World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

Global Crisis: The Asian Context

MAY 09

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Definitions

In this *Regional Economic Outlook: Asia and Pacific*, the following groupings are employed:

- "Emerging Asia" refers to China, India, Hong Kong SAR, Korea, Singapore, Taiwan Province of China, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.
- "Industrial Asia" refers to Japan, Australia, and New Zealand.
- "Asia" refers to emerging Asia plus industrial Asia.
- "Newly industrialized economies" (NIEs) refers to Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.
- "ASEAN-4" refers to Indonesia, Malaysia, the Philippines, and Thailand
- "ASEAN-5" refers to Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.
- "G-2" refers to the euro area and the United States
- "G-3" refers to the euro area, Japan, and the United States
- "TED Spreads" refers to the difference between the interest rates on interbank loans and short-term government debt.

The following abbreviations are used:

ABCP	Asset-backed commercial paper
ABS	Asset-backed securities
AIG	American International Group
ASEAN	Association of Southeast Asian Nations
BIS	Bank for International Settlements
BoJ	Bank of Japan
bps	basis points
CCA	contingent claims analysis
CDS	credit default swap
CPI	consumer price index
CVU	Corporate Vulnerability Utility
EICDS	Expected Default Frequency Implied Corporate Debt Spread
FCI	Financial Conditions Index
FDI	foreign direct investment
FSA	Financial Services Agency
GDP	gross domestic product
GFSR	*Global Financial Stability Report*
GIMF model	Global Integrated Monetary and Fiscal model
HIPC	heavily indebted poor country

ICR	interest coverage ratio
IT	information technology
JGBs	Japanese Government Bonds
LIBOR	London Interbank Offered Rate
LIC	low-income countries
MDRI	Multilateral Debt Relief Initiative
MoF	ministry of finance
MSCI	Morgan Stanley Capital International
NIE	newly industrialized economy
NPL	nonperforming loan
OECD	Organization for Economic Cooperation and Development
OLS	ordinary least squares
P/E	Price-Earnings
PPP	purchasing power parity
q/q	quarter-on-quarter
REO	*Regional Economic Outlook*
SAAR	seasonally adjusted at an annual rate
SME	Small and medium-sized enterprise
UNIDO	United Nations Industrial Development Organization
VAR	vector autoregression
WEO	*World Economic Outlook*
WPI	wholesale price index
y/y	year-on-year
ZIRP	zero interest rate policy

The following conventions are used:

- In tables, a blank cell indicates "not applicable," ellipsis points (. . .) indicate "not available," and 0 or 0.0 indicates "zero" or "negligible." Minor discrepancies between sums of constituent figures and totals are due to rounding.
- An en dash (–) between years or months (for example, 2007–08 or January–June) indicates the years or months covered, including the beginning and ending years or months; a slash or virgule (/) between years or months (for example, 2007/08) indicates a fiscal or financial year, as does the abbreviation FY (for example, FY2008).
- An em dash (—) indicates the figure is zero or less than half the final digit shown.
- "Billion" means a thousand million; "trillion" means a thousand billion.
- "Basis points" refer to hundredths of 1 percentage point (for example, 25 basis points are equivalent to ¼ of 1 percentage point).

As used in this report, the term "country" does not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

This *Regional Economic Outlook: Asia and Pacific* was prepared by a team coordinated by Joshua Felman and Roberto Cardarelli of the IMF's Asia and Pacific Department. The team included Vivek Arora, Carol Baker, Tarhan Feyzioğlu, Kristian Hartelius, Mark Horton, Anna Ivanova, Sonali Jain-Chandra, Kenneth Kang, Jacques Miniane, Papa N'Diaye, Dan Nyberg, Hiroko Oura, Romuald Semblat, Martin Sommer, Murtaza Syed, Kiichi Tokuoka, Olaf Unteroberdoerster, Xu Wei, and Harm Zebregs. Souvik Gupta, Ioana Hussiada, Shuda Li, Adil Mohommad, and Fritz Pierre-Louis provided research assistance; and Yuko Kobayashi, Ranee Sirihorachai, Livia Tolentino, and Lesa Yee provided production assistance.

Executive Summary

The spillovers from the global crisis have affected Asia with considerable speed and force. GDP in emerging Asia excluding China and India plummeted by no less than 15 percent on a seasonally adjusted annualized basis in the last quarter of 2008, and a further decline is expected for the first quarter of 2009.

In many ways, this severe impact was unexpected. Asia is far from the epicenter of the crisis, not just geographically but also in the sense that it did not indulge in the financial practices that led to serious problems in advanced economies' banking systems. Moreover, before the crisis the region was in sound macroeconomic shape, and thus in a strong position to resist the pressures emanating from advanced economies. In the event, however, the impact on Asia has been even swifter and sharper than in other regions.

What explains this outcome? As Chapter 1 explains, the answer lies in Asia's exceptional integration with the global economy. Much of Asia relies heavily on technologically sophisticated manufacturing exports, products for which demand has collapsed. At the same time, Asia's financial ties with the rest of the world have deepened over the past decade, exposing the region to the forces of global deleveraging.

Looking ahead, Asia's growth path will continue to run parallel to the global economy. For the rest of 2009, the external shock is expected to continue to spill over into private investment and consumption, causing many countries to register negative growth rates. Then, as the global economy revives in 2010, so too will Asia. But the recovery is likely to be tepid—and not only because the global economy will remain weak. As Chapter 2 argues, historical experience shows that investment tends to recover slowly from downturns, especially those that involve financial stress.

The risks to this baseline scenario are skewed to the downside. In particular, a delayed global recovery may trigger more insidious feedback loops between the real and financial sectors in Asia. As discussed in Chapter 3, continued weak demand and tighter financial conditions could lead to a surge in corporate distress that could feed back into Asian banks, making them even less able or willing to extend credit to the private sector. At the same time, a surge in corporate bankruptcies could spill over to domestic demand, with a sharper-than-anticipated increase in unemployment rates putting a dent in consumption.

Over the longer horizon, Asian economies are at risk of a structural decline in demand from advanced economies. Households in advanced economies have started repairing their over-leveraged balance sheets, as the era of easy credit to finance purchases of consumer durables could well be over. In that case, the growth rate of Asian manufacturing and exports could be structurally lower for many years, and Asia's export-led growth strategy may no longer pay the same dividends as in the past.

In this context, the challenge for Asia's policymakers is twofold:

- First, forceful countercyclical policies need to be sustained, to help Asia come out of the recession more quickly and vigorously, and to provide insurance against downside risks. On the fiscal policy side, it will be important to sustain the stimulus injected in 2009 into next year, not least as an insurance policy against risks that have yet to reveal themselves. At the same time, it will be critical to preserve fiscal credibility by signaling that such stimulus packages are extraordinary and will be unwound once the recovery is firmly established. On the monetary policy side, many central banks still have scope to reduce policy rates, while some may need to support credit to the private sector through unconventional measures. Japan's experiences with the crisis of the 1990s, examined in Chapter 4, suggest however that these measures may need to be accompanied by timely steps to address any underlying stress in the financial system as well as in household and corporate balance sheets.
- Second, Asia may need to rebalance growth away from exports and toward domestic demand in order to return to precrisis growth rates. China is already trying to catalyze private consumption, which has been falling for a decade relative to GDP. In principle, there should be scope to do this in many other Asian countries, particularly by building stronger social protection systems that will reduce the need for precautionary savings to meet necessities related to health, education, and retirement. Over the longer term, exchange rate appreciation also might help—by providing price incentives to shift resources toward production for domestic use and by raising real household income, thereby spurring consumption.

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I. Overview

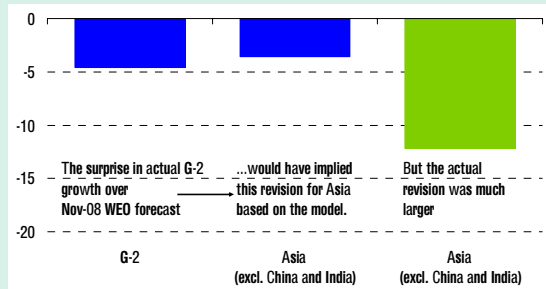
This year will likely see the first contraction of global economic activity in the post–World War II era. As financial firms in advanced countries have come under severe stress, credit has dried up, household wealth has shrunk, and uncertainty has increased. These developments, in turn, have triggered a sharp and synchronized collapse in global demand, setting off a corrosive feedback loop between the financial and corporate sectors that is posing major challenges to policymakers around the world. In the fourth quarter of last year, global GDP fell at an unprecedented 5 percent annualized rate, and has likely fallen by a similar amount in the first quarter of this year.

The spillovers from the global crisis have impacted Asia with unexpected speed and force. The intensity of the downswing has outstripped what could have been anticipated based on the historical correlation between business cycles in the G-2 (the euro area and the United States) and Asia (Figure 1.1). Indeed, the downswing has been even larger than in other regions, and sharper than at the epicenter of the global crisis. In the fourth quarter of 2008, GDP in Asia excluding China and India plummeted by close to 15 percent on a seasonally adjusted annualized basis (Figure 1.2).

More recently, some signs of stabilization have emerged. The slide in exports has eased off in recent months in several Asian economies, and forward-looking indicators for industrial production—in both advanced economies and Asia—have seen some improvement. In addition, pressures in credit markets have abated somewhat since March, with credit default swap (CDS) spreads easing and the global bond market reopening to a few highly rated companies in the region.

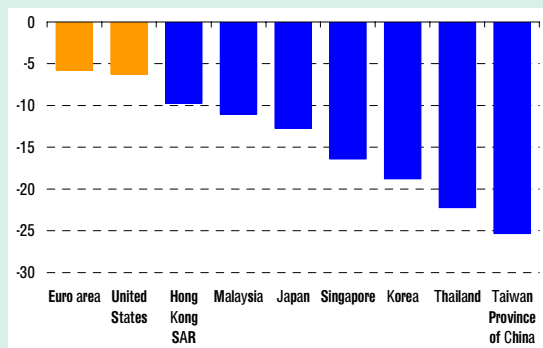
Even if these nascent trends continue, stabilization is far from recovery. Prospects for an imminent rebound of economic activity in the region are weak. Global financial stress remains exceptionally high and demand extremely low, which will continue to weigh on one of the world's most highly integrated regions—only partially offset by the aggressive policy response. At the same time, downside risks abound. The longer the recession continues, the

Figure 1.1. Asia: 2008Q4 GDP Growth—Actual vs. Predicted[1]
(Quarter-on-quarter percent change, SAAR)



Sources: Haver Analytics; and IMF, WEO database; and staff estimates.
[1] Based on a version of the IMF Global Integrated Monetary and Fiscal model (see N'Diaye, Zhang and Zhang, 2008).

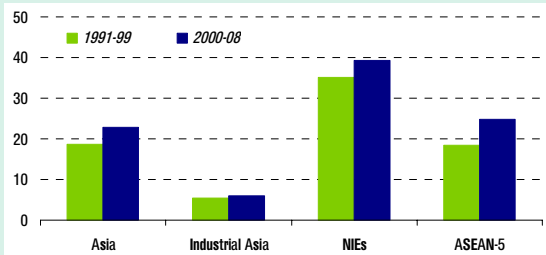
Figure 1.2. 2008Q4 GDP Growth
(Quarter-on-quarter percent change, SAAR)



Sources: Haver Analytics; and IMF staff calculations.

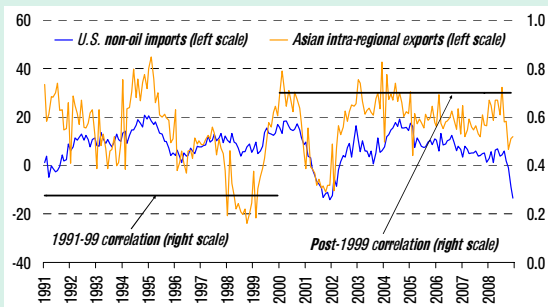
Note: The main authors of this chapter are Roberto Cardarelli, Romuald Semblat, Olaf Unteroberdoerster, and Harm Zebregs. Souvik Gupta and Shuda Li provided research assistance.

Figure 1.3. Asia: Export Exposure to G-2[1]
(In percent of GDP)



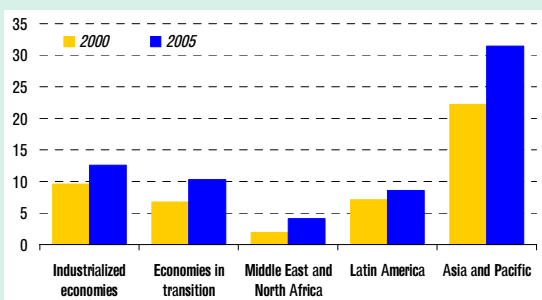
Sources: Guimarães-Filho and others, 2008; and IMF, *Direction of Trade Statistics* database; and staff calculations.
[1] Includes indirect exposure through exports of intermediate and capital goods via intra-regional trade. Regional aggregates are simple averages of the total exposure of consituent economies.

Figure 1.4. Emerging Asia Intraregional Exports and United States Non-Oil Imports[1]
(Year-on-year percent change)



Sources: Haver Analytics; and IMF, *Direction of Trade Statistics* database.
[1] Includes China, Hong Kong SAR, Korea, Singapore, Indonesia, Malaysia, the Philippines, and Thailand.

Figure 1.5. Share of Advanced Manufacturing Value-Added in GDP
(In percent)



Sources: UNIDO database; and IMF staff calculations.
[1] Advanced manufacturing is high-and-medium-technology manufacturing as defined in UNIDO *Industrial Development Report*, 2009.

greater the cumulative pressure on Asian corporates and banks, potentially trapping Asia in a feedback loop where the weakness of each sector imperils the other.

This chapter reviews recent economic developments in Asia, analyzes the reasons why Asia has been hit so hard by the crisis, and examines the channels through which the global demand and financial shocks have been transmitted to the real economy. It then presents the outlook in 2009 and 2010, and discusses policy options to limit the risks of a further deterioration and prepare the stage for a recovery.

Why Has Asia Been So Hard Hit?

The Other Side of Integration: The Trade Channel

Why has Asia been hit so hard? In broad terms, the answer lies in the nature of Asia's exceptional integration with the global economy. The rapid expansion of intraregional trade over the past decades led many to suggest that Asia could decouple from the business cycle of advanced economies. In reality, a large fraction of trade within the region reflects intra-industry processing and assembly through vertically integrated production chains. Virtually all growth in intraregional trade in recent years can be attributed to parts and components. As emphasized in the April 2008 *Regional Economic Outlook*, correcting for intra-industry trade reveals that the bulk of Asian exports are eventually consumed outside the region, and that the total trade exposure of the region to advanced economies has actually increased over time (Figure 1.3). Indeed, the correlation between U.S. import growth and Asian intraregional export growth has gradually become stronger (Figure 1.4).

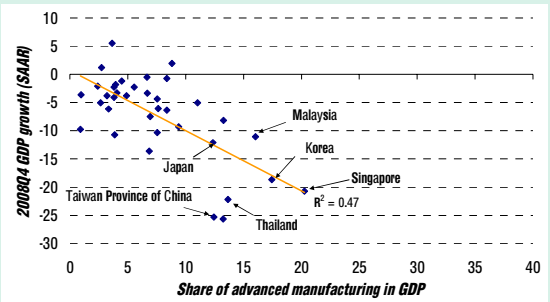
The spillover has been amplified by Asia's product mix, because the region is specialized in sectors particularly affected by the global credit crunch. Much of Asia relies for its growth on high-and medium-technology manufacturing exports—in particular, motor vehicles, electronic goods, and capital machinery (Figure 1.5). These sectors

generally tend to exhibit a stronger cyclical response, owing to the big-ticket size of the products and their heavy reliance on financing. All these features contributed to make these sectors more susceptible to the sharp swings in perceived uncertainty and the availability of credit that has occurred since late 2008. The demand for advanced manufacturing has collapsed—Japanese auto exports, for example, have fallen by nearly 70 percent between September 2008 and March 2009. A comparison of Q4 GDP outturns across advanced and emerging market economies shows that those with a larger share of advanced manufacturing in their GDP have experienced sharper output declines (Figure 1.6). Interestingly, the strength of the correlation decreases if one uses the share of *total* manufacturing in GDP, confirming that *advanced* manufacturing is the key dimension.

Asia's tightly integrated supply chain propagated the external demand shock rapidly across the region. The collapse in demand from advanced economies has been transmitted through the integrated supply chain, with dramatic effects on intraregional trade. Between September 2008 and February 2009, merchandise exports fell at an annualized rate of about 70 percent in emerging Asia—about one and a half times more than during the information technology (IT) sector bust in the early 2000s and almost three times more than during the Asian crisis in the late 1990s.

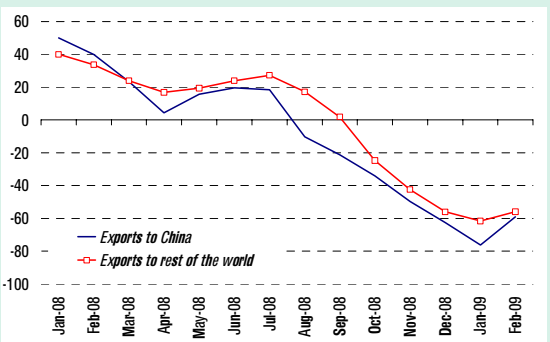
Exports to *China* from the rest of emerging Asia were particularly affected, declining at the rate of 80 percent over the same period (Figure 1.7)—though they have shown signs of stabilizing more recently. This is consistent with the large role of China as an assembly hub for final products in the Asian production networks—as shown by the steady increase of parts and components in China's imports from emerging Asia during the recent past (Figure 1.8). The collapse of exports to China helps explain why economies like *Hong Kong SAR* and *Taiwan Province of China* have been broadsided—exports to China account for about 20 percent and

Figure 1.6. Share of Advanced Manufacturing Value-Added in GDP and 2008Q4 GDP Growth
(In percent)



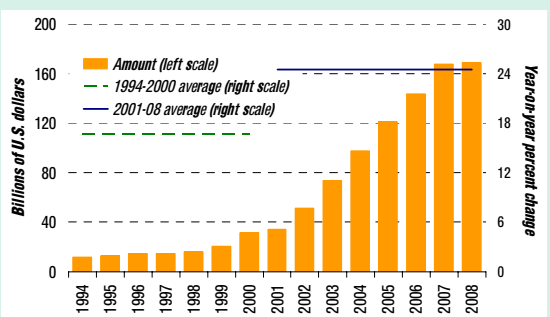
Sources: UNIDO database; and IMF staff calculations.
[1] Advanced manufacturing is high-and-medium-technology manufacturing as defined in UNIDO *Industrial Development Report*, 2009.

Figure 1.7. Emerging Asia (Excluding China and India): Direction of Exports
(3-month percent change of 3-month moving average, SAAR)



Sources: CEIC Data Company Ltd; and IMF staff calculations.

Figure 1.8. China: Imports of Parts and Components[1]



Sources: CEIC Data Company Ltd; and IMF staff calculations.
[1] Comprises machinery, equipment, and miscellaneous manufacturing articles.

45 percent of their total exports, respectively, compared with 10 percent on average for the other economies in the region.

Meanwhile, other Asian economies not so tightly linked to the global supply chain, such as the commodity exporters and low-income countries (see Box 1.1), initially held up better but have been also affected by the collapse in resource prices and the resulting terms of trade shock.

The Other Side of Integration: The Financial Channel

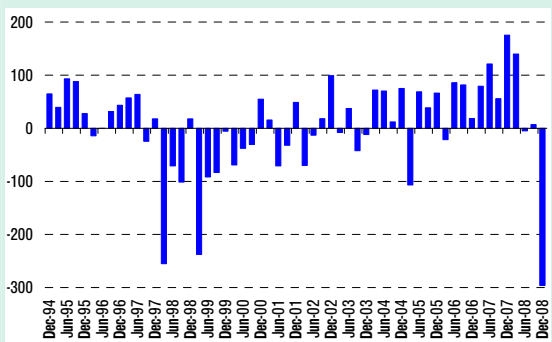
Asia was also expected to be insulated on the financial side. Financial institutions in Asia were believed to be well capitalized, with only limited exposure to U.S. subprime securities and little involvement in high-risk mortgage lending practices despite the property market boom in some economies in the region. In the end, all of this proved true. The subprime crisis did not pose any direct threat to Asian banking systems, nor did the recent decline in house prices in these economies. However, the indirect effects of global financial turmoil have proved exceedingly strong.

This is because Asia's financial ties with the rest of the world have deepened over the past decade, exposing the region to the forces of global deleveraging. In particular, cross-border bank flows to the region and corporate borrowing on international bond markets increased significantly; Asian banks have generally expanded their reliance on wholesale funding; and the share of foreign equity securities held by Asian residents and of Asian securities held by foreigners has soared (see *Regional Economic Outlook*, April 2008). Asia's greater participation in international financial markets has played a key role in fostering growth in the region. However, the earlier trends are now working in reverse, leading to a substantial tightening of external financing conditions. In particular:

- International bank flows to Asia turned negative, as escalating losses are pushing advanced economies' banks to reduce their exposure to emerging markets, either directly or through their foreign affiliates (Figure 1.9).

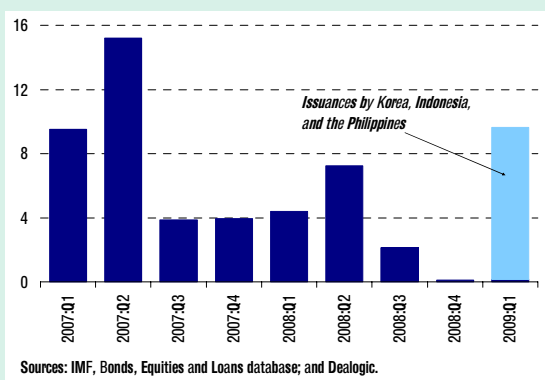
- Access to external bond financing has become much more difficult. Only sovereigns and the highest-rated companies are able to borrow and even then only at high spreads, though a spurt of such borrowing took place in the first quarter of 2009. For example, the *Philippines*, *Indonesia,* and *Korea* have successfully issued sovereign bonds, and Australian and New Zealand banks have issued government-guaranteed bonds. (Figure 1.10).

Figure 1.9. Changes in International Claims of Reporting Banks vis-à-vis Asia
(Adjusted for exchange rate changes; in billions of U.S. dollars)



Source: Bank for International Settlements, *Locational Banking Statistics*, April 2009.

Figure 1.10. Emerging Asia: External Bond Issuances
(In billions of U.S. dollars)



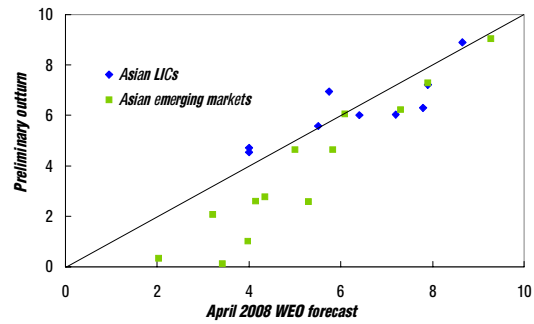
Sources: IMF, Bonds, Equities and Loans database; and Dealogic.

Box 1.1. How Did the Crisis Affect Low-Income Countries in Asia?

Little Initial Impact . . .

While Asian emerging markets were clearly feeling the pinch in the last quarter of 2008, growth in Asian low-income countries (LICs) came in broadly as expected, and the external positions of many countries actually improved as fuel prices tumbled and food prices stabilized.[1] The delayed impact was mostly due to the indirect nature of the transmission of the financial crisis. Growth was initially sheltered by LICs' lower trade integration and their export of lower-value-added products. Moreover, LICs were less vulnerable to the initial impact of the global financial shock—reflecting the limited size, depth, and overall development of LIC financial markets as well as lack of market access. Moreover, official financing of LICs—largely concessional—held up, and in some cases increased, in sharp contrast to the severe reduction in private inflows to emerging and developed economies.

Asian Growth: April 2008 WEO Projection and Outturn
(In percent)



Sources: IMF, WEO database; and staff calculations.

. . . But the Crisis Is Now Hitting

After showing initial resilience, LICs are starting to feel the impact of the global economic crisis.

- Commodity exporters were first to take the hit, as the fall in export prices weakened external and fiscal positions (Lao P.D.R., Mongolia, and Papua New Guinea);
- Slowing growth in more advanced countries is beginning to show up in lower tourist arrivals and spending (particularly in Cambodia);
- Plunging retail sales in the United States are leading to a reduction of garment export orders (Bangladesh and Cambodia) and severe compression of profit margins through aggressive price reductions (Bangladesh, Cambodia, Mongolia, and Sri Lanka);
- Slowing regional growth is reducing low-skilled employment opportunities in emerging markets and developed countries, with detrimental effects on remittances;
- Falling agricultural prices are lowering rural incomes—which still account for a sizable share of GDP in LICs—leading many households back into subsistence agriculture, which does not produce cash income;
- Moderating capital inflows or even reversals of flows back to cash-strapped parent banks is significantly reducing local liquidity in those LICs whose banking systems are dominated by branches of foreign banks; and

Note: The main author of this box is Carol Baker.

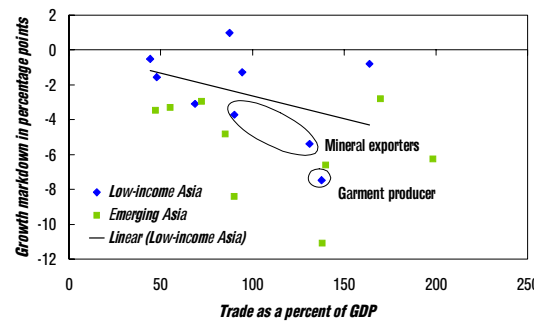
[1] Low-income Asia comprises nine nations eligible for the IMF's Poverty Reduction and Growth Facility (PRGF) not included in the REO sample (i.e., excluding India and Vietnam): Bangladesh, Bhutan, Cambodia, Lao P.D.R., Mongolia, Myanmar, Nepal, Papua New Guinea, and Sri Lanka. GDP data are preliminary estimates and subject to revision.

Box 1.1 *(concluded)*

- Multinationals are delaying, and in some cases curtailing, sizable investment plans in LICs, which depend heavily on foreign direct investment (FDI) for growth and employment (notably in mining and power generation sectors), weighing on growth not only this year but also for years to come (particularly in Lao P.D.R. and Mongolia).

As a result, growth forecasts for Asian LICs have been marked down relative to the April 2008 *Regional Economic Outlook*, albeit less so than for emerging markets, reflecting the lower degree of sophistication of exports in LICs. Among Asian LICs, the magnitude of the markdown is correlated with the share of FDI in GDP (e.g., into the capital-intensive mining sector, which has undergone sharp price reductions) and the share of exports destined for U.S. retail-based industries, such as garments.

Asia: Growth Markdown from April 2008 REO and Total Trade



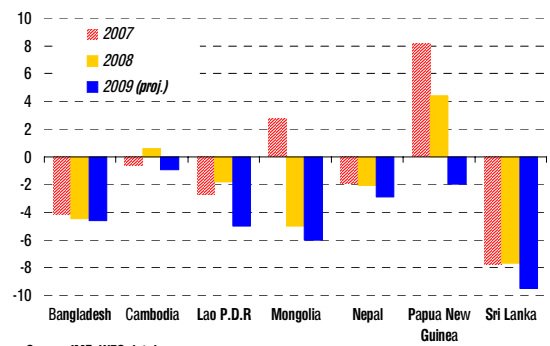
Sources: IMF, WEO database; and staff calculations.

Somewhat surprisingly, more vulnerable Asian LICs—those with comparatively large fiscal and/or current account deficits, low reserves, and generally higher risk of external debt distress—are not necessarily experiencing the weakest near-term growth prospects, as commodity exporters had reduced vulnerabilities over recent years.[2] However, these factors may affect governments' ability to address the crisis with countercyclical measures.

What Room for Policies?

Policymakers in LICs face a difficult tradeoff between supporting growth and employment and safeguarding macroeconomic stability—in particular, the presence of highly vulnerable groups and large development needs must be weighed against stubbornly high vulnerability. Asian LICs face equal challenges, and strides toward reducing poverty made during the global boom are now clearly at risk.[3] High vulnerability together with weak public expenditure management, ineffective monetary transmission mechanisms, and other policy constraints may reduce the scope and effectiveness of countercyclical policies. Moreover, currency depreciation may have little effect in boosting exports when trading partners are contracting.

Low-Income Countries in Asia: Fiscal Balance 2007–09
(In percent of GDP)



Source: IMF, WEO database.

[2] While external debt ratios have come down—much of this due to multilateral efforts such as the Heavily Indebted Poor Country (HIPC) initiative and Multilateral Debt Relief Initiative (MDRI) debt relief—they remain high. According to the most recent Debt Sustainability Assessments, only one Asian LIC is assessed to be at low risk of external debt distress, while four are at moderate risk and three either high risk or in debt distress.

[3] In terms of gross national income, Asian LICs as a group fall at the mean of non-Asian LICs, while they are still far from catching up with emerging Asia—in purchasing power parity (PPP) terms, Asian LICs' per capita GDP remains about 15 percent of that of Asian emerging economies, roughly unchanged from the early 1990s.

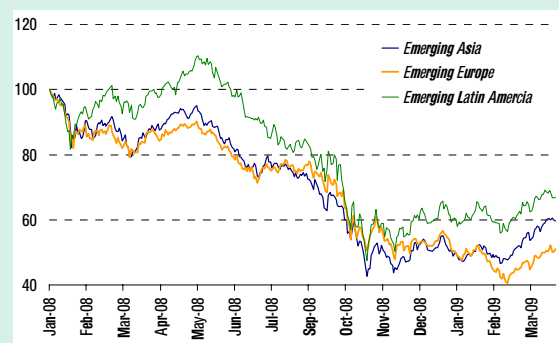
- *Fiscal policy*. Government revenues are coming under strain. The low and narrow revenue base faced by most LIC governments leaves them vulnerable to a reduction in trade and turnover taxes, and in some cases lower tax payments by a few large multinationals operating in their countries.[4] In the absence of additional sources of finance, domestically financed public investment programs are coming under pressure—in cases where adjustment is not being made, the pressure risks spilling over onto international reserves. In Asia, the substantially weaker revenue outlook (as in Mongolia, Lao P.D.R. and Papua New Guinea) together with concerns about the quality of additional spending and about debt sustainability (Bangladesh, Lao P.D.R., Nepal, and Sri Lanka) would indicate that there is little scope for further fiscal stimulus by governments. In most cases, a reprioritization of spending toward strengthening the social safety net is the most viable response. However, countries that have built cash buffers during the recent upcycle (such as Cambodia) may have somewhat more space for expanding overall spending.

- *Monetary policy*. In LICs the role of financial markets in providing credit in support of growth is limited by a lack of market development and financial depth. Moreover, ineffective (and in some cases nonexistent) policy instruments and weak institutions limit the capacity of the central bank to conduct monetary operations. In Asia, the limited scope for countercyclical easing is also because of dollarization, weak financial institutions, and exchange rate pegs. That said, the decline in food and fuel prices have reduced inflationary pressures in many LICs and liquidity conditions have tightened (owing to both lower foreign inflows and slowing deposit growth) at the same time that official domestic financing requirements are rising, potentially crowding out the private sector. Cautious easing in some cases may therefore be warranted, provided macroeconomic stability is not placed at risk.

[4] Indeed, forecasts for 2009 fiscal deficits in LICs globally have been marked down from the slight surplus (driven mostly by commodity-producing Africa) envisioned in April 2008 to a deficit of more than 3 percent of GDP in March 2009, generally excluding discretionary measures. Most LIC governments have yet to develop or implement discretionary fiscal measures.

- Regional markets experienced net equity outflows through mid March 2009, as global institutional investors and hedge funds tried to reduce exposure to emerging markets in general.[1] As a result, equity prices have been under pressure—despite a modest rebound from the lows reached in February 2009, the Morgan Stanley Capital International (MSCI) emerging Asia index remains about 40 percent below its level at the beginning of 2008, broadly in line with other world regions (Figure 1.11). The notable exception is the Chinese stock market, which has been supported by early signs that fiscal stimulus measures are beginning to gain traction.

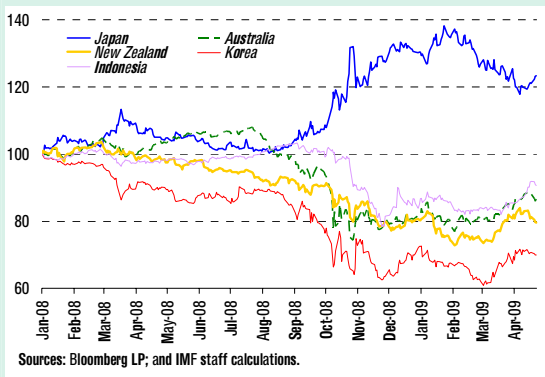
Figure 1.11. Emerging Markets: Stock Market Performance
(Morgan Stanley local currency index, January 1, 2008=100)



Sources: Bloomberg LP; and IMF staff calculations.

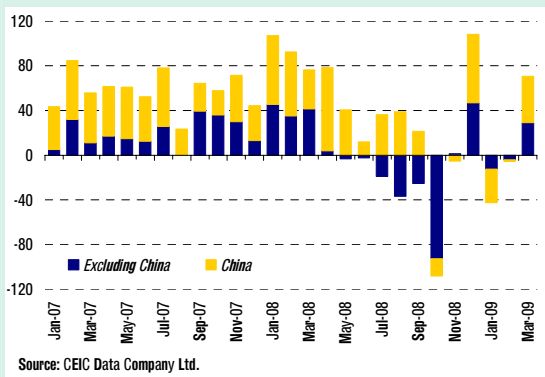
[1] After turning in their worst performance on record, hedge funds are faced with record redemptions. At end 2008, more than 1,000 hedge funds based in Asia managed some US$130 billion, nearly a third less than in 2007. For *Hong Kong SAR*, industry reports suggest about 15 percent of locally incorporated hedge funds are closing each quarter.

Figure 1.12. Selected Asia: Nominal Effective Exchange Rate
(January 1, 2008=100)



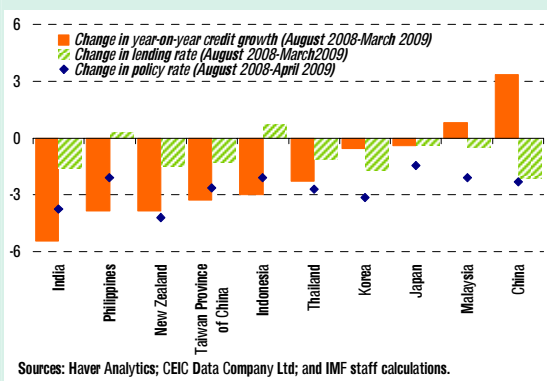
Sources: Bloomberg LP; and IMF staff calculations.

Figure 1.13. Emerging Asia: Changes in Foreign Exchange Reserves
(In billions of U.S. dollars)



Source: CEIC Data Company Ltd.

Figure 1.14. Selected Asia: Changes in Growth of Credit to Private Sector and Interest Rates
(In percentage points)



Sources: Haver Analytics; CEIC Data Company Ltd; and IMF staff calculations.

- Reduced global risk appetite has also caused regional currencies to depreciate (Figure 1.12). In particular, the Korean won and the Indonesian rupiah have depreciated about 20 and 10 percent in nominal effective terms between September 2008 and March 2009, respectively, thereby supporting exporters' profits and current account balances. The Australian and New Zealand dollars have also been severely hit by the decline in commodity prices. By contrast, the Japanese yen has appreciated by about 25 percent in nominal effective terms during the same period, following the unwinding of carry trade positions and narrower interest rate differentials against key currencies—and contributing to the sharp turnaround in Japan's trade balance, back into negative territory after about 30 years of uninterrupted surpluses.

- In general, exchange market pressures in the region have been met with only a limited degree of foreign exchange intervention, which in most cases has aimed at smoothing volatility. Consequently, after the sharp decline observed during the peak of the global financial turmoil late last year, foreign reserves have stabilized so far in 2009 (Figure 1.13).

- Shortages in dollar funding led to tensions in regional money markets in late 2008, requiring massive injections of liquidity by monetary authorities—including by extending the range of collateral accepted for central bank facilities, expanding access to central bank discount windows, and establishing foreign currency swaps lines with local banks. These policies have generally succeeded in alleviating local liquidity pressures, as shown in a decline in TED spreads from the peak last year. Still, long-term dollar funding remains scarce, as banks are still wary of taking on longer term credit risk.

Domestic financing has also come under stress, as risk aversion and the desire to preserve capital have induced banks to tighten lending standards. Bank credit to the private sector has continued to grow

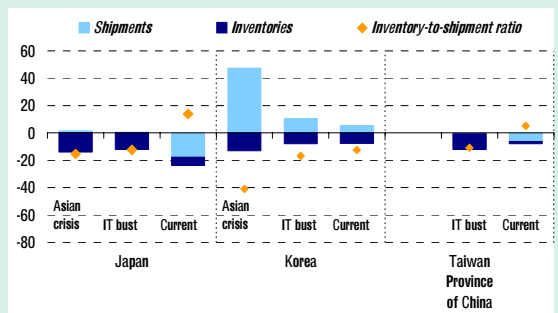
but at a lower pace than before, with the notable exception of China, where quantity restrictions on credit growth have been loosened. In addition, lending rates remain high despite aggressive cuts in policy rates (Figure 1.14). Many small and medium-sized enterprises (SMEs), which borrowed heavily during the previous decade to expand their activities as suppliers to the larger manufacturing enterprises, are facing a financing squeeze, as banks have started to rein in their lending to these firms just as the earlier loans are falling due. Trade finance was also initially affected, as more aggressive demand for up-front deposits and credit guarantees from importers hampered export activities in the last quarter of 2008. Since then, however, the situation seems to have improved with firms reporting less difficulty in obtaining trade credit. Nonetheless, this segment of the credit market remains a channel through which renewed banking strains could further undermine trade and production (see Box 1.2).

External Shocks Have Rapidly Fed through to Domestic Demand

Asian corporates have reacted to the slump in global demand by cutting production and reducing inventories. For example, in the first two months of 2009 industrial production in *Japan* and the *newly industrialized economies (NIEs)* declined at rates above 50 percent on a three month's annualized rate basis—a record decline. While the cutbacks in production have managed to bring inventories down, the drop in shipments has been so severe that excess inventories (relative to sales) have jumped to unprecedented levels in some economies, like *Japan* and *Taiwan Province of China*. More recently, these ratios have started to come down, particularly in *Korea*, where the reduction of inventories has been accompanied by an increase in shipments, helped by the very weak currency (Figure 1.15). Nevertheless, despite the aggressive pace of inventory reduction, the size of the adjustment needed to return to precrisis inventory to shipments ratios is such that, absent a sharp rebound of global demand, inventory de-stocking will likely depress GDP growth over the next few quarters.

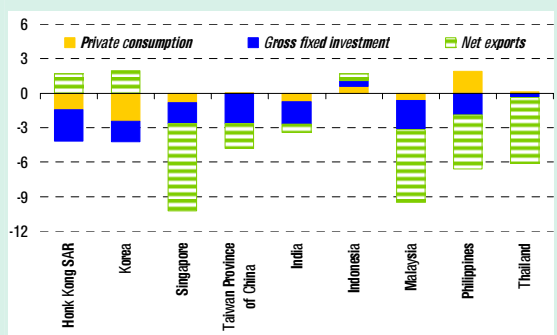
Private investment has also slowed significantly. The decline in fixed capital formation subtracted about 1½ percentage points from GDP growth in *emerging Asia* (excluding *China*) during the last quarter of 2008, compared to 2½ percentage points subtracted by the decline in net exports (Figure 1.16). The fall was particularly sharp in *Japan* and the *NIEs*, as plunging external demand created large excess capacity in manufacturing sectors and caused corporate profitability and confidence to plummet. As a result, business fixed investment declined by about 15 percent (year-on-year) in the last quarter of 2008 on average in *Japan* and the *NIEs*—close to the peak declines during the Asian crisis and the IT-related recession. Business investment has even suffered in countries less

Figure 1.15. Selected Asia: Inventories and Shipments
(In percent change from peak to trough)[1]



Sources: Haver Analytics; CEIC Data Company Ltd; and IMF staff calculations.
[1] For the current episode, change between December 2008 and February 2009 for Japan and Korea; and between December 2008 and January 2009 for Taiwan Province of China.

Figure 1.16. Selected Emerging Asia: Contributions to 2008Q4 GDP Growth
(In percentage points, quarter-on-quarter seasonally adjusted)



Sources: CEIC Data Company Ltd; and IMF staff calculations.

Box 1.2. The Global Financial Crisis and Trade Finance in Asia

The dramatic fall in both exports and imports across the region has raised the question of the role played by the contraction in trade finance. Although less risky than other forms of cross-border lending, the short-term nature of trade financing makes it vulnerable to shifts in risk aversion. For example, sharp declines in trade finance were reported in Russia, the Philippines, Thailand, and Korea in 1997–98, and in Turkey in 2000–01. Bank-financed trade credits also declined by as much as 50 percent in Brazil and Argentina in 2002. Is a trade finance crunch behind the recent collapse of Asia's trade?

Searching for Evidence

Answering this question is difficult. There are no comprehensive data on trade finance. Lack of systematic information in part reflects the nature of the business (relationship banking) and in part the wide diversity of financing instruments (ranging from business-to-business credits, to bank loans and letters of credit, which are off-balance-sheet items).[1] An additional complication is that these instruments are often close substitutes, so that partial information may not be representative of broader sectoral trends. For example, a fall in the reported issuance of letters of credit may be associated with greater recourse to alternative forms of finance or cash-in-advance arrangements, with little impact on trading activities.[2]

Recent industry surveys have tried to fill the information gap. A survey of some 40 banks done jointly by the IMF and the Bankers Association for Finance and Trade in early 2009 suggests a worldwide decline in the value of trade finance (intermediated through letters of credit, export credit insurance, and short-term export working capital) between January 2008 and October 2008, as well as an increase in the cost of trade credit. The impact appears to have been broadly similar across regions. Comparable results were captured by a March 2009 survey of the International Chamber of Commerce. Both surveys are, however, short on quantitative details and suffer from low response rates and limited country coverage.

Some available economy-specific data, although fragmented, throws more light on developments in Asia. The volume of letters of credit in both Korea and Taiwan Province of China has collapsed; balance of payments data on trade credit for Japan and Korea (which encompasses both bank-intermediated and business-to-business credit) point to a sharp fall in foreign financing to local firms; and in Hong Kong SAR, bank loans for trade finance have recorded the steepest decline since the Asian financial crisis. For emerging Asia as a whole, syndicated loans for trade finance—a segment where large international banks play a key role—have contracted at the fastest pace on record and more than the world average. Overall, Asia appears to have experienced a significant reduction in trade financing.

Supply or Demand?

Reduced lending, however, may be the result rather than the cause of less international trade. For example, a drop in the G-3's demand for Asia exports would naturally lead to less demand for trade credit, directly and along the intraregional supply chain.[3] So would significantly lower commodity prices, which not only reduce the value of required import financing but could also trigger strategic behavior by importers keen on forcing contract renegotiations.

In fact, there are reasons to believe that the bulk of the decline in trade finance can be explained by shifts in the demand for credit rather than in its supply:

Note: The main authors of this box are Olaf Unteroberdoerster and Harm Zebregs.

[1] Moreover, there are variations in periodicity and timeliness of reporting among various data sources.

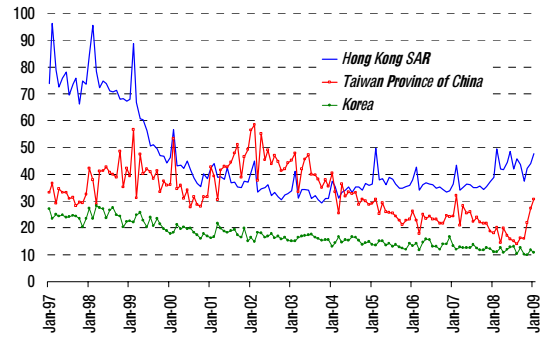
[2] In fact, in recent years, the use of relatively costly letters of credit has steadily declined. According to various industry sources, about 80 percent or more of all international trade is financed through working capital loans, overdrafts, and business-to-business credit, for which a breakdown by their different uses does not exist.

[3] Another factor that is likely to have reduced the demand for trade financing is the steep drop in commodity prices since the second half of 2008.

- First, according to industry sources, banks in the region continue to lend to established customers and have reportedly maintained broadly the same credit limits as in the first half of 2008, except for smaller high-risk customers.
- Second, a recent survey of 500 firms by the Hong Kong Trade and Development Council shows that a key concern among respondents is the lack of foreign demand, while the availability of trade credit is one of the lesser worries.
- Third, if Asia could not meet G-3 demand for goods owing to financing constraints, shortages would have developed and prices of imported goods in the G-3 would have gone up. There seems to be no evidence, however, that this is happening.

Tellingly, the ratio of trade credit to total trade has increased in recent months in Hong Kong SAR and Taiwan Province of China, while it has remained broadly stable in Korea. Although not conclusive, this evidence supports the view that the availability of trade credit has not been the main driver of collapsing trade flows.

Trade Credit
(In percent of total trade)



Sources: CEIC Data Company Ltd; and IMF staff calculations.

This said, Asia is far from being in a business-as-usual environment. Many small and medium-sized enterprises (SMEs) are struggling with the (globally) higher cost of funds. Conditions on working capital and overdraft loans have tightened, further reducing the availability of resources to finance trade. The cost of verifying letters of credit has risen considerably for a number of countries, including India and Korea. So have the fees charged by banks to exporters for insurance against nonpayment by importers. Reportedly, these increases reflect increased counterparty risk as well as capital constraints within banks.[4]

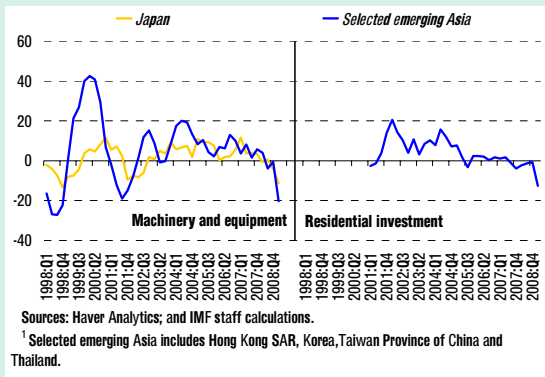
In response, governments in several economies in the region have announced supporting measures. In China, Hong Kong SAR, India, Indonesia, Korea, Thailand, and Singapore, governments have increased funds and guarantees for export finance, including through programs targeted at SMEs. Early signs suggest these programs are helping companies maintain access to trade credit.

[4] Financing charges have reportedly increased because banks that are adopting Basel II have to apply higher risk weights to trade loans in the absence of internal risk data that would justify lower weights.

affected by the global demand shock, such as *India,* because external financing has dried up and banks have became more conservative in their lending standards. At the same time, a downturn in property markets in a number of countries has contributed to a severe drop in residential investment (Figure 1.17).

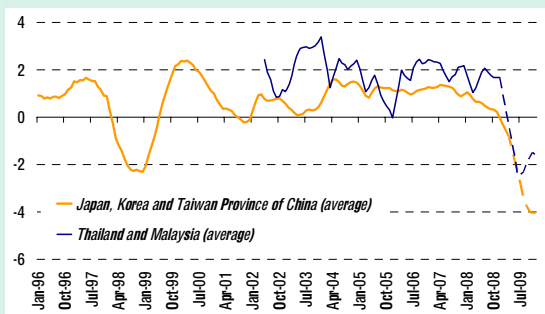
Private consumption has been relatively more resilient. The decline in private consumption subtracted only about an average of ½ percentage point from regional GDP growth in the last quarter of 2008. That is because private consumption has been supported by real income gains from lower commodity prices, notably oil and food. Moreover, households have been able to draw down on their high stock of savings in the banking system, which dwarfs investment in the stock market. In countries where this buffer has been less effective—for example, where relatively highly leveraged

Figure 1.17. Selected Asia: Real Private Investment in Machinery and Equipment and Real Residential Investment
(Year-on-year percent change)



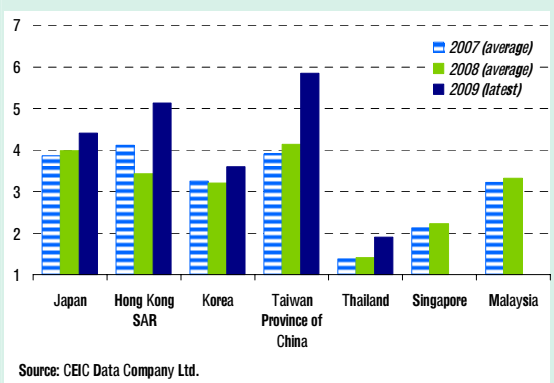
Sources: Haver Analytics; and IMF staff calculations.
[1] Selected emerging Asia includes Hong Kong SAR, Korea, Taiwan Province of China and Thailand.

Figure 1.18. Selected Asia: Employment Growth[1]
(Year-on-year; in percent)



Sources: CEIC Data Company Ltd; and IMF staff estimates.
[1] Dotted lines are prediction from a vector auto-regression model with industrial production and employment growth.

Figure 1.19. Selected Asia: Unemployment Rate
(In percent)



Source: CEIC Data Company Ltd.

households have been hit by tighter access to credit and falling house prices, as in *Korea*—cutbacks in household spending have been more severe.

The impact on household consumption from the crisis has also been moderated by the delayed adjustment of employment levels. While Asian firms have reduced their investment plans and slashed production, they have so far attempted to preserve employment and limited redundancies to part-time workers. However, the longer the demand shock persists, the fewer alternatives firms will have but to restructure, and the region could see a wave of consolidation through mergers and acquisitions. Looking at the historical relationships between industrial output and employment growth in selected emerging Asian economies suggests that the current downturn might push employment growth down by up to 4 percentage points over the next six months, implying rates of employment contraction close to those during the Asian crisis (Figure 1.18). Indeed, unemployment has already started to climb across the region (Figure 1.19).

Domestic demand has remained resilient in China, but with little benefit to other economies in the region, as shown by the sharp decline in Chinese imports from the rest of Asia. This is largely because policy efforts taken to shield the Chinese economy from the global crisis have shifted the composition of demand away from manufacturing investment, which largely uses imported machinery and equipment, and toward public investment, which relies mostly on domestic inputs. Moreover, the resilience of household consumption has not had a large trade impact, as consumer goods account for only a small share of imports.

A Long Recovery Ahead

Our Outlook

The synchronized nature of the global downturn and Asia's strong reliance on external demand weigh against the prospects of a speedy turnaround of economic activity in the region. The current crisis vividly illustrates that, far from having "decoupled" from the global economy, Asia has experienced

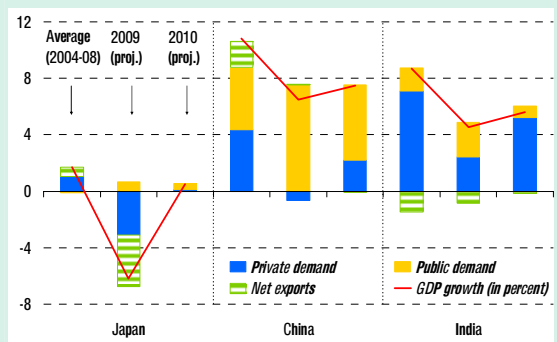
accelerator effects at work. Hence, despite governments' efforts to invigorate domestic demand, the prospects of a recovery at this stage hinge critically on a rebound in global activity.

The April 2009 *World Economic Outlook* expects global growth to gradually recover in early 2010, but to remain well below potential until the end of that year. The timing of the recovery depends on progress in stabilizing financial market conditions in mature markets. It will take some time to deal with bad assets and restore confidence in bank balance sheets, especially against the background of a deepening downturn that is expanding losses on a wide range of bank assets. Nevertheless, comprehensive policy steps to improve credit conditions, together with sizable fiscal and monetary support, will eventually create the conditions for a recovery in advanced economies next year. The key question for Asia is: will the region need to wait for this to happen before returning to precrisis growth rates?

Historical experience shows that Asia will need improved demand from advanced economies to escape the crisis. Chapter 2 of this *Regional Economic Outlook* looks more in detail at previous recession episodes in the Asia and Pacific region since 1980 and finds that the path to recovery in Asia tends to be led by a strong rebound of exports. In particular, strong global demand and currency depreciation allowed a rapid, V-shaped rebound of the region from both the financial crisis of the late 1990s and the IT bust episode of early 2000. This time around, though, there is no economic momentum elsewhere in the world to create demand for Asia's products. Hence, net exports' contribution to GDP growth is expected to cease over the next two years (Figures 1.20 and 1.21).

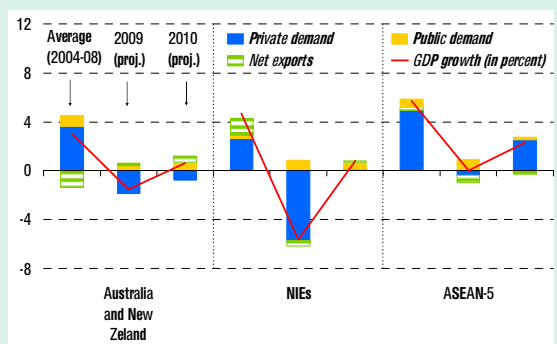
Private domestic demand will also remain generally subdued, as the external shocks continue to spill over onto private investment and consumption. Private gross fixed investment will remain depressed under the pressure of financing constraints and excess capacity accumulated over the recent past in key tradable sectors. Indeed, econometric evidence linking exports to domestic demand in selected Asian economies shows that it may take up to about a year and half for investment growth to return to its precrisis rate in countries with a large trade exposure to advanced economies (such as *Korea, Malaysia, Singapore,* and *Thailand*). Meanwhile, private consumption is expected to remain subdued as long as rising unemployment, weak confidence, and low asset prices (including house prices, see Box 1.3) weigh on households' spending plans. In general, the monetary easing and large fiscal transfers already approved will help limit the damage to the economies, and are expected in some cases (e.g., *Japan* and *Malaysia*) to bring growth into positive territory for a few quarters. However, they will not be enough to generate sustained growth in the region.

Figure 1.20. Japan, China, and India: Contributions to Growth
(In percentage points)



Source: IMF, WEO database.

Figure 1.21. Selected Asia: Contributions to Growth
(In percentage points)



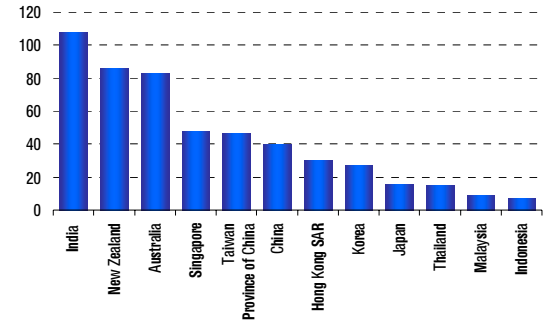
Source: IMF, WEO database.

Box 1.3. Housing Prices: Could Further Declines Threaten Growth?

Asia has experienced substantial housing price run-ups in recent years. Now, prices have begun to slide again. Could these price declines threaten consumption and growth? The answer varies by country. Led by India, New Zealand, and Australia, several Asian economies have seen large real appreciations in their housing markets over the past 10 years. Run-ups in local markets have been even stronger than suggested by average national prices as shown here. Examples include cities like Shanghai or Beijing, or the high-end segments in Hong Kong SAR, Korea, and Singapore, all of which have rushed ahead of their respective national averages. At the same time, some countries in Asia have shown little movement in real house prices, including Japan and Thailand, where real estate markets were still reeling in the early 2000s from the bursting of previous bubbles. Moreover, Asia as a whole has not witnessed the kind of housing bubbles seen in other regions, such as the United States and Western and Eastern Europe (see IMF, 2008b).

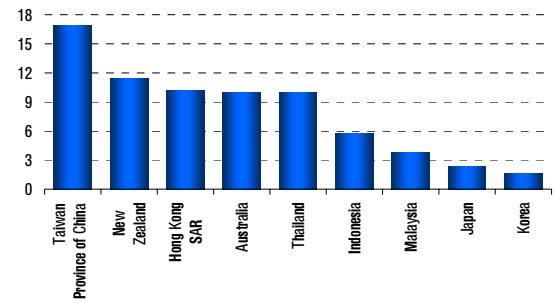
Some of the recent price appreciation cannot be explained by fundamentals. While strong income and population growth in the region account for part of the real appreciation, it is likely that another part can be traced back to the excessive liquidity and risk-taking that characterized the global economy up to 2007. Hence, it may not be sustainable. In order to assess how much of the increase in regional house prices is not explained by fundamentals, house price growth in selected Asian economies was modeled as a function of an affordability ratio (the lagged ratio of house prices to disposable incomes), growth in disposable income per capita, short-term interest rates, long-term interest rates, credit growth, and changes in equity prices and working age population. The unexplained increase in house prices (house price gaps) is interpreted as a measure of "overvaluation" and, therefore, identifies which countries may be particularly prone to a correction in house prices. Econometric estimates of the house price gap show that five economies in the region had gaps of about 10 percent or more at recent peaks.[1]

Asia: Real House Price Increases from 1999 to 2008
(In percent)



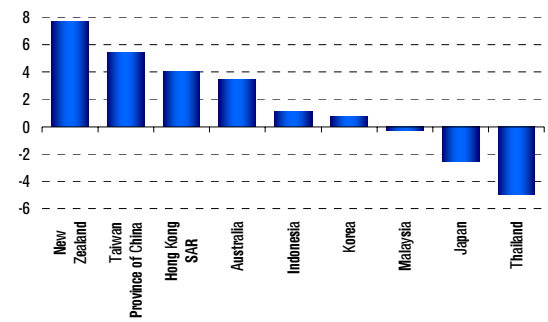
Sources: Haver Analytics; and IMF staff calculations.
[1] Latest data are available up to 2007 for India and Thailand.

Asia: House Price Gaps at Peak[1]
(In percent)



Sources: Haver Analytics; and IMF staff calculations.
[1] Difference between real house prices at post-2005 peak and the estimate of their fundamental values.

Asia: Current House Price Gaps[1]
(In percent)



Sources: Haver Analytics; and IMF staff calculations.
[1] Difference between latest real house prices and the estimate of their fundamental values.

Note: The main authors of this box are Jacques Miniane and Dan Nyberg.

[1] House price gaps are not reported for India, China, and Singapore, due to the small samples available for the estimation for these countries. Gaps are estimated through separate regressions for each economy. For Australia, immigration growth and mortgage rates are included among the regressors.

Recent price declines have helped narrow the gap, though in some cases not fully. Prices have come down substantially over the last year and a half, notably (but not exclusively) in Hong Kong SAR, New Zealand, and Taiwan Province of China, where real prices are 20 percent, 15 percent, and 11 percent lower than the peak, respectively. Following these declines, there is little evidence that real house prices are "overvalued" relative to fundamentals in Asian economies.

Is this enough to exclude sizeable effects of house price drops on consumption and GDP growth in the region? House price declines can affect consumption both because households feel poorer but also because the collateral they can pledge against credit is smaller. Although there is a large body of literature about the effect of house price changes on private consumption in advanced economies, such studies are scarce for emerging market economies. Previous cross-country studies (IMF, 2008c) suggest that elasticities tend to be higher, at least in the short run, in countries with more developed housing finance systems that make it easier for households to access housing-related credit, for example by allowing them to use houses as collateral. Consistent with these findings, some recent studies (Peltonen, Sousa, and Vansteenkiste, 2009) found that housing wealth effects have increased in emerging Asia over the recent past, reflecting increased innovations in many regional housing finance markets.[2] As a result, elasticities of private consumption growth to house prices in emerging Asian economies are estimated to be relatively close to those in advanced economies with flexible housing mortgage markets, such as the United States and the United Kingdom. In the case of New Zealand and Taiwan Province of China, remaining gaps and short-run elasticities from the table would suggest a decline in consumption by between ¼ and ½ percentage points. In other emerging Asian economies, both lower gaps and short-run elasticities would imply smaller effects on consumption, of about ¼ percentage point or less.

Marginal Propensity to Consume out of Housing Wealth

	Emerging Market Asia[1]	United States	United Kingdom
Range of short-run estimates	0.03-0.04	0.02-0.12	0.06
Range of long-run estimates	0.08-0.14	0.09-0.14	0.07

Sources: Carroll, Otsuka, and Slacalek (2006); Peltonen, Sousa, and Vansteenkiste (2009); and IMF, *World Economic Outlook* (2008).
[1] Includes China, Hong Kong SAR, Indonesia, Korea, Malaysia, Singapore, Taiwan Province of China, and Thailand.

While these are relatively modest effects, two types of consideration would suggest prudence in downplaying risks to growth from house price declines in Asia. First, long-run elasticities of housing wealth are generally estimated to be larger than short-run elasticities, suggesting that the effect of price declines in recent quarters may have yet to fully play out. Second, historical experience suggests that property prices can fall well below levels consistent with fundamentals, and that the burst of property valuation bubbles can have important knock-on effects on consumption.

[2] For estimates of housing wealth elasticities in Asia, see Edelstein and Lum (2004), Cheng and Fung (2008), and Peltonen, Sousa, and Vansteenkiste (2009).

Overall, we expect growth for Asia to decelerate to 1.3 percent in 2009 from 5.1 percent in 2008, and to return to 4.2 percent—still below potential—in 2010. In particular:

- In industrial Asia, *Japan* is expected to suffer a severe recession throughout 2009, experiencing its worst annual performance on record (Table 1.1). The strong fiscal response to the crisis will bring quarterly GDP growth back to positive territory in the second half of this year, but underlying growth will remain weak as the export collapse spills over to private domestic demand. Sustained positive growth will reemerge only in late 2010, after the external environment improves. Meanwhile, large excess capacity in key manufacturing and export sectors, such as cars and electronics, means the production adjustment will be particularly difficult, especially since Japan's financial conditions have become tighter

Table 1.1. Asia: Real GDP
(Year-on-year percent change)

	2008	2009	2010	2009	2010
		Latest projections		Fourth quarter[1]	
Industrial Asia	**-0.2**	**-5.4**	**0.5**	**-2.4**	**-0.3**
Japan	-0.6	-6.2	0.5	-2.7	-0.6
Australia	2.1	-1.4	0.6	-1.1	1.1
New Zealand	0.3	-2.0	0.5	-1.1	1.1
Emerging Asia	***6.9***	**3.3**	**5.4**	**4.4**	**6.0**
NIEs	***1.5***	***-5.6***	***0.8***	***-1.5***	***2.0***
Hong Kong SAR	2.5	-4.5	0.5	-3.3	3.2
Korea	2.2	-4.0	1.5	0.0	2.4
Singapore	1.1	-10.0	-0.1	-6.9	1.9
Taiwan Province of China	0.1	-7.5	0.0	-1.6	1.0
China	9.0	6.5	7.5	6.9	7.9
India	7.3	4.5	5.6	4.8	5.9
ASEAN-5	***4.9***	***0.0***	***2.3***	***1.2***	***3.3***
Indonesia	6.1	2.5	3.5	2.3	4.0
Malaysia	4.6	-3.5	1.3	-0.3	1.5
Philippines	4.6	0.0	1.0	-2.1	3.4
Thailand	2.6	-3.0	1.0	1.2	2.8
Vietnam	6.2	3.3	4.0	3.7	4.3
Emerging Asia excl. China	**4.8**	**0.1**	**3.2**	**1.8**	**4.0**
Emerging Asia excl. China and India	**3.1**	**-2.9**	**1.6**	**-0.2**	**2.6**
Asia	**5.1**	**1.3**	**4.3**	**2.7**	**4.5**

Source: IMF, *WEO* database.
[1] Change from fourth quarter of preceding year.

than during the banking crisis of the 1990s (see Box 1.4). *Australia and New Zealand* will also see negative output growth on average in 2009, but are expected to return to positive growth toward the end of this year, thanks to their strong policy response, healthy financial sectors, and exchange rate depreciation.

- Like *Japan*, the *NIEs* are expected to experience a long and severe recession, owing to their high exposure to the global advanced-manufacturing cycle and their extensive global financial links. Among these economies, *Korea* is expected to rebound earlier and more strongly, as exports will benefit from the sharply depreciated exchange rate and domestic demand will be supported by the forceful policy stimulus.

- Among the ASEAN-5, *Thailand*, *Malaysia,* and the *Philippines* are going to be hit more severely by the global crisis, owing to their higher dependence on advanced manufacturing exports and large spillovers from the external sector to domestic demand, affecting consumers and investor confidence. In *Thailand* and *Malaysia*, growth will be negative on average in 2009 and will resume firmly only next year, as the effect of strong fiscal efforts eventually complement the improvement in global conditions. Growth is expected to be zero in 2009 in the *Philippines*, as waning remittances—an important driver of consumption—will dampen domestic demand. By contrast, growth in *Indonesia* and *Vietnam* will remain positive over the next two years, reflecting the relatively lower share of advanced manufacturing in these economies and the higher contribution to growth from domestic demand. However, these economies, too, are forecast to see a substantial deceleration in growth from 2008 and output gaps over the next two years.

- For *India,* we expect growth to slow markedly in 2009 before starting to rebound toward year end. Although its still relatively low dependence on exports will contain the transmission of the global demand shock, India will be particularly affected by the financial shock, because the strong investment growth in recent years owed much to favorable credit conditions. With external financing having tightened and the domestic credit cycle having turned, investment growth is expected to be severely curtailed, and so is GDP growth.

- In *China*, GDP growth will also slow down notably from the average pace of the recent past. Still, the aggressive policy response is expected to support domestic demand and maintain growth at rates close to the level authorities consider necessary to generate jobs consistent with social stability. In particular, the massive program of public investment initiated late last year is expected to compensate for the decline in private investment and absorb productive resources no longer utilized in the tradable sector.

Box 1.4. Financial Conditions in Key Asian Economies

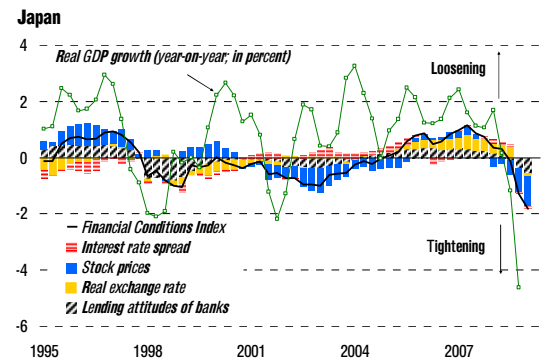
Under normal circumstances, financial conditions faced by households and corporations can be assessed well on the basis of the central bank policy rate and the exchange rate. However, such an approach would seem inappropriate at the current juncture as the global financial turmoil has often been accompanied by marked increases in risk premium, declines in asset prices, and tighter access to credit. Indeed, while all Asian economies have been hit considerably by the collapse in external demand, the spillovers to domestic financial conditions have differed markedly across the region reflecting different degrees of financial openness, financial sector vulnerabilities, and monetary policy responses.

To assess the recent evolution of financial conditions in an analytical framework, this box constructs a Financial Conditions Index (FCI) for four major Asian economies: Australia, China, Japan, and Korea.[1] The index is calculated from country-specific models which link GDP growth to a number of financial indicators such as interest rates, credit growth, lending attitudes of banks, exchange rate, and stock market prices, while controlling for relevant external factors such as oil prices, global growth and global financial conditions.[2]

Based on these FCIs, the figures confirm that the net effect of global financial turmoil and policy responses on domestic financial conditions has differed widely across Asia:

- In Japan, despite a reduction of the policy rate to 0.1 percent, financial conditions have become tighter than they were during the banking crisis of the 1990s, amplifying the impact of lower external demand on the local economy. Tightening financial conditions have reflected a variety of factors: stricter lending attitudes of banks—in part due to banks' losses on their equity holdings; rapid real exchange rate appreciation; low equity prices; and elevated credit spreads.[3] Japan's monetary policy options to deal with these developments have been limited by the low level of policy rate at the onset of the global financial turmoil (0.5 percent). The authorities have taken steps to improve availability

Financial Conditions Index in Selected Asian Economies



Source: IMF staff estimates.
Note: Vertical bars indicate contributions to the Financial Conditions Index.

Note: The main author of this box is Martin Sommer.

[1] The recent literature on the Financial Conditions index includes Gauthier, Graham, and Liu (2004), Lack (2003), English, Tsatsaronis, and Zoli (2005), Goodhart and Hofmann (2001), Guichard and Turner (2008), and Swiston (2008).

[2] The calculation of the FCI involves three steps. First, a country-specific VAR is estimated using quarterly inflation-adjusted data. Second, generalized impulse responses of Pesaran and Shin (1998) are calculated to assess the cumulative impact of the financial factors on GDP growth after 6 quarters. Third, the estimated elasticities are used as weights for the FCI. All variables are expressed as a deviation either from the sample mean or from the long-term trend. Global growth and financial conditions are proxied using the U.S. and Japan data as appropriate. Caution is needed in interpreting the FCI for China because the available data series are short and often available only on a year-on-year basis, and multiple administrative restrictions make gauging the true financial stance difficult.

[3] Lending attitudes of banks are seen as an important factor behind tightening financial conditions in the United States (Swiston, 2008) and elsewhere. Out of the four countries considered in this box, long-term time-series data on lending attitudes are only available for Japan. In the case of the other countries, changes in lending attitudes may be partly reflected in interest rate spreads and stock prices to the extent that these variables reflect deteriorating export revenues, corporate profitability, and creditworthiness. Conversely, the relatively large estimated impact of stock prices on financial conditions in some countries likely reflects not only the classical consumer wealth effect, but also expected corporate default probabilities, which in turn influence lending attitudes.

Box 1.4 *(concluded)*

of credit by providing funds to boost banks' capital and extending guarantees on small and medium-sized enterprise (SME) lending, and have also taken unconventional monetary policy steps aimed at easing corporate lending spreads, such as in the commercial paper market. In recent weeks, financial conditions have eased, with a narrowing of some credit spreads, yen depreciation, and rising stock prices. On balance, however, financial conditions remain tight and will likely remain a drag on growth for some time.

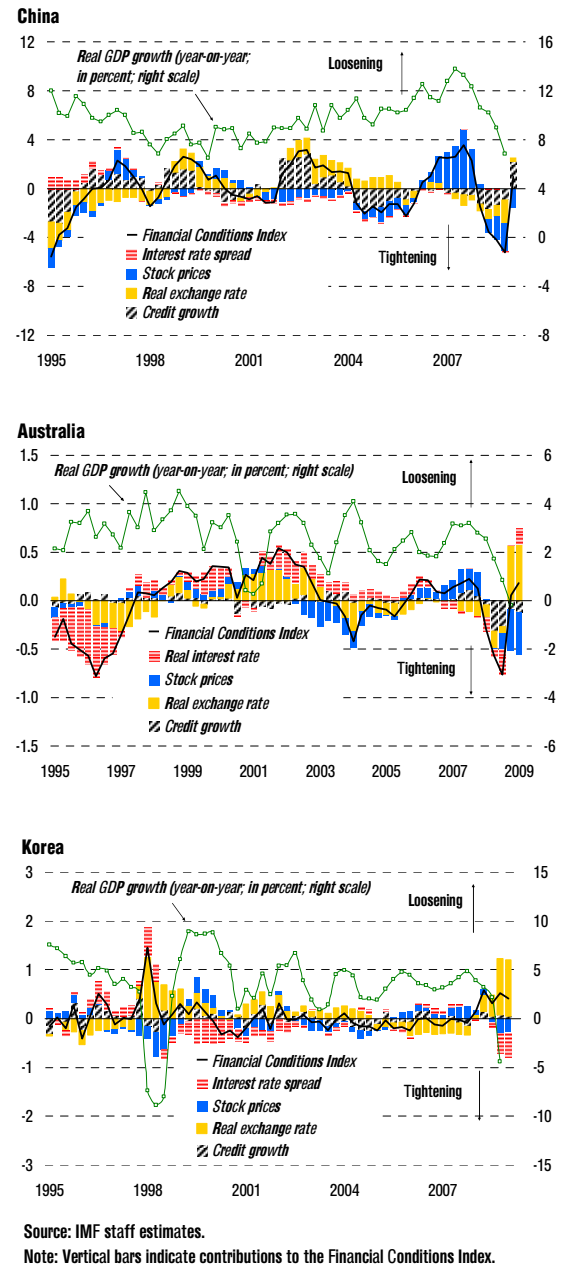
- In China, financial conditions have loosened significantly since last fall as monetary policy responded aggressively to slowing growth. The policy measures have included interest rate cuts, relaxation of credit quotas and mortgage lending conditions, and greater support for SME lending. Loan growth jumped to 24.2 percent (year-on-year) in February, although real interest rates have increased as consumer price inflation has fallen at a faster pace than policy and lending rates. On balance, the financial conditions have turned accommodative and will—together with sizeable fiscal stimulus—support economic activity.

- In Australia, financial conditions tightened in the first half of last year owing to rising lending rates, falling equity prices, and the strong dollar. Although credit growth is slowing, overall financial conditions have since then loosened markedly because the authorities cut the policy rate by more than 4 percentage points since September 2008, lending rates came down faster than expected inflation, and the exchange rate depreciated.

- Korea is the only case out of the four countries analyzed in which financial conditions have remained accommodative since the onset of the turmoil. This has mostly been due to the large depreciation of the won. The central bank has also contributed by cutting the policy rate by more than 3 percentage points since November 2008. Real lending interest rates have declined and credit growth has remained robust, though lending rates have fallen by a smaller degree than the policy rate and the lending spreads, while declining, remain elevated.

In summary, the global financial turmoil and policy responses have had vastly different implications for domestic financial conditions across these four countries. Calculations based on the FCI models

Financial Conditions Index in Selected Asian Economies



Source: IMF staff estimates.
Note: Vertical bars indicate contributions to the Financial Conditions Index.

suggest that, if allowed to persist, tight financial conditions could deduct about 2 percentage points from Japan's GDP over the next 1½ years. In Australia, the positive contribution of financial conditions to growth could be about ¼ percentage point; moreover, Australia's financial conditions have further scope for improvement going forward given the considerable monetary policy space. The accommodative financial conditions in Korea could support activity by about ½ percentage point, while the loosening financial conditions in China could boost growth by about 1 percentage point.[4]

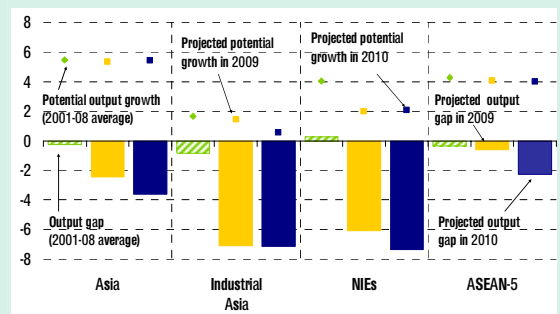
These results suggest that, while all Asian economies have been hit hard by the global turmoil, different policy responses devised to affect financial conditions can lead to different paths of economic recovery in the region. Such policies could include not only changes to the policy rates, but also support to banks and measures to lower credit spreads.

[4] The contributions to growth are calculated as the sum of contributions to growth from each variable contained in the FCI after 6 quarters, where variables are expressed as deviations from their trend or sample mean. The calculation assumes that financial conditions were on average neutral over period 1995–2008; the results should therefore be interpreted only as illustrative.

Under the projected growth profile, output gaps would continue to widen through the end of 2010 in most countries. To be sure, estimates of potential growth have been marked down in many Asian economies, to reflect the impact of the financial crisis on potential output—including through disruptions to supply chains, lower rates of capital accumulation, and loss of labor skills through prolonged unemployment. This is consistent with the evidence discussed in Chapter 2, that financial crises tend to lead to sizable and permanent declines in potential output in the region—after 10 years, output can be expected to be 10 percentage points below (and in some cases more) where it would have otherwise been barring the crisis, in contrast with no permanent losses after standard recessions. Despite the reduction in potential output, output gaps are expected to rise through the second half of 2010 in all Asian economies, as growth only gradually returns to potential (Figure 1.22). This would also imply an increase in unemployment rates, which will reach about 5 percent in the *NIEs*—a sharp increase (about 1½ percentage points) relative to 2008.

The combination of widening output gaps and the sharp drop in commodities prices since mid-2008 also implies downward pressure on inflation, and deflation in a few economies (Figure 1.23). In *Japan* and *Taiwan Province of China*, headline inflation is expected to be negative on average in 2009, under the pressure of overcapacity in the advanced manufacturing sector and weak inflation levels to start with. Headline inflation is expected to rise modestly in 2010 in the majority of Asian economies, as commodity prices increase modestly and the disinflationary effect from their collapse in the second half of 2008 unwinds. Nevertheless, core inflation is likely to remain subdued, helping to open space for monetary policy support.

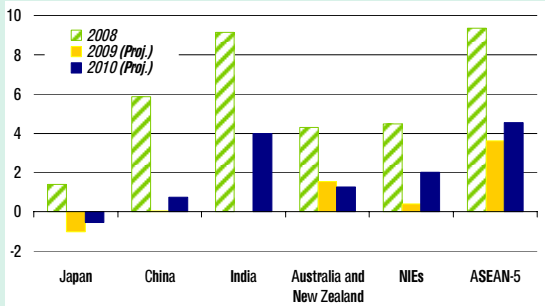
Figure 1.22. Asia: Output Gap and Potential Output Growth[1]
(In percent)



Source: IMF, staff estimates.

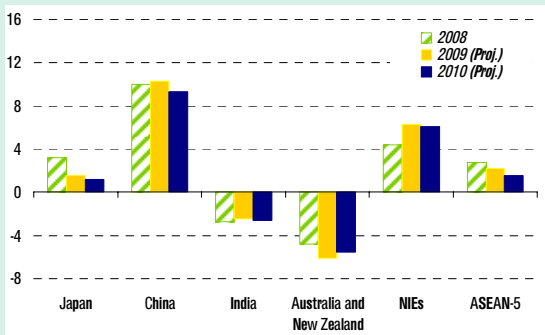
[1] Potential output is based on Asia-Pacific department's country-desk estimates. The Hodrick-Prescott filter is applied whenever country-desk estimates are not available.

Figure 1.23. Asia: Consumer Prices[1]
(Year-on-year percent change)



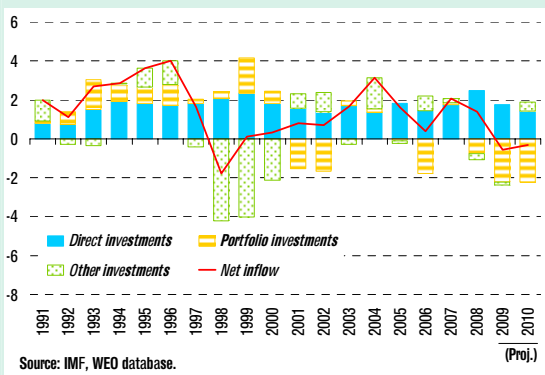
Source: IMF, WEO database.
[1] Wholesale prices used for India.

Figure 1.24. Asia: Current Account Balance
(In percent of GDP)



Source: IMF, WEO database.

Figure 1.25. Emerging Asia: Net Private Capital Flows
(In percent of GDP)



Source: IMF, WEO database.

Asia's current account surplus is expected to decline only slightly in the next two years. For many economies in the region, trade surpluses are actually expected to increase, as the combined effects of weak imports and lower oil prices more than offset the collapse in exports. On the other hand, commodity exporters will see their current account balances worsen, while China and India's balances are expected to remain relatively unchanged (Figure 1.24).

Net private capital inflows to the region are expected to become negative in 2009, driven by sharp retrenchments in bank lending and portfolio flows—though even the more resilient foreign direct investment (FDI) flows are also expected to take a hit—before rebounding in 2010 as deleveraging winds down and risk appetite returns. Overall, net private capital outflows from emerging Asia are expected to amount to ½ percent of GDP in 2009—about one-third of the outflows experienced during the Asian crisis in 1998 (Figure 1.25).

Key Risks to the Outlook

Risks to this outlook remain tilted to the downside. Projections are characterized by an exceptional degree of uncertainty, as shown by the unusually large confidence bands around our baseline forecast for the region (Figure 1.26). The downside risks are across several fronts:

First, there is the risk that the G-2 could take longer to recover. As pointed out in the April 2009 *World Economic Outlook*, the return to global growth in 2010 is predicated on the basis of a gradual stabilization of financial conditions and a pickup in production and trade, thanks to strong policy implementation in both advanced and emerging market economies. However, there are risks that financial strains will become deeper, and that macroeconomic policy support is withdrawn prematurely. In this case, the global downturn could continue to deepen. This would make it even more difficult for Asia to recover.

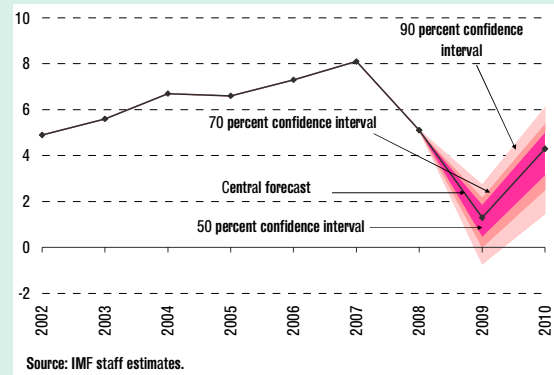
Second, the feedback loops between the real and financial sectors could become more insidious than

anticipated. At present, our belief is that losses in the corporate sector will remain manageable (see Chapter 3 of this *Regional Economic Outlook*). However, many industries in Asia, including key sectors such as autos and electronics, have already seen a collapse in demand and profits, and a squeeze in foreign financing, at a time when domestic banks have tightened lending standards. The recent experience in developed countries suggests that, even for corporates that entered the current downturn with relatively strong balance sheets, financial distress should by no means be ruled out. Hence, there is a risk that continued weak demand and tighter financial conditions will lead to a surge in corporate bankruptcies in the region. In that case:

- Corporate distress would feed back into Asian banks, making them even less able or willing to extend credit to the private sector. Using the stress test results of Chapter 3, if renewed risk aversion or falling corporate earnings lower equity prices in 2009 to the same amount as in 2008 corporate default would reduce bank Tier 1 capital ratios by up to 2 percentage points, prompting a further tightening of credit. Corporate default risk would rise by up to 4 percentage points—a similar increase to that experienced during the Asian crisis—with potential sizable effects on economic activity.

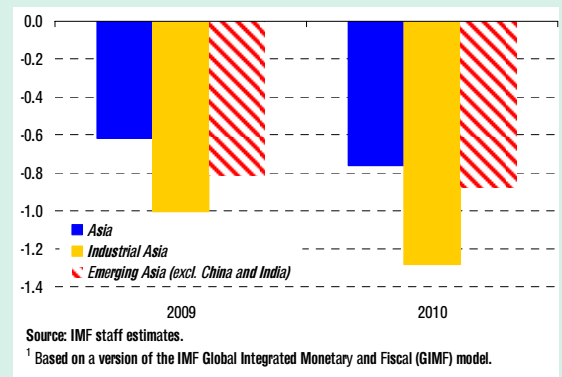
- A surge in corporate bankruptcies would spill over to domestic demand, with a sharper-than-anticipated increase in unemployment rates putting a dent on consumption. Model simulations suggest that consumption growth would decline relative to our central forecast by about 1¾ percentage points on average in 2009 and 2010 in emerging Asia (excluding *China* and *India*)—which would bring the total decline in private consumption growth closer to the sharp (6 percent) decline experienced in 1998 during the Asian crisis. This would subtract about 1 percentage point from GDP growth in the region in each of the next two years (Figure 1.27).

Figure 1.26. Asia: GDP Growth
(Central forecast and 50, 70, and 90 percent confidence intervals; in percent)



Source: IMF staff estimates.

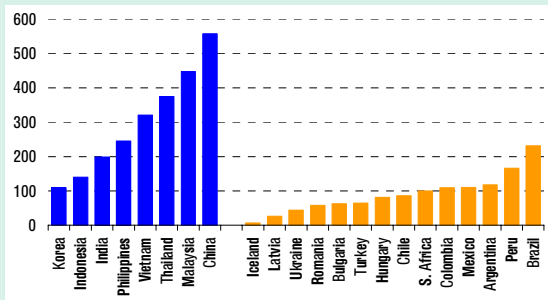
Figure 1.27. Asia: Effect on GDP Growth from Weaker Consumption Growth[1]
(Deviation from baseline; in percentage points)



Source: IMF staff estimates.
[1] Based on a version of the IMF Global Integrated Monetary and Fiscal (GIMF) model.

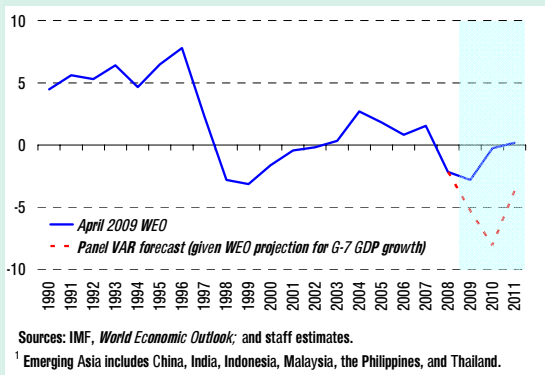
A third risk is that global deleveraging could limit corporates and sovereigns access to external financing. Our baseline is based on the assumption that the large buffer of reserves will provide a cushion against the deterioration in external financing conditions. Reserve cover ratios for Asian economies are generally much larger than for other emerging markets—indeed, most of these economies have enough reserves to cover projected external financing requirements in 2009 (Figure 1.28). Still, one lesson from this crisis is that even countries with a large reserve cushion, a comfortable current account position, and a strong and responsible policy framework can be hit hard. Most vulnerable are those economies whose banks

Figure 1.28. Foreign Reserves over External Financing Requirements[1]
(In percent)



Source: IMF staff estimates.
[1] Gross international reserves (December 2008) in percent of external debt maturing in 2009 (projected) plus projected current account deficit for 2009 (zero, if current account is in surplus).

Figure 1.29. Selected Emerging Asia: Projected Net Private Capital Flows[1]
(In percent of GDP)



Sources: IMF, *World Economic Outlook;* and staff estimates.
[1] Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, and Thailand.

and corporates accumulated substantial short-term foreign currency debt in recent years: these countries could face further cuts in bank credit lines and problems in rolling over existing foreign liabilities. These risks could be accentuated by contagion from emerging European economies. With European banks significantly involved in Asia, further difficulties in Europe's financial system could accentuate these risks as they may precipitate a further withdrawal of dollar and euro liquidity to the region. Econometric estimates by IMF staff suggest that, based on historical relationships, the sharp decline in GDP growth in the G-7 economies over the next two years would be consistent with a much stronger drop in private capital inflows to emerging Asian economies than anticipated in our baseline (Figure 1.29).[2] While there are reasons to believe these forecasts may be too dire (see also Annex 1.2 in the April 2009 *Global Financial Stability Report*), they illustrate the scale of the tail risks to Asia from the global financial crisis.

Finally, over a longer horizon, Asian economies are exposed to the risk of a structural decline of demand from advanced economies. For many years, consumption in the West had grown rapidly, fueled by increasing debt. But households in advanced economies have started repairing their over-leveraged balance sheets, and the era of easy credit to finance purchases of consumer durables, such as automobiles and consumer electronics, could well be over in industrial countries. Indeed, experience of previous financial crises suggests that credit can drop very sharply during the crisis and stay at that lower level for years to come—something that would restrain consumption even after a recovery in the global economy takes hold. In that case, the growth rate of Asian manufacturing and exports could be structurally lower for many years, and Asia's export-led growth strategy may no longer pay the same dividends as in the past.

What Role for Policy?

The one significant upside risk is a stronger-than-anticipated policy response (Figure 1.30). Forceful countercyclical policies would provide insurance against downside risks, or help Asia come out of the recession more quickly if the risks do not materialize. At the same time, the potential costs of this insurance policy are moderate: inflation pressures are absent and while some countries face

[2] These forecasts derive from a vector autoregression (VAR) model containing the following four variables: real GDP growth in the United States, real GDP growth, real private gross fixed capital formation growth and net private capital flows (as a percent of GDP) in emerging Asia (defined as average of China, India, Indonesia, Malaysia, the Philippines and Thailand). Data are annual from 1990 to 2007. The forecast for net private capital flows to emerging Asia shown in Figure 1.29 are obtained forcing the G-7 real GDP growth to follow the path envisaged in the April 2009 *World Economic Outlook*.

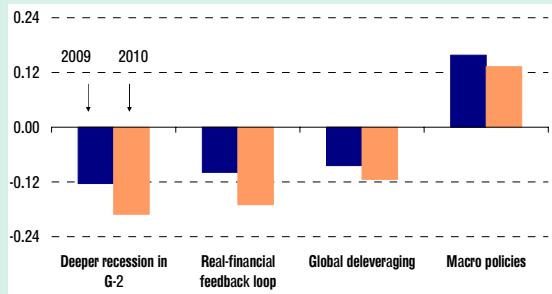
concerns about fiscal sustainability, these can be assuaged by ensuring that the stimulus is temporary and put in a credible medium-term fiscal framework.

On monetary policy, many economies still have scope for additional interest rate reductions. The impact of the aggressive cuts in interest rates so far has been largely offset by declining inflation expectations, so that real interest rates have remained relatively constant, or have increased, in a number of countries (Figure 1.31). Indeed, overall financing conditions have in some countries actually tightened over the past year, threatening to put additional pressure on growth (Box 1.4).

In addition, Asian authorities may increasingly need to turn to unconventional measures to improve the availability and cost of credit. Traditional monetary tools have become less effective as policy rates have approached their zero bound in a number of economies, and as greater caution by banks and rising risk premiums have weakened the traditional monetary transmission mechanism in the region. For these reasons, Asian central banks may need to try and reduce risk premiums and unlock activity in credit markets by expanding their balance sheets, as done in the advanced countries and some economies in the region (*Japan* and *Korea*) (Figure 1.32). In particular, central banks may need to support credit to the private sector through various forms of "credit easing," such as purchasing longer-term instruments (including corporate bonds) to drive down rates further out on the yield curve. Alternatively, or in addition to these measures, Asian governments may need to sustain the supply of credit by providing guarantees to bank lending, as done in few Asian economies over the recent months, particularly in support of credit to small businesses. Whatever the measures employed, it will be important to accompany them with a clear communication of the objectives and criteria of success of interventions.

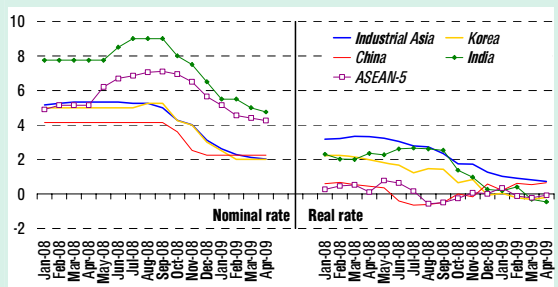
This is also what emerges from looking at the experience of Japan's banking crisis of the 1990s, as done in Chapter 4 of this *Regional Economic Outlook*. Faced with a systemic banking crisis and severe

Figure 1.30. Asia: Risk Factors
(In percentage points of Asia's GDP growth)



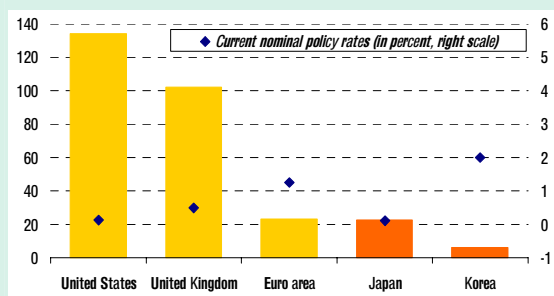
Source: IMF staff estimates.
[1] Based on a survey of the IMF's Asia and Pacific Department country economists on the risks to their baseline forecasts.

Figure 1.31. Asia: Policy Rates[1]
(In percent)



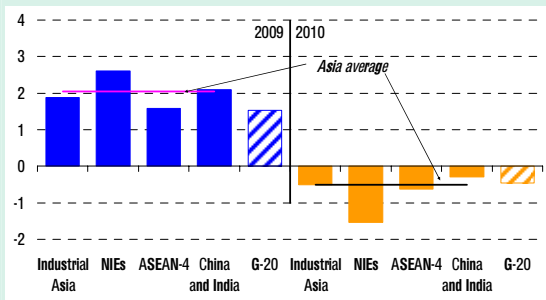
Sources: Haver Analytics; CEIC Data Company Ltd; Consensus Economics Inc; and IMF staff calculations.
[1] Real rates are constructed as the difference between policy interest rate and one-year-ahead inflation expectation from Consensus forecasts.

Figure 1.32. Central Bank Balance Sheet: Total Assets
(Percent change between June 2008 and March 2009)



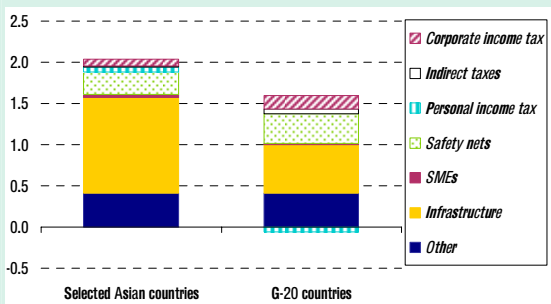
Sources: European Central Bank; CEIC Data Company Ltd; Haver Analytics; and IMF staff calculations.
[1] For Korea, percent change between June 2008 and February 2009.

Figure 1.33. Discretionary Fiscal Measures, 2009 and 2010[1]
(In percent of GDP)



Source: IMF staff estimates.
[1] Defined as fiscal impulses in each year (yearly changes in structural fiscal balances related to measures taken in response to the crisis). A negative entry implies withdrawal of fiscal stimulus.

Figure 1.34. Composition of Fiscal Stimulus Measures, 2009
(In percent of GDP)



Source: IMF staff estimates.
[1] Asian countries included are Australia, China, India, Indonesia, Japan, and Korea.

economic slowdown, *Japan* took some unprecedented measures at the time that are now being replicated in the *United States* and other parts of the world, including quantitative easing and conducting monetary operations through a broader range of securities. Such operations were taken to help stimulate activity by supporting asset prices, encouraging the expansion of bank balance sheets and influencing expectations. *Japan*'s experiences suggest that direct measures to jump-start dysfunctional credit markets may also be warranted, and that effective communication with markets and the public is vital when unconventional tools are being used. To minimize risks to the balance sheet and credibility of central banks, and to avoid disrupting markets once conditions normalize, a credible exit strategy also needs to be articulated early on. Finally, *Japan*'s experience suggests that unconventional policies are not a panacea. In fact, their costs in terms of disrupting monetary policy transmission and delaying restructuring rises over time, placing a premium on timely steps to address financial system stresses and restore debtor balance sheets.

On fiscal policies, it may be important to ensure that the stimulus injected in 2009 will not be withdrawn prematurely. Thanks to sound policies and a historical preference for conservative fiscal policies, many Asian economies entered the crisis with significant room for countercyclical fiscal support. This has enabled Asia as a whole to implement discretionary fiscal packages for 2009 that are slightly larger than the G-20 average (Figure 1.33), and higher than in past recessions (see Chapter 2).

Relative to the G-20 as a whole, stimulus packages in the Asian G-20 countries tend to be more heavily weighted toward spending (Figure 1.34), with particular emphasis on investment in infrastructure (*China*) and relatively less on social safety nets. By contrast, *Indonesia*'s 2009 stimulus package is almost exclusively focused on corporate and personal income tax relief.

However, only a few Asian countries have so far announced packages for 2010, creating the public perception that stimulus might be withdrawn at a time when economies are likely to remain very weak. Of course, countries have annual budget cycles, and it is likely that fiscal policy will be more supportive than the chart currently shows. But it would be even better to announce such measures now, to provide reassurance that governments will continue to support demand as long as necessary. This is particularly needed because most Asian economies, unlike some European countries, do not have extensive "automatic stabilizers," such as unemployment insurance, that can provide support to demand without discretionary measures.

Not all economies in the region have the same space for additional fiscal measures, as fiscal policy intervention may be hampered by the lack of access to financing, excessive fiscal deficits or public debt, or institutional and capacity constraints (see Box 1.5).

Box 1.5. The Case for Fiscal Stimulus

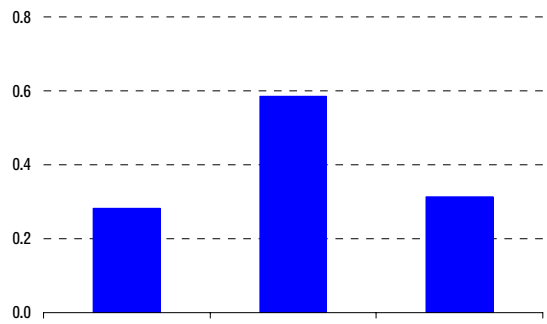
As elsewhere, Asian countries have been introducing fiscal packages to combat the recession. These packages are relatively large, imparting an average stimulus of about 2½ percent of GDP in 2009—with even higher amounts in China, Japan, and Korea—compared to 2 percent of GDP for the G-20 as a whole. So, is there any need or scope to do more?

The problem with current packages is that they are programmed to wind down next year, even as Asia's economies are likely to remain very weak. Even with the stimulus already planned, output in the region is projected to remain well below potential for some time, yielding output gaps averaging 2½ percent this year and 3¾ percent in 2010. Moreover, this is under a baseline scenario with significant downside risks, suggesting a need to sustain stimulus in 2010.

Benefits

The benefits of doing so can be assessed through a simulation using the IMF Global Integrated Monetary and Fiscal model (GIMF).[1] The GIMF simulation assumes that all countries across the world sustain their 2009 fiscal stimulus in 2010. That is, economies that in the baseline scenario withdraw stimulus in 2010 are assumed to take additional measures that maintain it at the same level as in 2009. For Asia, this would imply providing additional fiscal stimulus of around ½ percentage point over the WEO baseline. In this case, average output growth in Asia would be between ⅓ and ¾ percentage point higher than in the baseline—with a relatively greater impact in industrial Asia reflecting a more expansionary stance there. This result depends on the assumption that countries retain fiscal credibility, so that interest rate risk premiums do not rise and undermine the benefits of the stimulus. Moreover, with coordinated action across countries, there is less "leakage" of fiscal stimulus through imports and thus additional fiscal measures have a greater impact than when taken in isolation.

GDP Growth with No Withdrawal of Fiscal Stimulus in 2010
(Deviation from baseline, in percentage points)



Source: IMF staff estimates.

Scope

This assumption—that Asian countries have scope for further stimulus—needs to be verified. To do this, an indicator of fiscal space was constructed for each major country, taking into account a number of possible

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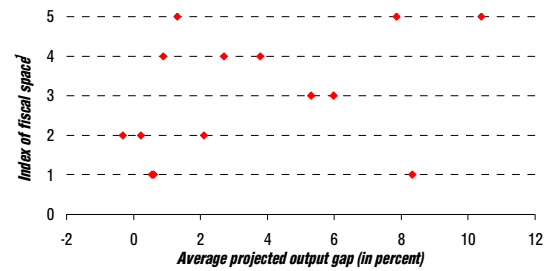
Note: The main authors of this box are Mark Horton, Anna Ivanova, and Papa N'Diaye.

[1] The model is well-suited for assessing the effects of fiscal policy because it has numerous non-Ricardian features, which make fiscal policy matter more than in other large macroeconomic models. In particular, households have a finite economic lifetime, are liquidity constrained, and have income streams that change during their lifecycle, while tax structures affect their labor and savings decisions. The version of the GIMF used comprises eight regions, of which five are Asian: Japan, Korea, China, Australia/New Zealand, and a group of emerging Asian economies (Hong Kong SAR, Singapore, Malaysia, Indonesia, the Philippines, and Thailand).

Box 1.5 *(concluded)*

constraints.[2] For example, further stimulus could raise concerns about fiscal sustainability, particularly if debt levels are already high. Or it could lead to macroeconomic difficulties, such as inflation or balance of payments problems. Fiscal spending also could run into capacity constraints and efficiency concerns. And in some cases there are fiscal responsibility laws limiting the size of debts and deficit.

Asia: Space and Need for Fiscal Stimulus during 2009–10[1]



Source: IMF staff estimates.

[1]The index of fiscal space is between 1 and 5, with 5 implying greatest space for additional fiscal expansion. Greater output gaps (output below potential) indicate more need for fiscal stimulus.

Graphing the fiscal space indicators against average projected output gaps during 2009–10 suggests that most countries have both the need and the fiscal space to provide additional stimulus (relatively large output gaps and high index measures). A few countries appear to have significant constraints on additional stimulus, but most of them also have less need. Only one country—Japan, in the southeast corner of the figure—appears to be facing a dilemma, where the need remains sizable (an output gap of about 8 percent) but the scope has diminished (the index of fiscal space is at its lowest value of 1).

In sum, most of Asia has both the need and the scope to sustain fiscal stimulus. But at the same time, countries will have to be careful to preserve credibility, by placing such measures within a robust medium-term fiscal framework that will eventually stabilize debt-to-GDP ratios at comfortable levels.

[2] The fiscal space index is a weighted average of seven indicators: (1) financing constraints, based largely on the size of savings-investment gaps; (2) sustainability constraints, based largely on the average projected debt-to-GDP ratio over 2009–14; (3) credibility constraints, based on the average overall ratio of fiscal balance to GDP projected in 2009–10; (4) macroeconomic constraints, based on inflation, current account deficits, reserve coverage, and an indicator of the potential crowding out of the private sector; (5) institutional constraints, based on fiscal rules or laws, earmarking provisions, and revenue-sharing arrangements; (6) capacity constraints, based on whether investment projects and social safety nets can be expanded quickly; and (7) efficiency constraints, based on perception of the efficiency of public spending, as well as structure of the tax base.

Especially in cases where fiscal space is narrow, it will be critical to clearly signal that such stimulus packages are extraordinary and will be unwound once the recovery is firmly established. The best way to do this would be to anchor fiscal plans in a credible medium-term fiscal strategy, to ensure that debt-to-GDP ratios will be stabilized at comfortable levels.

Further strengthening bank capital will also be needed to limit adverse feedback loops. Overall, the measures taken so far by Asian authorities to preserve financial stability have been effective in stabilizing confidence in the financial system and preventing a meltdown—as shown by stable deposit levels in the banking system and the absence of systemic bank runs. Despite this, credit quality is likely to deteriorate as the recession drags on and markets remain worried about the health of banks. To preempt concerns over the health of Asia's banking system, efforts to shore up capital even further will be invaluable. This may require the use of public funds in certain cases.[3] The alternative of relaxing loan provisioning requirements, so that banks simply do not recognize nonperforming loans

[3] *Hong Kong SAR*, *Japan,* and *Korea* have set up capital funds for their banks to tap, and *India* has announced its intention to inject additional capital into public sector banks.

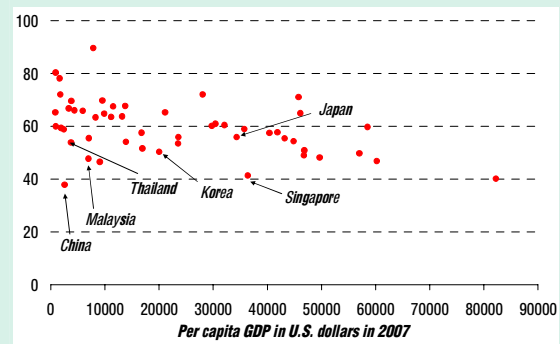
or prospective losses to capital, could prove counterproductive. International experience has shown that this just raises uncertainty over the health of bank balance sheets, thereby further constraining credit availability.

In addition, it may be prudent to prepare, on a contingent basis, plans to address the growing risks of large-scale corporate failures. For example, legal frameworks may need to be put in place or modified to promote efficient and orderly corporate debt workouts. Regulatory measures that can facilitate creditor coordination would be particularly important, and if the bankruptcy system becomes overwhelmed then government-supported out-of-court mechanisms may be necessary.

It will also important to preserve open capital and trade flows. Some worrying signs of protectionism are also surfacing within Asia. For example, few economies have restricted the import of certain goods while others have increased tax rebates for exporters. To be sure, protectionist pressures have already intensified across the globe—and will continue to do so as more economies slip into recessions. But countries should avoid supporting demand for only domestically produced goods and services through higher tariffs or import quotas. The experience of the Great Depression shows all too clearly the catastrophic consequences of restrictive trade policies and "beggar-thy-neighbor" exchange rate management. Given their high integration with the rest of the world, Asian economies would be the most affected by these policies.

Finally, in the longer term, Asian economies may need to look more at their own domestic economies as an engine of growth. As noted above, Asia faces the risk of a protracted period of lower growth in the wake of the global crisis, as consumers in their main export markets gradually rebuild their balance sheets. Therefore, Asia may need to rebalance growth away from exports and toward domestic demand in order to return to precrisis growth rates. China is already trying to catalyze private consumption, which has been falling for a decade relative to GDP. In principle, there should be scope to do this in many Asian countries, particularly those where consumption forms a relatively low share of GDP (Figure 1.35). Building social safety nets would go in this direction, because a stronger social protection system will reduce the need for precautionary savings to meet necessities related to health, education, and retirement. At the same time, exchange rate appreciation might also help—by providing price incentives to shift resources toward production for domestic use and by raising real household income, thereby spurring consumption. Although exchange rate appreciation may not be a realistic strategy at present as most Asian currencies are under pressure to depreciate, it may become so over the longer term.

Figure 1.35. Real Private Consumption Expenditure
(In percent of GDP, average for 2003–07)



Source: IMF, WEO database.

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II. Recessions and Recoveries in Asia: What Can the Past Teach Us about the Present Recession?

Asia is in the midst of a major downturn. With external demand for Asia's products vanishing as a result of a sharp deleveraging in advanced economies, export and industrial production growth in the region have plunged to levels unimaginable a year ago. In turn, weakness in exports is spilling over to domestic demand, with investment in particular showing signs of declining at a high rate. As such, it is no surprise that both the IMF and other forecasters now expect large contractions in GDP for 2009 in many of the region's economies.

In this context, two key questions emerge: how long and deep is the current recession likely to be, and how vigorous the recovery? The purpose of this chapter is to look at past recessions and recoveries in Asia to shed light on these important questions.[4] In particular, we look at past episodes and assess how long and deep the typical recession has been, why some recessions have been noticeably longer and deeper, if and why some countries within Asia have suffered deeper recessions than others, how strong or weak have recoveries typically been, and what leads these recoveries.

The key findings of the chapter can be summarized as follows:

- Recessions accompanied by financial stress, notably stress in domestic banking sectors, are substantially longer and deeper than the norm. The fall in credit deprives corporates of working capital and households of the means to smooth consumption, greatly exacerbating the downturn that may have been under way.
- Recoveries in Asia have been weak, because they were typically driven by a single engine: exports. In contrast, other emerging economies have tended to experience more vigorous recoveries because of a stronger contribution from domestic demand, notably investment.
- In Asia, deep recessions have resulted in substantial declines in potential output growth, meaning that their effects are not just cyclical but permanent.

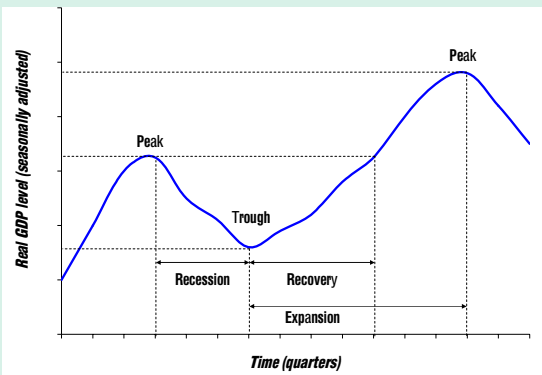
Two lessons from the past thus appear particularly pertinent for the present: Asia should strive to preserve the stability of its financial systems and to rebalance growth toward domestic demand. Strong balance sheet positions have so far allowed Asian banks to provide the credit needed in the face of capital outflows. If, however, their capital buffers were to buckle under the likely increase in nonperforming loans—a possible but not an immediate threat (see Chapter 3 of this *Regional Economic Outlook*)—or if liquidity constraints and risk aversion led them to curtail credit sharply to preserve this capital, history suggests that the current recession, already among the deepest given the unprecedented size of the external shock, could become substantially worse. Moreover, given the expected weak recovery in the G-2 countries (the euro area and the United States), Asia should not count on exports to rebound rapidly as they did in past recoveries—a slow return to precrisis growth

Note: The main authors of this chapter are Souvik Gupta and Jacques Miniane.

[4] While some papers such as Kim, Kose, and Plummer (2003) have looked at business cycle dynamics in Asia, there are fewer studies looking specifically at recession and recovery episodes in the region. One of these is Hong, Lee, and Tang (2009), who use annual rather than quarterly data as is done in this chapter. The use of annual data allows the authors to cover a longer data span, but at the cost of a less precise identification of business cycle turning points and hence the dynamics of different components around these key dates.

levels looks to be the more likely outcome at this stage. In this context, fiscal and monetary stimuli in the region are welcome to help sustain the recovery. More fundamentally, given the risk that G-2 growth might be less consumption-driven in the medium term, many economies in Asia will need structural reforms such as expansion of social safety nets in order to become less export dependent and sustain healthy growth rates going forward.

Figure 2.1. Recessions, Recoveries, and Expansions



The rest of the chapter is structured as follows. The next section explains the methodology used to identify recessions and recoveries, and reviews some of their general characteristics. Then the chapter looks at past recessions in Asia with emphasis on two questions: what distinguishes the most severe recessions, and whether some countries are more vulnerable than others. The following section looks at past recoveries in Asia, showing in particular why they have tended to be weak compared with recoveries in other regions. The following section discusses policy responses and their effects in past recessions, and the last section concludes.

Preliminary Considerations

In a study of recessions and recoveries, the first obvious question is: what type of recession? The academic literature typically distinguishes between classical recessions, which entail a decline in GDP *levels*, and growth slowdowns, which deal with declines in GDP *growth*. This chapter focuses on classical recessions, mainly because most economies in the region are expected to experience declines in GDP levels in the current cycle.

Recession episodes are identified through an extension of the "two-quarters-of-negative-growth" rule. As general terminology, a "recession" begins when the level of GDP starts declining after a "peak" and ends when the level of GDP reaches a "trough." A "recovery" begins when the level of GDP starts rising after the trough and ends when the level of GDP returns to its peak level; an "expansion" lasts until GDP reaches its next peak. (Figure 2.1) The chapter identifies peaks and troughs by means of the Bry-Boschan (1971) algorithm, which has become standard methodology in the study of classical recessions.[5] Strictly speaking, the algorithm does not require two consecutive quarters of negative growth after a peak to identify a recession, but it does require GDP growth to be negative over the combined two-quarter period following the peak.

The chapter also differentiates recessions alongside various dimensions that appear relevant at the current juncture. We define a financial crisis recession as a recession episode associated with a domestic banking crisis as identified in Laeven and Valencia (2008), and/or with higher-than-normal levels in our measure of global financial conditions—the financial stress index for advanced economies used in Cardarelli, Elekdag, and Lall (forthcoming).[6] We also differentiate between export recessions, defined as those during which export levels fall by at least 5 percent relative to peak level, and nonexport recessions. One objective of this chapter is to assess whether there are clear differences in length, depth, and dynamics between financial stress and nonfinancial stress recessions, and between export and nonexport recessions.

The sample of recessions identified in this chapter is quite diverse, with one surprising finding: export

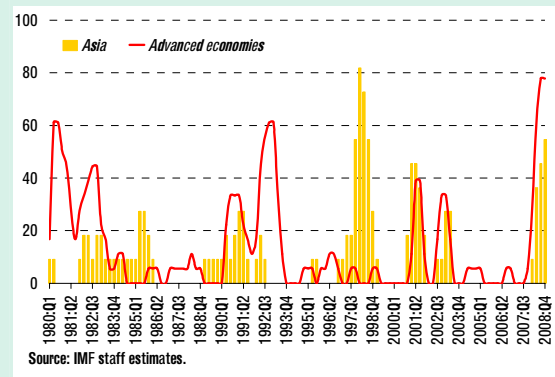
[5] See Appendix 2.1 for details on the Bry-Boschan algorithm.

[6] See Appendix 2.1 for details on the construction of the global Financial Conditions Index, as well as the banking crisis indicator.

shocks have been an important but not the main cause of recessions in Asia. Limiting the analysis to the post-1980 period because of rapid changes in economic structure in the region, we identify 33 recessions in our *Regional Economic Outlook* economies, *excluding the current recession ongoing in several of these economies.*[7] Of these 33 recessions, 10 occurred in industrial Asia—Japan, Australia, and New Zealand—and 23 in emerging Asia (see Table 2A.1 in Appendix 2.1). Of relevance, no classical recession occurred in China or India during the sample period. Seventeen out of the 33 recessions are associated with financial stress, but only 7 of these 17 coincided with a banking crisis. The latter have typically resulted from the bust of large imbalances in the domestic economy, as was the case in Japan in the 1990s or in the Asian crisis. Finally, 8 of the 33 were export recessions according to our definition, suggesting that export shocks have been an important but far from exclusive driver of recessions in the region. Needless to say, the current recession in Asia—which is not included in the study—is, first and foremost, an export recession.

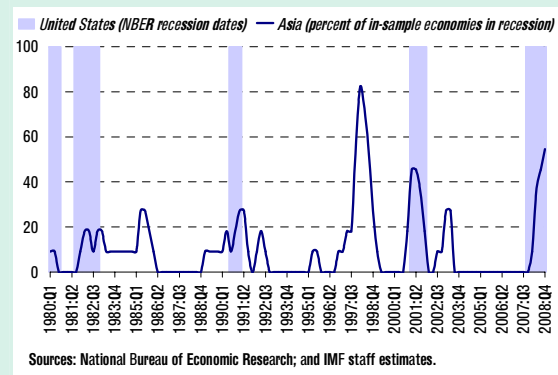
Asia's business cycles appear increasingly coordinated with global business cycles. The incidence of recessions in Asia has by and large been uncorrelated with the incidence of recessions in advanced economies, either contemporaneously or with lags, when measured *over the whole sample* (Figure 2.2). At the same time, every U.S. recession has coincided with at least 20 percent of the Asian economies in our sample being in recession, and often more (Figure 2.3). Moreover, the correlation between the incidence of recessions in Asia and globally appears to have increased over the past decade, a possible consequence of Asia's deepening integration with the global economy.[8]

Figure 2.2. Recession Timeline since 1980
(Percent of in-sample economies in recession)



Source: IMF staff estimates.

Figure 2.3. Asia and United States: Recession Timeline since 1980



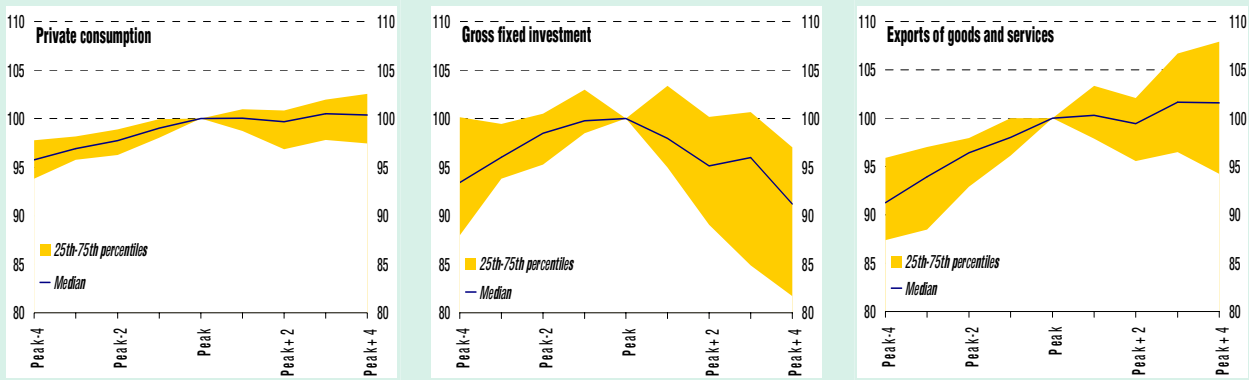
Sources: National Bureau of Economic Research; and IMF staff estimates.

Finally, recessions in Asia have had one common characteristic, regardless of the shock that caused them: investment tends to decline during the recession. Looking across all recessions, exports do not appear to have fallen on average, nor does consumption. Investment, however, falls with high probability (Figure 2.4). Why? The reason has to do with the fact that investment is tied both to exports and to domestic demand, and it suffers when recessions are caused by shocks to export demand, shocks to consumption, or shocks to financial conditions. Indeed, contrary to consumption and exports, investment fell both in the 1997–98 and the 2000–01 recession, which at their roots were very different.

[7] We exclude the current recession precisely because it is still ongoing and hence of unknown depth and duration. Note that Vietnam was excluded from the sample because its quarterly GDP series is too short and appears too smooth.

[8] See Guimarães-Filho and others (2008) for discussion on Asia's deepening integration with the global economy.

Figure 2.4. Asia: Previous Recessions since 1980
(Median real level, peak of the recessions = 100)

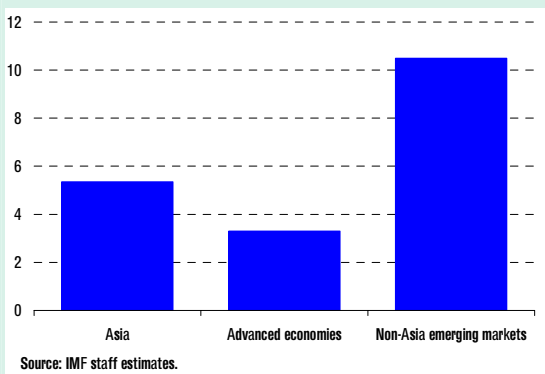


Source: IMF staff estimates.

Recessions in Asia: How Long and Deep?

Are Some Recessions Deeper Than Others?

Figure 2.5. Cumulative Output Loss in Previous Recessions since 1980
(Median, in percent)



Source: IMF staff estimates.

In Asia, recessions have typically not been very long, nor very deep. The median duration of recessions in Asia has been three quarters, similar to those in advanced economies and other emerging markets. In terms of the cumulative output loss during the recession, Asian episodes have been more costly than those in advanced economies—the median loss during an Asian recession has been around 5 percent of peak GDP, compared with about 3 percent in advanced economies (Figure 2.5). This is consistent with the considerable literature showing that emerging markets are exposed to larger and more persistent volatility than advanced economies,[9] owing to the former's less diversified economic structures and their limited ability to use domestic financial systems or international markets to smooth the impact of shocks. At the same time, recessions in Asia have been less costly than in other emerging markets, where the median cumulative loss has been about 10 percent of peak GDP.[10]

Yet these median statistics mask an important fact: a substantial number of recessions in Asia have been both long and very deep. In particular, 25 percent of recessions in Asia (i.e., 9 of the 33) have lasted longer than a full year, and entailed cumulative output losses larger than 12 percent of peak GDP, more than double the median loss.

These long and deep recessions are all associated with financial stress. Indeed, when we separate our sample between financial stress and nonfinancial stress recessions, the former led to output losses

[9] See Aguiar and Gopinath (2007) among others.

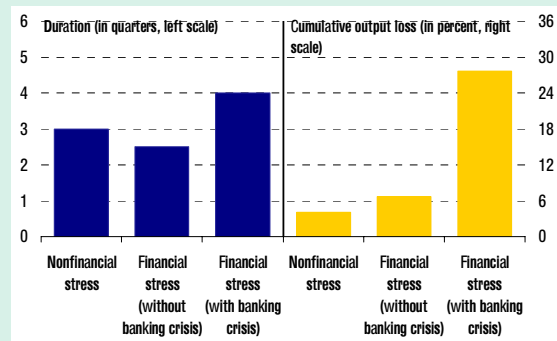
[10] Given Asia's higher trend growth precrisis, however, it is not clear that recessions in Asia have been less costly if measured not in terms of output loss relative to peak but in terms of the output gap. We did not use the output gap as measure of the cost of recessions because of the difficulty in properly estimating potential output during a recession.

8 percent of GDP higher in the median. At the same time, it is important to note that not all financial stress matters statistically for the length and depth of recessions. Recessions associated with global financial stress that were not accompanied by a domestic banking crisis are barely different in their severity to recessions with no financial stress, at least in our sample. It is recessions associated with banking crises that are an order of magnitude more severe, entailing a 20 percent of GDP higher median cumulative output loss (Figure 2.6).[11] Indeed, the recessions in our sample with the largest 25 percent output losses were all associated with a banking crisis.

Credit curtailment appears to be the channel through which bank impairment amplifies recessions. In the case of Asia, credit growth remains by and large unaffected during standard recessions, but plummets during banking crises. At its lowest point during these recessions, median credit growth is 30 percentage points below its level before the recession started (Figure 2.7). Therefore, firms are deprived of working capital and consumers of the means to smooth consumption, explaining why the two fall substantially more during banking crises. The relationship between credit and the real economy, however, should in no way be seen as uni-directional: banking crises are themselves caused by severe stresses in the real economy. What matters, then, is the feedback loops between real shocks and credit.

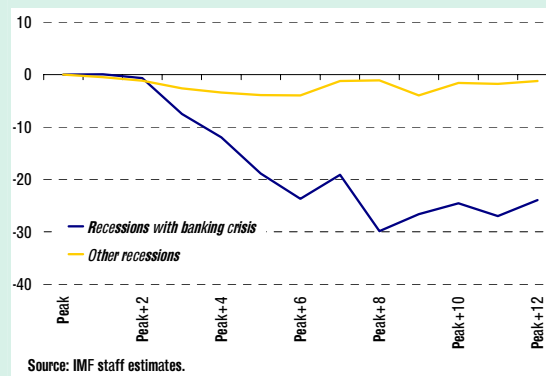
The lesson for the current cycle is clear: Asia should strive to preserve the stability of its domestic financial systems. While the region has suffered from the global reappraisal of risk in the form of capital outflows, declines in equity prices, and tight domestic liquidity conditions among other symptoms, core systems have remained stable and have been able to reintermediate credit in the face of limited external funding. With corporates and households in the region coming under stress, banks themselves will likely suffer. As explained in Chapter 3, declines in capital asset ratios are expected to be manageable, yet vigilance is needed in the face of history's lessons: banking stress could make the current recession, already of historical proportions owing to the size of the external shock, even longer and deeper.

Figure 2.6. Asia: Previous Recessions since 1980
(Median)



Source: IMF staff estimates.

Figure 2.7. Asia: Credit to Private Sector during Previous Recessions since 1980
(Median, year-on-year percent change, peak of the recessions =0)



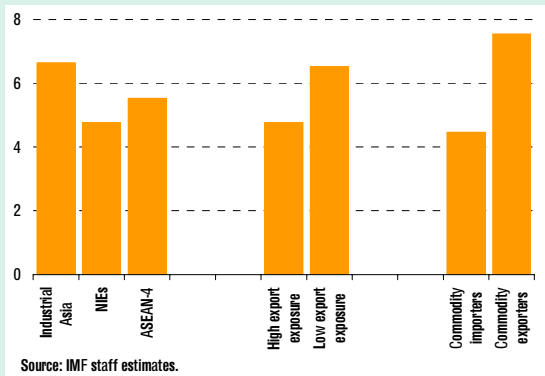
Source: IMF staff estimates.

Do Some Economies Suffer Deeper Recessions?

Different economies in Asia seem to suffer comparable recessions on average. Decomposing Asian economies in different subgroups—regional groupings, commodity importers versus exporters, high export exposure versus low export exposure,

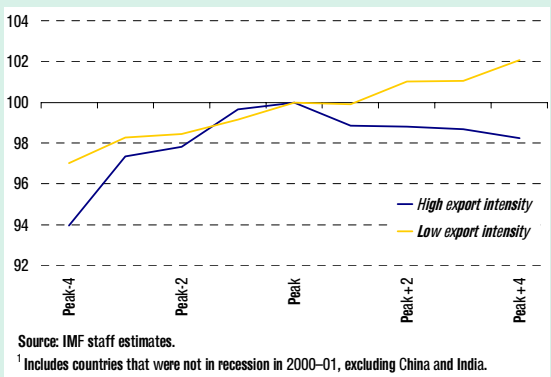
[11] This result thus confirms for Asia what had been previously found for advanced economies in Cardarelli, Elekdag, and Lall (forthcoming) and Reinhart and Rogoff (2009).

Figure 2.8. Asia by Regional Groups: Cumulative Output Loss during Previous Recessions since 1980
(Median, in percent)



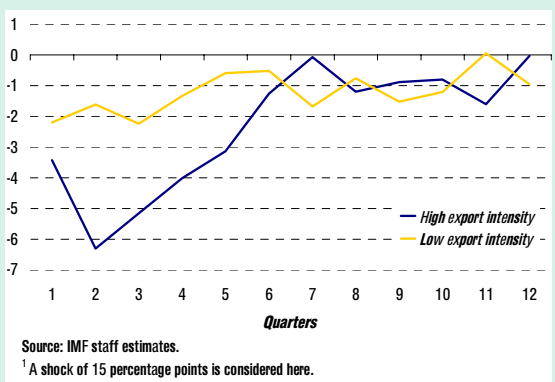
Source: IMF staff estimates.

Figure 2.9. Asia by Type of Export Activity: Real Gross Domestic Product during 2000–01 Recession[1]
(Median level, peak of the recession = 100)



Source: IMF staff estimates.
[1] Includes countries that were not in recession in 2000–01, excluding China and India.

Figure 2.10. Asia: Response of Real Gross Fixed Investment Growth to a Shock to Real Export Growth[1]
(In percentage points)



Source: IMF staff estimates.
[1] A shock of 15 percentage points is considered here.

etc.—does not signal major differences in median duration or output loss of recessions across groups (Figure 2.8). Commodity exporters—Australia, New Zealand, Indonesia, Malaysia—seem to suffer deeper losses, but this is because two of the three recessions in Indonesia and Malaysia were banking crises.

However, of relevance to the current context, export-dependent economies are doubly vulnerable to export shocks because their *domestic demand* seems less autonomous from the export cycle.[12] Not only did GDP fall by more in these countries during export recessions, but consumption and investment fell as well (Figure 2.9). Given the limited number of export-led recessions, we estimated the dynamic impact of export shocks on consumption and investment growth in the two sets of economies over the entire sample, by means of a panel vector autoregression (VAR).[13] The results confirm that export shocks have substantially larger effects in the high export exposure group. In terms of magnitude, a 15 percentage point decline in year-on-year growth of *real* exports—a decline of similar magnitude to that experienced in Asia in recent months—leads in the estimated model to a 6 percentage point decline in real investment growth in high export exposure countries, versus a 2 percentage point decline in low export exposure economies (Figure 2.10). Moreover, the impact in the former group is persistent, with investment growth returning to preshock levels only a year and a half after the shock. The impact on consumption growth is smaller in magnitude but still not trivial: in trade-dependent economies, consumption growth declines by about 1½ percentage points following the shock.

[12] Highly export dependent economies are the newly industrialized economies (NIEs) and Malaysia, and low export dependence economies are Australia, Indonesia, Japan, New Zealand, the Philippines, and Thailand. This classification uses data on Asian countries' direct and indirect export exposure to the United States and the euro area presented in Guimarães-Filho and others (2008).

[13] See Appendix 2.1 for details on the VAR.

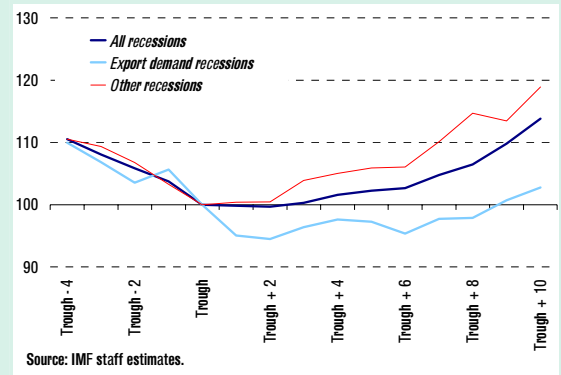
Thus, past recession patterns yield two meaningful insights: banking sector stress greatly amplifies recessions, and export-dependent economies are more vulnerable in the face of external demand shocks. What lessons can we learn from the pattern of past recoveries? This is the purpose of our next section.

Past Recoveries: How Vigorous?

Patterns of recovery in Asia are relatively more homogeneous than those of recessions, and tend to be characterized by a strong rebound in exports and a relatively weak contribution from domestic demand. More specifically:

- *Many recoveries in Asia have been "investment-less."* In the typical recovery, investment remains flat post-trough for about three quarters, and then picks up the pace very gradually (Figure 2.11). Moreover, only 4 out of the 33 recoveries in the sample were led by a recovery in investment, defined as an upturn in investment post-trough that preceded the upturn in consumption and exports. Why has investment been so sluggish to recover? Excess pre-recession capacity may be part of the answer. Numerous studies have pinned excess investment before the Asian financial crisis as one reason investment appeared to be so weak after the crisis.[14] In fact, the collapse of investment in Asia following the 1997–98 crisis has often been cited as one of the root causes of the current account imbalances that have dominated the global economy in the past decade. Yet this crisis was not the only one during which investment failed to recover strongly. For instance, the recovery after the 2000–01 recession was even weaker, with investment stuck at trough levels for a full three years.[15] Once again, excess capacity before the crisis, in this case concentrated in the information technology (IT) sector, led to weak investment after the crisis. It is an open and important question why investment in Asia appears to follow such pronounced boom and bust cycles.

Figure 2.11. Asia: Real Gross Fixed Investment during Previous Recessions since1980
(Median level, trough of the recessions = 100)



Source: IMF staff estimates.

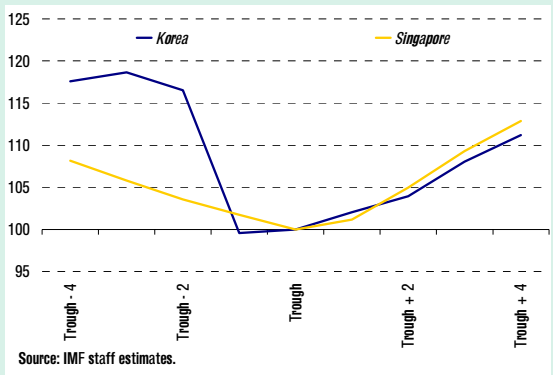
- *Consumption played an important role in a limited number of recoveries.* Consumption recoveries led about 9 of the 33 GDP recoveries in the sample. Surprisingly, consumption led the recovery in several of the Asian-crisis episodes, for example in Korea and Singapore, and to a lesser extent in Thailand (Figure 2.12). This is in contrast with received wisdom that countries exited the Asian crisis thanks to sharp depreciations and export rebounds. This being said, it is doubtful that these consumption recoveries would have been sustainable had exports not recovered sharply soon after.

- *Exports, then, have been the main engine of recoveries in Asia.* In the recovery phase, exports tend to rebound strongly, with export volumes typically more than 10 percent higher than their trough levels four quarters on (Figure 2.13). Not only was the rebound in exports key to the recovery in many export recessions, but growth in exports also led GDP and the other demand components in 16 out of the other 25 recoveries

[14] See IMF (2006) among others.

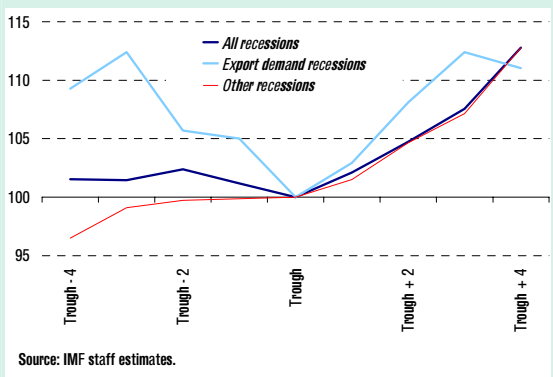
[15] In some economies like Hong Kong SAR, this could be due to the "SARS" recession coming quickly after the IT recession. Moreover, apparent weakness in the investment recovery post 2001 may have been exaggerated by the surge of regional FDI flows toward China in this period.

Figure 2.12. Selected Asia: Real Private Consumption Expenditure during the Asian Crisis
(Trough of the recession = 100)



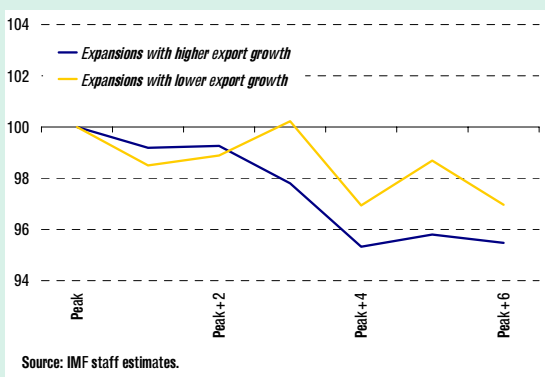
Source: IMF staff estimates.

Figure 2.13. Asia: Real Exports of Goods and Services during Previous Recessions since 1980
(Median level, trough of the recessions = 100)



Source: IMF staff estimates.

Figure 2.14. Asia: Real Effective Exchange Rate during Previous Recessions since1980
(Median, peak of the recessions = 100)



Source: IMF staff estimates.

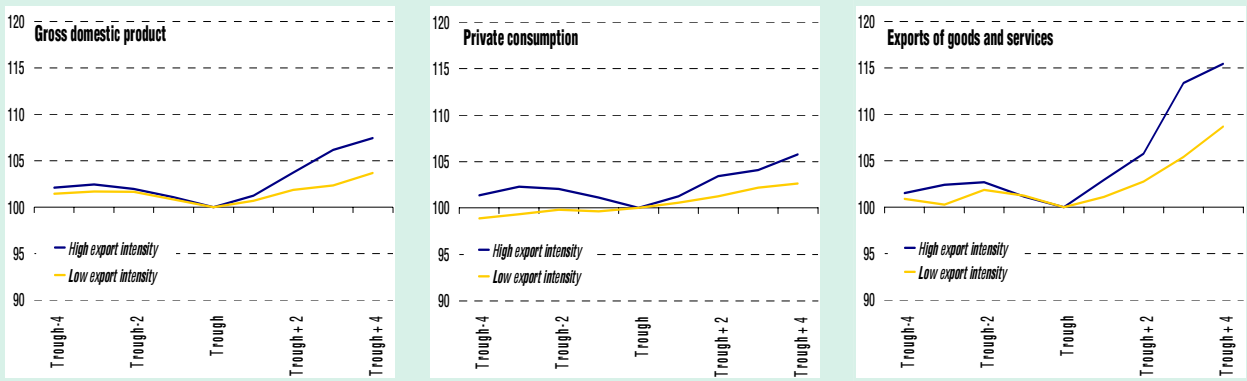
(i.e., recoveries following nonexport recessions).[16] Export rebounds appear to have been helped by currency depreciations, a common feature of Asian recessions, with stronger export recoveries associated with larger real effective depreciations in our sample (Figure 2.14). Finally, of relevance to the current context, most export rebounds in our sample happened in periods of better-than-acceptable growth in the G-2. A clear case is the post-2001 rebound in Asian exports, which coincided with the recovery in the United States and Europe from their own recessions. In other words, Asia never exited a recession through exports in our sample at a time of weak growth in the G-2.

Given the importance of export growth in the recovery phase, this presents the question of whether export-dependent economies experience sharper recoveries. The answer is yes, both because the recovery in exports is sharper—perhaps owing to a higher elasticity of exports to foreign demand in these countries—and because the recovery in exports translates into a stronger recovery in domestic demand (Figure 2.15). Median GDP levels are 5 percentage points higher one year after the trough in high export exposure economies, and the difference cannot be explained by higher trend growth in this group.

Because recoveries in Asia have typically relied on a single engine, they have tended to be weaker than in other regions. It typically takes emerging Asia three quarters to recover its recession output loss, when other emerging markets take two quarters to recover an output loss that was on average greater. Put differently, growth in the recovery phase in Asia is typically ½ percentage point lower per quarter (nonannualized) than in other emerging economies (Figure 2.16). A key difference is that non-Asia emerging economies typically benefit from a strong V-shaped recovery in investment.

[16] To summarize, 60 percent of recoveries were led by exports, 30 percent by consumption, and 10 percent by investment.

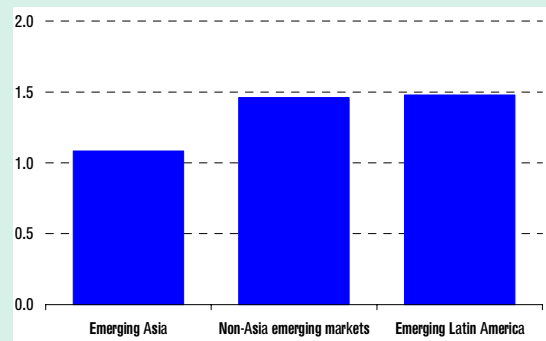
Figure 2.15. Asia: Previous Recessions since 1980 by Type of Export Intensity of the Economies
(Median real level, trough of the recessions = 100)



Source: IMF staff estimates.

Finally, are deeper recessions followed by sharper recoveries? The answer is a clear no. If output was trend stationary, a deeper recession could be followed by a sharper recovery. But the key is that deep recessions appear to entail permanent rather than just cyclical losses, violating the assumption of trend stationarity. In the deepest recession episodes, quarterly (annualized) potential output growth falls by some 1½ percentage points, compared with about ⅓ percentage point in the median recession (Figure 2.17). The cumulative impact of such a decline is significant: a 1 percentage point decline in annualized quarterly trend growth means that GDP would be 10 percent lower after 10 years.

Figure 2.16. Average Quarterly Growth during Recovery Phase
(In percent, nonannualized)

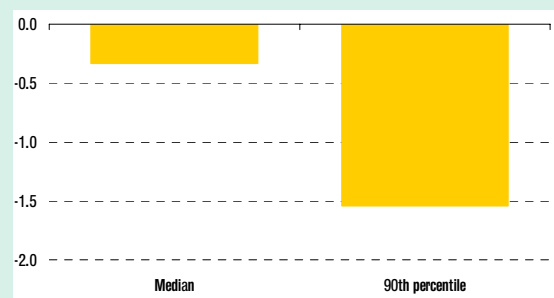


Source: IMF staff estimates.

Policy Responses and Impacts

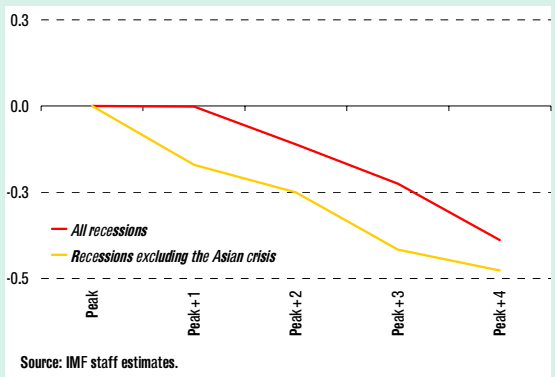
As Asia grapples with the question of the right size and composition of the policy response in the current recession, it may be useful to put current policies in the context of past responses. In particular, how large and timely have these responses typically been, and to what extent did they limit the impact of recessions and speed up recoveries?

Figure 2.17. Asia: Change in Trend GDP Growth during Previous Recessions since 1980[1]
(In percent)



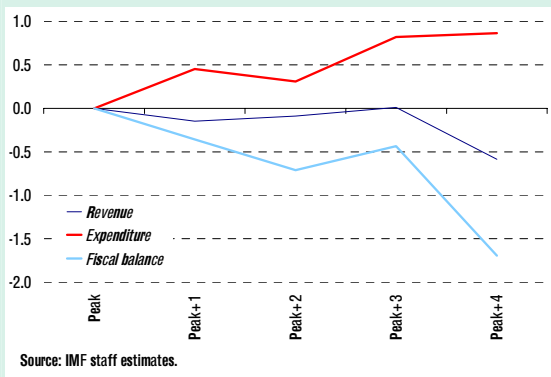
Source: IMF staff estimates.
[1] Difference in average annualized quarterly growth between eight quarters before peak and eight quarters after trough of the recessions.

Figure 2.18. Asia: Nominal Policy Rates during Previous Recessions since 1980
(Median, in percent, peak of the recessions =0)



Source: IMF staff estimates.

Figure 2.19. Asia: Fiscal Indicators during Previous Recessions since 1980
(Median, in percent of GDP, peak of the recessions =0)



Source: IMF staff estimates.

Asia *has* taken advantage of countercyclical tools in past recessions. Despite a large literature documenting the procyclicality of fiscal and monetary policies in emerging economies,[17] our event study analysis shows that monetary and fiscal policies in Asia tend to loosen in response to recessions. Looking at monetary policy, interest rates have typically been reduced by 50 basis points (bps) over the full year after the recession (Figure 2.18). Needless to say, this was simply the median response: some recessions were met with higher policy rates to defend exchange rate pegs (as during the Asian crisis), whereas others were met with very aggressive policy loosening. Declines in nominal rates were enough to outpace falling inflation, as witnessed by the fact that median real interest rates fell as well. And, as mentioned earlier, exchange rate depreciations have been a common feature of recessions in Asia.

Although monetary policy is often thought of as the first line of defense, fiscal policy has also played its part in Asia. In past recessions, fiscal balances have typically been more than 1½ percent of GDP lower a year after the peak. This was in part due to falling revenues in the recession, but expenditures also tended to be raised—by 1 percent of GDP over one year (Figure 2.19).[18] Equally noteworthy, the response of fiscal policy has typically been quite timely, with expenditures ½ percent of GDP higher one quarter after the recession started.

Has countercyclical monetary and fiscal policy been effective? Reverse causality hampers a proper answer to this question, because stronger policy responses tend to be observed during deeper recessions. To circumvent this problem, we constructed a counterfactual scenario. Specifically, we borrowed from the academic literature standard values for the dynamic impact of monetary and fiscal policy on GDP, and used these multipliers *together with the actual policy changes during recessions* to compute how much lower GDP would have been had policy not been loosened.[19] The results show that, in the absence of observed policy changes, GDP would have been somewhat lower and the recovery shallower and more delayed. Because policy impacts operate with lags, the gap between the actual and counterfactual paths does not become substantial until one year after the start of the recession, but after two years the GDP counterfactual is 3 percentage points lower than actual GDP (Figure 2.20).

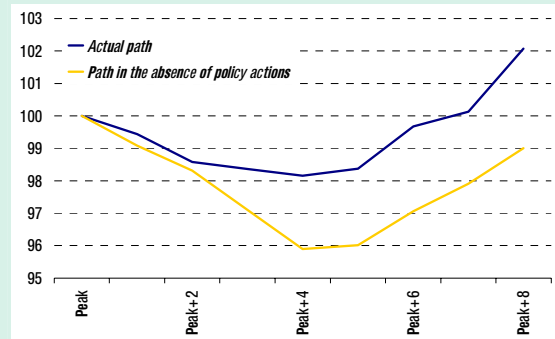
[17] See Kaminsky and others (2004), among others.

[18] We do not have enough data to determine how much of this jump is due to discretionary spending and how much to automatic stabilizers, but the latter tend to be small in Asia.

[19] See Appendix 2.1 for details on the construction of the counterfactual scenario.

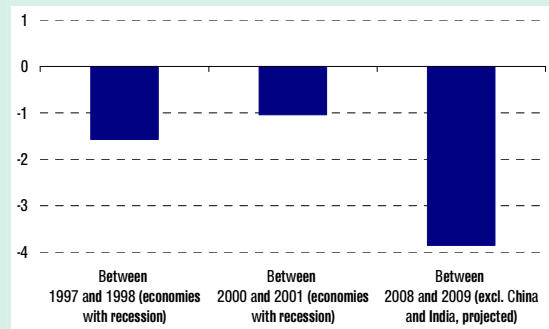
The policy response in the current recession has been substantially stronger than that during past recessions. The median decline in policy rates across all countries in the region exceeds 200 basis points (bps) since the third quarter of last year, four times more than the median response in past recessions. Similarly, the median expected change in overall fiscal balances during 2009 is over 3½ percent of GDP, more than double the response following the Asian crisis (Figure 2.21).[20] Although these numbers underscore the severity of the current recession, they also highlight the benefits of conservative policies followed in the past decade, which expanded the available monetary and fiscal space when the crisis hit the region.

Figure 2.20. Asia: Impact of Policy Actions during Previous Recessions since 1980
(Median real GDP, peak of the recessions =100)



Source: IMF staff estimates.

Figure 2.21. Asia: Change in Fiscal Balance in Selected Recessions
(Median, in percent of GDP)



Source: IMF, WEO database.

Concluding Remarks

Minimizing the depth and duration of the current recession means essentially two things for Asia: preserving the stability of core banking systems, and putting less emphasis on an export recovery. History suggests that cracks in the banking sector could worsen an already painful recession. Although financial systems in Asia remain well capitalized and capable of intermediating credit, persistent stress in the corporate sector and associated job losses mean that pressure on banks is likely to intensify. Authorities should thus remain vigilant and stand ready to stabilize banking sector conditions if needed. And just as the region's reliance on exports is a key reason it has suffered greatly in this recession, the Asian model of relying on exports to lead the recovery may not be as successful as in the past, given the weak expected recovery in the G-2. In this sense, it is reassuring that countercyclical policies are being deployed to a greater extent than in past recessions. At the same time, households in advanced economies will need to repair their over-leveraged balance sheets over time, and the era of easy credit to finance purchases of consumer durables could well be over. In such an environment, the structural growth rate of Asian manufacturing and exports could be much lower. Structural reforms, such as expansion of social safety nets and deepening of domestic financial markets, will be needed if Asia wants to diversify its sources of growth more durably.

[20] The number for 1998 is limited to standard fiscal outlays and excludes bank recapitalization costs.

Appendix 2.1

Table 2A.1. Asia: Identification of Previous Recessions since 1980

	Recession episodes	Recessions identified with		
		Financial stress	Domesitc banking crisis	Export demand shock
Japan	1992Q2-1992Q3	√		
	1997Q2-1999Q1	√	√	
	2001Q2-2001Q4			
Australia	1981Q4-1983Q2	√		
	1990Q2-1991Q3	√		
New Zealand	1982Q4-1983Q1	√		
	1985Q2-1986Q1			√
	1989Q3-1990Q2			
	1991Q1-1991Q2	√		
	1997Q4-1998Q1	√		
Hong Kong SAR	1982Q1-1982Q2	√		
	1989Q1-1989Q2			
	1995Q2-1995Q3			
	1997Q4-1998Q4	√		
	2001Q1-2001Q4			√
	2003Q1-2003Q2			
Korea	1979Q3-1980Q2			
	1997Q4-1998Q2	√	√	
Singapore	1985Q2-1985Q4			√
	1997Q4-1998Q3	√		
	2001Q1-2001Q3			√
	2002Q3-2003Q2			
Taiwan Province of China	2000Q4-2001Q3			√
	2003Q1-2003Q2			
Indonesia	1998Q1-1998Q4	√	√	
Malaysia	1998Q1-1998Q3	√	√	
	2001Q1-2001Q2			√
Philippines	1983Q3-1985Q3	√	√	
	1990Q4-1991Q2	√		
	1992Q1-1992Q2			
	1998Q1-1998Q2	√	√	√
	2000Q4-2001Q1			√
Thailand	1996Q4-1998Q3	√	√	

Sources: Laeven and Valencia (2008); Lall, Cardarelli and Elekdag (2008); and IMF staff estimates.

Data Coverage

The sample of Asia and Pacific economies includes Japan, Australia, New Zealand, China, India, Hong Kong SAR, Korea, Taiwan Province of China, Indonesia, Malaysia, the Philippines, and Thailand, although no recessions were identified in China or India.

The sample of advanced economies includes Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

The sample of non-Asian emerging economies includes Argentina, Brazil, Chile, Colombia, Costa Rica, Croatia, Ecuador, Islamic Republic of Iran, Latvia, Lithuania, Mexico, Peru, Poland, Russia, South Africa, Serbia, the Slovak Republic, Turkey, Uruguay, and Venezuela (other economies were part of the sample but no recession was identified for them).

The data are quarterly, and we focus on the post-1980 period because of the dramatic changes in the structure of Asian economies over the past four decades.

The Bry-Boschan Algorithm

Recessions are identified using the Bry-Boschan (1971) algorithm. Formally, the algorithm follows:

y_t is defined as local peak if $y_t - y_{t-1} > 0$, $y_t - y_{t-2} > 0$,

$y_{t+1} - y_t < 0$,and $y_{t+2} - y_t < 0$;

y_t is defined as local trough if $y_t - y_{t-1} < 0$, $y_t - y_{t-2} < 0$,

$y_{t+1} - y_t > 0$ and $y_{t+2} - y_t > 0$,

where t denotes a given quarter.

A recession is defined as the time (i.e., number of quarters) between the local peak and local trough. The cumulative output loss in the recession is the cumulative difference across all recession quarters between actual GDP and the level of GDP at the local peak.

A recovery is defined as the time between the local trough and the first quarter in which GDP equals or exceeds GDP at the previous peak. An expansion defines the time between a local trough and the next local peak.

Finally, note that official business cycle dates are available for a few countries only. Even when available, the study used the Bry-Boschan algorithm to date the cycles in order to preserve a common methodology across countries.

Financial Stress Recessions

A recession is defined as a financial stress recession if:

- an advanced economies Financial Conditions Index (FCI) is at least one standard deviation above its mean (indicating greater-than-average stress) in any of the four quarters before of the recession, and/or
- the country was experiencing a systemic banking crisis during the recession, as defined by Laeven and Valencia (2008).

The advanced economies FCI is drawn from Cardarelli, Elekdag, and Lall (forthcoming), and is an equal-variance weighted average of seven variables: stock market declines, time-varying stock price and real exchange rate volatility, corporate spread, TED spread, inverted term spread, and the banking sector β (i.e., covariance between financial stocks and the overall market). See Cardarelli, Elkdag, and Lall (forthcoming) for more details.

Ideally, financial stress recessions in the chapter would have been identified with an Asia FCI analogous to the advanced economies FCI, rather than relying on a composite of two different, not directly comparable variables. Unfortunately, data limitations mean that an Asia FCI could only be computed for the post-1996 period, making it unsuitable for this chapter.

Vector Autoregressions (VARs)

The VARs are run in panel form, and include four variables: the year-on-year (y/y) growth of private domestic demand in the United States, and the y/y growth of private consumption, investment, and exports in country *i,* where *i* belongs to the panel of countries. We allow for country-specific fixed effects but otherwise impose common coefficients across countries in the panel. Eight lags are imposed, and the impulse responses presented in the text of this chapter are the generalized impulses normalized so that the export growth shock equals 15 percentage points on impact. We run the VARs for two panels of Asian economies: (1) Hong Kong SAR, Korea, Singapore, Taiwan Province of China, Malaysia, and Thailand (high export exposure group); and (2) Japan, Australia, New Zealand, India, and the Philippines (low export exposure group). Indonesia was excluded from the second group because the panel VAR did not display well-defined impulse responses when including Indonesia.

Constructing the Counterfactual

We constructed an artificial counterfactual GDP by subtracting from actual output the impact of monetary and fiscal policy changes observed during recessions (we looked at the policy actions that took place over four quarters starting at peak). The assumed impact on GDP per 100 bps reduction in the policy rate was derived from the IMF's Global Economic Model and amounts to 0.48 percentage points for Japan, 0.44 for Australia and New Zealand, 0.60 for Korea and Taiwan Province of China; and 1.40 for ASEAN-4 countries, Hong Kong SAR, and Singapore. The impact of monetary policy was assumed to be staggered across four quarters. The impact of fiscal policy on quarterly GDP was assumed to be 0.7 for each percentage point change in the expenditure to GDP ratio. Because these multipliers derive from calibrated models (as opposed to being estimated) they are not subject to the reverse causality problems.

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III. How Vulnerable Is Corporate Asia?

As Asia has plunged into recession, anxieties about the region's corporate sector have grown. And not without reason. The collapse of global demand has decimated corporate revenues, forcing many companies to scramble to find financing to tide them over until their earnings revive. But financing has proved hard to find. For eight months from mid-2008 not a single emerging Asian corporate was able to issue an international bond, even as obligations on previous issues continued to mature. Finally, in March 2009, international bond markets opened again, but to only a handful of companies, the highest-rated and best-established ones. Others found they still could not borrow internationally, and many even encountered difficulty borrowing domestically, as banks became reluctant to lend in the face of deteriorating economic prospects.

Consequently, many firms are now in a race against time. The longer the current situation persists, the greater the risk that a wave of corporate bankruptcies could sweep over the region, potentially pulling down banks in their tow. Asia could then find itself trapped. The combination of corporate and bank failures would quickly transform the recession into a full-blown crisis, making the problem much more intractable to handle and causing serious social dislocation. In other words, the region could find itself back in the same painful situation that it experienced a decade ago during the Asian crisis.

The objective of this chapter is to assess the likelihood of such a scenario. It attempts to answer two broad questions. First, how high is the risk of corporate sector defaults? Second, how large are the expected losses from defaults, and how badly will they affect the banking sector? To answer these questions, the chapter relies heavily on the approach known as Contingent Claims Analysis (CCA). This methodology combines balance sheet information with prices prevailing in financial markets in order to obtain forward-looking measures of the risk of defaults and the potential losses they might cause. Put another way, the CCA attempts to uncover the market's view of what is likely to happen to the corporate sector, by teasing out the scenario implicit in current market prices. Then, alternative scenarios can be constructed, including what would happen if things turn out worse than the market expects.

The main conclusions of the chapter are as follows:

- The risk of corporate defaults is unusually high, but still much smaller than that which prevailed during the Asian crisis.
- Accordingly, the impact on the corporate and banking sectors is likely to be significant but manageable. Losses to creditors (excluding shareholders) from defaults in Asia as a whole could amount to about 2 percent of GDP, while bank losses could amount to about 1⅓ percent of their assets.
- The main reason the risks are manageable is that the corporate sector entered the crisis in robust health, with low leverage ratios and high profitability.
- These findings, however, are based on a market-based scenario in which Asia's economy stabilizes and then gradually recovers. Although this view is consistent with the outlook presented in Chapter 1, the

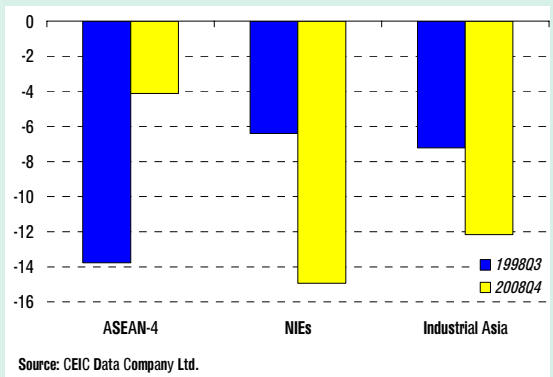
Note: The main authors of this chapter are Sonali Jain-Chandra, Papa N'Diaye, and Hiroko Oura. Adil Mohommad provided research assistance. The authors thank Kenichi Ueda for sharing his Matlab code and the Worldscope data used in the IMF's Corporate Vulnerability Utility, and Petia Topalova for her Stata code.

downside risks are sizable and the costs of getting trapped in a corporate-banking sector bankruptcy loop could be immense. So, prudence would suggest taking preemptive measures, especially to shore up the banking system and prepare for a possible surge in corporate bankruptcies, if global demand plunges anew.

How Badly Has the Corporate Sector Been Hit?

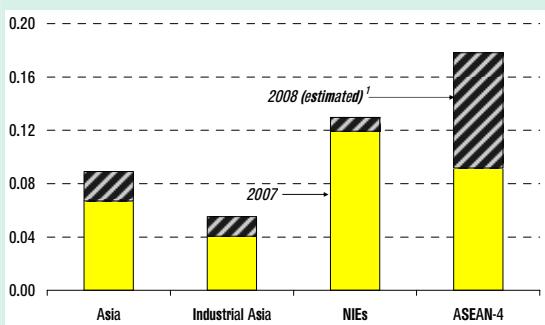
In some respects, the situation now confronting Asia's corporate sector is without precedent in the post-war era. Never have the declines in exports been so large, neither during the Asian crisis, nor during the collapse of the IT bubble in 2001. In most countries, exports have plunged by more than 20 percent year-on-year; in some cases, the decline has reached an astonishing 50 percent year-on-year (see Box 3.1 for an analysis of the impact on China's corporate sector).

Figure 3.1. Selected Asia: Decline in Industrial Production
(Year-on-year decline in 1998Q3 and 2008Q4, in percent)



Source: CEIC Data Company Ltd.

Figure 3.2. Asia: Share of Debt of Firms with Interest Cover Ratio Less than One
(Ratio)



Sources: Worldscope; and IMF staff estimates.
[1]Assuming a 15 percent decline in profits.

Two aspects of the situation are striking and very different from the Asian crisis experience:

- Firms in more *advanced economies* have been hit much harder than those in developing markets. That is because many specialize in cyclically sensitive sectors that have been particularly affected, such as electronics or automobiles.
- Companies in the *tradable sector* have been affected more than domestically oriented firms, because the shock originated from abroad. The major exception is real estate/construction firms, which are typically highly leveraged and have been wounded by sharp falls in real estate prices.

But the problem is not confined solely to the export and real estate sectors. There has been an unprecedented collapse of the manufacturing sector as a whole in industrial Asia and the NIEs, with industrial production falling by about 12–15 percent year-on-year (Figure 3.1). Production has even declined in the ASEAN-4, though by far less than a decade ago. As a result, corporate profits have been severely undermined. In the December quarter, robust profit growth in China, India, and Australia suddenly ground to a halt, while in Japan manufacturing profits suddenly and completely vanished.

With cash flows diminishing, the number of financially vulnerable firms has soared. One key measure of corporate health is the Interest Coverage Ratio (ICR), the degree to which cash flows are sufficient to cover the interest on debt. Firms where earnings before interest and taxes are less than interest payments due, that is, with ICRs of less than one, are sometimes referred to as "technically bankrupt." Many of these firms can survive for a time by selling assets to meet their debt obligations. But if their ICRs remain below

one for a prolonged period, eventually they will run out of assets and actual bankruptcy will ensue.

How have Asian firms fared on this measure? At end-2007, only about 15 percent of listed firms had ICRs less than one. Moreover, most of these firms were small, together accounting for only 7 percent of corporate sector debt (Figure 3.2). But in 2008, the share of firms with insufficient profits is estimated to have risen to about 17 percent of all firms, accounting for about 10 percent of total corporate debt.[21] The estimated increase is stark in ASEAN-4, because many of the firms in these countries were close to the threshold before the crisis, and so quickly crossed over when earnings suffered at the end of last year.

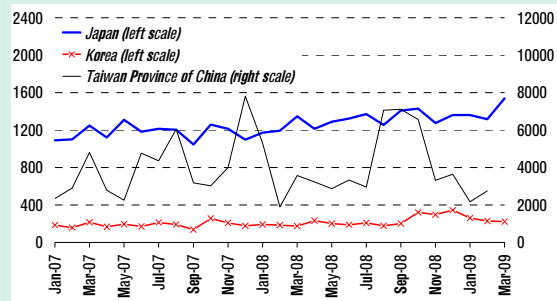
How Large Are the Default Risks?

So far, there is little sign that these stresses have been translating into an increase in corporate bankruptcies. In Taiwan Province of China, the number of companies dissolved has actually been falling in recent months (Figure 3.3); in Korea, there was initially an uptick in bankruptcies after September 2008, but the rate has subsided again. Only in Japan (among economies for which there is ready data) does the crisis seem to have caused bankruptcy rates to jump.

However, financial markets have reacted to growing vulnerability with trepidation. By February 2009, share prices in emerging Asia had plunged by about 60 percent year-on-year, a drop as precipitous as the one that occurred during the Asian crisis (Figure 3.4). Particularly punished have been the cyclically sensitive sectors, such as financials, industrials, and consumer discretionary (autos, consumer services, and durables) (Figure 3.5). Mainly, this is because the shock has hit these sectors hardest. But in some cases it is also because the sectors had preexisting

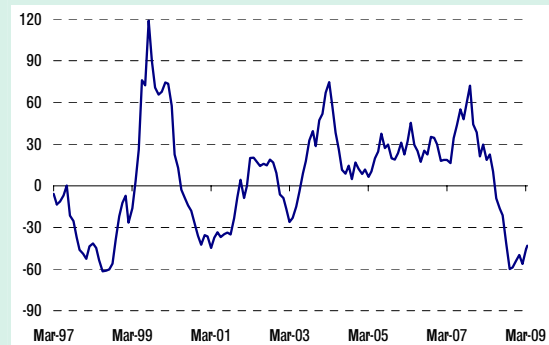
[21] Since 2008 balance sheets are not available in many cases, results for that year were derived by applying an estimated profit decline (15 percent) to 2007 balance sheet data.

Figure 3.3. Selected Asia: Corporate Bankruptcies[1]
(Units per month, from January 2007 to March 2009)



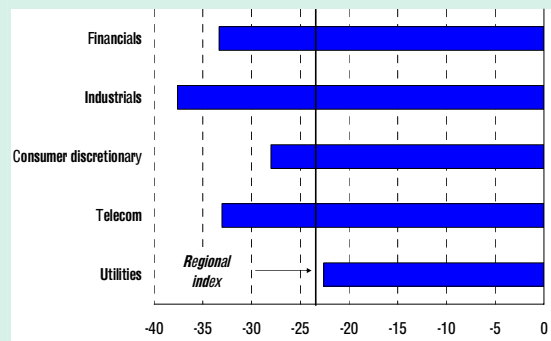
Source: CEIC Data Company Ltd.
[1] For Taiwan Province of China, data refer to companies dissolved or licenses revoked, up to February 2009.

Figure 3.4. Emerging Asia: Stock Market Performance
(Year-on-year percent change)



Source: Morgan Stanley.

Figure 3.5. Asia Excluding Japan: Equity Performance by Sector
(Percent change over September 2008 to-April 2009)

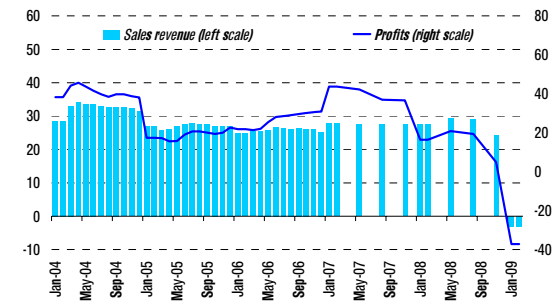


Source: Morgan Stanley.

Box 3.1. How Is the Economic Downturn Affecting China's Corporate Sector?

In China, the downturn has affected corporate profits and increased financial stress, particularly in the real estate and export-related sectors and in sectors where overcapacity has built up in recent years. Growth in corporate profits has slowed since late 2007 across virtually all sectors, and turned sharply negative (year-on-year) in early 2009. Signs of distress have emerged in particular sectors (e.g., real estate, steel, heavy machinery, textiles, toys, automobiles) where firms have been adjusting by running down inventories, cutting prices, and laying off workers. The layoffs mainly involve migrant workers, and are thus not fully reflected in the measured unemployment rate, which covers only registered urban workers. There have been anecdotal reports of pay cuts and wage arrears in some areas and of distress among smaller firms.

China: Year-to-Date Profits and Sales
(Year-on-year percent change)

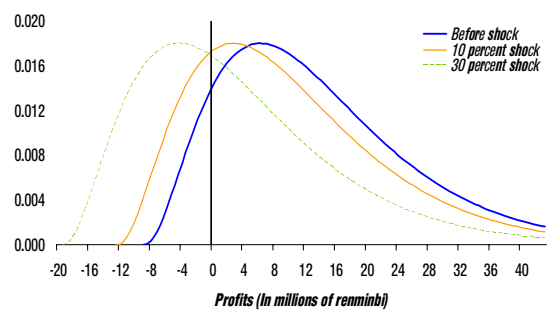


Source: CEIC Data Company Ltd.

The corporate sector entered the downturn with relatively strong balance sheets in the aggregate, which provided a cushion. Corporate deposit growth in the banking system, while decelerating during 2008 as profits slowed, has remained relatively strong. Compared with other countries, firms in China rely relatively more on retained earnings than on bank credit, and very little on foreign funds and capital market financing. As a result, declines in these latter components have not had much effect on corporate balance sheets and investment.

The corporate sector outlook for 2009 is difficult, with GDP growth in China set to slow to 6.5 percent and output expected to decline in key partner countries. The real estate sector is likely to remain weak as the overhang of vacancies, fall-off in mortgage growth, and the gap between rental and mortgage rates could presage a continued softness in the sector in 2009. Manufacturing investment could weaken if inventories continue to be run down and falling profits drive down retained earnings. Corporate weakness could intensify further if significant overcapacity emerges in certain industries or global demand falters further or protectionist barriers emerge. Defaults on informal lending, through interenterprise credit and loans to customers, could be an additional source of risk. However, the fiscal stimulus and other policy measures should mitigate the negative impacts, particularly if they come alongside a step-up in reforms of key social services that would strengthen the basis for private consumption and strong medium-term growth.

China: Electronics Industry – Probability Distribution of Firm Profits[1]



Source: IMF staff estimates.
[1] Disributions are based on shocks to exports sales of zero percent, 10 percent, and 30 percent, respectively.

A simulation exercise suggests that additional external and real estate shocks,[1] were they to occur, could significantly hurt the corporate sector. But the magnitude of shocks required to induce widespread distress and defaults is very large. Weaker exports would have a large impact on the electronics and textile industries, and weaker domestic demand would have a large impact on ferrous metal and nonmetal minerals

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Note: The main authors of this box are Vivek Arora, Tarhan Feyzioğlu, and Xu Wei.

[1] The simulation assumes a 10 percent or a 30 percent decline in external demand or domestic demand. The chart presents the results for the external demand shock.

sectors. Losses would surge, especially in the electronics sector because the distribution of profits in this sector is skewed significantly to the left, with many firms having thin profit margins. The number of bankruptcies in most sectors would increase but remain manageable, because many firms have large equity buffers against losses, and firms' financial costs are very low. A deeper and more protracted slowdown would dramatically increase bankruptcies in the electronics, textiles, and ferrous metal industries.

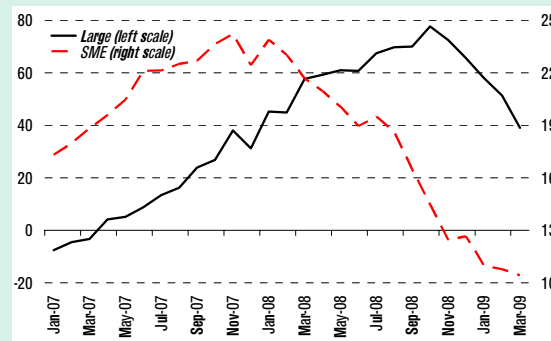
vulnerabilities. For example, estimates suggest that at end-2008, about 20 percent of the debt of electronics firms in ASEAN-4 was owed by financially vulnerable firms with ICRs less than one.

Financial markets have also drawn a sharp distinction between large firms and small and medium-sized enterprises (SMEs). When the crisis hit, large well-established firms quickly turned to domestic banks for funding, in some cases to repay foreign debts, in other cases as a precautionary measure. But SMEs were unable to do the same (Figure 3.6). To the contrary, they found that their access to bank credit was curtailed quickly and sharply, a development that prompted governments to step in with loan guarantees.

Why were banks so quick to clamp down on SME credit? They seem to have responded to the SMEs' greater vulnerability. In the previous decade, many SMEs had borrowed heavily to expand their activities, notably as suppliers to larger manufacturing enterprises. But these expansions proved insufficiently profitable. The financial health of listed SMEs was relatively weak—and listed firms were most likely in better shape than their unlisted brethren. In 2007, the share of small firms with ICRs less than one was about 25–30 percent (Table 3.1). In contrast, the share of debt of financially vulnerable large firms was only in the range of 1–10 percent.

Worries about default, however, extend far beyond the SMEs. There are no observable prices that directly measure the expected probability of defaults. But, such probabilities can be inferred in two ways. One is by looking at the spreads on credit default swaps (CDS) on the dollar bonds issued by

Figure 3.6. Korea: Lending by Size of Companies
(Year-on-year percent change)



Source: CEIC Data Company Ltd.

Table 3.1. Selected Asia: Share of Debt of Firms with Interest Cover Ratio Less than One, by Size, 2007
(Ratio)

Industrial Asia	
Small	0.24
Medium	0.11
Large	0.02
NIEs	
Small	0.31
Medium	0.15
Large	0.11
ASEAN-4	
Small	0.27
Medium	0.17
Large	0.03

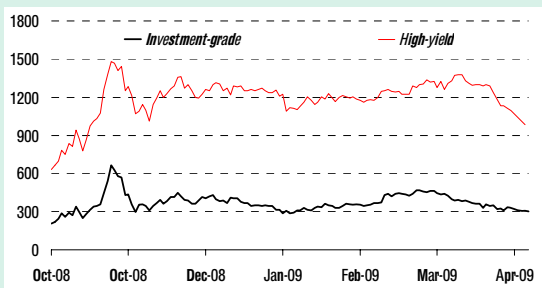
Sources: Worldscope; and IMF staff calculations.

Asian corporates abroad. These indeed indicate that perceived risk has soared, even for large companies that were able to borrow internationally.

Spreads on investment-grade firms, which had been running about 150 basis points (bps) before September 2008, almost immediately afterward jumped to about 300 bps, while those on high-yield companies soared to about 1,300 bps (Figure 3.7). In other words, in March 2009, bondholders seeking protection on non-investment-grade companies were willing to pay on average 13 percent of the face value of their bonds per year as an insurance premium against default, an astonishingly high amount.

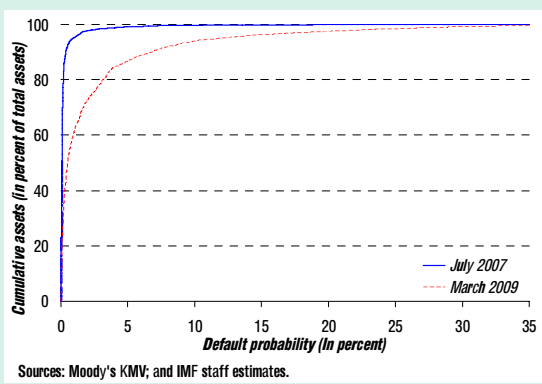
This suggests that financial markets perceive default risks for large Asian corporates to be exceptionally high. This would be worrisome, for if significant numbers of large companies go under, a wave of defaults could cascade down Asia's tightly integrated supply chain. But it is also possible that the figures are misleading, because Asian CDS markets are thin, distorted by the financial difficulties of the major global banks, and in any case involve only a handful of companies, possibly unrepresentative of corporate Asia as a whole.

Figure 3.7. Asia: Credit Default Swap Spreads[1,2]
(In basis points)



Source: Bloomberg LP.
[1] Excluding Japan.
[2] Uses iTraxx indices, which are a set of credit default swap indices covering regions or sectors and contain the most liquid names in that market, based on a dealer poll.

Figure 3.8. Asia: One-Year-Ahead Default Probability of Nonfinancial Corporates



Sources: Moody's KMV; and IMF staff estimates.

Indeed, the second method of inferring default probabilities based on the CCA methodology, gives a very different view. This approach has the advantage of using share prices, so the analysis can be extended to a much larger universe, namely all the listed firms in Asia. Under this approach, the risk of default is related to the probability that the value of a firm's assets will fall below the value of its liabilities. This, in turn, depends on two main factors: firm leverage (debt relative to the market value of its equity) and uncertainty about the value of firm assets, which reflects the expected value of future profits. Both of these factors are related to share prices, because when stock prices fall, this diminishes the market equity base; and when price volatility increases, this implies growing uncertainty over asset values. Both increase the probability that a firm will default. With this and other information, expected default probabilities one year ahead can be calculated using the CCA framework.

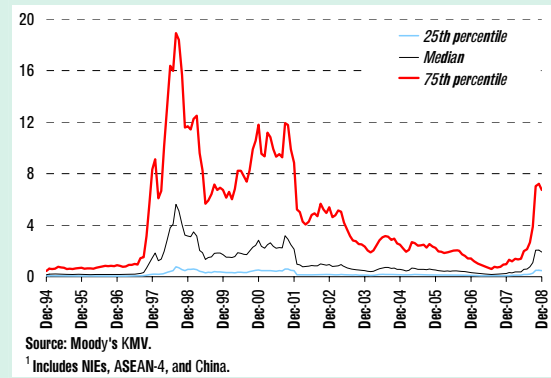
What do such calculations show? They indicate that expected default probabilities have increased markedly. For example, back in July 2007, only a small fraction of firms—those with less than 1 percent of corporate sector assets—had a default risk one year ahead that exceeded 5 percent. But by March 2009, this proportion had increased to about 14 percent (Figure 3.8). A key reason is the collapse of share prices and the soaring volatility. In addition, tighter financial conditions have raised debt service costs and rollover risks, because short-term debt represents more than 60 percent of corporates' total debt in the sampled countries.

The same calculations can be looked at a slightly different way. One could examine how default probabilities have changed for firms at different levels of risk. For example, the default probability for the median firm, an "average" firm in the sense that half the firms in Asia have a higher risk of

default, has risen by 1¾ percentage points from September 2008 to March 2009, an amount equivalent to a 10-standard-deviation increase relative to the post-2004 average. For firms at the 75th percentile, the risk of default reached 8 percent in March, implying that nearly one-quarter of listed Asian corporates have even higher default risk[22] (Figure 3.9). But, significantly, these levels of risk remain far below the levels reached during the Asian crisis, which for firms at the 75th percentile peaked at about 19 percent. Current levels are also smaller than the previous peak, during the IT bubble collapse in 2000–01.

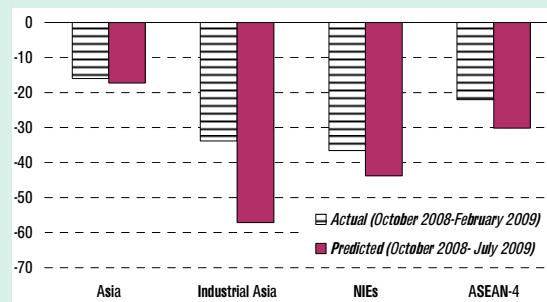
These market-based default probabilities are based on a bad but not disastrous scenario for the corporate sector. Unlike in advanced countries, there are no consensus forecasts of corporate earnings. However, econometric techniques can be employed to tease the scenario out. Accordingly, a vector autoregression (VAR) model was estimated to establish the relationship between the expected default probabilities and the actual rate of industrial production, an observable and timely proxy for corporate revenue.[23] This estimation suggests that changes in default probabilities are indeed good predictors of industrial production one year ahead, especially when financial conditions are also taken into account. Specifically, the 1¾ percentage point increase that had occurred in the default probability during May–October 2008 for the median firm predicts declines in industrial production by mid-2009 that are slightly larger than the declines that have already taken place. For example, industrial production would fall by about 30 percent in ASEAN-4, 45 percent in the NIEs, and 60 percent in industrial Asia (Figure 3.10), taking into account the change in financial conditions. Put another way, the default probabilities seem to be based on a scenario similar to the one presented in Chapter 1, in which things do not get much worse but will take some time to get better.

Figure 3.9. Selected Asia: Historical Expected Default Frequency[1]
(In percent)



Source: Moody's KMV.
[1] Includes NIEs, ASEAN-4, and China.

Figure 3.10. Asia: Change in Industrial Production—Actual vs. Predicted[1]
(In percent)



Sources: CEIC Data Company Ltd; and IMF staff calculations.
[1] Predicted values are the model prediction for 10 months ahead, based on changes in expected default frequencies from May to September 2008.

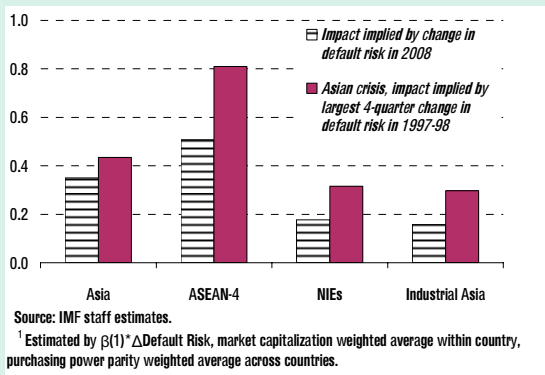
Another way to assess the market scenario is by comparing the current implicit forecasts with those that would have prevailed at the time of the Asian crisis. To do this, a model was estimated relating changes in default probabilities for individual firms to the amount of their investment over the subsequent year. It proved to have strong predictive power (Appendix 3.2). Then, the predicted change in investment based on the annual change of default probability in 2008 was compared to the prediction the model would have made in 1997–98.[24] It turns

[22] In April, the default risk at the 75th percentile receded to 7 percent.
[23] For details, see Appendix 3.1.
[24] Because many firms still have not reported their 2008 results, the end-2008 default probability is computed using 2007 balance sheet and 2008 equity price data. The change in default risk during the Asian crisis is measured using the largest four

out that the currently expected decline in corporate investment in Asia as a whole is indeed smaller than what was expected at the time of the Asian crisis (Figure 3.11), across all country groupings, especially in the ASEAN-4 countries.

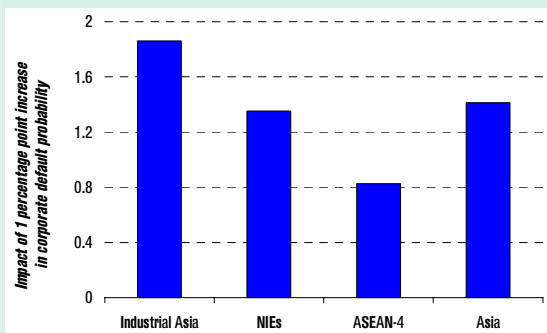
Finally, it is important to consider whether the market expects corporate distress to spill over into the banks. Estimates from a VAR model confirms that they do. The model shows that the cumulative impact on banks' default risk from a 1 percentage point shock to corporate sector default probabilities exceeds one in most country groupings. The results are particularly strong for industrial Asia, where a 1 percentage point increase in corporate default risk leads to a nearly 2 percentage point rise in banks' default risks (Figure 3.12). The larger increase in bank default risk reflects the fact that banks' assets, which are in part composed of corporate loans (loans to corporates account for 45–60 percent of bank loans), are leveraged. This means it will be important to examine the impact of expected corporate losses on the banking system, which will be done below.

Figure 3.11. Expected Implication of Higher Default Risks on Firm Investment[1]
(Decline in capex/total assets ratio)



Source: IMF staff estimates.
[1] Estimated by β(1)*ΔDefault Risk, market capitalization weighted average within country, purchasing power parity weighted average across countries.

Figure 3.12. Selected Asia: Cumulative Impact on Banks' Default Probabilities from Shock to Corporate Default Probabilities, after 10 Months
(In percent)



Source: IMF staff estimates.

Summing up, the scenario that markets seem to be expecting is similar to the one outlined in Chapter 1. Markets expect a substantial drop in industrial production and corporate investment, and a significant rise in corporate defaults. But they do not seem to be expecting defaults on anywhere near the scale that occurred during the Asian crisis, even for country groupings such as industrial Asia that emerged relatively unscathed a decade ago. This immediately raises a question: how large are the default losses expected to be?

How Large Are the Likely Default Losses?

Although mathematically complex, the basic strategy for deriving expected losses using the CCA is relatively straightforward.[25] However some definitions are needed. The term "expected losses" refers to the present value of expected losses due to default, estimated using information on corporates' equity, market value of assets, debt, and the volatility (or the risk) associated with the assets.[26] Importantly, these figures are not comprehensive estimates of corporate losses, or even losses at defaulting

quarter change in default risk between 1997Q1 and 1998Q4, because the timing of the increase in default risks varied significantly from country to country.

[25] Also see Gray and Tamirisia (2009).

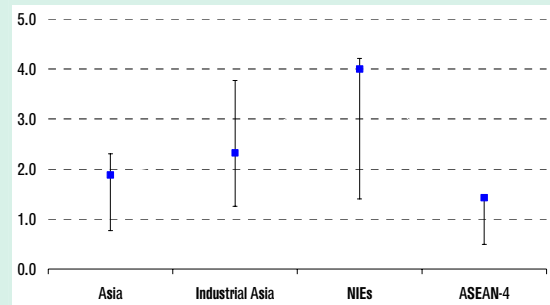
[26] In the underlying Merton model (see Gray and Malone, 2008), these expected losses are equal to the value of a put option, the underlying assets of which are the assets of the firm, and the strike price is defined by the firm's liabilities.

corporates, but rather the expected losses that bondholders and banks would be forced to absorb after the equity of defaulting companies' shareholders has been entirely wiped out (IMF, 2008a). In other words, they are partial figures, focusing on losses to creditors only. So, they are most useful as a comparative guide to indicate which regions will suffer the most. Also, because they focus on losses to creditors, they can provide a good base for estimating the potential impact on the banking system.

The model suggests that default losses could be significant. For Asia as a whole, expected losses would amount to about 2 percent of GDP (using equity price data as of mid April 2009)—a relatively high figure considering its partial nature and the fact that it is derived from a scenario in which the economic situation does not deteriorate much further. Interestingly, the expected losses correlate well with the degree to which country groupings have been affected so far, with losses in ASEAN-4 estimated to amount to about 1½ percent of GDP while those in the NIEs are predicted to reach a sizable 4 percent of GDP (Figure 3.13). Estimates for industrial Asia are close to the lower ASEAN-4 level, even though this region has been hit particularly hard, largely because the big companies there are well established and thus less likely to default.

There is, naturally, a range of uncertainty around these estimates of creditors' losses. Perhaps the most important unknown is the degree to which creditors would be able to recover on their collateral when the defaults occur. In the baseline case, recovery rates on corporate assets are assumed to be the same as the historical average recovery rate of the industry that each defaulting corporate operates in. As alternatives, the recovery rate is assumed to be as much as 80 percent or as low as 40 percent.

Figure 3.13. Asia: Nonfinancial Corporate Sector—Annual Average Expected Losses One Year Ahead
(In percent of GDP)



Sources: Moody's KMV - Credit Edge; and IMF staff estimates.
[1]Dots represent point estimates. Confidence intervals assume 80 percent and 40 percent recovery rate in case of default.

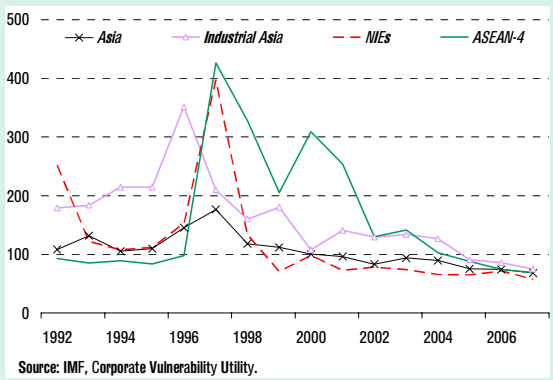
As Figure 3.13 shows, the point estimates are generally close to the top of the range, implying that in most countries historical recovery rates are closer to 40 percent. Not surprisingly, in industrial Asia the situation is much better, as the point estimate is in the middle of the range, implying a recovery rate of about 60 percent. Should Asian countries be able to improve recovery rates even further to 80 percent, the sensitivity analysis shows that expected losses could be cut in half, to about 1 percent.

In sum, the calculated expected losses seem significant, but manageable. But how can this be? How can the extent of default losses be manageable when the collapse in industrial production is even greater than during the Asian crisis?

Why Is Asia's Corporate Sector Expected to Remain So Resilient?

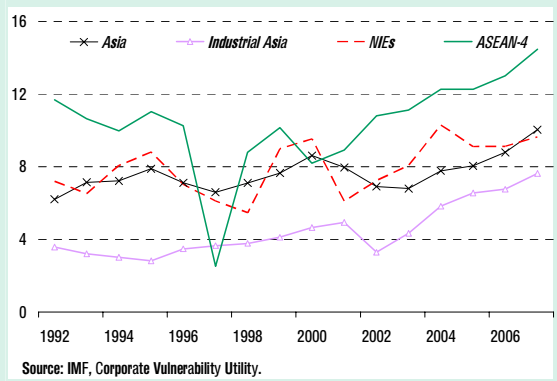
The answer to this question is quite straightforward: Asia entered the global financial crisis in a relatively healthy state. The comparison with a decade ago is instructive. In 1997, corporate Asia was in an extremely vulnerable position. Its leverage was high and its profitability low; it had large unhedged foreign currency and short-term debts. So, when exchange rates fell and interest rates rose, the sector was quickly devastated.

Figure 3.14. Asia: Leverage (Debt-to-Equity Ratio)
(In percent)



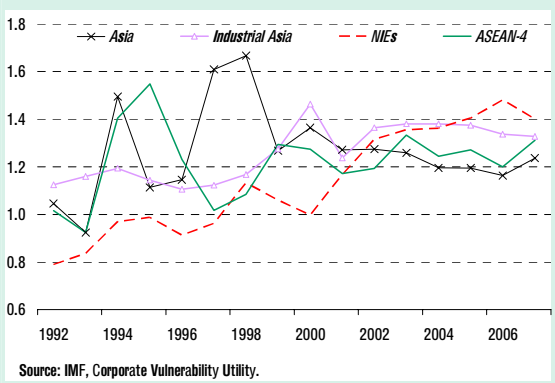
Source: IMF, Corporate Vulnerability Utility.

Figure 3.15. Asia: Profitability (Return on Assets)
(In percent)



Source: IMF, Corporate Vulnerability Utility.

Figure 3.16. Asia: Liquidity (Quick Ratio)
(In percent)



Source: IMF, Corporate Vulnerability Utility.

In contrast, thanks to the postcrisis restructuring and a long global boom, by 2007 corporate positions were exceptionally strong on every standard measure.

- *Leverage*. The Asian corporate sector had deleveraged significantly, with the debt-to-equity ratio (market capitalization weighted average) for the region as a whole falling by half from its peak to just 75 percent in 2007 (Figure 3.14). In addition, its debt structure had also improved, with short-term debt falling as a share of total debt.

- *Debt service*. Similarly, corporate financing costs, as measured by the average interest paid on debt outstanding, had declined as interest rates declined across the globe and spreads collapsed.

- *Profitability*. With demand booming and companies paying much closer attention to the bottom line, profitability increased sharply, with the average rate of return on assets reaching about 10 percent for Asia as a whole and 14.5 percent in ASEAN-4 in 2007 (Figure 3.15).

- *Liquidity*. During the boom period, firms also built up their liquidity, a precaution that proved extremely helpful when the recession hit. The average quick ratio (the current assets of a firm net of inventories divided by current liabilities) had increased above one in every country grouping (Figure 3.16), indicating that firms were able to service a year's worth of obligations simply by using their liquid assets (cash plus marketable securities plus accounts receivable).

These strong initial conditions have made Asia resilient to what has been an exceptionally large shock. In addition to the shield provided by strong balance sheets, firms are likely to attempt to slash costs by delaying investment plans and shedding labor to avoid entering into bankruptcy. Even so, there will be a significant amount of defaults, which means there will be a sizable spillover to the banking sector. To quantify exactly how large this spillover will be, we turn back to the CCA.

How Badly Will the Banks Be Affected?

Translating the corporate sector's expected losses into banking sector losses requires several steps. Essentially, one needs to apportion the losses among the various creditors, according to the relative importance of these sources and the seniority structure of the debt. Much of the information needed to do this is unavailable, but some approximations can be made (Appendix 3.3). When this is done, the estimates suggest that new bank writedowns could range from 1¾ percent of total 2008 loans in industrial Asia to 2½ percent of loans in ASEAN-4 (Figure 3.17). Such writedowns would bring banks' cumulative losses—that is, existing provisions plus expected new writedowns—to as much as 6 percent of banks' total loans in ASEAN-4 economies.

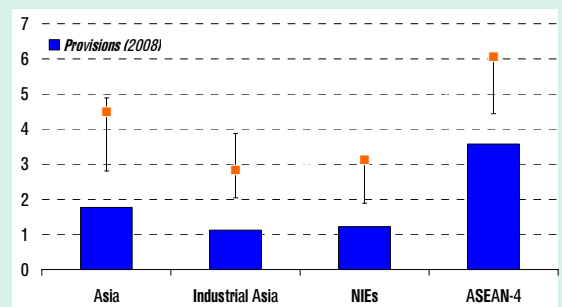
Note an apparent paradox. Expected losses from corporate defaults are highest in the NIEs by far, but the impact on the banks is expected to be the greatest in ASEAN-4. Although the result seems strange, the explanation is simple. The banking sector in ASEAN-4 is much smaller compared to other country groupings, so corporate losses that may seem modest as a share of GDP will have a disproportionately large impact on ASEAN-4 bank capital.

Even so, banks in all regions should be in a position to absorb the projected writedowns, because they too entered the crisis in strong capital positions, relative to the minimum Basel requirements.[27] Under relatively conservative assumptions regarding banks' operating profits this year, the toll on total and Tier 1 capital is expected to range between ½ percent and 1¼ percent of bank assets across country groupings. After these reductions, bank capital will still remain sufficient, with regulatory capital asset ratios around 10 percent for Asia as a whole and Tier 1 capital exceeding 5.4 percent in all country groupings (Table 3.2).

These estimates, however, need to be treated with caution. For a start, the figures almost certainly underestimate the extent of the likely losses. That is because they include only those bank losses that stem directly from defaults on corporate sector loans. And corporate sector loans account for only around 45–60 percent of bank loan books. In particular, the estimates exclude losses from loans to households also, which may be quite large because the recession has also put them under stress, from rising unemployment and falling housing prices.

One way to cross-check the results is to calculate bank losses directly from bank share prices using the

Figure 3.17. Asia: Banking Sector—Expected Losses from Corporate Sector Distress One-Year-Ahead[1]
(In percent of total banking sector loans)



Sources: Moody's KMV - Credit Edge; and IMF staff estimates.
[1] Dots represent point estimates. Confidence intervals assume 80 percent and 40 percent recovery rate in case of default.

Table 3.2. Asia: Potential Impact on Bank Capital from Corporate Sector Distress[1]
(In percent)

	Capital				Return on Assets[4]	
	Regulatory[2]		Tier 1[3]			
	Before writedowns	After writedowns	Before writedowns	After writedowns	Before writedowns	After writedowns
Asia	11.2	9.9	7.6	6.3	0.9	0.5
Industrial Asia	12.1	10.9	6.6	5.4	0.4	0.3
NIEs	12.1	11.5	9.1	8.5	1.1	0.5
ASEAN-4	16.8	15.8	10.2	9.2	1.6	0.8

Sources: Moody's KMV - Credit Edge; and IMF staff estimates.
[1] Based on estimated losses using Moody's corporates recovery rates.
[2] Refers to Basel Capital Adequacy Ratios, with the minimum ratio typically around 8 percent.
[3] Minimum Tier 1 ratio is typically 4 percent.
[4] Profits are assumed to decline by 50 percent relative to their 2008 level.

[27] For discussion of the issue of capital buffers higher than the minimum Basel capital requirements, see Bank for International Settlements (2006).

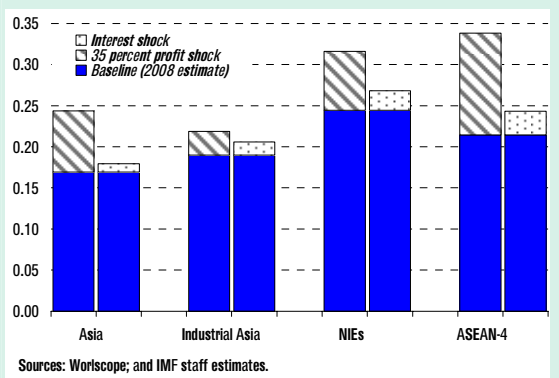
CCA. These losses are naturally higher, amounting to 2½ percent of GDP on average for Asia.[28] They are also in line with IMF staff estimates of bank losses on loans and securities of about 2 percent of GDP (excluding China), presented in the April 2009 *Global Financial Stability Report*. Even using these more comprehensive figures, however, bank losses will still be a far cry from those experienced during the Asian crisis. In that case, banks' recapitalization costs varied from 20 percent of GDP to 35 percent of GDP in the cases of Indonesia, Korea, the Philippines, and Thailand (Berg, 1999).

But there is one final problem with the results: they are based on the scenario that Asia's economy will stabilize and only gradually recover. What would happen if instead things get worse?

Stress Testing the Corporate Sector

There are two possible ways to examine a more adverse scenario. The first is by employing more pessimistic assumptions in the CCA. Consider the case, for example, where worsening economic conditions lead to a fall in corporate share prices by an additional 50 percent from March 2009 levels. If that happens, default probabilities would soar by

Figure 3.18. Profit Shock vs. Interest Rate Shock: Share of Firms with Interest Cover Ratio Less than One
(Ratio)



Sources: Worlscope; and IMF staff estimates.

4 percentage points for the median firm, levels not that far away from those reached in the Asian crisis. Under this scenario, expected corporate losses would amount to 2–7 percent of GDP, with the smallest losses again occurring in ASEAN-4 and the largest in the NIEs. As a result, banks would have to write down 2–4 percent of their loans, reducing their regulatory capital ratios by about 1½–2 percentage points. This would represent a sizable blow to banks; while average capital in all country groupings would still remain a few percentage points above the minimum 8 percent regulatory norm, this would not necessarily be true for individual banks.

Another way to examine what would happen if things go wrong is to stress test corporate balance sheets. This approach involves examining how different types of shocks to the corporate sector, such as a specified fall in profits, would affect firms' viability as measured by their ICRs (Appendix 3.4). The results provide a guide to the types of shocks that would be particularly painful for the corporate sector, and the types of firms that would be particularly vulnerable.

The stress tests suggest that corporate Asia would be particularly vulnerable to further demand shocks. For example, in one test, profits were assumed to fall another 35 percent from their estimated 2008 level, in line with the drop that occurred during the Asian crisis. In that case, the share of Asian firms with ICRs less than one would rise to around a quarter of all firms, accounting for about 17 percent of corporate debt (Figures 3.18 and 3.19). Firms in the NIEs and ASEAN-4 would be particularly affected, as the share of low-profit firms in these groupings would exceed a third of all firms.

Breaking the results down by sector shows that three types of firms would be particularly affected:

- *Small firms*.[29] The earnings shock would push up the share of debt of low ICR firms to 30–50 percent (Figure 3.20).

[28] These estimates exclude losses for Singapore and New Zealand banks owing to data constraints. They also exclude China for comparability with the GFSR estimates (see IMF, 2009a).

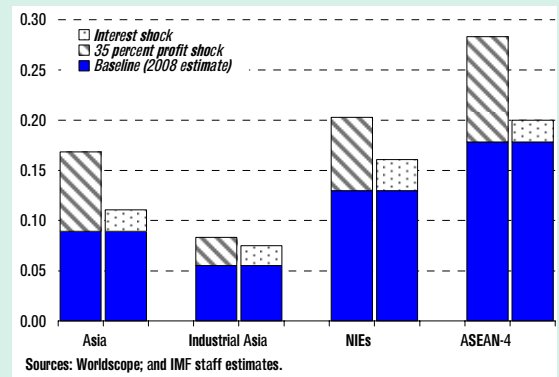
[29] The sample is divided into three categories—small, medium, and large—on the basis of market capitalization. Small refers to

- *Electronics sector*. If profits fall sharply, 70 percent of debt of electronics firms would be at risk in the ASEAN-4 countries (Figure 3.21).
- *Construction companies*. In the ASEAN-4 countries, a major portion of construction firms' debt would become impaired.

On the positive side, corporate Asia is much less sensitive to other types of shocks. Increases in interest rates matter much less than they did a decade ago, because firms have deleveraged considerably. For example, an increase in interest rates of 100 basis points would have a much smaller impact on ICRs than a further 35 percent profit decline. Moreover, the likelihood of such a shock is extremely small—so far during the current recession, domestic interest rates have actually been falling.

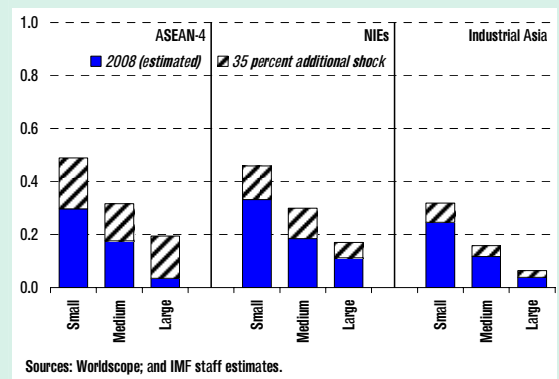
Sensitivity to changes in foreign interest rates and exchange rates also appears to have diminished. It is impossible to test these sensitivities directly, because most firms report only their aggregate debt levels, without breaking them down into foreign and domestic debt. But some inferences can still be drawn. For example, firms are unlikely to be much affected by soaring foreign interest rate spreads. That is because access to new borrowing is extremely limited, whereas all of the existing direct corporate borrowing would have been done at fixed rates or fixed spreads. As for exchange rates, sensitivity is likely to have fallen sharply over the past decade, because external debt ratios have come down considerably. Indeed, for many exporters, exchange rate depreciations may now be beneficial, boosting the local currency value of their revenues by more than they increase their more modest external debts.

Figure 3.19. Profit Shock vs. Interest Rate Shock: Share of Impaired Debt of Firms with Interest Cover Ratio Less than One
(Ratio)



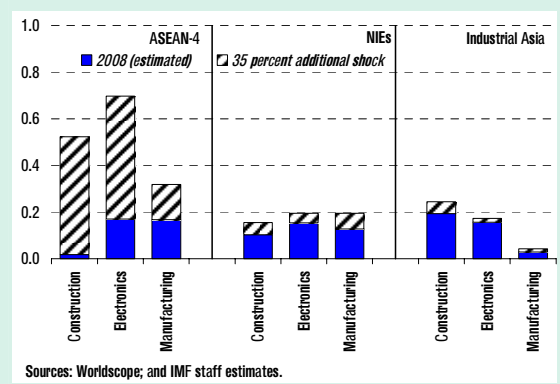
Sources: Worldscope; and IMF staff estimates.

Figure 3.20. Share of Debt of Firms with Interest Cover Ratio Less than One, by Size
(Ratio)



Sources: Worldscope; and IMF staff estimates.

Figure 3.21. Share of Debt of Firms with Interest Cover Ratio Less than One, by Sector
(Ratio)



Sources: Worldscope; and IMF staff estimates.

firms below the median, medium to firms between the 50th and 90th percentile, and large to firms above the 90th percentile. These results are robust to alternative cutoffs; they also hold if total assets were used to rank firms rather than market capitalization.

Overall, the stress tests are a bit worrisome. Although the corporate sector may now have less cause for concern from higher interest rates and depreciating exchange rates, plausible further falls in profit levels could swell the ranks of the "technical defaulters" to exceptionally high levels, particularly among certain vulnerable subsectors.

Conclusions

We are now in a position to answer the questions posed at the beginning of the chapter. Is Asia likely to see a wave of corporate defaults? Most likely, yes. Already, many industries have seen demand and profits collapse. Now, they are facing a squeeze from the financing side, particularly from external creditors. It will be difficult for firms to roll over their mounting external debt obligations, since external bond markets have been shut to all but the highest-rated companies since mid-2008 and are likely to stay shut for some months to come. Meanwhile, the scope for substituting to domestic borrowing is narrowing, since domestic banks, like those in advanced countries, have become acutely concerned about credit risks. So, defaults are bound to rise.

How significant will these defaults be? In the baseline case, the resulting losses will be manageable, in the sense that they will not unduly deplete bank capital. But the current fragile global situation gives little ground for complacency. If global demand plunges anew, stress tests indicate that the ranks of defaulters would grow to uncomfortably high levels. In that case, the region could suddenly find itself trapped in an adverse feedback loop. Large-scale corporate defaults could severely damage banks, rendering them unable to extend credit, which in turn will put further pressure on the corporate sector.

Given the serious implications of a more adverse scenario, it would seem important to take preemptive measures to limit the potential ramifications. In particular, countries may want to reexamine their corporate bankruptcy frameworks. Research shows that bankruptcies in emerging Asia are time-consuming, costly, and likely to yield little for creditors. If bankruptcy procedures can be improved and streamlined, then recovery rates could be improved, and the impact of corporate losses on the banking sector could be better circumscribed.

At the same time, it would be helpful to increase banks' capital further so they can better absorb potential losses. Asian banks have raised capital of US$73 billion in the five months to March 2009, helping to ensure that their capital adequacy will remain at healthy levels. But further efforts to shore up capital are still needed, given the risks that lie ahead, as well as the market-driven demands to maintain higher capital cushions and higher quality capital, such as tangible common equity.

Putting things another way: so far, so good. Asia's corporate sector has withstood an enormous shock reasonably well. With some luck, the final toll will be readily absorbable. But the risks are sizable, in which case, a pound of preparation could be worth much more than a ton of cure.

Appendix 3.1. Using Vector Autoregressions to Analyze the Transmission of Shocks across Sectors

To analyze the transmission of shocks across sectors, a series of vector autoregressions are estimated. In these VARs, default risks of banks and corporates are incorporated in addition to standard macroeconomic variables to predict industrial production and banks' default risks.[30] The vector includes the following variables at the monthly frequency: the default probabilities of corporates and banks, industrial production, credit growth, and inflation.

The baseline VARs are augmented by a global Financial Conditions Index (FCI), which is considered exogenous. The FCI is an equal-variance

[30] Papers that examine the relationship between macro variables and expected default frequencies of firms include Castrén, Dées, and Zaher (2008), and Åsberg Sommar and Shahnazarian (2008).

weighted average of seven variables, from the banking sector, securities market, and foreign exchange market (Cardarelli, Elekdag, and Lall, forthcoming).

The model is estimated in first differences for variables that appear not to reject the null of a unit root. The lag structure is determined according to the Akaike information criterion and the Bayesian information criterion. The generalized impulse responses (Pesaran and Shin, 1998) are utilized to avoid the sensitivity of the results to the ordering of the variables in the VAR.

Appendix 3.2. Micro-Level Evidence on Real Macro-Financial Linkages

A standard firm-level investment model based on Tobin's Q is augmented to incorporate measures of firm vulnerability (Equation 1). A firm-level panel equation of one-year ahead capital expenditure (standardized by asset size) is estimated for each country using ordinary least squares (OLS), controlling for macroeconomic and external factors through time dummies and firm-level fixed effects.

$$Capex(t+1,i)/BookValue\,of\quad TotalAssets(t,i) \quad = const. + \beta_1 DefaultRisk(t,i) + \beta_3 TimeDummies + \beta_4 FirmFE + \varepsilon(t,i) \qquad (1)$$

Standard deviation is clustered by firms. The Tobin's Q is proxied by annual sales growth.[31] In addition to this baseline model, alternative models with additional firm-specific characteristics, including size, equity volatility, return on assets, and leverage, are estimated for robustness checks.

All firm-level (i) data, including (end-year) default probability, are annual (t) and from the IMF's Corporate Vulnerability Utility (CVU), based on Worldscope and Datastream.[32] For most of the countries, the data start in the mid-1990s and end in 2007. The analysis is focused on nonfinancial firms. The sampled countries include China, India, ASEAN-4, the NIEs, and industrial Asia.

The estimation results indicate that for most of the sampled countries firms' default probabilities do have statistically significant predictive power for future investment. Moreover, for most countries, the coefficient on the default probability continues to remain statistically significant and of similar magnitude when other firm-specific characteristics are included.

Table 3A.1. Summary: Estimation Results

	Significance[1]	Robustness[2]	Stability[3]
Japan	***	yes	yes
Australia	***	yes	yes
New Zealand	***	no	yes
Hong Kong SAR	***	yes	yes
Korea	***	yes	yes
Singapore	***	yes	yes
Taiwan Province of China	***	no	yes
China	*	no	no
India	***	yes	yes
Indonesia	***	yes	yes
Malaysia	***	yes	yes
Philippines	***	yes	yes
Thailand	***	no	yes

Source: IMF staff estimates.
[1] Statistical significance of default risk coefficient (β1 in eq.1). Significant at 10 percent (*), 5 percent (**), and 1 percent (***) levels.
[2] Robustness against inclusion of other firm characteristics.
[3] Estimated parameters in alternative specifications stay within 95 percent confidence interval of the baseline estimation.

Appendix 3.3. Computation of Banks' Expected Losses from Corporate Sector Distress

Banks' expected losses from corporate sector distress were calculated using information from Moody's KMV implied CDS (EICDS) spreads and banks' exposure to the corporate sector. The calculation involved the following steps:

[31] We also estimated models with the Tobin's Q proxied by (market value of equity + book value of debt)/(book value of assets). Because market value of equity appears in both this measure of Tobin's Q and default risks, multicollinearity could undermine their parameter estimation. While this seems to affect the estimated parameter and standard deviation of the coefficient of Tobin's Q, rather than that of default risks, we adopt a measure of Tobin's Q without using market value of equity.

[32] We resort to CVU data because the KMV data are aggregated, do not accompany firm-level balance sheet data, and cover only five years.

- First, expected losses for the corporate sector one year ahead embedded in EICDS spreads are calculated using the contingent claim analysis framework.
- Second, the corporate sector's expected losses are expressed as ratios of the corporate sector's total liabilities. It is then assumed that all the corporate sector's creditors will suffer the same relative losses in their books—for example, if the corporate sector's expected losses represent 10 percent of the corporate sector's total liabilities, then the banking sector will write down 10 percent of its current performing loans to the corporate sector. This approximation is necessary because a more precise calculation requires information on the seniority structure of the debt and on the relative importance of domestic versus foreign financing sources—data that we do not have.
- Third, banks' current performing loans to the corporate sector are calculated. Here in the absence of information on banks' current provisions for losses on loans to the corporate sector, banks' overall provisions for losses are subtracted from the current stock of their loans to the corporate sector, and the resulting amount is scaled by banks' exposure to the corporate sector.
- Fourth, the relative losses calculated in the second step are multiplied by the current stock of performing loans to the corporate sector calculated in the third step. The resulting amount is the expected increase in banks losses stemming from banks' exposure to the corporate sector.

The calculations were made for individual countries and then aggregated into regional groupings using 2008 purchasing power parity (PPP) weights.

Appendix 3.4. Stress Testing Corporate Balance Sheets

The methodology focuses on analyzing how shocks affect the debt servicing capacity of corporates, following the framework utilized in Jones and Karasulu (2006), Heytens and Karacadag (2001), and Oura and Topalova (2009). As is standard in the literature, the debt-servicing capacity of a firm is measured by the interest cover ratio. Specifically, the idea is to analyze how many firms go into "technical default" (interest cover ratio less than one) when buffeted by various shocks. The results are expressed in terms of the debt of firms with low interest cover, or the "impaired" debt, as a percent of total corporate sector debt. An interest cover ratio less than one does not necessarily imply that the firm will default as it may have other liquid assets to draw upon. Nevertheless, it does point to some level of corporate distress that is not sustainable over the long term.

The stress tests use firm-level data from Worldscope for 13 countries.[33] In the absence of complete balance sheets for 2008, the 2007 balance sheets are adjusted to arrive at an estimate of the end-2008 balance sheet position, assuming an estimated decline in profits of 15 percent across the board. This is considered the baseline.

The profit shock of 35 percent is based on the average decline during the Asian crisis.[34] This is also in line with a one-standard-deviation shock to profits. Next, we consider a shock to the cost of financing just to give an idea of the impact of a significant rise in interest rates. So far, however, interest rates on domestic bank borrowing have actually declined while there has been almost no new international borrowing.

[33] Worldscope data consists only of listed companies, so the analysis excludes unlisted SMEs. Worldscope data do not provide the currency composition of debt, so exchange rate shocks—which may be an important source of risk—are not considered.

[34] In absence of aggregate profits data for all countries in the sample going back to the Asian crisis, we aggregated the firm level profits from the Worldscope database for the standard 13 economies analyzed in the REO (excluding Vietnam). These are then aggregated using PPP weights. During the Asian crisis, profits fell by 37 percent for all 13 countries. Profits in the crisis hit countries fell more dramatically, by around 200 percent, with many firms going into losses.

IV. Revisiting Japan's Lost Decade

This chapter discusses Japan's experiences with its banking crisis in the 1990s and the potential implications for resolving the current global crisis. Drawing on insights from a recent IMF seminar (Box 4.1), the chapter revisits the Japanese fiscal, monetary, and financial sector policy responses through the lens of the present turmoil. In doing so, it draws possible lessons for policymakers today, including in Asia, as they attempt to stabilize their economies and orchestrate a recovery.

Japan's crisis was successfully resolved and most of the public funds deployed were recovered, but not before a "lost decade" of stagnation and prolonged deflation. While today's policy challenges are compounded by the complexity of the distressed assets involved and the global scope of the crisis, they are in many ways similar to the problems Japan had to confront. Therefore, Japan's eventual success—and early difficulties—in overcoming its crisis could provide useful insights.

The results are likely to be of interest to a range of economies. They apply most directly to the United States and other advanced countries whose financial sectors are at the epicenter of the crisis. However, given unprecedented real and financial spillovers, various aspects of the policies discussed are becoming increasingly relevant more broadly, including in Asia. Fiscal policy has assumed center stage in the region, with most economies planning significant stimulus packages to combat large output gaps. On the other hand, with deflationary pressures emerging and credit markets impaired, traditional monetary policy may be reaching its limits and central banks may need to resort to unfamiliar credit easing measures. And although financial and corporate sectors in Asia have been generally resilient, contingency plans to deal with heightened distress may be called for given the significant downside risks that remain. In all these areas, Japan's experiences provide a rich array of lessons that could guide policy responses.

Accordingly, the chapter asks:

- Based on Japan's experience, can fiscal policy be used to stimulate the economy and, if so, what measures are likely to work? Looking ahead, how concerned should policymakers be about risks to medium-term fiscal sustainability?
- How successful was Japan in easing credit conditions and fighting deflation using unconventional monetary policies?
- In the financial sector, what strategies did Japan use to clean up bank and debtor balance sheets and to restore lending? How were the fiscal costs of these interventions managed and what were the key lessons in designing an exit strategy?

Background: Stylized Facts from Japan's Lost Decade

Following unprecedented run-ups, Japan's stock and real estate markets collapsed in the early 1990s. After an extraordinary bull market that saw share prices rise almost threefold in only four years, the stock market plunged in 1990. Notwithstanding some intermittent upswings, the gains during the bubble were given up entirely over the next 12 years, with most of the decline occurring in the first two and a half years after the crash. In 1991, the property market also started to falter: after tripling between 1985 and 1990, prices gradually slid back to their initial level by the early 2000s (Figure 4.1).

Note: The main authors of this chapter are Kenneth Kang, Murtaza Syed, and Kiichi Tokuoka.

Box 4.1. IMF Seminar on Japan-U.S. Parallels: Summary of Proceedings[1]

Through most of the 1990s and early 2000s, Japan grappled with a financial crisis in many ways reminiscent of the turmoil affecting the United States today. Both crises originated in the bursting of asset bubbles fueled by excess liquidity, lax financial regulation and irrational exuberance. The asset collapse spread to other financial markets, raising liquidity and solvency concerns for systemically important institutions and weakening growth. Addressing these concerns required unprecedented intervention to stabilize financial markets, while cushioning adverse feedbacks through supportive macroeconomic policies. Motivated by these parallels, the IMF organized a seminar in March 2009 to discuss Japan's experience and the potential implications for resolving the financial difficulties facing the United States today.

In his opening remarks, Anoop Singh (IMF) discussed some key similarities between the two crises—in terms of their origins, evolution, and policy challenges—while noting that the present crisis was moving much faster, was global in scale, and involved more complex assets. He stressed that while a strong policy response had so far allowed the United States to fast-forward its way through the first half of Japan's lost decade, some of the more difficult challenges still lie ahead. In particular, Japanese history suggests that a post-bubble recession is much harder to combat than a cyclical downturn and that the detrimental effects on growth can be long lived. In this context, a speedy and strong U.S. recovery was likely to hinge on continued success in financial and macroeconomic policies, as well as longer-term reforms to raise productivity.

Credit Easing: The Bank of Japan's Approach

Participants acknowledged that the precise transmission channels of unconventional monetary policies are considerably uncertain, but warned against falling behind the curve:

- Although policy rates have approached the lower bound in many advanced economies, Hiromi Yamaoka (IMF Office of the Executive Directors) pointed out that a number of unconventional policy tools can still be used. The Bank of Japan's experience suggests that these include influencing expectations by committing to keeping policy rates low for an extended period, expanding the size of the central bank balance sheet, or changing its composition by purchasing financial assets with longer maturities or credit risks. However, the extent to which credit easing worked in Japan remains highly uncertain and it was not a substitute for policies to fix the financial system.

- Vincent Reinhart (American Enterprise Institute) suggested that there were four channels through which credit easing could work: (1) supporting the prices of certain assets; (2) complementing fiscal policy; (3) encouraging the expansion of bank balance sheets through reserve creation; and (4) influencing expectations. There could also be an exchange rate channel, although there was little evidence about the effects on currencies, especially when credit easing was being attempted globally. Unconventional policies are also much harder to explain to the public, are open to political interference, and can be difficult to unwind. However, these limitations were not an excuse for inaction, and he urged the U.S. Federal Reserve to continue taking a range of aggressive measures.

Japan's Fiscal Stimulus in the 1990s: Did It Work?

Participants were split on the impact of Japan's fiscal stimulus, but generally agreed that some degree of activism was needed to support the economy while the health of the financial system was restored:

- Takatoshi Ito (University of Tokyo) discussed the empirical difficulties of assessing the effectiveness of fiscal policy in Japan, including quantifying the fiscal impulse and the unobservability of the counterfactual. Some

[1] IMF seminar on "Japan's Policy Response to its Financial Crisis: Parallels with the U.S. Today" (March 19, 2009). See www.imf.org/external/np/seminars/eng//2009/jpn/index.htm for supporting materials.

empirical work suggests that fiscal policy helped to prevent a complete meltdown of the economy but was constrained by packages containing relatively small "real water." However, others point out that fiscal policy—hampered by low multipliers and Ricardian effects—could not prevent the economy from sliding into stagnation. Despite these controversies, he noted that the scale of the present crisis calls for a response in targeted areas to increase productivity and long-term growth—such as the environment, medical care, and education in Japan—with attention to debt sustainability.

- Adam Posen (Peterson Institute) argued in favor of fiscal activism, particularly given that conventional monetary policy was close to its limits. However, if private demand was not supported by resolving the problems of the financial system and a restructuring of the economy toward productive sectors, the effects of fiscal stimulus were likely to be short-lived. In addition, he noted that most of the current debates on the effectiveness of fiscal policy—specifically on tax cuts versus public works spending, temporary versus permanent tax cuts, and Ricardian effects—were overly simplistic. For a productive dialogue, he felt that there was a need to move beyond clichéd labels and focus on the nature of the policies themselves, as in recent work by IMF staff.[2]

Resolving Japan's Banking Crisis: Strategies Adopted and Fiscal Cost

Participants agreed that the United States may be repeating some of Japan's early mistakes, arguing for forceful actions to encourage loss recognition, restructure distressed assets, and recapitalize viable institutions:

- Takeo Hoshi (University of California, San Diego) argued that by providing money to banks without assessing their financial conditions and capital needs, the United States was guilty of some familiar mistakes. Japan had adopted many of the same strategies that the United States is considering now, but it eventually needed to force banks to clean up their balance sheets and dispose of bad assets.
- Jonathan Fiechter (IMF) stressed that, like the United States today, Japan's policies initially involved ad hoc responses to capital injections before a more rigorous assessment of banks was finally implemented. It would therefore be instructive to understand how Japan overcame public resistance to bank bailouts and the stigma that banks attached to accepting public capital. To the extent that the Japanese approach resulted in a banking sector that has been more resilient to the current crisis, strategies adopted could also provide useful insights for reforming the global financial system.

Concluding Roundtable Discussion: Parallels with the United States

Panelists agreed that the U.S. response has generally been swift but, with the current crisis more daunting in some ways, difficult steps could still lie ahead:

Olivier Blanchard (IMF) stressed that as long as measures were chosen carefully, fiscal multipliers are likely to exceed unity and likely to increase output as the U.S. output gap is large. Hence, the only relevant constraints on fiscal policy are the impact on interest rates and market perceptions of debt levels. In addition, understanding why deflation in Japan did not become more severe despite the large output gap has important implications for whether the United States will also manage to avoid a deflationary spiral. Professor Ito welcomed the close cooperation between the Federal Reserve and the Treasury, but warned that this should not be at the expense of violating the independence of the central bank. Krishna Guha (Financial Times) hinted at the possible trade-off between fiscal stimulus and bank recapitalization, given political resistance to using public funds. The limited funds available implied a further case for setting a high benchmark in assessing the potential effectiveness of fiscal policy measures. Adam Posen pointed out that the much weaker global environment presents an added challenge during the current crisis, by limiting the scope for an export-led recovery. Daisuke Kotegawa (IMF Office of the Executive Directors) suggested that by influencing public perceptions, the mass media could play a useful role in generating support for needed bank recapitalization.

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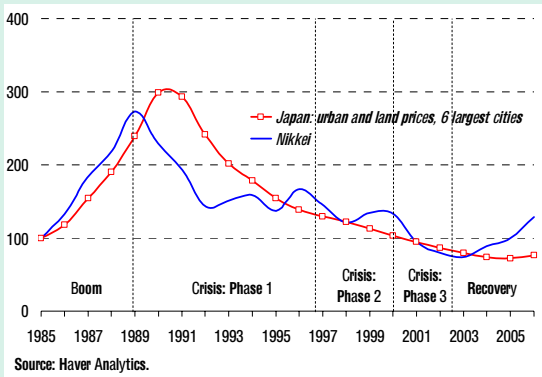
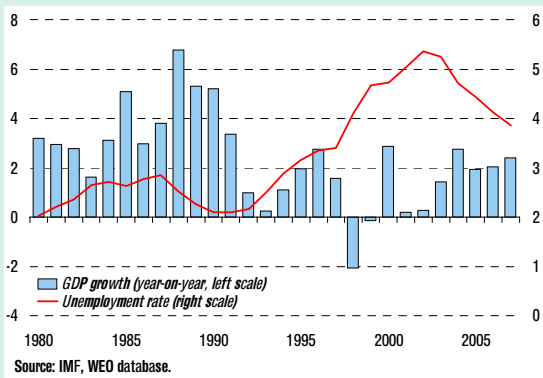
[2] See Spilimbergo and others (2008).

Figure 4.1. Japan's Twin Bubbles: Stock Market and Real Estate
(1985=100)



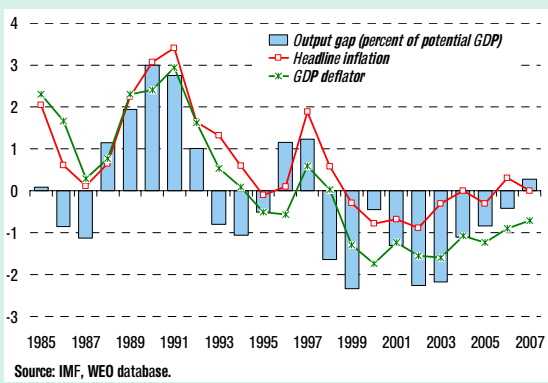
Source: Haver Analytics.

Figure 4.2. Japan: Growth and Unemployment
(In percent)



Source: IMF, WEO database.

Figure 4.3. Japan: Inflation and Output Gap
(Year-on-year percent change)



Source: IMF, WEO database.

The bursting of these twin bubbles interrupted Japan's long post-war expansion, but the immediate effects were not devastating. After growing by about 4 percent in the early 1990s, the economy stagnated until the middle of the decade, with average growth of about 1 percent (Figure 4.2). Unemployment ticked up and inflation fell gradually from highs of about 3½ percent, although credit growth remained relatively resilient and official nonperforming loans (NPLs) were low. The economy was generally expected to emerge relatively quickly from what was seen as a typical cyclical downturn, obviating the need for aggressive policy action. Indeed, a recovery appeared to be taking hold between 1994 and early 1997, as growth and inflation picked up and the stock market staged a rally (Figure 4.3).

The full scale of Japan's problems became evident when a systemic banking crisis erupted in 1997. The bursting of the asset bubbles left Japan's financial system saddled with large problem loans and rising risks from a weak economy. Financial vulnerabilities arose from the absence of a sustained recovery, continued high corporate leverage, and significant market and credit risk that placed mounting pressure on bank capital. However, it was a full six years after the property market bust before mounting losses on failed real estate loans and falling share prices led to the interbank market freezing up and a wave of failures in the financial sector, featuring some of the country's largest banks. The situation was compounded by the deterioration in the external environment induced by the Asian crisis. The economy contracted for two consecutive years, the first time growth had fallen into negative territory since the oil shock of the early 1970s.

Subsequently, the economy seemed to be on the mend between 1999 and 2000, helped by the global IT boom. However, following the collapse of the IT bubble in 2001, the situation took another turn for the worse as deteriorating corporate profits damaged the still fragile banking system and resulted in a renewed phase of financial stress. The economy barely grew in 2001 and 2002. A large output gap opened up again and deflation worsened significantly, as credit contracted in the face of

long-delayed but much-needed deleveraging in the financial and corporate sectors. Table 4.1 provides a chronology of the crisis.

Moreover, the usual policy defenses against a slowdown appeared to lose their effectiveness as monetary policy hit the zero rate bound and deficit spending could not reverse the economy's slide. In 2002, unemployment rose to a post-war high of 5½ percent and NPL ratios peaked at almost 9 percent. Meanwhile, net public debt continued to escalate, doubling to nearly 75 percent of GDP in net terms between 1997 and 2002, by far the highest among advanced economies.

The corner was finally turned in 2002. A more aggressive approach to dealing with problem loans and capital shortages—together with the rescue and nationalization of two major banks and the resolution of small regional institutions and credit unions—helped to reduce systemic stress. A virtuous cycle began to take hold as the health of the banking system improved and corporates made progress in redressing the underlying imbalances of the bubble period by shedding the triple excesses of debt, capacity, and labor (Figure 4.4).

Successful resolution of the financial crisis laid the foundation for the longest uninterrupted expansion in Japan's post-war history on the back of surging exports amid strong global growth, rising corporate profits, and expanding employment. Growth picked up, averaging a healthy 2 percent through 2007 and the stock market surged. Price pressures remained mild, with headline inflation only edging into positive territory from 2006.

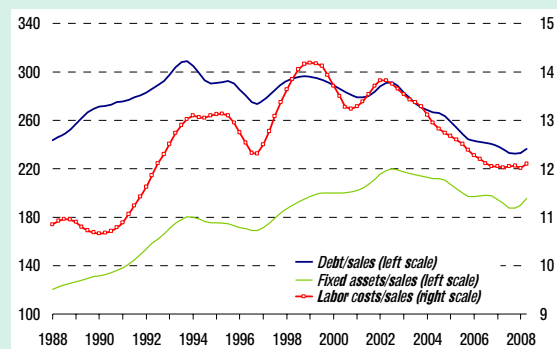
Japan's crisis was eventually resolved successfully, but not before a "lost decade" characterized by an extended period of sluggish growth, commodity and asset price deflation, banking failures, and persistent NPLs. By 2000, GDP was nearly 40 percent lower than if growth had continued at the same rate as during the 1980s, and prices were locked in a downward trajectory. At more than 20 percent of GDP, bank losses were eventually much larger than first envisioned, and about 10 percent of GDP in public funds was needed to dispose of NPLs and recapitalize banks.

Table 4.1. Key Events in Japan's Banking Crisis

1989	Stock market peaked
	Crisis Phase I: Slowdown
1990	Land prices peaked
1994	Hyogo Bank failed
1996	Series of housing loan companies failed
	Crisis Phase II: Escalation and fledgling recovery
1997	Yamaichi Securities Co. Ltd. and Hokkaido Takushoku Bank failed
1998	First injection of public funds into banks
	Long-Term Credit Bank of Japan and Nippon Credit Bank nationalized
1999	Second injection of public funds into banks
	Bank of Japan implements zero-interest rate policy
	Resolution and Collection Corporation (RCC) starts purchase of NPLs from healthy financial institutions
	Series of mergers among major banks
2000	Bank of Japan lifts zero interest rate policy
	Crisis Phase III: Renewed systemic stress
2001	Bank of Japan lowers interest rates and implements quantitative easing policy
2002	Full deposit protection terminated
	Financial Revitalization Program implemented
	Bank of Japan starts stock purchases from banks
2003	Resona Bank nationalized
	Industrial Revitalization Corporation of Japan (IRCJ) established
	Ashikaga Bank nationalized
	Sustained Recovery
2004	Full protection for deposits payable on demand terminated
2005	Outstanding balance of banks' lending trends upwards
2006	Bank of Japan lifts quantitative easing and zero interest rate policy

Source: Standard and Poors (2008).

Figure 4.4. Japan: "Three Excesses" of Corporate Sector
(In percent)



Source: Ministry of Finance, *Corporate Survey*.

Fiscal Policy: Did Stimulus Work?[35]

The effectiveness of fiscal policy in Japan during the lost decade has been the subject of much debate. Fiscal stimulus was used to combat the downturn, but growth remained weak and stagnant tax revenues and increased spending created

[35] Figures presented in this section are on a fiscal year basis.

average deficits of more than 5 percent of GDP between 1993 and 2000. As a result, net debt rose to 60 percent of GDP. While some argue that expansionary fiscal policy was effective but not tried consistently, to others the combination of rising deficits, mounting debt, and stagnant growth points to strong Ricardian effects, mistargeted stimulus, or constraints from a dysfunctional banking system. The evidence itself is mixed, although the effectiveness of fiscal policy appears to have been dampened by weaker fiscal multipliers during the crisis as well as some mistimed consolidation efforts.

Japan's Policy Response

During the 1990s, Japan introduced a number of fiscal stimulus packages. These packages were in the form of supplementary budgets, which are typically used to address unforeseen events during the year.[36] While these packages had large headline numbers—altogether totaling ¥140 trillion, including credit guarantees and public investment—actual spending was considerably smaller—about ¥40 trillion (8 percent of 2000 GDP). Stimulus measures mainly took the form of public investment, support for small and medium-sized enterprises (SMEs), and employment assistance on the spending side, as well as tax measures.

On average, public works accounted for about 40 percent of Japan's fiscal stimulus measures, and were particularly important in the packages of the early 1990s. They included spending on roads and bridges. Although the returns from such public investment projects may have been low,[37] they appeared to have served a safety-net purpose, by creating jobs during the downturn. In the late 1990s, public investment shifted toward arguably more productive spending, including IT-related infrastructure.

Another important element of the stimulus packages was an expansion of credit guarantees on SME lending. When the credit crunch became more pronounced in the late 1990s, Japan introduced a special credit guarantee program that provided 100 percent coverage to banks against losses.[38] These guarantees reached nearly ¥30 trillion (6 percent of GDP) by 2001.

At the same time, the stimulus packages of the late 1990s attached greater weight to employment support, given the sharp rise in unemployment, and the share of social security spending, including support for the elderly, also increased. In addition, cash vouchers (¥0.7 trillion) were distributed in 1999 to households that were potentially liquidity-constrained.[39]

The government also implemented sizable tax cuts, primarily on income, but with mixed results. In 1994, a tax cut of about ¥5.5 trillion (1.1 percent of GDP) was enacted (Table 4.2). However, in 1997, in response to rising government debt and growing concerns about the fiscal implications of population aging, the government changed course and passed a budget that aimed for a substantial down payment on medium-term consolidation (Figure 4.5). The budget raised the consumption tax rate by 2 percentage points and abolished the temporary part of the earlier tax cut, raising the overall tax burden by some ¥7.0 trillion (1.4 percent of GDP). In the wake of the sharp economic contraction that followed, the government again changed course and reintroduced a temporary income tax cut of about ¥4.0 trillion in 1998, followed by another tax cut of ¥6 trillion in 1999.

Importantly, the fiscal stimulus measures during the 1990s were not framed within a medium-term strategy. Although the Fiscal Structural Reform Law— which aimed at a reduction in fiscal deficits over the medium term—was formulated in 1997, it

[36] Typical examples of unforeseen events are natural disasters, but stimulus measures can also be included.

[37] For example, little-used roads that were constructed in rural areas likely carried small multiplier effects.

[38] Although this measure was aimed at mitigating the credit crunch, it may also have delayed necessary restructuring. For instance, there is some evidence that the SMEs that used this program were more heavily indebted and faced a higher risk of default (Matsuura and Hori, 2003).

[39] The inability to verify incomes forced the government to seek out proxies, such as the presence of children or the elderly.

was scrapped a year later in light of the sharp economic contraction.[40]

Despite the seemingly significant fiscal stimulus, the economy remained largely stagnant until the early 2000s (Figure 4.6). Between 1993 and 2000, average growth was slightly above 1 percent, and tax revenue remained almost flat, leading to larger fiscal deficits. Over this period, the general government deficit averaged more than 5 percent of GDP. As a result, net debt increased sharply to 60 percent of GDP in 2000 from about 15 percent of GDP a decade earlier.

Assessment of Japan's Experience

While deficits appeared large, the actual fiscal impulse was modest, with the cyclically adjusted deficit (the "structural" deficit) increasing only modestly between 1994 and 1998 (Figure 4.7). It was only after 1998 that fiscal policy became truly expansionary, with a more significant widening of the structural deficit. As discussed below, the limited fiscal impulse may have reflected several factors.

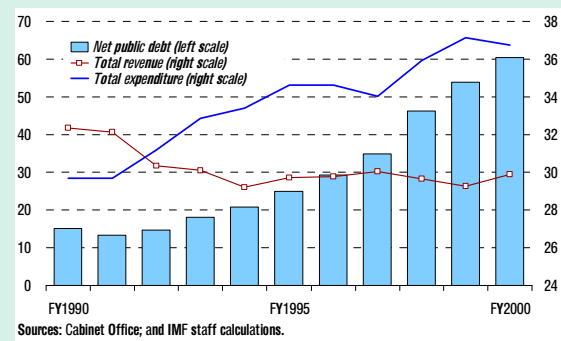
First, actual public investment was smaller than the deceptively large headline numbers, as public investment in the central government initial and supplementary budget did not increase much after the mid-1990s (Figure 4.8). The economic impact may also have been limited by the large share of land purchases, which were as high as 30 percent of the project size in some cases (Kalra, 2003). Finally, about 15 percent of budgeted public investment remained unused partly because local governments were unable to obtain matching funds.[41] As a result, public investment remained flat after the mid-1990s, as reflected in the national accounts data, where real

Table 4.2. Japan: Major Tax Cuts during the 1990s
(In trillions of yen)

	Income taxation		Corporate taxation
	Permanent	Temporary	
FY1994		5.5	
FY1995	3.5	2.0	
FY1996	↓	2.0	
FY1997			
FY1998		4.0	Permanent
FY1999		4.0[1]	2.0
FY2000		↓	↓

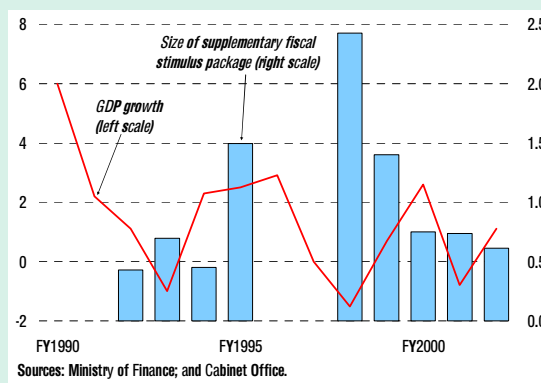
Sources: Ministry of Finance; and Cabinet Office.
[1] Introduced as semi-permanent tax cut and fully lifted in FY2007.

Figure 4.5. Japan: Fiscal Situation of the General Government
(In percent of GDP)



Sources: Cabinet Office; and IMF staff calculations.

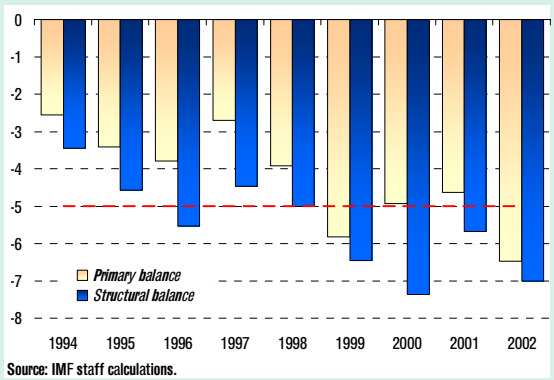
Figure 4.6. Japan: GDP Growth and Supplementary Fiscal Stimulus Package
(Supplementary budget basis; in percent of GDP)



Sources: Ministry of Finance; and Cabinet Office.

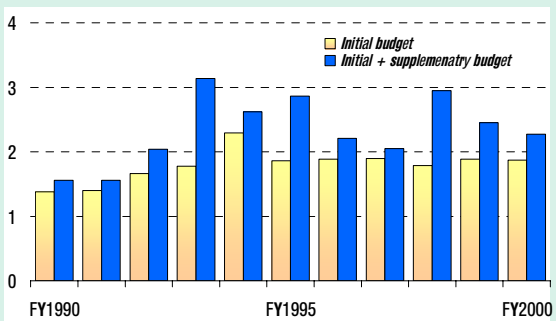
[40] The original law targeted a reduction in the general government deficit to below 3 percent of GDP by 2003.
[41] However, unused funds are carried over to the next year's budget.

Figure 4.7. Japan: Structural Balance of the General Government
(In percent of potential GDP)



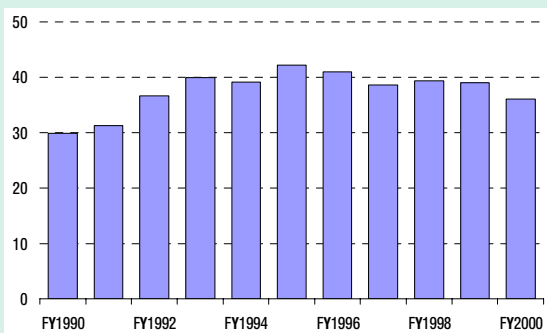
Source: IMF staff calculations.

Figure 4.8. Japan: Central Government Public Investment[1]
(In percent of GDP)



Source: Sadahiro (2005).
[1] Includes land purchases.

Figure 4.9. Japan: Real Public Investment[1]
(In trillions of 1995 yen)



Source: Cabinet Office.
[1] SNA basis.

public investment (including by local governments) started to decline as early as 1995 (Figure 4.9).[42]

Second, the limited fiscal impulse also reflected the stop-start nature of Japan's early stimulus efforts, in particular, the premature tax reversals. With the economy appearing to recover in 1997, the government proceeded to reverse the income tax cut and raise the consumption tax. The larger-than-expected fall in household spending that followed stymied the short-lived recovery, plunging the economy back into recession.

Third, stimulus may have been hampered by low fiscal multipliers.[43] Estimates of fiscal spending multipliers cover a wide range (0.4–2.0) (Table 4.3), but there is general consensus that these declined over time. For example, the Cabinet Office's estimate for the public investment multiplier declined to 1.1 in 2004 from 1.3 in 1991. As laid out below, possible factors behind the declining multipliers include:

- *Lack of private sector response.* Private spending may not have responded to the stimulus because the banking sector was not able to play an effective intermediary role given its weak balance sheet and bad loan problems (e.g., Kuttner and Posen, 2001). This view is supported by empirical evidence of a credit crunch during the late 1990s (Motonishi and Yoshikawa, 1999). Heavily indebted corporates were also not in a position to increase spending, as they were deleveraging. Indeed, flow of funds data suggests that the corporate sector's financial surplus was on an upward trend until the end of the 1990s (Figure 4.10).

[42] Analyses by the Cabinet Office also confirm that the rise in the fiscal deficit and debt during the 1990s was largely due to nondiscretionary factors: a sharp decline in revenues and an increase in social security spending owing to the prolonged slump rather than rising public investment associated with countercyclical policy. Indeed, the Cabinet Office's estimates indicate that public capital formation contributed *positively* to the fiscal balance over the period 1990–2002. However, this may largely reflect a drastic cut in pubic investment after 2000.

[43] Jinno and Kaneko (2000); Kuttner and Posen (2001); Kalra (2003); Sadahiro (2005).

- *Shift to lower multiplier spending.* The share of central government spending on social security, which is typically thought to have a smaller multiplier than capital spending, increased to 3.5 percent of GDP in 2000 from 2.6 percent in 1990 (Figure 4.11). The disbursement of cash vouchers in 1999 also had a limited impact, with an estimated multiplier of at most one-third, perhaps due to substitution effects (Cabinet Office, 1999).

- *Ricardian equivalence.* Although the evidence for Ricardian effects is mixed, some have argued that private demand could have been suppressed by concerns over future tax increases and the rapid rise in public debt (e.g., Bayoumi, 2000).

Potential Implications for Fiscal Stimulus in the Current Crisis

Amid today's concerted push for a global fiscal stimulus, Japan's experiences provide some useful guidelines to policymakers. The need for discretionary actions is particularly acute in Asia, given generally weak automatic stabilizers and large output gaps. There is also ample fiscal space following years of prudent policies in many economies (as discussed in Box 1.5):

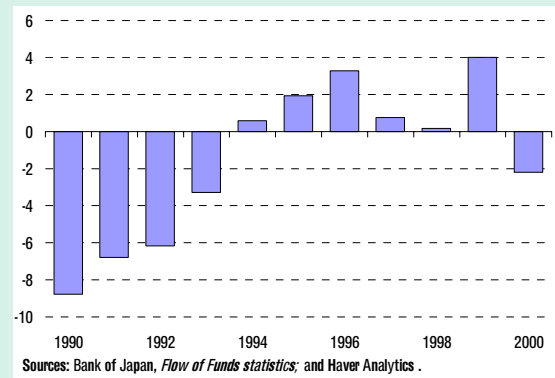
- *Successful fiscal stimulus requires identifying spending with high multipliers.* Within the G-20 economies, stimulus packages announced by Asian countries are, on average, more heavily weighted to spending—with particular emphasis on investment in infrastructure. To justify spending against debt accumulation and its potential negative effects on interest rates, measures must be well-targeted, e.g., transfers should be aimed at lower-income households with a higher marginal propensity to consume (Spilimbergo and others, 2008). On public investment, the priority should be projects that are more likely to stimulate private demand.

Table 4.3. Japan: Estimated Multipliers

	Spending	Tax cut	Estimation period
Kalra (2003)	0.4	0.4-0.5	1981-2000
Bayoumi (2000)	0.65	0.2	1981-98
Murata and Saito (2004)	1.1[1]	0.5	1985-2003
Kuttner and Posen (2002)	2.0	2.5	FY1976-99

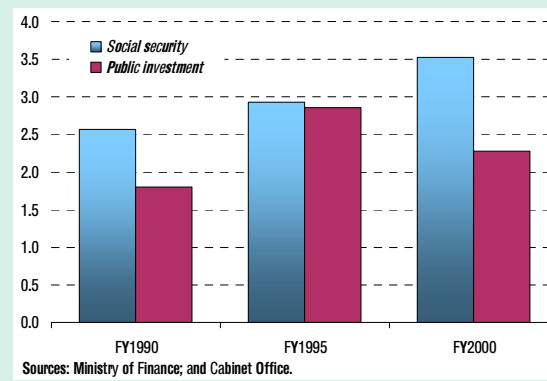
[1] Multiplier for public investment.

Figure 4.10. Japan: Financial Surplus of Nonfinancial Corporate Sector
(In percent of GDP)



Sources: Bank of Japan, *Flow of Funds statistics;* and Haver Analytics .

Figure 4.11. Japan: Share of Central Government Spending
(In percent of GDP)



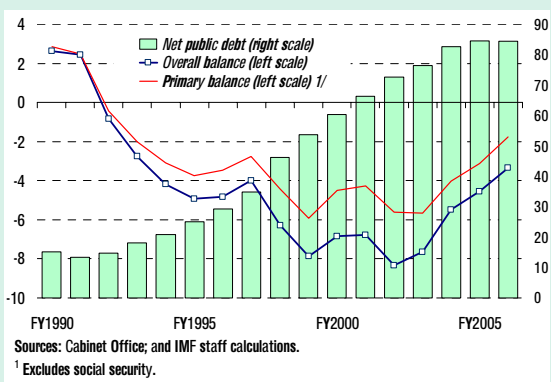
Sources: Ministry of Finance; and Cabinet Office.

- *While getting the timing right can be challenging, fiscal stimulus should be withdrawn only after clear signs of an economic recovery.* Japan's experiences highlight the difficulty in deciding the timing of tax and spending changes. Tellingly, the Japanese economy quickly fell into a recession in FY1997 when the temporary tax cut was reversed.

Policymakers must strive to ensure that actions are sustained as long as needed and guard against premature withdrawal of stimulus in the face of false dawns.

- *Equally, a delay in restoring tax increases can be costly.* In Japan, the income tax cut introduced in the late 1990s was fully lifted 10 years later (in 2007), partly contributing to persistently large deficits and a continued rise in public debt even during the recovery period after 2002.
- *To maximize the impact of fiscal stimulus, attention must be paid to restoring the credit function of the banking sector.* The effects of fiscal stimulus could be short-lived unless the financial system is in good health. In Japan, large-scale capital injection into banks took place only in 1999, with fiscal stimulus packages before that date proving ineffective in generating a sustained recovery.
- *Finally, it would be useful to outline at an early stage a concrete and credible medium-term strategy for returning to a sustainable fiscal position.* It was only in 2002, after net debt had reached nearly 75 percent of GDP, that the Japanese authorities announced a target for achieving a primary balance (excluding the social security fund) by the early 2010s (Figure 4.12).

Figure 4.12. Japan: Fiscal Balance and General Government Debt
(In percent of GDP)



Sources: Cabinet Office; and IMF staff calculations.
[1] Excludes social security.

In the current setting, deliberations on near-term fiscal stimulus provide a good opportunity to build agreement on a medium-term plan for achieving fiscal sustainability. Any costs of government intervention in the financial sector (including by the central bank) should be accurately and transparently recorded to properly assess the balance sheet risks to the public sector.[44]

Monetary Policy: The Bank of Japan's Approach to Credit Easing[45]

As Japan's crisis unfolded, the Bank of Japan (BoJ) faced an unprecedented set of challenges. After some delay, monetary policy was gradually loosened over the 1990s, but the impact was dampened by banking sector weaknesses. Unable to lower rates past their zero bound, the BoJ took some innovative steps from 2001, centered on exceptional measures to provide liquidity, including expanding the range of collateral, direct asset purchases, and quantitative easing under a zero interest rate policy. However, through most of this period, monetary policy appeared to "pushing on a string" as demand for credit shriveled. Each time measures were taken, the economy seemed to be unresponsive, as growth deteriorated and deflationary pressures became more entrenched. Ultimately, fixing the financial system was needed to end deflation and usher a return to a more normal monetary policy framework, with the BoJ managing a smooth exit.

[44] For instance, the injection of capital into banks, provisions of directed loans to financial institutions, credit guarantees, and purchases of illiquid assets may not entail an upfront rise in net debt or the deficit, but their fiscal impact eventually depends critically on the recovery value of acquired assets.

[45] The terms "quantitative easing" and "credit easing" are used interchangeably in this chapter. The BoJ's "quantitative easing" policy focused on government bond purchases and featured an operating target on the liabilities side of its balance sheet. By contrast, the Federal Reserve's current "credit easing" features a more targeted approach by intervening in markets that appear stressed and focusing on the asset side of its balance sheet without an explicit operating target. Despite their separate focus and modalities, however, the potential channels of influence of the two approaches do not appear to be significantly different.

Japan's Policy Response

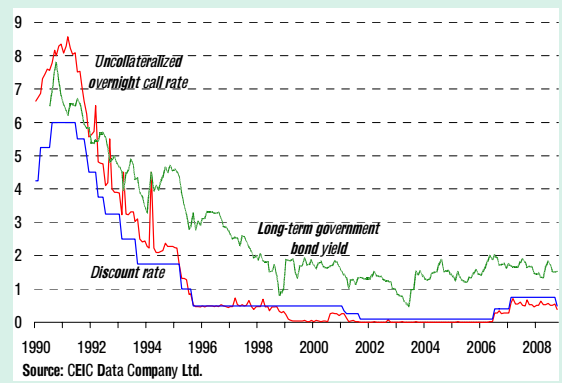
At first, the BoJ responded to the crisis with standard monetary policy tools, through successive interest rate reductions. Except for a hiatus in 1994, the BoJ gradually cut its target interest rate: between mid-1991 and mid-1995, the discount rate was lowered eight times, from 6 percent to fractional levels (Figure 4.13). The BoJ then changed its target to the overnight interest rate but, with rates already very low, the initial target was set at just 0.5 percent. In any case, some pickup in economic activity and inflation, together with increased bank lending, seemed to obviate the need for easing over the next few years.

In 1997, the collapse of key financial institutions revealed the full scale of the crisis and called for more forceful actions to ease credit conditions. The macroeconomic environment deteriorated significantly, with credit conditions also tightening (Figure 4.14). However, the scope for further conventional easing was extremely limited—a rate cut of only a quarter percentage point to 0.25 percent was possible in the fall of 1998—necessitating a radical change in the monetary policy framework. A major change in the institutional environment was also enacted, as the BoJ gained formal independence from the government.

To better provide liquidity support and substitute for the impaired interbank market, the BoJ expanded the range and flexibility of its monetary instruments. These measures evolved over time in response to changing market conditions and focused primarily on (1) broadening the range of eligible collateral to include corporate bonds, loans on deeds, asset-backed commercial paper (ABCP) and other forms of asset-backed securities (ABS); (2) providing liquidity at longer terms by extending the maturity of bill purchases and Japanese Government Bond (JGB) repos from six months to a year; and (3) increasing the number of counterparties for JGB purchases and commercial paper repo operations. The BoJ's balance sheet swelled as a result.

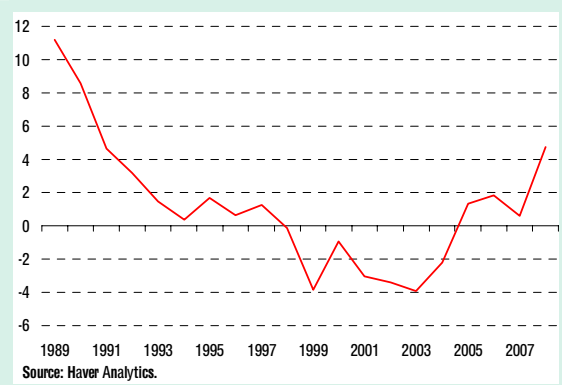
In February 1999, the BoJ formally shifted to a zero interest rate policy (ZIRP). Following the announcement of the BoJ's intention to encourage the policy rate to move "as low as possible," the policy rate was lowered to 0.15 percent, succeeded by further reductions to rates as low as 0.02 percent. The BoJ had felt that the downturn reflected problems in the financial and corporate sectors so that the onus rested with fiscal and structural policy. However, in hitting the zero lower bound on nominal interest rates, the BoJ decided to move beyond conventional monetary policy. Even then, the BoJ's public pronouncements suggested that it saw ZIRP as an extraordinary move, with uncertain channels of influence.

Figure 4.13. Japan: Interest Rates
(In percent)



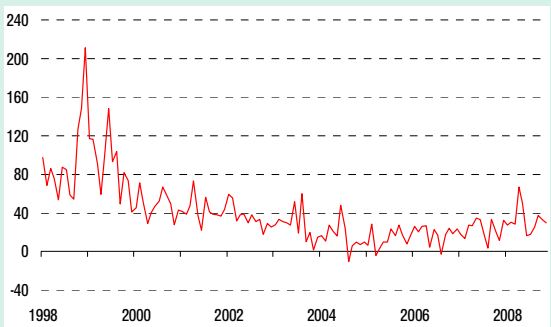
Source: CEIC Data Company Ltd.

Figure 4.14. Japan: Bank Lending
(Year-on-year percent change)



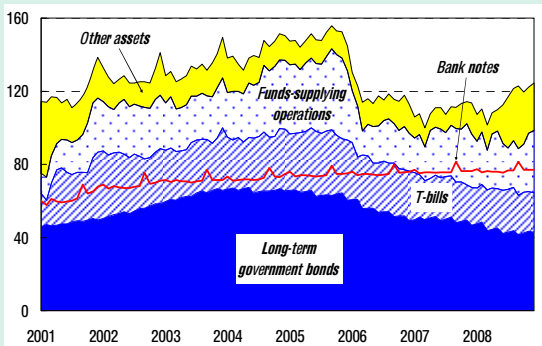
Source: Haver Analytics.

Figure 4.15. Japan: Credit Spreads[1]
(In basis points)



Sources: Haver Analytics; CEIC Data Company Ltd.; and IMF staff calculations.
[1] Spread between 10-year A-rated corporate and 10-year government bond.

Figure 4.16. Bank of Japan: Assets and Balance of Banknotes in Circulation
(In trillions of yen)



Sources: Bank of Japan; and Haver Analytics.

Some signs of a pickup in activity prompted an early termination of the policy, but this had to be reversed. In August 2000, the BoJ lifted ZIRP and raised rates to 0.25 percent, on some tentative evidence of a pickup in growth and a decline in risk premiums (Figure 4.15). The move was also prompted by fears that excess liquidity could fuel another bubble and unhinge inflation expectations. The government requested a postponement of the decision, particularly because deflation had not abated and bank lending was still contracting. In addition, the recovery appeared fragile, with unemployment still on an upward trend and corporate bankruptcies increasing. In fact, with the economy falling back into recession soon after, the BoJ had to lower the policy rate back to zero within seven months.

In March 2001, the BoJ introduced its "quantitative easing" policy.[46] The policy instrument was changed, with the BoJ targeting the outstanding balance of banks' current accounts at the central bank (consisting of required and excess reserves). The initial target was set at about ¥5 trillion, aimed at pushing the overnight call rate to zero, and was increased in a series of steps to about ¥35 trillion by 2004 as credit growth remained lackluster.

The BoJ also strengthened its commitment to quantitative easing through its communication strategy, making it increasingly clear that a more expansionary stance would be maintained until deflation ended. This helped to better manage market expectations about the future path of interest rates (the so-called policy duration effect). In October 2003, the BoJ clarified its commitment by announcing two necessary conditions for ending quantitative easing—that core CPI be non-negative for a few months and that a majority of the Policy Board members forecast positive core CPI inflation.

In addition, greater coordination with fiscal policy was in evidence, with the BoJ gradually increasing its purchases of long-term JGBs from ¥400 billion to ¥1.2 trillion per month, and such purchases were generally regarded by market participants as helping to place a cap on long-term yields. Over time, assets that could be purchased by the BoJ under quantitative easing were expanded to include commercial paper, corporate bonds, equities, and asset-backed securities, although actual amounts were relatively limited. The quantitative easing policy saw the BoJ's balance sheet increase from ¥91 trillion in 1998 to a high of about ¥155 trillion in 2006 (Figure 4.16).

At the same time, the BoJ took unprecedented steps to address the capital shortage in banks. Banks' large equity holdings (¥32 trillion or nearly 150 percent of their Tier 1 capital) constrained their ability to extend credit and take on new risk. To help reduce banks' market exposure, the BoJ introduced

[46] For more details, see Fujiki, Okina, and Shiratsuka (2001); Shirakawa (2002); and Ueda (2005).

a program in 2002 to purchase equity rated BBB– or higher directly from banks at market prices. In addition to stabilizing the banking system, such operations may have bolstered the asset price channel of monetary policy by reinforcing economic activity through wealth effects. During 2002–04, BoJ purchases of equities reached ¥2.1 trillion (US$18 billion), representing about 6 percent of banks' total equity holdings. Although significant, the amount was tiny compared to the BoJ's holdings of JGBs (¥65 trillion).

The BoJ also resorted to unconventional measures to support corporate lending. In 1998, to help firms with their end-of-year funding, the BoJ established a temporary lending facility to refinance 50 percent of the increase in loans provided by financial institutions during the fourth quarter of the year. In 2003, the BoJ initiated a program to assist SMEs by purchasing ABS and ABCP backed by SME loans rated BB or higher.

Meanwhile, the Ministry of Finance (MoF) undertook large-scale foreign exchange interventions in 2003 and early 2004, helping to stabilize the yen during a period of dollar weakness. These operations could have helped to activate the exchange rate channel and prevent an undue tightening of monetary conditions. Amounts were large, with the monetary authorities selling ¥20 trillion in 2003 and ¥15 trillion in the first quarter of 2004.

Quantitative easing did not immediately arrest deflation or lead to an expansion in bank credit, partly reflecting the unwillingness of banks to make loans and the subdued demand for credit from corporates amid deleveraging pressures. These weaknesses disrupted the normal transmission channels of monetary policy (Figure 4.17).

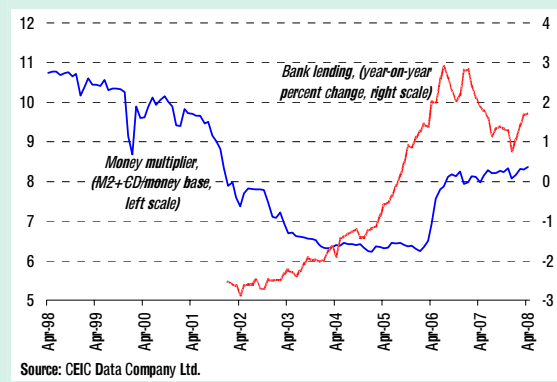
To its credit, the BoJ was able to exit from quantitative easing relatively smoothly, aided by transparent and open communication. After the economy recovered, it took some time before deflation was ended and the preannounced conditions for ending quantitative easing were met. In March 2006, the BoJ orchestrated a smooth exit to a more normal monetary framework, indicating that it would gradually drain liquidity while keeping overnight interest rates effectively at zero until excess reserves were drawn down. By August, current account balances at the BoJ had fallen to less than ¥10 trillion.

Assessment of Japan's Experience

Loosening of monetary policy in the early 1990s, while arguably appropriate given general expectations of future economic developments at the time, proved to be too slow in light of subsequent declines in output and prices.[47] Traditional central bank concerns about inflation, the belief that fiscal policy should take the lead, the lack of precedent—as well as the need to devise new operating procedures—for a zero-rate environment may all have been important constraints. In fact, by the time quantitative easing was introduced, prices were already on a sustained downward trajectory and long-term yields had fallen to low levels.

Premature tightening and lack of coordination with fiscal policy may have hampered the effectiveness of monetary actions. Some have faulted the rate hike in August 2000 as a key policy

Figure 4.17. Japan: Monetary Aggregates



Source: CEIC Data Company Ltd.

[47] For instance, the BoJ's initial policy actions fell far short of the level of easing seen during comparable episodes in Sweden and the United States during the 1930s (Baig, 2003) and a number of more formal studies based on Taylor reaction functions suggest that monetary policy was slow to respond to deflationary developments in the 1990s. See, for example, Bernanke and Gertler (1999); Jinushi, Kuroki, and Miyao (2000); McCallum (2003), and Taylor (2001).

error.[48] After the fact, the decision certainly appears to have been premature, with the choking off of the fledgling recovery and worsening of deflationary pressures prompting an abrupt reversal. Others have suggested the presence of an "independence trap," with a newly formally independent BoJ resisting a more expansionary policy that could have jeopardized its credibility (see, e.g., Cargill, Hutchison, and Ito, 2000).

A clear communication strategy, together with a transparent objective, may have helped shape inflation expectations and build credibility. Initially, some market analysts questioned the BoJ's commitment to the ZIRP, viewing its pledge to keep rates at zero "until deflationary concerns were dispelled" as vague. In its defense, the BoJ may have been reluctant to commit to a zero rate target for an extended period, given concerns over potential asset bubbles and future inflation. Due to the inherent uncertainty regarding the potential benefits and costs of unconventional measures, it is also much more difficult for central banks, including the BoJ, to explain whether and how these would work, compared with conventional tools such as rate cuts. In the end, clearer communication with the public and more transparent exit conditions helped the BoJ to manage financial market expectations of future monetary policy actions and avoid an inflationary spike after the recovery.

However, zero interest rates and quantitative easing came at a cost and were not a final solution. Unconventional monetary policy actions have significant negative side effects, notably in the form of compounding the breakdown in money markets, reduced market discipline, compressed credit spreads, pressure on bank profits, as well as reduced incentives for restructuring.[49] This may be a necessary price to pay for maintaining financial stability and preventing deflation from worsening. However, the costs—particularly in terms of delayed restructuring and disruptions to the monetary transmission mechanism—increase the longer the zero interest rate policy is in place, necessitating rapid progress to restructure all affected balance sheets.

Potential Implications for Monetary Policy in the Current Crisis

With interest rates and inflation expectations falling sharply in most economies, while banks scale back intermediation, central banks may need to adopt unconventional policies. For those approaching the lower bound and where large risk premiums are disrupting the normal transmission of monetary policy, some consideration of quantitative easing measures may be warranted. Even those that still have scope for lowering policy interest rates to stimulate their economy may have to be prepared to take some of these actions in the future, given significant downside risks.[50] In addition, credit easing under way in major economies could have spillover impacts—in particular, economies with fixed or pegged exchange rates could be importing quantitative easing from abroad. Japan's experiences suggest that:

- *When faced with a marked slowdown and potential deflationary pressures, central banks must not shy away from bold and unconventional monetary policy actions.* Despite some negative side-effects associated with credit easing, central banks should be willing to take a range of aggressive measures in light of the severity of the crisis.
- *While private markets remain dysfunctional, direct measures to ease credit conditions that aim to jump-start*

[48] See, among others, Harrigan and Kuttner (2005) and Ito (2004). Orphanides (2004) likens the rate hike to that of the U.S. Federal Reserve in 1937, believed by some to have contributed to choking off an incipient recovery from the Great Depression.

[49] For example, ample liquidity and low interest rates can delay the recognition of problem loans and undermine market discipline by making it easier for essentially insolvent borrowers to remain current on their interest payments. The flattening of the yield curve also made it more difficult for banks to raise their core profitability and "grow out" of their problems (see Box 3, in IMF, 2003).

[50] For instance, if credit markets remain unresponsive to lower interest rates or the central bank needs to engage in lender-of-last-resort operations in a systemic banking crisis, credit easing measures might be needed.

credit could be considered. In Japan, the weak condition of the banking system led to a significant decline in financial intermediation, severely limiting the effectiveness of traditional monetary policy. In such cases, policies aimed at strengthening the development of capital markets, or even bypassing the dysfunctional banking system, may be helpful.

- *Some coordination between fiscal and monetary authorities may be considered.* Increased government bond purchases by the central bank could help to stimulate the economy by lowering long-term yields and alleviating crowding-out. However, risks to the balance sheet and independence of the central bank must be carefully balanced. In particular, default risks on private debt could be significant while losses on treasury securities could mount as interest rates rise with a recovery. Such vulnerabilities could undermine the independence and credibility of the central bank. In cases where operations have a fiscal nature and credit risk is significant, it seems more appropriate for fiscal authorities to take the lead.

- *Effective communication with markets and the public is vital, particularly when unconventional tools are being used.* As the BoJ found, it is important to convince markets and the public that the central bank is committed to sustained expansion until the economy recovers. In taking unconventional actions, Asian central banks could improve transparency by clarifying their near-term objectives.

- *A smooth exit strategy from unconventional operations once the crisis abates needs to be conceived at an early stage.* The Japanese money market, which had withered during the late 1990s, recovered, as institutions relied less on the BoJ for funding that had been made available at penal rates relative to normal times and the opportunity cost of idle balances rose. With the recovery drawn out, the BoJ was also able to avoid losses and yield spikes by holding JGBs to maturity.[51] As in Japan, the most desirable exit scenario would be for investors' risk appetite to recover and credit markets to normalize. However, while the natural maturing of government bond holdings presents few risks, other acquisitions may be more problematic, such as long-lived assets for which there may no longer be a market.

In the final analysis, however, credit easing can have costly side-effects and is not a substitute for balance sheet restructuring. This places a premium on timely steps to restructure bank and debtor balance sheets, which would stimulate private credit while creating a plausible exit strategy for central banks. Japan's experiences in this area are discussed in the next section.

Financial Sector Policies: Resolving Japan's Banking Crisis and Fiscal Costs

As the crisis intensified and its roots became clearer, the Japanese authorities turned more forcefully to financial sector policies. Their strategy centered on restructuring banks, pushing them to recognize problem loans and raise new capital, and in some cases seek out public funds or exit the sector. At more than ¥100 trillion, bank losses were much larger than first envisioned, and about ¥47 trillion in public funds was needed to dispose of NPLs and recapitalize banks. In the final analysis, tighter supervision, judicious use of public funds, and a sound framework for restructuring distressed assets helped restore health to the financial system and support a sustained economic recovery. To date, nearly three-fourths of the public funds used in the financial sector interventions have been recovered.

Japan's Policy Response

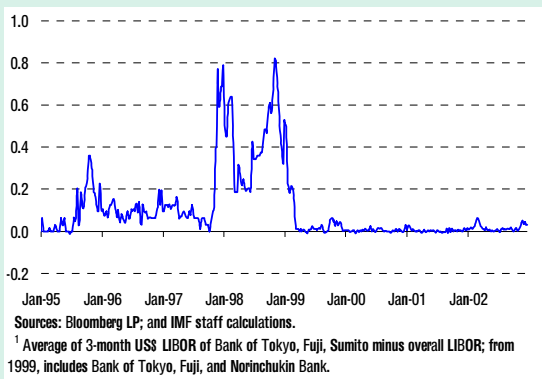
Starting in 1991, the Japanese government embarked on a series of attempts to address the problems in the banking system (Box 4.2). Beginning with the problems with the *jusen* mortgage

[51] The BoJ also began selling large numbers of its share acquisitions from 2007, targeting a 10-year period for complete divestment.

financing companies and credit cooperatives, the government organized joint rescues by private banks (based on the "convoy" approach) centered around loan concessions and liquidity support. But as property prices continued to fall, losses in the loan portfolio increased. By 1995, around three-fourths of *jusen* loans were nonperforming, forcing the government to liquidate the failed *jusen* and create a public asset management company to handle their bad assets (Hoshi and Kashyap, 1999, 2001).

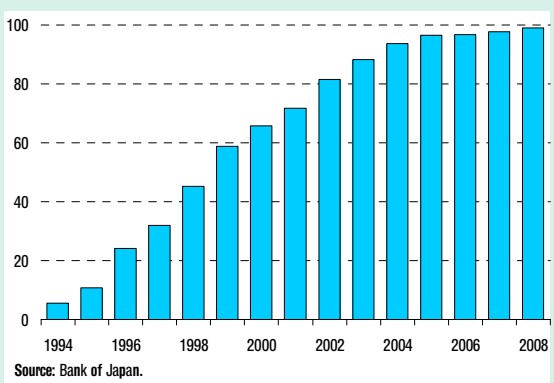
The tendency early on toward regulatory forbearance and an ad-hoc, case-by-case approach reflected to some extent a lack of understanding on the size of the NPL problem and the initial belief that an economic recovery would soon take hold. Public resistance to bank bailouts coupled with deficiencies in the deposit insurance scheme and legal framework for resolving a large-scale banking crisis may have also limited the authorities' ability to act (Kanaya and Woo, 2000).[52] As problem loans were allowed to fester, funding costs for Japanese banks continued to rise during the mid-1990s (the so-called Japan premium), making it difficult for banks to simply "grow out of their problems" (Figures 4.18 and 4.19).

Figure 4.18. "Japan Premium[1]"
(3-month LIBOR, in percentage points)



Sources: Bloomberg LP; and IMF staff calculations.
[1] Average of 3-month US$ LIBOR of Bank of Tokyo, Fuji, Sumito minus overall LIBOR; from 1999, includes Bank of Tokyo, Fuji, and Norinchukin Bank.

Figure 4.19. Cumulative Loans Losses of Japanese Banks since 1992
(In billions of yen)



Source: Bank of Japan.

As strains in financial markets heightened in 1997, the BoJ was forced to intervene to stabilize the system. Successive failures of several banks and securities houses beginning in the mid-1990s paralyzed the financial markets, requiring the BoJ to step in with emergency assistance. Such assistance ranged from providing lender-of-last-resort liquidity support to the interbank market to directly injecting capital into failed banks through the Deposit Insurance Corporation (DIC).[53] Despite these efforts, financial strains intensified, leading the BoJ and the MoF in November 1997 to announce a blanket guarantee on all deposits and interbank transactions to safeguard the system.

The BoJ's interventions helped to stabilize the credit markets, but they did not solve the problem of banks' capital shortage. LIBOR spreads for Japanese banks came down starting in 1998, and the volatility and level of short-term interest rates were reduced, but banks' weak capital position limited their ability to extend new credit or take on risk, raising concerns over a credit crunch. Regulatory forbearance also reduced management and shareholders' incentives to take action, either by raising new equity or writing down bad loans. To resolve this impasse, the BoJ and others pushed strongly for the government to inject public funds as a means of freeing banks' capital constraints and reviving the credit channel.

[52] As a result, the BoJ was forced to use its balance sheet to rescue two banks in 1994, later suffering losses.

[53] The BoJ extended US$35 billion in lender-of-last-resort assistance at its peak in December 1997 and some US$74 billion in loans to the Deposit Insurance Corporation for recapitalizing banks. In 2001, the irrecoverable amount was estimated to be US$900 million. See Nakaso (2001) for a discussion of the early policy responses.

Box 4.2. Japan: Key Financial System Reforms, 1996–2003

1996: The "Big Bang." Removal of the remaining legal barriers separating ownership of banks, trust banks, securities firms, and insurance companies; removal of the long-standing ban on holding companies, also allowing the creation of financial groups. Safety net enhanced including temporary comprehensive deposit insurance.

1998: Banking law reform. Prompt corrective action (PCA) procedures established. Financial Supervisory Agency established under Financial Reconstruction Commission (FRC) to oversee rehabilitation of the financial sector and improve supervision. Inspection manual prepared and published, designed to promote more effective loan valuation and provisioning practices (introducing so-called self-assessment process). Securities and Exchange Surveillance Commission (SESC) moved from the Ministry of Finance (MoF) to the Financial Supervisory Agency.

Bank of Japan (BoJ) law passed, establishing an independent central bank. BoJ's right to examine counterparty financial institutions explicitly confirmed.

1999: Insolvency law reformed under Civil Rehabilitation Law. Disclosure regime enhanced. Banks required to disclose more information on asset quality and unrealized gains/losses on securities' holdings. The Resolution and Collection Corporation (RCC) created to collect bad loans from failed housing loan companies, banks, and credit cooperatives.

2000: Safety net enhanced. New deposit insurance law codifying the safety net, including a crisis management framework. PCA procedures strengthened. Accounting reforms introduced, including consolidated accounting and mandatory use of market values for securities. Financial Supervisory Agency renamed Financial Services Agency (FSA).

2001: FSA takes over functions of the FRC. Position of Minister for Financial Services within the Cabinet set up. Accounting Standards Board of Japan established to complete task of bringing accounting standards into line with international best practice. Special inspections by the FSA leading to more realistic loan loss provisioning.

2002: Comprehensive deposit insurance withdrawn; large time deposits no longer insured. Government and BoJ establish schemes for purchasing bank equity holdings. Program for Financial Revival published; key elements include (1) new inspection of major banks' loan classification and provisioning; (2) introducing discounted cash flow (DCF) methodology for provisioning loans to large "special attention" borrowers; (3) harmonizing loan classification for large borrowers across banks; (4) disclosing the gap between major banks' self-assessment of problem loans and FSA assessment; and (5) external auditing of capital adequacy ratios, starting in FY2003.

2003: Industrial Revitalization Corporation of Japan (IRCJ). Set up to promote more effective corporate restructuring. Another round of special inspections leading banks to raise external capital and set up asset resolution companies, often in conjunction with international investors.

Source: IMF (2003).

Early attempts at public recapitalization came with few conditions. A new Financial Crisis Management Committee was created to identify banks with capital shortages and the amounts to be injected. By defining conditions under which regulators were obliged to take remedial actions, the scope for regulatory forbearance was narrowed. Under this new framework, public fund injections took place in three stages.

- In February 1998, the government made ¥30 trillion in public funds available, of which ¥13 trillion (about 2½ percent of GDP) was for capital injection and the rest for deposit insurance. To minimize the stigma associated with public funds, banks were encouraged to apply together for public funds; by end-March, ¥1.8 trillion had been disbursed almost equally to 21 large banks but without a comprehensive examination or clean-up of bank balance sheets.
- As financial market conditions deteriorated, the Diet in October 1998 doubled the pool of public funds earmarked for strengthening the banking sector to ¥60 trillion (12 percent of GDP), of which ¥25 trillion was set aside for capital injection into solvent banks, and the rest for resolving failing banks, and supporting deposit insurance. Despite these efforts, two sizable banks—Long-Term Credit Bank of Japan and Nippon Credit Bank—failed and were temporarily nationalized.
- In March 1999, an additional ¥7½ trillion was injected into 15 major banks. To qualify for the capital injection, each bank had to submit a restructuring plan that included raising new capital from the private sector, which was reviewed quarterly.[54]

Although these attempts helped to recapitalize the system, NPLs continued to rise, and ultimately, a more comprehensive strategy to clean up banks' balance sheets was required. This strategy, which complemented previous capital injections, adopted a more forceful approach to using public funds, concentrating on four key elements:

- *Ensuring realistic valuation of bad assets*. The strategy began with so-called special inspections by the Financial Services Agency (FSA) focusing on large borrowers at the major banks and then later extended to regional banks. The results confirmed that self-assessments of asset quality were overly optimistic and that nonperforming loans had been significantly understated. Starting in 2002, prudential norms were strengthened by introducing mark-to-market accounting, stricter loan classification and loan-loss provisioning. In particular, the introduction of discounted cash flow methodology to value loans and the cross-check of loan classification across major creditors helped to improve provisioning and raise banks' incentives for restructuring.
- *Accelerating the disposal of nonperforming loans*. Under the so-called Program for Financial Revival, major banks were required to accelerate the disposal of NPLs from their balance sheet within two to three years by selling them directly to the market, pursuing bankruptcy procedures, or rehabilitating borrowers through out-of-court workouts. Remaining loans were sold to the Resolution and Collection Corporation (RCC) charged with disposing of bad assets of failed banks. In contrast to the ineffective warehousing of bad *jusen* loans in the early 1990s, the RCC and banks looked more to restructure nonperforming assets.
- *Improving bank capital*. About ¥12½ trillion of public funds (including past injections) was used to recapitalize both major (except for the Mitsubishi Tokyo Financial Group) and regional banks, mainly through preferred stock or subordinated debt. In the later stages, in exchange for public funds, banks were required to write down the capital of existing shareholders, replace senior management, and submit a reorganization plan to be reviewed

[54] If the FSA was not satisfied with progress, it could convert its preferred stock holdings to common stocks after a certain grace period, and demand management changes as the largest shareholder.

regularly by the FSA.[55] Banks were also required to undertake governance reforms consistent with Basel Committee guidelines, such as appointing outside directors and establishing a board audit committee.

- *Strengthening supervision.* In 1998, the FSA was created (later renamed the Financial Services Agency), consolidating supervision from the MoF and other government agencies into a single entity. A new law was also passed, authorizing the FSA to prescribe prudential rules and apply prompt corrective action when rules were breached or when institutions were viewed as unsafe or unsound.

At the same time, the government took steps to facilitate the restructuring of distressed borrowers. In 2003, the government established the Industrial Revitalization Corporation of Japan (IRCJ) to purchase distressed loans from banks (up to about ¥1 trillion) and work with creditors in restructuring. To support private-sector-led restructuring, the government also reformed the insolvency system (introducing a faster and more efficient "Civil Rehabilitation Law"), introduced guidelines for out-of-court corporate workouts, and upgraded the accounting and auditing framework. These measures helped to create a market for restructuring distressed assets, drawing in private capital and expertise, including from overseas.

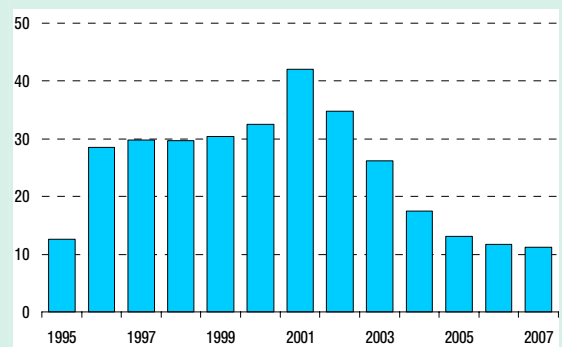
In the end, the government injected public funds of nearly ¥47 trillion (10 percent of 2002 GDP) to recapitalize the banking system and dispose of problem loans. In 2003, banks' share prices started to recover, as banks' NPLs began to trend down and capital ratios stabilized (Figure 4.20). At the same time, the banking system underwent significant consolidation, with several large banks and many smaller institutions either closed or merged. To date, nearly three-fourths of the ¥12.5 trillion of public capital has been repaid, and about 80 percent of total funds are expected to be recovered.

Assessment of Japan's Experience

Delays in recognizing problem loans exacerbated Japan's financial crisis and postponed a sustained recovery. Weak accounting practices and regulatory forbearance masked the NPL problem for many years and limited incentives for remedial action by both the government and the banks themselves. The delay in recognizing the losses proved costly, both in terms of taxpayer funds but also in holding back a recovery, as insolvent "zombie" firms were allowed to linger and constrain investment by sound firms.[56] The result was ultimately a "lost decade" of growth, wasteful pump-priming spending, and a large buildup of public debt. At a minimum, earlier action to recognize problem loans and raise adequate provisioning would have helped identify the capital shortage and jump-start the process of restructuring.

Liquidity provision helped forestall an immediate systemic crisis, but could not adequately address the fundamental problem of an undercapitalized banking system. In Japan, exceptional liquidity was required to stabilize the system, but without accompanying steps to recognize losses and address the capital shortage, its effectiveness diminished over time. As noted earlier, if left for too long, exceptional liquidity can also generate negative

Figure 4.20. Japan: Nonperforming Loans
(Risk management loans, in trillions of yen)



Source: Financial Supervisory Agency of Japan.

[55] At the same time, limits were placed on the amount of deferred tax assets (tax credits based on expected future profits) banks could count toward their Tier 1 capital ratio. Deferred tax assets, which in 2003 accounted for nearly one-half of Tier 1 capital in major banks, generated market concerns over the quality and ability of bank capital to absorb further losses.

[56] See Caballero, Hoshi, and Kashyap (2008) for an empirical analysis of the impact of such "zombie" firms on investment and employment growth of sound firms.

side effects by distorting the functioning of the markets and delaying needed restructuring.

Public funds that were conditional on equity writedowns and steps to dispose of bad assets ultimately proved effective. In Japan, the injection of capital into viable institutions, together with the orderly resolution of nonviable ones, helped support credit and bolster capital ratios, but only after they were linked to strong steps to clean up balance sheets and undertake restructuring. Such steps were supported by close monitoring by the FSA under an agreed reorganization plan. Public funds also helped to promote needed financial consolidation, with several large banks and many smaller institutions either closed or merged.

A centralized asset management approach helped accelerate the clean-up of banks' balance sheets. Government purchases and sales of NPLs through the RCC and the IRCJ facilitated a market for restructuring by enhancing price discovery, resolving credit disputes, and providing legal clarity and accountability.[57] They also allowed bank management to concentrate on extending new loans and restructuring their business operations. With asset prices recovering, these interventions ended up costing taxpayers far less than their original price tag—indeed, the IRCJ even managed to generate a small profit before it shut down in 2007.

On the borrower side, a sound private-sector-led framework was needed to assist in such restructuring. Although a public asset management company can quickly remove distressed assets from banks, recovery values are likely to depend on the private sector taking the lead in restructuring. Getting the incentives right hinged on proper valuation of distressed assets and a sound prudential framework. Bankruptcy reforms and improvements to the accounting and governance framework also provided the private sector with useful tools to restructure distressed firms.

[57] See Kang (2003) and Ohashi and Singh (2004) for an analysis of the development of a market for distressed debt in Japan.

Finally, to restore market discipline and minimize moral hazard, an exit strategy for divesting public shares in the banking system and other interventions in the financial system needed to be developed. In the case of Japan, the shift from a blanket guarantee to partial deposit insurance and the gradual repayment of public funds were fairly orderly and smooth. However, the BoJ has not managed to unwind fully its purchases of equities held by banks, while some banks are still struggling to repay their public funds. The gradual withdrawal of public support of the SMEs, such as through credit guarantees, may have also held back the restructuring of smaller firms that continue to suffer from excess leverage and low profitability.

Potential Implications for Financial Sector Policies in the Current Crisis

Economies facing similar acute banking distress should be wary of repeating Japan's early mistakes of the 1990s and be prepared for forceful actions to recognize bank losses, restructure distressed assets, and recapitalize viable institutions. Faced with a quickly deteriorating outlook, Asian authorities have taken a range of steps to promote financial stability (Table 4.4). The degree of intervention has varied across Asian economies, mainly reflecting the relative funding needs and balance sheet strength of banks. Temporary guarantees to boost confidence have been put in place in many countries, including deposit insurance and blanket guarantees on other bank liabilities. Thus far, there has been less need for direct capital support or measures to remove or guarantee bad assets, although Hong Kong SAR, Japan, and Korea have set up funds to bolster bank capital. However, there may be a need for a broader range of Asian economies to shore up capital to limit adverse fallout from the crisis, and preemptively prepare plans to deal with distressed debt and potential corporate failures (as suggested in Chapter 3). Japan's experiences suggest some key priorities:

- *Recognizing bank losses early.* In Japan, regulatory forbearance and pricing gaps, particularly on illiquid properties and multicreditor loans, held up the disposal of NPLs. The introduction of

discount cash flow methodology and mark-to-market accounting and the cross-check across banks helped to clarify the true extent of banks' losses and strengthened the incentives for restructuring. For failed banks, the transfer of bad assets was more straightforward, suggesting that a rigorous inspection of bank asset quality should be a prerequisite for using any public funds to remove bad assets.[58] If left unaddressed, uncertainty over the value of the nonperforming loans can spill over to affect sound banks, making it difficult to raise private capital.

- *Using public funds to clean up balance sheets.* Japan had adopted many of the same strategies that advanced economies are considering now—setting up asset management companies, protecting bank liabilities, and injecting public capital. Nevertheless, the financial system remained dysfunctional until the Japanese government in 2002, under Prime Minister Koizumi and Minister Takenaka, finally forced banks to clean up their balance sheets and dispose of bad assets. Encouragingly, the ultimate fiscal cost was significantly lower than the up-front expenses because a significant portion was recovered once the economy stabilized.

- *Overcoming resistance to temporary nationalization.* The Japanese experience demonstrates that there is no silver bullet—crisis responses are inevitably messy and invariably involve a learning curve. In the mid-1990s, public backlash over the ineffective injection of public funds into the failed *jusen* companies made it very difficult for the authorities to consider additional public funds for some time, limiting their policy flexibility. Japan's ability to eventually overcome public resistance to bank bailouts and the stigma attached to public capital proved crucial in forging a final resolution to the problem.

Table 4.4. Summary of Bank Support Measures in Asia

Measures adopted	Economies
Direct liquidity and funding support	Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Philippines, Singapore, Thailand
State guarantees for bank obligations	
Deposit protection	Australia, Hong Kong SAR, India, Indonesia, Malaysia, New Zealand, Philippines, Singapore, Taiwan Province of China, Thailand
Debt issuance	Australia, Korea, New Zealand
Removal of bad assets	Japan, Korea
Insurance of bad assets	Korea
Capital support	Hong Kong SAR,[1] India,[2] Japan, Korea

Source: Fitch.
[1] Facilities set up but yet to be used.
[2] Purely a policy intention at this stage.

- *Measures to restructure distressed borrowers can also help support bank restructuring.* In Japan, financial and corporate restructuring went hand in hand and proved mutually reinforcing. Bankruptcy reform, out-of-court workouts, and debt-equity swaps were useful tools for the private sector to rehabilitate distressed, but creditworthy, firms.

Conclusions

Japan's experiences following the collapse of its asset bubbles in the 1990s speak, in varying degrees, to key dilemmas facing policymakers in different parts of the world today, including in Asia. In economies undergoing—or likely to encounter—acute financial stress, a systemic solution that addresses both sides of the balance sheet will be needed for a sustained recovery. In this context, a comprehensive approach that addresses both solvency and liquidity issues may be needed, including recapitalizing the banks and restructuring the debts of distressed borrowers.

[58] In some cases, such as for Shinsei Bank, where uncertainty over loan valuations was high, partial insurance through "put options" on NPLs was used to encourage investors to take over failed banks. However, insurance must be designed carefully to avoid the risk of "cherry picking" and selling back the worst assets (Tett, 2004).

In the meantime, to support growth, in those economies with room for discretionary action, fiscal stimulus should be sustained, centered on high-impact areas, and only reversed when clear signs of recovery emerge. At the same time, it will be important to articulate a concrete strategy for returning to a sustainable fiscal position over the medium term. To help restore credit markets and combat deflation, monetary policy actions will need to be bold, innovative, and wide-ranging. Where credit easing measures are taken, potential losses to the central bank's balance sheet and credibility will need to be carefully managed. In this context, clear and transparent communication and a considered exit strategy are desirable.

Importantly, Japan did not recover until the three excesses of labor, debt, and capacity built up during the bubble period were sufficiently addressed. Where such imbalances exist in the banking system or household and corporate balance sheets, the goal of policymakers should be to facilitate the required adjustment, without which sustained growth may not be possible.

The challenges posed by the global crisis may be daunting, but ultimately Japan's experiences inspire confidence in the ability of informed policymaking to lay the foundations of a lasting recovery and a more dynamic—and resilient—financial system. It may seem curious that in order to chart a way forward, this chapter has looked back. But as the crisis unfolds, policymakers in Asia and across the globe are likely to find that Japan's experiences provide valuable guidance in their search for a sustained economic recovery.

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