries may also present obstacles for enforcing proper corporate governance principles. For example, it could be technically difficult and costly for minority shareholders to bring lawsuits against the corporate insiders who have allegedly violated their fiduciary duties. Such lawsuits are extremely rare in Asian countries. Similarly, class actions from a group of minority shareholders are also technically difficult to pursue in most Asian jurisdictions.

An exception can be found in the Republic of Korea in which an institutional investor, Newrich Capital, successfully brought a lawsuit against the former management of the Korea First Bank in 1999. This was conceivably the first of similar lawsuits that was won against corporate insiders in the Republic of Korea. Should more efficient enforcement be available, the threat of potential legal actions would almost certainly promote effective corporate governance. However, there is always a debate on how far the enforcement should go to promote good governance practices while preserving the flexibility of corporate managers to pursue value-maximizing operations. An example can be illustrated by the enforcement in Hong Kong, China. Traditionally, insider-dealing cases were handled by a semi-official Insider Dealing Tribunal with limited jurisdiction and involved a lengthy process. In 1999 the Government of Hong Kong, China proposed a new consolidated securities bill that, among other things, called for the enhancement of the enforcement power of the Securities and Futures Commission (SFC) and higher levels of responsibilities of corporate directors. One item concerns the possible criminal responsibilities of the directors of brokerage companies. The proposed draft law stated that directors were liable under criminal law. The proposal generated a significant reaction from the investment community. One possible scenario is that international investment companies might have directors overseas and appoint an arms-length operation in Hong Kong, China. The legal liability under the proposal would be

significant enough to deter international investment companies from setting up their operating arms in Hong Kong, China. As a response to the reactions, the law was subsequently revised, including leaving the burden of proof to the SFC.

One point worth noting is that unlike the OECD markets in which much of the basic protection for investors is offered by their legal systems and enforcement mechanisms, the Asian markets are characterized by a still developing set of institutions and laws that in theory offer similar protection. As the systems are still evolving it is important to ensure that the legal framework includes the right balance between enforcement and flexibility for both business managers and regulators.

V. CONCLUSION AND RECOMMENDATIONS

This paper represents an initial step in analysing the state of development of corporate governance in several economies of the Asia-Pacific region in the context of the benchmarks offered by standards prevailing in the OECD countries. The paper has attempted to provide a broad evaluation of the major aspects of corporate governance in Malaysia, the Republic of Korea, Thailand and Hong Kong China. These economies, however, do not represent the entirety of the markets that have adopted codes of best practice for corporate governance. Further studies can be extended to other economies (such as Singapore and Indonesia) to provide a more exhaustive comparison of corporate governance codes in the Asia-Pacific region. This study observes that since the late 1990s many Asian countries have made strenuous efforts to draft their corporate governance codes of practice and have attempted to enhance their corporate governance standards. The ultimate goal of corporate governance is to monitor the behaviour of the board in making management decisions that are in alignment with general shareholder interests. Since the corporate finance environments differ widely across the various Asian countries with respect to legal, regulatory, economic, social and cultural factors, it is obvious that a single standard would not apply to all Asian countries.

Given this background, there are two issues concerning the development of corporate governance practices: enhancement of standards within each country and convergence of standards over time across different countries to integrate national markets in this area. The overall view is that the two issues should be dealt with simultaneously. On the operational side, however, we are in favour of the view that each individual country should work to step up its own standards before a unified Code of Practice can be applied. We note that there is a fundamental difference in the corporate setting between OECD and Asian economies regarding corporate governance issues. The OECD codes are derived from a model of devised ownership of large corporations in which there is a clear separation of ownership and control. In many Asian economies, family control is a common phenomenon and the majority shareholders play a key management role in the company.

Based on this difference, we distinguish that in the OECD model the primary requirement is monitoring corporate management that often has insignificant ownership of the relevant firms' equity. In the Asian model the key issues are to bridge the information gap between corporate insiders and investors, and to mitigate the potential conflict of interest between the majority shareholders and other minority shareholders. Another major distinction between OECD and Asian economies is in the degree of participation by institutional investors. In OECD countries, institutional investors hold a substantial portion of publicly traded equities and have a strong interest in timely and accurate information and assurance of good corporate governance practice. In Asian countries, however, institutional investors typically represent a small portion of stock market activities. Corporate managers hence may not see an immediate need to impose corporate governance policies. Studies have suggested that there is a demand for good governance practice and good governance could be rewarded by a premium paid by investors. On macroeconomic considerations, good corporate governance will contribute to the stability of the local equity market since investors, in particular foreign institutional investors, will have a greater interest to commit long-term funds to the local market. Such a commitment will be beneficial to long-term economic development in Asian countries. On the basis of the foregoing our recommendations are the following:

Short-term recommendations

Disclosure of information: we propose that one of the more immediate needs is to allow investors access to timely and accurate information on the financial and non-financial aspects of the corporations. The following measures to reinforce fair and accurate information disclosure would be relevant:

- Accounting boards and the audit profession should review the standard and format in which financial information is disclosed. Efforts should be made on a country-by-country basis and also on a regional basis since the reporting format can deviate fairly substantially across different countries.
- The stock exchange is usually the primary regulatory institution concerning the quantity and quality of information disclosed by listed companies. The stock exchange and the other regulatory bodies can work to review and impose whether the information disclosure is sufficient and make changes when necessary.
- In several countries the presentation format of information disclosed is in technical or professional terms that are difficult for the average investor to understand. Stock exchanges and regulatory bodies should

work to simplify the language of such information so that investors can have a reasonable understanding of the meaning of the information.

- We suggest that external auditors should take a more active role to reinforce the auditing profession and stress the areas in which investors should take note.

The current status is that many Asian countries have adopted governance guidelines and codes of best practice. However, it remains to be seen if listed corporations can, or will, follow these guidelines and codes. An effective means to facilitate the adoption of these practices is to have the regulatory body that would require corporations' compliance to these practices. Also, the regulatory body should have the power to enforce such practices in listed companies. Regulators should take a consistent standard to apply to all listed companies so that corporate managers can identity with the new guidelines.

Medium-term recommendations

Education. A significant element in promoting good governance practices is that corporate board members need to voluntarily participate in the process. Therefore, local Governments and regulators need to establish education programmes so that good governance becomes a common practice in the investment community.

Studies on corporate governance issues. There is a common pattern of an inadequacy of case studies on the abuse of the existing governance rules. Owing to this insufficiency, regulators cannot use real life examples and devise adequate rules and regulations to prevent such poor practices from happening. It is also because of this inadequacy that regulators might have the intention to "import" the OECD rules and try to apply them to their local markets. We suggest that regulators and academic institutions (e.g., law faculties and business schools) initiate to build local libraries of corporate governance case studies. The information from this documentation will enhance the promotion of good corporate practices in the legislative process and also in other education programmes.

Long-term recommendations

High-level discussions on standard setting. The long-term sustainability of promoting good governance practices requires that high-level support from the Government, regulatory bodies and stock exchanges is present. We suggest that high-level forums and conferences on corporate governance be organized on a regular, i.e., annual, basis. These activities will form a major component in building awareness and a positive culture for corporate governance.

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IMPACT OF FINANCIAL AND CAPITAL MARKET REFORMS ON CORPORATE FINANCE IN INDIA

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India's financial and capital market reforms since the early 1990s have had a positive impact on both the banking sector and capital markets. Nevertheless, the capital markets remain shallow, particularly when it comes to differentiating high-quality firms from low-quality ones (and thus lowering capital costs for the former compared with the latter). While some high-quality firms (e.g., large firms) have substituted bond finance for bank loans, this has not occurred to any significant degree for many other types of firms (e.g., old, export-oriented and commercial paper-issuing ones). This reflects the fact that most bonds are privately placed, exempting issuers from the stringent accounting and disclosure requirements necessary for public issues. As a result, banks remain major financiers for both high- and low-quality firms. The paper argues that India should build an infrastructure that will foster sound capital markets and strengthen banks' incentives for better risk management.

Most small- and medium-sized enterprises (SMEs) in Asian developing countries have access to fairly limited internal sources of finance (i.e., retained earnings) for investment because of their relatively low profitability. Yet, the demand for credit in an expanding economy is high. For example, retained earnings as a share of total finance needed for investment account for about 10 per cent each in Indonesia and the Republic of Korea, 13 per cent in Malaysia, and 20 per cent in Thailand. In these countries, firms depend mainly on bank loans for finance. By contrast, in developed countries, such as Germany, Japan and the United States, retained earnings are a major source of finance, accounting for more than 70 per cent of total finance. Based on the concepts of information asymmetry and agency problems, the "pecking

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order" theory indicates that firms' financing patterns begin with retained earnings, followed by riskless debt, and then new equity (Myers, 1977; Myers and Majluf, 1984). In addition, it has been increasingly recognized in recent years that the liability mix, particularly among external sources of finance, depends crucially on (a) the extent of information asymmetry (e.g., risk preference) and agency problems (e.g., commitment to repayment or performing well) between ultimate creditors (or investors) and ultimate borrowers (or issuers); (b) availability of growth opportunities; and (c) the state of the (informational, legal, and judicial) infrastructure suitable for external financing (Shleifer and Vishny, 1987; Yoshitomi and Shirai, 2001).

The extent of information asymmetry and agency problems is likely to be reflected in the characteristics of the firms. For example, corporate bond finance can be cheaper than bank loans for reputable, profitable or large-sized firms (Diamond, 1991). This is because established firms of high reputation and with good credit records accumulated through previous financial relationships with banks, so-called "high-quality" firms, are not viewed as excessive risk takers and are regarded as being committed to repayment. From the bondholders' viewpoint, their information asymmetry and agency problems are small. Thus, bondholders charge them lower interest rates, which take account of risk-free interest rates, systemic or market-wide risks, firm specific risks (i.e., credit, default, and liquidity risks), and the premium for information asymmetry and agency problems. Similarly, such firms are able to issue equity at high prices owing to their reputation for good and transparent management and the large expected corporate earnings (hence, capital gains). This makes it cheaper for them to raise funds from the equity market compared with bank loans. Moreover, information technology (IT) firms are able to issue equity at low cost because of greater growth opportunities than other firms, even though they find it difficult to obtain bank loans and bond finance owing to a lack of tangible assets. The fact that shareholders can potentially claim unlimited upside returns from equity, whereas downside risks are limited to the value of the initial investment by virtue of limited liability, explains why an equity market can flourish in developing countries. This is so even when the existing infrastructure does not support the development of a corporate bond market, for which the upside return is limited by the contractual interest rate (Herring and Chatusripitak, 2000).

The amount of financial and capital market infrastructure building needed also affects the liability mix. Capital (equity and bond) markets require timely, precise, and standardized information about issuers to the public. Standardized information, which explicitly embodies information in terms of coupon rates, risk premiums, length of maturity, ratings and financial statements, can be produced by imposing proper disclosure, accounting, and auditing requirements, with the assistance of investment banks and information-generating agencies. Moreover, the enforcement of these requirements and the protection of investors' rights are a prerequisite for improving

public confidence in investing securities. Thus, the more sophisticated the infrastructure, the easier it is for capital markets to distinguish high-quality firms from low-quality ones. On the other hand, relatively low-quality firms, typically new, unprofitable SMEs, find it expensive to issue securities and, thus, raise funds from banks, which have skills and expertise to lower the cost of financing. Although information on low-quality firms is highly idiosyncratic and non-transferable to the public, banks are able to extend loans to them. This is because banks are able to reduce the costs of collecting and processing information about borrowers and monitoring (hereafter called "relationship lending") by carrying out repeated transactions, offering settlement and checking accounts, and exploiting economies of scale (Diamond, 1991; Chemmanur and Fulghieri 1994).

In other words, well-developed capital markets enable high-quality firms to increasingly finance themselves from securities (bond and equity) rather than bank loans. In response, banks have to provide more loans to relatively low-quality firms and, thus, conduct relationship lending in order to maintain profitability. Therefore, the characteristics of firms determine corporate financing patterns and, hence, the extent of information asymmetry and agency problems. In other words, one can assess the state of financial and capital market development of a country by examining whether corporate financial patterns vary between firms of different quality.

India was chosen as a case study, for this paper. The public sector dominates India's banking sector, which coexists with the relatively large equity market established with the introduction of the Bombay Stock Exchange in 1875. In 1991, India launched comprehensive banking sector reforms in an effort to enhance its efficiency and commercial orientation. These were followed in 1992 with capital market reforms to improve pricing and disclosure systems and tighten listing requirements. The important question is whether banks have continued to engage in relationship lending and whether these reforms have contributed to a differentiation between high- and low-quality firms, giving the former relatively better access to the capital markets. This paper examines the behaviour of the banking sector and whether securities are substituting for bank loans for high-quality firms compared with low-quality ones. Although this paper focuses on India, the same framework for assessing the state of financial and capital market development can be equally applied to other developing countries. The paper is divided into four sections. Based on the 5,000 firm-level database for 1990-2001, section I conducts a regression analysis to test whether banks' lending behaviour varies depending on firms' characteristics, reflecting information asymmetry and agency problems. Section II examines whether there has been a move from bank loans to bond finance on the one hand, and from bank loans to equity finance on the other, among high-quality firms compared with low-quality ones. The same analysis

is performed for term-loan financial institutions. Section III contains concluding remarks.[1]

I. ASSESSING THE CHANGES IN CREDITORS' LENDING BEHAVIOUR

The comprehensive banking sector reforms launched in 1991 by the Government of India included interest rate decontrols, cuts in reserve and liquidity requirements, an overhaul of priority sector lending, deregulation of entry barriers, strengthening of prudential regulations, and capitalization and partial privatization of public sector banks (Shirai, 2002). These reforms have helped to improve the performance of existing banks, as exemplified by the increase in returns on assets between 1993 and 2000 (from -0.5 per cent to 0.7 per cent for public sector banks and from -0.2 per cent to 0.9 per cent for private sector banks). This shows that banks have become more sensitive to various risks and returns in the face of intensified competition and tighter prudential regulations and supervision. In this environment, the important issues relate to whether banks have increasingly engaged in relationship lending, a question closely linked with the lending patterns of low-quality firms.

Basic model for banks and estimation results

Before India launched its reforms, heavy intervention left banks with few incentives to conduct relationship lending or turn in a high performance. As a result, banks provided loans both to high- and low-quality firms indiscriminately. Supporting this view, a study by Cobham and Subramaniam (1995) found no difference in the financing patterns between large and small firms based on data of 1,500 Indian firms for 1981-1990. Bank loans and internal sources were the two most important sources of finance for both kinds of firms. Since the early 1990s, however, banking sector and capital market reforms should have affected firms' corporate financing patterns, as the reforms have tackled issues relating to disclosure and availability of information. To assess whether such has been the case, this paper investigates whether banks have allocated credit disproportionately to low-quality firms compared with high-quality ones, which should be an inevitability when high-quality firms seek increasing recourse to the capital markets. Few studies have pursued this line of research, apart from Sarkar and Sarkar (2000). They analysed the age effect of firms and found that young firms were more deeply affected by the reforms than old ones and that the impact was more pronounced in earlier periods than later. They did this by looking at trend patterns of the proportion of funds mobilized from external sources since the

[1] One shortcoming of this paper is that the analysis does not cover the pre-reform period due to lack of consistent data. Thus, the paper focuses on (a) whether corporate financial patterns are consistent with those predicted by existing theories and (b) whether corporate financial patterns have seen significant changes before and after the 1996 tightening of reforms.

reforms began. This paper builds on their analysis by focusing on various characteristics of firms, based on the concepts of information asymmetry and agency problems and examining the substitution relationship among various external financial sources.

This paper chooses, as a dependent variable, each firm's borrowings from banks as a percentage of total liabilities (including share capital and reserves). Assuming that the degrees of information asymmetry and agency problems are reflected in the size of firms, years of incorporation, profitability and variance in profitability (as proxy to a measure of credit risk), these variables are adopted as explanatory variables. Low-quality firms refer to those that are relatively small, new, unprofitable and high-risk, while high-quality firms are defined as being large, old, profitable and low-risk. A natural logarithm of the asset size is used as a proxy for the size of the firm, ASSET. With respect to years of incorporation, this paper uses a dummy variable NEW, which is equal to 1 if a firm was incorporated from 1991 onward and 0 otherwise. As for profitability, after-tax return on assets, ROA is used. For variance of ROA, RISK is estimated based on the three-year period (the year under examination and the two preceding years) for each year.

Other explanatory variables include two dummy variables (commercial paper issuance and public listing at stock exchanges) and a variable for export-orientation. A commercial paper (CP) dummy variable CPD is equal to 1 if a firm issues CP and 0 otherwise. A listing dummy variable LISTED is equal to 1 if a firm is publicly listed in one of the 23 Indian stock exchanges or 0 otherwise. As for export orientation, the ratio of exports to sales EXPORT is used. Since exporting firms have access to export and import credit facilities and various tax benefits, they are likely to achieve higher performance and hence gain better financing deals (Kakani et al., 2001). Following Sarkar and Sarkar (2000) and Kakani et al. (2001), moreover, two indicators are used as proxy for the size of intangible assets: depreciation expenditure as a percentage of sales, DEPSALE, and the sum of marketing and advertising expenditures as a percentage of sales, ADVSALE. Firms with lower depreciation ratios are regarded as those with a larger amount of intangible assets and, thus, more growth options in their investment opportunities. Firms with high ratios of marketing and advertising expenditure to sales may be good at establishing entry barriers against competition by building up their brand image and increasing intangible assets. These two expenditures are important in industries with mature production technology (Aaker, 1984). In addition, industry dummies are adopted. CAT1 indicates firms belonging to the food, beverages, and live animals sector; CAT3 minerals and energy; CAT4 fats and oils; CAT5 chemicals and related products; CAT6 leather, textiles, rubber, plastic, paper, non-metallic minerals, and metals; CAT7 machinery, transport equipment and electronics; CAT8 miscellaneous manufactured goods; and CAT9 firms with diverse products. Since there are no firms in CAT2, this dummy variable is omitted. CAT9 is excluded for intercept.

Regression analysis is performed using the above variables and time dummies TIME, based on panel data for 1990-2001 using the ordinary least squares (OLS) method. Since RISK uses data of the previous two years in addition to the year under investigation (for example, RISK of the year 1992 uses data of 1990-1992), the observation period for the empirical analysis ranges from 1992 to 2001. The model omits the 1992 time dummy variable and, thus, coefficients of other time dummy variables account for time-specific factors in relation to 1992. Taking into account the predictions derived from existing theories, the signs of ASSET, ROA, CPD, LISTED, and EXPORT are expected to be negative. The coefficients of NEW and RISK are expected to be positive. The coefficient of ADVSALE (and DEPSALE) is expected to be negative (and positive) if a larger amount of tangible assets increases banks' incentives to extend more credit. Firm data are obtained from the Prowess database covering domestic manufacturing private firms, compiled by the Centre for Monitoring the Indian Economy.

The regression estimation is conducted for two separate periods (1992-1996 and 1997-2001). This is in order to assess whether banks changed their lending behaviour after the tightening of initial public offering (IPO) requirements in 1996, which enabled the capital market to differentiate firms by quality, so that relatively high-quality firms increased their access to the capital market compared with low-quality firms. The estimation results as reported in table 1 can be summarized as follows.

First, the coefficients of ROA were statistically significant and negative for both periods, suggesting that bank loans to unprofitable firms were greater than to profitable firms for the two periods and supporting the view that banks undertook relationship lending in the reform period. Second, the coefficients of EXPORT, LISTED, and CPD have shifted from being statistically significant and positive for 1992-1996 to being statistically insignificant in 1997-2001. This suggests that during 1992-1996 bank credits to relatively high-quality firms, i.e., ones that were export-oriented, publicly listed, and CP-issuing, were larger than those to less export-oriented, unlisted firms and those not issuing CP. However, such differences have become insignificant during 1997-2001, implying that low-quality firms have gained access to bank loans as much as high-quality firms – weak evidence of relationship lending. Third, bank credits to old firms, on the other hand, remain larger than those to new firms, as evidenced by the statistically significant and negative coefficient of NEW for both periods – contrary to the prediction. Fourth, the coefficient of RISK moreover turned out to be statistically significant for the two periods (albeit small scale), but shifted from positive during 1992-1996 to negative in 1997-2001. Thus, while bank credits to high-risk firms were larger than to low-risk ones during 1992-1996, those to low-risk firms relative to high-risk ones became greater during 1997-2001, contrary to the prediction. Further, the coefficient of ASSET shifted from being statistically significant and negative in 1992-1996 to being statistically

insignificant in 1997-2001. This indicates that smaller firms borrowed more heavily from banks compared with larger firms in 1992-1996, but such differences had disappeared in 1997-2001. Fifth, the coefficient of DEPSALE turned out to be statistically insignificant. On the other hand, the coefficient of ADVSALE shifted from negative in 1992-1996 to positive in 1997-2001, reflecting that bank loans to firms with growth opportunities have been greater in recent years. Sixth, compared with earlier periods, banks extended more credit to firms belonging to the food, fats and leather sectors as compared with firms with diverse products.

The above results suggest that banks have been providing more loans to unprofitable firms relative to profitable ones, while extending credit somewhat indiscriminately to less export-oriented, unlisted, and non-CP-issuing ones on the one hand, and to export-oriented, publicly listed, and CP-issuing ones on the other. In other words, banks have been expanding their customer base to a wider range of firms by increasingly engaging in relationship lending to low-quality firms in addition to high-quality ones. Nevertheless, some types of low-quality firms, such as those that are new and high-risk, have not obtained as much credit as old and low-risk ones, suggesting that banks' relationship lending has not developed to its full potential.

Application of the model to financial institutions

In India, term loan financial institutions are generally referred to as development banks established to promote industrial and agricultural development. Compared with ordinary banks, financial institutions have the following unique features: they (a) subscribe to rights issues and underwrite public issues, (b) provide long-term loans, (c) convert debt to equity when firms become financially distressed and (d) raise long-term financing from bonds. Until 1991, these institutions provided long-term loans at interest rates lower than those applicable to working capital or other short-term loans provided mainly by banks. To meet this objective, their bonds were issued with a guarantee and, thus, at low cost. Moreover, their funds were often granted through the budget and a large portion of the central bank's long-term credit was allocated to some of these institutions. Also, these institutions used to be protected from competition with banks, as regulations prevented banks from extending large term loans to industrial units and allowed them to provide term loans only to small-scale industrial units on a priority basis. Consequently, they were generally insufficiently oriented toward the task of monitoring managers and thus were unlikely to exercise effective governance over the firms (Khanna and Palepu, 1999).

However, since the 1991 reforms, financial institutions have increased exposure to market forces. This is because the Government has eliminated guarantees on bond issues and ceased the provision of cheap funds from the budget, which made it costly for these institutions to issue long-term bonds and forced them to increasingly issue shorter-term ones. Financial institutions face greater financing constraints than banks,

Table 1. Estimation results for firm's choices over loans, 1992-2001

Variable	*Bank loans*				*Loans from financial institutions*			
	Period: 1992-1996		*Period: 1997-2001*		*Period: 1992-1996*		*Period: 1997-2001*	
	Coefficient	*t-Statistic*	*Coefficient*	*t-Statistic*	*Coefficient*	*t-Statistic*	*Coefficient*	*t-Statistic*
C	29.82***	14.73	16.55***	7.86	6.78***	4.82	-5.69***	-4.56
TIME93	-0.43	-0.45	–	–	-0.58	-0.88	–	–
TIME94	-1.56*	-1.70	–	–	-0.92	-1.45	–	–
TIME95	-1.10	-1.24	–	–	-1.80***	-2.93	–	–
TIME96	-1.87**	-2.17	–	–	-3.63***	-6.06	–	–
TIME97	–	–	–	–	–	–	–	–
TIME98	–	–	0.23	0.34	–	–	-0.29	-0.72
TIME99	–	–	-0.24	-0.36	–	–	-0.68*	-1.68
TIME00	–	–	1.13*	1.66	–	–	-1.05***	-2.60
TIME01	–	–	-0.09	-0.12	–	–	-2.05***	-4.60
ASSET	-5.89***	-11.76	-0.40	-1.00	2.68***	7.72	6.78***	28.81
EXPORT	0.08***	6.22	0.00	0.99	0.00	0.22	-0.00	-0.97
ROA	-0.64***	-39.21	-0.65***	-44.40	-0.24***	-21.30	-0.40***	-45.99
RISK	0.00**	2.08	-0.00***	-3.40	-0.00	-1.25	-0.00***	-7.02
LISTED	1.34**	2.03	-0.70	-1.29	1.05**	2.28	1.14***	3.55
NEW	-4.32***	-3.63	-1.81***	-3.20	2.70***	3.27	3.04***	9.08
CPD	1.85***	2.51	0.69	0.88	-2.30***	-4.48	-5.43***	-11.77
DEPSALE	-0.00	-1.20	-0.00	-1.17	0.01***	5.55	0.00***	4.17
ADVSALE	-0.26***	-3.76	0.05***	2.91	-0.15***	-3.19	-0.05***	-4.76
CAT1	-0.07	-0.04	4.81**	2.39	-0.13	-0.10	4.86***	4.08
CAT3	-1.98	-0.85	-3.40	-1.48	4.27***	2.66	6.77***	4.99
CAT4	0.32	0.15	5.76***	2.51	2.16	1.41	7.65***	5.62
CAT5	-1.94	-1.09	0.35	0.18	4.76***	3.85	6.38***	5.48
CAT6	-0.56	-0.33	3.38*	1.77	7.45***	6.33	8.34***	7.38
CAT7	-2.22	-1.28	1.12	0.58	2.23*	1.85	4.09***	3.56
CAT8	2.60	0.73	-1.12	-0.37	5.51**	2.23	5.16***	2.89
R-squared	0.19		0.14		0.09		0.19	
F-statistics	101.38		117.31		45.92		169.12	
n	8 812		14 644		8 812		14 644	

Note: ***, **, * indicate significance at 1%, 5% and 10% respectively; n refers to the number of observations.

because they are unable to raise funds through cheaper deposits owing to the limited number of branches and the central bank's limit on their access to deposits (because they are exempted from reserve and liquidity requirements). The demarcation between banks' and financial institutions' lending business has also been gradually disappearing, as banks have increasingly engaged in large-scale project finance and have become direct competitors. Further, interest rate liberalization has contributed to raising the financing cost for financial institutions.

Reflecting these changes, financial institutions would have had a greater incentive than banks to perform better and thus monitor their borrowers and/or issuers by taking advantage of dual holdings of term loans and equity. Since banks and financial institutions differ in their financing sources, the mechanisms to mitigate information asymmetry and agency problems are likely to be different. Banks are able to minimize information asymmetry and agency problems through repeating short-term financing transactions (refinancing), which give banks unlimited power. By contrast, financial institutions offering long-term loans may attempt to minimize such problems by conducting more extensive due diligence to evaluate projects, pricing the risk more carefully with considerable monitoring and covenants, and investing in borrowers' equity.

To test this hypothesis, the regression model adopted for banks is used, except that the dependent variable is firms' borrowings from financial institutions as a share of total liabilities. The results reported in table 1 can be interpreted as follows: first, the coefficients of ROA and CPD and NEW turned out to be statistically significant and negative and positive for both periods. This means that loans from financial institutions to unprofitable, non-CP-issuing, and new firms were greater than those to profitable, CP-issuing, and old firms, suggesting that more credit is allocated to relatively low-quality firms, in line with predictions. Second, the coefficients of EXPORT were moreover statistically insignificant for both periods, indicating no differences between export-oriented and less export-oriented firms in terms of access to loans from financial institutions. Third, further, the coefficients of DEPSALE (and ADVSALE) were statistically significant and positive (negative), as predicted. This suggests that loans from financial institutions to firms with a large amount of tangible assets were greater than those to firms with few tangible assets. Fourth, loans from financial institutions to large and publicly listed firms, however, remained larger than those to small and unlisted firms for the two periods, as evidenced by the statistically significant and positive coefficients of ASSET and LISTED. Fifth, in addition, financial institutions seem to have extended credit to high-risk and low-risk firms indiscriminately during 1992-1996, as indicated by the statistically insignificant level of the coefficient of RISK. However, credits extended to low-risk firms became greater than to high-risk firms in 1997-2001, contrary to the prediction. Sixth, compared with earlier periods, financial institutions allocated more credit to firms belonging to sectors from CAT1 to CAT8 compared firms with diverse products.

These results indicate that financial institutions, like banks, extended more credit to unprofitable firms compared with profitable firms. In addition, they also extended loans more intensively to new and non-CP-issuing firms compared with old and CP-issuing firms' behaviour not present in the case of banks. This suggests that financial institutions engage in a greater degree of relationship lending than banks. These results are consistent with the view that financial institutions, as long-term financiers, face more severe information asymmetry and agency problems and, thus, their incentive to perform relationship lending is greater than for banks.

II. TESTING THE RELATIONSHIP BETWEEN LOANS AND SECURITIES FINANCE

Prior to the 1992 market reforms, the pricing and volume of corporate securities were controlled by the Government; IPO requirements were loose in the absence of adequate accounting, disclosure and listing requirements; and all securities were treated at par regardless of firm size, liquidity, floating stock, trading volume, performance, etc. In order to improve the infrastructure needed to develop a sound capital market, the Government empowered the Securities and Exchange Board of India (SEBI) as a regulatory body in 1992. In the same year, SEBI published guidelines on equity issues that enabled issuers to price their primary issues freely, generating the first stock market boom in 1993-1995. Moreover, the National Stock Exchange (NSE), the first nationwide screen-based stock exchange, was established in 1994, intensifying competition among the existing 22 stock exchanges. In 1995, NSE formed the National Securities Clearing Corporation Ltd. to eliminate counterparty and payment risks. The National Securities Depository Ltd., set up in 1996, dispensed with the need for physical share certificates by setting up a system of computer records of ownership of securities. SEBI allowed the entry of foreign institutional investors to the capital market in 1992 and introduced the Takeover Code in 1994 as well as further deregulation subsequently. Stricter entry and disclosure norms were introduced in 1996. Compared with the equity market, whose market capitalization accounts for more than 50 per cent of GDP, the corporate bond market remains small, with the share of outstanding corporate bonds issued standing only at about 3 per cent even today. Further, private placements account for 90 per cent of public debt issues.

Relationship between bank loans and bond finance

The existing literature on finance suggests that compared with bank loans, bond finance is less effective at minimizing agency problems and improving corporate control. This is because even if bond covenants are inefficient (for example, allowing unprofitable projects to continue or profitable projects to be terminated), corporate bondholders, unlike banks, lack the ability to respond flexibly to ensure better resource allocation (Berlin and Loeys, 1988). The bond market disciplines issuers mainly

through bond covenants, which are written in terms of readily observable indicators of the firm's ability to repay. Further, renegotiation of corporate bond agreements is difficult and costly compared with bank loan agreements, since a change in covenants must be approved by bondholders through collective representation clauses (for example, in the United States, changes are permitted to covenants if two thirds of bondholders agree). The wider the bond ownership, the more difficult renegotiation becomes.

Generally, calls for renegotiation are considered to be less likely for high-quality firms than low-quality ones because the former are perceived to have better performance and management. Also, greater access to the bond market is assured by a high reputation as a diligent payer of debt services based on previous bank-borrower relationships and the readiness to standardize information. To test whether high-quality firms, compared with low-quality ones, have easier recourse to bond issuance and have shifted away from bank loans, the model uses each firm's borrowings from banks as a percentage of total liabilities as a dependent variable. As explanatory variables, the interaction-variables are used between outstanding bonds issued by firms as a percentage of total liabilities BOND and dummy variables derived from the firms' characteristics. Dummy variables are related to the following high-quality firms: large HASSET, profitable HROA, low-risk LRISK, older OLD, CP-issued CPD, publicly listed LISTED, and export-oriented HEXPORT. HASSET is equal to 1 if a firm has above-average assets and 0 otherwise; HROA is equal to 1 if a firm has above-average profitability and 0 otherwise; LRISK is equal to 1 if a firm has below-average variance of ROA and 0 otherwise; OLD is equal to 1 if a firm was incorporated before 1991 and 0 otherwise; and HEXPORT is equal to 1 if a firm has above-average exports as a percentage of sales and 0 otherwise. As high-quality firms are expected to be more active in substituting bond finance for bank loans than low-quality ones, the signs of these interaction variables are expected to be negative, given that declining interest rates make it attractive for firms to issue bonds.

In addition, two proxies for firms with large intangible assets are introduced. HDEPSALE is equal to 1 if a firm has above-average depreciation expenditure as a share of sales (thus, above-average tangible assets) and 0 otherwise. LADVSALE is equal to 1 if a firm has a below-average sum of marketing and advertising expenditures as a share of sales (thus above-average tangible assets) and 0 otherwise. As for the signs of the coefficients of BOND X HDEPSALE and BOND X LADVSALE, existing theories do not say much about the relationship between bank loans and bond finance. Banks may require fixed assets as collateral on firms, while bond investors may pay higher prices for issuers with sufficient collateral. In such a case, the coefficients of BOND X HDEPSALE and BOND X LADVSALE are positive since firms with a large amount of tangible assets may have access to both bank loans and bond finance, compared with those that have a small amount of tangible assets.

The regression estimation is performed using the OLS method based on the same database for the two periods. The estimation results as reported in the left two columns of table 2 indicate the following: first, the coefficient of BOND X HASSET turned from being statistically insignificant in 1992-1996 to being statistically significant and negative for 1997-2001. This suggests that bank loans and bond finance have become substitutes for each other for large firms compared with small firms in recent years – evidence of differentiation of firms by quality. Second, the coefficients of BOND X HROA turned out, however, to be statistically significant but positive for both periods. This suggests that bank loans and bond finance are complementary for profitable firms relative to unprofitable ones. Moreover, the coefficient of BOND X HEXPORT was statistically insignificant in 1992-1996, but became statistically significant and positive in 199-2001. This indicates that complementarity has been strengthened recently for export-oriented firms relative to less export-oriented firms. The complementary relationships for profitable and, recently, for export-oriented firms occur, because banks tend to provide shorter-term working capital, which is not a direct substitute for relatively longer-term bond finance (of between five and seven years). Third, the coefficients of BOND X HDEPSALE and BOND X LADVSALE were statistically significant and negative in 1992-1996, but turned out to be statistically insignificant in 1997-2001. Thus, bank loans and bond finance were substitutes for each other at an earlier stage for firms with greater tangible assets, but no difference was observed between firms with different levels of tangible assets in later periods.

With respect to firms' borrowings from financial institutions, the main results reported in table 2 are as follows: first, the coefficients of BOND X HASSET and BOND X HROA turned from being statistically insignificant for 1992-1996 to being statistically significant and negative for 1997-2001. This suggests that loans from financial institutions and bond finance have become substitutes for each other for large and profitable firms in recent years – evidence that SEBI's efforts to improve the market infrastructures have had a positive impact. Second, in addition, the coefficients of BOND X LRISK and BOND X LISTED were statistically significant and negative for both periods. These results suggest that borrowings from financial institutions and bond finance have functioned as substitutes for each other for low-risk firms and publicly listed firms for both periods – evidence of quality differentiation. The fact that financial institutions provide longer-term loans relative to banks may explain why loans from these institutions and bond finance tend to be more interchangeable for large, profitable, low-risk and listed firms. Third, the coefficient of BOND X OLD was statistically insignificant in 1992-1996 but became significant and positive in 1997-2001, suggesting that loans from financial institutions and bond finance have been complementary for old firms relative to new firms in recent years. Moreover, the coefficient of BOND X HEXPORT turned from being statistically significant and negative for 1992-1996 to being statistically significant

and positive for 1997-2001. Last, the coefficient of BOND X LADVSALE turned out to be statistically significant and positive in 1997-2001, while that of BOND X HDEPSALE was statistically significant and positive in 1992-1996. Thus, the results for firms with large tangible assets have been mixed.

While some evidence of quality differentiation has been observed in the reform period, the overall weak relationship between loans from both banks and financial institutions and bond finance may indicate that the latter has not yet succeeded in distinguishing high-quality firms from low-quality ones to a substantial degree. This may be closely associated with the fact that most bonds are issued in the private placement market, to which even low-quality firms have access. According to the existing literature, private placement bond finance lies between bank loans and publicly issued bond finance, since private market borrowers tend to be less transparent with respect to their information (Carey et al., 1993). Therefore, the differences between loans and bond finance are subtle. This also suggests that there has been insufficient infrastructure building needed for a sound bond market, so few high-quality firms have qualified to act as public issuers.

Relationship between loans and equity finance

When a solid infrastructure allows outside shareholders to distinguish high-quality firms from low-quality ones, the former are likely to increase equity over debt. There are several reasons for this. First, high-quality firms do not need to increase debt in order to signal their truly favourable (e.g., profitable) position to outside shareholders. If the equity market is unable to differentiate between high-quality and low-quality firms because of inadequate disclosure systems, the former have an incentive to increase debt over equity. This is because they know that low-quality firms would not follow them given that the higher marginal expected bankruptcy costs for any debt level would prevent the latter from increasing debt (Harris and Raviv, 1991).

Second, outside shareholders would not heavily discount the prices of newly issued equity of high-quality firms if the quality is known to them. This avoids the situation where more than the net present value of the new project is accrued to outside shareholders so that inside shareholders anticipating a new loss are reluctant to accept the project (Myers and Majluf, 1984). If the quality is unknown, managers of the firms would increase debt to prevent the loss of inside shareholders so that the latter would not reject a new project – a device to mitigate the problems of underinvestment and sluggish firms' growth. Therefore, high-quality firms, if the quality is known to the public, do not need to worry about this discounting problem and, thus, issue more equity over debt. Third, managers of high-quality firms tend to operate firms in a proper manner and, thus, shareholders of such firms do not need to increase debt in order to reduce free cash available to managers that might be used for

Table 2. Estimation results for loans and bond finance relationship, 1992-2001

Variable	*Bank loans*				*Loans from financial institutions*			
	Period: 1992-1996		*Period: 1997-2001*		*Period: 1992-1996*		*Period: 1997-2001*	
	Coefficient	*t-Statistic*	*Coefficient*	*t-Statistic*	*Coefficient*	*t-Statistic*	*Coefficient*	*t-Statistic*
C	26.75***	9.93	15.40***	7.60	9.74***	5.33	-2.27*	-1.87
TIME93	-0.61	-0.62	–	–	-0.45	-0.68	–	–
TIME94	-2.16**	-2.20	–	–	-0.53	-0.79	–	–
TIME95	-1.70*	-1.78	–	–	-1.58***	-2.44	–	–
TIME96	-2.35**	-2.33	–	–	-3.70***	-5.41	–	–
TIME97	–	–	–	–	–	–	–	–
TIME98	–	–	0.00	0.01	–	–	-0.67*	-1.81
TIME99	–	–	-0.41	-0.67	–	–	-1.06***	-2.83
TIME00	–	–	0.95	1.52	–	–	-1.45***	-3.90
TIME01	–	–	-0.43	-0.60	–	–	-2.40***	-5.67
ASSET	-6.40***	-10.58	0.27	0.66	3.73***	9.10	7.35***	29.82
ROA	-0.68***	-37.83	-0.65***	-44.80	-0.24***	-20.01	-0.39***	-45.25
OLD	4.72***	3.12	1.70***	3.07	-3.18***	-3.09	-3.17***	-9.55
CPD	2.50***	2.68	0.96	1.12	-1.81***	-2.86	-4.79***	-9.33
LISTED	2.18***	2.83	-0.70	-1.32	1.36***	2.60	1.57***	4.92
EXPORT	0.08***	5.34	0.00	0.98	-0.00	-0.52	-0.00	-1.06
DEPSALE	-0.00	-0.97	-0.00	-1.15	0.01***	4.72	0.00***	4.57
ADVSALE	-0.28***	-3.39	0.05***	2.78	-0.15***	-2.76	-0.05***	-4.84
RISK	0.00***	2.98	-0.00***	-4.19	-0.00	-0.42	-0.00***	-7.82
CAT1	-0.69	-0.33	3.64*	1.91	-1.86	-1.33	4.10***	3.59
CAT3	-1.53	-0.60	-4.50**	-2.08	3.06*	1.75	5.92***	4.55
CAT4	-1.03	-0.42	4.72**	2.18	1.07	0.64	6.12***	4.72
CAT5	-2.59	-1.32	-0.67	-0.36	3.92***	2.94	5.63***	5.04
CAT6	-1.09	-0.59	2.30	1.28	6.75***	5.34	7.57***	6.98
CAT7	-3.11*	-1.62	-0.05	-0.02	1.03	0.79	3.25***	2.94
CAT8	2.39	0.61	-2.01	-0.70	4.93*	1.85	4.51***	2.63
BOND	0.03	0.10	-0.24	-1.29	0.21	1.00	0.18	1.59
BOND X HASSET	0.12	1.33	-0.36***	-3.99	0.02	0.37	-0.23***	-4.18
BOND X HROA	0.17**	2.12	0.20**	2.32	0.09	1.60	-0.12**	-2.30
BOND X LRISK	0.03	0.19	0.06	0.52	-0.23**	-2.37	-0.20***	-3.06
BOND X OLD	0.11	0.48	0.03	0.30	-0.09	-0.61	0.18***	2.77
BOND X CPD	-0.13	-1.30	-0.01	-0.10	-0.10	-1.41	0.04	0.50
BOND X LISTED	-0.24	-1.12	0.04	0.28	-0.35**	-2.43	-0.27***	-3.52
BOND X HEXPORT	0.04	0.43	0.18*	1.82	-0.12*	-1.78	0.13**	2.33
BOND X HDEPSALE	-0.19**	-2.32	0.17	1.84	0.19***	3.38	-0.02	-0.31
BOND X LADVSALE	-0.16*	-1.86	0.01	0.14	0.03	0.50	0.09**	1.72
R-squared	0.20		0.14		0.11		0.19	
F-statistic	65.01		83.43		31.36		121.33	
n	7 783		15 673		7 783		15 673	

Note: ***, **, * indicate significance at 1%, 5%, and 10%, respectively.

unproductive activities – mitigating conflicts of interest between shareholders and managers (Jensen, 1986).

At the same time, high-quality firms are able to mitigate various conflicts of interest between shareholders/managers and debt-holders, thereby being able to determine the optimal liability mix and achieve more efficient outcomes. For example, high-quality firms, because of adequate cash flows, are able to avoid a situation where shareholders/managers want to continue to operate firms, while debt-holders prefer liquidation (Harris and Raviv, 1990). Moreover, high-quality firms could minimize the two sources of "asset substitution effect" of debt. The first source refers to the situation in which the debt contract gives shareholders an incentive to invest sub-optimally – investing in risky projects – thus accruing large returns that are well above the face value of the debt to shareholders when a project turns out to be successful. Meanwhile, debt-holders bear the cost through lowered value of the debt or shoulder the failure of the project due to shareholders' limited liability (Harris and Raviv, 1991). The second source occurs in cases of near bankruptcy, where shareholders may not increase holdings of equity even though the project is value-increasing (Myers, 1977). This is because shareholders have to bear the entire cost of the investment, while debt-holders may obtain returns. Thus, the more debt accumulates, the higher the probability of rejecting value-increasing projects.

Based on these existing studies, this paper tests whether high-quality firms have substituted equity finance for bank loans compared with low-quality firms. Moreover, whether firms with a large amount of intangible assets are likely to issue more equity over bank loans is tested. This paper adopts the same regression model presented earlier, but uses the ratio of share capital to total liabilities SHARE, instead of BOND. It is expected that the signs of the coefficients of SHARE X HASSET, SHARE X HROA, SHARE X LRISK, SHARE X OLD, SHARE X CPD, SHARE X LISTED, and SHARE X HEXPORT would be negative. As for firms with a large amount of intangible assets, two dummy variables are used: LDEPSALE and HADVSALE (in contrast to HDEPSALE and LADVSALE in the case of bonds) being equal to 1 if firms have above-average intangible assets and 0 otherwise. The coefficients of SHARE X LDEPSALE and SHARE X HADVSALE would be expected to be negative. This is because banks are unlikely to extend credit to firms without sufficient collateral, while such firms may have access to the equity market due to growth opportunities.

The estimation results reported in table 3 for the case of firms' borrowings from banks indicate the following: first, the coefficients of SHARE X HASSET, SHARE X HROA, SHARE X LRISK, and SHARE X HEXPORT were statistically significant and negative for both periods, in line with the prediction. These results indicate that bank loans and equity finance are substitutes for each other in the case of large, profitable, low-risk, and export-oriented firms, compared with small, unprofitable, high-risk, and less export-oriented ones. Although the results appear to

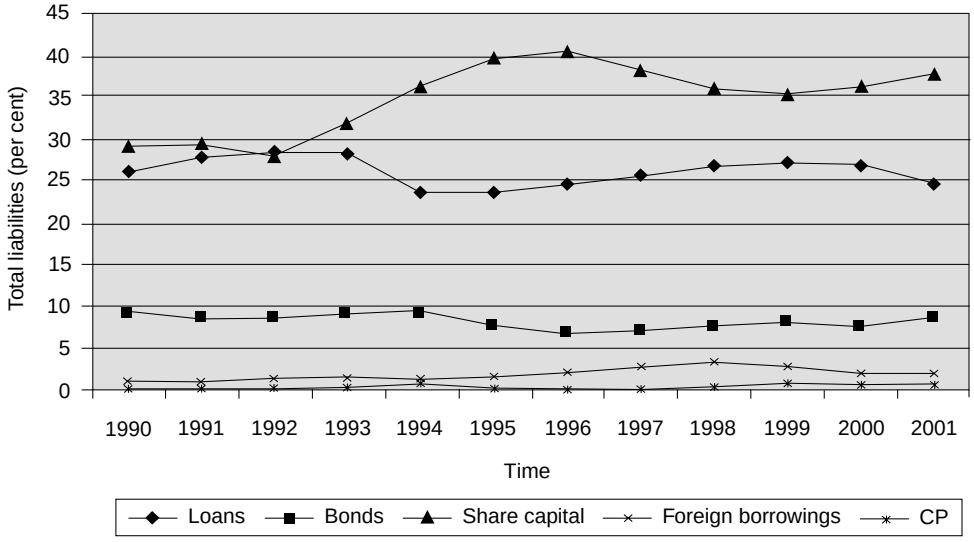
Table 3. Estimation results for loans and equity finance relationship, 1992-2001

Variable	*Bank loans*				*Loans from financial institutions*			
	Period: 1992-1996		*Period: 1997-2001*		*Period: 1992-1996*		*Period: 1997-2001*	
	Coefficient	*t-Statistic*	*Coefficient*	*t-Statistic*	*Coefficient*	*t-Statistic*	*Coefficient*	*t-Statistic*
C	36.13***	10.40	19.07***	8.95	12.68***	5.21	2.29*	1.77
TIME93	-0.59	-0.63	–	–	-0.71	-1.10	–	–
TIME94	-1.76*	-1.92	–	–	0.42	0.65	–	–
TIME95	-1.65*	-1.81	–	–	-0.36	-0.57	–	–
TIME96	-2.83***	-2.92	–	–	-2.36***	-3.47	–	–
TIME97	–	–	–	–	–	–	–	–
TIME98	–	–	0.16	0.26	–	–	-0.75**	-2.02
TIME99	–	–	-0.27	-0.44	–	–	-0.98***	-2.64
TIME00	–	–	0.79	1.28	–	–	-1.13***	-3.02
TIME01	–	–	0.82	1.17	–	–	-2.86***	-6.72
ASSET	-3.08***	-4.63	1.01**	2.09	4.03***	8.63	5.61***	19.10
ROA	-0.68***	-35.20	-0.58***	-37.12	-0.19***	-14.35	-0.38***	-40.51
OLD	-9.74***	-3.70	-2.78***	-3.49	-11.71***	-6.34	-6.07***	-12.56
CPD	1.70	1.58	0.89	1.04	-4.66***	-6.16	-5.07***	-9.75
LISTED	-3.28***	-3.58	-4.01***	-6.14	2.45***	3.81	2.69***	6.80
EXPORT	0.19***	10.94	0.00	1.08	-0.00	-0.19	-0.00	-1.00
DEPSALE	-0.01**	-2.03	-0.00	-1.37	0.01**	2.39	0.00***	3.62
ADVSALE	0.16*	1.81	0.07***	3.85	-0.12**	-2.03	-0.04***	-3.94
RISK	-0.00***	-7.21	-0.00***	-5.44	-0.00	-1.42	-0.00***	-7.83
CAT1	0.63	0.33	4.44**	2.39	-0.38	-0.28	4.51***	3.99
CAT3	-0.70	-0.29	-3.57*	-1.68	2.21	1.31	6.01***	4.66
CAT4	-1.09	-0.48	5.03**	2.37	2.90*	1.79	6.74***	5.24
CAT5	-1.69	-0.92	0.34	0.19	3.78***	2.95	5.83***	5.29
CAT6	-0.13	-0.08	3.38*	1.92	6.93***	5.69	7.86***	7.34
CAT7	-0.99	-0.55	1.07	0.60	1.35	1.08	3.68***	3.38
CAT8	4.81	1.30	-0.62	-0.22	3.63	1.40	4.81***	2.82
SHARE	0.07	0.88	0.01	0.82	0.26***	4.71	-0.01	-0.96
SHARE X HASSET	-0.12**	-2.04	-0.14***	-3.05	0.04	1.01	0.05	1.61
SHARE X HROA	-0.09***	-3.22	-0.04***	-2.88	-0.00	-0.14	-0.01*	-1.70
SHARE X LRISK	-0.61***	-22.99	-0.22***	-16.91	-0.03*	-1.62	0.00	0.48
SHARE X OLD	0.44***	7.08	0.10***	6.71	0.29***	6.74	0.07***	7.63
SHARE X CPD	0.00	0.03	-0.06	-1.03	0.24***	3.87	0.02	0.57
SHARE X LISTED	0.29***	6.26	0.15***	9.67	-0.25***	-7.74	-0.04***	-4.21
SHARE X HEXPORT	-0.38***	-10.14	-0.04***	-2.84	-0.03	-1.02	0.02***	2.77
SHARE X LDEPSALE	0.05*	1.91	0.05***	4.36	-0.27***	-15.69	-0.06***	-8.52
SHARE X HADVSALE	-0.25***	-8.14	-0.05***	-4.16	-0.03	-1.29	-0.03***	-4.60
R-squared	0.30		0.16		0.16		0.19	
F-statistic	110.23		100.19		50.73		124.25	
n	7 783		15 673		7 783		15 673	

Note: ***, **, * indicate significance at 1%, 5%, and 10%, respectively.

support the prediction, one needs to be cautious in interpreting them. The substitution relationship may simply reflect temporary stock market booms driven by the liberalization of stock prices in 1993-1995 (when many firms listed their shares at stock exchanges), and in the 1999-2000 IT boom (in order to take advantage of the temporary low cost of equity). There has been no steady shift from bank loans to equity finance, as shown in figure 1 for the average of all firms. The highly volatile pattern of equity finance also reflects a poor infrastructure. Therefore, the substitution relationship between bank loans and equity finance does not necessarily imply that the importance of bank loans has constantly declined over equity for high-quality firms during 1990-2001. Second, further, the coefficients of SHARE X OLD and SHARE X LISTED turned out to be statistically significant and positive for both periods, suggesting that bank loans and equity finance are complementary for old and publicly listed firms relative to new and unlisted firms. Third, the coefficients of SHARE X LDEPSALE and SHARE X HADVSALE turned out to be statistically significant, but the signs were opposite.

Figure 1. Total liabilities for all firms, 1990-2001



Source: Prowess database, Centre for Monitoring the Indian Economy.

The same model is applied to the case of borrowings from financial institutions. The sign of the relationship between loans from financial institutions and equity finance for high-quality firms is expected to be mixed. On the one hand, a negative relationship is expected to be more pronounced than the case of bank loans and equity finance, because long-term loans and equity finance are more likely to be substitutes for each other. On the other hand, a positive relationship can be expected since financial institutions often invest in shares of their borrowers. If the second effect exceeds the first, a positive relationship between loans and equity finance is to be expected.

With respect to firms' borrowings from financial institutions, the results reported in table 3 are summarized as follows: first, the coefficient of SHARE X LISTED was statistically significant and negative for the two periods. This suggests that loans from financial institutions and equity finance are substitutes for each other in the case of publicly listed firms relative to unlisted firms. Also, the coefficient of SHARE X HROA shifted from being statistically insignificant in 1992-1996 to being statistically significant and negative in 1997-2001. Thus, a substitution relationship is observable for profitable firms relative to unprofitable ones in recent years. Second, the coefficient of SHARE X LRISK, which was statistically significant and negative for 1992-1996, turned out to be statistically insignificant and positive in 1997-2001. Third, the coefficient of SHARE X OLD was moreover statistically significant but positive for the two periods. Fourth, the coefficient of SHARE X CPD turned from being statistically significant and positive to being statistically insignificant, while the opposite is true for the case of SHARE X HEXPORT. The overall greater complementarity between loans from financial institutions and equity finance (as compared with bank loans with equity finance) arises from the greater impact of dual holdings of debt and equity. Fifth, the coefficients of SHARE X HDEPSALE and SHARE X LADVSALE were statistically significant and negative, in line with the prediction.

III. CONCLUSIONS

This paper has found that financial and capital market reforms have had positive impacts on these markets in India. However, the financial and capital markets remain shallow for several reasons. First, firms characterized as being of high quality have increasingly substituted bond finance for bank loans, but this behaviour was more prevalent for the relationship from loans from financial institutions to bond finance. The weaker substitution relationship for bank loans reflects their short-term nature as a result of the intervention policies of previous governments. As the reforms make further progress, banks should be expected to lengthen the maturity of credit as they diversify. Thus, a greater substitution relationship is likely to emerge for high-quality firms than for low-quality ones.

Second, the overall weak substitution relationship between loans (both from banks and financial institutions) and bond finance for high-quality firms suggests the failure of the largely privately funded bond markets to differentiate firms by quality, because SEBI exempts public issues from stringent accounting and disclosure requirements. Indeed, tighter regulations in the public capital market have encouraged some firms to shift from the equity market to the private placement bond market. Such a regulatory arbitrage merits greater attention and a further improvement of the infrastructure.

Third, while equity finance has become one of the most important financing sources next to loans, the equity market has not proved a stable source during 1990-2001. Firms appear to have taken advantage of the two stock market booms in order to raise funds cheaply, but have shifted away from the market once the boom petered out. Therefore, there has been no steady shift among high-quality firms from loans from banks and financial institutions to equity. This reflects an inadequate infrastructure for a sound capital market despite SEBI's efforts to strengthen accounting, auditing and disclosure requirements, thereby failing to differentiate between firms of different quality and to enable high-quality firms to issue shares at higher prices than low-quality ones regardless of the boom-bust cycles of stock prices. The poor infrastructure is evidenced by the frequent cases of malpractice and price manipulation. The results of this study reinforce the need for further financial and capital market reforms with an emphasis on infrastructure building.

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TECHNOLOGY DEVELOPMENT IN MALAYSIA AND THE NEWLY INDUSTRIALIZING ECONOMIES: A COMPARATIVE ANALYSIS

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Taking the Republic of Korea, Singapore and Taiwan Province of China as the reference economies for comparison, the study focuses on the policy lessons for Malaysia in pursuing technology-based economic growth. The key elements examined are human capital, research and development (R&D), science and technology (S&T) parks, foreign technology transfer and government research institutes (GRIs). The analysis shows that the availability of skilled human capital in Malaysia is not sufficient for technological development to progress. The paper makes a number of recommendations to promote technological development in Malaysia.

Malaysia is an emerging Asian economy aspiring to move towards a technology-driven and high-tech production-based pattern of development and thus replicate the experience of the newly industrializing economies (NIEs) of Asia. In fact, Malaysia has been categorized in the group of countries that have the potential to create new technologies on their own (Mani, 2000). The prospects remain promising despite the 1997 Asian financial crisis, although no country in the region was spared.

The rapid technological development of the NIEs over the past two decades has caught the attention of both developing and developed economies (Hobday, 1995). Coincidentally, Malaysia and the NIEs are not only located in the same region, but to a large extent have similar economic regimes and trade structures. In view of that, Malaysia has a strong basis to consider formulating its own technological development strategy based on those in the NIEs with appropriate adaptations to accommodate the economy's uniqueness.

Nevertheless, it is non-optimal for Malaysia to import wholesale a technological development model from any of the NIEs. Given that each of these economies used dissimilar technological development routes to make their way into high-tech markets, this suggests that there is no single strategy that can guarantee successful technological upgrading in Malaysia. Clearly, their patterns of technological

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development would need to be adapted in order for Malaysia to make the best use of them. Drawing upon their successful experience in pursuing technology-based economic growth, the object of this study is to come up with policy lessons for Malaysia. The organization of the paper is as follows. Section I comprises the methodology, followed by section II that analyses and contrasts the technological catch-up strategies and the strategic resources that are currently being used by Malaysia and the NIEs. Finally, sections III and IV provide the policy lessons and overall conclusions, respectively.

I. METHODOLOGY – AN ANALYTICAL FRAMEWORK

The NIEs that are taken as the reference countries for comparison are the Republic of Korea, Singapore and Taiwan Province of China. The two main objectives of the comparative study are, firstly, the technological catch-up strategies within the context of their national technological innovation systems; and, secondly, the strategic resources that have been utilized in the course of their technological upgrading.

Technological catch-up strategy

The strategic dimension to be used for analysing the technological catch-up strategies of Malaysia and the NIEs is the technological development capability of the latecomer firms with the resource-based view. The technological capabilities of a firm can be conceptualized as having product technological capabilities and process technological capabilities[1] (Wong, 1999). The resource-based view suggests that the superior performance of a firm is derived from its pursuit of strategies that best exploit its unique resource position. Considering that strategic resources are heterogeneously distributed across firms and that these differences are stable over time, there is a link between firm resources and sustained competitive advantage. One needs to delineate the unique resource positions of these firms in order to understand why certain latecomer firms are able to achieve rapid technological catch-up (Barney, 1991).

Strategic resources

The strategic resources to be analysed are as follows: human capital, R&D, S&T parks, foreign technology transfer and GRIs. The success of a nation's technological development hinges on the planned use of these strategic resources and the formulation of policies and their implementation at the national level. Two caveats

[1] Product technological capabilities cover the abilities to create, design and commercialize new products and services whereas process technological capabilities cover the abilities to make multiple copies of a product or to deliver repeatedly a service once the product or service performance specifications are given.

are in order. First, data are compiled from various national and international official publications and thus may not be strictly comparable. The latter include the Human Development Report (HDR), the World Competitiveness Yearbook (WCY) and the World Development Report (WDR). Second, some data series do not cover complete periods and missing data have to be estimated to compile a series.

II. ANALYSIS

Technological catch-up strategy

Both Malaysia and the NIEs have mounted elaborate strategies to identify and act upon strategic technologies (Dodgson, 2000; Chang and Cheema, 2001). They have used trade and domestic credit policies to different extents and in different combinations to influence resource allocation, infrastructure development, firm size and cluster formation, skill development, technological activity and FDI attraction, to build local technological capabilities (Lall and Teubal, 1998). Also, national technology development plans have been formulated to systematically guide their nations to match the technologically advanced economies.

While the national innovation model of Malaysia remains elusive, the one in the Republic of Korea is characterized by large and vertically integrated conglomerates (*chaebol*). Meanwhile, Singapore and Taiwan Province of China are seen to be following the small- and medium-sized enterprise-public research institute (SME-PRI) innovation network model and the foreign direct investment (FDI)-leveraging model, respectively (see table 1). Over the years, Malaysia has attempted to emulate the three models but none of these has produced significant results thus far.

If development proceeds by stages, Taiwan Province of China should have preceded the Republic of Korea into high-tech production. In fact, the Republic of Korea has now overtaken Taiwan Province of China in many respects. This can be traced principally to differences in industrial and firm structures in the two countries. The conglomerate organizational mode of the Republic of Korea accelerates entry into many markets while the smaller Taiwan Province of China firms have been unable to sustain themselves in these markets (Mody, 1990).

Nevertheless, technological development in the Republic of Korea has its downside (Ernst, 2000). A fundamental problem of its industries, especially electronics, is the narrow and sticky product specialization on segments that require huge investment outlays and sophisticated mass production techniques for homogeneous products. Also, its narrow domestic industrial technological knowledge base remains constrained by an insufficient critical mass of R&D and patenting, inefficiency of corporate technology management and an ineffective technological innovation system in the public domain.

Singapore's FDI-leveraging model strongly pushes into the specialized high-tech industry for export markets and subcontracting promotion for SMEs to raise

Table 1. National innovation models of the NIEs

National innovation system models	*Dominant technological catch-up routes*
Republic of Korea's large firm internalization model	• Reverse product life cycle strategy
Singapore's FDI-leveraging model	• Process specialist strategy, followed by reverse value chain strategy on a smaller scale • Application pioneering strategy strong among service firms • Emergence of reverse product life cycle strategy and product pioneering strategy in the 1990s
Taiwan Province of China's SME-PRI innovation network model	• Reverse value chain strategy, followed by process specialist strategy • Strong emergence of product pioneering strategy since the late 1980s

Source: Wong (1999).

local content. Besides, there is an aggressive targeting and screening of multinational corporations (MNCs) to direct them into high value added and R&D intensive activities (Lall and Teubal, 1998; Wong, 1999). More often than not, its success lies in the capability of SMEs in engineering positive spillovers from MNCs.

The NIEs today share common structural characteristics in technology because they made use of the same sources of FDI, notably the United States and Japan, in the early stage of their technological development. However, only the Republic of Korea has successfully deepened and broadened its technology base, not only in the electronics industry, but also in the automobile, shipbuilding and steel industries. Meanwhile, to date, Singapore and Taiwan Province of China have only become the forerunners in the electronics industry. This can be arguably attributed to the difference in the role of Government. Taiwan Province of China's Government has been supportive rather than interventionist whereas the Republic of Korea's Government has been collaborative and even coercive in relations with the private sector (Yung, 1990).

Strategic resources

Human capital

Compared to the NIEs, Malaysia's human capital is relatively scarce and less qualified (Mani, 2000). Table 2 shows that both the education index and human resources ranking of Malaysia were relatively low in comparison with those of the NIEs in 1990 and 2000. Also, both the literacy rate and enrolment ratio of Malaysia have trailed behind the NIEs over the past two decades (see tables 3-6). However,

during the period, Malaysia progressed quite rapidly in terms of both youth and adult literacy rates. In fact, this is somewhat in line with Lau's (2000) findings (see table 7).

Table 2. Education index (EI) and human resources ranking (HRR)

	EI		*HRR**	
	1990	*2000*	*1990*	*2000*
Republic of Korea	0.92	0.95	66.7	67.9
Singapore	0.83	0.87	68.3	70.7
Taiwan Province of China	n.a.	n.a.	67.1	69.0
Malaysia	0.75	0.80	63.4	66.5

Sources: HDR, WCY* (various issues).

Table 3. Percentage of 20-24 year olds enrolled in tertiary education

	1990	*2000*
Republic of Korea	37	43
Singapore	18	53
Taiwan Province of China*	22	52
Malaysia	7	13

Sources: WCY (various issues), NSF*.

Table 4. Youth literacy rate, ages 15-24

	2000	*Index (1985=100)*
Republic of Korea	99.8	100
Singapore	99.7	102
Taiwan Province of China	n.a.	n.a.
Malaysia	97.3	105

Source: HDR (2002).

Table 5. Combined primary, tertiary gross enrolment ratio

	1990	*2000*
Republic of Korea	81	90
Singapore	68	75
Taiwan Province of China	n.a.	n.a.
Malaysia	61	66

Source: HDR (various issues).

Table 6. Adult literacy as percentage, ages 15 and above

	1990	*2000*
Republic of Korea	97.6	97.8
Singapore	90.3	92.3
Taiwan Province of China	n.a.	n.a.
Malaysia	82.2	87.5

Source: HDR (various issues).

Table 7. Average annual rates of human capital growth

	Period	*Growth rate*
Republic of Korea	1960-95	6.2
Singapore	1964-95	5.9
Taiwan Province of China	1953-95	5.3
Malaysia	1970-95	7.7

Source: Lau (2000).

As shown in tables 8-10, the technical enrolment as a percentage of all secondary students, S&T graduates as a percentage of all graduates and engineering enrolments as a percentage of the population in Malaysia trailed significantly behind the NIEs over the past 10 years. With such poor S&T enrolment numbers, the research scientists and engineers (RSEs) per 10,000 labour force in Malaysia were not surprisingly outnumbered almost 15 to one by the NIEs during the period (see table 11). Also, it is worrisome that Malaysia is still very short of S&T human resources despite the increasing number of S&T degree holders from the local educational institutions during the period 1971-2000 (see table 12). This suggests that demand has actually outstripped supply. The other side of the coin is that technology development in Malaysia has been so rapid that even the incremental increase in S&T human resources supply fails to meet the demand. Nonetheless, findings suggest an undesirable imbalance in terms of RSEs in Malaysia.

Table 8. Technical enrolment as percentage of all secondary students

	1988-1991	*2000*
Republic of Korea	18.6	18.6
Singapore	n.a.	5.6
Taiwan Province of China	n.a.	n.a.
Malaysia	2.2	2.2

Source: HDR (various issues).

Table 9. S&T graduates as percentage of all graduates

	1990	*2000*
Republic of Korea	42	44
Singapore	53	63
Taiwan Province of China*	48	56
Malaysia	32	39

Sources: HDR (various issues), NSF*.

Table 10. Engineering enrolment as percentage of population

	1990	*2000*
Republic of Korea	0.46	0.68
Singapore	0.45	0.65
Taiwan Province of China	0.51	0.70
Malaysia	0.02	0.16

Source: WDR (various issues).

Table 11. Research scientists and engineers per 10,000 labour force

	1990	*2000*
Republic of Korea	53	45
Singapore	30	85
Taiwan Province of China*	31	80
Malaysia	2	10

Sources: HDR (various issues), NSF*.

Soon (1992), Mani (2000) and Lall (2001) explain that Singapore has arguably one of the most well-developed systems of industrial and vocational training that has enabled the rapid transformation of its unskilled workforce into a highly skilled one over a short period of two decades. Interestingly, as shown in table 13, there is not much difference between the training and skills development in all of these countries

Table 12. Malaysia: output of S&T degree holders from local institutions

	1971-1975	*1976-1980*	*1981-1985*	*1986-1990*	*1991-1995*	*1996-2000*
Science	4 451	6 513	9 317	17 510	19 642	40 077
(per cent)	(31.8)	(33.5)	(34.7)	(33.1)	(24.8)	(27.8)
Technical	498	1 566	2 719	7 550	10 508	21 953
(per cent)	(3.6)	(8.1)	(10.1)	(14.3)	(13.3)	(15.2)
Total	4 949	8 079	12 036	25 060	30 150	62 030
(per cent)	(35.4)	(41.6)	(44.8)	(47.4)	(38.1)	(43.0)

Source: Five-Year Malaysia Plan (various issues).

Note: Science includes medicine, agricultural sciences and pure sciences; technical includes engineering, architecture and surveying.

Table 13. Training and skills development in Malaysia and the NIEs

	Incentives for in-service training	*Coordinating body for vocational training*	*Composition of coordinating body*
Republic of Korea	Tax levied on firms failing to train required proportion of workforce	Vocational training and management agency	Government led, limited autonomy from Ministry of Labour
Singapore	Levy-subsidy	Institute of Technical Education	Governors drawn from industry, labour organizations and government
Taiwan Province of China	Subsidy from general taxation	Employment and vocational training administration	Government body, some informal consultation with industry
Malaysia	Levy-subsidy (large firms); double deduction of training expenses for tax purposes (others)	Technical and vocational division of the Ministry of Education	Government body

Source: Tzannatos and Johnes (1997).

except for the composition of the coordinating body, in which Singapore is more private sector driven and governed. Most specialized technical training programmes are run as a collaborative venture with reputed overseas partners, either in the form of well-known MNCs or highly regarded industrial training institutes. In addition, Singapore has also successfully adopted a very liberal immigration policy to attract foreign scientists and engineers to work in the island State.

If one measures a country's human capital by public education expenditure, Malaysia was actually on par with the NIEs, if not outperforming them, over the past two decades (see tables 14-15). As pointed out by Mani (2002), if one goes by standard indicators of the Government's commitment towards human capital efforts, Malaysia compares very favourably with the NIEs and indeed even with developed countries, such as Japan and the United States.

Table 14. Public education expenditure as percentage of Government expenditure

	1985-1987	*1995-1897*
Republic of Korea	n.a.	17.5
Singapore	11.5	23.3
Taiwan Province of China	n.a.	n.a.
Malaysia	18.8	15.4

Source: HDR (various issues).

Table 15. Public education expenditure as percentage of GNP

	1985-1987	*1995-1997*
Republic of Korea	3.8	3.7
Singapore	3.9	3.0
TaiwanProvince of China*	2.1	5.7
Malaysia	6.9	4.9

Sources: HDR, UNESCO* (various issues).

The order of priority in the budget allocations for primary, secondary and tertiary levels in the NIEs is not the same (see table 16). This suggests that public education expenditure by level is not crucial for human capital development. After all, these three levels of education are equally important as none of them is dispensable in the course of human capital formation.

As the output of degree courses shows a continued preference for arts and humanities, the increase of human capital that has the right quality and knowledge in Malaysia is not sufficient for technological upgrading to become self-sustaining. While such human capital can be augmented via domestic initiatives, these efforts have been

Table 16. Public education expenditure by level as percentage of all levels

	Pre-primary Primary		*Secondary*		*Tertiary*	
	1985-1986	*1995-1997*	*1985-1986*	*1995-1997*	*1985-1986*	*1995-1997*
Republic of Korea	47.0	45.3	36.7	36.6	10.9	8.0
Singapore	30.5	25.7	36.9	34.6	27.9	34.8
Taiwan Province of China	n.a.	n.a.	n.a.	n.a.	n.a.	n.a
Malaysia	37.8	32.7	37.1	30.6	14.6	25.5

Source: HDR (various issues).

partly offset by the brain drain problem. Although this is not insurmountable, the fact that all countries in the region are competing head-on for this scarce intangible capital will pose a challenge to Malaysia's S&T human capital growth. Therefore, Malaysia needs to come up with a set of liberal immigration policies to attract more foreign scientists and engineers to work in the country.

Research and development

With a gross expenditure on R&D (GERD)/GDP of less than 0.5 per cent during the period 1990-2000, certainly Malaysia's R&D investment was considered as insignificant (see table 17). The number of patents granted to Malaysia in the United States was also quite small during the period (see table 18). The number would be even smaller if the patents granted to the MNCs that operate in Malaysia had not been included. The two common internal factors that limit R&D activities in Malaysia are insufficient financial resources and lack of skilled R&D personnel. Inadequate market research has also been cited as an important external factor that greatly curtails R&D activities in the private sector. Lack of emphasis on the importance of R&D for long-term benefit also seems to have impeded higher growth of R&D activities in the GRIs and institutes of higher learning (IHLs) (MoSTE, 2000).

Table 17. GERD/GDP, 1990-2000

	1990	*1992*	*1994*	*1996*	*1998*	*2000*
Republic of Korea	1.90	2.03	2.44	2.60	2.55	2.69
Singapore	0.90	0.97	1.13	1.45	1.76	1.92
Taiwan Province of China	1.70	1.75	1.82	1.88	1.98	1.96
Malaysia	0.37	0.37	0.34	0.22	0.39	0.49

Source: MoSTE (2002).

Table 18. Patents granted in the United States, 1990-2000

	Pre-1986	*1990*	*1992*	*1994*	*1996*	*1998*	*2000*
Republic of Korea	213	225	538	943	1 493	3 259	3 314
Singapore	62	12	32	51	88	120	144
Taiwan Province of China	742	732	1 001	1 443	1 897	3 100	4 667
Malaysia	0	3	5	10	12	23	30

Source: United States Patent and Trade-Mark Office (2002).

Surprisingly, while the number of patents granted in Malaysia was much smaller than the ones in the Republic of Korea and Taiwan Province of China, it was significantly larger than the one in Singapore, especially during the period 1992-1996 (see table 19). This implies that countries that leverage foreign sources for technological upgrading tend to be less successful in promoting local patenting activities. Also, an NIE that records higher GERD/GDP does not necessarily indicate that it has a larger patent intensity. For instance, during the period 1990-2000, the Republic of Korea's GERD/GDP was significantly higher than second-placed Taiwan Province of China but the number of patents granted to the former in the United States was smaller than to the latter.

Table 19. Patents granted locally, 1990-2000

	1990	*1992*	*1994*	*1996*	*1998*	*2000*
Republic of Korea	7 930	8 308	8 457	11 835	9 579	10 475
Singapore	40	44	58	91	130	285
Taiwan Province of China	22 601	21 264	19 011	29 707	25 386	26 958
Malaysia	518	1 002	1 629	1 801	586	350

Source: United States Patent and Trade-Mark Office (2002).

Bloom (1992), Kim (1995) and Kim (1997) attribute this paradox to the weaknesses that lurk in the *chaebol's* innovation management system. While the Republic of Korea's external technology sourcing strategies are highly sophisticated, the organization of innovation within these firms follows a centralized R&D model that produces rigid procedures concerning information management and decision-making, product design cycles and speed-to-market. This would inevitably result in weak domestic linkages, either with foreign companies or what can be internalized by the *chaebol*.

In terms of sector-wise distribution, the R&D expenditure in both Malaysia and the NIEs is not equally distributed. Throughout the period 1990-2000, the lion's share of the R&D expenditure went to the private sector while both the GRIs and IHLs held only a moderate and very low share, respectively (see table 20). The R&D role of private enterprise is expected to be increasingly important, eclipsing both GRIs and IHLs in the future.

While several research grants and tax incentives are offered in Malaysia and the NIEs to promote R&D activities in their respective countries (see table 21), most R&D schemes in the former are offered only to the locally controlled and owned companies (at least 51 per cent local equity holding). Obviously, this is a disincentive for foreign-owned companies to carry out R&D activities in Malaysia. Consequently, foreign R&D investment remains low in the country and it was exceeded by about six

Table 20. R&D expenditure by sector (in per cent), 1990-2000

	Private sector		*GRIs*		*IHLs*	
	1990	*2000*	*1990*	*2000*	*1990*	*2000*
Republic of Korea	71	75	22	15	8	10
Singapore	54	63	15	19	31	18
Taiwan Province of China	67	73	24	14	9	13
Malaysia	37	66	55	22	8	12

Sources: Ministry of Science and Technology (Republic of Korea), Executive Yuan Council (Taiwan Province of China), National Science and Technology Board (Singapore) and Ministry of Science, Technology and the Environment (Malaysia).

Table 21. Key research grants and projects provision

Republic of Korea	• 21st century Frontier R&D Programme • Highly Advanced National Project • Creative Research Initiative • National Research Laboratory Programme • Strategic National R&D Project
Singapore	• Research Incentive Scheme for Companies • Innovation Development Scheme • Funds for Industrial Clusters • Promising Local Enterprises
Taiwan Province of China	• Leading Product Subsidiary Programme • Technology Development Programme • Small Business and Innovation Research Programme • Industrial Technological Development Programme
Malaysia	• Industry Research and Development Grant • Technology Acquisition Fund • Intensification of Research in Priority Areas • Commercialization of R&D Fund

Sources: Ministry of Science and Technology (Republic of Korea), Ministry of Economic Affairs (Taiwan Province of China), National Science and Technology Board (Singapore), Ministry of Science, Technology and the Environment (Malaysia).

to four by local R&D investment during the period 1990-2000. While such a shareholding restriction has also been implicitly imposed on some of the R&D schemes offered in the NIEs, locally incorporated companies are defined as those which have a substantial connection to their economies and substantial parts of their

production, R&D, management or general business activities are located in the host countries.

The R&D expenditure by type of research in Malaysia is dissimilar to that in the NIEs. While most research in the NIEs is concentrated on experimental development, the biggest portion of the R&D expenditure in Malaysia is used for applied research. Meanwhile, basic research constitutes the smallest portion of the total R&D expenditure in both Malaysia and the NIEs. This suggests that they all mainly focus on a particular application or use rather than to increase the general knowledge base. According to Wong (1999), while applied research can solve the current and immediate future needs of industry today, only basic research capabilities can provide more radical or breakthrough solutions.

In the NIEs, most government R&D research funds are given to the electronics manufacturing industry, the largest contributor in their national GDPs. In contrast to the NIEs, the R&D expenditure by field of research in Malaysia is not in accordance with the importance of the economic sectors. For instance, while the share of the agricultural sector to GDP dropped from 18 per cent in 1990 to 8 per cent in 2000, the bulk of IRPA (the largest government R&D grant scheme) still went to this sunset sector. While the share of the manufacturing sector to the GDP increased from 25 per cent to 35 per cent during this period, its percentage spending in IRPA was merely one third of that disbursed to the agricultural sector (see table 22). This is worrisome as manufacturing is the sector that has been driving the nation towards being a high-tech exporter in the world (see table 23). As shown in table 24, the high-tech exports of Malaysia have indeed been improving tremendously over the past 10 years. Considering that both Malaysia and the NIEs are heavily dependent on electronics exports, there is little reason for the former not to follow the same strategy in terms of R&D budgetary allocation.

Malaysia's R&D productivity remains low as capital expenditure constitutes a larger share than labour costs in R&D expenditure by type of costs. During the period 1990-2000, capital expenditure accounted for over 40 per cent of the total R&D expenditure in Malaysia whereas it constituted not more than 25 per cent in the NIEs. While labour costs accounted for less than 20 per cent of the total R&D expenditure in Malaysia, in the NIEs they hovered at around 40 per cent.

Among the NIEs, Taiwan Province of China is the only economy that has successfully used R&D consortia to enhance its R&D capability (Mathews, 1999). Such consortia are a series of collaborative R&D ventures that exist within a distinctive institutional framework. Technological learning, upgrading and catch-up are the main objectives of the collaborative exercises. As explained by Hou and Gee (1993) and Lin (1994), with relatively small budgets, such alliances bring together firms and public sector research institutes, with the input of trade associations and financial assistance from the Government. They span many industries, target several specific technologies and vary in size.

Table 22. Malaysia: IRPA programme approvals by area of research

Area	*US$ million*	*Percentage*
	1991-1995	
Agricultural sciences	111.6	49.2
Applied sciences and technologies	68.1	30.0
Medical sciences	20.0	8.8
Others	27.2	12.0
Total	226.9	100.0
	1996-2000	
Agro industry	49.6	25.6
Construction	6.6	3.4
Energy	14.9	5.3
Environment	13.1	6.7
ICT	9.7	5.0
Manufacturing	19.9	10.3
Medical	26.9	13.9
Material and geoscience	4.2	2.1
Science engineering	31.8	16.4
Services	15.0	2.1
Socio-economic	4.2	2.3
Biotechnology	8.0	4.1
Photonics	5.2	2.7
Total	209.1	100.0

Source: Five-Year Malaysia Plan (various issues).
Note: It has been reclassified in the Seventh Malaysia Plan (1996-2000).

Table 23. Percentage share of high-tech exports to total manufactured exports

	WDR		*UNU/INTECH*
	1990	*2000*	*2000*
Republic of Korea	22	36	27
Singapore	51	67	57
Taiwan Province of China	n.a.	n.a.	n.a.
Malaysia	49	64	49

Sources: WDR (various issues) and UNU/INTECH.

Table 24. Malaysia: Performance of high-technology exports (millions of US dollars)

	Exports	*Share (per cent)*	*Ratio to the United States*	*Ratio to the world*
1990	6 050	38.2	0.07	0.016
1995	25 409	46.1	0.20	0.034
2000	38 335	57.3	0.20	0.039

Source: Extracted from Mani (2002).

Science and technology parks

Among the NIEs, the Republic of Korea was the first that set up an S&T park, followed by Singapore and Taiwan Province of China (see table 25). While the S&T parks in the Republic of Korea specifically cater for R&D, the ones in Singapore and Taiwan Province of China are mainly focused on high-tech manufacturing. The typical activities in the three S&T parks in Malaysia are high-tech manufacturing, R&D and software and IT services. Although the first S&T park in the Republic of Korea was established earlier than the one in Taiwan Province of China, today the latter is regarded as the only one in the world that has successfully replicated the

Table 25. Science and technology parks

Republic of Korea	• Daeduck Science Park (DSP). Established in 1973. Occupies 27 square kilometres. Caters to R&D. • Ansan Technopark (ANTP). Established in 1998. Occupies 110,000 square metres. Caters to R&D.
Singapore	• Singapore Science Park (SSP). Established in 1981. Occupies 30 hectares. Caters to high-tech manufacturing.
Taiwan Province of China	• Hsinchu Science-Based Industrial Park (HSIP). Established in 1981. Occupies 580 hectares. Caters to high-tech manufacturing. • Tainan Science-Based Industrial Park (TSIP). Established in 2000. Occupies 680 hectares. Cater to high-tech manufacturing.
Malaysia	• Kulim High-Tech Park (KHTP). Established in 1993. Occupies 1,486 hectares. Caters to high-tech manufacturing. • Technology Park Malaysia (TPM). Established in 1995. Occupies 120 acres. Caters to R&D. • Multimedia Super Corridor (MSC). Established in 1996. Occupies 750 square kilometres (takes 20 years for the full implementation and execution). Caters to software and IT services.

Sources: S&T park administrations of the respective countries.

Table 26. Progress made by science and technology parks

	Turnover (US$ billion)		*Number of tenants*		*Number of institutions**		*Number of employed*
	1990	*2000*	*1990*	*2000*	*1990*	*2000*	*2000*
DSP	n.a.	n.a.	43	86	22	33	15 000
ANTP	n.a.	n.a.	n.a.	40	n.a.	7	n.a.
HSIP	2.2	21.7	121	292	18	23	75 000
SSP	n.a.	n.a.	67	307	15	19	7 000
MSC	n.a.	0.9	n.a.	429	n.a.	53	13 000
KHTP	n.a.	n.a.	n.a.	24	n.a.	1	n.a.
TPM	n.a.	n.a.	n.a.	105	n.a.	4	n.a.

Sources: S&T Park administrations of the countries.

* These include GRIs and public universities.

Silicon Valley in the United States (Lubman, 1999; Saxenian, 2000). As shown in table 26, the progress of the HSIP has indeed been ahead of the others.

The success of the HSIP can be attributed to active Government involvement, rapid accumulation of knowledge and skills, and specific focus on manufacturing and demand-motivated R&D (Xue, 1997). Saxenian (1999) explains that its dynamism is due to the increasing interdependencies between Silicon Valley in the United States and Hsinchu-Taipei in Taiwan Province of China. A community of United States-educated Taiwan Province of China engineers has coordinated a decentralized process of reciprocal technological upgrading by transferring capitals, skills, and know-how, and facilitating collaborations between specialist producers in the two regions. In fact, over 40 per cent of the start-up companies in the HSIP are owned by these engineer-entrepreneurs (Chan, 2001).

Contrary to the HSIP, the DSP is more domestically oriented and there is no deliberate effort to attract foreign companies to locate there. Its positive aspects include a good physical environment, emerging spin-off companies and high-quality research and educational activities, while its negative aspects are limited collaborative research among the institutions, no synergistic effects among research institutions and few linkages between the institutions and local industries. Also, there is not much industrial activity in the park as most of the tenants are government laboratories (Shin, 2001).

According to Kahaner (1995), there are three similarities between the S&T parks in Malaysia and the NIEs. First, they have become a new strategy to develop S&T and ensure a rapid transfer of R&D results to high-tech industries. Second, Government plays the leading role in promoting their development. These include providing funds for infrastructure building and offering various tax incentives to the

tenants. Third, universities play relatively minor roles in them. This is in contrast with the ones in the United States and Europe where universities are typically among the key players.

Wang (2000) notices that although both the HSIP and SSP have strength in physical and institutional infrastructure, FDI, venture capital (VC), overseas market, technology, universities or institutes, high-tech talents and administration, their domestic markets are weak. Meanwhile, the MSC has strength in physical and institutional infrastructures, FDI and administration, but its VC, domestic market, overseas market, technology, universities or institutes and high-tech talents are weak.

Even if most of the key success factors are available in Malaysia, it still faces stiff competition from other S&T parks in the region in attracting foreign investors. Especially with the entry of China into WTO, many world class high-tech companies from the developed countries may consider shifting their investments to the S&T parks in that country.

Foreign technology transfer

Foreign technology transfer is important to the technological upgrading in Malaysia and the NIEs (Lim and Maisom, 2000; Carr et al., 2001; Keller, 2001). As shown in the Global Competitiveness Report (2002), Singapore recorded the highest technology transfer index (1.95), followed by Malaysia (1.08), Taiwan Province of China (0.90), and the Republic of Korea (0.82) in 2001. The index is in fact positively correlated with the FDI inflows to these countries (see table 27).

Japan and the United States were the two key FDI sources in the early technological development of both Malaysia and the NIEs (Hobday, 1995; Banik, 2000). However, due to increasing production costs in the NIEs (especially Taiwan Province of China), they have gradually emerged as an important source of FDI for Malaysia since the early 1990s (see table 28). During the period 1980-2000, foreign technology inflows to Malaysia were mostly transferred to both the electronics and petrochemical industries via technical assistance and licence, trademark and patents (see tables 29 and 30).

Table 27. Net FDI inflows, 1970-2000 (billions of US dollars)

	1970	*1980*	*1985*	*1990*	*1995*	*2000*
Republic of Korea	0.20	0.34	0.53	0.79	1.78	15.69
Singapore	5.58	7.21	5.46	3.67	5.22	6.37
Taiwan Province of China	0.29	0.42	0.58	1.33	1.56	5.27
Malaysia	0.04	0.19	0.13	2.33	4.13	5.22

Source: HDR (various issues).

Table 28. Source of foreign direct investment to Malaysia by rank, 1980-2000 (millions of US dollars)

	1980	*1985*	*1990*	*1995*	*2000*
Republic of Korea	4	32	360	1 403	446
Singapore	96	288	1 220	4 195	570
Taiwan Province of China	17	57	3 611	6 159	293

Source: Malaysia Industrial Development Authority (2002).

Table 29. Technology inflows by industry group, 1980-2000 (n.o.s)

Industry	*1980*	*1985*	*1990*	*1995*	*2000*
Electrical and electronics	16	21	41	25	48
Chemical products	21	17	24	22	25
Transport equipment	n.a.	n.a.	18	9	15
Fabricated metals	14	0	4	4	5
Food manufacturing	12	10	4	2	2
Rubber products	14	4	8	3	2
Non-metallic minerals	4	0	7	1	5
Basic metals	10	0	4	0	5
Textiles and apparel	5	1	7	1	2
Hotels	2	4	3	0	0
Plastic products	6	0	5	6	12
Wood products	n.a.	n.a.	6	1	0
Pulp and paper	0	3	4	4	1
Machinery	n.a.	n.a.	6	4	1
Beverages and tobacco	n.a.	n.a.	10	1	5
Petroleum and coal	3	0	0	1	3
Leather	n.a.	n.a.	1	0	0
Miscellaneous	13	16	3	0	0
Total	120	76	155	84	131

Source: Five-Year Malaysia Plan (various issues).

Table 30. Technology inflows by type of agreement, 1980-2000 (n.o.s)

Type of agreement	*1980*	*1985*	*1990*	*1995*	*2000*
Joint venture	22	9	15	3	0
Technical assistance	64	51	72	36	78
Licence, trademark and patents	8	5	36	26	43
Know-how	n.a.	n.a.	12	4	4
Management	6	6	5	1	0
Turnkey and engineering	n.a.	n.a.	1	1	0
Services	7	1	6	5	6
Sales, marketing/distribution	n.a.	n.a.	5	1	0
Supply and purchase	n.a.	n.a.	2	0	0
Others	19	24	1	6	0
Total	126	96	155	83	125

Source: Five-Year Malaysia Plan (various issues).

Both the externalization and internalization strategies for technology transfer have been successfully implemented in the NIEs. The externalization strategy adopted in the Republic of Korea and Taiwan Province of China is aimed at restricting the role of FDI, promoting inflows in other forms, and supporting domestic enterprises in mastering increasingly complex activities. Lall (2001), however, argues that such a strategy is difficult and risky and few other countries can replicate it. It requires a strong base of technological skills, entrepreneurs who are able and willing to undertake risky technological effort and an incentive regime that protects learning while imposing export discipline. Also, it needs a bureaucracy that is able to handle these tools efficiently and flexibly without being hijacked by particular interests. Meanwhile, the internalization strategy practised by Singapore is to rely heavily on internalized technology transfer via FDI, but not to leave resource allocation and technology to markets. This requires the Government to target complex technologies and induce MNCs to upgrade local functions. Also, it calls for a strong skill base and an administrative structure that is able to select technologies, target and bargain with MNCs and handle incentives efficiently.

Despite the widespread perception that FDI plays a minor role in the Republic of Korea development model, the country's electronics exports started taking off only when it became a final export platform for American semiconductor firms (Ernst 2000). In fact, in the early 1970s, foreign firms accounted for one third of the Republic of Korea's electronics production and 55 per cent of its exports, before falling below 30 per cent in the 1980s (Bloom, 1992). Nevertheless, the Republic of Korea has now one of the lowest rates of inward investment in East Asia, even after the crisis-induced attempts by the Republic of Korea Government to bring foreign

investment back into the country as a vehicle for accelerated technology diffusion. Ernst (2000) attributes this to the increasingly demanding requirements by the Government on foreign firms to contribute to local value added and increase the transfer of technology. By creating fears of a possible boomerang effect through involuntary technology leakage, this accelerated the withdrawal of foreign firms that faced increasingly stiff competition from the *chaebol.*

Each NIE has to a certain extent adopted somewhat dissimilar foreign technology transfer strategies. For instance, GRIs are the main facilitator in the Republic of Korea and Taiwan Province of China but not in Singapore and Malaysia. In the Republic of Korea, the *chaebol* with ready access to financial resources are the main channel to transfer foreign technology via licensing. Under licensing deals, *chaebol* pay royalties for patent rights, as well as product, process and components technologies (Hobday, 1995). Instead of allowing foreign firms to establish local subsidiaries and determine the speed and scope of technology diffusion, some of the leading *chaebol* are encouraged to focus on learning and knowledge accumulation through a variety of links with foreign equipment and component suppliers, technology licensing partners, original equipment manufacturing (OEM) clients and minority joint venture partners. Meanwhile, SMEs that play the main bridging role in Singapore and Taiwan Province of China and to a large extent Malaysia are seen to be leveraging on the MNCs for foreign technology transfer. Their home-grown conglomerates and SMEs merely play a complementary role in promoting technology transfer (Ernst, 2000).

Given that the progress of technological upgrading in Malaysia trails far behind Singapore, this suggests that the former's strategy lacks specific policy instruments to engineer positive spillovers from the MNCs that mostly operate in the manufacturing sector. Actually, this can be attributed to its weak technology-based SME sector that is of paramount importance to technology diffusion (Mani, 2002). As pointed out by Amsden et al. (2001), MNCs in Singapore are reputed to undertake not only R&D locally but applied and possibly even basic research, although it is typically Government-induced. For instance, the Local Industries Upgrading Programme in Singapore has successfully encouraged MNCs to adopt a group of SMEs and transfer technology and skills to them. This programme pays the salary of a full-time procurement expert to work for specified periods with the adopted firms and help them upgrade their production and management capabilities to the required standards.

Thanks to the successful technological upgrading from OEM to original design manufacturing (ODM) and original brand manufacturing (OBM), the Republic of Korea and Taiwan Province of China are now less dependent on foreign technology transfer. While Singapore and Malaysia still depend heavily on it for technological upgrading, it is only the former that has rapidly moved up the manufacturing value added chain.

Government research institutes

In the NIEs, GRIs act as the vehicle or gateway for their local companies to access technology that would otherwise be beyond their capability. For instance, the Republic of Korea lacked technological capabilities for industrialization in the 1960s. Besides imports of foreign technologies, the more radical solution was the establishment of R&D institutes. This had led to the establishment of the first GRI in 1966, namely the Republic of Korea Institute of Science and Technology. Meanwhile, in the 1970s, Taiwan Province of China's industry mainly comprised SMEs that ran on limited capital. This compelled the Government to establish the first technology research institute in 1972, namely the Industrial Technology Research Institute, to carry out innovative R&D technologies and transfer research results to the marketplace.

At present, Singapore has more industrial technology-based GRIs than Taiwan Province of China and the Republic of Korea (see table 31). While the difference is insignificant, this suggests that the number of GRIs in a country does not necessarily reflect its true technological capability. This in fact explains the reason behind the consolidation of 15 GRIs in the Republic of Korea under various ministries into nine large research institutes under the Ministry of Science and Technology during the 1980s.

It is a statistical truth that Malaysia has more GRIs than the NIEs. As pointed out by Mani (2000), only two out of the existing 33 GRIs available in Malaysia are devoted to industrial technology research, namely the Standards and Industrial Research Institute of Malaysia (SIRIM) and the Malaysian Institute for Microelectronic Systems (MIMOS); the other two GRIs, namely the Malaysian Technology Development Corporation and Malaysian Industry Group of High Technology, also responsible for industrial technology development in Malaysia, only act as catalysts.

The functional roles of Malaysia's GRIs are generally not very different from those in the NIEs. They generate new areas of technologies, provide a critical labour pool to the industry, analyse industrial development, conduct and review feasibility studies for new industrial technologies, collect foreign scientific and technology information and encourage local industries to take up R&D projects in collaboration with them.

III. POLICY LESSONS AND RECOMMENDATIONS

National innovation system model

Taking a forward-looking perspective Malaysia may first adopt the DFI-leveraging model, followed by the SME-PRI innovation network model and the large firm internalization model. Given that the second is in fact a pillar of strength to the first, Malaysia may initially implement these two in Johor and Penang,

Table 31. Industrial technology-based GRIs in Malaysia and the NIEs

Republic of Korea	• Republic of Korea Institute of Science and Technology • Republic of Korea Electronics and Telecommunications Research Institute • Republic of Korea Institute of Industrial Technology • Republic of Korea Research Institute of Machinery and Materials • Republic of Korea Electro-technology Research Institute • Republic of Korea Research Institute of Chemical Technology • Republic of Korea Institute of Oriental Medicine • Republic of Korea Food Research Institute
Singapore	• Data Storage Institute • Environmental Technology Institute • Gintic Institute of Manufacturing Technology • Kent Ridge Digital Labs • Institute of Molecular Agro-biology • Institute of Molecular and Cell Biology • Institute of Microelectronics • Institute of Materials Research and Engineering • Bio-process Technology Centre • Centre for Remote Imaging, Sensing and Processing • Centre for Wireless Communications • National Supercomputing Research Centre • Centre for Signal Processing
Taiwan Province of China*	• Industrial Technology Research Institute • Electronic Research and Service Organization • Energy and Resources Laboratories • Centre for Measurement Standards • Materials Research Laboratories • Union Chemical Laboratories • Opto-electronics and Systems Laboratories • Centre for Pollution Control Technology • Centre for Aviation and Space Technology • Centre for Industrial Safety and Health Technology • Computer and Communication Research Laboratories • Mechanical Industry Research Laboratories
Malaysia	• Standards and Industrial Research Institute of Malaysia • Malaysian Institute for Microelectronic Systems

Sources: Ministry of Science and Technology (Republic of Korea), Ministry of Economic Affairs (Taiwan Province of China), National Science and Technology Board (Singapore) and Ministry of Science, Technology and the Environment (Malaysia).

* All of the public research institutes and centres are organized and coordinated by the Industrial Technology Research Institute.

respectively. After all, SMEs are an important nexus in the industrial cluster in the former while the latter's industrial structure is mainly dominated by MNCs. Taking these two industrial states as the test-bed, the two models can then be gradually implemented in other states over time. This would not only provide more policy options for the Government to apply, but also help Malaysia to avoid taking the risk of adopting a single model across all the industrial states. Upon building a relatively strong technological base, Malaysia may then start embarking on the large firm internalization model.

Human capital

- Both the public and private IHLs need to reverse the present ratio of science to arts students from 40:60 to at least 60:40.
- The composition of the coordinating body for training and skills development needs to be more privately driven and governed, so that more technical training programmes can be run as collaborative ventures with MNCs or industrial training institutes.
- Strengthening the Government recruitment programmes and introducing more liberal immigration policies are vitally important to alleviate the brain drain problem.

Research and development

- The existing shareholding restriction that is presently imposed on most of the R&D schemes needs to be lifted in order to promote more foreign-based R&D activities.
- R&D expenditure by field of research ought to be in accordance with the importance of the economic sectors and labour cost has to be given the top priority in terms of R&D expenditure by type of cost.
- Strategic partnerships such as collaborative R&D ventures and alliances are vitally important in spearheading R&D activities.

Science and technology parks

- More stringent rules and conditions have to be imposed in the process of selecting tenants.
- Enhancing the interdependencies and collaborations between the S&T parks in Malaysia and the NIEs is an effective process of reciprocal technological upgrading.
- A private sector managed coordinating body needs to be set up to promote strategic alliances between the S&T parks in Malaysia and help form network linkages between their tenants.

Foreign technology transfer

- The strength of a technology-based SME sector is the key success factor.
- Malaysia is expected to be less dependent on it as the country moves up the value added chain. Therefore, it is required that the country shifts its strategies from internalization to externalization so as to restrict the role of FDI in mastering advanced technologies.

Government research institutes

- The present number of establishments is not sufficient and more need to be established.
- GRIs have to be established according to scientific disciplines and technological specialization so as to carry out R&D and transfer results to the marketplace more effectively.

IV. CONCLUDING REMARKS

Both Malaysia and the NIEs have mounted elaborate strategies to identify and act upon strategic technologies. Without having strong strategic resources, the results of these strategies in Malaysia have, not surprisingly, been less impressive thus far. Admittedly, the existing strategic resources are necessary and useful, but might not be sufficient for the local technological upgrading to take off. More committed and concerted efforts are needed to strengthen each of these resources, both structural and non-structural. Given its sound macroeconomic fundamentals, there is little reason for Malaysia not to succeed in this endeavour and to put it on the path of technologically-driven development.

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LESSONS FROM EAST ASIA'S CRISIS AND RECOVERY

*Obiyathulla Ismath Bacha**

This paper analyses the crisis and recovery in three East Asian countries, Malaysia, Thailand and the Republic of Korea. Using macroeconomic data for the three countries over a 13-year period, 1990-2002, the paper examines the factors leading to the crisis, the policy responses to the crisis, an evaluation of their recovery and the lessons that can be learned. While Thailand and the Republic of Korea had to turn to the IMF for assistance, Malaysia took the 'unorthodox' route of capital controls and a fixed currency peg to deal with the crisis. The paper argues that despite different policy stances all three countries experienced a largely similar V-shaped recovery. The paper concludes with an outline of key lessons for policy makers from the experience of the three countries.

East Asia's currency crisis of 1997-1998 was probably the most contagious of recent economic crises. Several countries, Malaysia, Thailand, Indonesia, the Republic of Korea and the Philippines, were hit directly while others such as Taiwan Province of China, Singapore and especially Hong Kong, China were badly affected.[1] What began as a speculative attack on the Thai baht in July 1997 quickly spread as 'contagion' to the other countries. Over a three-month period between July and October 1997, the baht fell nearly 40 per cent, the Malaysian ringgit and Philippine peso by about 27 per cent, the Indonesian rupiah by about 40 per cent and the Korean won approximately 35 per cent against the United States dollar. For countries that had been dubbed "miracle economies" this was a serious blow with wide-ranging economic, social and political ramifications.

The currency crisis quickly metamorphosed into what economists call a "twin crisis". In essence, slumping currencies and the policy response to defending

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[1] In differentiating between crisis and affected countries we use the standard definition of a 25 per cent depreciation of the currency to denote a crisis.

them, set off, in turn, a domestic banking crisis. This happened in particular in four countries, the Republic of Korea, Thailand, Indonesia and Malaysia. Indonesia, faced with both economic and political crises, went into a tailspin. Singapore and Taiwan Province of China largely escaped unscathed while Hong Kong, China had to take innovative steps to continue defending its currency peg and its property and stock markets. Clearly, the impact was differential; some countries were affected much more than others, in proportion to the extent of vulnerability that had been accumulated over the years.

The objective of this paper is to undertake an empirical analysis of the factors leading to the crisis, the policy response of the sample countries, an evaluation of their recovery and the policy lessons that can be learned. In line with this, the paper is designed to address the following four specific questions: (a) How had these countries performed in the years leading to the crisis? (b) What was the policy response to the currency crisis and what similarities/differences were there in policy responses across countries? (c) How have the sample countries performed following the crisis? and (d) What lessons can we learn?

We address these questions by analysing the macroeconomic data of three countries, Malaysia, Thailand and the Republic of Korea, over a 13-year period, from 1990 to 2002.[2] The 13-year period is divided into three time segments. The period 1990-1996 is the pre-crisis period, 1997 and 1998 is considered the period of the crisis and 1999-2003, is the period of recovery. The other well-known crisis country, Indonesia, has been left out since its current problems are heavily compounded by political rather than economic issues and a purely economic assessment would render few, if any, meaningful insights. Except where otherwise stated, all data are sourced from the Asia Recovery Information Center (ARIC) of the Asian Development Bank. The paper is divided into four sections. Section I provides an overview of relevant literature and evaluates the economic performance of the sample countries in the seven years prior to the crisis, 1990-1996. Section II examines the crisis period 1997 and 1998 and the policy response. Section III outlines the recovery, while the final section evaluates the recovery and analyses the lessons learned.

I. THE PRE-CRISIS YEARS: 1990-1996

The need to understand currency crises has received much attention. This has largely been due to their increased frequency with the advent of globalization. Several alternative explanations have been put forth to explain currency induced crises. Broadly speaking, we could classify these into four broad categories;[3] (a) the existence

2 Where available, data for the first two quarters of 2003 are also used.

3 See *IMF Working Paper WP/01/154.*

of structural weaknesses and/or policy distortions, (b) moral hazard, (c) self-fulfilling panics and (d) temporary illiquidity.

Structural weaknesses and/or policy distortions

This is probably the most often cited explanation for currency induced crises. Krugman (1979) views currency crises as speculative attacks resulting from deteriorating fundamentals. Budget deficits, excessive monetary growth, current account deficits and reserve losses are typical preconditions. When underlying fundamentals are inconsistent with the existing pegged exchange rate, a speculative attack results. More recently Frankel and Kose (1996), using data for 100 countries over a 20-year period, find that there are several common features of crisis countries. Among these are very high levels of debt financed by commercial banks on variable interest rates, sharp reductions in FDI inflows and overvalued exchange rates. Others have found that exchange rate overvaluations are good predictors of impending crises. Since an exchange rate regime is ultimately determined by the Government, overvaluations are nothing but purely policy induced distortions.

Moral hazard

Moral hazard arising from the existence of either actual or implicit guarantees has been put forth as yet another explanation. Most of the work has been within the asymmetric information framework. Frankel (1999) argues that the combination of informational asymmetries, implicit guarantees and lack of transparency accentuate adverse selection problems making the underlying economies vulnerable. These vulnerabilities remain masked until just before the crisis.

Illiquidities

Calvo and Mendoza (1996) point to temporary illiquidities arising from a rapid build-up of short-term external debt. A crisis can be touched off when a country's ability to service outstanding short-term debt appears questionable. Calvo and Mendoza argue that when large gaps exist in the stock of liquid financial assets and gross reserves in the presence of a pegged exchange rate, vulnerability increases. Given these imbalances, a sudden shock can quickly drain reserves, making the fixed exchange rate unsustainable.

Herding and self-fulfilling panics

Herding leads to self-fulfilling panics because rational investors would want to pull out their money if they believed other investors would do the same. When all investors hit the exits at the same time, a self-fulfilling crisis begins. When they

decide to pull out of other markets, contagion is the result. Radelet and Sachs (2001) and Sachs, Tornell and Velasco (1996) propose herding and self-fulfilling panics as causes of crises. The latter authors, analysing data for 20 emerging markets, argue however that for contagion and crisis to happen, there must have been some "degree of previous misbehavior".

Depending on how one looks at it, the Asian currency crisis could be explained by all four of the above propositions. While factors suck as a self-fulfilling panic or temporary illiquidity could have touched off the crisis, this paper will argue that, prior to the crisis, there existed serious structural weaknesses and policy distortions in all three sample countries.

Pre-crisis conditions

If there is one feature that can characterize economic performance in the three sample countries prior to the crisis, it must be their stellar growth record. Over the seven-year period 1990-1996, all three countries experienced very rapid GDP growth. Table 1 shows the compounded annual growth rate and the cumulative growth for the period.

Table 1. 1990-1996 nominal GDP growth (in percentage)

	Compounded annual growth	*Cumulative compounded growth*
Malaysia	11.63	116
Thailand	11.22	110.6
Republic of Korea	11.7	117.4
Average	11.52	114.67

The three countries had an average annual growth of 11.52 per cent over the seven-year period. This is indeed an impressive performance by any measure. With cumulative growth above 100 per cent, all three countries had more than doubled their GDP in the seven-year period. It is not surprising, therefore, that these economies were referred to in glowing terms as "miracle economies". Yet in the following two years, 1997 and 1998, all three countries were in serious trouble.

The key to understanding what went wrong lies in examining how these GDP growth rates were financed. The growth pump was being primed by three broad means: a) rapid monetary growth, (b) large current account deficits and (c) capital inflows.

Rapid domestic monetary growth

Rapid domestic monetary growth appears to be a common feature of all three countries in the pre-crisis period. Table 2 shows how much the monetary pump had been used to fuel growth.

Table 2. 1990-1996, growth in real GDP, M2 and domestic credit

	Real GDP	*M2*	*Domestic credit*
Malaysia	7.33	15.5	20.1
Thailand	6.86	13.6	21.3
Republic of Korea	6.31	14.6	17.8
Average	6.8	14.6	19.7
United States	*1.75*	*2.14*	*n.a.*

Two things are evident from table 2. First, money supply, as measured by M2, had grown at more than twice the rate of growth in real GDP. Second, domestic credit had grown approximately at three times the rate for real GDP. Such deviations between real and monetary growth can be harmful when sustained over a period of time. As we will see later, this led to serious distortions/vulnerabilities.

Current account deficits; negative savings – investment gaps

Table A1 in the appendix shows the current account balance as a percentage of GDP. Current account deficits have been pointed out as one of the key reasons for the currency crisis. Notice that all three countries had current account deficits in every one of the seven years before the crisis. In many instances the percentage was larger than the 5 per cent threshold which many would consider a risk level. There are a number of reasons for this consistent deficit. The first reason is the obvious push in all these countries for growth. Rapid GDP growth requires heavy investment growth. Thus, the import of capital goods increased and import growth outpaced that of exports in several years (tables A2 and A3 in the appendix).

There is yet another way by which a high growth policy can lead to current account deficits. From a theoretical viewpoint, a country is likely to run current account deficits if it has a savings – investment (S – I) gap. Essentially, the savings – investment gap reflects the net imports needed to finance the gap. Though East Asia is legendary for its high savings rate (approximately 35 per cent of GDP), the very high investment rates needed to sustain the high growth objective meant that the

S – I gap was negative for all three countries in the seven years prior to the crisis. Malaysia and Thailand had a negative S – I gap averaging 6.2 per cent of GDP. The Republic of Korea's was much lower at 1.7 per cent (see table A4 in the appendix).

Capital inflows – reliance on short-term inflows

The flip side of a current account deficit is a capital account surplus. Holding reserves constant, a current account deficit must be matched by a capital account surplus. What this implies is that the net imports of the current account will have to be financed by foreign capital inflows. As such, all our crisis countries have had capital account surpluses, meaning strong capital inflows. Large capital inflows in themselves are not a problem. It is the form and composition of the inflows that really matters. Inflows in the form of FDI are long term in nature and add to productive capacity. However, inflows in the form of portfolio investments or short-term deposits/ borrowing can be destabilizing. With the opening up of China and other countries, the traditional recipients such as our sample countries saw declining FDI inflows. Their high growth strategies, however, meant that capital inflows were needed to continually fuel the growth.

Though FDI inflows still constituted a major portion, short-term inflows in the form of portfolio investments and borrowing were increasing. Tables A5, A6 and A7 of the appendix show the increased reliance on loans and the composition of these loans. In each case we see a gradual increase in total foreign loans both in absolute terms and as a percentage of GDP. Total foreign loans as a percentage of GDP approached 40 per cent for Thailand and exceeded 25 per cent for the Republic of Korea. Malaysia's foreign loans stood at 22 per cent of GDP as at December 1996. Table A7 shows the composition of these loans. Short-term loans constituted more than two thirds of total loans for the Republic of Korea. Thailand's exceeded 65 per cent while Malaysia's stood at 56 per cent. Clearly, in all three cases, there had been a heavy reliance on short-term inflows.

From structural weaknesses to vulnerabilities

If the above factors show the structural weaknesses that were being built, a number of other policy induced distortions aggravated these weaknesses. Two such factors are worth noting. The first had to do with the exchange rate regime while the second was financial liberalization.

All three sample countries were on quasi-peg systems with their currencies being managed within narrow bands. While such a system reduces currency volatility, it requires that domestic monetary policies be in conformity with that of the currency to which it is pegged. Since in all three cases the exchange rate policy had been to keep the domestic currency within a narrow band bilaterally against the United States

dollar, monetary policy deviations were putting stress on the exchange rate. We saw in table 2 above how monetary growth in the sample countries was several-fold that of the United States for the 1990-1996 period. Additionally, annual inflation rates for the three countries averaged 5 per cent for the same seven-year period, while that of the United States was 2.6 per cent. Thus, by purchasing power parity measures (PPP), their currencies should have depreciated against the United States dollar. However, since the exchange rate regime was to keep the currency within narrow bands, the currencies were becoming overvalued in real terms even though they were about the same in nominal terms. Going by PPP, based on annual CPI numbers, the ringgit, baht and won had a percentage overvaluation as at end December 1996 of 12.5 per cent, 31.3 per cent and 35.4 respectively. Coupled with the fact that all three countries had low levels of international reserves, with the lowest levels recorded in 1997,[4] this indicated that these currencies were ripe for a speculative attack (table A8).

When the exchange rate regime is seen with the financial liberalization that had been taking place, the build-up in vulnerability seems to have been inevitable. Critics have pointed to the sequencing of liberalization as having been the problem. Instead of first strengthening the domestic banking sector before enabling it to source funds overseas, the opposite appears to have been the case – at least in Thailand and the Republic of Korea. For example in 1993, the Government of the Republic of Korea removed controls on short-term foreign borrowing by the country's banks. Since this was done while controls on direct access to foreign capital markets by Republic of Korea firms remained, the proportion of short-term debt exploded and created a serious maturity mismatch. A similar situation was played out in Thailand. There, as part of capital account liberalization, the Thai Government established the Bangkok International Banking Facility (BIBF). Thai banks used the facility to raise foreign currency loans which were then recycled domestically as baht loans. The rationale was the large interest spread that they were earning. That this was extremely risky from a currency exposure viewpoint was ignored. Thus in both countries the banking system had built up huge foreign currency loans and exposure.[5]

On the eve of the crisis in mid-1997, all three economies had also built serious financial sector fragility. The main contributor to this was the huge build-up in leveraging, both domestic and foreign. The build-up in leveraging was caused by the earlier monetary policy looseness and capital inflows. Asset bubbles, particularly, in the sectors most malleable to speculative activity, properties and stocks (shares) were a feature in all three countries.

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4 The low 1997 amount may also be due to reserves lost in defending the currency.

5 The Malaysian banking system did not have the same extent of foreign currency exposure because of the central bank's enforcement of the Exchange Control Act.

Not only were the banks that financed this leveraging over-extended, their situation was worsened by skewness in their direction of lending. In Malaysia, for example, more than half of all loans were directed at the broad property sector and financing of shares. Among the three countries, it was in Thailand that the property market bubble was worst. In the Republic of Korea lending was mostly to the *chaebols* (conglomerates), resulting in debt/equity ratios of four or five times for these firms.

The result was that the domestic corporate sector was both highly leveraged and had unhedged foreign currency exposures. The domestic banking sector, on the other hand, in having done the lending, was over-extended and in the Republic of Korea and Thailand had financed the lending with large amounts of foreign currency borrowing.

II. THE CRISIS PERIOD: 1997 AND 1998

The catalyst that led from vulnerability to full-blown crisis was the speculative attack on the Thai baht in July 1997. The initial attack worsened and spread as contagion to the other East Asian countries when it was revealed that the Thai central bank's level of usable reserves was much less than what had been originally reported. The speculative attack itself was not new. These same currencies had come under a similar attack in early 1995 following the Mexican peso crisis. Whereas they had successfully defended their currencies in 1995, this time it was different. What was different this time was the massive capital outflow. With hindsight, it now appears that, more than the speculative attack, it was indeed the capital outflow that led to a full-blown crisis. In Thailand, for example, the estimated capital outflow was 26 per cent of GDP within the first six months of the crisis. This superceded the largest ever previous reversal of 20 per cent of GDP for Argentina in the 1980s. The massive capital flight was probably the reaction to the vulnerabilities that had been building up and now laid bare by depreciating currencies.

Three things worked against the central banks in their efforts to stabilize their currencies: capital flight, low reserves and interest rates. Faced with capital outflows that were undermining their currencies and low reserves with which to defend, the central banks had little choice but to float their currencies and raise interest rates to prevent a financial collapse. Given the highly leveraged nature of their domestic economies, raising interest rates was extremely painful and counterproductive in some ways.

With depreciating currencies, rising interest rates became the mechanism by which the currency crisis was transmitted into a domestic banking sector crisis. By early 1998, all three countries showed signs of what in the literature is known as the "twin crisis". The banking sector in all three countries took a hit. As the corporate/real sector began to reel under sharply increased interest rates, non-performing loans

(NPLs) spiked. The banking sector was faced with near collapse. Table 3 provides a summary of key economic variables for the two-year crisis period.

Table 3. Crisis and macrovariables

Real sector	*1997*		*1998*	
Real GDP growth				
Malaysia	7.3		-7.4	
Republic of Korea	5.0		-6.7	
Thailand	-1.4		-10.5	
Consumption expenditure growth				
	Private	Public	Private	Public
Malaysia	9.3	-10.2	8.9	-8.9
Republic of Korea	9.1	-11.7	40.6	-0.4
Thailand	4.4	-11.5	1.6	3.9
Gross domestic investment growth				
Malaysia	12		-44	
Republic of Korea	-8		-38	
Thailand	-22		-51	
Monetary sector – M2 growth per cent				
Malaysia	23		2	
Republic of Korea	14		24	
Thailand	16		10	
Three-month interbank rate				
Malaysia				
Republic of Korea	14.1		14.6	
Thailand	17		16.8	
Domestic credit growth				
Malaysia	29.3		-2.7	
Republic of Korea	23.3		11.6	
Thailand	34.3		-1.3	
Capital account balance, per cent of GDP				
Malaysia	-6.0		-7.2	
Republic of Korea	-4.4		-4.8	
Thailand	-6.0		-4.9	
Unemployment rate per cent				
Malaysia	2.6		3.2	
Republic of Korea	2.6		6.8	
Thailand	0.9		4.4	

The severity of the crisis is evident from the GDP growth numbers. All three countries experienced a sharp contraction in growth over both years, particularly in 1998. Average GDP growth for the three countries was approximately – 8 per cent for 1998, a sharp contrast to the 11.5 per cent average for the seven-year crisis. The sharp fall in GDP growth was due to a significant reduction in consumption expenditure (especially in public consumption) and in gross domestic investment (GDI). GDI fell an average of 40 per cent in 1998.

The monetary sector saw an equally drastic contraction. M2 growth reduced sharply in both Malaysia and Thailand. The Republic of Korea, however, recorded an increase in M2 growth. Monetary contraction was most evident where interest rates and credit growth were concerned; three-month interbank rates, already high as part of currency defence in 1997, remained at approximately 15 per cent the subsequent year. With banks already convulsing from rising NPLs, they simply cut back on new loans. Domestic credit growth turned negative in 1998. Again the Republic of Korea was the exception, as credit growth continued, albeit at half the 1997 rates.

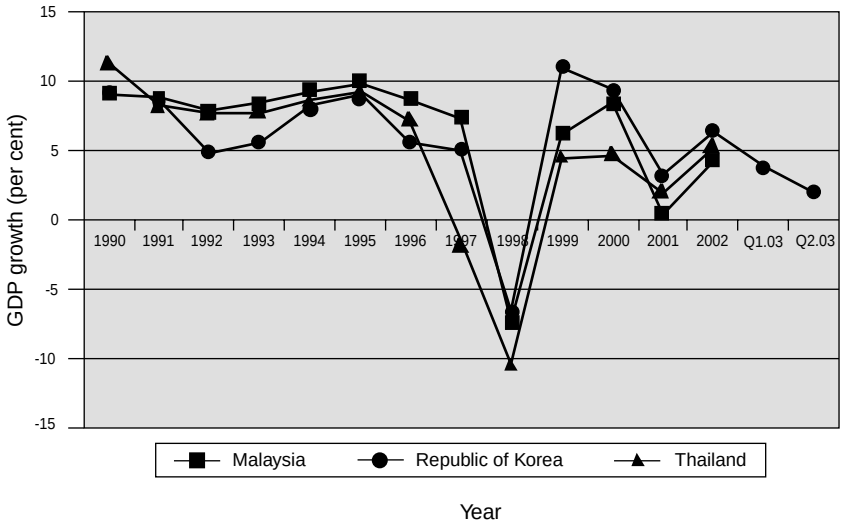
The sharply contractionary policies, both fiscal and monetary, were essentially unavailable. They were aimed at currency stabilization and restoring confidence. The earlier-mentioned capital outflows are evident when the capital account balance as a percentage of GDP is examined. All three countries show negative balances for both years, implying net capital outflows. Interestingly, Malaysia has the highest negative balance as a percentage of GDP. Table A9, shows the portfolio investment flows in billions of United States dollars. Once again it is Malaysia that appears to have had the highest outflows. In fact, Malaysia continued with negative portfolio flows in every subsequent year. The unemployment rate, an indicator of the pain and social cost to the economy, shows a rise in all three countries, the steepest increase being for the Republic of Korea. Still, given the extent of the crisis, these unemployment numbers are surprisingly tame. With a 6.8 per cent unemployment rate at the depth of the crisis (table A10), and a low inflation environment, the social cost does not appear to have been too drastic. This is especially so, when considering the fact that most countries have higher unemployment even in normal times. Overall, as figure 1 shows, the period of the crisis, effectively about four quarters, was sharp but short.

III. POST-CRISIS RECOVERY

Policies to deal with the crisis were mainly contractionary in effect if not by design. They were aimed at stabilization after the crisis. This stage lasted from about the third quarter of 1997 to approximately the third quarter of 1998. With some degree of stabilization in place a second stage of pro-growth policies were put in place. Here the policies were a reversal of the earlier ones and were markedly expansionary.

If the depth and speed of the downturn were surprising, the sharp and quick recovery was equally surprising. By about the second quarter of 1999, real GDP growth was positive for all three countries. Strong growth in the global economy in 1999 and 2000 helped in no small measure. With all three countries registering positive growth in every subsequent year, the recovery was real. By far the strongest recovery was that of the Republic of Korea. The growth numbers in table A11 and their graphical presentation in figure 1 show a decline and recovery pattern that appears the same for all three countries. Yet, this masks two key differences among the countries. The first was the very different Government policy stances to the crisis and second, the vastly different growth drivers fuelling the recovery.

Figure 1. Real GDP growth (per cent)



Different policy stances

Though the macroeconomic policies undertaken to counter the crisis were similar, the policy reaction was different. Faced with large capital outflows and a potential implosion of their domestic economies, the crisis countries had to either put a stop to further outflows or seek new inflows to avoid collapse. It is here that vastly different paths were taken. Malaysia chose to impose capital controls and peg its currency, while both Thailand and the Republic of Korea chose the route of IMF financing. Given the immensity of the crisis, the IMF put together large official

financing packages. These amounted to a total of US$ 58 billion for the Republic of Korea, $17 billion for Thailand and $36 billion for Indonesia. The IMF packages had three components: (a) official financing, (b) requirements for structural reform and (c) new macroeconomic policies. As was seen in the previous section, despite these different paths, the macroeconomic policies to counter the crisis were largely the same.

Different growth drivers

While, on the surface, the recovery appears largely similar for all three countries, a deeper analysis of the data points to quite different growth drivers. These differences are most obvious when comparing Malaysian and Republic of Korea data. Malaysia's recovery appears to have been fueled by Government consumption and very strong export performance; the Republic of Korea's recovery appears much more broad-based with less reliance on Government expenditure.

In examining real sector variables of tables A12 to A15, which show private and public consumption, gross domestic investment and foreign direct investment, the differences are glaring. While Malaysia has the highest public sector consumption for 1999 and subsequent years, the Republic of Korea has the highest private sector consumption numbers. Table A12 confirms this. The Government budget balance has been negative since 1998 for Malaysia and continues to grow larger as a proportion of GDP. The Republic of Korea's budget balance, on the other hand, has been positive since 2000. The GDI and FDI numbers show both a sharp increase in 1999 and strong subsequent performance for the Republic of Korea. The portfolio investment data in table A9 show a similar picture. While strongly positive for the Republic of Korea, Malaysia and Thailand experienced portfolio outflows in each subsequent year.

The monetary sector data reinforce the differences between the two countries. Despite sharply reduced interest rates (three-month interbank rate shown in table A16), growth in bank credit to the private sector and overall domestic credit growth (tables A17 and A18) remain anaemic for Malaysia but are strongly positive for the Republic of Korea. Performance in the external sector as shown in the current account balance tells a different story. The current account, which was in deficit for all three countries every year before 1997, turns positive (table A1). This reversal is most prominent for Malaysia, testimony to the very strong export performance on the back of an undervalued currency.

Unemployment, NPLs and foreign reserves

We examine three other variables, the unemployment rate, NPL and gross international reserves, to compare the relative recovery in our sample countries. Table A10 shows the annual percentage unemployment rate. In 1998, the Republic of Korea's unemployment rate of 6.8 per cent was the highest and more than twice

Malaysia's rate. By 2002, however, both the Republic of Korea and Thailand had unemployment rates lower than Malaysia's. Despite the recovery, Malaysia's unemployment appeared to have grown marginally higher. NPLs, seen as a barometer of banking sector recovery, are lowest for the Republic of Korea. At 2.2 per cent of total commercial bank loans, the Republic of Korea's NPLs[6] were barely a quarter Malaysia's rate of 9.2 per cent and Thailand's 15.9 per cent. The Republic of Korea's better relative performance, however, is most evident in the build-up of gross international reserves. Measured in billions of United States dollars, table A8 shows such reserves to be marginally lower than Malaysia's in 1997. As at the end of 2002, however, the Republic of Korea's reserves were almost four times those of Malaysia.

Structural reforms

Since leveraging was at the heart of the crisis, the main aim of structural reforms in all three countries was deleveraging. This was carried out in two steps: the first, to clean up the mess from the crisis and the second, to strengthen the cleaned out structure that remained. The first step involved the intervention by way of capital infusion to resuscitate viable institutions while closing down the unviable ones. These are standard IMF procedures and were therefore applied in Thailand and the Republic of Korea. Malaysia differed, in that it was absorbing rather than closing down weak entities. Absorption was done by means of mergers/acquisition. The second step of strengthening the system was fairly similar in all three countries.

Since there was a twin crisis, the structural reforms were aimed at both the corporate and banking sectors. In Malaysia, for example, three key institutions were established to initiate the reforms. There were the Corporate Debt Restructuring Corporation (CDRC), Danaharta and Danamodal. While the first two had a role in both steps of the structural reforms, Danamodal was intended only for the first step. Its role was to provide the capital injection needed to resuscitate the weaker banks that were on the verge of collapsing. Capital was provided in exchange for an equity stake. In Thailand and the Republic of Korea this task was undertaken directly by the central banks. Malaysia's CDRC was tasked with working out the problems of the heavily indebted firms. This was done largely through rescheduling of debt, some asset sales and acquisitions. Since most of Malaysia's heavily indebted firms had little foreign currency denominated loans, relative to the other two countries, CDRC's work of having to work with the local lenders was much easier.

Danaharta was the classic asset management company (AMC). Its counterparts in the Republic of Korea and Thailand were the Korean Asset Management Co. (KAMCO) and the Thai Asset Management Co. (TAMC). The AMCs were tasked

6 The Republic of Korea's much smaller percentage is also reflective of the much faster growth in bank credit in the post-crisis period.

with relieving the banking sector of NPLs by carving out the bad loans. This was to be done by purchasing problem loans from banks, repackaging/inventorying them until they could be sold, usually by public tender/auction.

Relative to the other two countries, Malaysia's Danaharta has probably been the most effective. Early changes in legislation to give the agency legislative muscle went a long way in enabling Danaharta to move quickly to a resolution. At the other extreme is TAMC. Lacking legislative backing, the Thai AMC was left to negotiate with banks on a voluntary basis, thereby making it much less successful. As such, inclusive of assets still held by TAMC, the NPL ratio for Thailand is still around 18 per cent. For the Republic of Korea and Malaysia, even when assets held by their AMCs are included, the NPL ratio is 8 per cent and 9.6 per cent respectively. The Republic of Korea's ratio is smaller due to the much faster growth in domestic credit in the post-crisis period. If expected recovery rates are an indicator of the efficiency of an AMC, Malaysia's Danaharta has outpaced the others with a 56 per cent recovery rate. This compares to KAMCO's 47 per cent and TAMC's 45 per cent.

In addition to AMCs, the banking sector in all three countries underwent major restructuring. Weaker banks were merged or allowed to be acquired by stronger ones. In Thailand and the Republic of Korea, foreign acquisition or foreign equity participation in domestic banks was made possible. This was in line with IMF policies to do away with weak banks. In Malaysia, a wave of central bank orchestrated mergers led from 37 commercial banks before 1997 to 10 currently.

IV. WHAT CAN WE LEARN?

In identifying the lessons that we can learn from the crisis and recovery, we begin with a synopsis of our analysis thus far. A number of commonalities are apparent. In the period leading to the crisis, there clearly were structural weaknesses and vulnerabilities in all three countries. These structural problems were very much in line with Krugman (1979). The hypothesis that this was a self-fulfilling crisis (Sachs and others, 1996), implying that a previous degree of misbehaviour is also applicable.

The key commonality across all three countries is the similarity in growth patterns during the 13-year period of this study. All three had very impressive growth pre-crisis, were hit just as hard during the crisis and had an equally impressive recovery. The reason for this is obvious: all three countries had similar macroeconomic and structural reform policies. This is true, despite Malaysian Government rhetoric that it was following an unorthodox path, whereas the Republic of Korea and Thailand were following orthodox IMF style policies. Malaysia's unorthodox package appears very similar to the IMF package. What was dissimilar were the capital controls and currency peg announced on 1 September 1998. This begs the question, how much more did the capital controls and peg really help Malaysia? Based on our analysis thus far, one would be hard pressed to show any added advantage from these policies. These

policies probably had more to do with the subsequent political problems in Malaysia than with any economic rationale. The reputational cost did not lead to a better payoff in economic terms. To be sure, Malaysia has seen fewer bankruptcies and an attendant increase in unemployment during the crisis. While this would have reduced the pain at the time, it does not help with long-term competitiveness.

It was classic Keynesian style fiscal expansion and export growth benefiting from an undervalued currency that led to recovery. Including fiscal 2003, Malaysia would have had its sixth consecutive year of budget deficit (table A19), much higher than Thailand's and in sharp contrast to the Republic of Korea's budget surpluses. Neither of these two growth drivers are sustainable over the long term. Private consumption, domestic investment, credit growth and foreign capital inflows must recover if growth is to be sustainable.

While Thailand's recovery and growth resembles that of Malaysia, the Republic of Korea has outpaced both. In addition to faster GDP growth, the Republic of Korea which followed the orthodox IMF package has done better when measured against factors such as unemployment rate, NPLs, international reserves, stock market capitalization[7] and overall breadth of recovery.

So, what can we learn from the experience of these countries? A number of useful lessons can be deduced. The first and most obvious lesson is that vulnerability should be avoided. This means that one has to be watchful about the build-up of leveraged debt financing. Beyond a low threshold, the financing of such debt with foreign currency exposures must be avoided. Since the need for debt and external financing arises from the need to grow at any cost, Governments must reorientate growth strategies. A slower but better quality growth strategy makes sense, one that has a better absorption rate of domestic resources and higher added value.

The sequencing of financial liberalization is certainly important. As was seen in the case of Thailand and the Republic of Korea, inappropriate sequencing can be a major cause of vulnerability. In this regard, unless the banking system is strong and globally competitive, domestic banks should not be allowed to take on huge foreign currency exposures. Also, building a strong banking system would not be possible under the current protectionist mode. Banking systems should be subject to competition and market discipline. Capital account liberalization while simultaneously protecting the domestic banking system may lead to the worst of both worlds.

Developing less bank-reliant financial systems would also be helpful. In all three crisis countries the financial sector was heavily bank-dependent. The problem with this is that risks get concentrated. Risks will be dissipated if alternative financing

[7] In 1996, market capitalization in Malaysia and the Republic of Korea was US$ 319 billion and US$ 139 billion respectively. In 2002, however, Malaysia's capitalization had fallen to US$ 127 billion whereas the Republic of Korea's had risen to US$ 219 billion.

mechanisms are enhanced. For example, attention should be paid to building better bond and money markets.

The experience of the three countries shows the importance of avoiding exchange rate misalignment. Pegged or quasi-pegged systems are incompatible with independent monetary policies in the presence of free capital flows. Central banks, as we saw, often ignore this incompatibility, with disastrous consequences. Quasi-pegged systems also lull the private sector into taking on unhedged foreign exchange exposures. Currency risk management becomes the obligation of the central bank. This again is unsustainable over the long term. There is a need to "privatize" risk management by developing the markets and tools for hedging. Central banks should also pay close attention to the ratio of useable foreign reserves to short-term obligations. A low ratio is a sure sign of vulnerability.

In addition to the obvious lessons above, there are three implicit lessons to be learned from the experience. The first is that the old Government-directed industrialization models may no longer be workable. The worst culprits in all three countries have been the State-connected conglomerates that were the result of such industrialization. It is these entities that had taken on the highest debt and foreign currency exposures.

The second implicit lesson is that temporary capital controls may not be as bad as previously thought. Malaysia's capital controls were highly selective and effectively short in duration. Today most of the controls have been relaxed. What hurt most was the one-year moratorium on capital outflows. While most economists have little objection to temporary capital controls, especially on capital inflows, the moratorium on outflows was highly controversial. Many of the dire predictions made about the controls have not, however, been borne out. While it is still early to assess the long-term consequences of the policy, going by our post-crisis data, Malaysia has not been worse off. However, we concluded earlier that despite the controversial policies Malaysia's performance does not show any added advantage. Thus, one can only conclude that if Malaysia has not been better off with these policies, it is not worse off either.

A final implicit lesson, perhaps even an explicit one, is that IMF policies have worked. One could always argue about the harshness of IMF policies and their social impact. The fact remains that both Thailand and the Republic of Korea have snapped back into a strong recovery. The sharp V-shaped recovery following IMF intervention is not new nor peculiar to these two countries. Mexico is also a case in point. Following a similar currency crisis and capital flight, Mexico went into a tailspin in December 1994. However, by the end of 1996 the economy had almost fully recovered. Mexico too had been on an IMF package. A combination of external assistance, greater policy-making discipline and improved competitiveness have been the key elements in post-crisis recovery in both Mexico and East Asia.

APPENDIX

Table A1. Current account balance as per cent of GDP

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia	-2.1	-8.5	-3.7	-4.5	-6.1	-9.8	-4.8	-5.2	13.2	15.9	9.4	8.3	7.6
Republic of Korea	-0.8	-2.8	-1.3	0.3	-1	-1.7	-4.4	-1.7	12.7	6	2.7	1.9	1.3
Thailand	-8.4	-9	-8	-4.9	-5.4	-7.9	-7.9	-2	12.8	10.2	7.6	5.4	6

Table A2. Growth of merchandise exports (US$ f.o.b., per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*Q1.03*	*Q2.03*
Malaysia	17.4	18.7	9.7	17	27	20.2	6.5	12.1	29.7	12.2	16.1	-10	6		
Republic of Korea	4.2	10.5	6.6	7.3	16.8	30.3	3.7	5	-2.8	8.6	19.9	-13	8	19.8	12
Thailand	14.2	23	13.6	13.5	21.6	23.6	0.4	27.9	24.4	-1.4	25.2	4.3	2.2		

Table A3. Growth of merchandise imports (US$ c.i.f., per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*Q1.03*	*Q2.03*
Malaysia	30	27.4	3.6	15.7	32.8	24.6	1.5	12	3.3	8.9	25.3	-10	8.3		
Republic of Korea	13.6	16.7	0.3	2.5	22.1	32	11.3	-3.8	-35.5	28.4	34	-12	7.8	19.1	8.5
Thailand	27.4	13.6	7.8	12.9	17.4	28.8	3.9	5	-7.8	7.5	30.8	10.5	0.8		

Table A4. Savings-investment gap (as per cent of GDP)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*AVERAGE*
Thailand	(7.6)	(6.4)	(4.9)	(4.5)	(5.0)	(7.5)	(7.7)	(6.2)
Republic of Korea	(1.0)	(2.5)	(1.5)	(0.8)	(1.1)	(1.5)	(3.5)	(1.7)
Malaysia	(3.3)	(8.0)	(4.7)	(5.3)	(7.3)	(9.5)	(5.5)	(6.2)

Source: *IMF: World Econ. & Fin. Survey*

Table A5. Total foreign loans (US$ million)

	Dec-1994	*Dec-1995*	*Jun-1996*	*Dec-1996*	*Jun-1996*
Thailand	43 879	62 818	69 409	70 147	69 382
Republic of Korea	56 599	77 528	88 027	99 953	103 432
Malaysia	13 493	16 781	20 100	22 234	28 820

Source: *BIS, Business Times*

Table A6. Total foreign loans as per cent of GDP

	Dec-1994	*Dec-1995*	*Dec-1996*
Thailand	30.4	37.4	38.7
Republic of Korea	18.6	22.1	25.7
Malaysia	18.6	19.2	22.4

Author's computation

Table A7. Financial position (as at December 1996)

	Short-term loans (US$ Million)	*Short-term loans as per cent of total foreign loans*	*Foreign loans as per cent of reserves*	*Short-term loans as per cent of reserves*
Thailand	45 733	65.20	181	118
Republic of Korea	67 468	67.50	300	202.50
Malaysia	12 451	56.00	83.90	46.90

Table A8. Gross international reserves (US$ billion)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*Q1.03*	*Q2.03*
Malaysia	9.87	11	17.4	37.4	25.5	23.9	27.1	20.9	25.7	30.7	29.6	30.5	34.3		
Republic of Korea	14.8	13.7	17.2	20.3	25.7	32.7	34.1	20.41	52	74.1	96.2	102	121		132
Thailand	14.3	18.4	21.2	25.4	30.3	37	38.7	26.89	29.5	34.8	32.7	33	38.9		

Table A9. Portfolio investment (US$ billion)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia	-1.05							-4.39	-6.87	-1.2	-2.47	-0.7	-1.7
Republic of Korea	0.08	3.05	5.8	10	6.12	11.6	15.2	14.3	-1.88	8.68	12	6.58	0.18
Thailand	0.46			5	1.69	4.01	2.88	4.37	0.33	-0.1	-0.71	-1.2	-2.3

Table A10. Unemployment rate (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*Q1.03*	*Q2.03*
Malaysia	5.1	4.3	3.7	3	2.9	2.8	2.5	2.6	3.2	3.4	3.1	3.7	3.5	3.8	n.a.
Republic of Korea	2.5	2.3	2.4	2.8	2.4	2	2	2.6	6.8	6.3	4.1	3.7	3	3.6	3.3
Thailand	2.2	2.7	1.4	1.5	1.3	1.1	1.1	0.9	4.4	4.2	3.6	3.3	2.4	2.9	2.5

Table A11. Real GDP growth (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*Q1.03*	*Q2.03*
Malaysia	9	8.7	7.8	8.3	9.2	9.8	8.6	7.3	-7.4	6.1	8.3	0.4	4.2		
Republic of Korea	9	8.5	4.8	5.5	8.1	8.9	5.5	5	-6.7	10.9	9.3	3.1	6.3	3.7	1.9
Thailand	11.2	8.1	7.6	7.7	8.5	9.2	7.1	-1.4	-10.5	4.4	4.6	1.9	5.2		

Table A12. Private consumption expenditure growth (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
MALAYSIA	11.9	14.3	7.5	9.8	13.2	11.7	9.6	9.3	-10.2	2.9	12.5	2.8	4.2
Republic of Korea	9.6	21.1	14.8	14	18.7	9.6	13.2	9.1	-11.7	11	7.9	4.7	6.8
Thailand	12.9	11.6	12.5	11.7	13.1	7.8	11.6	4.4	-11.5	4.3	4.9	3.7	4.7

Table A13. Public consumption expenditure growth (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia	5.9	12.7	5.9	10.9	10.2	6.1	2.4	8.9	-8.9	17.1	3	17.6	13.8
Republic of Korea	7.4	21.3	16.8	10.4	12.3	0.8	-11	40.6	-0.4	1.3	0.1	1.3	2.9
Thailand	6.9	12.5	21.3	12.8	12.2	5.2	13.3	1.6	3.9	3.1	2.6	2.9	0.5

Table A14. Foreign direct investment (US$ billion)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia	2.33					6.64		5.56	2.71	2.47	1.76	0.29	1.3
Republic of Korea	-0.26	-0.3	-0.43	-0.75	-1.7	-1.8	-2.3	-1.61	0.67	5.14	4.29	1.11	-0.7
Thailand	2.4			1.57	0.88	1.18	1.41	3.3	7.36	5.74	3.37	3.65	0.96

Table A15. Gross domestic investment growth (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*Q1.03*	*Q2.03*
Malaysia								12	-44	-4	28	-9	9	0.1	-2.3
Republic of Korea		15	-1	3	14	11	9	-8	-38	30	11	-2	4	7	2
Thailand					11	14	5	-22	-51	9	11	2	5	10	

Table A16. Three-month interbank lending rate (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia								9.0	11.5	4	3.2	3.2	3
Republic of Korea								14.1	14.6	6.8	7.1	5.2	4.8
Thailand								17	16.8	4.9	4	3.1	2.1

Table A17. Growth in real bank credit to private sector (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia		16	6	7	10	27	22	20	-2	-1	5	3	5
Republic of Korea		12	7	6	17	11	14	12	-6	17	16	13	21
Thailand		16	17	18	24	16	9	15	-13	-5	-11	-7	6

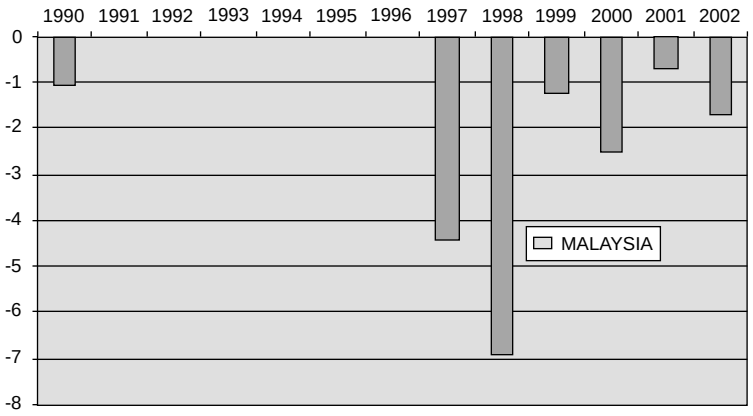
Table A18. Domestic credit growth (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia	18	18.5	16.6	12.3	14.8	29.5	31.2	29.3	-2.7	0.3	9.6	-6.9	8.9
Republic of Korea	25	22.4	11.5	12.8	18.5	14.6	19.5	23.3	11.6	17.4	16.3		
Thailand	26.8	15.5	18	22.7	29.4	23	14	34.5	-1.3	-4.2	-7.5		

Table A19. Government budget balance as per cent of GDP

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Malaysia	-2.9	-2	-0.8	0.2	2.3	0.8	0.7	2.4	-1.8	-3.2	-5.8	-5.5	-5.6
Republic of Korea	-0.7	-1.6	-0.5	0.6	0.3	0.3	0.3	-1.5	-4.2	-2.7	1.3	1.3	3.8
Thailand	4.9	4	2.6	1.9	2.7	3	0.9	-1.5	-2.8	-3.4	-2.2	-2.4	-1.4

Table A9. Portfolio investment (US$ billion)



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COPING WITH POVERTY IN THE HEALTH SECTOR: EVIDENCE FROM PUBLIC SPENDING IN THAILAND

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This paper examines whether an increase in government expenditure on health has been accompanied by greater equality between the poor and non-poor in Thailand. In the period 1992-2000, real government expenditure grew on average 10 per cent per annum, the number of health services personnel and facilities increased and the rise was far greater than the growth in population or incomes per capita. However, in the distribution of public resources on health the bottom quintile of the population received disproportionately less government spending. The widening inequality between the poor and non-poor could partly be explained by large differences in the mix of health resources used by each province in the country over time and the associated costs involved. These phenomena imply that improving equity in public health care provision needs to be given higher priority in Government spending.

Since a healthy life is an asset for poor people, it is important to minimize the risk of falling ill and to promote health in order to increase their productivity and earning capacity. The Millennium Development Goals (1990-2015) set targets for improvements in health, primarily reducing child mortality, improving maternal health and controlling HIV/AIDS and other diseases, coupled with other important goals such as the reduction of poverty, improving the provision of education, promoting gender equality and protecting the environment. Thailand's high economic growth, particularly between 1988 and 1996, enabled the health sector to enjoy a period of expansion that delivered important benefits to the population at large. Reducing infant mortality, improving life expectancy and decreasing morbidity rates were notable

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developments in the Thai health sector. These successes were reflected in higher spending on health in terms of GDP, which increased from 4.6 per cent in the early 1980s to 5.7 per cent in the late 1990s. More significantly, perhaps, real government spending on health grew about three times faster than the rate of growth of GDP while per capita government spending increased fourfold from 1988 to 1996. During the 1997-1998 crisis, progress in these fields came to a halt as both household incomes and real government expenditures on health services declined. For the poorer households, the effect of a loss or reduction of income coupled with an increase in price levels in the provision of private health services was particularly severe given their dependence on public health services.

However, such developments have been uneven in their effects on different groups of people and between rural and urban areas. According to World Bank estimates nearly 40 per cent of the Thai population does not have access to adequate health care, primarily in the rural areas (World Bank, 2000). The lack of access to health care services is reflected in the overall levels of health. In the second half of the 1990s in rural Thailand, 28 infants (per 1,000 live births) died before reaching their first birthday and the rural infant death rate was 1.85 times higher than in urban areas. The disparity in health indicators still exists among and within regions even though the health status at the national level has improved significantly. As a result, the question of universal access to both quantitative and qualitative health care services became important issues in the 1997 constitution of Thailand and in various national economic and social development plans.

A health system typically functions with large variance in the distribution of resources across different levels of the system, regions and various groups of people, as noted by Fogel and Lee (2003), and Wagstaff (2002). Analysing the impact of public spending patterns on disadvantaged groups is crucial in this regard and in overall poverty reduction strategies. With this background, the question of the distribution of Government expenditure becomes critical as it is the primary source for the provision of health care services in rural Thailand. The main question is whether poor people really benefit from general increases in Government expenditure, in other words, how and to what extent has the recorded increase in expenditure been accompanied by increasing equality between the poor and non-poor. In doing so, this paper will document how much the richest receive, how much the poorest receive, whether they have always received the same allocation over time and whether the gap is widening or being reduced towards more equality.

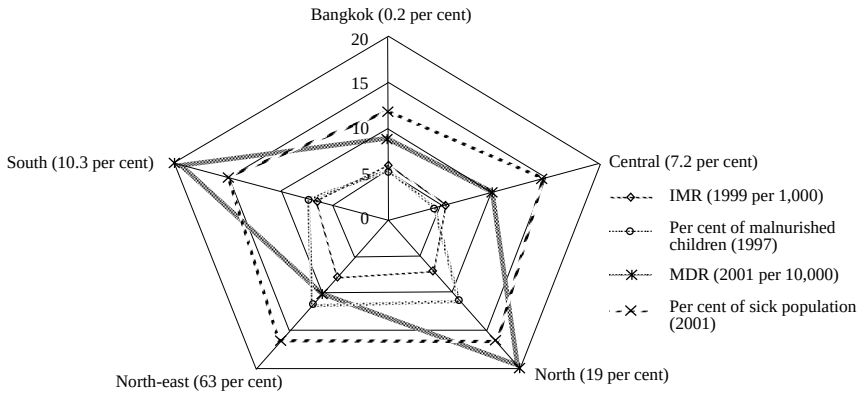
The paper is organized as follows. Section I reviews the health situation in Thailand while section II briefly documents the Thai health care system under two headings: health care facilities and health personnel and health care financing. The latter will concentrate more on the issues of efficiency by comparing it with other Asian countries and with the impact of the crisis on the health system. Section III examines the basic pattern and distribution of Government expenditure on health by

region. Section IV analyses the incidence of benefits from Government expenditure on health and the Government policy response to poverty and section V summarizes the findings and discusses the relevance of the findings.

I. UNDERSTANDING THE HEALTH SECTOR

An analysis of health outcomes, to some extent, can help one understand the concept of need-based distribution, i.e., how people are getting the health care that they need. Based on National Statistics Office data, in Thailand, between 1984 and 1996, the infant mortality rate (IMR) per 1,000 live births decreased by 15 per cent and the maternal mortality rate per 100,000 live births decreased by 33 per cent while life expectancy at birth increased by 8 per cent.[1] The prevalence of HIV/AIDS, however, has been on the rise. Between 1984 and 1998, 148,806 AIDS-related cases were identified, of which 20 per cent have died (Suwit, 2000). Figure 1 shows the regional differences in three health profiles in the late 1990s: infant mortality rate, malnourished children and the sick population. Table 1 shows selected socio-economic indicators.

Figure 1. Identifying the neediness of health care services by region, 2000



Sources: Report of Health and Welfare Survey 2001, NSO;
Thailand Public Health 1999, Alpha Research Co., Ltd., Thailand

Notes: (a) Central region includes vicinity of Bangkok, Eastern and Western regions.
(b) (…) parenthesis indicates the regional share of poverty incidence.
(c) Malnourished children as percentage of total primary students.

[1] IMR is defined as the number of deaths under one year of age per 1,000 live births. Maternal mortality rate is the death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management.

Table 1. Selected socio-economic indicators for Thailand, 1990-2000

Indicators	*1990*	*1996*	*1998*	*2000*
GNP per capita (US$)	1 510	2 985	1 780	1 941
Real GDP growth (1995)	8.6	5.5	-8.0	4.3
Real government expenditure growth (1995)	16.8	10.8	-6.3	1.4
Recurrent expenditure/total expenditure (health)	–	74.7	73.0	89.6
Government expenditure/GDP	0.95	1.34	1.69	1.32
Population (million)	57.0	59.9	61.2	62.4
Poverty (million): head count index	15.5 (27.2)	6.8 (11.4)	7.9 (13.0)	8.9 (14.2)
Income distribution (Q5/Q1)	57.8/4.2	56.7/4.2	56.5/4.2	57.6/3.9
Life expectancy at birth (M/F)[a]	68.6/73.4	69.4/74.1	70.2/74.7	–
Infant mortality rate (per 1,000) M/F	9.2/6.9	5.8/4.5	4.9/4.1	
Maternal mortality rate (per 100,000)	24.8	15.6	7.6	–
Prevalence of underweight (per cent of school children)	19.8[b]	7.9	12.3	–
Prevalence of iodine deficiency (per cent of primary school children)	16.8	7.1	3.9	–
Population with safe drinking water (per cent)[c]	80	–	–	84
Gross enrolment rate[d]	46.6	57.6	61.3	74.1

Sources: Thailand Health Profile 1997-1998, Ministry of Public Health, Thailand; Development Evaluation Division, NESDB.

– Data are not available.

[a] Thailand Health Profile 1997-1998, MOPH and the data indicate each five-year period beginning with the year as mentioned.

[b] 1991.

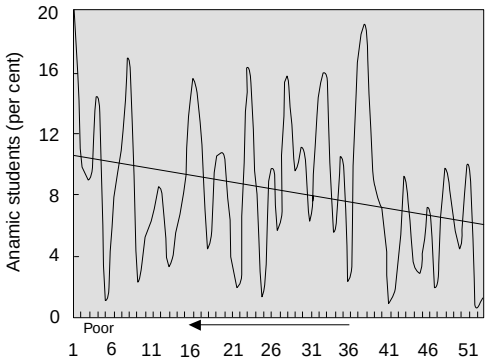
[c] <www.unicef.org>.

[d] Combined primary, secondary and tertiary level students as a percentage of school age population (3-21 years of age).

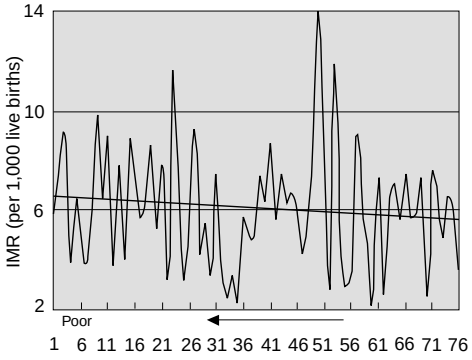
Within Thailand, a region's performance, on each of four indicators, is expressed as a percentage and the lowest value indicates best performance and vice versa. Bangkok had the highest achievement in all these indicators as it is located closer to the minimum on every output. The percentages of maternal death, sick population and malnutrition among children are higher in poorer regions: the northern, southern and north-eastern regions. However, in terms of IMR (figure 2) and becoming ill, the southern region is comparable to the central region and is less than the northern and north-eastern regions. The transition in IMR is shown in figure 2b. From 1990 it declined substantially but during the crisis this trend was reversed. Although the increase was common in all regions during this period, it was

Figure 2. Identifying need for health care services, 2000

a. Anemia among primary students



b. Infant mortality rate



Source: Thailand Public Health 1999, Alpha Research Co., Ltd., Thailand.

higher in the north-eastern region. The differences in health outcomes not only indicate the structural characteristics of each region but also the differences in the availability of health services.

The SES on health, conducted by the National Statistics Office, is available for collecting information regarding the ill health of the Thai people at various levels and household choice in seeking treatment. The choices of seeking treatment reflect the availability, cost and quality of services. The data are reported in table 2 and the findings are summarized below. First, illness has increased in urban areas between 1996 and 2001 and it was higher amongst females. Furthermore, it has been increasing since 1996. Second, although the Government-provided health care is the main destination for all patients irrespective of where they live, rural people pay more visits than others to such facilities. Third, urban patients are frequent visitors to private sources. Finally, rural people are less likely to report illnesses than their counterparts in urban areas. Lower reporting could be because of the fact that the characteristics of poor people, such as lower level of education and acceptance of illness as a normal feature of life, determine their attitudes and responses to illness.

II. THE NATIONAL HEALTH CARE SYSTEM

This section briefly documents the two main aspects of the national health system: health care services and health financing. The Ministry of Public Health (MOPH) is the office responsible for budget allocations, provision of health services and the implementation of policies. In addition, other ministries such as the Ministry of Interior, the Ministry of Defence, the Ministry of University Affairs and the Ministry

Table 2. Percentage of ill and type of last treatment by sex and area, 2001

	Ill as per cent of population in 1996	*Ill as per cent of population in 2000*	*Of those ill, per cent seeking treatment by source (2000)*				
			No care	*Self-and traditional treatment*[a]	*Government sources*	*Clinic*	*Private*
Thailand total	15.3	15.15	4.88	24.87	53.37	3.90	3.90
Male	13.7	13.15	5.00	24.90	52.59	12.44	4.35
Female	16.9	17.13	4.79	24.85	53.97	12.32	3.56
Urban	11.6	13.63	3.95	29.71	39.58	17.24	8.86
Rural	16.3	15.88	5.26	22.87	59.07	10.36	1.85

Source: The Health and Welfare Report, 2001 and 1996.

[a] Self-and traditional treatment is the sum of herbal medicine users and traditional healer.

of Labour and Social Welfare and non-governmental organizations are also significant participants in the national health system.

Health care facilities in Thailand's public sector consist of three major components, namely primary, secondary and tertiary care levels.[2] According to the latest available list of health facilities (1998) in Thailand, the higher level health providers, in descending order, are regional/general hospitals (243), community and extended hospitals at district and subdistrict levels (716), health centres at Tambon level (9,689) and community health posts at village level (69,108).[3] The available health professionals number about 19,500 practicing doctors, of which 69.4 per cent are specialists. There are also 6,278 dentists, 13,329 pharmacists, 56,366 professional nurses and 30,633 health centre workers (see table 3).

It is certainly the case that the Government of Thailand has been focusing more on building health centres and community hospitals aimed at increasing primary health care facilities in rural areas. Between 1987 and 1998, the number of health centres and community hospitals grew by 37.5 per cent and 26.7 per cent, respectively, while general hospitals increased by 26.4 per cent. More importantly, the spending priorities aim to increase the number and size of the community hospitals. As a result, the ratio of population per bed in community hospitals has declined.

2 Such a classification would be a rough calculation as their services overlap within levels.

3 The figures under the regional/general level hospitals include military hospitals, specialized hospitals and medical school hospitals. Figures under the health centres include public health centres and branches administered by the Bangkok metropolis.

Table 3. Expansion of the health care system in Thailand, 1989-1997

	1989	*1995*	*1997*
Health facility			
Government hospitals	774	923	943
Private hospitals	237	357	358
Community hospitals	561	688	712 (1999)
Health centres	6 992 (1987)	8 842 (1996)	9 614 (1998)
Population/bed	938	739	459
Health personnel			
Doctors	4 361	4 180	3 649
Pharmacists	3 825	5 867	5 941
Professional nurses	1 478	1 092	1 073
Health financing (per cent of total health financing)	1991	1995	1998
Government[a]	23.5	30.1	34.7
Of which SSS	0.56	1.73	2.7
Out-of-pocket	75.2	68.7	63.9
Private Insurance	1.1	1.1	1.3

Source: Thailand Health Profile 1997-1998, MOPH.

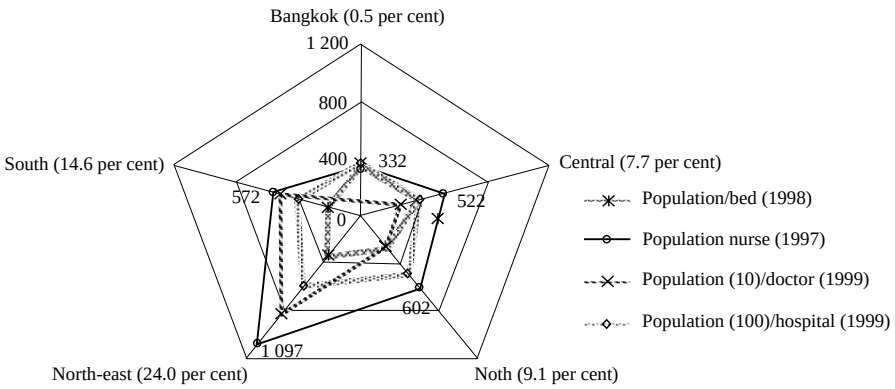
[a] Government refers to the general Government and includes ministries and state enterprises of the country's central and local governments.

Distribution of health facilities by region

Public health facilities by region vary significantly. Figure 3 compares the health inputs in terms of the number of population per facility together with regional poverty incidence (noted in brackets for each region) by region; thus the maximum value of each of the axes indicates a lack of facility in a particular region.

For example, the north-eastern region has the highest population in Thailand, roughly one third of the country's total population including two thirds of the poor, but the number of available health inputs for people is insufficient. The most affluent area, Bangkok is home to less than 0.5 per cent of the country's poor but has the highest number of facilities. The southern and northern regions share nearly equal facilities while the central region is higher than the other four regions. In the last decade, the changes in the distribution of health facilities have favoured the richer provinces (see the appendix). Overall, it is demonstrable that the distribution of health facilities and health personnel are Bangkok-centred but the distribution of needs is skewed towards the north-eastern and northern regions.

Figure 3. Health facilities and professionals by region



Source: Directory of Hospitals and Public Health Statistics in Thailand 2000-2001, Alpha Research Co. Ltd. (in Thai).
(…) Parenthesis indicates the poverty incidence at the regional level in 1998.

International comparisons of the health care system

Table 4 compares the health system efficiency within selected Asian countries. According to the information provided in the *World Health Report* 2001, the efficiency of the health system is actually lower in Thailand than many other countries that spend considerably less. The efficiency is assessed by calculating the Health Performance Index (HPI) and the value of the index explains how an efficient health system translates expenditure into health achievement.[4] The index of zero, therefore, means the least efficient and one, the most efficient. Table 4 reports that the health performance and Thailand was ranked, in descending order, 102 among the 161 member countries of WHO. Thailand's efficiency index is 0.71, less than 75 per cent of efficiency compared to 93 per cent in Singapore.[5] In terms of GDP allocation, it is spending more than any other country listed in table 4. Similarly, expenditure per person has increased markedly over the past decade with only minimal effects on health outcome. The curative health care system is blamed for such inefficiency in the way of over-utilization of drugs, irrational technical use and spending waste. The report further states that in terms of health output the return from the cost of curative

[4] Health achievement is measured by disability-adjusted life expectancy (DALE) and it is an estimate of burden of disease using disability-adjusted life expectancy as a measure of the health gap in the world.

[5] The *World Health Report* 2001 also reports the uncertainty interval occurring in the above performance. For Thailand, the interval is 0.682-0.736, which is again too low and for Singapore, the range is 0.909-0.942.

Table 4. Health system in Asia

	Total health expenditure, per cent of GDP (2000)	*PPP public expenditure per capita (1998)*	*U5MR[a] (1999)*		*Life expectancy at birth (2001)*		*HPI[b] (1997)*	*Fairness of financing health*
			M	*F*	*M*	*F*		
India	5.1	20	97	104	59.6	61.2	0.67 (118)	0.96 (43)
Indonesia	2.7	14	63	53	64.4	67.4	0.74 (90)	0.94 (73)
Malaysia	2.5	97	15	13	69.2	74.4	0.75 (86)	0.92 (123)
Singapore	3.5	263	4	3	76.5	81.8	0.93 (14)	0.93 (101)
Sri Lanka	3.6	51	25	19	66.6	74.1	0.78 (66)	0.94 (78)
Thailand	5.7	121	40	27	65.7	72.2	0.71 (102)	0.91 (128)

Source: *World Health Report* 2000 and 2001, WHO.

(…..) Parenthesis denotes the rank of the country within WHO members.

[a] The U5MR is the probability of dying between birth and exactly five years of age per 1,000 live births.

[b] The Health Performance Index (HPI) reports how efficient health systems translate expenditure into health as measured by disability-adjusted life expectancy (DALE) and it is defined as the life expectancy at birth minus the total time expected to be lost being ill.

care is lower than that from the cost of preventive care which could reduce the risk of illness and decrease the morbidity and mortality rates.

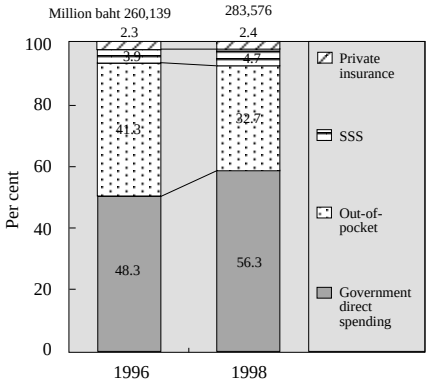
Financial adjustment to the 1997 crisis

This section discusses briefly the financing mix of health services and how these have adjusted in response to the economic and financial crisis in 1997. In Thailand, health care services are financed through two main channels, out-of-pocket and direct Government spending. The insurance mechanism is not so developed. It is notable that the role of government financing in the health sector has increased since the late 1990s. In 1998, a National Health Accounts exercise estimated that the total national outlay on health was 179 billion baht or 2,935 baht (US$ 71) per person. The Government was the largest contributor at about 60 per cent and the remaining 40 per cent came from private sources, mainly out-of-pocket spending (33 per cent), and other third party arrangements, involving insurance, private employers and charities

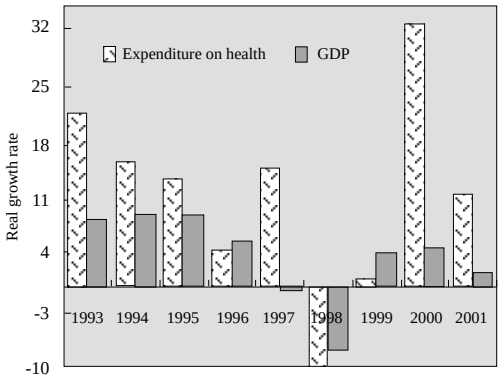
(see figure 4). Before the crisis, these proportions were 52.2 per cent and 47.3 per cent, respectively. (National Accounts Division, NESDB, 1996 and 1998) The fall in household income was reflected in a lower demand for health as the people switched demand for health from private to public facilities because the latter were subsidized. To offset the effect of the decline in private expenditure on health outcome, at least partially, the Government responded positively by increasing recurrent expenditure on health. Such an adjustment could be viewed as a response to the negative effect of the crisis. Another notable development in the pattern of Government financing was the expansion of various health insurance schemes as a part of enhanced social safety nets programmes such as low-income and voluntary health card system and the introduction of the 30-baht scheme by the present Government to enlarge access to health services at a low nominal cost. Finally, the relative price of health care services rose compared to the country's general price level, because of the strong depreciation of the baht during the crisis.

Figure 4. Health care financing in Thailand

a. Financing response to the crisis



b. Expenditure grows at faster rate than GDP



Sources: For figure 4a, National Accounts Division, NESDB and for figure 4b, Economic and Financial Statistics, BOT.

Within the Government sector, the MOPH is the main agent in financing the health sector and its role has increased following the crisis. In 1996, about 53 per cent of the total Government expenditure on health (or 29 per cent of total national financing) was channelled through the MOPH while in 1998 it was 61 per cent (or 36 per cent of the national spending on health). In 1998, 43 per cent of MOPH financing was spent on hospital and health professionals, 28 per cent on investment in

facilities, 12 per cent on administration and 13 per cent on health promotion and disease control (National Accounts Division, NESDB, 1996 and 1998). In Thailand, even though the contribution of insurance financing appears to be growing it is not so developed as to displace a substantial amount of direct Government spending. In 1998, the expenditure on private hospitals and doctors significantly declined in both absolute and relative terms from one fourth of the total national health expenditure (in 1996) to one fifth as a result of the closing of a number of private hospitals which had experienced a decline in demand.

III. PATTERN OF GOVERNMENT EXPENDITURE ON HEALTH

Total Government spending on health in Thailand is 1.6 per cent of GDP or 9.3 per cent of total Government expenditure, with an estimated average of baht 1,237 (approximately US$ 32) spent per person in the year 2000. As reported in the National Health Accounts (1998), the Government is the largest provider of health care funds (60 per cent), with physicians the largest component (33 per cent) followed by hospitals (30 per cent). Total Government spending on health rose from 1.2 per cent of GDP in 1988 to 2.1 per cent in 1998 before declining to 1.6 per cent in 2000.[6] Until the late 1990s, on average, the growth rate of real Government expenditure on health was more than three times the rate of growth of GDP and between 1998 and 1999 these trends were slightly reversed before Government expenditure started to increase again in 2000.[7]

The composition of the public budget allocations also matter in creating a link between health expenditure and health outcomes. Although it is widely accepted that spending on health promotion and disease prevention could effectively translate into overall health improvement, a large proportion of Government spending falls into curative services. Between 1993 and 1999, about 64 per cent of the national health budget was allocated to curative services while 22 per cent was allocated to health promotion and prevention. There is, thus, scope for improving social outcomes by changing the composition of public expenditure. Moreover, the classification of expenditure by economic type reveals that in 2000, 92.6 per cent of health expenditures was spent on recurrent expenditures and 7.4 per cent on capital investment (Bureau of the Budget, 2000).

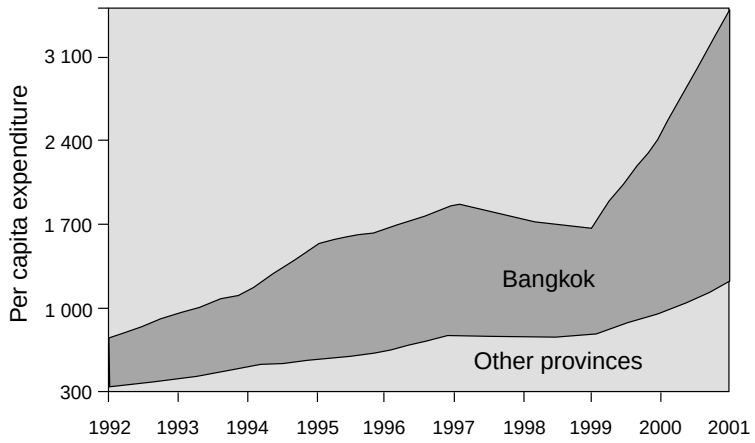
[6] The capital expenditure on health has declined nearly 63 per cent between 1998 and 2000. The share of current expenditure to the total expenditure rose from 63 per cent in 1997 to 90 per cent in 2000.

[7] During 1990-1998, the growth rates of real Government expenditure and real GDP were 12.9 per cent and 5.7 per cent respectively and between 1999-2000, they were -9.3 per cent and 4.2 per cent, respectively.

Distribution of Government health expenditures by region

Figure 4a presents the annual public subsidies per person by region before and after the crisis and the horizontal line – the average Government expenditure per person at the national level – indicates how far each region deviates from the average. Regions in figure 5 are arranged with poverty incidence in ascending order. It shows that the poor regions receive the lowest subsidy per person and the gap between Bangkok and the north-eastern region is still widening. Although a large proportion of health needs in Bangkok is fulfilled by the private sector a significant disparity exists in the public sector between Bangkok and the rest of the regions. The poorest regions are much worse off than the national average. While 26 per cent of the total Government expenditure is in Bangkok, its population accounts for only 12 per cent of the total population, but 23 per cent of the expenditure is in the north-eastern region, which accounts for 34 per cent of the total population.

Figure 5. Widening gap in per capita public spending



Source: Bureau of the Budget.

IV. BENEFIT INCIDENCE ANALYSIS

The Benefit-Incidence Analysis (BIA) is used to evaluate how public health spending benefits the poor. The BIA deals with only the monetary value of Government health services and this technique assumes that the benefit derived from health services is equal to the cost of providing such services. It combines the cost of providing such services with information on their ultimate usage to show how the benefits of Government spending are distributed across different socio-economic groups.

Data and methodology

The BIA brings together three sources of information. First, poverty incidence (from the Development Evaluation Division, NESDB) is used to rank the provinces.[8] Second, population (from the Report of Census and Housing, NSO) is used to construct the deciles/quintiles. It should be noted that the total population is considered as beneficiaries (from health expenditures) rather than the number of patients. This is done in order to understand the subsidy implication of achieving universal health care which Thailand wants to achieve. Third, the actual total Government expenditure on health (from the Bureau of the Budget) is assigned to calculate the benefits for each decile/quintile.

The major steps in the calculation are:[9]

- Ranking the provincial population by poverty incidence
- Calculating the provincial share of population
- Dividing the sample into quintiles
- Calculating the provincial expenditure shares going to each quintile

The distribution of expenditure is then analysed by constructing expenditure concentration curves for the whole population ranked by poverty incidence.[10] Such a calculation can indicate whether the health financing system in Thailand is proportional or biased in favour of either the rich or the poor. The main hypothesis in this section is that there are no differences in the allocation of Government subsidies across the population and each group of the population contributes to the financing of health care according to its ability to pay.

Who benefits and by how much

Table 5 and figure 6 summarize the concentration of Government subsidy among various groups. The top 25 per cent of the population receives more than 35 per cent of the total Government expenditure and the bottom 14 per cent of the population, which falls above 30 per cent of the poverty line, receives less than 10 per cent of expenditure. More importantly, the range of disparity in expenditure allocation between the bottom 10 per cent (or next 10 per cent) and Bangkok is large. A person who lives in Bangkok has a 10 times higher chance of receiving a Government

8 Poverty incidence means the number of persons falling below the poverty line during a given period and is calculated as a percentage of total population.

9 To examine the burden of health financing, that is vertical equity, similar steps are followed using household per capita income, instead of poverty.

10 The expenditure concentration curve is a plot of cumulative population from poorest to richest against the proportion of expenditure (subsidy) received.

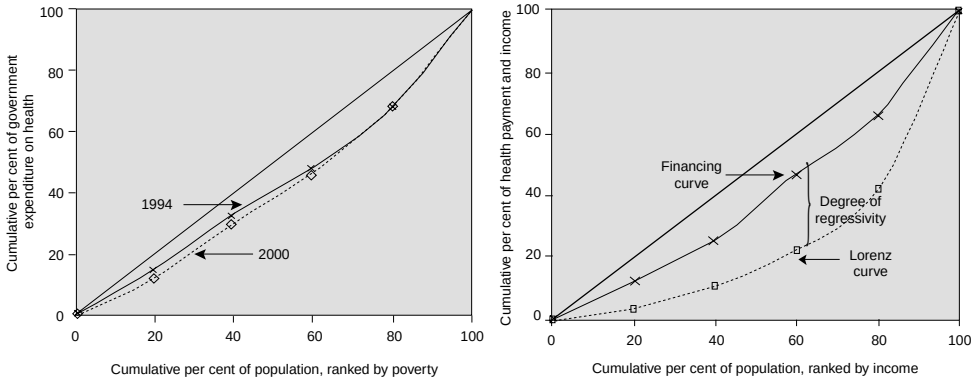
Table 5. Distribution of Government expenditure on health by poverty incidence in 2000

Per cent of poverty (Range – HCI)	*Share of population (per cent)*	*Share of health expenditure (per cent)*	*Health expenditure (million baht)*
< 1.9[a]	12.4	11.6	27 119
(0.26)[b]	(11.8)	(25.6)	(18 651)
2.0 – 9.9	21.8	23.2	16 729
10.0 – 19.9	23.2	20.0	14 925
20.0 – 29.9	16.8	11.4	10 771
30.0 – 39.9	7.0	5.1	3 533
40.0 >	7.0	3.8	2 892

Source: Author's calculation using data from NESDB and Bureau of the Budget.
[a] Excludes Bangkok.
[b] Bangkok only.

Figure 6. Expenditure concentration curves: 1994 and 2000

a. Widening inequality b. Poor pay more



Source: Author's estimation.

Note: Lorenz curve (LC) is pre-tax income and financing curve (FC) is the tax concentration curve. Population is ranked by pre-tax income as with LC. If the average tax rate rises with income the FC lies below the LC, so that the system is progressive and if the opposite is true then taxes, that is the finacing system, are regressive.

subsidy as one who lives in Mae Hong Son or seven times higher than one who lives in Yasothon. In 2000, the poverty incidence of these two provinces was 30 per cent and 50 per cent, respectively. The bottom two deciles share more or less the same amount of expenditure but a person living in Bangkok receives a sum nearly four times higher than his or her counterpart in the bottom levels.

The important issue related to concentration is equity. This paper adopts two alternative yardsticks to evaluate the issues of equity, the first, that Government spending should be according to need. As explained in the preceding section, since the risk of sickness and need are relatively high amongst the poor, the distribution of Government health care spending should favour the poor. Regarding this, the expectation is that the relationship between Government expenditure and the changes in poverty incidence should be progressive or even proportional. For examining such a hypothesis, the poverty incidence is used as the base. The second yardstick is that financing of health should distribute burdens fairly across people with different abilities to pay. In other words, should those with a greater ability to pay be proportionally paying more (or should the degree of regressivity be minimal)? For testing this hypothesis, the average monthly income per household is used.

The expenditure concentration curves are plotted in figure 6. The vertical axis measures the cumulative proportion of expenditure received while the horizontal axis measures the cumulative percentage of population, ranked by poverty incidence from poorest on the left to richest on the right. It is similar to the Lorenz curve (it is ranked by income level) but here the population is ranked by poverty incidence. If the constructed curve coincides with the diagonal, everyone, irrespective of poverty status, enjoys an equal share of Government subsidy. If the curves deviate from the diagonal this will be an indication of inequality. A concentration below the diagonal line indicates a pro-rich approach and above the diagonal, a pro-poor approach.

Clearly government health financing system in Thailand is less than ideal as the curves lie below the diagonal. For example, in 2000, the poorest 20 per cent of the population only received about 11.8 per cent of the total government subsidy and the richest quintile, nearly three times more than the poorest. The distribution of expenditure over time is examined to determine whether the increasing expenditure has benefited the poor. If the concentration curve of the current year is everywhere closer to the diagonal than that of previous years, then the current year's concentration curve is considered as more equal than the previous ones. Figure 6a shows only two years, 1994 and 2000, because to make the picture clear the curves for other years are omitted. One can observe unambiguously that the curves in each year at the bottom levels (below 40 per cent of population) deviate from the diagonal. In such conditions, it seems reasonable to conclude that increasing expenditure could help increase the shares of the middle and upper levels of society rather than the bottom level.

It can be concluded, therefore, that in the past decade the people as a whole have not been treated equally and the distribution of Government subsidy on health

was not pro-poor. Admittedly, increasing disparity is part of a long-term trend and the degree of bias towards non-poor did not come into being in one or two years; the adjustment to a more neutral disposition will not be possible in one or two years.

Comparing the share of income received by each income group with its share of health care payments provides an alternative way of assessing equity. The constructed curves for both financing and income are shown in figure 6b. It clearly shows that the Thai health financing system is regressive, implying that the share of the total financing burden borne by lower income groups exceeds their share of society's income, while the share borne by higher income groups is less than their share of society's income. For example, the bottom income quintile in 2000 received 3.9 per cent of income but contributed 12.9 per cent to the health care services, whilst the top quintile received 57.6 per cent of income and made a 32 per cent contribution to the health care services. Government spending on health provides increasing benefits with income so that the health system in Thailand is regressive.

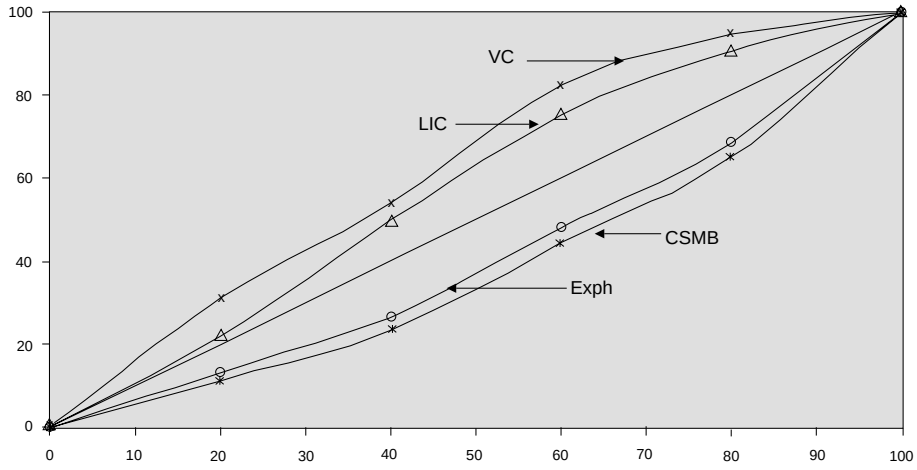
Financing health care coverage and the poor

In Thailand, it is estimated that currently about 46 million people (76 per cent of the total population) are covered by at least one of the subsidized health insurance schemes (Donaldson et al., 1999). The five major insurance schemes are: Civil Servants Medical Benefits Scheme (CSMBS), Social Insurance Scheme (SIS), Voluntary Health Card Scheme (VHCS), Low Income Card Scheme (LICS) and other private health insurance. The rest of the population, the poorest groups, slum dwellers, subsistence farmers and other rural workers, receive no such coverage. In this study, three financing schemes, namely CSMBS, VHCS and LICS, for which data are available by province, are considered.

Means-tested spending programmes benefit only those whose financial resources fall below a certain level. In Thailand, the low-income health card is typically focused on low-income people so that it is able to benefit the poor. Even though the voluntary health card is available to anyone, it seems that the poor prefer to join the low-income scheme because of lower charges (see figure 7).

The distribution of Government expenditure on the voluntary health card and on the low-income card was pro-poor. However, it is important to note that, while the distribution of expenditure on the voluntary health card was more progressive than that of the low-income card, the fact is that the outlay on the voluntary card is too small to reduce the risk of poverty effectively. In total, less than 15 per cent of Government health expenditure usually falls on these programmes. Moreover, the relative ineffectiveness of Government expenditure programmes in protecting the vast majority of the people is still a puzzling issue.

Figure 7. Distribution of government financing on selected insurance schemes and the poor in 2000



Source: Author's estimation using data from the Bureau of the Budget and NSO.

Contrary to this, expenditure on CSMBS is regressive, which accounts for more than 20 per cent of the Government spending programmes on health. Health care expenditure for the more affluent areas, in the form of Government financing to health insurance, skew total growth expenditure further toward the better off.

Policy response

This section examines how the Government responded to the changes in the poverty level during the past decade. Government support for health is often viewed as enabling the patients of poor families to go to hospitals and thus is viewed to have a positive impact on poverty. If this is a valid hypothesis, one would observe a positive relationship between per capita Government expenditure and the incidence of poverty. To estimate exactly how and to what extent the poor really benefit and/or are the incidental victims of Government policy, the two variables, namely per capita Government expenditure and poverty incidence, are used. Before plotting them they were transformed into standardized values (STD value).[11] Such types of estimation clearly show that the share of population deviates from the national average. The

[11] The standardized values (STD) are calculated as: $X_z = \frac{X_i - \mu}{\sigma}$, where X_i = i^{th} province's per capita Government spending on health, μ = mean of the Government spending on health, that is per capita spending at the national level, and σ = standard deviation of per capita spending. In a similar fashion, the standardized values of poverty incidence are calculated.

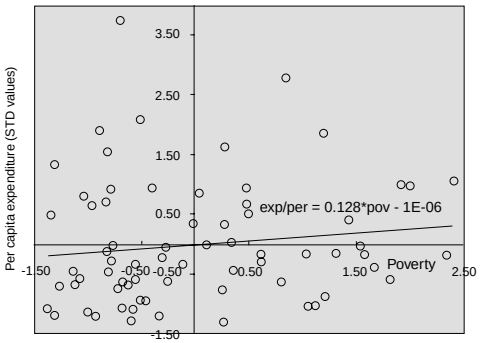
results are summarized in scatter diagrams in figures 8a and 8b and the details along with other health-oriented variables (only for 2000) are produced in table 6.

In 1992, the relationship between Government expenditure on health and poverty was positive even though it was not strongly significant (figure 8a). Figure 8b, however, shows the relationship is strongly negative indicating that the policy bias is pro-rich. Positive relationships are shown in the north-east and south-west quadrants of the diagram (figure 8b) and these two areas consist of 38 provinces which between them share only 28.4 per cent of the total Government expenditure and 36 per cent of the total population. This indicates that the Government expenditure programme failed to reach the disadvantaged groups.[12]

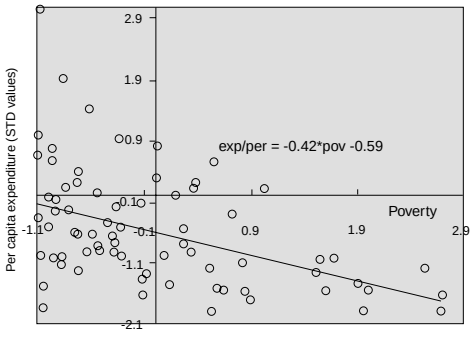
The following paragraphs document inputs and outputs in the health sector in line with changes in expenditure per person on health in order to understand the reasons behind it. The influence of certain variables (hospital facilities and health personnel) on expenditure can, at least in theory, be manipulated by Government policy. The policy stance here represents overall Government intervention on health such as spending and provision of health care services. In 2000, per capita outlays vary from over 2,400 baht in Bangkok to under 230 baht in Mae Hong Son. Combining both table 6 and the appendix provides evidence that there is a close link between the distribution of publicly provided health care services and Government expenditure.

Figure 8. Government policy response to poverty

a. 1992



b. 2000



12 A possible policy lag is also examined and the conclusion on policy stance is the same, i.e., that a non-pro-poor expenditure policy with respect to health has been adopted, especially since the mid-1990s.

Table 6. Health sector performance and policy (health) stance, 2000

Poverty – government expenditure	*Poverty*	*Per capita government expenditure*	*Household health expense/H H-income*	*Number of population per facility*			*Per cent of population*	*Infant death rate*	*Per cent of population*	
				Bed	*Doctor*	*Hospital*			*In-patient*	*Out-patient*
High-low (25)	29.4	771.9	5.1	895	8 906	50 572	40.6	6.3	2.8	9.7
Low-high (14)	4.1	1 594.6	4.6	361	3 350	31 081	23.7	6.1	1.9	7.7
High-high (6)	19.8	1 407.6	3.9	427	4 473	30 176	3.94	7.2	1.0	3.0
Low-low (31)	5.7	925.2	4.4	564	5 624	40 516	31.8	5.6	4.0	14.7
Whole country	14.4	1 174.8	4.6	632	6 268	38 086	64.15 (million)	6.1	0.1	0.5

Source: Author's compilation using above sources.

Note: High-low would mean high poverty and low per capita government expenditure relative to national averages, and high-high, high poverty and high expenditure and so on.
Figures in (…) denote the number of provinces falling within the range.

It would be useful to summarize some of the key results regarding the failure of Government health subsidies to reach the poor in Thailand.

a) The poor spend proportionately more on health than the rich.

b) High-cost health professionals are concentrated in the richer provinces. The number of active practicing doctors per 10,000 persons varies from 9.9 in Bangkok to 0.69 in Srisaket province (north-eastern region).

c) Publicly provided services are skewed towards the rich, as more individuals from the higher income groups are likely to use health services. Population per bed ranged from 174 in Nonthaburi (one of the richest provinces in the vicinity of Bangkok) to 2,824 in Mae Hong Son.

d) There is a close relationship between changes in the distribution of Government expenditure on health care services.

e) The benefits of Government expenditure on health have shifted as the actual incidence (those to whom the benefits actually go) was different from the intended one.

V. CONCLUSIONS AND POLICY IMPLICATIONS

This study has highlighted two stylized facts: first, between 1992 and 2001, real Government spending on health grew on average three times greater than that of

real GDP. Second, the distribution of Government expenditure on health has been widening in favour of the rich since 1992. In 2000, the poorest quintile of the population received only about 12 per cent of the Government health expenditure while the richest quintile received 36 per cent. This is explained by the fact of the bias in favour of richer provinces in the provision of public health care services, mainly their Bangkok-centred provision. A large number of rural people, therefore, still have limited or no access to health care services. The distribution of publicly provided services is skewed towards the rich. However, rural people decline to report illness more frequently than their counterparts in urban areas. This suggests that improving equity in Thailand would basically require increasing health awareness amongst rural people and providing information on health and health services are important to improving the access of the poor to quality health services. Since malnutrition and illness are higher among rural people, the budget allocation should address health promotion and preventive programmes in the public health system rather than secondary and tertiary levels of health care that are much less cost-effective.

The lack of public investment on health in the poorest provinces in relation to the size of the population should not merely mean increased Government expenditure but rather an extensive reform of existing policies with the focus on the composition of expenditure combined with equity-specific targets to ensure that efficiency in delivery and impact is maintained. As emphasized in recent research, a link between efficiency and equity is needed for a desired result in the health sector. Put in their own words, "…..(in Thailand) there are enough resources to provide everyone with a rather comprehensive health benefit package. Thus, the challenge is to improve the efficiency of health expenditures and the equitable distribution of financial resources", Donaldson et al. (1999). The real challenge, therefore, is to maintain efficiency with equity within the existing financial resources.

The pro-rich oriented Government expenditure, whether intentional or otherwise, appears to be a matter of distribution of publicly provided health services and, to some extent, the composition of expenditure. It therefore requires a closer examination of the distribution of health resources, and more importantly the degree of substitution among health professionals such as between physicians and nurses and between urban and rural areas. However, it would be more useful to extend the period of study beyond the year 2000 to cover the most recent developments, the new social security policies such as the 30-baht scheme, which is designed to play both a distribution and a risk reduction role in poverty reduction. Since this paper does not consider in a major way the composition of spending on health and the degree of crowding-out of private spending between rich and poor it must necessarily remain cautious in recommending specific policies on health care for the future.

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APPENDIX GOVERNMENT EXPENDITURE AND POVERTY

Table A1. Regional variation in Government expenditure, 2000

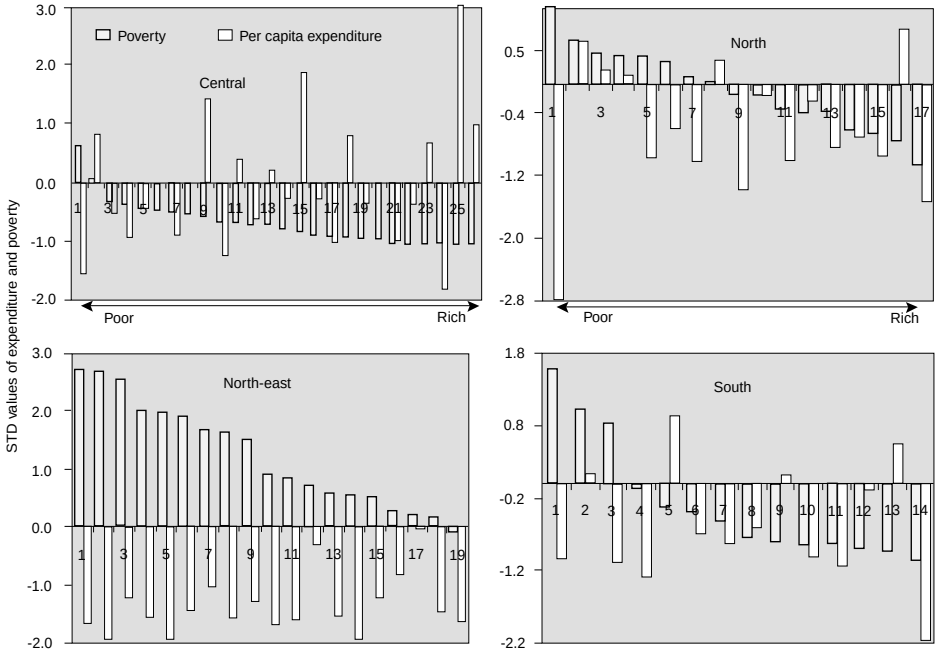
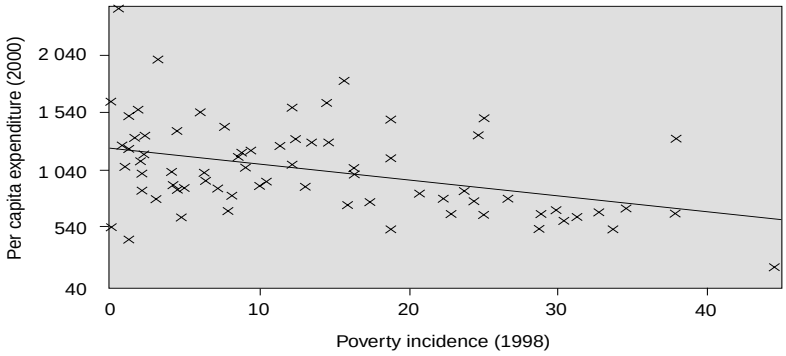


Table A2. Government policy (expenditure) and poverty, responding with policy lag



Source: Author's estimation.

MAKING OF A NATION: BANGLADESH: AN ECONOMIST'S TALE

by Nurul Islam, Dhaka: University Press Limited, 2003
pp. xix + 482, ISBN 984-05-1666-3

Nurul Islam, a Professor of Economics, former Deputy Chairman of the Planning Commission from 1972 to 1975 and Emeritus Fellow of the International Food Policy Research Institute, adds his name to the growing list of politicians, scholars and diplomats who have attempted to provide future generations of Bangladeshis with an insider's perspective on the birth of Bangladesh. The book reviews the economic conflicts that led to the break-up of Pakistan, provides a critical insight into the administrative, economic and diplomatic issues faced by the Awami League Government from 1971 to 1975 and outlines the key economic decisions that were taken by the new Government that have continued to dominate the political debate in Bangladesh. The book concludes with a set of recommendations for dealing with problems of governance, economic reform and regional cooperation.

The book is divided into three parts. The first set of five chapters deals with the Pakistan period from 1947 to 1971. Islam begins with a detailed account of the origins of the two economies theses developed by the then East Pakistani economists which declared that East and West Pakistan constituted two separate regions each with its own distinctive economy. Given the immobility of labour between East and West Pakistan and the high costs and time needed to transport commodities between the two regions, they insisted economic development in Pakistan would require a very high degree of regional autonomy. West Pakistani leaders, however, saw the argument as an attempt to lay the foundations for separatism and rejected the analysis. The issues raised by East Pakistan, however, came to dominate the economic debate in Pakistan for the next decade and contributed to the development of a growing sense of mistrust between the two regions. This deep sense of mistrust accelerated with the passage of time in the wake of the slow pace of economic growth in East Pakistan, inadequate resource allocations from the central Government and the absence of effective political representation.

Gradually, East Pakistanis came to see the disparity between East and West as a denial of their legitimate economic and political rights and demanded a radical restructuring of the rules that governed the Pakistani state. This restructuring took the form of the Six Point Programme, which demanded greater autonomy for East Pakistan. While the authorship of the Six Point Programme was unclear, agues Islam, it came to dominate the political discourse. Despite extensive negotiations, the author

insists, no compromise was possible. The result was a civil war, the break-up of Pakistan and the emergence of Bangladesh.

The eight chapters in part two represent the core of the book and deal with the critical economic problems confronting the Awami League Government that ruled Bangladesh from 1972 to 1975. These issues include the formation of a Planning Commission, the formulation of the First Five Year Plan, the nationalization of trade, industry, insurance and banking, the famine of 1974, the initiation of international aid, the sharing of Pakistan's debt liabilities, Indo-Bangladesh economic cooperation and an assessment of the successes and failures of the Awami League Government.

One of the earliest decisions of the new Awami League Government was to create a national Planning Commission for Bangladesh under the chairmanship of Sheikh Mujibur Rahman. Professor Nurul Islam was to serve as its Deputy Chairman. Although the new Planning Commission was designed to serve as the focal point for the formulation of economic policy, argues Islam, past traditions and attitudes made it impossible for the Commission to play its assigned role. In addition, the appointment of academic economists to run the Planning Commission created a variety of tensions. Ministers resented the Planning Commission's perceived usurpation of their authority and sought to bypass Commission policy, friction developed over questions of individual seniority and status and the Commission totally overestimated the persuasive impact of technical analysis in a political system dominated by patron-client relationships, patrimonialism and patronage. Although the authority of Sheikh Mujib could have compelled compliance with the Commission's edicts, the Prime Minister refused to intervene in disputes between the Commission and ministers and instructed the two to work out their differences through direct negotiations. In the wake of a growing political and economic crisis the authority of the Commission gradually eroded. By 1974 the Planning Commission had almost completely lost its authority in shaping the economic policies of the country.

From the very beginning the Planning Commission became involved in a wide array of controversial decisions. Its problems began with the publication of the country's First Five Year Plan. While the Commission insisted that the Plan presented a coherent set of social and economic objectives for the new nation, critics charged that the Plan was little more than a declaration of pious exaltations. The real problem, Islam insists, was the lack of political support for the Plan. In addition, he notes, the political leadership had a limited understanding of socialism and its policy implications and many Awami Leaguers had a weak commitment to socialist principles; the planners, on the other hand, made overly optimistic assumptions in drawing up the Plan and the members of the Planning Commission had an inadequate understanding of the importance of governance in the implementation of the Plan. As a result the Plan failed to achieve its objectives.

Among the most controversial decisions taken by the Awami League Government, argues Islam, was the decision to nationalize both Pakistani and Bangladeshi owned industries. The decision, he insists, was a product of a long series of Awami League political commitments over the years including the party's 1970 election manifesto. Although the cabinet was divided on the issue, Sheikh Mujib supported the policy of nationalization due to the party's past commitments, intense pressure from radical students, workers and leftist parties and the low political costs of alienating a weak and divided business community. Ironically, Professor Islam seems somewhat surprised at the long-term impact Awami League nationalization policies were to have on private sector investment behaviour. He seems baffled by the deep-seated sense of resentment, insecurity and mistrust that came to dominate Bengali business behaviour that resulted in a reluctance to invest in Bangladeshi industries long after the nationalization policies had come to an end despite similar reactions by industrialists in other countries in the region.

One of the most painful events of the Awami League era was the famine of 1974. While some of Islam's former colleagues on the Planning Commission have blamed the famine on the failure of the United States to provide timely food aid to Bangladesh, the author concedes that the Government of the day bore the brunt of the responsibility. However, he insists, there were a variety of contributing factors that led to the famine. These factors included rampant inflation, floods, speculation, smuggling and delays in the arrival of food aid.

Perhaps the most agonizing issue facing the new Bangladesh Government following the civil war was the decision to turn to the West for economic development assistance. Shortly after liberation, the Awami League leadership reluctantly came to the conclusion that India, the Union of Soviet Socialist Republic and other socialist countries were in no position to provide the necessary assistance required to rebuild the economy of Bangladesh. Proud, independent and inexperienced, however, the leadership of Bangladesh began its new aid relationship on a contentious note. The Government of Bangladesh refused to acquiesce to traditional World Bank procedures, chafed at the tone and tenor of the Bank's critique of its Five Year Plan, rejected the Bank's emphasis on providing greater scope to the private sector and was reluctant to come to grips with the issue of sharing Pakistan's debt liability. As the country's economic crisis deepened, however, the Bank's influence began to grow. Increasingly, Bangladesh became an aid-dependent country and Government success became judged by the level of international aid it was able to obtain.

The era of Awami League rule came to a crashing halt following the assassination of Sheikh Mujib and the collapse of his Government. Nurul Islam attributes the failure of Awami League rule to a lack of management and administrative experience, its limited base of political talent, the politicization of the army, the establishment of paramilitary forces, job insecurity in the civil service, the "perception of corruption", failure to explain the economic crisis, refusal of the elite to share

a degree of deprivation, internal divisions within the ruling party and the creation of Baksal. Since the author's focus is almost completely confined to economic issues, however, almost none of these factors receive much attention in the overall narrative.

Having reviewed the forces leading up to the break-up of united Pakistan and the economic issues faced by the new Government of Bangladesh, the author concludes with a series of prescriptive chapters that deal with the need to create a more effective decision-making structure for the country, the problems of economic liberalization, privatization, deregulation and globalization and the future of regional economic cooperation. Given the atmosphere of political polarization in Bangladesh, he concludes that it is difficult to see how effective solutions to the problems of governance, economic reform and regional cooperation can be found.

Overall, Nurul Islam's book is an attempt by a participant observer to provide a retrospective and impassionate and, at the same time, thoughtful and balanced analysis of the momentous political and economic events that have shaped the development of Bangladesh. In the context of today's Bangladesh this is a rare achievement. Even non-partisan critics, however, will be struck by the fact that the author tends to gloss over the problems created by the Awami League's wayward performance in government, the character and personality of key political figures and insights into the norms and values that have shaped Bangladeshi political behaviour over the years.

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