ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Asia and the Global Crisis

The Industrial Dimension

OECD

Chapter 2

THE ORIGINS OF THE CRISIS

Introduction

There has been extensive debate on whether or not the financial crisis in Asia was inevitable. Some observers, including Radelet and Sachs (1998), have argued that the crisis was largely an artefact of external, global forces which made international financial markets prone to panic. It has also been observed that the first attempts to stem the tide of capital outflows in the Asian countries, including the measures "enforced" by the International Monetary Fund, failed partly because they relied on a dramatic increase in interest rates which strangled domestic demand and worsened the situation for the highly indebted private sector in Asian countries.

While financial factors and processes triggered the crisis, it is clear that a number of underlying structural factors played a role in Indonesia, Korea, Malaysia, the Philippines and Thailand (Furman and Stiglitz, 1999). This chapter addresses the role of factors and policies related to industry. A brief background on structural developments in Korea, Malaysia and Thailand is provided. Differences in developments in Hong Kong, Singapore and Chinese Taipei are noted. The key problem areas are then highlighted. Statistical information relating to the topics addressed in the chapter can be found in Annex 1, Tables 1 to 9.

Country profiles

The immediate causes of the crisis were macroeconomic in character. Between 1993 and 1996, the Malaysian current account deficit grew steadily, peaking at nearly 9% of GDP in 1995, before levelling off to around 5% in 1996. In Thailand, the deficit increased from approximately 5% in 1993 to around 8% just before the onset of the crisis. Indonesia also ran progressively larger deficits in the years before the crisis, rising to around 4% of GDP in 1996. In Korea, the sharp fall in the price of semiconductors on the world market contributed to the increase in the current account deficit to 5% of GDP in 1996.

The widening current account deficits were in part driven by developments in the capital account (Yoshitomi and Ohno, 1999), notably the swelling inflows of portfolio investment, while direct investment continued to grow at a more stable pace. The ratio of short-term debt to foreign reserves increased sharply during 1994-97 in most of the crisis countries. In three – Indonesia, Korea and Thailand – the ratio was well over 100% by mid-1997. The high ratios increased these countries' vulnerability to short-term shifts in investment and lending behaviour. By early 1997, it had become clear that the choice of exchange rate regime throughout much of the region, which effectively pegged domestic currencies to a strengthening US dollar, was a major factor in the widening current account deficits. Depreciation became ever more likely. The devaluation of the Thai baht in July 1997

triggered what was to follow. Investors and bankers became nervous, fuelling a reversal in capital flows in the other countries of the region as well.

On closer examination, however, it becomes apparent that the crisis has been far more than a financial, or even macroeconomic, phenomenon. There is growing recognition that key structural weaknesses in industry had been allowed to develop in a number of Asian economies, and that these weaknesses were the underlying cause of the crisis. It is useful to review some of these developments on a country-by-country basis.

Korea

Korea has the highest level of industrialisation among the crisis-affected Asian economies. The country has experienced several decades of very strong economic development. Its annual industrial growth averaged 10.7% between 1976 and 1986, and 8.3% during the decade ending in 1997. The Korean industrialisation process started with the development of labour-intensive light industry in the 1960s; the country then began to emphasise capital-intensive heavy industry, and achieved significant progress in the metal, machinery and chemical industries from the beginning of the 1970s. In the 1980s, high-technology industries, such as motor vehicles, semiconductors and computer chips, gained momentum. During the first half of the 1990s, the share of high-technology industry in the manufacturing sector grew from 18% to 30% in terms of output and from 14% to 42% in terms of employment (OECD, 1998c).

Between 1994 and 1995, Korea enjoyed an investment-led economic boom, although confronted with an increasing problem of excess capacity. In 1996, the main Korean export items were hit by falling prices. The earnings of computer chip manufacturers, Korea's largest exporters, fell by nearly 90% in that year, while car producers, shipbuilders, steel and petrochemical producers were also affected. There is little doubt that over-capacity in key industries was a major structural weakness of the Korean economy, and that the excessive private debt which contributed to its build-up was a factor in rendering the economy vulnerable to the crisis.

The Korean government played an active role in influencing industrial structure through industrial policy and the easy availability of bank credits to certain industries. A principal characteristic of Korean industry is the dominance of the large diversified conglomerates, the *chaebol,* which arose as a result of Korean industrial policies. Growth of the *chaebol* tended to occur at the expense of small and medium-sized enterprise development. Meanwhile, labour shortages and rising labour costs have been eroding the country's competitiveness in labour-intensive industries such as textiles, in which Korea had built up a leading world position.

As is the case for many countries with low per capita income, limited technological competence makes Korea's high-technology sectors dependent on more advanced countries for technology imports. Acquiring greater technological capacity is a challenge despite the fact that Korea has achieved a much higher capacity than other Asian developing economies. Its strengths in this respect are rooted in a cultural tradition that places high value on education and on the capacity to adopt and exploit existing knowledge and technology. There has also been intensive public encouragement of research and development (R&D) through government subsidies.

Malaysia

Malaysia's economic performance has been very strong in the last several decades. Real GDP grew at 8.7% a year between 1991 and 1996, inflation averaged around 3.8% over the same period, and unemployment was low, at 2.5% in 1996. Manufacturing accounted for 34% of GDP in 1997, up from 12% in 1970. Malaysia's industrial development has been markedly export-oriented, and the share of manufactured exports in total exports increased from 11% in 1970 to 81% in 1997. Despite this impressive performance, Malaysia is confronted with a number of serious structural weaknesses, which were recognised at the beginning of the 1990s in the Sixth Malaysia Plan (1991-95) (Box 2). The Malaysian economy has in essence been overheating since 1991, generating upward pressure on factor prices, with wage increases exceeding productivity gains. In the absence of efficiency improvements, growth was chiefly achieved through capacity expansion, a situation that could not be sustained in the long run. Developments in the 1990s aggravated, rather than addressed, this situation.

Box 2. Industrial restructuring in Malaysia

The Sixth Malaysia Plan identified actions that the country would have to take in order to remain internationally competitive. The prescriptions recognised the need for structural change: this would be engineered through macroeconomic as well as sectoral strategies. The message was the following:

Macroeconomic strategies. Efforts to accelerate the process of industrial development will continue. To remain internationally competitive, Malaysia will have to change the structure of its industry to produce more of the technologically sophisticated and better-quality products in demand in developed countries. This will require designing policies to encourage technological upgrading, diversify the industrial base and promote industrial restructuring and modernisation, especially among small and medium-scale industries. It will also require policies to raise the standards of manufacturing to higher levels of innovation and know-how in production, design and marketing. In particular, the quality of education and training will need to be improved to meet the increasing demand for skilled manpower and to raise the efficiency and productivity of the labour force.

Sectoral strategies. The primary strategy for promoting growth in the manufacturing sector is to widen and diversify the industrial base, as well as to establish greater linkages between new and traditional sectors. Emphasis will continue to be placed on accelerating the growth of export-oriented industries, while at the same time developing the intermediate and capital goods industry, and restructuring and modernising existing industries.

Source: Sixth Malaysia Plan (1991-95).

As much of industry is export-oriented, weak domestic linkages are a main source of concern. Malaysian industry is highly vulnerable to fluctuations in export markets, and domestic needs are largely unfulfilled by Malaysian production. For example, Malaysia imports some 60% of its pharmaceutical consumption. Meanwhile, export industries are highly dependent on imported inputs, ranging from machinery through intermediate components to raw materials. Value added in electronics, for instance, remains relatively low despite the fact that the electronics industry has become dominant in the industrial and export structures. The reliance of Malaysian industry on imported machinery has led the government to impose import substitution policies in this area. Malaysia also has a service-related current account deficit, which is largely due to its reliance on foreign providers of trade-related services, such as shipping. The government has tried to foster a trade-related service industry in order to reduce the service-related current account deficit.

Malaysian labour costs have increased markedly along with the emergence of labour shortages, which have led to substantial imports of labour. Currently, some 1.14 million legal foreign workers constitute 13% of the Malaysian labour force. The future strength of Malaysia's industry will no doubt be strongly influenced by its technological competence, including the supply of human capital. Malaysia has limited educational capacity, however, and many Malaysian students go abroad to pursue their studies. About 38% of students in tertiary education studied abroad in 1988 (Lall, 1998a). At present about 54 000 students are pursuing tertiary-level courses in foreign institutions. The bottleneck facing the Malaysian educational system is the lack of qualified teachers, rather than the lack of financial resources (World Bank, 1998c) – a situation typical of countries having experienced rapid industrialisation in their most recent histories. As Malaysia moves up the ladder of the value-added chain, the capacity and quality of its higher education system becomes increasingly important.

Thailand

Until the onset of the crisis in July 1997, Thailand had experienced decades of impressive economic development. Growth in real per capita income averaged 5% per annum and real GDP grew at about 9% per annum from 1986 onwards, before slowing in 1996. The manufacturing sector, which employs more than 4 million workers, accounts for 29% of GDP and more than 70% of export earnings. Thailand has gradually embarked upon an export-led growth strategy, initially fostering industries that were able to exploit the low labour costs that the country enjoyed in the early stages of its economic development.

Thailand's industrial development benefited from the relocation of labour-intensive industries by multinational firms from high-labour-cost industrialised countries. This provided Thailand not only with the capital and technologies needed for rapid industrialisation, but also with well-developed channels to large foreign markets. In addition, exports benefited from the privileges of the Generalised System of Preferences (GSP) to which Thailand was entitled as a developing country. Under these favourable conditions, export growth of Thai manufactured goods averaged 24.4% per annum between 1980 and 1990, and 22.9% during the first half of the 1990s. This development involved considerable structural shifts in Thai manufacturing, away from light industries towards heavy, more complex activities.

However, growth in Thai exports slowed in 1996. In that year, total exports grew by only 0.3%, and industrial exports dropped by about 1%. Exports of electronic products suffered from a price collapse due to global over-capacity and what was widely viewed to be a cyclical downturn. Meanwhile, exports of labour-intensive light industrial products, such as garments, plastic products and footwear, as well as frozen shrimp, declined markedly. This may have been the first sign that Thailand had lost – to a critical extent – its strength in labour-intensive industries. From 1996, Thai industry experienced reduced profitability, weakened foreign exchange earnings and increasing problems with debt servicing.

Over-investment led to over-capacity. Industrial development took place during a prolonged economic boom, where firms could make profits without improving efficiency or upgrading product quality. While easy credit fuelled expansion in industrial capacity and also in non-core business areas, firms made little effort to upgrade their technology or improve their strategic positions in other respects. Again, this resulted in, on the one hand, industrial over-capacity and, on the other hand, a decline in the competitiveness of Thai industry. Meanwhile, competition intensified in Thailand's main export markets, especially from countries with lower labour costs.

High-technology industry has grown rapidly in Thailand during the 1990s. Technology-intensive exports increased on average by 31% per year between 1992 and 1995, accounting for 54% of total manufactured exports in 1996, up from 42% in 1992 (Lall, 1998b). The development of high-technology industry in Thailand was built on foreign capital, foreign technology and foreign product designs; final products, moreover, relied significantly on foreign markets. For example, the electronics sector absorbed nearly 40% of foreign direct investment in manufacturing in Thailand between 1995 and 1997 (UNCTAD, 1998a). On average, imported contents accounted for 80% of the value of high-technology exports.

Other Asian economies

The crisis did not affect all developing Asian countries similarly. Hong Kong, Singapore and Chinese Taipei, for example, have so far escaped with relatively little damage. One of the reasons for this is that they have managed structural change more effectively during the course of rapid industrialisation. The cultural, linguistic and geographic advantages enjoyed by Hong Kong, Singapore and Chinese Taipei are likely to have contributed to their successful industrial restructuring. Nevertheless, their experience in terms of policy provides useful lessons.

First, these economies not only have sound macroeconomic fundamentals, but also a relatively free entrepreneurial climate. Hong Kong is recognised as the freest market economy in the world and it also has a very flexible labour market. Singapore has a relatively transparent regulatory environment run by a stable government. Chinese Taipei, which used to be known for its interventionist industrial policies, has, since 1980, opted to increase the economy's receptiveness to market forces (Schive, 1995). Market mechanisms have thus been given a major role in resource allocation and structural adjustment. There is limited policy-induced resource misallocation. Sound macroeconomic management based on prudent fiscal policy and conservative monetary policy have counter-acted a build-up of industrial over-capacity.

Second, governments and private sectors in these economies have attached great importance to investments in human capital and R&D. This becomes particularly important when an economy reaches a certain level of development. For example, in the 1980s when Chinese Taipei's economy began to mature, public R&D spending increased rapidly, indirect promotion measures to boost venture capital were introduced and profits reinvested in research were exempted from tax. In addition, these economies have adopted policies to attract skilled labour from overseas, particularly highly educated people of Chinese origin from Western countries. Hong Kong and Singapore, which seek to attract mainland-Chinese students from abroad, offer probably the best compensation packages in the world for university faculty. Fluency in English and the fact that the Chinese language is spoken in these parts of Asia are factors which have contributed to success in this regard.

Third, small and medium-sized enterprises have played an important role in these economies. SMEs typically enjoy a relatively high degree of flexibility, which allows them to be quick in responding to changes in market demand and in adopting the most suitable technologies. As SMEs were able to follow market signals by adjusting their product mix and by adopting new production technologies, industrial structures shifted in parallel. Thus, the high level of flexibility in these economies is closely related to their large and very active small-firm sector.

In this respect, Chinese Taipei's experience is particularly interesting. The *Rules for Promotion of Small and Medium-sized Enterprises*, promulgated in 1967, became law in 1991. This law ensures equal treatment for SMEs in cases where incentives are offered to an industry. It aims to provide a wide range of support measures to SMEs, including market promotion, business co-operation,

promotion of strategic alliances, upgrading of technologies and labour training. Even more important has been the insurance fund for SME credit, which reportedly has been very successful, with a low rate of loan defaults (Schive, 1995). SMEs are often regarded as having a disadvantage in access to information. However, Chinese Taipei's experience shows that the diffusion of new technology, if it involves no heavy capital investment, and of new products, is particularly rapid in SME-concentrated industries. It is argued that this is because SMEs have an advantage in learning quickly which tends to offset the disadvantage in access to information. However, networking and a critical mass are important conditions for enhancing the learning effect and technology diffusion.

Fourth, massive overseas relocation of labour-intensive production has taken place over the last two decades, as many of Hong Kong's labour-intensive industries moved their plants to Guangdong, in mainland China, which has become their "backyard workshop". On the other hand, Hong Kong continues to act as the "front shop" for these enterprises, linking goods to the international market. It is estimated that Hong Kong manufacturing facilities in China today employ up to 4 million workers, more than the total size of Hong Kong's labour force. Firms from Chinese Taipei carried out similar relocation of labour-intensive production via large investments in mainland China. It is interesting to note that the Chinese Taipei authorities sought to discourage such investments; those that did occur were therefore driven entirely by market forces. Singaporean firms have followed a similar route, investing in Malaysia, Indonesia and China.

Structural weaknesses

This brief review of industry-related developments in selected countries indicates that structural factors played a major role in determining the unfolding of the crisis. Indeed, they were the underlying cause. They crucially triggered the inflating of asset prices. As asset values began to decline, the fundamental weaknesses became visible, creating a vicious circle. In other countries, where such problems were much less prevalent, the more favourable structural conditions helped to limit the direct effects of the crisis.

Why did the differences not show up before?

It is clear that, prior to mid-1997, there was increasing evidence of the existence of significant structural weaknesses in Asia. For instance, commodity prices were on the decline (Annex 2). As we have seen, some of the governments were aware of these weaknesses and pledged to undertake countervailing measures. Still, foreign capital continued to pour in and overall investment to surge. How is it possible that so little attention was paid to the deficiencies for so long? There are several reasons for this.

The economic performance recorded in the Asian countries during their previous long period of high growth was so strong that it overshadowed the existence of weaknesses in the eyes of investors, policy makers and academics alike. During 1990-96, the rate of economic growth in Indonesia, Korea, Malaysia and Thailand averaged, or exceeded, 8% per year. Together with these countries' mostly impeccable record of strong public finances and low inflation, this performance was so superior to that observed in other parts of the developing world that any problems were dwarfed in comparison.

Another factor is the interrelated nature of the performance displayed by the different Asian countries. Booming trade in the neighbouring economies boosted demand and raised confidence on the part of foreign and domestic investors. Indeed, as the individual countries developed and production costs increased, capital and industrial capacity was relocated, helping to spur continued growth in the next

generation of developing countries, a phenomenon which in Asia became known as the "flying wild geese". However, just as the success of the Asian countries was interrelated, so was the danger that they would fall together. This risk of collective failure was particularly difficult to predict.

In addition, another important consideration is the fact that the preconditions for continued success in Asia, as elsewhere, have changed gradually but systematically. This factor is related to the growing hold of the so-called "knowledge-based economy". Those industries whose shares of production, value added and trade are on the increase in the world economy, tend to be relatively intensive in their use of new technology and knowledge. Furthermore, technology and knowledge are becoming increasingly important as production factors across a widening spectrum of industrial activities, including services. In particular, the widespread adoption of information and communication technology offers enormous new opportunities for accessing and using information on a global scale (OECD, 1999b).

As Asia developed, the individual countries cherished increasing ambitions to compete in more and more technologically advanced industries, where value added was higher and higher wages could be offered to workers. However, some of the conditions and policies which had succeeded in the past became increasingly burdensome and/or redundant. Some of the main problem areas are considered below (see also Box 3 and Table 3).

Targeting

First, a number of Asian economies adopted ambitious development programmes targeting investment in heavy and high-tech industries (Table 2). Compared to other developing countries, which had promoted industrial development by substituting for imports, it is true that the Asian countries did encourage industrial output that could be competitive on world markets. Nevertheless, market forces were put to the side.

Table 2. Industrialisation plans in selected Asian countries

Country	Name and period	Policy goals
Indonesia	7th Five-year Development Plan (1994-98)	Export promotion via industry targeting (food, clay/glass, machinery, electronics, textiles)
Korea	Five-year Economic Plan (1993-97)	Deregulation, technology development, human resource development, promotion of foreign direct investment
Malaysia	Industrialisation Master Plan (1986-95) New Industrialisation Master Plan (1996-2005)	Export orientation targeting 12 industries, mainly for capital-intensive industries Strengthening of inter-industry linkages for automobiles and electronics (industry clustering), improving information infrastructure
Philippines	Mid-term Development Plan (1993-98)	Encouraging interlinkages between agriculture and manufacturing, industry targeting via the Investment Priorities Plan
Thailand	7th Five-year Development Plan	Targets six industries (food, textiles, machinery, electronics, chemicals and steel)

Source: Sakura Research Institute (1998).

In the case of Korea, for instance, policies sought to promote heavy industry (such as automobile production, steel and chemicals) in the 1970s. These were effectively abandoned during the 1980s, when priorities shifted to the upgrading of technology and the rationalisation of declining industries (OECD, 1996a). The shift in focus is reflected in the country's development strategy under its 1993-97 five-year economic plan which aimed to make Korea's industrial structure similar to those of the advanced OECD countries by developing "high-tech" industries. This was to be accomplished through structural policies, including the promotion of science and technology.

While policy shifts have occurred in the other four Asian countries, the use of targeting has continued into the 1990s, albeit to different degrees. Malaysia has implemented strong support policies for some industries (notably steel, machinery and electronics), while targeting in the Philippines and Thailand has been less focused. In these two latter countries, the governments have set up Investment Boards which grant concessions to selected projects. Indonesia's policies, while less well-defined, have tended to support the food-processing industry and non-oil-related sectors. The textile and automobile sectors have been protected through relatively high tariffs.

The emphasis on heavy industry has contributed to raising the value-added share of manufacturing in GDP in the five economies; reaching levels in excess of 25% in all except the Philippines (World Bank, 1998*b*). In the case of Indonesia, Malaysia and Thailand, the share has increased significantly since 1980, while it has declined somewhat in the other two countries.

Meanwhile, little attention seems to have been paid to the international situation in each of the targeted sectors, with the result that severe over-capacity has developed in a number of areas. As trade barriers came down, there was a further impetus to competition, making it increasingly difficult to sustain uncompetitive enterprises. This was especially the case in economies where real exchange rates appreciated and costs rose quickly, precipitating attempts to apply targeting as a means of competing successfully in the realm of high-value-added technology- and knowledge-based industries.

Investment environment

The problems in industry are closely interlinked with failure in the financial system. With easy access to credit and weak loan criteria, it was relatively simple for companies to borrow money for well- and ill-advised projects alike. This contributed to the development of sprawling, highly leveraged industrial conglomerates. Prior to the crisis, debt was two to three times higher than equity in Indonesia and Thailand for non-financial corporations, with the ratio generally rising during 1995 and 1996. In Korea, the ratio at the end of 1997 was over 500% for the 30 largest *chaebol*. The high debt leveraging was sustainable as long as capacity utilisation was high; when it tumbled, however, overextended firms found themselves confronting bankruptcy or, at the very least, serious financial difficulties.

The financial sectors of the Asian crisis economies, albeit to varying degrees, are relatively underdeveloped and were unprepared to cope with the challenges posed by increasing capital account liberalisation, the massive inflow of foreign capital, and growing demand for resource allocation through domestic capital markets. Banks and other financial institutions lacked the expertise and experience required for assessing risk and for effectively monitoring firms' investment and performance. This was made worse by government intervention in resource allocation through targeting, as mentioned above, and by the lack of transparency in corporate governance regimes (see below). The cosy relations that favoured industries enjoyed with the government were often taken as (implicit) guarantees for borrowing, resulting in widespread moral hazard by both borrowers and lending institutions.

Corporate governance

Corporate governance refers to the framework of rules and regulations that shape the extent to which shareholders and other stakeholders can exercise oversight and control over a company. The conditions for corporate governance in the Asian countries have played an important role over the years, shaping success as well as failure. The dominant model in the region is based on close relationships between corporations, banks and governments, leading to a strong commitment by multiple stakeholders to the survival and growth of companies. Accounting tends to be highly non-transparent, however, and the rights of minority shareholders are weak. This situation was further aggravated by the barriers to mergers and acquisitions, both legal and due to business practices and the nature of stakeholder involvement in Asia. Before the crisis took hold in 1997, there were, in fact, relatively few mergers and acquisitions in the region.

Insufficient oversight by banks and regulatory authorities, and the lack of transparency and accountability to shareholders, gave corporations an inordinate amount of discretion in their business decisions, and they were often backed by political support. As a result, a good number of ill-advised investments worked their way into companies' portfolios. These bad investments have intensified the restructuring that will be required, as there is little hope that such dubious projects can, or should, be made viable. The commitment made by the crisis economies to liberalising trade and investment will, in fact, put further pressure on companies to jettison weak investments.

SMEs

The focus and favouritism towards targeted industries in the crisis economies came at the expense of small and medium-sized enterprises, which generally received relatively little policy attention. Critical linkages between larger firms and SMEs failed to develop, leading to an increased reliance on imported inputs and technology, limiting innovative capacity and impeding spin-offs of new activities and the diffusion of new technologies. This contributed to undercutting the competitiveness of industry in general.

Small firms are of vital importance for several reasons. They tend to be less capital-intensive than large firms, they employ appropriate levels of technology and are flexible and quick to adjust to new demand. At the same time, SMEs are an important source of new jobs for less skilled or experienced workers. This is critical in industrialising countries which need to absorb the surplus labourers leaving the agricultural sector for the industrial sector as part of the process of industrialisation. In addition, the existence of a dynamic SME sector is crucial for, and also itself dependent on, a culture of entrepreneurship and creativity since it thrives on individual initiative and increases the variety of options for individuals to venture into new business undertakings.

It is worth noting that SME development has important implications for corporate governance and the functioning of markets. As small firms are unable to exert the kind of lobbying pressures that large firms do, discriminatory intervention in markets is less likely. In economies with large numbers of SMEs, product markets are more likely to function competitively, as price manipulations are made more difficult, while factor markets are likely to be more adaptive to changing economic circumstances. Finally, labour-intensive activities are in line with these countries' current comparative advantages, and are thus important to their performance in world markets.

Technology, innovation and knowledge

The Asian countries have increasingly begun to compete on the basis of knowledge and technology rather than on low costs. In particular, Korea has invested significantly in this area and has obtained a strong hold in education measured in terms of literacy or share of the population with degrees at various levels. At the same time, it is clear that the Asian countries have run into problems in their handling of the knowledge-based economy, although it should be noted that policy makers worldwide face challenges in this domain. In a recent study, the OECD concludes that most countries continue to rely too heavily on policies fostering research and technology in a limited number of high-technology industries and firms, rather than focusing on policies promoting broad-based diffusion and use of technology that can result in economy-wide productivity gains and job creation (OECD, 1998b).

According to the World Bank (1999), developing countries crucially need to implement policies enabling them to narrow the knowledge gaps that separate the poor countries from the rich. Governments, multilateral institutions, non-governmental organisations and the private sector must work together to strengthen the institutions that can serve to address the information problems causing markets and governments to fail in the area of knowledge generation and use. The creation and use of knowledge requires a long-term perspective. However, the mere recognition that knowledge is at the core of all development efforts can help to reveal solutions to a range of seemingly intractable problems.

As shown in Table 3, some of the greatest differences among the Asian countries prevail in the field of technological skills. The rapidity with which the Asian countries, pushed by industrial policy, shifted their production towards more knowledge-intensive industries, meant that the national technical expertise required to support the new enterprises was not available. Because technical support was deficient, the new facilities operated at sub-optimal levels. Moreover, labour shortages led to rising wages, especially for skilled or semi-skilled workers. Higher wages eroded industrial competitiveness in labour-intensive production. The fact that the currencies of several Asian economies were linked to the appreciating US dollar added further strains.

This situation also contributed to reliance on imported inputs and technology. In favoured sectors, large inflows of foreign investment, with accompanying technology and skills, enabled the Asian economies to rapidly build high-technology industries. Contributions of foreign capital and technology tend to bring pressures to manage the fundamental process of structural change at a very fast pace, that is, to build sufficient technological capabilities before labour costs rise too high. The task is made all the more difficult as skill development requires incentives which can motivate education and learning efforts. The time span during which a low-labour-cost advantage could be exploited was particularly short in the Asian case due to the development strategies of these countries. Aggressive promotion of technology-based industry, full employment and skill shortages all worked to push up labour costs.

At the same time, regulations in the area of mergers and acquisitions, along with the approach to corporate governance widely practised in Asia, presented barriers to FDI in the form of take-overs, increasingly the dominant entry mode into international markets and a main channel for rapid technology transfers. Furthermore, the strategic reliance on absorption of existing technologies rather than on own innovation by Asian firms, coupled with weaknesses in intellectual property right protection, represented a barrier to licensing. As the Asian industries became increasingly competitive, foreign firms were dissuaded from making technology readily available to prospective competitors in the region.

In promoting the use of foreign capital and technologies to build capital- and knowledge-intensive industries, while retaining barriers to such inflows and suffering from weaknesses in own innovation

capacities, labour shortages and rising wages, the Asian crisis economies appear to have misjudged the comparative advantages within their reach. As a consequence, they probably lost their edge in production based on low labour costs prematurely.

Box 3. Industry-related factors in the Asian crisis economies

- Over-capacity created by over-investment in certain sectors.
- Insufficient diversity of industrial structure, including excessive reliance of some industries on export markets.
- High reliance of certain export industries on imports of inputs and machinery.
- Overemphasis on large enterprises to the detriment of small firms.
- Lack of linkages between export-oriented industries and other sectors.
- Lack of industrial linkages between high-technology and supporting sectors.
- Outdated technologies and machinery in many domestic industries.
- Shortages of skills and of technological and managerial competencies.
- Weak transparency and deficiencies in corporate governance structures.

Table 3. Summary of major structural weaknesses

	Over-capacity[1]	Insufficient technological capability[2]	Unfavourable conditions for SMEs
China	++++	++	+
Hong Kong	-	++	No
Indonesia	+++	+++	++
Korea	++++	+	++++
Malaysia	++++	++++	+++
Philippines	+++	+++	++
Singapore	+	+	++
Chinese Taipei	-	+	No
Thailand	+++	++++	+++

Note: Crosses indicate the degree to which each element is problematic, from relatively low (+) to relatively high (++++). "-" indicates unknown, and "No" indicates no problem.

1. The degree of over-capacity varies markedly across sectors. It provides a rough estimate of the seriousness of the problem in those sectors which are most affected within each economy.

2. This element assesses the degree of technological capability, relative to the stage of each country's development (*i.e.* not relative to each other). The rating takes into account the following factors: the level of telecommunication infrastructure, the level of electronics production and consumption, literacy, an index of technological graduates from higher education, the number of patent applications, the number of scientists and engineers in R&D, and public expenditure on R&D (as a percentage of GDP). The evaluation uses the INEXSK methodology (infrastructure, experience, skills and knowledge) [see Mansell and Wehn (1998), pp. 20-44 for further information].

Conclusions

The industry-related factors which contributed to the crisis in the Asian countries are summarised in Box 3. Their impact can be summed up as three major structural weaknesses: over-capacity; insufficient technological capability; and an unfavourable environment for small and medium-sized enterprises. Table 3 provides an estimation of the extent to which these impacts were present in a number of the economies in the region, including those most affected by the crisis.

This situation led to a dichotomous structure; large industries co-exist with small firms which are labour-intensive and sometimes low-technology, and there are insufficient linkages between the two. The build-up of excess capacity was facilitated by lack of transparency in domestic financial markets and large inflows of foreign capital. Potential problems were disregarded because of the countries' outstanding past performance, and because of the fact that the countries in the region could drag each other down just as they had helped each other to perform in the first class of the development league for so long.