World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

Consolidating the Recovery and Building Sustainable Growth

OCT 10

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Definitions

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

- "Emerging Asia" refers to China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China, Thailand, and Vietnam.
- "Industrial Asia" refers to Australia, Japan, and New Zealand.
- "Asia" refers to emerging Asia plus industrial Asia.[1]
- "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.
- "EU-15" refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.
- "G-2" refers to the euro area and the United States.
- "G-7" refers to Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
- "G-20" refers to Argentina, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, and the United States.

The following abbreviations are used:

AER	average effective rate
APRA	Australian Prudential Regulation Authority
AsDB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BoJ	Bank of Japan
BVAR	Bayesian variance autoregression
CFR	core-funding ratio
CPI	consumer price index
EM	emerging markets
FDI	foreign direct investment
FY	fiscal year
GARCH	generalized autoregressive conditional heteroscedasticity
GDP	gross domestic product

[1] This definition of Asia differs from the *World Economic Outlook*.

GMM	generalized method of moments
GVAR	global vector autoregression
IRD	inland revenue department
IT	information technology
LAR	largest autoregressive root
LIC	low-income countries
MER	marginal effective rate
NIE	newly industrialized economy
NKPC	New Keynesian Phillips Curve
NPL	nonperforming loan
OECD	Organisation for Economic Co-operation and Development
PFM	public financial management
PICs	Pacific Island countries
PPP	purchasing power parity
REER	real effective exchange rate
RBNZ	Reserve Bank of New Zealand
REO	*Regional Economic Outlook*
SAAR	seasonally adjusted at an annual rate
SARC	sum of autoregressive coefficients
SIFI	systemically important financial institutions
SMEs	small and medium-sized enterprises
SOEs	state-owned enterprises
SVAR	structural vector autoregression
VAR	vector autoregression
VAT	value-added tax
WEO	*World Economic Outlook*
WPI	wholesale price index

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, FY2010).
- 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 Vivek Arora and Roberto Cardarelli of the IMF's Asia and Pacific Department, under the overall direction of Anoop Singh. Contributors included Ashvin Ahuja, Brian Aitken, Steve Barnett, Pelin Berkmen, Julia Bersch, Ran Bi, Carlos Caceres, Stephan Danninger, Leif Lybecker Eskesen, Roberto Guimaraes, Byung Kyoon Jang, Sanjay Kalra, Svitlana Maslova, Malhar Nabar, Carolina Osorio Buitron, Runchana Pongsaparn, Nathan Porter, Yasuhisa Ojima, Mousa Shamouilian, Murtaza Syed, Kiichi Tokuoka, Patrizia Tumbarello, D. Filiz Unsal, Olaf Unteroberdoerster, Shengzu Wang, and James Walsh. Souvik Gupta, Adil Mohommad, and Yiqun Wu provided research assistance; Antoinette Kanyabutembo and Lesa Yee provided production assistance. Martha Bonilla and Joanne Blake of the IMF's External Relations Department edited the volume and coordinated its publication and release. This report includes comments from other departments and some Executive Directors.

Executive Summary

Asia has entered the second year of the global economic expansion still firmly in the lead of the recovery. Growth in the first half of 2010 proceeded well above trend in almost all regional economies, as global manufacturing continued to rebound and fueled exports and investment in the region. Private consumption also remained strong, as labor conditions continued to improve and confidence remained high despite greater market volatility as a result of global financial turbulence.

During the second half of 2010, economic activity has moderated toward a more sustainable pace, although it remains robust. In particular, industrial production and export growth rates have started to moderate. This in part reflects the maturing of the global and regional inventory cycle, particularly for the information technology products that are important for production and exports in many Asian economies.

The short-term baseline outlook for Asia remains positive, with growth expected to settle at more sustainable but still high levels. Growth is likely to remain particularly strong in the large, domestic-demand-driven economies of China, India, and Indonesia. The continuing, albeit sluggish, recovery in advanced economies during 2010–11 that is envisaged in the October 2010 *World Economic Outlook* should support firm growth in Asia's exports, although below the very high rates of 2009 and early 2010. A gradual pace of withdrawal of policy stimulus, sustained improvements in labor market conditions, and still accommodative financial conditions are expected to sustain private domestic demand. Ample global liquidity on the one hand, and the relatively robust growth and low public debt in Asia on the other hand, should continue to fuel capital flows to the region. Reflecting the slowing of export growth and strong domestic demand, Asia's current account surplus is projected to decrease to about 3 percent of regional GDP in 2010 and 2011, from about 5 percent in 2007, making a modest contribution to the narrowing of global imbalances.

The main risk to the outlook is the external environment. As discussed in the *World Economic Outlook*, while global financial conditions have improved since June 2010, underlying sovereign and banking vulnerabilities in advanced economies remain a significant challenge, and concerns linger over the strength of the global recovery. Despite Asia's strong economic and policy fundamentals, important trade and financial linkages with advanced economies suggest that a further deterioration in global financial conditions and a slowing of the global recovery would have important repercussions for the region.

In view of the strong economic expansion that is under way, and emerging signs of inflationary pressure in some economies, Asia has reached the threshold to normalize policy stances across the region. Many economies have started to take steps in this direction. But monetary and fiscal policies are still generally accommodative and, with output gaps closing rapidly, inflation pressures could intensify next year with the risk that policies are becoming more procyclical. In particular, tight capacity constraints could exacerbate the effect of supply shocks on inflation, as discussed in Chapter II. Continued capital inflows may also pose risks to financial stability if they are associated with excessively easy domestic financial conditions. Macroprudential measures have appropriately been taken in many regional economies to minimize these risks, but a further tightening of monetary policy conditions may be needed, including through greater exchange rate appreciation. A faster withdrawal of fiscal stimulus would also help guard against the risks of overheating and a buildup of financial imbalances. Should global conditions worsen, however, the region has the room to delay the normalization of policy stances.

Over the medium term, sustaining robust growth in Asia will require continued progress with rebalancing growth toward domestic demand. For Asia as a whole, only limited progress has been made toward reducing external imbalances. In 2009, while China's current account surplus narrowed as a percent of GDP, those of many other Asian economies, such as NIEs and ASEAN, increased. With external demand from advanced economies unlikely to return to precrisis trends in the foreseeable future, Asia will need stronger domestic demand to maintain robust growth. The normalization of policy conditions in Asia would, therefore, need to be accompanied by continued measures to reinforce private domestic consumption and investment. The challenge of raising private consumption was discussed in some detail in the April 2010 Asia and Pacific *Regional Economic Outlook*. In the present Asia and Pacific *Regional Economic Outlook*, Chapter III focuses on the challenge of raising investment and stresses the importance of measures to facilitate access to credit, particularly for smaller, domestically oriented, and service sector firms. The chapter also highlights the importance of reviving investment in infrastructure, which will contribute to rebalancing both directly and indirectly, by improving the environment for private sector investment.

In Asian low-income and Pacific Island countries, policy stimulus and rising global demand for commodities and garments have driven a strong recovery in recent quarters. But these economies face significant challenges in the near and medium term, including the need for fiscal consolidation to strengthen fiscal positions and create more policy space, and the need for structural reforms to raise potential growth and reduce vulnerabilities. Chapter IV discusses these issues.

I. Moving to Sustainable Growth: Risks and Challenges

A. Recent Developments and Emerging Pressures

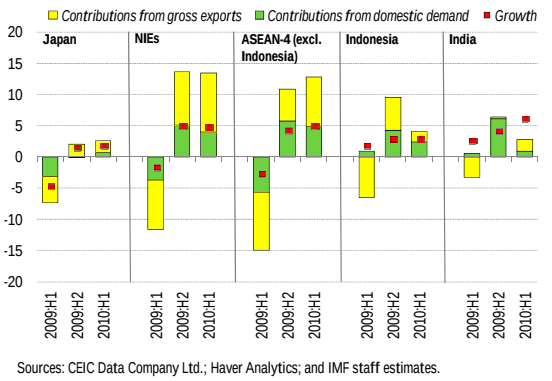
Over the first two quarters of 2010, economic activity in Asia continued its rebound from the global financial crisis. The speed of the recovery, as well as its composition, have remained quite different across Asia, with smaller export-dependent economies generally experiencing more pronounced cycles than larger economies with sizable domestic demand (Figure 1.1). In particular:

- NIEs and export-oriented ASEAN economies posted very strong GDP outturns, as exports grew faster than expected, private consumption remained robust, and the investment cycle that began in late 2009 continued to mature. The sharp, V-shaped business cycle experienced with the global financial crisis appears to be over, and output levels have returned to precrisis trends (Figure 1.2). In Korea, growth benefited from continued inventory accumulation and a pickup in business investment. In Singapore, export growth boosted both inventory and investment cycles, as economic activity accelerated to double-digit growth in the first half of 2010.

- In Japan, the recovery remained slow but became more broad based. Rising exports helped improve business sentiment among large export-oriented firms, which are further upgrading their capital spending plans, and private consumption accelerated thanks to the impact of new fiscal stimulus measures. Overall, however, growth remains insufficiently strong to return output to precrisis trends and move inflation into positive territory.

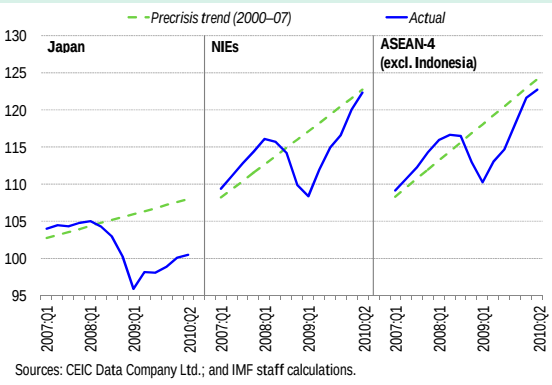
- Private domestic demand was strong in the first half of 2010 in emerging Asian economies that did not experience sharp downturns in 2009, such as India and

Figure 1.1. Selected Asia: Contributions to GDP Growth
(Semiannual, in percentage points; seasonally adjusted)



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

Figure 1.2. Export-Oriented Asia: Real GDP
(2005 =100; seasonally adjusted)



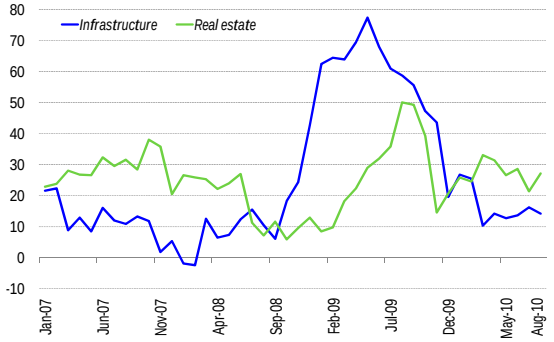
Sources: CEIC Data Company Ltd.; and IMF staff calculations.

Note: The main author of this chapter is Roberto Cardarelli, with inputs from Leif Lybecker Eskesen, Souvik Gupta, Adil Mohommad, Malhar Nabar, Runchana Pongsaparn, D. Filiz Unsal, Olaf Unteroberdoerster, and Yiqun Wu.

Indonesia. In India, capital goods production and spending on consumer durables remained robust during the first half of 2010. In Indonesia, strong private demand offset a slowdown in exports and lower government spending, so that GDP growth accelerated in the second quarter of 2010.

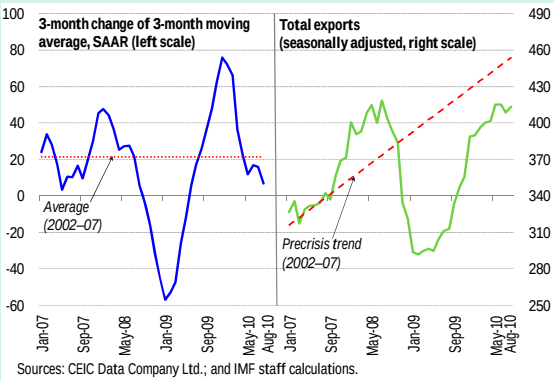
- In China, output growth remained very rapid, with robust growth in private consumption and exports, although it moderated in the second quarter, as infrastructure-related investment decelerated and real estate investment slowed under measures adopted to cool the property market (Figure 1.3).

Figure 1.3. China: Urban Real Fixed Asset Investment
(Year-on-year percent change)



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

Figure 1.4. Asia: Merchandise Exports
(Left scale: in percent; right scale: in billions of U.S. dollars)



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

- Economic activity continued to rebound in Australia and New Zealand, driven by external demand for their commodities that raised the terms of trade to near historically high levels in Australia. In Australia, growth was also boosted by high consumer confidence and tight labor market conditions, which supported private consumption, and public spending on infrastructure. In New Zealand construction investment provided an additional boost to growth.

- Economic activity also accelerated in many Asian low-income countries (LICs) thanks to higher external demand, particularly for garment exports (Bangladesh, Cambodia, Vietnam); investment in the mining sector (Lao PDR, Mongolia); and accommodative macroeconomic policies (Lao PDR and Vietnam). In Sri Lanka and Mongolia the economic outlook improved markedly.

More recent indicators, however, suggest that activity in Asia likely peaked in the first half of 2010. Asia has regained all of the ground that it lost with the export collapse during the crisis. Indeed, by August 2010, overall Asian exports were at about precrisis levels, although still about 10 percent below precrisis trends (Figure 1.4). Subsequently, the growth momentum in industrial production and exports has slowed from these cyclical highs toward rates that are closer in line with historical averages (Figure 1.5). Export growth slowed more markedly in Japan and ASEAN economies than in China and NIEs, partly reflecting stronger currency appreciation in the former cases.

The moderation of Asia's export growth in recent months partly reflects the completion of the inventory cycle. Asia's domestic inventory cycle has probably come to an end, as the inventory-to-shipment ratios in Japan, Korea, and Taiwan Province of China have returned to levels more in line with precrisis averages

(Figure 1.6). The global inventory cycle, too, likely peaked in the first half of 2010. U.S. imports of information technology (IT) products have already passed their precrisis levels, and the inventory-to-sales ratio of U.S. IT wholesalers and retailers appears to have stabilized in recent months (Figure 1.7).

The slowing of China's domestic demand since the second quarter of 2010 may also have contributed to the deceleration of exports from other Asian countries. A geographical breakdown of Asia's exports indicates a marked moderation in intraregional exports to China in recent months (Figure 1.8). The slowing of intraregional exports to China may partly reflect the high degree of vertical integration of the Asian production chain, whereby China imports inputs from several Asian countries for the production of exports to advanced economies. But it also likely reflects slower final demand from China, as the pace of exports from China to the United States has actually picked up in recent months.

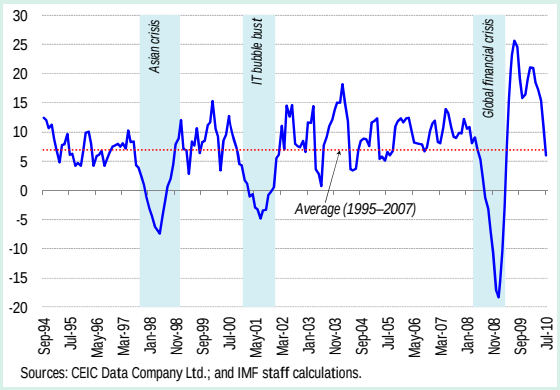
Sequential growth of retail sales in some Asian economies has also moderated in recent months, but remains generally robust (Figure 1.9). In particular, in the ASEAN-5 economies and in China, retail sales are still growing at double-digit rates, while in India passenger vehicle sales have accelerated in recent months.

Overall Financial Conditions Are Still Accommodative

External financial conditions have been volatile in recent months and are somewhat tighter than they were a year ago. Net capital inflows to Asia have moderated so far in 2010, from their very high levels of 2009, although the pattern varies across the region (Figure 1.10). In particular:

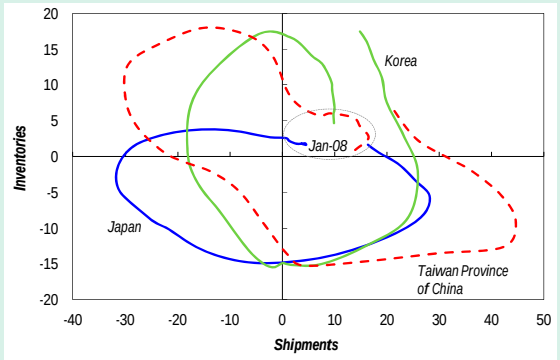
- Portfolio equity inflows have resumed in recent months, after a sharp reversal in May 2010 owing to the spike in global risk

Figure 1.5. Asia: Industrial Production
(3-month percent change of 3-month moving average, SAAR)



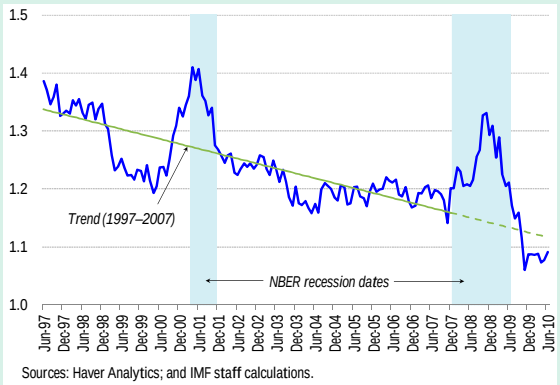
Sources: CEIC Data Company Ltd.; and IMF staff calculations.

Figure 1.6. Selected Asia: Manufacturing Inventories and Shipments
(3-month moving average of year-on-year percent change; seasonally adjusted)



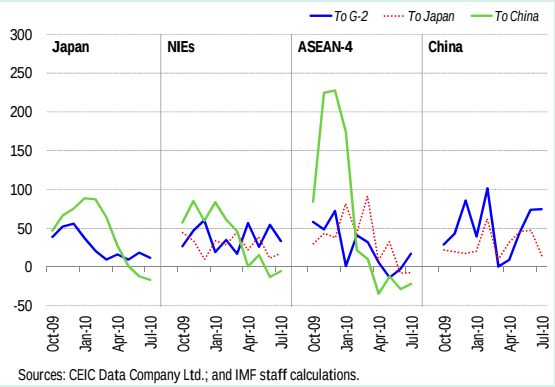
Sources: Haver Analytics; and IMF staff calculations.

Figure 1.7. United States: Electronics Inventories-to-Sales Ratio
(Seasonally adjusted)



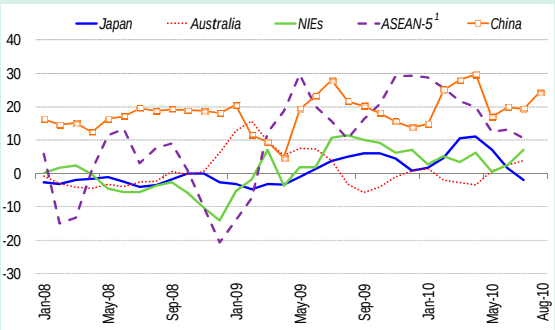
Sources: Haver Analytics; and IMF staff calculations.

Figure 1.8. Asia: Direction of Exports
(3-month percent change of 3-month moving average, SAAR)



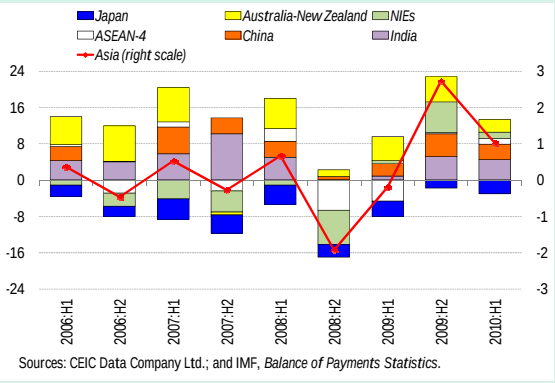
Sources: CEIC Data Company Ltd.; and IMF staff calculations.

Figure 1.9. Asia: Retail Sales Volume
(3-month percent change of 3-month moving average, SAAR)



Sources: CEIC Data Company Ltd.; and Haver Analytics.
[1] Retail sales data for the Philippines are proxied by motor vehicles sales.

Figure 1.10. Asia: Net Capital Inflows
(In percent of GDP)



Sources: CEIC Data Company Ltd.; and IMF, *Balance of Payments Statistics*.

aversion amid sovereign debt concerns in advanced economies, but they remain volatile. In recent months, equity inflows have moderated in a few economies, including Korea and Taiwan Province of China, as uncertainty about the global recovery has weighed on export prospects (Figure 1.11).

- After slowing in April–May 2010, foreign bond issuance by Asian economies has rebounded subsequently. External appetite has picked up further for Asian debt, particularly sovereign, against the backdrop of positive interest rate differentials, market expectations of exchange rate appreciation, and relatively sound fiscal positions of Asian governments (Figure 1.12).

Stock market performance has varied across the region, partly reflecting differences in the degree of integration of various economies with global markets. The spike in global risk aversion in May 2010 caused a broad decline of stock prices in Asia, as it did in other regions, but equity markets have since rebounded (Figure 1.13). The rebound has been particularly notable in ASEAN economies, where, as of September 2010, equity valuations were about 30 percent above their levels at the beginning of the year. In NIEs, by contrast, equity valuations have remained broadly stable in 2010, partly reflecting their stronger integration with advanced equity markets. In Japan, stock market performance has been weighed down by still weak growth prospects, and equities have lost about 10 percent since the start of the year. In China, equity valuations have also declined since early 2010, perhaps reflecting market expectations of a tighter monetary stance.

In real effective terms, most regional currencies have appreciated so far in 2010 (Figure 1.14). Despite the moderation in capital inflows, upward pressures on Asian

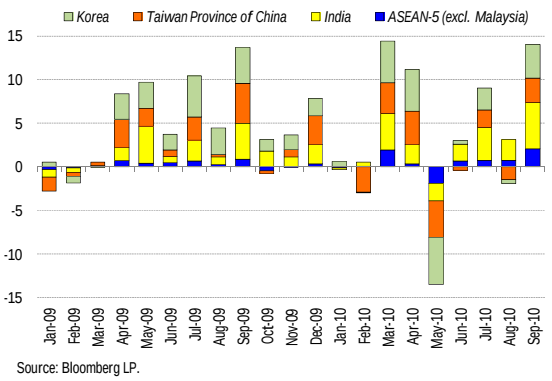
exchange rates have remained generally strong, owing partly to higher trade surpluses in the region. Some notable features are as follows:

- In China, the authorities' decision in mid-June 2010 to allow more flexibility of the renminbi has been followed by a nominal appreciation of the currency against the U.S. dollar of about 2 percent as of early October 2010. In real effective terms, although the renminbi has appreciated during 2010, it is still at roughly its level of the late 1990s. The rapid pace of reserve accumulation, high trade surplus, and positive productivity differential vis-à-vis trading partner countries over this period suggest that the renminbi remains substantially below the level consistent with medium-term fundamentals.

- Among emerging Asian economies, India, Indonesia, Malaysia, and Thailand have experienced the strongest real effective exchange rate appreciations so far in 2010, and their currencies were close to 10-year highs in August 2010. The real effective appreciations largely reflect higher nominal exchange rates, although in India inflation has also played a significant role. The Singapore dollar also appreciated to reach a 10-year high in real effective terms in August, following the authorities' move in April 2010 to tighten the policy stance by recentering upward the policy band and returning to a modest, gradual appreciation of the nominal effective exchange rate. Over the last few months, a few Asian currencies have lost some upward momentum amidst higher volatility in mature financial markets (see Box 1.1).

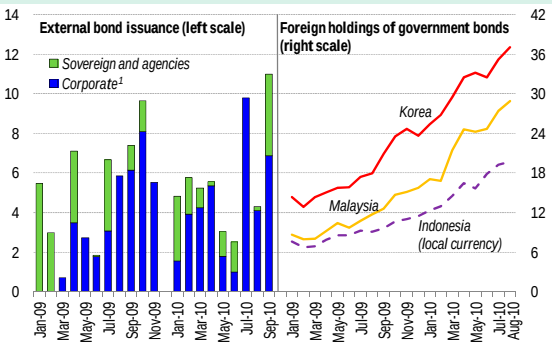
- Renewed global risk aversion has further fueled an appreciation of the Japanese yen in recent months, partly reflecting its status as a "safe haven" currency. Since April 2010, the yen has appreciated by 10 percent

Figure 1.11. Selected Emerging Asia: Net Foreign Investment in Equity Markets
(In billions of U.S. dollars)



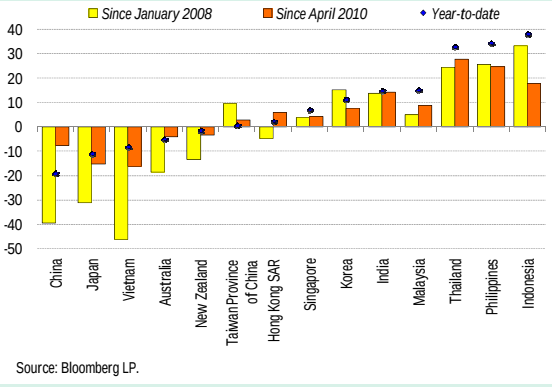
Source: Bloomberg LP.

Figure 1.12. Emerging Asia: Foreign Currency Bond Issuance and Foreign Holdings of Government Bonds
(In billions of U.S. dollars)



Sources: Bond Radar; and CEIC Data Company Ltd.
[1] Includes financial corporations.

Figure 1.13. Asia: Stock Markets
(Percent change; as of end-September, 2010)

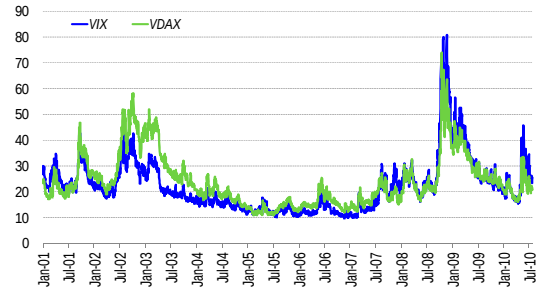


Source: Bloomberg LP.

Box 1.1. Global Volatility and Forex Returns in East Asia

Volatility shifts in mature markets transmit to emerging market foreign exchange returns through various channels, including through movements in investment portfolios across asset classes, which in turn induce shifts in capital flows across countries. This happens because investors—at home and abroad—readjust their portfolios along risk-return frontiers. These developments are often couched as "search-for-returns" and "flight-to-safety" hypotheses. The higher levels of volatility, therefore, have implications for asset markets in emerging markets, including foreign exchange markets. The relationships, in turn, have implications for monetary and exchange rate management in these countries.

Mature Market Volatility 2001–10[1]



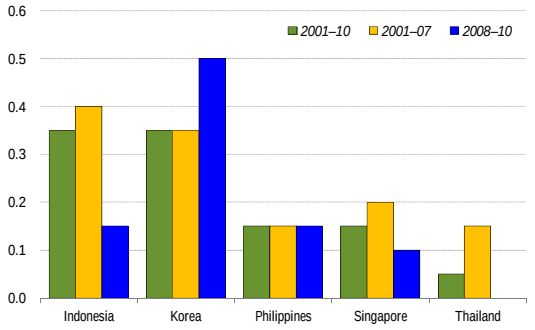
Source: Bloomberg LP.
[1] The VIX and the VDAX volatility indices are used for expected volatility over the next thirty days of the S&P 500 (United States) and the DAX (Germany) stock indices, respectively.

Volatility in mature equity markets has risen since late 2006, with a noticeable spike in mid-2007 in the wake of the subprime crisis in the United States and the unfolding global credit crunch.[1] Volatility levels rose further toward end-2008 to the highest levels in a decade and then subsided, before rising again in mid-2010 as the European crisis unfolded. What was the impact of these shifts in volatility on Asian forex markets? Did this relationship change in the wake of the global financial crisis?

To examine these issues, we analyzed daily forex returns (defined as the percentage change in spot exchange rate against the U.S. dollar), for five East Asian countries—Indonesia, Korea, the Philippines, Singapore, and Thailand—for the period 2001–10 in a generalized autoregressive conditional heteroscedasticity (GARCH) framework.[2]

The sample period was then subdivided into 2001–07 and 2008–10 to see whether the relationships had changed during the latter period of high volatility in mature markets. The main results of this analysis include the following:

Selected Asia: Exchange Rate Elasticities
(Response to 5 percent increase in VIX index; depreciation; GARCH models)



Source: IMF staff estimates.

- For East Asian economies, an increase in mature market equity volatility is generally associated with lower forex returns. In other words, an increase in mature market volatility generates a tendency for East Asian exchange rate depreciation, suggesting a "flight" from East Asian currency denominated assets.
- The sensitivity of exchange rates to mature market volatility varies across countries, with Indonesia at the higher end of the spectrum, Korea and Singapore forming the middle, and Thailand at the lower end. These differences reflect a combination of factors, including the depth of countries' forex markets, the degree of integration into the global financial

———

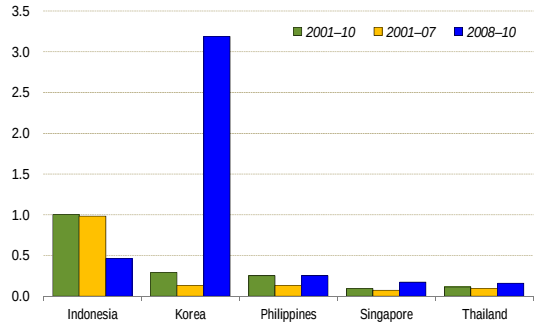
Note: The main author of this box is Sanjay Kalra.

[1] Mature market volatility is proxied by the VIX, the Chicago Board Options Exchange (CBOE) volatility index, which is a forward-looking measure of market expectations for the S&P 500 equities.

[2] See Kalra (2008) for details on the methodology.

system, and the extent of country exposure to cross-border financial flows. A 5 percentage point increase in the VIX index (close to a 1 standard deviation change) was associated, on average over the whole period, with 0.15–0.35 percentage point exchange rate depreciation.

Selected Asia: Long-Run Volatility of Exchange Rates
(Unconditional variance from GARCH models)

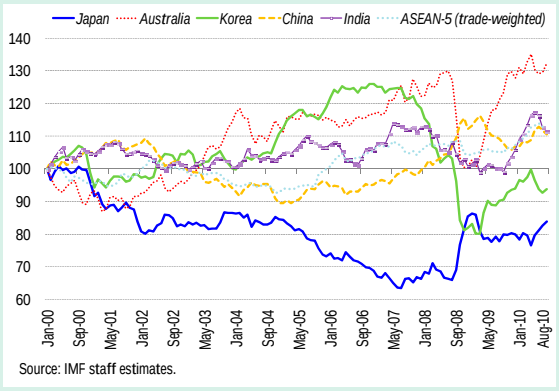


Source: IMF staff estimates.

- Relative to the average impact over the last decade, the spike of global volatility during the late 2008 global financial crisis had a stronger impact on the Korean won, possibly reflecting the sharp tensions in wholesale external funding. By contrast, the impact was lower in Indonesia, Singapore, and Thailand, possibly reflecting a stronger role for the global search for yields, as asset returns in mature markets declined and capital flows turned increasingly to emerging markets.

in real effective terms and about 8 percent in nominal effective terms (see Box 1.2). The rapid appreciation and increased volatility of the yen in recent months prompted the authorities in September 2010 to intervene in foreign exchange markets, for the first time since 2004.

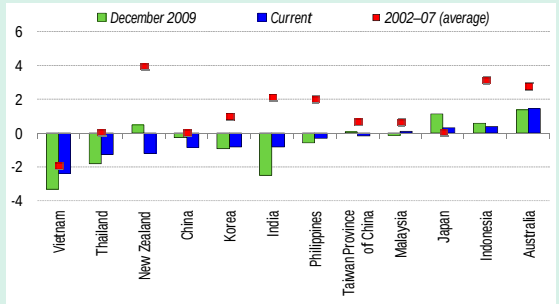
Figure 1.14. Selected Asia: Real Effective Exchange Rate
(Index, January 2000=100; increase=appreciation)



Source: IMF staff estimates.

Domestic financial conditions generally remain accommodative across the region. The process of monetary policy normalization in Asia has continued over the last few months, with several central banks in the region increasing policy interest rates since the start of 2010. Still, increasing inflationary pressures have pushed real interest rates lower in a number of economies, particularly India, Korea, and Thailand (Figure 1.15). Moreover, outside China, bank credit to the private sector has picked up further in 2010 (Figure 1.16) and bank lending spreads have also generally declined since the April 2010 *Regional Economic Outlook* (Figure 1.17), suggesting that banks may have become more willing to extend credit as the recovery has continued.

Figure 1.15. Asia: Real Policy Rates[1]
(In percent; as of October 5, 2010)



Sources: Consensus Economics Inc.; CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.
[1] Real policy rate is defined as current policy rate minus 1-year ahead inflation expectation published by Consensus Economics Inc.

The combination of accommodative domestic financial conditions and tightening external

Box 1.2. The Yen's Appreciation and Its Implication for Japan's Outlook

Over the period between April and early October 2010, the yen has appreciated by about 12 percent against the U.S. dollar and 10 percent against the euro, prompting the government to intervene in the foreign exchange market. The immediate effect was some weakening of the yen, but in effective terms the yen is still close to its peaks following the Lehman shock. This box examines the factors behind the yen's rise and the implications for Japan's recovery.

Factors behind the yen's rise

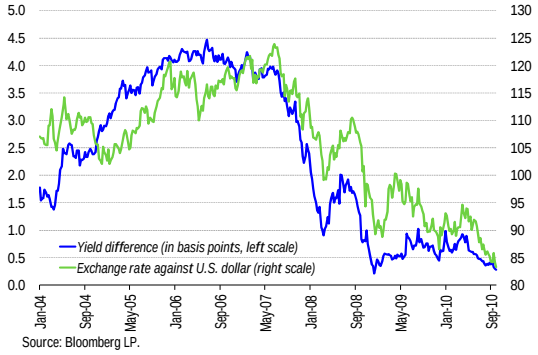
While it is inherently difficult to pin down causes of short-term exchange rate movements, the recent rise of the yen appears to have been mainly driven by external factors.

- During periods of heightened global uncertainty, the yen—much like the swiss franc—tends to appreciate on account of safe haven flows.[1] In the current episode, concerns about European sovereign debt appear to be a major driver behind the yen's appreciation. In late April, as uncertainty about the Greek debt crisis peaked, the bilateral exchange rate rose in a very short period and has remained high since then.

- At the same time, a weakened U.S. growth outlook helped narrow the interest differential with Japan. Empirical studies show that the yen/U.S. dollar rate is sensitive to movements in the interest rate differential between Japan and the United States, reflecting the relative returns of fixed income investments. Since May, the 2-year U.S. Treasury and Japanese government bond yield difference declined from about 80 basis points to 40 basis points, driven almost entirely by U.S. developments. A weaker U.S. growth outlook and expectations of additional quantitative easing by the Federal Reserve lowered expected policy rates in the United States and weakened the U.S. dollar against most currencies, and particularly against the yen.

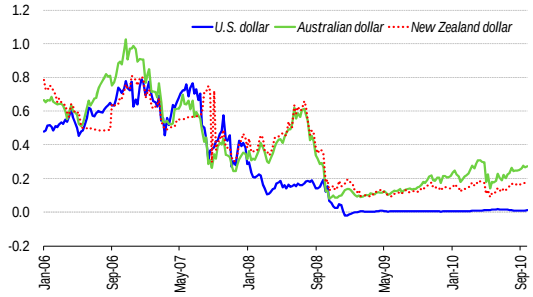
- Unlike in 2009, the unwinding of leveraged carry trade positions does not appear to have been the main contributor to the recent yen appreciation. This is not surprising given that the risk adjusted returns on carry trade have remained low since May.

Japan: 2-Year Treasury Yield Difference with U.S. and Bilateral Exchange Rate Against the U.S. Dollar



Source: Bloomberg LP.

Japanese Yen: Risk Adjusted Returns on Carry Trade[1]
(Sharpe ratio)



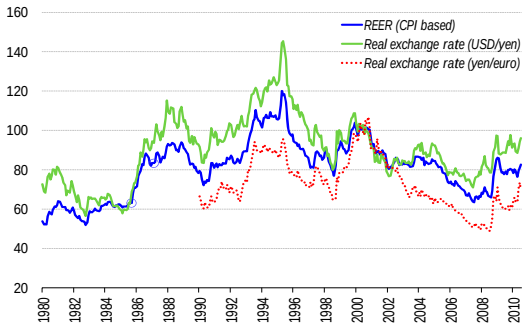
Source: IMF staff calculations.
[1] The Sharpe ratio (defined as 1-month interest rate differential divided by implied volatility in bilateral exchange rate) is a measure of the risk adjusted return on yen carry trade.

Note: The main authors of this box are Pelin Berkmen and Stephan Danninger.
[1] Since the mid-1990s U.S. dollar/yen appreciations of 10 percent or more within one quarter have occurred only five times and were mainly linked to events outside of Japan: the Asian crisis in 1998, the Enron and WorldCom crisis in 2002, and the 2008 Lehman shock.

Implications for the outlook

In the past, strong increases in the yen have led to sharp equity market corrections and were followed by slowdowns in exports and GDP growth. A similar pattern appears to be playing out in the recent appreciation episode. The Nikkei stock market index has declined by more than 15 percent since end-April on weaker corporate earnings and may dampen investment looking ahead. Export growth has so far held up, as firms have absorbed falling yen prices by cutting profit margins, but this process is unlikely to be sustained.

Japanese Yen: Real Exchange Rate
(2000=100)

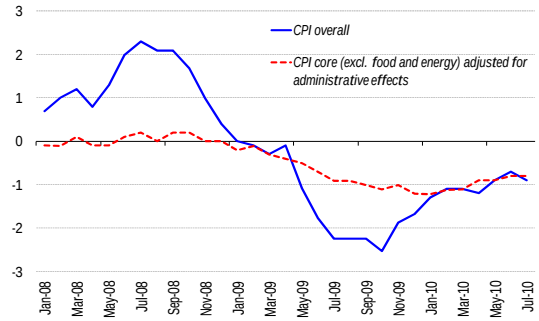


Sources: Bloomberg LP; and IMF staff calculations.

The impact on near-term growth depends on the persistence of the current appreciation and the impact of the recent intervention. A sustained real effective appreciation of 5–6 percent (equivalent to the recent increase) could slow export growth by 2–2½ percent after two to three quarters, which would dampen GDP growth by 0.3–0.4 percent over the course of a year. The effect on growth could be significantly larger and reach 1 percent if the appreciation was signaling a significant slowdown in global growth.[2] In the past, however, sharp and sudden yen appreciations have been partially reversed in following quarters, limiting their negative growth impact.

Longer-term implications of the recent yen appreciation appear so far to be limited. In real effective terms, the yen is still close to past averages. As of August 2010, the yen was about 4½ percent above its 1980–2010 average, and 2 percent below its 1990–2010 average, limiting concerns of a significant deterioration in competitiveness. Two factors have helped to moderate real yen movements: first, Japan's persistently low inflation rate over time has offset the impact on competitiveness of the rise in the nominal yen rate. Second, Japan's rising trade share with Asia (about 50 percent of total exports) at the expense of declining trade shares with the United States and the euro area, which has made Japan's competitiveness less sensitive to exchange rate movements vis-à-vis the euro and the U.S. dollar.

Japan: Consumer Price Inflation
(Year-on-year, in percent)



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

The yen's appreciation also poses a risk to deflation. On a year-on-year basis, core inflation (excluding food and energy) bottomed out at -1.2 percent in December of 2009 and gradually eased to -0.7 percent by August along with the recovery.[3] Direct effects on inflation via falling import prices have been limited because the

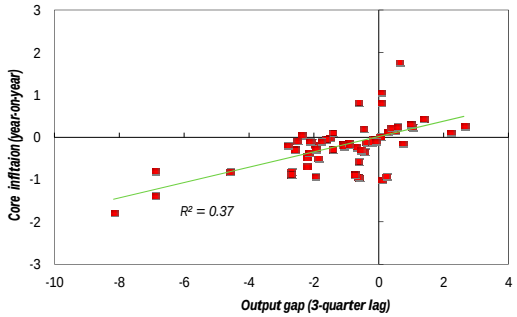
[2] The scenario assumes zero growth in the euro area and the United States. For a detailed discussion of the model simulation see Box 1 on the Potential Impact of Global Sovereign Distress on Japan in IMF (2010c).

[3] Excluding an administrative price change implemented in April 2010.

Box 1.2. *(concluded)*

share of foreign products and services in the core consumption basket is relatively small.

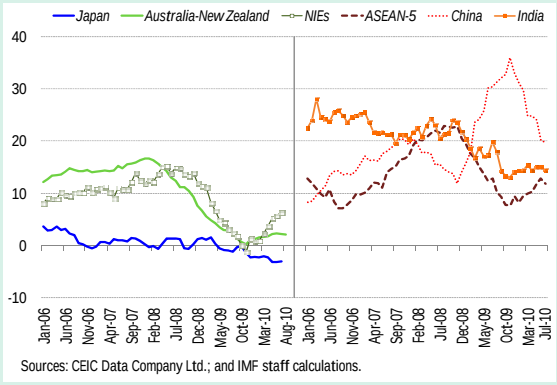
Japan: Phillips Curve (1996–2010)
(In percent)



Source: IMF staff estimates.

The yen's rise mainly affects deflation through a weakening of Japan's export-led recovery, but the impact of the recent increase is unlikely to be large. As growth slows, the output gap closes more gradually, delaying a return to positive inflation. Japan's Phillips curve relationship—an empirical association between inflation and the output gap—shows that such an effect tends to be small as core inflation is comparatively insensitive to fluctuations in the output gap. The estimated elasticity of -0.18 implies that a widening of the output gap by one percentage point would lower core inflation by about 0.2 percentage points, a rather small effect. However, a sustained further appreciation coupled with a significant global slowdown could accelerate downward price pressures, especially if such a shock was accompanied by a weakening of long-term inflation expectations.

Figure 1.16. Asia: Credit to Private Sector
(Year-on-year percent change)



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

conditions leaves overall financial conditions in Asia still accomodative but slightly tighter now than at the beginning of 2010 (Figure 1.18). This pattern is borne out by a broad-based Financial Conditions Index that combines external and domestic financial indicators based on their relative contributions to economic activity (Box 1.3). While overall conditions are more accommodative in most economies than they were before the crisis, they seem to have tightened slightly. The tightening is particularly evident among export-oriented economies, where higher real effective exchange rates and lower stock prices growth have more than offset the positive contribution from lower real interest rates and stronger credit growth.

Inflationary Pressures Are Rising

With output growing above potential during the first half of 2010, output gaps are closing quickly, indeed faster than expected at the time of the April 2010 *Regional Economic Outlook* (Figure 1.19). With faster-than-expected growth and still accommodative financial conditions, inflationary pressures have continued to build in some economies:

- Average CPI headline inflation in Asia, excluding Japan, accelerated to 4½ percent (year-on-year) in the second quarter of 2010 (Figure 1.20), from ¾ percent in 2009. The increase partly reflects higher commodity (particularly food) prices, but

Box 1.3. A Financial Conditions Index for Asia

This box discusses a Financial Conditions Index (FCI) for Asia that takes into account both external and domestic financial conditions. The FCI suggests that overall financial conditions in Asia are still accommodative: although external financial conditions have tightened somewhat in recent months, the effect has been offset by loose domestic conditions. External financial conditions have generally tightened in Asia in 2010 relative to end-2009, reflecting real exchange rate appreciation and a moderation in capital inflows that contributed to a stabilization of equity valuations. On the other hand, domestic financial conditions have eased as real interest rates have declined, bank credit growth has picked up, and lending spreads have narrowed.

The FCI is a single summary measure of the overall stance of financial conditions. It is constructed as a weighted average of several financial indicators, with the weights determined by empirical measures of the relative contribution of each of these financial variables to economic activity.

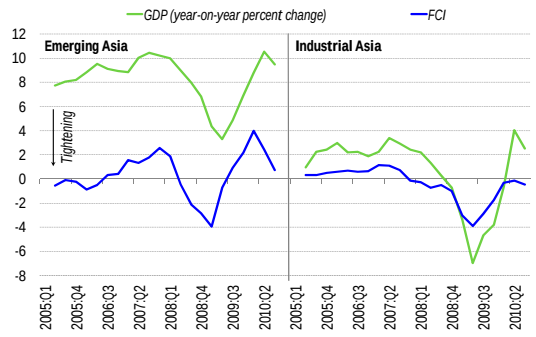
Staff estimates of the FCIs for Asian economies consider four major financial variables:

- growth of credit to the private sector (and, where available, lending standards of banks);
- interest rates (real lending rates and interest rate spreads);
- change in equity prices;
- change in real effective exchange rates.

The weights assigned to each of these variables were derived from estimates of their impact on GDP growth within unrestricted vector-autoregression models (VARs), and were normalized to prevent the more volatile financial variables from dominating the broad index. These weights were found to reflect well the most obvious differences in the economic and financial structure of Asian economies. For instance, movements in real exchange rates were found to be relatively more important in export-dependent economies (Korea, Singapore, Taiwan Province of China, and Thailand) and were thus assigned proportionally higher weights for these economies. Stock prices were assigned relatively higher weights in economies with deeper stock markets (such as Japan and Hong Kong SAR).

This methodology allowed FCIs to measure exogenous changes in financial conditions that may affect economic activity with a lag. Indeed, changes in FCIs across Asian economies were found to significantly affect economic growth over a two-quarter period. Hence, the FCI summarizes the information on the *future* state of the economy contained in the *current* financial variables.

Asia: Financial Conditions Index (FCI) and GDP Growth



Source: IMF staff estimates.

Recent movements in the FCI provide the following indications regarding overall financial conditions in Asia:

- Financial conditions eased significantly during 2009 across the region, thanks to the strong recovery in equity markets and substantial monetary policy easing.

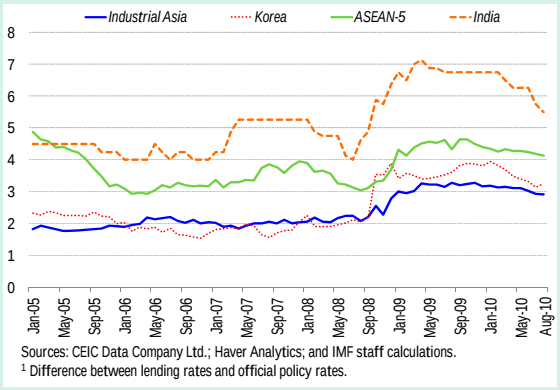
Note: The main authors of this box are Runchana Pongsaparn and D. Filiz Unsal.

Box 1.3. (concluded)

- However, financial conditions have generally started to tighten since the beginning of 2010, following the stabilization of stock markets (particularly in Hong Kong SAR) and real exchange rate appreciation (Malaysia, Singapore, and Taiwan Province of China).

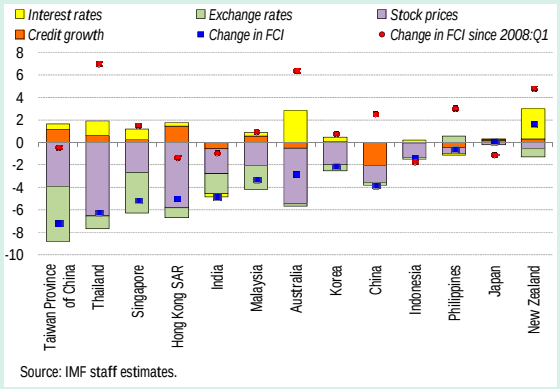
- Despite the recent tightening, financial conditions generally remain accommodative in many emerging Asian economies compared with before the crisis (especially in China, the Philippines, and Thailand), as the policy easing of 2009 has not been completely unwound, equity valuations remain elevated, and bank credit continues to recover. However, overall financial conditions in mid-2010 were generally closer to the precrisis stance in industrial Asia (Japan, Australia, and New Zealand), owing to weak credit growth and the strong appreciation of exchange rates.

Figure 1.17. Selected Asia: Bank Spreads[1]
(In percentage points)



Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.
[1] Difference between lending rates and official policy rates.

Figure 1.18. Asia: Contributions to Change in Financial Conditions Index (FCI) since 2009:Q4
(In percentage points)



Source: IMF staff estimates.

core inflation has also risen. The degree of acceleration has, however, varied considerably across the region. The uptrend of inflation has been most noticeable in India, where headline wholesale price index (WPI) inflation was still growing at close to double-digit rates in August 2010, while in other regional economies inflation remains more moderate.

- House prices in several economies (China, Hong Kong SAR, and Singapore) are growing at double-digit rates (Figure 1.21). In China, a property bubble appears to be inflating in some of the larger cities, although it does not seem as if property prices are significantly above fundamentals for the country as a whole (see Box 1.4). Starting in October 2009 some economies (China, Hong Kong SAR, Korea, and Singapore) have introduced measures to rein in real estate markets, such as more stringent limits on mortgage loan-to-value ratios and higher stamp duties and sales taxes on resale transactions. These measures have contributed to a moderation in some real estate markets. In Korea, property markets in Seoul declined sufficiently that in August the authorities eased the ceilings on loan-to-value and annual household debt-to-income ratios.

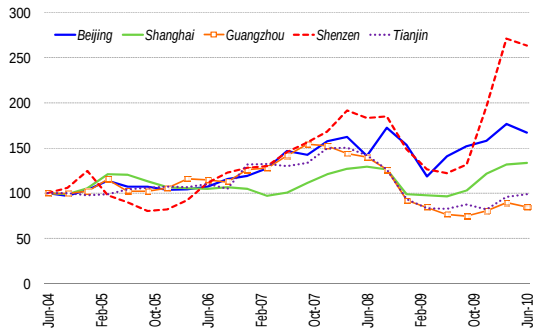
B. Economic Outlook

The economic outlook for Asia depends on the prospects for regional exports after the end of the inventory cycle, and on the strength of private domestic demand in the face of less policy stimulus and more volatile external

Box 1.4. Are House Prices Rising Too Fast in China?

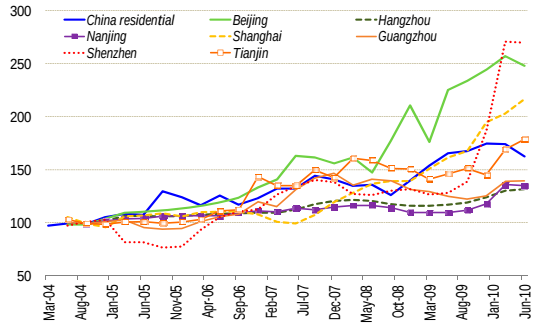
China's residential property market prices turned around and began to grow rapidly during 2009, especially in several large and medium-sized cities. Meanwhile, mortgage loans grew at nearly 50 percent in 2009, raising mortgage debt from 10 to about 15 percent of nominal GDP in one year. The sharp increase in prices, coupled with unprecedented lending growth, has led many to question whether there is a bubble building up in China's property sector. In addition, improvement in housing affordability has stopped since mid-2009, making housing affordability a prominent issue.

China: Index of House Price to Average Disposable Household Income
(June 2004 =100)



Source: IMF staff calculations.

China: Price-to-Rent Index
(2004 = 100)



Source: IMF staff calculations.

This box measures how far residential property prices may have deviated from the levels consistent with medium-term fundamentals in different Chinese cities, both in the mass-market and luxury segments.[1] It then characterizes price deviation in comparator countries, discusses similarities and differences with China's experience as well as policy to contain financial imbalances in China in the future.

Judgments on the level of house prices are difficult to make, especially in markets that only formed into less than a decade and a half ago. But it is possible to compare house prices with benchmarks suggested by asset pricing relationships. The basis for assessing whether the level of house prices is "too high" or "too low" according to this framework is as follows: in a housing market with well-functioning rental and credit markets, the cost of owning a house (in nominal terms), or imputed rent, should be the same as the cost of renting a similar house for the same time period.[2] If ownership cost is higher than market rent for some time, then buyers may be overpaying for that property and should switch to renting a similar property instead. Such deviations would induce arbitrage through changes in rents as well as changes in investment plans, which ultimately move the price toward its equilibrium.

The approximate annual cost of ownership consists of (i) the cost of foregone interest the homeowner could earn by investing elsewhere; (ii) the annual property tax, which in China is currently nonexistent; (iii) the tax benefit of owning when the owner deducts mortgage interest and property tax payments from income tax payment (if they are allowed to do so); (iv) maintenance cost; (v) expected annualized house price appreciation; and (vi) the additional risk premium to compensate homeowners for the higher risk of owning instead of renting.

Note: The main author of this box is Ashvin Ahuja.

[1] Owing to a limited number of well-functioning rental markets in China and limitation in rent data, this box focuses on mass-market housing prices in Beijing, Guangzhou, Shanghai, Shenzhen, and Tianjin and luxury housing prices in Beijing, Hangzhou, Nanjing, and Shanghai.

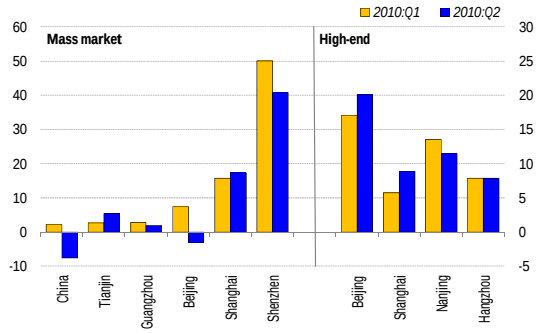
[2] See Poterba (1984) and Himmelberg, Mayer, and Sinai (2005).

Box 1.4. *(concluded)*

The main findings from applying this methodology are:

- House prices were not significantly overvalued in China as a whole during the first half of 2010. However, mass-market residential markets in Shanghai and Shenzhen and luxury residential markets in Beijing and Nanjing may be in the early stages of excessive price growth. Recent policy measures to cool down the markets unveiled by the government in April 2010 appear to have already had some impact on price growth. The gaps between market and fundamentals-implied prices have become smaller in a few cities.

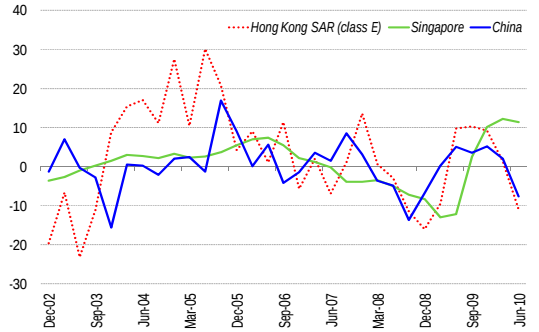
China: Deviation of House Prices from Benchmark
(In percent of benchmark prices)



Source: IMF staff estimates.

- During the past decade, house prices have corrected frequently in China, much like in Hong Kong SAR and Singapore, and in contrast to the trend increase experienced by advanced economies before 2008. Only recently have residential apartment prices in Singapore begun to deviate from benchmark by more than 10 percent for two consecutive quarters.

Selected Asia: Deviation of House Prices from Benchmark Prices
(In percent of benchmark prices)



Source: IMF staff estimates.

- Systemwide mortgage loan-to-value movements tended to precede house price movements in China during 2007 to 2009. Measures to dampen leverage in 2007 led to a fall in house prices toward the benchmark price without persistent undershooting, while measures to ease leverage restrictions and extraordinarily loose monetary conditions in 2009 were followed by a surge in house prices.

Given the awareness of China's authorities of the risks posed by excessive property price growth, and their experience in containing them, the threat of a housing price bust and consequent financial instability is not immediate. However, with structurally low real interest rates in the face of rapid income growth, no property taxes, lack of alternative investment possibilities, and the surging mortgage-to-GDP ratio, rapid property price growth in China is likely to continue. While we do not see evidence of significant and broad-based over-valuation in China's residential property today, financial imbalances take time to build. As home ownership rises in this financial environment, policymakers are facing an ever growing challenge to financial stability.

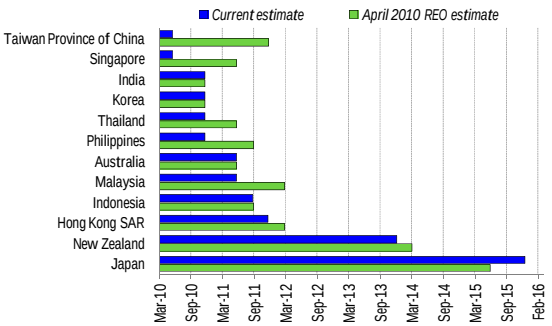
conditions. This section addresses both prospects, discussing first the main forces shaping the outlook and then presenting the forecasts for 2010 and 2011.

What Lies Ahead?

Asian real export growth is expected to moderate from precrisis trends, but will remain robust, in line with the expected continuation of the global recovery. Gains in market shares and increased final intraregional trade are unlikely to offset the weakness of final demand from advanced economies (see also October 2009 Asia and Pacific *Regional Economic Outlook*). Based on the October 2010 *World Economic Outlook*, final domestic demand from the United States and the euro area is projected to grow at about 1¾ percent (year-on-year) in 2011, down from about 2½ percent on average during 2004–07. Applying an estimated average income elasticity of Asia's export to the United States and euro area of 3, this may subtract about 2½ percentage points from Asia's real export growth in 2011 relative to the precrisis period average of about 14½ percent. The impact across regional economies will vary, however, based on how much export gowth in each economy depends on final demand from the United States and euro area.

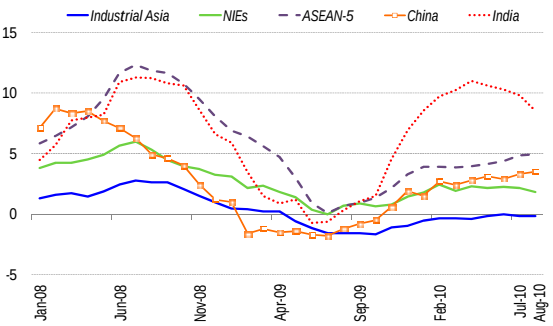
Capital inflows to Asia are likely to remain strong. These inflows will be driven both by cyclical and structural factors. Interest rates in the advanced countries will likely remain low for a prolonged period and sustain flows to emerging markets (EMs), provided global financial market conditions remain relatively stable. Structurally, the higher medium-term growth prospects for the region, stronger policy fundamentals (including sound fiscal positions) and expanding local capital markets are leading fund managers and institutions to increase their allocations to emerging Asia (see IMF, 2010e). Given the long lead time required to change

Figure 1.19. Asia: Estimated Output Gap Closure Dates



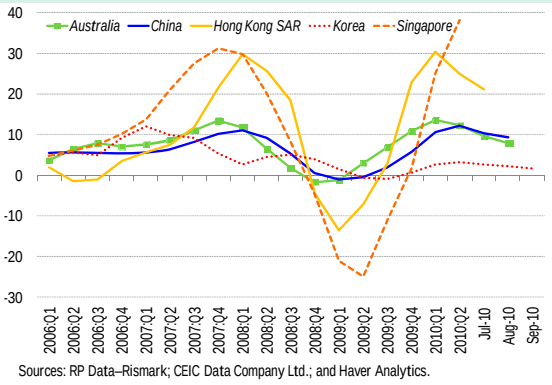
Source: IMF staff estimates.

Figure 1.20. Asia: Headline Consumer Prices[1]
(Year-on-year percent change)



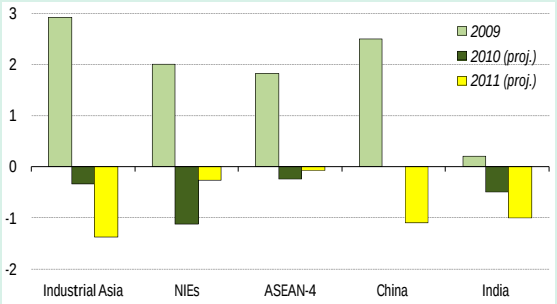
Sources: CEIC Data Company Ltd.; and IMF staff calculations.
[1] Wholesale prices used for India.

Figure 1.21. Selected Asia: Property Prices
(Year-on-year percent change)



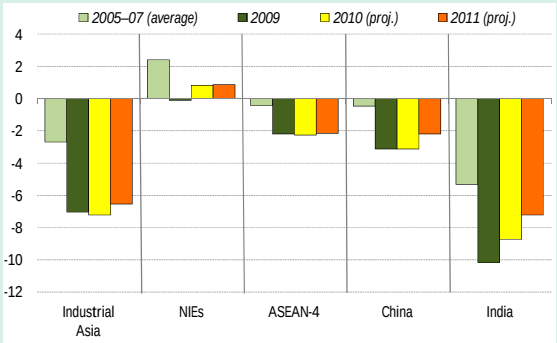
Sources: RP Data–Rismark; CEIC Data Company Ltd.; and Haver Analytics.

Figure 1.22. Asia: Fiscal Impulse[1]
(In percent of GDP)



Source: IMF staff estimates.
[1] Change relative to previous year in structural fiscal balances related to measures taken in response to the crisis. A negative number implies withdrawal of fiscal stimulus.

Figure 1.23. Asia: Cyclically Adjusted General Government Balance
(In percent of GDP)



Source: IMF staff estimates.

investment mandates and benchmarks, and the limited supply of assets available to foreign investors, this portfolio shift could take years to implement, implying persistent flows to the region.

The withdrawal of fiscal stimulus is expected to be very gradual. In all subregions of Asia, fiscal policy is expected to be less accommodative in 2010 than in 2009, as reflected in a negative fiscal impulse for 2010 (Figure 1.22). But fiscal stances remain accommodative, as cyclically adjusted government fiscal deficits are still relatively high (Figure 1.23). In a few cases (Hong Kong SAR, New Zealand, the Philippines, Singapore, and Thailand) stimulus is projected to continue in 2010, with a withdrawal starting only in 2011. The accommodative fiscal positions in the region mainly reflect the introduction of medium-term measures to support growth, rather than the extension of measures taken in response to the crisis. Some governments have extended stimulus measures, or phased in new measures, in response to special circumstances. For instance, in China, the reduction in taxes on automobile purchases and tax incentives for purchases of home electrical appliances has been extended until end-2010. In Japan, the eco-point program will remain in place until late 2010, and the government began a child support system in June.

Asia's autonomous private consumption growth should remain robust. The rebound in asset prices and improved labor market conditions, which have been important contributors to the rebound of private consumption in emerging Asia, should continue to sustain consumption prospects in the future:

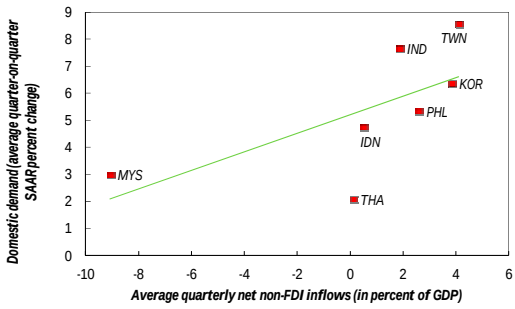
- Continued foreign equity inflows will support equity valuations. Although wealth effects of equity prices on private consumption are generally relatively low in Asia, reflecting limited share ownership among Asian households, equity prices may affect consumption in the region through confidence effects. IMF staff estimates suggest that private consumption in Asia does indeed tend to react strongly to large foreign equity inflows (see Box 1.5).

- Labor market conditions continue to improve across emerging Asia. With a few exceptions, including Japan, unemployment rates have returned to precrisis levels (Figure 1.24). Real wage increases have, however, been relatively muted, perhaps reflecting renewed uncertainties over the strength of external demand (Figure 1.25). Employment and wages seem closely linked to exports in many Asian economies,

Box 1.5. Capital Flows and Domestic Demand in Emerging Asia

Across emerging Asia, the recovery in domestic demand since the global financial crisis has been positively correlated with the volume of foreign capital inflows. This box examines empirically the relationship between capital inflows and domestic demand in a selected number of Asian emerging economies (India, Indonesia, Korea, Malaysia, the Philippines, Taiwan Province of China, and Thailand) over the last decade, using a vector autoregression (VAR) framework.[1] The results suggest that, during this period, private consumption and investment in emerging Asia have tended to react strongly to shocks to foreign equity and debt inflows, and that the response appears to be tempered by exchange rate flexibility and less procyclical fiscal policy.

Emerging Asia: Domestic Demand and Net Non-FDI Capital Inflows during 2009:Q1–2010:Q1



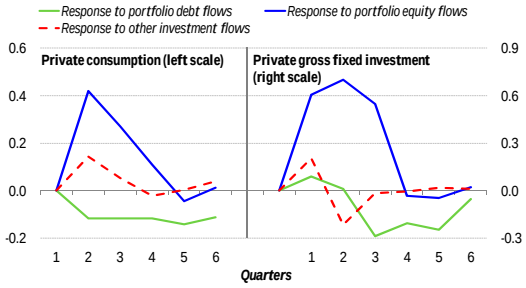
Sources: CEIC Data Company Ltd.; and IMF, *Balance of Payments Statistics*; and staff calculations.

How does private domestic demand respond following a shock to capital flows?

Over the past decade, Asian private consumption and investment have responded for several quarters after a shock to capital flows. At its peak, the acceleration in private domestic demand following a 1 percentage point of GDP increase in portfolio equity flows is equivalent to 0.4 percentage points of quarter-on-quarter annualized growth in the case of consumption, and nearly twice that amount for investment. Both components of private domestic demand also grow more rapidly following a shock to other investment flows. Investment growth increases following a shock to portfolio debt flows and other investment flows, although the effect wears off relatively quickly.

Emerging Asia: Response of Private Domestic Demand to Non-FDI Capital Net Inflows[1]

(In percentage points)



Source: IMF staff estimates.
[1] Includes ASEAN-4, India, Korea, and Taiwan Province of China. Response of quarter-on-quarter annualized growth to 1 percentage point of GDP increase in net inflows of each type.

Several possible links between capital flows and private domestic demand can account for the observed patterns.

- *Credit to the private sector* responds favorably to other investment flows, suggesting that a link between other investment flows and private domestic demand is through the channel of credit. The link is seen more clearly for countries in the region (such as Korea) that rely on wholesale bank funding from overseas. Easier external financial conditions enhance the lending capacity of domestic banks and expand the volume of bank resources available. Even in a situation where banks do not rely on wholesale external funding, there may be a tendency to relax lending standards with the easing of external financial conditions.

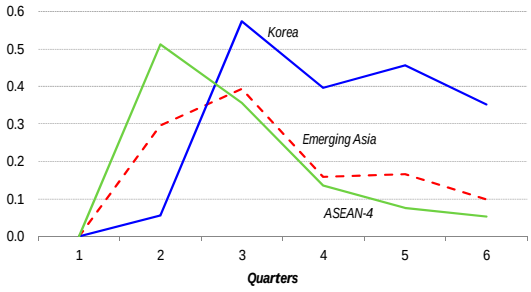
Note: The main authors of this box are Malhar Nabar and Souvik Gupta.

[1] Because consumption and investment plans tend to adjust more slowly than financial portfolios, the key identifying assumption in the VAR model is that consumption and investment do not react to contemporaneous shocks to capital flows, but only do so with a one-quarter lag. However, since investors can move capital relatively quickly across borders, flows are assumed to react to within-quarter, higher frequency leading indicators of consumption and investment.

Box 1.5. *(concluded)*

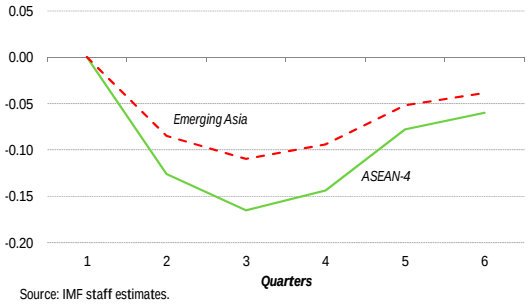
- *The real cost of equity* declines following a positive shock to equity inflows.[2] The magnitude of decline is large compared with the size of typical fluctuations in this variable in advanced economies and is particularly strong in the case of the ASEAN-4 economies. The effect persists even six quarters after the initial shock and helps explain why investment growth increases in response to a large inflow of equity capital.

Emerging Asia: Response of Credit to Private Sector to Other Investment Net Inflows[1]
(In percentage points)



Source: IMF staff estimates.
[1] Includes ASEAN-4, India, Korea, and Taiwan Province of China. Response of quarter-on-quarter annualized growth to 1 percentage point of GDP increase in other investment net inflows.

Emerging Asia: Response of Real Cost of Equity to Portfolio Equity Net Inflows[1]
(In percentage points)



Source: IMF staff estimates.
[1] Includes ASEAN-4, India, Korea, and Taiwan Province of China. Response of real cost of equity to 1 percentage point of GDP increase in portfolio equity net inflows.

Capital inflows, private domestic demand, and policy stances

The strength of the linkages between private domestic demand and capital flows may also depend on the exchange rate regime and the fiscal policy stance.

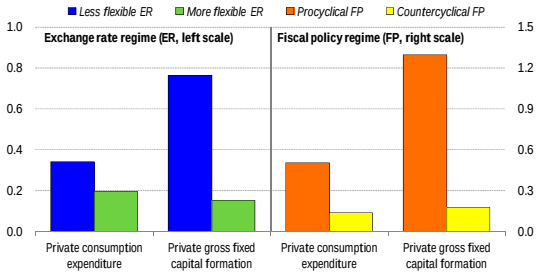
- *Exchange rate flexibility* offers an important buffer. The response of private domestic demand to a shock to capital flows is generally lower in absolute terms for countries with more flexible exchange rates.[3] Not surprisingly, these are also the same countries where reserve accumulation is relatively weakly correlated with fluctuations in capital flows.[4] The insulating effects of exchange rate flexibility arise from several possible factors. Greater exchange rate flexibility could translate into less sustained inflow pressure in anticipation of eventual appreciation, and therefore a smaller cumulative impact of capital flows on consumption and investment. With flexible exchange rates there would be less need for intervention which, if imperfectly sterilized, could fuel domestic consumption and investment via a buildup of liquidity and a credit boom. Even if the interventions are fully sterilized, the links between capital flows and domestic demand may remain strong if banks and firms anticipate that easy access to external finance will continue.

- *Countercyclical fiscal policy can also weaken the ties between capital flows and the domestic cycle*.[5] Over the past decade in emerging Asia, countercyclical public spending has contributed to a lower sensitivity of private domestic demand to capital flows. The response of consumption growth to equity, debt, and other investment flows

[2] Conceptually, the real cost of equity (i.e., the implied rate of return required by investors) is equal to the sum of the risk-free interest rate and the equity risk premium. At a time of large equity inflows, the relative appeal of equity investment increases, making it easier for firms to issue shares.
[3] Exchange rate flexibility is measured by the coefficient of variation in the nominal exchange rate with the U.S. dollar over the period 2000:Q1–2010:Q1.
[4] The extent to which foreign exchange reserves fluctuate with capital flows is measured by the correlation between quarterly changes in reserves and the sum of net portfolio and other investment flows, all scaled by nominal GDP.
[5] The degree of procyclicality is measured by the correlation between government consumption growth and real GDP growth (year-on-year) over 2000:Q1–2010:Q1.

is lower in the case of counter-cyclical fiscal regimes. Countercyclicality of public spending also appears to contribute to a lower sensitivity of private investment in response to a shock to debt and other investment flows. By contrast, if public expenditure is procyclical, the spending on the upswing of the cycle could contribute to an increase in interest rates and greater appreciation pressures, which will attract additional inflows and lead to a further acceleration of private domestic demand.

Emerging Asia: Response of Private Domestic Demand to Non-FDI Net Capital Inflows by Policy Regimes[1]
(In percentage points, 4-quarter cumulative response)

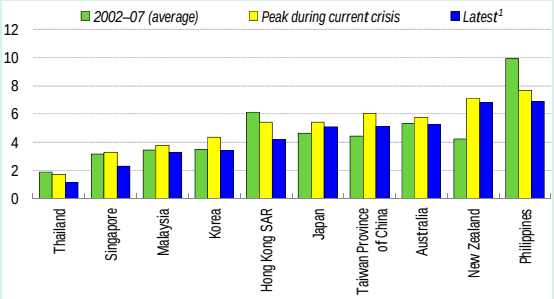


Source: IMF staff estimates.
[1] Average response of quarter-on-quarter seasonally adjusted growth rate to an increase in each of portfolio debt, portfolio equity, and other investment flows by 1 percentage point of GDP. Emerging Asia includes ASEAN-4, India, Korea, and Taiwan Province of China.

suggesting a firm growth in exports, in line with the unfolding global recovery, could contribute to a sustained improvement in labor market conditions in the region (Figure 1.26).

Private investment growth in Asia should also remain rapid. The most important drivers of the recovery in private investment since 2009 have been the turnaround in exports and rising capacity utilization (Figure 1.27).[1] Capacity utilization and export growth together account for nearly half of the rebound in investment since the first quarter of 2009 in selected Asian economies. The decline in the cost of capital (Figure 1.28) has also contributed to the investment rebound, although to a lesser extent, as the strong balance sheet positions of Asian firms have enabled them to rely more on

Figure 1.24. Selected Asia: Unemployment Rate
(In percent; seasonally adjusted)



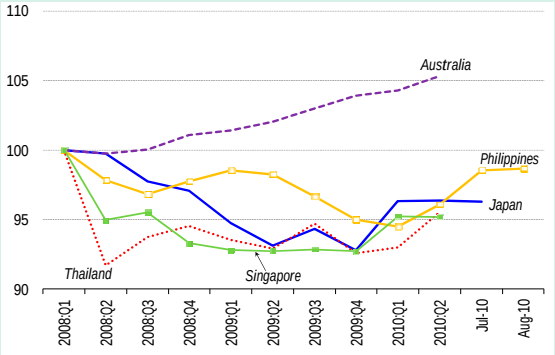
Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.
[1] Latest data refer to 2010:Q3 for the Philippines; August 2010 for Hong Kong SAR, Japan, Korea, and Taiwan Province of China; July 2010 for Thailand; and 2010:Q2 for other economies.

internal resources to finance investment during the early stages of the recovery. Looking forward, these underlying fundamentals are likely to continue to sustain private investment growth:

- Capacity utilization rates outside Japan remain high (Figure 1.29).
- Low and decreasing loan-to-deposit ratios in many Asian economies suggest that ample liquidity is available to fund a more decisive bank credit expansion (Figure 1.30). Indeed, bank credit growth to

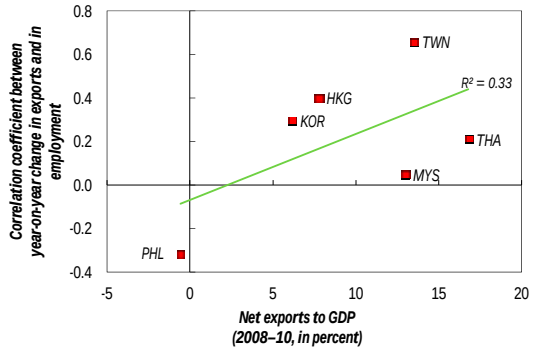
[1] This conclusion is based on results from an empirical model of private investment growth in selected emerging Asian economies (Indonesia, Korea, Malaysia, the Philippines, Taiwan Province of China, and Thailand) using available and estimated quarterly data on private investment. A standard specification for private investment growth was estimated using a panel generalized method of moments (GMM) approach, in which the explanatory variables included export growth, private consumption growth, capacity utilization, credit growth, a measure of uncertainty (the VIX index), and the lending rate.

Figure 1.25. Selected Asia: Real Wage/Earnings
(2008:Q1=100; seasonally adjusted)



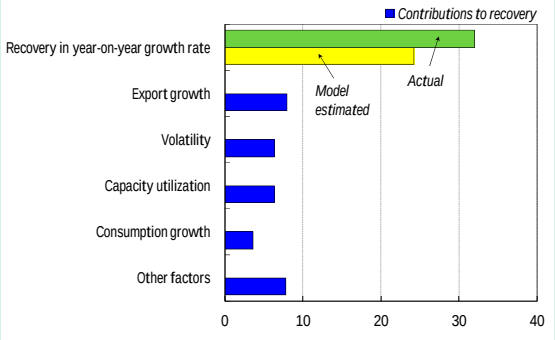
Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

Figure 1.26. Selected Export-Oriented Emerging Asia: Link between Exports and Employment



Source: IMF staff estimates.

Figure 1.27. Emerging Asia: Contribution to Recovery of Private Investment (2009:Q1–2010:Q1)[1]
(In percentage points)



Source: IMF staff estimates.
[1] Emerging Asia includes ASEAN-4, Korea, and Taiwan Province of China.

the corporate sector has started to pick up in the region in 2010. Moreover, Asian banks are unlikely to be greatly affected by the regulatory changes to strengthen the capital and liquidity of banks that are currently being contemplated in the global discussion (see Box 1.6).[2]

- Steady inflows of foreign capital to Asia will also provide an important source of funding for corporate investment. Empirical evidence suggests that Asia's private investment tends to react strongly to changes in capital flows, which tend to drive up domestic credit (Box 1.5). Domestic credit tends to respond particularly strongly to cross-border bank flows, especially in economies, such as Korea, where wholesale bank funding from overseas is important. Foreign equity inflows could also contribute to further reducing the real cost of equity.

Projections for 2010–11

GDP growth for Asia as a whole is projected to rise to about 8 percent in 2010 before moderating to a more sustainable rate of about 7 percent in 2011. The projections represent an upward revision of nearly 1 percentage point for 2010 compared with the April 2010 Asia and Pacific *Regional Economic Outlook*, mainly reflecting the much stronger-than-expected outturns across the region so far in 2010, and a slight reduction for 2011 (Table 1.1). For emerging Asia, growth is projected at about 9⅓ percent in 2010 and 8 percent in 2011, although with substantial variation across the region. A notable aspect of the outlook is that the large, domestic-demand-driven economies—China, India, and Indonesia—are set to grow particularly rapidly and lead the

[2] Box 1.9 suggests that new banks' liquidity standards adopted in New Zealand in 2010 may have led to an increase in banks' funding costs and bank spreads.

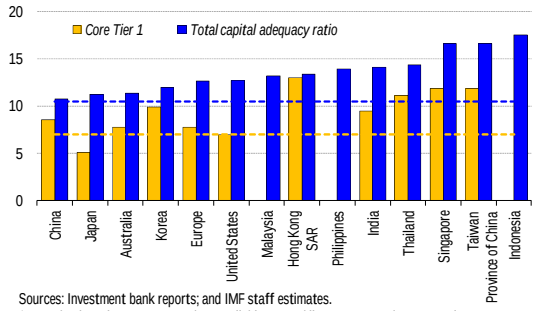
Box 1.6. Asia and Global Financial Reforms

Asia's financial systems have been remarkably resilient during the current crisis. This strong performance owes much to significant structural changes following the Asian crisis, and demonstrates that traditional virtues—maintaining adequate capital, avoiding excessive reliance on short-term funding, ensuring proper loan underwriting, and following sound risk management—remain critical. Appropriately, these principles are prominent in ongoing reform debates and Asia's important role in institutions like the G-20, Financial Stability Board, and Basel Committee provides the region a platform to help build a stronger global financial system.

Looking ahead, however, reforms will be important to ensure that the risk of systemic crises remains contained as well as to support rebalancing. Encouragingly, the region has so far drawn the right lesson from the crisis—that financial development can bring great benefits if managed adequately and does not inevitably cause crises. Maintaining a strong supervisory regime, including by building up risk assessment capabilities and adopting a macroprudential approach, is essential in this regard. With capital flows likely to remain large in coming years, moving ahead with the development of Asia's financial markets will become even more important to contain potential risks to stability as well make the best use of the region's significant savings in support of domestic demand.

In this context, Asia will need to adapt to new global regulatory proposals. There is broad agreement on the key principles of reform in response to the crisis—widening the regulatory perimeter to include all systemically important financial institutions (SIFIs), bolstering supervision, improving the measurement and regulation of systemic risk, and strengthening crisis resolution mechanisms, particularly for "too-big-to-fail" institutions. Asia is helping to shape new international standards on these fronts. In addition, there is recognition that risk-taking needs to be curbed, notably through regulations designed to make financial institutions hold more and better quality capital, build buffers during good times, improve liquidity management, and curb excessive leverage. In this regard, enhancements to the Basel framework were recently announced, including:

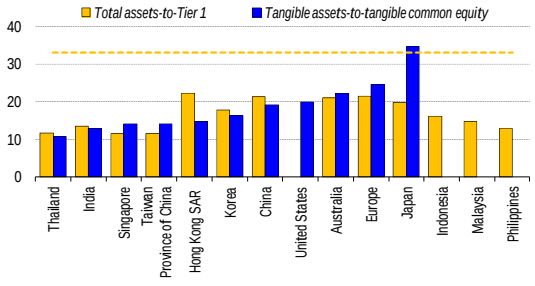
Capital Ratios[1]
(Average, in percent)



Sources: Investment bank reports; and IMF staff estimates.
[1] Large banks only. Most recent data available. Dotted lines correspond to eventual new thresholds.

- *Minimum capital ratios will be raised* effectively to 7, 8½, and 10½ percent for common equity, Tier 1 and total capital (including a 2½ percent capital conservation buffer). An additional countercyclical buffer of 2½ percent may also be applied by national regulators during periods of excessive credit growth. These changes will be phased in over several stages from January 2013, with full implementation by January 2019 and existing capital instruments grandfathered for 10 years.
- *A leverage ratio will become a new Pillar 1 requirement.* The precise metric is yet to be finalized, but

Leverage Ratios[1]
(Average)



Sources: Investment bank reports; and IMFstaff estimates.
[1] Large banks only. For most of Asia, refer to NikkoCiti forecasts for 2010. Dotted line corresponds to potential eventual new threshold for total assets-to-Tier-1 ratio.

Note: The main author of this box is Murtaza Syed.

Box 1.6. ***(concluded)***

capping total assets at 33 times Tier 1 will first be tested. Metrics based on total capital and tangible common equity are also candidates, with full implementation envisaged from January 2018.

- *New global standards for funding liquidity are to be introduced* in the form of a 30-day liquidity coverage ratio (January 2015) and a net stable funding ratio to reduce banks' dependence on short-term funding (January 2018).

As a whole, Asia is likely to be relatively less affected by these measures than the United States and Europe, because its banks already tend to operate under tight liquidity and capital rules, with regulators adopting a conservative approach in the implementation of Basel II requirements. The new capital standards, for instance, may not be binding as average ratios in many Asian banking systems are already above the minimum thresholds that will apply in 2019. In addition, curbs on risky behavior may also have less of an impact, given that Asian banks typically have a different business model—one that relies on relatively more stable sources of funding and revenue, that is, deposits and interest income. That said, there could still be some impact, although it should be largely manageable. Reforms to the quality of capital would have implications for some Japanese and Malaysian banks that hold sizable deferred tax assets and hybrid instruments. In addition, new liquidity standards could affect some banks in Australia, Korea, and New Zealand with a relatively high reliance on short-term wholesale funding, and some banks in Japan and India could be impacted if leverage limits include government securities on the asset side. More broadly, the cost of business could rise globally and there could also be some indirect effect if European and U.S. banks reduce lending to the region in response to these changes. However, the Basel Committee estimates that the potential impact on global lending conditions and growth would be relatively limited, with the benefits from reducing the probability of financial crises and their associated output losses outweighing the costs.

The phase-in period and grandfathering provisions provide further cushioning to implement these reforms, which would ultimately help sustain the region's growth. The generally strong balance sheets and liquidity position of Asian banks should allow them to adapt quickly to the new regulatory requirements, perhaps even developing a competitive advantage over banks in other jurisdictions. Indeed, banks and regulators have already grasped the benefits of some reforms—for instance, Japanese banks have bolstered their capital positions through share issuances over the last year, New Zealand has introduced a core funding ratio, and Korean regulators are encouraging banks to move to longer-term funding maturities. In addition, a number of Asian authorities have indicated that they could implement stricter regulations on a faster timetable and tailored to contain systemic risks in the region, such as those from procyclicality, regulatory arbitrage, and the real estate sector. In this regard, some may adopt the higher capital standards for SIFIs (being developed by the Financial Stability Board for the G-20) as an add-on to the new Basel standards. Such a proactive strategy toward reforms could have significant payoffs: some analysts estimate that Asia could create the most value added in the banking industry over the next decade, with revenues in China and India potentially growing 10 percentage points faster than in the United States (McKinsey, 2010).

Asian recovery. Some specific features of the projections are as follows:

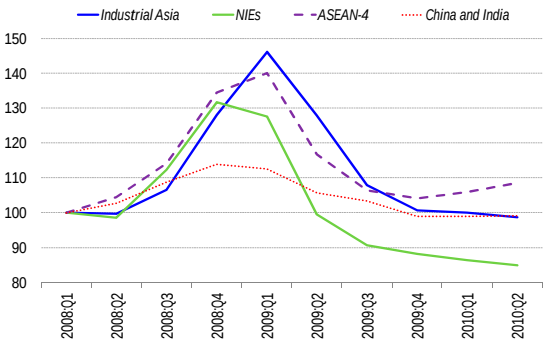
- In China, GDP growth is projected to be 10½ percent in 2010, based on strong domestic demand, while net exports are likely to remain a drag on growth. In 2011, growth is expected to moderate to about 9½ percent, but to be driven more by private-sector demand as the stimulus winds down (Figure 1.31). In particular, consumption growth should remain robust and increase as a share of GDP, underpinned by strong labor market conditions and continued policy efforts to raise household disposable income.

- In India, GDP growth is expected to reach about 9¾ percent in 2010 before moderating slightly to 8½ percent in 2011. Private domestic demand is expected to remain strong (Figure 1.31), with investment supported by rising corporate profits, credit growth, and capital market issuance, and consumption supported by strong labor market conditions and rising disposable income.

- Growth in the NIEs is expected to moderate from 7¾ percent in 2010 to 4½ percent in 2011 (roughly in line with potential), reflecting a smaller contribution from inventory accumulation and net exports, owing to lower demand from both advanced economies and China. The drivers of growth are expected increasingly to shift from public to private demand (Figure 1.32).

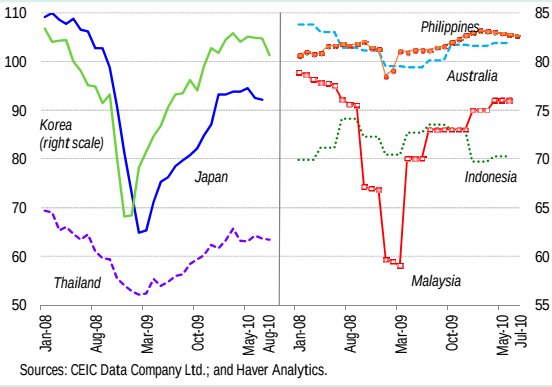
- Growth in the ASEAN-5 economies is projected to reach about 6½ percent in 2010 before moderating to about 5½ percent in 2011 (Figure 1.32). Indonesia is likely to experience robust growth in both 2010 and 2011 from broad-based strength in consumption and investment, and with

Figure 1.28. Asia: Real Cost of Equity
(Index; 2008:Q1=100)



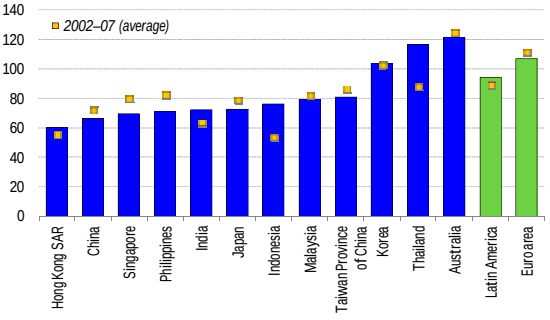
Sources: I/B/E/S; and IMF staff estimates.

Figure 1.29. Selected Asia: Manufacturing Capacity Utilization
(In percent; seasonally adjusted)



Sources: CEIC Data Company Ltd.; and Haver Analytics.

Figure 1.30. Commercial Banks' Loan-to-Deposit Ratio[1]
(In percent)



Sources: Reserve Bank of Australia; CEIC Data Company Ltd.; and IMF, *International Financial Statistics*, and staff calculations.

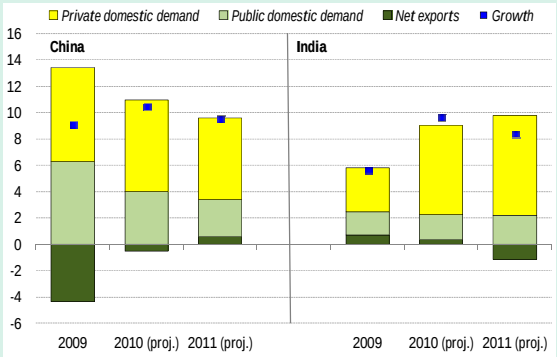
[1] Ratio of credit-to-private sector to deposits used for Latin America.

Table 1.1. Asia: Real GDP Growth
(Year-on-year; in percent)

	2009	2010	2011
		Latest projection	
Industrial Asia	**–4.1**	**2.9**	**1.9**
Japan	–5.2	2.8	1.5
Australia	1.2	3.0	3.5
New Zealand	–1.6	3.0	3.2
Emerging Asia	**5.8**	**9.4**	**8.1**
NIEs	***–0.9***	***7.8***	***4.5***
Hong Kong SAR	–2.8	6.0	4.7
Korea	0.2	6.1	4.5
Singapore	–1.3	15.0	4.5
Taiwan Province of China	–1.9	9.3	4.4
China	9.1	10.5	9.6
India	5.7	9.7	8.4
ASEAN-5	***1.7***	***6.6***	***5.4***
Indonesia	4.5	6.0	6.2
Malaysia	–1.7	6.7	5.3
Philippines	1.1	7.0	4.5
Thailand	–2.2	7.5	4.0
Vietnam	5.3	6.5	6.8
Emerging Asia excl. China	**2.5**	**8.2**	**6.4**
Emerging Asia excl. China and India	**0.4**	**7.2**	**4.9**
Asia	**3.6**	**8.0**	**6.8**

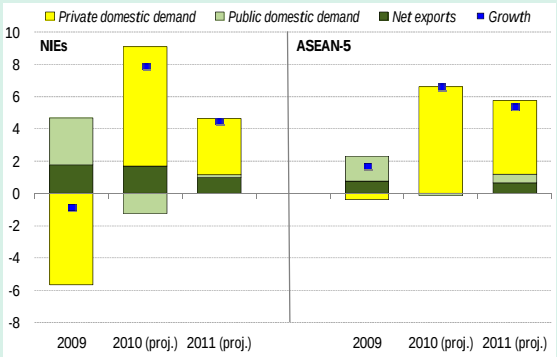
Source: IMF staff projections.

Figure 1.31. China and India: Contributions to Growth
(Year-on-year; in percentage points)



Source: IMF staff projections.

Figure 1.32. NIEs and ASEAN-5: Contributions to Growth
(Year-on-year; in percentage points)



Source: IMF staff projections.

additional support from planned infrastructure development. In the Philippines, above-trend growth in 2010 reflects a recovery in exports, strong consumption supported by robust remittance inflows, and a pickup in investment. In 2011, as the recovery matures, growth is expected to return to trend. In Malaysia, private consumption will be the main driver of growth in 2010, in line with improvements in employment conditions and rural incomes. Growth is expected to moderate slightly in 2011 owing to weaker external demand, although private investment is likely to advance in response to structural reforms to boost medium-term growth. In Thailand, robust and broad-based growth in 2010 will move to a more sustainable pace in 2011, as stimulus policies are rolled back and export growth moderates.

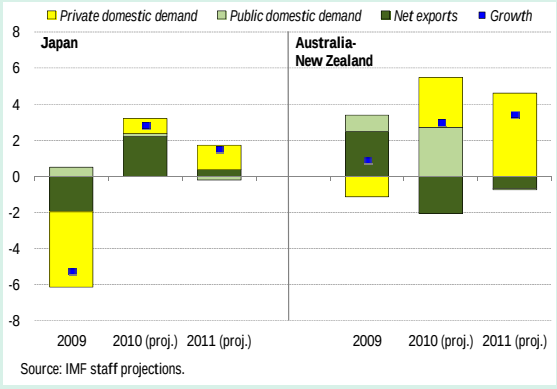
- In Japan, growth is projected to reach 2¾ percent in 2010 before slowing to 1½ percent in 2011. With a softening external environment, business investment plans are expected to pick up only gradually, particularly in export-related sectors. Private consumption should slow over the next few quarters as fiscal stimulus measures expire, before picking up later in 2011 as labor market conditions gradually improve (Figure 1.33).

- Growth in Australia and New Zealand is projected to remain strong through 2010 and 2011 (Figure 1.33). In Australia, real GDP growth is projected at 3–3½ percent in 2010–11, with private investment in mining and commodity exports taking over from public demand as the main driver of growth. Despite rising mortgage rates, household consumption should be supported by the recent rebound in employment that has buoyed real income growth. In New Zealand, GDP is expected to grow at about 3 percent in 2010 and 2011, as commodity exports remain robust.

Inflation is expected to increase across most of the region (Figure 1.34). In China, inflation is expected to remain moderate in the near term, reflecting a further expansion of capacity as a result of the large investment program in response to the global financial crisis, significant productivity growth, and abundant labor supply. In India, although food prices are expected to ease after 2009's drought and headline inflation is projected to slow gradually to about 7 percent by March 2011, underlying inflationary pressures are expected to remain elevated, given little or no slack in the economy and still accommodative monetary conditions. In Indonesia, inflation is expected to approach the upper end of the 4–6 percent target range in 2011, on the back of a narrowing output gap, recovering credit growth, and administered price hikes. In Korea, with the output gap closing in the second half of 2010 and monetary policy still highly accommodative, headline inflation is expected to reach 3½ percent in 2011. In Japan, deflation has continued to recede and, with a narrowing of the output gap, headline inflation is expected to turn positive in early 2012.

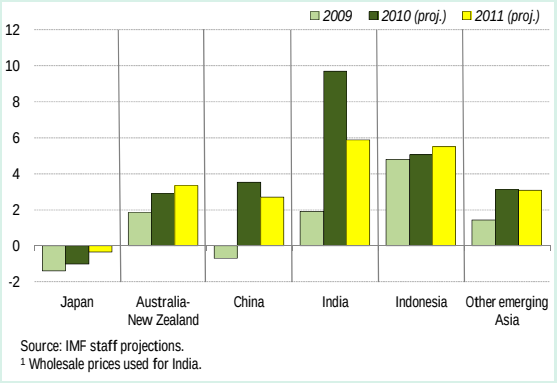
Asia's current account surplus as a proportion of the region's GDP should continue to narrow in the near term. The surplus is expected to decline from about 3½ percent in 2009 to about 3 percent in 2011, reflecting contributions from most major economies in the region (Figure 1.35). China's current account surplus is projected to fall by nearly 1½ percent of GDP in 2010 relative to 2009, but to start increasing again in 2011. Excluding China, the current account surplus for the rest of the region is expected to fall to under 2 percent of GDP in 2011, from 2⅓ percent in 2010, as higher regional growth translates into a faster pickup in imports than in exports, and as income from investment outside the region falls with lower growth in the rest of the world. The decline in the external surplus is expected to be more pronounced in the ASEAN-5, consistent with

Figure 1.33. Industrial Asia: Contributions to Growth
(Year-on-year; in percentage points)



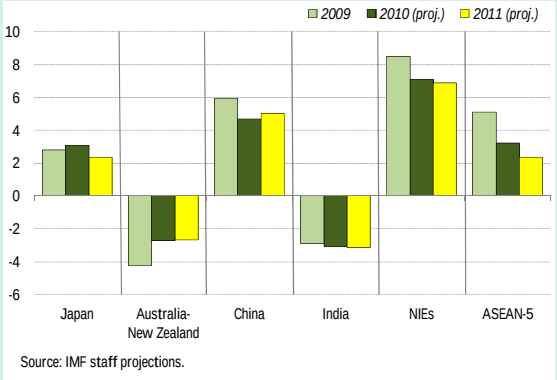
Source: IMF staff projections.

Figure 1.34. Asia: Consumer Prices[1]
(Year-on-year percent change)



Source: IMF staff projections.
[1] Wholesale prices used for India.

Figure 1.35. Asia: Current Account Balance
(In percent of GDP)



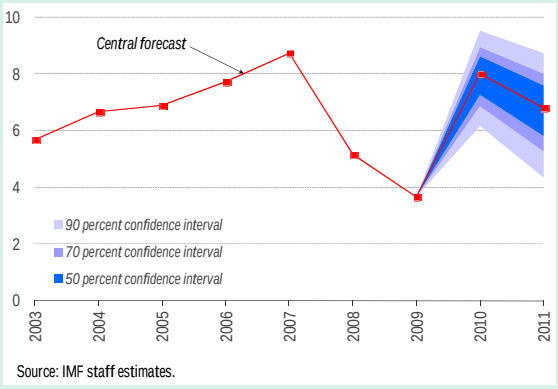
Source: IMF staff projections.

government initiatives to boost infrastructure spending and to induce more private investment. In India, the current account deficit is projected to rise to 3 percent of GDP in 2010/11, as domestic demand remains strong.

C. Risks

The main risks to the growth projections arise from the external environment, and particularly the downside risks to global growth (Figure 1.36). As the October 2010 *World Economic Outlook* notes, a sustained and healthy global recovery depends both on stronger private demand in advanced economies that facilitates a shift away from fiscal support, as well as on higher net exports from current account deficit countries and lower net exports from surplus countries. But strong policies to foster these changes are not yet in place. As a result, the global recovery is expected to be both sluggish—the current *World Economic Outlook* projection for global growth of 4–4¾ percent in 2010 and 2011 is sluggish considering that advanced economies are emerging from their deepest recession in the past 60 years—and vulnerable to downside risks.

Figure 1.36. Asia: GDP Growth
(Central forecast and selected confidence intervals; in percent)



Source: IMF staff estimates.

A key downside risk for Asia is a scenario in which advanced economies are hit by renewed financial turbulence that disrupts their private domestic demand. Renewed turbulence in sovereign debt markets in advanced countries could cause renewed damage to their financial sectors, and spill over to the real economy through higher bank funding costs and tighter lending conditions. Although Asia's economic fundamentals are generally strong, the region would feel the impact of fresh turmoil and a renewed slowdown in the rest of the world in light of its close trade and financial linkages with advanced economies.

Trade linkages remain an important spillover channel for Asian economies, which rely heavily on external demand to drive growth.[3] Over the past two decades, emerging Asia has experienced a boom in intraregional trade, particularly since China's accession to the World Trade Organization. During the recovery from the global recession, intra-Asian exports, notably to China, rose about twice as fast as Asian exports to the United States and the European Union. For many regional economies, China is now the single largest direct export destination, accounting for about 20 percent of the exports of other Asian economies. However, to a large extent, the boom of intraregional trade reflects growing vertical integration and thus trade in intermediate inputs. Indeed, two-thirds of the final demand for Asian exports still comes from outside the region, and non-Asian final demand accounts for an estimated 20 percent of the total value added produced in the region. The dependence on non-Asian demand is higher (up to 50 percent) in the region's smaller and more export-reliant economies, such as Malaysia, Singapore, Taiwan Province of China, and Thailand (Figure 1.37). A 1 percent decline in U.S. and euro area domestic demand could subtract an estimated ⅓ percentage points from GDP growth on average across Asia, with estimates ranging from about 0.1 percentage points for Indonesia to about 0.6 percentage points for Malaysia (Figure 1.38). In addition to

[3] See Chapter III of the April 2010 Asia and Pacific *Regional Economic Outlook*.

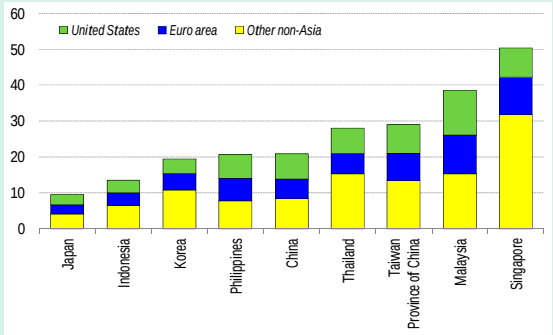
direct effects, a more pronounced slowdown in external demand would also hamper the transition to private domestic demand in Asia by weakening labor market conditions as well as the investment recovery. However, the region's "growth leaders"—particularly China, India, and Indonesia—are relatively less vulnerable to external demand shocks than some of the smaller economies because of their large domestic demand bases, which are playing a larger role in their growth.

Financial spillovers from advanced countries to Asian banks, firms, and sovereigns are also a source of concern, although they appear to be generally manageable.

- Banks: Asian banks are unlikely to face significant fallout from credit or liquidity shocks that may occur in advanced countries, due to their relatively small overseas exposure (20–30 percent of total assets), particularly to Europe (7–10 percent of total assets) where financial stress was particularly acute earlier in 2010 (Figure 1.39). Indeed, Asian bank credit default swaps (CDS) spreads have remained well below their 2008–09 levels. Banks' funding exposures to advanced economies could be a potentially larger source of concern for some economies, particularly those that rely more on foreign wholesale funding, as the bulk of cross-border claims on Asian economies are held by European banks (notably French, German, Swiss, and U.K. banks) (Figure 1.40).

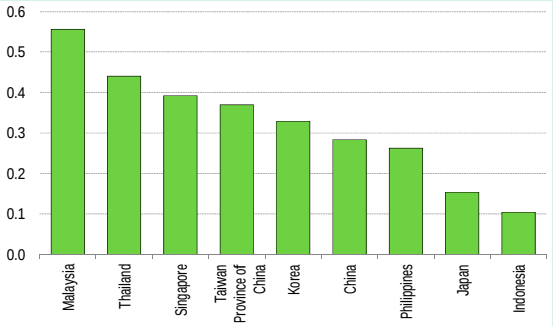
- Firms: Corporate foreign currency-denominated rollover needs over the next few quarters appear sizable in dollar terms, particularly for Australia, Korea and, to some extent, India. On the other hand, such needs are generally small relative to potential shock absorbers, such as gross

Figure 1.37. Share of Non-Asian Final Demand in Asian Value Added
(Average during 2005–08; in percent)



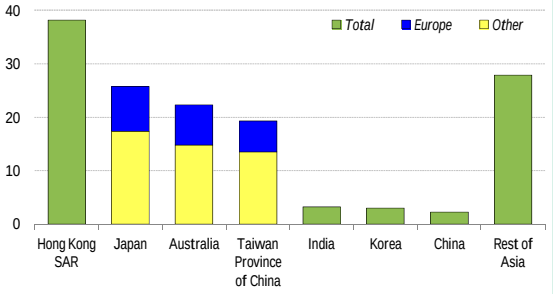
Sources: Japan External Trade Organization (JETRO), *Asian Input Output Table* (2000); OECD; United Nations, *Comtrade* database; CEIC Data Company Ltd.; and IMF staff estimates.

Figure 1.38. Selected Asia: Impact of 1 Percentage Point Decline in G-2 Final Demand on GDP Growth[1]
(In percentage points)



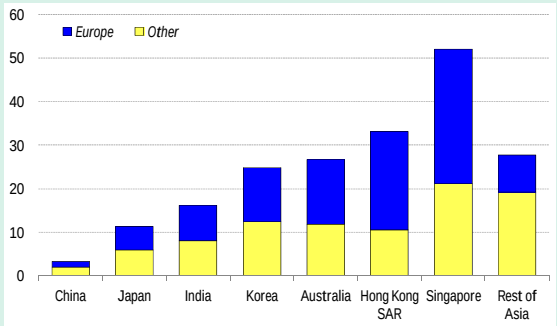
Source: IMF staff estimates.
[1] See April 2010 Asia and Pacific *Regional Economic Outlook* for methodology.

Figure 1.39. Outstanding Cross-Border Claims of Asian Banks, 2009[1]
(In percent of assets of Asian banks)



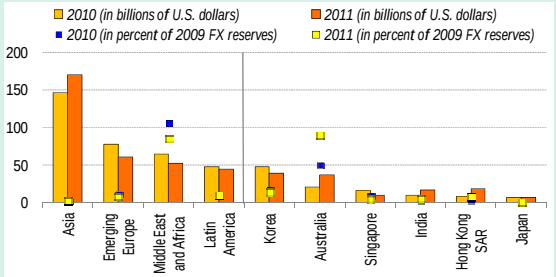
Sources: Bank for International Settlements; CEIC Data Company Ltd.; and IMF staff calculations.
[1] Height of each column represents total outstanding claims. Regional claims are shown wherever data are available.

Figure 1.40. Outstanding Claims of BIS Reporting Banks on Asia, 2009
(In percent of liabilities of Asian banks)



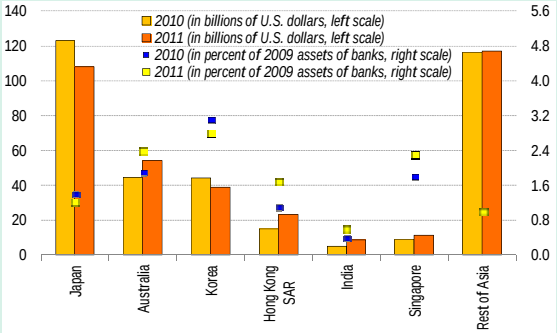
Sources: Bank for International Settlements; CEIC Data Company Ltd.; and IMF staff calculations.

Figure 1.41. Foreign Currency Refinancing Need for Nonfinancial Private Corporations[1,2]



Sources: Bloomberg LP; CEIC Data Company Ltd.; and IMF staff calculations.
[1] Based on Bloomberg LP estimates of maturing bonds and syndicated loans.
[2] Emerging Europe includes Hungary, Kazakhstan, Poland, Russia, Turkey, and Ukraine. Middle East and Africa include South Africa and United Arab Emirates. Latin America includes Argentina, Brazil, Chile, and Mexico.

Figure 1.42. Asia: Local Currency Refinancing Need for Nonfinancial Private Corporations[1]



Sources: Bloomberg LP; CEIC Data Company Ltd.; and IMF staff calculations.
[1] Based on Bloomberg LP estimates of maturing bonds and syndicated loans.

official reserves (Figure 1.41).[4] Local currency-denominated rollover needs are modest in comparison with the depths of local banking systems (Figure 1.42).

- Sovereign: Asian sovereign CDS spreads have remained broadly stable in recent months, suggesting that investors' perceptions of sovereign default risks continue to be low. This reflects relatively strong fiscal positions, and, in the few cases where public debt levels are elevated by regional standards, such as India and Japan, relatively low levels of external debt (Figure 1.43). However, an escalation of debt sustainability concerns in advanced economies and a jump in global risk premiums would raise financing costs for Asian governments (see Box 1.7).

Further increases in volatility and risk aversion in global financial markets could weaken private domestic demand in Asia. The experience during the 2008–09 crisis and 2010 financial turbulence suggests that Asian debt and equity markets are highly correlated with global markets (Figure 1.44). A jump in global risk aversion that led to a reversal of foreign capital inflows to the region would hurt private consumption and investment by negatively affecting confidence, increasing the real cost of equity, and reducing credit to the private sector. At the same time, a few economies (Hong Kong SAR, Japan, and Singapore) could experience capital inflows in search of safe havens. In Japan, a further real appreciation of the yen could weaken the export-led recovery, exacerbate deflationary pressures, and, via lower share prices, hurt banks' stock portfolios. In Hong Kong SAR and Singapore, on the other hand, further capital inflows may exacerbate overheating pressures in the property sector.

[4] For Australia, the high ratio reflects the fact that it is the exchange rate that acts mainly as a shock absorber.

Box 1.7. Sovereign Spreads and the Risk of Contagion for Asia

Since the beginning of the global financial crisis in late 2008, sovereign spreads in Asia (defined as the difference between 10-year sovereign bond yields and the yield on 10-year swap)[1] have gone through three distinct phases:

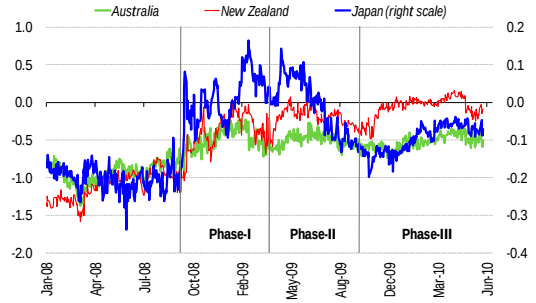
- Phase I (October 2008–March 2009): Following the collapse of Lehman Brothers, sovereign bond yields increased well above swap rates across Asia, particularly in emerging Asia.
- Phase II (March 2009–September 2009): Most Asian sovereign spreads fell back to precrisis levels, as systemic risk decreased.
- Phase III (October 2009–July 2010): Increasing idiosyncratic risks caused greater differentiation among economies, but sovereign spreads in the region have generally remained contained regardless of the sovereign debt turmoil in the euro area.

What determines these fluctuations? Does the risk of contagion from advanced country sovereign risks to sovereign spreads in Asia depend on the type of the financial shock, in particular its global nature? And what is the role played by country-specific factors?

To address these questions, this box uses a model developed by Caceres, Guzzo, and Segoviano (2010), that allows assessing the relative contribution to Asia's sovereign spreads from three different factors:[2]

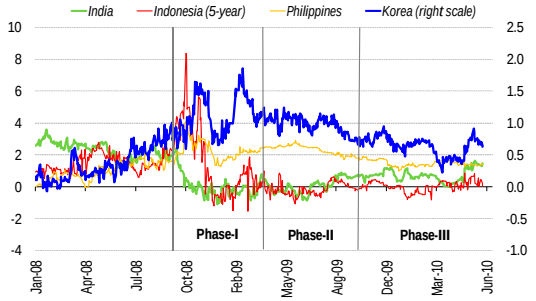
- Changes in global risk aversion as captured using an index of global risk aversion, as in Espinoza and Segoviano (forthcoming).
- Changes in sovereign risk or contagion, or in the degree to which risks originating from other sovereigns spill over to Asian sovereigns. Contagion is measured as the probability of distress of a country given that distress has occurred in other countries, as in Segoviano and Goodhart (2009).

Industrial Asia : Sovereign 10-Year Swap Spreads[1]
(In percentage points)



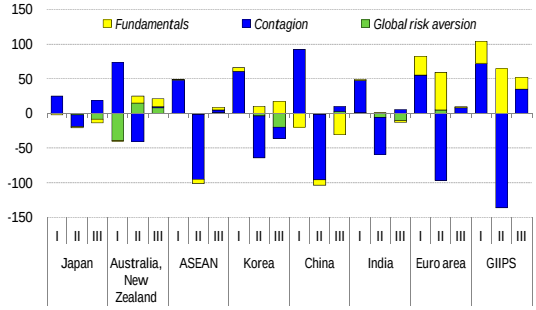
Sources: CEIC Data Company Ltd.; Haver Analytics; and Thompson Datastream.
[1] Difference between treasury yields and interest rate swap rates of same maturity and currency.

Selected Emerging Asia: Sovereign 10-Year Spreads[1]
(In percentage points)



Sources: CEIC Data Company Ltd.; Haver Analytics; and Thompson Datastream.
[1] Difference between treasury yields and interest rate swap rates of same maturity and currency.

Selected Asia: Average Contributions to Swap Spreads by Credit Phase
(In basis points)



Source: IMF staff calculations.

Note: The main authors of this box are Carlos Caceres and D. Filiz Unsal.
[1] For China, Indonesia, Malaysia, and the Philippines, we use the difference between 5-year sovereign bond yields to the yield on 5-year swap.
[2] The model is estimated with GARCH (1,1) specification. Our data set spans from the beginning of 2005 through mid-2010, encompassing ten Asian economies.

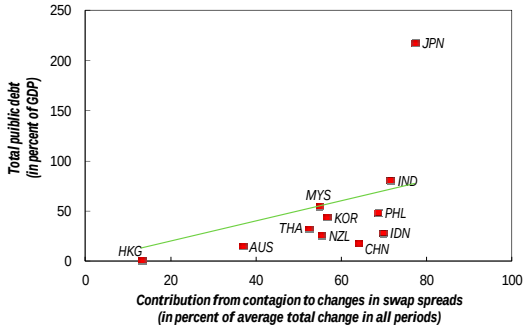
Box 1.7. *(concluded)*

- Changes in country-specific fiscal fundamentals, defined here as public debt-to-GDP ratio and fiscal deficit-to-GDP ratio.

The results of the model suggest that spillovers from sovereign risk were the main driver of the changes in Asian sovereign spreads since the financial crisis outbreak. In Phase I, contagion contributed to the spike of Asia's sovereign spreads, as higher probability of distress outside the region affected market confidence in Asia. This effect reversed in Phase II, where positive spillovers (or negative contagion) drove the rapid normalization of Asian sovereign spreads. Within Asia, the impact of contagion in driving swap spreads appears relatively limited only in Japan, presumably reflecting the limited foreign ownership of Japanese government debt. In Phase III, the spillover from sovereign risk elsewhere to Asian economies was more limited, possibly reflecting the smaller and more "local" nature of the most recent financial turmoil relative to the post-Lehman episode.

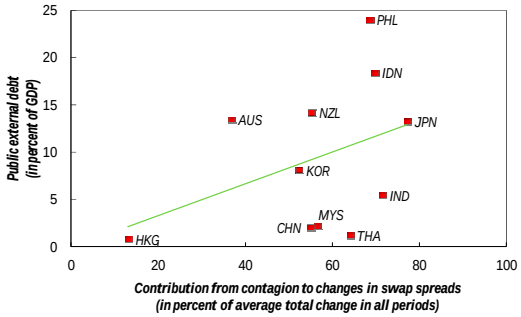
At the same time, changes in fiscal fundamentals have played a much smaller role in driving Asian sovereign spreads, relative to euro area economies. On average in Asia and over the three phases, the contribution from fundamentals to changes in sovereign spreads was estimated at 5 percent of total changes, compared with 27 percent for the euro area. This partly reflects the relatively more solid fiscal position of Asian economies in general over the three periods. Nevertheless, the contribution from contagion to swap spreads tends to be higher for Asian economies with relatively higher overall public debt ratios, and relatively higher external debt ratios.

Selected Asia: Total Public Debt and Contribution from Contagion to Sovereign Spreads



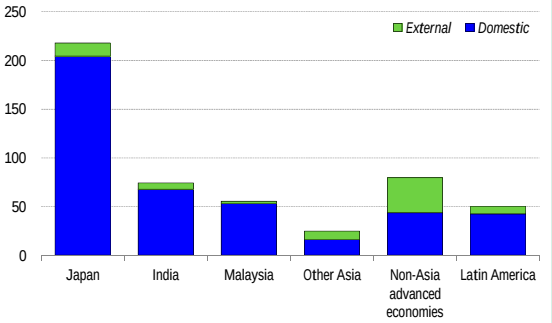
Source: IMF staff calculations.

Selected Asia: Public External Debt and Contribution from Contagion to Sovereign Spreads



Source: IMF staff calculations.

Figure 1.43. Gross Public Debt, 2009
(In percent of GDP)



Sources: World Bank, Joint Database on External Debt; Reserve Bank of New Zealand; CEIC Data Company Ltd.; and IMF, WEO database; and staff calculations.

Within Asia, a more abrupt slowdown of economic activity in China than expected is a tail risk. If such an abrupt slowdown were to occur, it would have implications across the region given the linkages of many regional economies with China through the vertical integration of trade, imports by China of commodities and capital goods from other Asian economies, financial flows, and other channels.

D. Policy Challenges

Managing the Exit from Stimulus

The main short-term policy challenge for Asian policymakers is to manage the exit from policy stimulus now that the recovery is well under way across the region. Closing output gaps and emerging pressures in goods and asset prices suggest that the time has come to normalize fiscal and monetary policy stances.

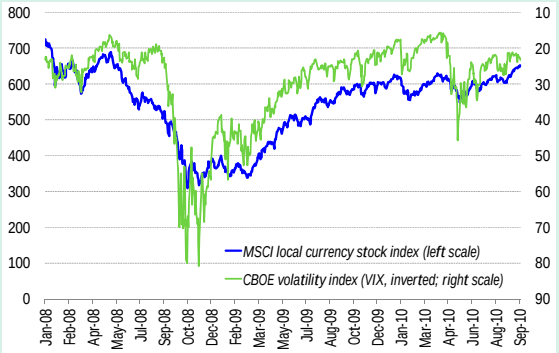
Monetary policy stances remain generally accommodative, although many economies have started taking steps to normalize them (Figure 1.45). "Excess liquidity" (the difference between broad money growth and nominal output growth) has come down from its peak in late 2009, but it remains above precrisis levels (Figure 1.46). Real policy rates are still well below their precrisis levels in most economies despite the rapid recovery and, with a few exceptions (such as Australia and Malaysia) they are also well below estimated levels that are consistent with stable inflation and zero output gaps (Figure 1.47).

An early move to normalize monetary policy stances is needed to head off pressures in goods and asset prices.

- Inflationary risks: high headline inflation, due to spikes in food and energy prices, could spill over into inflation expectations and then into core inflation. These risks are all the more real in the context of increasingly tight resource utilization in many Asian economies. Chapter II shows that rapidly closing output gaps tend to amplify the second-round effects of higher commodity prices on inflation in Asia. The chapter also suggests that the role of demand factors in driving inflation in Asia has increased over the last decade.

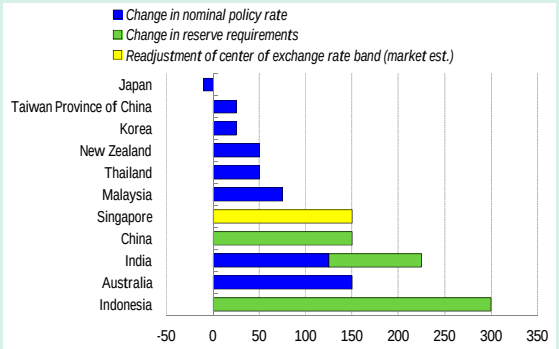
- Asset bubble risks: history suggests that Asia can be susceptible to asset boom-bust

Figure 1.44. Emerging Asia: Stock Market Movements and Global Risk Aversion
(Index)



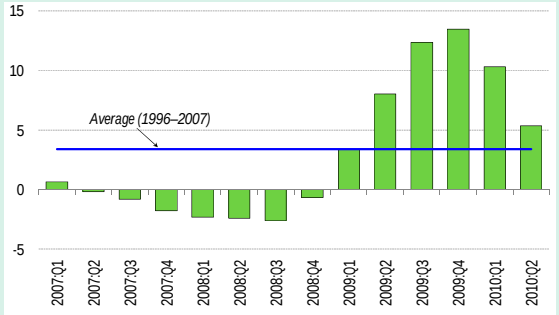
Sources: Bloomberg LP; and Haver Analytics.

Figure 1.45. Asia: Monetary Tightening since 2009:Q3
(In basis points; as of October 5, 2010)



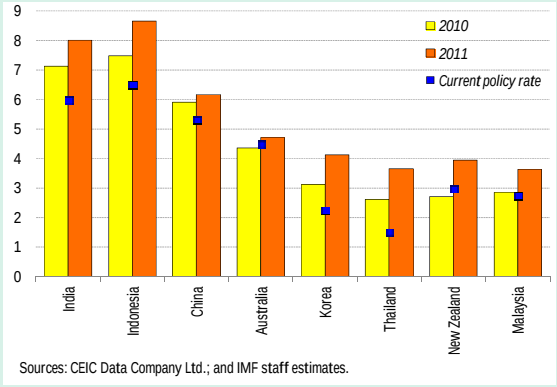
Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

Figure 1.46. Emerging Asia: Excess Liquidity[1]
(4-quarter moving average)



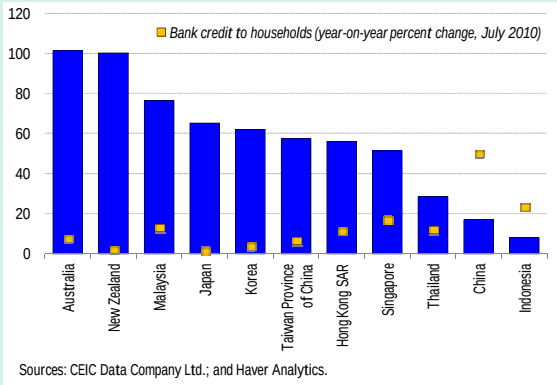
Sources: Haver Analytics; and IMF staff calculations.
[1] Excess liquidity is defined as the difference in year-on-year growth rate of broad money and nominal GDP.

Figure 1.47. Asia: Policy Rates and Estimated Taylor-Rule Rates
(In percent)



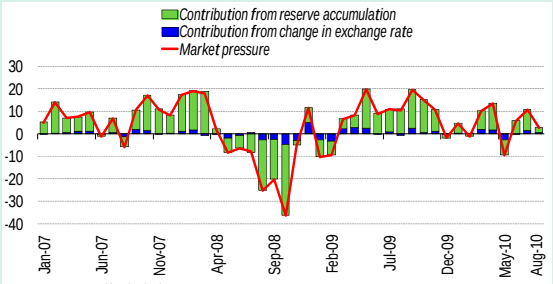
Sources: CEIC Data Company Ltd.; and IMF staff estimates.

Figure 1.48. Asia: Household Debt, 2009
(In percent of GDP)



Sources: CEIC Data Company Ltd.; and Haver Analytics.

Figure 1.49. Emerging Asia (excl. China): Exchange Market Pressure Index[1]



Source: IMF staff calculations.
[1] The exchange market pressure index (EMPI) is defined as the month-on-month change in nominal exchange rate vis-à-vis the U.S. dollar plus month-on-month change in international reserves (including interventions in the forwards market) in percent of monetary base. Positive (negative) index implies appreciation (depreciation) pressure.

cycles during periods of "excess liquidity" (see April 2010 Asia and Pacific *Regional Economic Outlook*). Maintaining accommodative monetary conditions in the context of rapid economic growth could lead to asset price inflation. Some monetary policy tightening may be justified even in the absence of strong and visible CPI inflation pressures, particularly in economies where household debt is relatively high and credit growth rapid (Figure 1.48).

Greater exchange rate flexibility will be an important component of policy tightening. Foreign inflows to Asia in recent quarters have been reflected mainly in international reserve accumulation and less so in exchange rate appreciation (Figure 1.49). Reserve accumulation has accelerated in most of emerging Asia since May 2010, and has contributed to excess liquidity in many countries. Allowing the exchange rate to appreciate in response to inflows would be more conducive to normalizing the policy stance, and (as discussed below) would also help in managing effectively the volatility associated with capital inflows.

In Japan, however, given the yen's appreciation and sluggish domestic demand, the central bank should continue to stand ready to ease policy further to address possible downside risk to the outlook. The Bank of Japan (BoJ) has already taken further measures to expand liquidity, such as extending the size and maturity of a fund-supplying facility aimed at reducing term premiums and introducing a facility to help finance bank lending to private sector projects in new growth sectors. In October 2010, the BoJ announced a new "comprehensive monetary easing" policy, aimed at driving longer-term interest rates and risk premiums lower. The policy (i) maintains the uncollateralized overnight call rate at between 0 and 0.1 percent; (ii) commits to maintaining the virtually zero interest rate policy until medium- to long-term "price stability is in

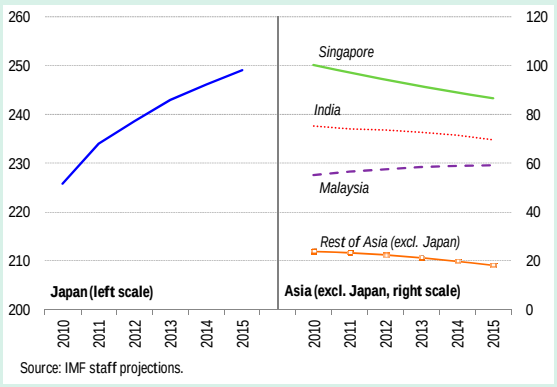
sight;"[5] and (iii) establishes a program to purchase various financial assets (up to ¥5 trillion in one year), including government securities, corporate bonds, exchange-traded funds, and real estate investment trusts.

Fiscal policy stimulus in the region should be withdrawn further, now that the recovery is under way. A withdrawal of fiscal policy stimulus would allow governments to reconstruct the fiscal space that they need to cope with adverse shocks in the future. Countercyclical fiscal policy can also help to cushion domestic demand against the impact of large capital flows (Box 1.5). The extent and type of fiscal adjustment that is appropriate for each country will depend on individual circumstances, particularly the pace of the recovery and the surrounding risks, as well as the fiscal space available (Figure 1.50). Fiscal consolidation could be accompanied by moves to strengthen medium-term fiscal frameworks, which can help to better anchor fiscal policy. Several governments in Asia are already moving in this direction (Table 1.2). For commodity exporters, in particular, fiscal rules could reduce the procyclical bias imparted by volatile fiscal revenues, as well as ensure that the benefits from these resources are shared across generations (see Box 1.8).

Many Asian economies could reorient spending within available fiscal envelopes to further support investment in infrastructure. Chapter III suggests that, in economies where private investment is particularly low, infrastructure investment can increase competitiveness and crowd in private investment. Several governments across the region have stepped up their allocations to infrastructure over the last two years (China,

[5] The Bank of Japan's Policy Board members' understanding of price stability is a change of the annual CPI rate in a positive range of 2 percent or lower with the midpoint at about 1 percent.

Figure 1.50. Asia: Projected General Government Gross Debt (2010–15)
(In percent of GDP)



Source: IMF staff projections.

Hong Kong SAR, Indonesia, and Thailand). Nonetheless, infrastructure gaps appear sizable in several economies, including India and most of the ASEAN. In these economies, greater use of public-private partnerships, if well managed, could usefully complement direct public financing and potentially allow the public sector to take advantage of private sector efficiencies.

Asian low-income countries (LICs) and Pacific Island countries (PICs) face significant fiscal adjustment and reform challenges in the coming years. The situation of Asian LICs and PICs is discussed in more detail in Chapter IV. Fiscal positions in these economies have deteriorated significantly during the global crisis, raising some debt sustainability concerns. Their fiscal challenges, however, go beyond the need for fiscal consolidation, as there are also large financing needs for development spending. Creating the fiscal space to step up public investment programs will require LICs to implement fiscal reforms. For many PICs the need for significant fiscal adjustment and reform challenges in the coming years mainly derive from progress in trade liberalization and declining overseas assistance.

Policy Responses to Large Capital Inflows

Managing capital inflows is another major policy challenge for Asia. With U.S. monetary conditions likely to remain supportive for an

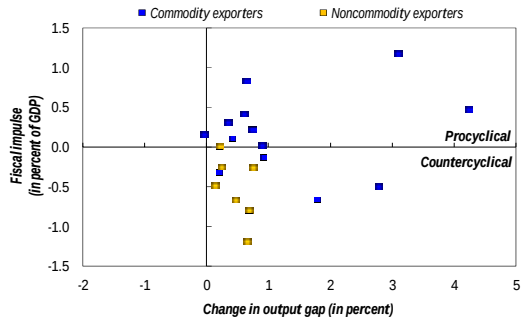
Box 1.8. Fiscal Policy in Commodity-Exporting Countries

The increase of commodity prices in recent years has raised two concerns over fiscal policy in commodity-exporting countries:

- *Excessive volatility of fiscal revenues*: changes in the terms of trade impact revenue directly, as a substantial share of revenues is resource-related, or more broadly, because GDP is sensitive to the commodity cycle. In the short term, this volatility could foster policy procyclicality. A sharp increase in revenues, for example, could lead to a rise in expenditure, and vice versa. Indeed, fiscal policy appears to have been more procyclical in commodity exporters in recent years, compared with noncommodity exporters.

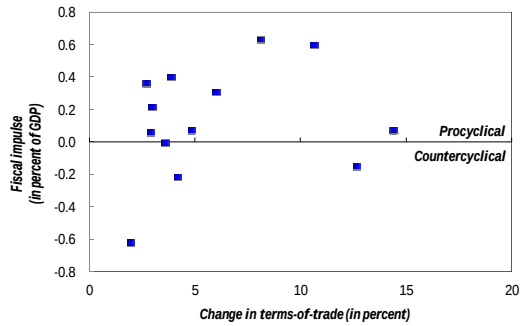
- *Intergenerational distribution of the benefits from nonrenewable resources*: if commodities are nonrenewable, their exports decrease national wealth. Some of this wealth could be saved, both to help achieve long-term fiscal sustainability and for intergenerational equity. Without a compensating accumulation of assets (physical or financial), the welfare of future generations would be permanently harmed.

Procyclical Bias in Fiscal Policy: Commodity Exporters versus Noncommodity Exporters
(2004–07)



Source: IMF staff estimates.

Commodity Exporters: Procyclical Bias in Fiscal Policy
(2004-07)



Source: IMF staff estimates.

Fiscal frameworks in Asia-Pacific commodity exporters

How are these issues dealt within Asia-Pacific commodity exporters?

- In Australia, the framework laid out in the Charter of Budget Honesty requires fiscal policy to contribute to moderating cyclical fluctuations in economic activity, and maintain Commonwealth Government debt at prudent levels. The current government's strategy is to achieve budget surpluses on average over the medium term, to help moderate the procyclical impact from the terms of trade. The framework allows for swings in the fiscal balance over the cycle and yet maintains the flexibility that allowed the large fiscal stimulus during the crisis, without the need for abandoning its fiscal rules (IMF, 2009b). Another objective of this framework is to improve the financial net worth of the government over the medium term, which de facto helps achieve an equitable allocation of the benefits from nonrenewable resources across different generations.[1]

- In New Zealand, the 1994 Fiscal Responsibility Act introduced principles of fiscal management, as opposed to mandatory targets. Governments are required to reduce total Crown debt to prudent levels, to spell out policies to reach that target, and to explain temporary departures. It is left to the government to interpret

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Note: The main authors of this box are Patrizia Tumbarello, Mousa Shamouilian, and Shengzu Wang.
[1] Proven reserves of nonrenewable resources are expected to last well over 100 years (Australian Government, 2010).

the relevant fiscal terms. The framework is flexible enough to take into account excessive volatility of commodity prices.

- Indonesia and Malaysia do not have fiscal frameworks that allow responding to the commodity price cycle, or that target an "equitable" drawdown of oil wealth. But efforts have been made in recent years to decrease the dependence of the budget on oil revenues, by improving non-oil revenue compliance and by rationalizing fuel subsidies.

Fiscal rules in commodity-exporting economies

Various fiscal rules have been adopted around the world by commodity exporters to address both the excessive revenue volatility and intergenerational equity issues (Davis and others, 2001, and IMF, 2009b). In general, the difficulty of distinguishing between temporary and permanent terms-of-trade shocks could further complicate the design and implementation of fiscal rules for commodity exporters.

- *Cyclically adjusted, structural balance.* By correcting for changes in commodity revenues, this rule allows insulation of the budget from the volatility of commodity prices and the effects of the business cycle. Revenue windfalls will be saved in good times to build a buffer against a fall in commodity prices. This rule is appropriate for commodity exporters that do not have large commodity revenues but are still subject to sharp swings in the terms of trade. One drawback is that it requires an estimation of the output gap, which is subject to considerable uncertainty and large ex post revisions. As such, this rule may not be easy to monitor and communicate to the public. Nonetheless, it has been extremely successful in Chile in avoiding procyclical fiscal policies during periods of terms-of-trade booms. In Mexico, consideration is being given to introducing a structural rule that reinforces savings at the peak of the cycle.

- *Noncommodity balance target rule.* Setting a target on the noncommodity balance can insulate the budget from the volatility of commodity revenues, and let the authorities focus on a fiscal aggregate that can be controlled more than the overall balance. During periods of relatively high commodity prices or output, the overall budget might accumulate a surplus, and a deficit during periods of low prices or output, but expenditures would be unaffected. This rule is in effect in Norway, which uses the non-oil structural deficit as fiscal target. A general concern about this rule is that targeting a noncommodity balance could lead to excessive headline deficits in the case of a sharp drop in commodity prices or output, assuming that the drop is temporary. Moreover, this rule is not easy to implement when the share of each commodity in total revenues is small.

- *Commodity stabilization or saving funds.* Revenue volatility and intergenerational issues can also be achieved by establishing "stabilization" or "saving" funds. Stabilization funds are a mechanism that helps smooth government expenditure in view of volatile commodity revenue. They are designed to accumulate resources when the commodity revenue is above or below some preannounced thresholds. Saving funds convert resource wealth into financial wealth. These funds have mostly been used in oil and gas exporters such as Algeria, Azerbaijan, the Gulf countries, Libya, and Russia, and in a few cases their creation supplements other fiscal rules (Norway).

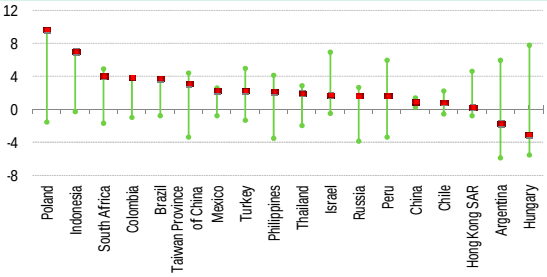
extended period and global interest rates likely to remain low for the foreseeable future, Asia may attract further capital inflows that could contribute to overheating pressures in goods or asset markets. This is especially the case for economies with tightly managed exchange rate policies, which may in effect import easy global monetary policy conditions unless they tighten capital controls. By depressing local long-term yields, large capital inflows may undermine efforts to tighten the monetary stance through policy rate increases. Large portfolio inflows may also swamp local financial markets, particularly local bond markets, which are relatively small in most of Asia (Figure 1.51). As discussed in the October 2010 *Global Financial Stability Report*, portfolio flows to emerging markets may result in "herding" behavior, where allocations are made simply on the basis of what other investors already do. In these circumstances, a self-reinforcing cycle can develop, whereby large portfolio inflows lead to a mispricing of risk that further reinforces the inflows to unsustainable levels and exacerbates the risk of a sudden and disruptive reversal. Policy responses to try and minimize the risks from large and destabilizing capital inflows can include exchange rate appreciation, macroprudential measures, and tighter fiscal policy.

Table 1.2. Selected Asia: Medium-Term Fiscal Objectives

Japan	Halve primary deficit (in percent of GDP) by FY2015, and achieve stable reduction in the public debt ratio from FY2021.
Korea	Balance central government budget (excluding social security funds) by 2013–14.
China	Move toward balanced budget.
India	Central government deficit of 3 percent of GDP by FY2013/14 and debt ratio of 45 percent of GDP by FY2014/15.
Philippines	Deficit target of 2 percent of GDP by 2013.
Thailand	Balanced budget by FY2014.

Source: IMF country desks.

Figure 1.51. Equity and Debt Portfolio Inflows
(In percent of equity market capitalization and debt outstanding)



Sources: Bloomberg LP; and IMF, *International Financial Statistics*, and staff estimates.
[1] Lines indicate ranges of portfolio flows (4-quarter trailing average) during 2003:Q4–2010:Q1, as percent of average equity market capitalization and debt outstanding during this period. Diamonds are 2010:Q1 values except for China, Colombia, Hong Kong SAR, Hungary, Israel, Mexico, and Peru.

Greater exchange rate flexibility offers an important buffer against the risk posed by large capital inflows. IMF staff analysis shows that domestic demand overheating in response to surges in capital inflows is less likely in economies that have more flexible exchange rates (Box 1.5). Greater exchange rate flexibility could also reduce expectations of a large step appreciation, and thus dampen the pressure on inflows and the associated impact on consumption and investment. Furthermore, exchange rate flexibility would reduce the challenges for domestic liquidity management, as it would lessen the need for reserve intervention and the resulting risk of excess liquidity and credit booms.

A stronger prudential framework can also help to mitigate the adverse consequences of sizable and potentially volatile capital inflows. Indeed, several Asian economies have implemented preemptive measures to limit a buildup of financial vulnerabilities. The measures, with respect to the effects of capital inflows, have mainly related to banking sector leverage, short-term foreign capital inflows, property price inflation, and foreign currency exposures.

- In June 2010, Indonesia and Korea took steps to restrict the volatility of capital inflows and reduce short-term external exposures. In Indonesia, the central bank introduced a one-month holding period requirement on central bank bills, for both domestic and foreign investors. In Korea, limits on foreign currency derivative

positions were introduced to discourage banks' short-term foreign currency borrowing, and thus to minimize the systemic fallout from spikes in global risk aversion and sudden withdrawals of capital. These measures have been successful so far mainly in altering the nature of inflows rather than their size. In Indonesia, foreign appetite for central bank bills has remained strong after the introduction of the measures, but the holding period requirement could dampen the severity of outflows should risk appetite diminish. In Korea, the foreign currency hedging that was done by Korean branches of foreign banks has started being done by the foreign parent banks instead.

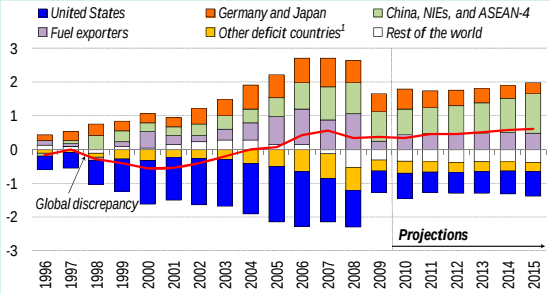
- In Taiwan Province of China and Thailand, measures were taken to reduce currency appreciation pressures. In November 2009 Taiwan Province of China prohibited foreign investors' access to time deposits as a way of curbing inflows and speculation, while in February and September 2010 Thailand eased controls on capital outflows.

- In April 2010, the New Zealand authorities implemented new liquidity rules for banks aimed at reducing the risks that a sudden reversal of capital inflows may lead to bank funding strains as was seen during the global financial crisis (see Box 1.9). In Korea, to address vulnerabilities associated with wholesale funding, the loan-to-deposit ratio will be capped at 100 percent from 2013.

Policies for Rebalancing

While private domestic demand is expected to be the main driver of growth in Asia in 2010 and 2011, the prospects for sustained progress toward external rebalancing over the medium term are still unclear. Private consumption and investment are together projected to contribute about 3 and 2 percentage points to emerging Asia's total GDP growth in 2010 and 2011, respectively. This rebalancing may prove to be mainly cyclical, however, as over the medium term external surpluses are expected to decrease only modestly. The relatively limited reduction in projected surpluses over the medium term would contribute to global imbalances remaining elevated, as discussed in the October 2010 *World Economic Outlook* (Figure 1.52).

Figure 1.52. Global Imbalances
(In percent of world GDP)



Sources: IMF, WEO database, and staff projections.
[1] Other deficit countries include Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Turkey, and United Kingdom.

Continued structural reforms will be needed to sustain the outlook for private consumption in key Asian economies, particularly China. Recent developments are positive in this regard. Retail sales have been on an upward trend in recent years in China, and private consumption as a share of GDP stabilized in 2009 after years of decline. In addition to structural changes in the dynamics of consumption, as a result of urbanization and demographic changes, household consumption in China is also likely to continue benefiting from authorities' efforts to expand pension and health care coverage, which should gradually lower the motivation for precautionary saving. However, given the relatively low share of household consumption in GDP, and the many economic forces that prevent it from rising more quickly, it is still a major challenge for China to raise the share of private consumption over the medium term.

Private investment in the region will likely benefit from more efforts to boost

Box 1.9. Bank Funding and Liquidity Rules in Australia and New Zealand

The global financial crisis highlighted the need for banks to have adequate liquidity to safeguard financial stability and the Basel Committee proposed new liquidity rules in December 2009. Given that a key external vulnerability in Australia and New Zealand is their banks' sizable short-term offshore funding, the authorities moved ahead of other countries to propose new liquidity policies.

In October 2009 the Reserve Bank of New Zealand (RBNZ) introduced new quantitative requirements to increase banks' liquidity and reduce reliance on short-term offshore funding. Given its concern that market discipline approaches based on disclosure to address banks' liquidity risk were insufficient, the RBNZ first floated plans for new liquidity rules in late 2007, and the following became effective from April 2010.[1]

- Liquidity mismatch ratios set minimum "zero" requirements for one-week and one-month mismatch ratios each business day. The mismatch ratios compare a bank's liquid assets and likely cash inflows with its likely cash outflows, expressing the difference as a ratio of total funding.
- A minimum core funding ratio (CFR) aims to ensure that banks hold sufficient retail and longer-dated wholesale funding. The minimum CFR has been set at 65 percent of total loans and advances from April 2010, increasing to 70 percent from July 2011 and 75 percent from July 2012.

In September 2009, the Australian Prudential Regulation Authority (APRA) also proposed changes to its current prudential approach to banks' liquidity risk management. The APRA proposals emphasize stress tests and define a three-month "market disruption" scenario that mainly targets banks' resilience to a disruption in access to offshore wholesale funding. The proposals reflect the authorities' views that existing regulatory arrangements have worked effectively over recent years in Australia and severe stress in the financial system was avoided during the recent financial crisis. Given the Basel Committee's proposals in December 2009, APRA decided to delay the finalization of its revised liquidity rules.

Since the onset of the global financial crisis in 2008, Australian and New Zealand banks have improved their funding structures. They have significantly increased their liquid assets and retail and long-term wholesale funding. However, it is not clear whether this was because of the RBNZ's plans to introduce liquidity requirements, the Basel Committee's proposed liquidity standards, the uncertain and volatile environment, or rating agencies putting pressure to reduce their exposure to rollover risk. While only indicative, a cross country comparison suggests that New Zealand's new liquidity policy may have played a role in reducing its external vulnerability: since end-2007 (precrisis), short-term external debt declined by 15 percent of GDP in New Zealand, whereas it rose for many other countries.[2] During the same period, New Zealand banks' dependence on short-term offshore funding also declined more than in Australia and Korea.

Changes in Short–Term External Debt
(In percent of GDP)

	December 2007 to March 2010	June 2008 to March 2010
Australia[1]	2.5	0.9
Finland	22.6	11.5
Ireland	81.4	52.5
Korea	0.7	–2.1
New Zealand[1]	–14.7	–11.6
Portugal	14.2	10.4
Spain	15.1	7.6
United Kingdom	–3.5	11.0

Source: IMF staff calculations.
[1] Changes up to June 2010.

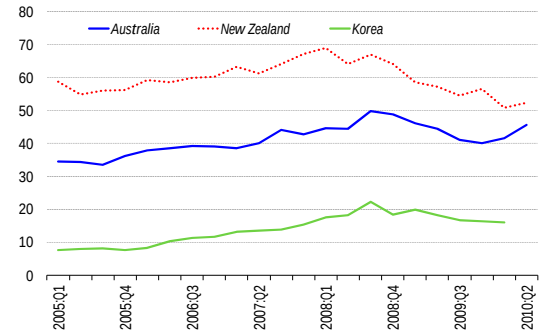
Note: The main author of this box is Byung Kyoon Jang.

[1] These new liquidity requirements have considerable similarities to the Basel Committee's proposed liquidity standards—the liquidity coverage ratio and net stable funding ratio.

[2] Only Australian and New Zealand external debt data are on a residual maturity basis; others are on an original maturity basis.

At the same time, the shift to more stable funding in Australia and New Zealand seems to have increased bank funding costs. Both the experience of the crisis and new liquidity rules in New Zealand have made banks willing to pay more to attract retail deposits.[3] In addition, funding costs increased as banks lengthened the maturity of their wholesale funding, given a positively sloped yield curve. Thus, bank funding costs relative to the policy rate have increased substantially, by an amount equivalent to tightening of policy rates of about 100 basis points. Banks in the two countries have generally responded to higher funding costs by increasing their lending rates relative to official benchmark rates and keeping their net interest margin at about 2–2½ percentage points.

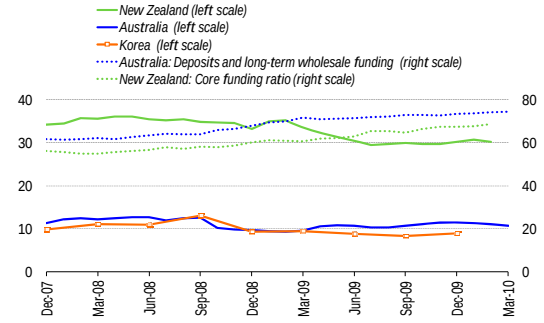
Total Short-Term External Debt in Asian Countries
(In percent of GDP)



Source: IMF staff calculations.

The impact of New Zealand's new liquidity policy is expected to be stronger in cyclical upturns, when banks tend to resort to short-term offshore funding markets to support credit expansion. To satisfy growing credit demand, banks will need to find funding mostly from customer deposits and longer-term markets. As a result, lending rates should automatically move higher during credit upswings, without the RBNZ needing to raise the policy rate to the same extent. Moreover, limited access to retail and longer-term funding could put a brake on procyclical lending. Through these channels, the CFR has the potential to play a role in assisting monetary policy.

Banks' Short-Term Nonresident Funding
(In percent of total funding)



Source: IMF staff calculations.

[3] Rising spreads on retail deposits have also been taking place in other countries, for example the United Kingdom.

infrastructure. In several economies, notably China, Hong Kong SAR, India, Indonesia, Malaysia, the Philippines, and Thailand, governments are putting in place measures to boost infrastructure. This is already benefiting heavy equipment and steel manufacturers in the region (particularly in Korea), inducing them to expand capacity to meet these demands. In time, improvements in infrastructure will benefit end users, enhance connectivity, and draw in additional investment (see Chapter III).

In general, a successful shift in Asia's pattern of growth toward private domestic demand would require the simultaneous implementation across the region of a package of measures. Such a package would include (i) a continued strengthening of social safety nets, which should help to further reduce precautionary saving and thus boost consumption (especially in China); (ii) further advances in financial sector reforms, which can support private consumption as well as investment, both by smaller firms and by larger firms that seek financing for large projects; and (iii) more exchange rate flexibility, which will boost household disposable income and facilitate the shifting of resources to nontradable sectors. As emphasized in the April 2010 Asia and Pacific *Regional Economic Outlook*, in order for these measures to be most effective, they need to be undertaken widely across the

region. If only a few countries implement reforms, then, although rebalancing may have some positive domestic and regional spillovers (especially if undertaken in larger economies such as China), it is unlikely to fill the void created by weaker external demand from advanced economies.

In sum, Asia's situation is a positive one as it has emerged in the lead of the global recovery and policymakers have managed effectively the balance of macroeconomic risks. Now that the recovery is well established, it is time for policy stances to be normalized across the region. Should downside risks materialize, countries generally have ample room to ease policies in response. It is time also to look ahead to the medium term, when Asia will have to rely increasingly on domestic demand for its growth. A strong package of measures taken across the region to foster this medium-term reorientation will help Asia to sustain its robust growth, and it will also help to sustain growth in the rest of the world by contributing to a reduction in global imbalances.

II. Inflation Dynamics in Asia

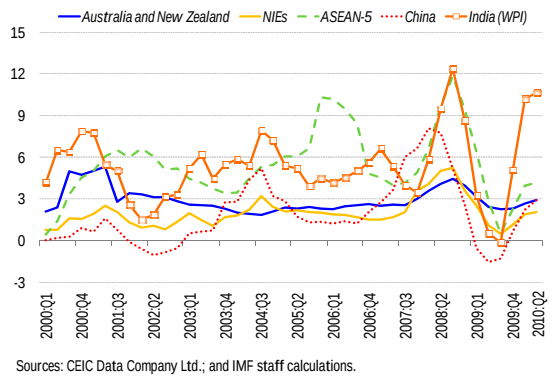
Although inflation in Asia is still relatively moderate, it has picked up in some countries and is becoming an important consideration as policymakers seek to manage their exits from stimulus, and in particular to normalize policy conditions while guarding against risks to the recovery. A key input for managing this exit is an assessment of the forces that drive inflation, or so-called inflation dynamics. This chapter presents a quantitative analysis of inflation dynamics in Asia and shows how the nature and origin of inflation pressures differ across economies and have changed over time. The chapter also discusses more specifically the inflation drivers in the two largest emerging Asian economies—China and India.

A. Introduction

Inflation pressures have risen in some Asian countries since late 2009. Headline inflation accelerated markedly in the first quarter of 2010 and reached 4½ percent (year-on-year) in the second quarter on average across the region excluding Japan (Figure 2.1). The increase in headline inflation has been mainly driven by commodity prices.[1] However, core inflation has also picked up, although it is still at low levels (Figure 2.2).

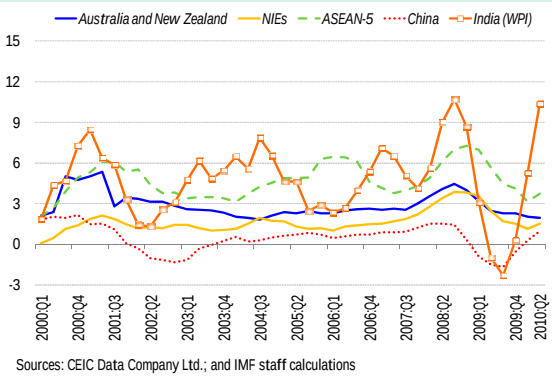
Inflation pressures have varied across the region. In India, headline inflation recently reached double digits, and core inflation since April 2010 has been close to its precrisis peaks. In Indonesia, headline inflation increased to 4½ percent in the second quarter of 2010, from 2½ percent in the fourth quarter of 2009, and core inflation has remained at about 4 percent since the end of 2010. On the other hand, in China, notwithstanding the rapid economic recovery and credit growth, inflation has remained relatively moderate at about 3 percent.

Figure 2.1. Asia (excl. Japan): Headline Consumer Price Index
(Year-on-year percent change)



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

Figure 2.2. Asia (excl. Japan): Core Consumer Price Index
(Year-on-year percent change)



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

Against this background, an important consideration for policymakers is what forces drive inflation dynamics across the region. In order to assess inflation prospects, and determine the appropriate monetary policy response, it is important to determine the extent to which inflation in Asia is driven by supply and demand pressures as well as the extent to which these pressures are caused by foreign versus domestic sources. Identifying the relative contributions of

Note: The main authors of this chapter are Roberto Guimaraes, Carolina Osorio Buitron, Nathan Porter, D. Filiz Unsal, and James Walsh. Yiqun Wu provided research assistance.

[1] Oil prices have risen to about $80 as of mid-September 2010, after falling to $61 a barrel in 2009, although food prices have eased since early 2010.

different factors to inflation is complicated by the fact that these factors usually coexist. For example, the run-up in Asian inflation before the global crisis, to nearly 8 percent in 2008, coincided with both surging world commodity prices and strong Asian growth. To determine the relative contributions of various factors to inflation it is thus necessary to conduct an empirical analysis, as this chapter does below. The analysis examines the relative impacts of supply shocks and demand shocks, as well as their origins in terms of foreign and domestic sources. Supply factors comprise commodity prices and producer prices, while demand factors comprise monetary shocks (to money supply, interest rates, and exchange rates) and output gaps.

Two main conclusions emerge from the empirical analysis:

- Over the past two decades, the main driving forces of inflation in Asia have been supply shocks and monetary shocks, while output gaps have played a relatively smaller role. There are, however, variations in the importance of these various factors across economies. Among ASEAN economies other than Indonesia, commodity prices play a particularly important role in driving inflation, perhaps owing to the openness of these economies and their dependence on oil and food imports. By contrast, in some of the higher-income economies (Australia, Hong Kong SAR, Japan, and New Zealand), output gaps tend to be more important. Across the region, while foreign factors sometimes play an important role, most shocks are domestically driven.

- The relative roles of key inflation drivers appear, however, to be changing over time. The role of supply shocks in driving inflation appears to have fallen slightly in recent years, while the role of output gaps has increased. The impact of monetary shocks on inflation in Asia has diminished, particularly in economies that have relatively clear monetary objectives and flexible exchange rate regimes (such as Indonesia, Korea, the Philippines, and Thailand).

B. Explaining Inflation Dynamics in Asia

The Role of Food and Energy Prices

Food and energy prices are a particular focus of attention in Asia, as they constitute a larger share of CPI baskets compared with other regions. The shares of food and energy in the average emerging Asian CPI basket are nearly 40 percent and 10 percent, respectively, both of which are higher than the average for emerging economies worldwide (Figure 2.3). In India and Indonesia, the CPI shares of food and energy are higher than the Asian average.

Moreover, changes in food and energy prices tend to have significant second-round effects on inflation in Asia. In particular:

- Over the last decade, simple contemporaneous correlations between headline inflation and core inflation, on the one hand, and between core inflation and food and energy prices on the other hand, have been quite high (at 0.8 and 0.4, respectively; Figure 2.4). This suggests that changes in food and energy prices feed through quickly to core inflation, possibly through inflation expectations, wages, and other input costs.

- Core inflation has tended to follow headline inflation in Asia, rather than the other way around, suggesting that the overall inflationary impact of changes in commodity prices has been relatively persistent. This has been the case especially in India, Indonesia, Malaysia, the Philippines, and Thailand.[2]

[2] The convergence of the two measures of inflation has been tested using the methodology followed in OECD (2005).

- The strength of second-round effects in Asia seems to depend on demand conditions. In an empirical estimation of core inflation, in which core inflation depends on commodity prices, the output gap, expected and past inflation, and an interaction term between commodity prices and the output gap, the latter term turns out to be significant on average in the region, suggesting that the output gap influences the impact of commodity prices on inflation (Table 2.1).[3] This may be because when demand conditions are weak an increase in commodity prices and production costs is more likely to be reflected in narrower profit margins, while when demand conditions are strong firms have more scope to pass higher production costs on to consumers.

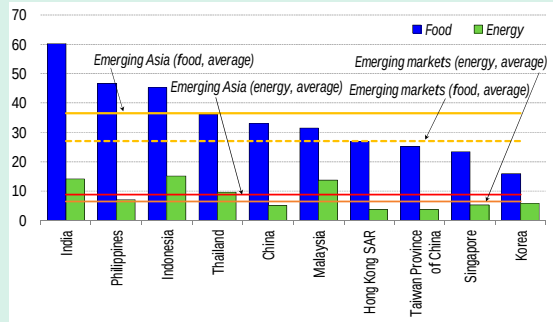
A separate point worth noting at this stage is that Asia accounts for a substantial share of the global demand for commodities. Asian demand may therefore have an important influence on world commodity prices. Emerging Asia accounted for 25 percent of global oil demand as of 2008, a threefold increase from its share during the 1980s (Figure 2.5). Asian demand accounts for more than 50 percent of world demand for aluminum and copper, and for 35 percent of world soy demand (Figure 2.6). The high share of Asia in world demand for commodities suggests that developments in the region may have an increasing influence on world commodity prices (see IMF, 2008b).

Empirical Analysis

The contributions of the various drivers of inflation, including food and energy prices but also other factors, can be assessed in a framework that takes into account international linkages. The analysis is done through a global VAR (GVAR) model (see Appendix 2.1), in which changes in

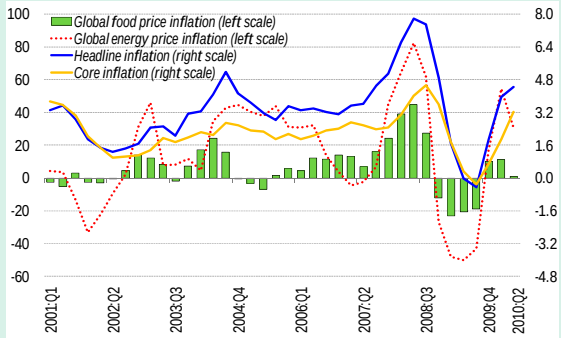
[3] The output gap is defined as a deviation of output from its trend, calculated using Hodrick-Prescott filter.

Figure 2.3. Emerging Asia: Food and Energy Weights in Consumer Price Index Baskets
(In percent)



Sources: CEIC Data Company Ltd.; Hong Kong and Shanghai Banking Corporation; and IMF staff calculations.

Figure 2.4. Asia (excl. Japan): Headline Inflation and Global Commodity Price Inflation
(Year-on-year, in percent)



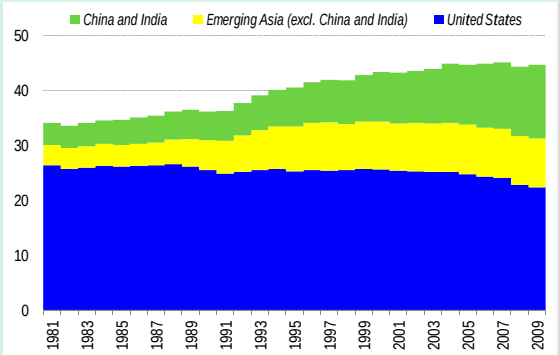
Sources: CEIC Data Company Ltd.; and IMF, WEO database, and staff calculations.

Table 2.1. Asia: Pass-Through from Output Gap to Core Inflation[1]

	Estimated coefficients (1991:Q1–2010:Q2)[1]		Estimated coefficients (2001:Q1–2010:Q2)	
	Output gap	Interaction dummy of output gap with commodity price inflation	Output gap	Interaction dummy of output gap with commodity price inflation
Australia	0.15 *	0.04 *	0.29 *	0.24 *
China	0.08 *	–0.04	0.12 **	–0.03
Hong Kong SAR	0.02 *	0.40 *	0.02 *	0.77 *
India	0.37 *	0.31 *	0.78 *	0.93 *
Indonesia	0.36 **	0.10	0.63 *	0.43 *
Korea	0.19 **	0.12 **	0.23 *	0.13 *
Malaysia	0.02 **	0.02 *	0.02 *	0.08 **
New Zealand	0.29 **	0.22 **	0.38 *	0.46 *
The Philippines	0.07 *	0.38 *	0.10 *	0.75
Singapore	0.06 *	0.00	0.21 *	0.02
Taiwan Province of China	0.03 *	0.08 *	0.03 *	0.32 *
Thailand	0.04 *	0.10 *	0.06 *	0.20 *
Average	0.14	0.14	0.24	0.36

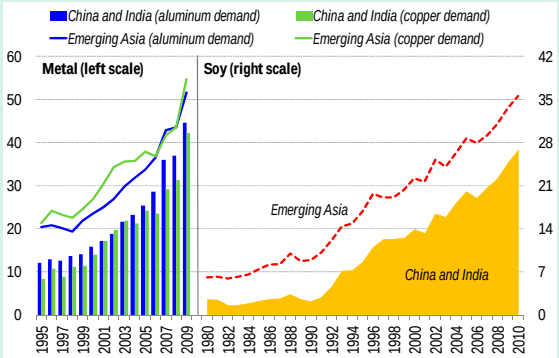
Sources: CEIC Data Company Ltd.; and IMF staff calculations.
[1] Sample period starts from 1994:Q1 for China, 1993:Q1 for Indonesia and Thailand, 1996:Q2 for India, 1995:Q1 for Malaysia, and 1999:Q1 for the Philippines. * and ** denote significance at 5 and 10 percent levels, respectively.

Figure 2.5. United States and Emerging Asia: Oil Demand
(Share in world demand, in percent)



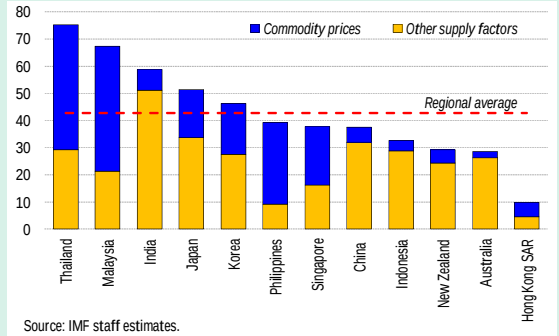
Sources: U.S. Energy Information Association; and IMF staff calculations.

Figure 2.6. Emerging Asia: Metal and Soy Demand
(Share in world demand, in percent)



Sources: World Bureau of Metal Statistics; and U.S. Department of Agriculture.

Figure 2.7. Selected Asia: Contribution of Supply Shocks to Inflation Variation[1]
(In percent)



Source: IMF staff estimates.
[1] Generalized forecast error variance decomposition for endogenous changes in prices over 10 quarters.

headline inflation in 12 Asian economies are explained by supply and demand shocks. *Supply shocks* include changes in production costs, proxied by producer price indexes, and in commodity prices. *Demand shocks* refer to changes in monetary variables (money supply, nominal interest rates, and nominal effective exchange rates), and in the output gap. In addition to *domestic factors* (the impact of domestic supply and demand shocks on domestic inflation), the model also allows an assessment of the relative roles of regional and global factors. *Regional factors* refer to the impact on inflation in Asian economies from supply and demand shocks in other Asian economies. *Global factors* refer to the impact on inflation in Asian economies of supply and demand shocks in the 21 non-Asian economies in the model.

The results from the empirical analysis suggest that supply shocks and monetary shocks account for most of the variation in Asia's inflation during the last two decades. In particular:

- Supply shocks explain about 45 percent of the inflation fluctuations in Asia, of which about three-quarters reflect commodity price shocks (Figure 2.7). The contribution of commodity prices is particularly significant among ASEAN economies (except Indonesia), Japan, and Korea, which are among the largest oil importers in Asia. In general, commodity prices contribute more to inflation in economies that have higher oil intensity (defined as barrels of oil consumption divided by GDP in constant U.S. dollars) (Figure 2.8). The contribution of commodity prices to inflation is smaller for high-income commodity exporters (Australia and New Zealand), where they contribute less than 10 percent to the fluctuations in inflation. In these economies, higher commodity prices drive up the terms of trade, but this tends to be accompanied by exchange rate appreciation that mitigates the inflationary impact of higher food and fuel prices.

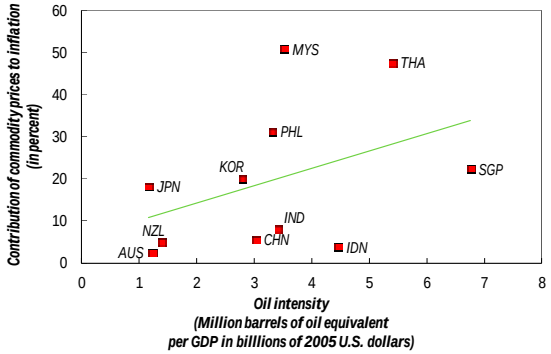
- Demand shocks explain 55 percent of fluctuations of inflation in Asia, of which nearly three-quarters reflects the impact of monetary shocks and one-quarter reflects the effect of output gaps. In particular, changes in money supply and interest rates explain about 25 percent of inflation fluctuations; changes in exchange rates explain about 15 percent, although they play a more important role in those economies (such as Indonesia and Korea) that experienced relatively large currency swings during the sample period (Figure 2.9); and changes in the output gap account for about 15 percent of Asia's inflation fluctuations.

The role of output gaps in driving inflation has, however, grown over time. In emerging Asia, the correlation between core inflation and the output gap rose to 0.7 over the past decade, from 0.2 in the previous two decades (Figure 2.10). On average in Asia over the last decade, output gaps explained about 20 percent of inflation fluctuations, from about 5 percent over the previous decade (Figure 2.11). By contrast, the contribution of monetary shocks to inflation has diminished over time, particularly in economies such as Indonesia, Korea, the Philippines, and Thailand. The impact of output gaps on core inflation can also be assessed within the inflation equation of Table 2.1. On this basis, estimates using data for the past decade suggest that a 1 percentage point decrease in output gaps in Asia leads to a ¼ percentage-point increase in core inflation, which is twice the size of the elasticity over the whole period. The association between the output gap and core inflation is particularly significant in India, Indonesia, and New Zealand.

In terms of the geographic origins of shocks, the analysis suggests that inflation fluctuations in Asia are driven mainly by domestic factors (see also Jongwanich and Park, 2009). In particular:

- More than 60 percent of inflation fluctuations in Asia have a domestic origin (Figure 2.12). The contribution of domestic factors is more pronounced for economies that have large

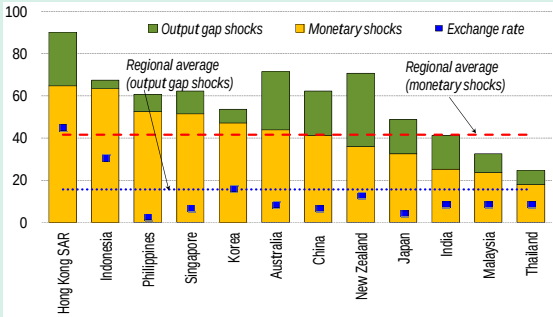
Figure 2.8. Selected Asia: Contribution of Commodity Price Shocks to Inflation Variation and Oil Intensity



Sources: IMF, WEO database, and staff estimates

Figure 2.9. Selected Asia: Contribution of Aggregate Demand Shocks to Inflation Variation[1]

(In percent)

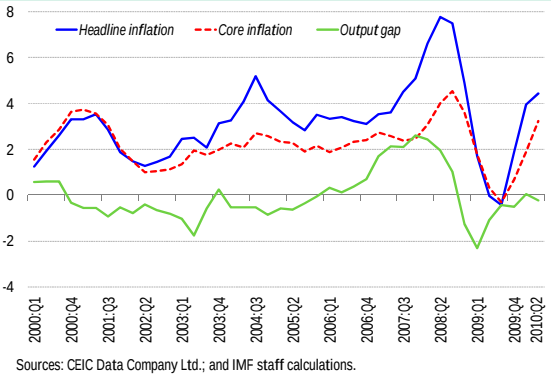


Source: IMF staff estimates.

[1] Generalized forecast error variance decomposition for endogenous changes in prices over 10 quarters.

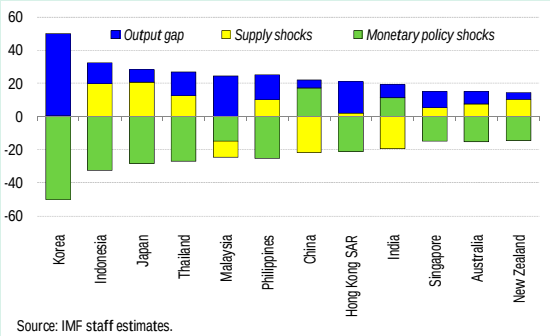
Figure 2.10. Asia (excl. Japan): Year-on-Year Inflation and Output Gap

(In percent)



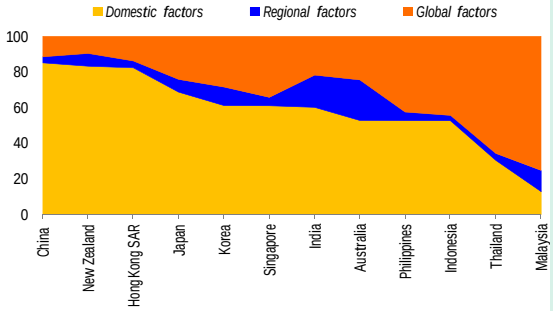
Sources: CEIC Data Company Ltd.; and IMF staff calculations.

Figure 2.11. Change in the Relative Contribution of Shocks between 1986–99 and 2000–10[1]
(In percentage points)



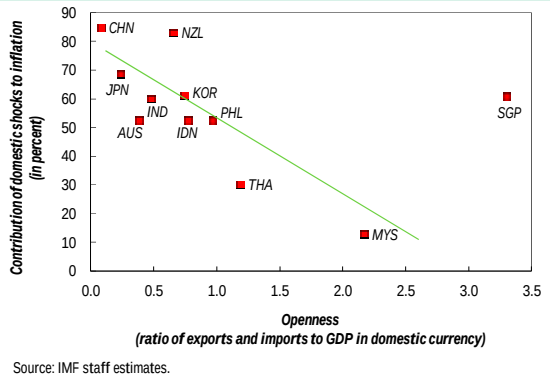
Source: IMF staff estimates.
[1] Generalized forecast error variance decomposition for endogenous changes in prices over 10 quarters.

Figure 2.12. Selected Asia: Relative Contributions of Domestic, Regional, and Global Factors to Inflation Variation[1]
(In percent)



Source: IMF staff estimates.
[1] Generalized forecast error variance decomposition for endogenous changes in prices over 10 quarters.

Figure 2.13. Selected Asia: Contribution of Domestic Demand Shocks to Inflation and Openness



Source: IMF staff estimates.

domestic demand bases (China, India, and Indonesia) and for those that are more advanced (Japan, Korea, and New Zealand). On the other hand, domestic factors account for a lower share of inflation fluctuations in ASEAN economies such as Malaysia and Thailand, which are relatively more open and exposed to global inflationary shocks (Figure 2.13).

- Global factors account for about 30 percent of inflation in Asia, and regional factors account for slightly less than 10 percent. The contribution of regional factors may, however, be larger than this, if account is taken of the indirect impact of regional demand on domestic inflation via its impact on commodity prices. Indeed, demand from Asia explains about 45 percent of the demand-driven changes in world fuel prices, and 30 percent of demand-driven fluctuations in food prices (Figure 2.14). Once this indirect effect is taken into account, the contribution of regional factors to Asia's inflation fluctuations increases to about 20 percent.

C. A Closer Look at Inflation Dynamics in China and India

Inflation dynamics have differed quite substantially in China and India:

- In China, inflation has been surprisingly moderate over the past decade, with headline inflation generally below 5 percent since the late 1990s. Inflation has been moderate despite economic growth being very rapid during this period, and credit growth outpacing nominal GDP growth in most years. Food inflation has been relatively volatile, with spikes often coinciding with supply disruptions (Figure 2.15). Nonfood inflation, however, has been subdued and has rarely risen above 2 percent. The reasons usually cited for the low rate of nonfood inflation have been the rapid growth in manufacturing capacity, combined with the

slow rate of consumption growth relative to income.

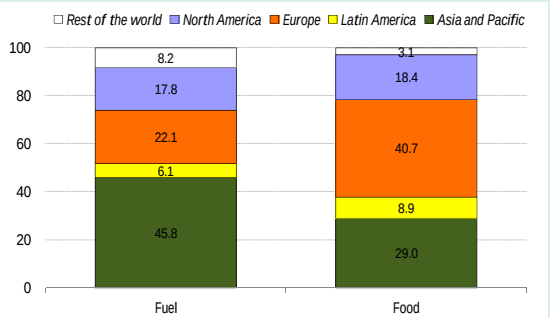
- In India, after averaging 5 percent in 2000–07, headline (wholesale) inflation has risen and become more volatile (Figure 2.16). In 2008, inflation rose sharply to more than 9 percent following unprecedented increases in international commodity prices. As commodity prices fell subsequently and domestic growth weakened, inflation declined sharply to 2¼ percent in 2009. In 2010, inflation rose once again to double digits in the first half of the year as a result of strong growth that has eliminated the slack in the economy. Furthermore, CPI inflation, in which food prices have a higher weight, has been in double digits for more than two years.

Given the large size and systemic nature of their economies, the next two subsections take a closer look at the determinants of inflation dynamics in China and India.

China

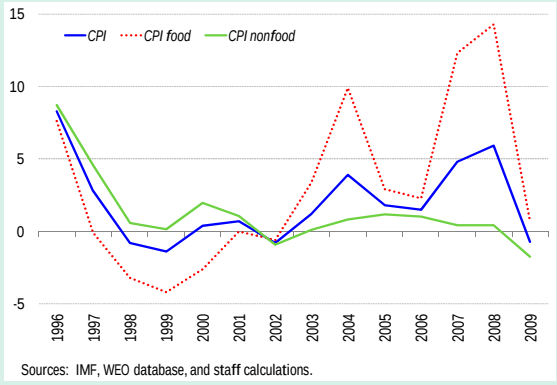
This section examines the factors that drive nonfood inflation (a measure of core inflation) in China. It relates movements in nonfood inflation to aggregate demand factors, such as movements in the output gap and monetary conditions, and to supply factors, such as movements in input prices, global prices, the occurrence of natural disasters, and fluctuations in productive capacity. The analysis focuses on the estimation of a New Keynesian Phillips Curve (NKPC), which links nonfood inflation to expected and past inflation, domestic cost pressures (proxied by the domestic output gap), and foreign cost pressures (proxied by import deflators); and a Bayesian variance autoregression (BVAR) model, which assesses the inflationary impact of external variables (including the U.S. output gap, commodity prices, and the nominal effective exchange rate), domestic variables (including domestic output gap and producer price inflation) and monetary policy

Figure 2.14. Contribution of Regional Demand Factor to Fuel and Food Price Inflation[1]
(In percent)



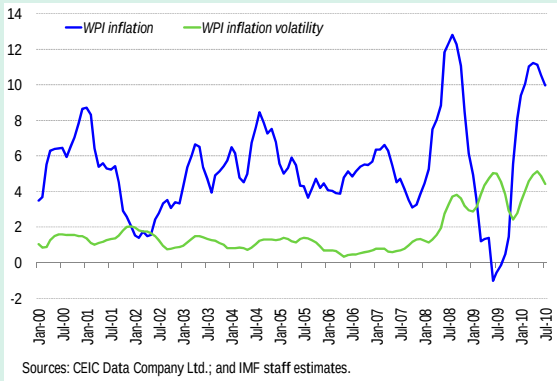
Source: IMF staff estimates.
[1] Generalized forecast error variance decomposition for endogenous changes in prices over 10 quarters.

Figure 2.15. China: Consumer Price Inflation
(Year-on-year, in percent)



Sources: IMF, WEO database, and staff calculations.

Figure 2.16. India: Headline Inflation (WPI) and Inflation Volatility
(In percent)



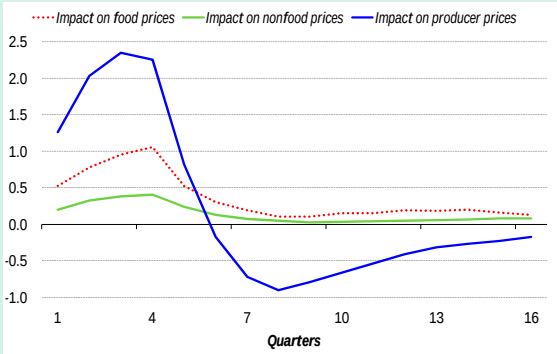
Sources: CEIC Data Company Ltd.; and IMF staff estimates.

Table 2.2: China: NKPC–Baseline GMM Estimates with Nonfood Inflation[1]

Variable	Coefficients	t-statistic
Constant	–0.002 **	-1.81
Foreign price gap	0.31 *	15.74
Expected inflation	0.12 *	2.69
Output gap[2]	0.02	0.93
Lagged inflation	0.63 *	21.38
R -squared= 0.84, adjusted *R* -squared = 0.75		

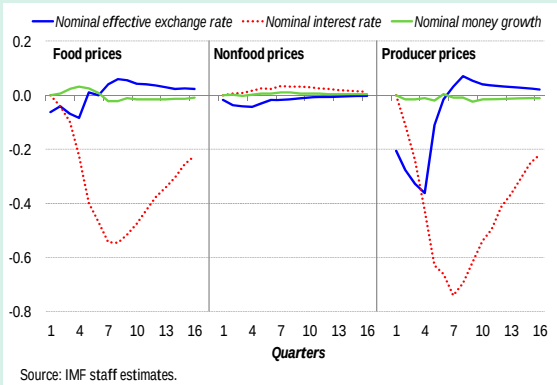
Source: IMF staff estimates.
[1] The sample period is 1996–2008. * and ** denote significance at 5 and 10 percent levels, respectively.
[2] Output gap is estimated through a growth accounting model.

Figure 2.17. China: Impact of Foreign Output Gap
(In percentage points)



Source: IMF staff estimates.

Figure 2.18. China: Impact of Monetary Policy
(In percentage points)



Source: IMF staff estimates.

variables (including the one-year lending rate and broad money growth).

A key conclusion is that domestic demand pressures have played a limited role in driving inflation in China, but foreign demand pressures have been important. The relatively large role played by foreign demand is an unconventional finding, but perhaps it is unsurprising given China's history of externally oriented growth and limited consumption demand. The results also suggest that input prices are important drivers of producer prices and nonfood inflation. In particular:

- *The impact of the output gap on nonfood inflation is limited in China*. This could, however, reflect difficulties in measuring the output gap for such a rapidly changing economy as China. By contrast, inflation expectations, lagged inflation, and relative foreign cost pressures all significantly increase nonfood inflation (Table 2.2).[4] There seems to be a modest underlying deflationary pressure (indicated by a negative constant of about 0.2 percentage points in the Phillips curve), possibly reflecting China's large labor force and the expansionary impact on productive capacity from rapid productivity growth.

- *By contrast, the foreign (U.S.) output gap and commodity prices are important drivers of inflation dynamics in China*. A 1 percent shock to the foreign output gap raises producer prices by more than 2 percent, food prices by about 1 percent, and nonfood prices by about ½ percent in the first year (Figure 2.17). World commodity prices affect both producer prices and nonfood inflation, but they have little impact on food price inflation.

[4] The results are robust for different output gap measures including measures based on statistical filters (such as Hodrick-Prescott, Baxter-King, and Christiano-Fitzgerald filters) as well as a measure based on a simple growth accounting exercise.

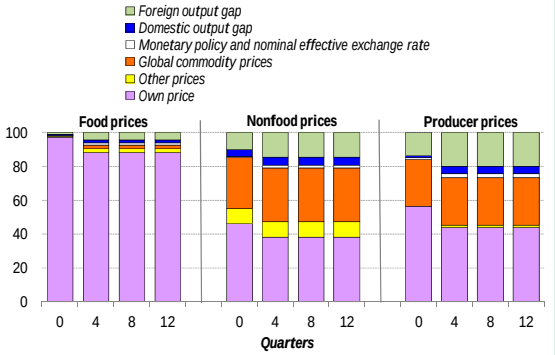
- *Monetary policy has a mixed effect on inflation* (Figure 2.18). Money growth appears to have surprisingly little impact on inflation. On the other hand, interest rates do affect food inflation within 1–2 years, although they have little impact on nonfood inflation. Nominal exchange rate appreciation seems to have a modest pass-through effect on producer prices (but little effect on consumer prices), possibly because imports are dominated by intermediate goods and consumer goods imports are relatively small.

The importance of foreign shocks for China's inflation is highlighted if one decomposes the volatility of the inflation series in the BVAR model (Figure 2.19). A quarter of the variance in producer prices is explained by changes in world commodity prices, and a further 20 percent by movements in foreign demand. Commodity prices explain around one-third of the variance of nonfood consumer price inflation, while the foreign output gap accounts for about 10–15 percent. Other prices and the domestic output gap appear to have a relatively small influence on nonfood inflation. The variance of domestic food inflation, on the other hand, appears to be relatively unaffected by both domestic and foreign supply and demand shocks. Rather, it is lagged food prices that are most important, indicating that food price supply shocks have a highly persistent effect over time.

India

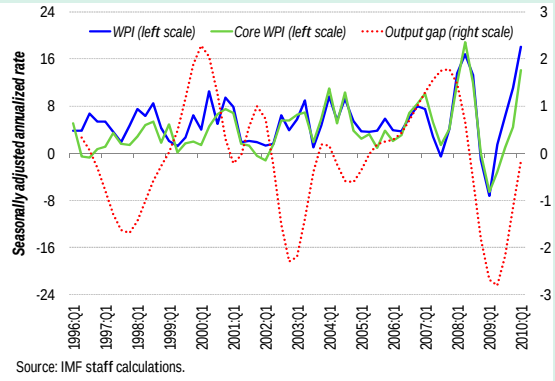
Headline inflation in India is significantly correlated with international commodity prices, but it is also correlated with the output gap. First, the energy (fuel) component of the WPI moves closely in line with international oil prices after a lag. Second, the domestic energy component of the WPI is significantly correlated with domestic core inflation, with a correlation coefficient generally higher than 0.5, suggesting that movements in domestic underlying inflation have occurred in tandem with shocks to

Figure 2.19. China: Variance Decomposition of Inflation
(In percent)



Source: IMF staff estimates.

Figure 2.20. India: Inflation and Output Gap
(In percent)



Source: IMF staff calculations.

Table 2.3: India: NKPC–Baseline GMM Estimates with Core Inflation[1]

Variable	Coefficients	t-statistic
Expected inflation	0.25 *	2.08
Output gap	0.98 *	2.28
Lagged inflation	0.75 *	6.34
J-statistic = 0.10 (p-value=0.81), adjusted *R* -squared = 0.36		

Source: IMF staff estimates.

[1] The sample period is 1996:Q2–2010:Q1. * denotes significance at 5 percent level. Estimated constant is not shown here. Coefficients on lagged and forward inflation are constrained to add up to one.

Table 2.4: India: NKPC–Baseline GMM Estimates with Wholesale Price Inflation[1]

Variable	Coefficients	t-statistic
Expected inflation	0.27 *	2.25
Output gap	0.77	1.45
Lagged inflation	0.73 *	6.31
J-statistic = 0.08 (p-value=0.93), adjusted *R* -squared = 0.24		

Source: IMF staff estimates.

[1] The sample period is 1996:Q2–2010:Q1. * denotes significance at 5 percent level. Estimated constant is not shown here. Coefficients on lagged and forward inflation are constrained to add up to one.

Table 2.5: India: NKPC–Open Economy GMM Estimates with Core Inflation[1]

Variable	Coefficients	t-statistic
Expected inflation	0.32 *	4.57
Output gap	0.50	1.50
Relative commodity price index	0.15 *	3.50
Lagged inflation	0.68 *	9.51
J-statistic = 0.13 (p-value=0.66), adjusted *R* -squared = 0.35.		

Source: IMF staff estimates.

[1] The sample period is 1996:Q2–2010:Q1. * denotes significance at 5 percent level. Estimated constant is not shown here. Coefficients on lagged and forward inflation are constrained to add up to one.

international oil prices. The correlations of core and headline inflation (both in quarter-on-quarter seasonally adjusted annualized terms) with various measures of the output gap range from 0.15 to 0.22 (Figure 2.20).

The empirical analysis suggests that both demand and supply conditions affect inflation in India. The key driver is commodity prices, but demand conditions also have a significant impact. An NKPC is estimated both for headline (WPI) and core (WPI, excluding food and energy) inflation, using quarterly data from 1996:Q2 to 2010:Q1. Different measures of the output gap (factor costs GDP, factor costs GDP excluding agriculture, and market price GDP) are used in the estimations.

The main results are as follows:

- The effect of the output gap on inflation is for the most part statistically significant. Its significance depends, however, on the measure of inflation used and, to a lesser extent, on the measure of the output gap. In the case of core inflation, the impact of the output gap is statistically significant with a coefficient of 0.98 (Table 2.3). In the case of headline inflation, however, the coefficient of the output gap loses statistical significance, but remains economically relevant as a 1 percentage point increase in the output gap leads to a 0.77 percentage point increase in headline inflation (Table 2.4).[5]

- International commodity prices exert an effect on inflation above and beyond their effect on expectations or past inflation (Table 2.5). A one percentage point increase in commodity prices is associated with a 0.35 percent increase in headline inflation.

- Lagged inflation is particularly important, as its coefficient is generally large (positive) and statistically significant, implying substantial inflation inertia. The estimated effect of lagged inflation on current inflation typically exceeds 0.70 and is much larger than that of expected inflation.

- Expected inflation also has an effect on current inflation, but quantitatively it is generally small across specifications. A one percentage point increase in expected inflation leads to a 0.2–0.4 percentage point increase in inflation depending on the specification. Also, the effect of expected inflation tends to be larger when foreign variables are included.

[5] The statistical significance of the output gap depends in part on the instrument set used and on the lag structure of the estimated equation. For instance, preliminary estimates indicate that the lagged output gap may also have a direct impact on inflation.

The relatively important role of food prices in driving inflation in India becomes clearer once inflation is disaggregated into its food and nonfood components. In India, and developing countries in general, the volatility of food shocks is higher and large upward shocks are more common and persistent, and the transmission mechanism between food and nonfood prices is stronger than in rich countries (Box 2.1). The kinds of large food price shocks observed in recent years in India could thus be expected to have a relatively large effect on overall inflation. For example, between September 2008 and July 2010, India experienced unusual food price shocks. In India, the mechanism transmitting food shocks to nonfood prices is stronger than in countries such as the United States. This mechanism thus led to higher inflation throughout 2008 and early 2009 than such shocks would have generated in the United States (Figure 2.21). By 2010, as nonfood shocks were declining, the spillover of food inflation into nonfood inflation, enabled by India's stronger transmission mechanism, led to year-on-year inflation of 5–7 pecentage points higher than the United States would have faced under similar food price increases.

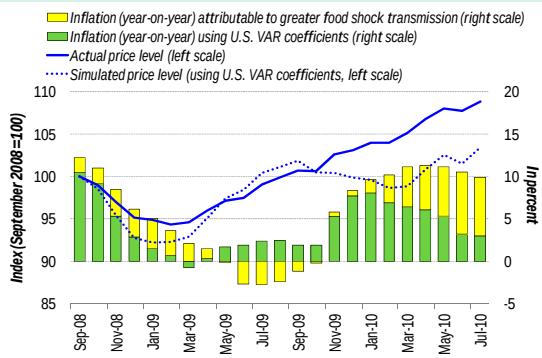
D. Conclusions and Policy Implications

Although inflation dynamics across Asia, including in China and India, are mainly driven by domestic supply shocks, the contribution of demand factors has risen in recent years. Looking ahead, if the influence of demand factors on inflation continues to grow, policymakers will need to give increasing priority to managing inflation relative to promoting growth.

The contribution of monetary shocks to inflation has diminished over time, perhaps reflecting the improvements in monetary frameworks in many countries. These improvements have included greater clarity and transparency with respect to monetary objectives and instruments as well as greater exchange rate flexibility. Additional moves in this direction may help to further reduce the level and volatility of inflation across the region.

Developments in Asia seem also to have a growing influence on global commodity prices, which is consistent with the high and rising share of Asia as a source of demand for key commodities. As this share grows over time, policymakers will need to pay increasing attention not only to the influence of global commodity prices on domestic prices, and indeed domestic economic conditions, but also to the implications of domestic conditions for global prices.

Figure 2.21. India: Actual and Simulated Inflation



Source: IMF staff estimates.

Inflation dynamics are also different between China and India, which are of particular interest as the largest emerging economies. In China, for the past several years, investment has grown more rapidly than consumption, resulting in a buildup of supply capacity that has held down inflation pressures. Inflation pressures in this environment are driven mainly by supply shocks, which largely comprise shocks to food prices. In India, meanwhile, more traditional mechanisms seem to be at work, where both supply and demand forces play a role in driving inflation. There is also some new evidence that, in India, the persistence of food inflation is higher and food price shocks feed more strongly into nonfood prices than in other advanced and emerging economies (Box 2.1).

Box 2.1. Persistence of Food Price Inflation

In developing countries, the volatility of shocks to food prices is higher than in more advanced countries, large upward shocks are more common, these shocks are more persistent, and the transmission mechanism from food to nonfood prices is stronger. A closer examination of each of these features informs that food prices shocks affect nonfood inflation much more strongly in developing economies.

We analyze some characteristics of food and nonfood price inflation in a sample of 91 countries, comprising advanced economies, emerging markets, and low-income countries. Food inflation on average is significantly higher in the developing economies than in the advanced economies, while for nonfood inflation the differences are less pronounced. Similarly, the standard deviation of food price inflation is much lower among the richer economies. Finally, food price inflation is right-skewed (meaning more large upward shocks to food prices than downward shocks) in most countries, and to a greater extent than nonfood inflation.

Higher volatility does not make food price shocks an important issue when policymakers think about price stability. If these shocks dissipate quickly, then their effect on overall inflation will be transitory and muted, and the time during which these shocks can propagate into the broader price index will also be limited. However, if high volatility is accompanied by high persistence, then proportionately larger food price shocks will be maintained in the economy for a long period of time, and can propagate into nonfood prices.

Food and Nonfood Inflation
(Month-on-month; in percent)

Income group	Food inflation			Nonfood inflation		
	Mean	Standard deviation	Skewness (percent positive)	Mean	Standard deviation	Skewness (percent positive)
High income	2.2	2.4	91.3	1.9	1.2	47.8
Middle income	6.1	4.2	70.1	5.2	2.3	65.2
Low income	11.2	14.8	76.0	7.1	4.9	68.0

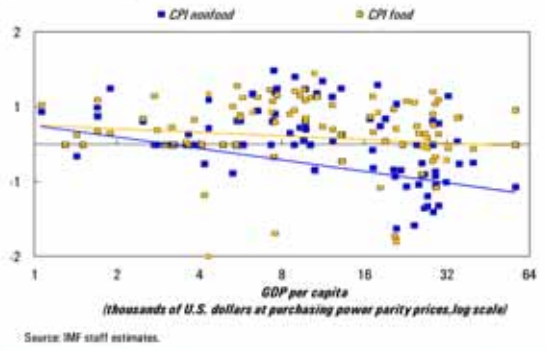
Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

The degree of persistence can be measured in various ways, each with its own shortcomings, but a starting point for most specifications is estimating the equation:

$$\pi_t^X = \rho_1 \pi_{t-1}^X + \cdots + \rho_q \pi_{t-q}^X + \varepsilon_t^X \qquad (1)$$

where π_t^X represents inflation for X, a basket of either food or nonfood items, at time t. We use two different methods. In the first method, the sum of autoregressive coefficients (SARC) is the sum of the ϱ coefficients in the above equation. A higher sum of the ϱ coefficients means a series in which more of the initial shock is maintained over time. The second method, the largest autoregressive root (LAR) method, reformulates equation (1) as a lag polynomial, and calculates the largest root of this polynomial. The closer this root is to one, the closer the series comes to having a unit root in which all shocks are permanent.

Persistence of Food and Nonfood Inflation by GDP Per Capita
(SARC measure)



Source: IMF staff estimates.

By both measures, food inflation shocks are more persistent than nonfood shocks in most of the countries in the sample. And both measures are correlated with income: inflation persistence in both food and nonfood categories is less in richer countries than in poorer ones, with food price persistence being close to zero in rich countries (justifying their exclusion from core inflation) but not in poorer ones.

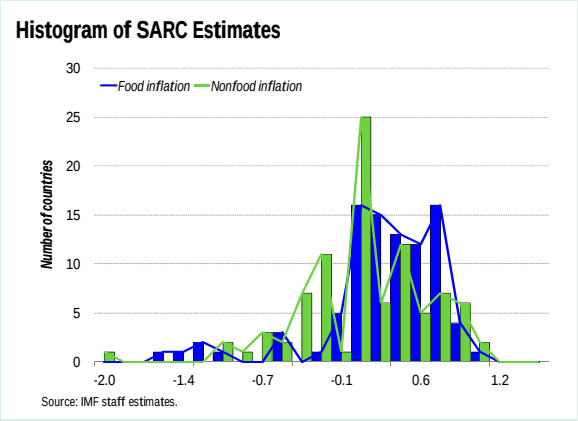
Note: The main author of this box is James Walsh.

Finally, the degree to which food price inflation feeds into nonfood inflation is significant. Food price shocks that dissipate quickly can still have large effects on nonfood prices if the link between food and nonfood prices is strong. In general, these linkages are stronger among poorer countries than richer ones. Estimating the degree of transmission of food price shocks into nonfood prices can be done by estimating a VAR for the following equations relating food and nonfood prices:

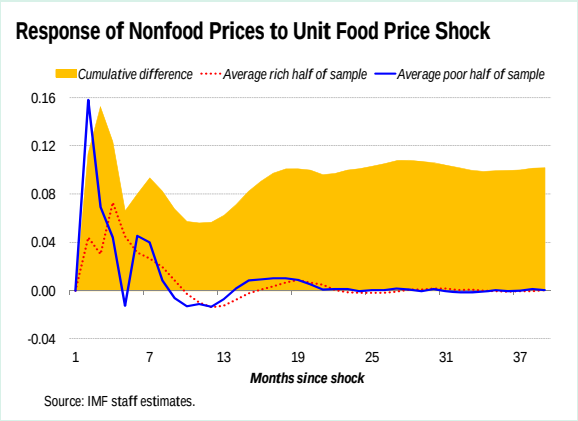
$$\pi_t^F = \beta_1^{FF}\pi_{t-1}^F + \beta_1^{NF}\pi_{t-1}^N \ldots + \beta_q^{FF}\pi_{t-q}^F + \beta_q^{NF}\pi_{t-q}^N + \varepsilon_t^F \quad (2)$$

$$\pi_t^N = \beta_1^{FN}\pi_{t-1}^F + \beta_1^{NN}\pi_{t-1}^N \ldots + \beta_q^{FN}\pi_{t-q}^F + \beta_q^{NN}\pi_{t-q}^N + \varepsilon_t^N \quad (3)$$

As above, these effects are larger in developing economies than for developed economies. In poorer countries, the average response of nonfood prices to a shock to food prices is stronger at the outset than in richer countries. While the effects on nonfood prices tend to dissipate at about the same rate, the long-term effect of a food price shock is greater in poorer countries than in richer ones: on average, a unit shock to food prices leads to a long-term increase in nonfood prices of about 0.1 percentage points higher in a poor country than in a richer one.



The combination of these three factors—relatively volatile inflation, greater long average persistence, and relatively strong transmission into nonfood prices—means that the kinds of large food price shocks observed in recent years across the world will have a more important effect on the overall price level of poor countries than in richer countries, where these features are more muted.



The fact that food price shocks in developing countries feed strongly into nonfood prices has a number of policy implications. Countries with low volatility in food price shocks and weak transmission mechanisms can afford to regard such shocks as temporary supply-side distortions, but this may not be the case in poor countries. In these cases, food price shocks eventually work their way into the price of nonfood goods and services, adding to nonfood and overall inflation. This greater severity of food price shocks means that central banks in developing countries should be vigilant when supply shocks hit food.

Appendix 2.1. Global VAR

A number of macroeconomic variables are modeled; let x_{it} denote the vector collecting these variables for country $i = 0, 1, 2, \ldots N$. Given the general nature of interdependencies that might exist in the world economy, all country-specific variables (x_{it}) and observed global factors (such as oil prices) are treated endogenously. Denote the observed global and unobserved global factors by d_t and f_t, respectively. Then

$$x_{it} = \delta_{io} + \delta_{i1} t + \Gamma_{id} d_t + \Gamma_{if} f_t + \xi_{it} \quad (1)$$

for $i = 0, 1, 2, \ldots N$ and $t = 1, 2, \ldots T$, where ξ_{it} is a vector representing country-specific factors. On the other hand, δ_{io} and δ_{i1} represent the coefficients of the deterministic intercept and time trend, respectively. Unit root and cointegration properties between variables can be accommodated by allowing for the global and country-specific factors to have unit roots. Without unobserved common factors, the model for the *i*-th country decouples from the rest of the country models, and each country model can be estimated separately. But when unobserved common factors are included, the model is quite complex, particularly for large *N*.

An alternative strategy is to proxy the unobserved global factor (f_t) by the cross-section averages of country-specific variables x_{it}, and the observed common effects (d_t) (Pesaran, 2006; and Pesaran, Schuermann, and Weiner, 2004). After some algebraic manipulation, the model in equation (1) can be re-expressed as follows:

$$\phi_i(L, p_i) x_{it} = a_{io} + a_{i1} t + \Gamma_i(L, q_i) d_t + \Lambda_i(L, q_i) x^*_{it} + u_{it} \quad (2)$$

where

$$x^*_{it} = \sum_{i=1}^{N} w_{ij} x_{it} \quad \text{with } w_{ij} = 0.$$

The weights w_{ij} capture the importance of economy *j* for economy *i*. The use of country-specific weights allows us to specify a different model for each country (by attaching zero weights to missing variables from country *j*'s model).[1] For each country, we include output, consumer and producer price inflation, money supply, the nominal exchange rate, and the short term interest rate, as endogenous variables. Global oil and food prices are assumed to be exogenous global factors for all countries except for China, India, and the United States. We use quarterly data for the period 1986 through 2010 (first quarter).

Appendix 2.2. Structural VAR (SVAR)

In order to check the robustness of our analysis using GVAR, and to test for structural changes in the inflation process, we also estimate a structural VAR which allows for the identification of structural shocks through a Choleski decomposition. We employ seven variables: GDP, consumer and producer price inflation, the bilateral U.S. dollar exchange rate, real narrow money (or short-term interest rate), a food and oil commodity price index, and foreign (trade weighted) GDP. To ensure stationarity of variables we take their first differences.

For the largest economies of the region, China and India, we impose an ordering in which economic growth can have an impact on global commodity prices directly through its own demand effect or indirectly through its impact on global demand. For the smaller economies, global demand and commodity prices are assumed to be exogenous, as is commonly assumed in the literature.

The results of the country-specific SVAR models are broadly consistent with the GVAR

[1] Before estimating the model we conduct unit root and cointegration tests, to identify and take account of long term relationships between macroeconomic variables for each country. We also test for weak exogeneity of x^*_{it}, as well as for global observed factors (such as oil and food prices), since these are the main assumptions that underline the estimation strategy.

estimates. Variance decomposition of different shocks suggests that the contributions of the shocks to inflation differ by less than 5 percent for all economies between the two methodologies.

Following the robustness check, we split the sample in two subsamples, 1986–99 and 2000–09, to examine the evolution of importance of supply and demand factors for inflation dynamics in Asia.

III. INVESTMENT AND REBALANCING IN ASIA

Ensuring stable growth in the postcrisis world economy will require a rebalancing of economic activity in several different countries. In Asia's export-dependent economies, this entails relying more on private domestic demand as a driver of growth. While some countries need to raise consumption, several countries need to raise investment or reorient it from tradable to nontradable sectors. These changes in investment could be facilitated by financial reforms that enhance domestically oriented firms' access to credit and by improvements in infrastructure that raise the returns to private investment.

A. Introduction

Rebalancing Asia's growth model involves simultaneously reorienting production and spending away from external toward domestic drivers of growth. The domestic drivers include both consumption and investment, although the emphasis differs across countries. The April 2010 Asia and Pacific *Regional Economic Outlook* examined the consumption aspects of rebalancing growth. In this chapter we discuss the investment aspects.

Although individual circumstances differ across economies, one common channel through which these objectives can be met is by promoting investment. In some parts of the region, notably the ASEAN-4, aggregate investment—particularly private fixed investment—appears low. In other parts, including the newly industrialized economies (NIEs) and Japan, although aggregate investment is in line with comparators, the composition is skewed toward exporters and capital-intensive firms, crowding out domestically focused and labor-intensive enterprises. Added to this, rapid growth has stretched existing infrastructure close to the point where it severely constrains activity.

This chapter examines the case for rebalancing in Asia through the route of investment. In contrast with existing work (Guimaraes and Unteroberdoerster, 2006; and Hori, 2008), it focuses on investment at both the aggregate level and the level of individual sectors across major Asian economies.[1] The analysis is guided by the following questions:

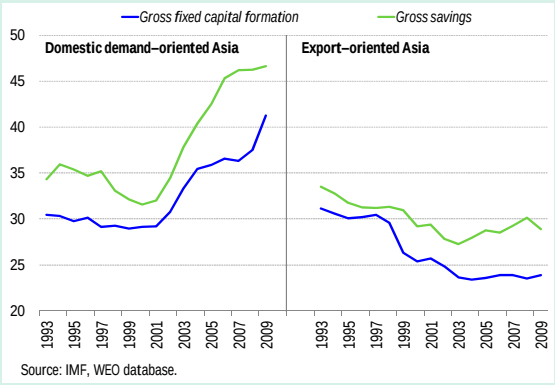
- What factors determine private investment spending at the aggregate level and at the sectoral level in Asia? What structural attributes help explain recent investment trends in the region? How do the patterns differ in Asia compared with other regions?
- Is investment in Asia constrained by limited development of financial sectors and infrastructure in many countries?
- What policies could promote investment to rebalance Asian economies toward domestic demand-led growth and lift potential growth?

The analysis leads to two main findings. First, lower returns, greater uncertainty, and altered perceptions of the ease of doing business have held down investment in many regional economies over the past decade or so. But financial constraints also play a role, as small and medium enterprises (SMEs) and firms operating in the service sector appear to have limited access to external funding, particularly in Japan and NIEs. In these economies, promoting financing on risk-based terms, supporting SMEs' restructuring through more private out-of-court workouts, and streamlining tax policies could help rotate the composition of investment toward nontradable sectors. Second,

Note: The authors of this chapter are Malhar Nabar and Murtaza Syed. Souvik Gupta provided research assistance.

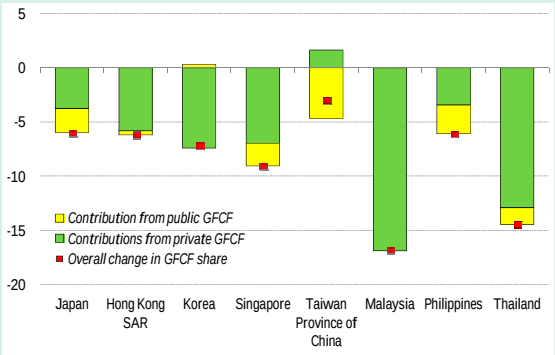
[1] Guimaraes and Unteroberdoerster (2006) also look at investment trends at the aggregate and firm level, focusing on developments in Malaysia since the Asian crisis.

Figure 3.1. Asia: Gross Fixed Capital Formation (GFCF) and Gross Saving
(In percent of GDP)



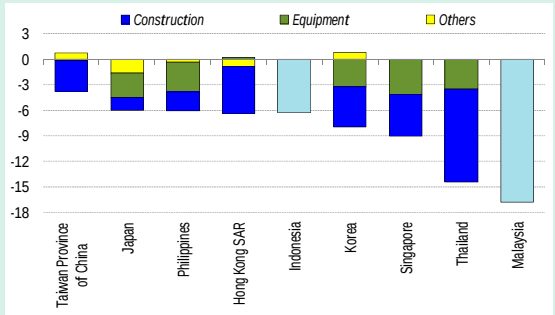
Source: IMF, WEO database.

Figure 3.2. Export-Oriented Asia: Contribution to Change in Average Share of GFCF in GDP
(In percentage points; change in average shares between 1990–97 and 2000–07)



Sources: IMF, WEO database, and staff calculations.

Figure 3.3. Selected Asia: Change in Investment by Type[1]
(2000–07 relative to 1990–97; in percent of GDP)



Sources: CEIC Data Company Ltd.; and IMF staff calculations.
[1] For Indonesia and Malaysia, change in overall gross fixed capital formation shown by light blue–shaded columns due to lack of sufficient data by type of investment.

shortfalls in infrastructure also suppress private investment spending, particularly in the ASEAN–4. With most of the infrastructure in the region provided by governments, greater private participation through public-private partnerships and bond funds may help reduce the pressure on government budgets.

B. Investment Trends in Asia

Recent Developments

In the decade between the Asian crisis and the current global crisis, investment spending in Asia diverged across two groups of economies (Figure 3.1). In the economies with relatively large domestic demand bases (China and India), investment decreased slightly during the Asian crisis, but then increased appreciably starting in the early 2000s.[2] In the group of relatively more export-oriented economies (NIEs, Japan, Malaysia, the Philippines, and Thailand), the average decline in the investment share of GDP following the Asian crisis was about 7 percentage points. Combined with relatively stable saving in this group, the fall in investment as a share of GDP contributed to rising current account surpluses over this period.

A sharp fall in private spending on fixed capital accounts for most of the investment decline in export-oriented Asia (Figure 3.2). Outside of Taiwan Province of China, the bulk of the investment slowdown originated in the private sector. In particular, a sustained slump in fixed investment—in the form of factories and machinery—typically accounted for between half and three-fourths of the overall decline in countries for which a breakdown is available. In addition, excess investment in residential

[2] Most of the subsequent discussion on private investment focuses on developments outside China and India, and emerging Asia is used to refer to economies excluding these two countries.

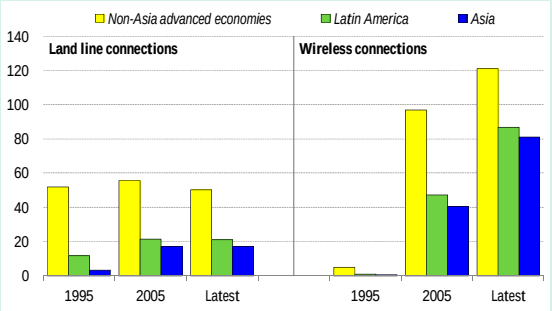
construction may have also played some role in the precrisis boom and subsequent slump (Figure 3.3).

Meanwhile, the decline in the public investment share has meant that an "infrastructure gap" persists between emerging Asia and the rest of the world, particularly in a few countries, such as the ASEAN-4 and India (Figures 3.4 and 3.5). The stock of infrastructure has increased since the 1990s along several dimensions, but still lags comparator emerging market regions in important respects. The median electricity-generating capacity in emerging Asia is approximately 90 percent of the median for Latin America (up from 50 percent in 1995). And, despite the rapid spread of telephones, particularly mobile phones, in the region in the past decade, emerging Asia also continues to lag behind Latin America in its stock of telecommunications infrastructure. There is growing recognition among policymakers in the region that these infrastructure deficits impede private investment and growth.[3]

Investment Levels and Composition in Asia

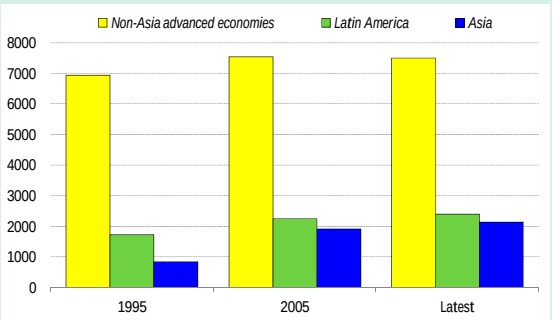
Investment is relatively low in some regional economies, notably the ASEAN-4. Previous research using macrolevel estimates from a standard neoclassical growth model demonstrated that most ASEAN economies have been investing well below the rate implied by their current capital-output ratios (see Chapter III in IMF, 2010b). Firm-level data also support this view. Even as liquidity indicators have improved and leverage has decreased since the Asian crisis, operating margins and investment have fallen markedly over this period.[4] Investment rates in the ASEAN-4 economies are now lower than in other emerging economies and closer to those in economies with much higher per capita incomes

Figure 3.4. Phone Connections[1]
(Median; number of connections per 100 people)



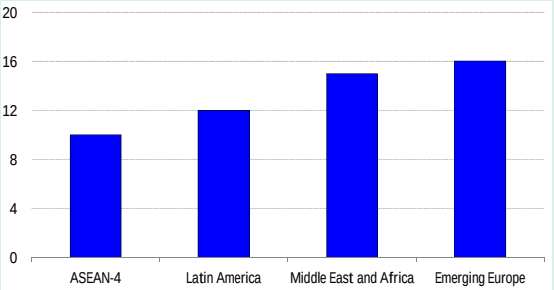
Source: World Bank, *World Development Indicators*, 2010.
[1] Asia includes ASEAN-5, China, India, and Korea. Latin America includes Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, and Mexico.

Figure 3.5. Electricity Generation[1]
(Median; in kilowatt hours per capita)



Source: World Bank, *World Development Indicators*, 2010.
[1] Asia includes ASEAN-5, China, India, and Korea. Latin America includes Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, and Mexico.

Figure 3.6. Firm-Level Investment Rate, 2000–07[1]
(Median investment-to-capital ratio)



Sources: Worldscope; and IMF staff calculations.
[1] Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Middle East and Africa includes Israel, Egypt, Morocco, Pakistan, and South Africa. Emerging Europe includes Czech Republic, Hungary, Poland, Russia, and Turkey.

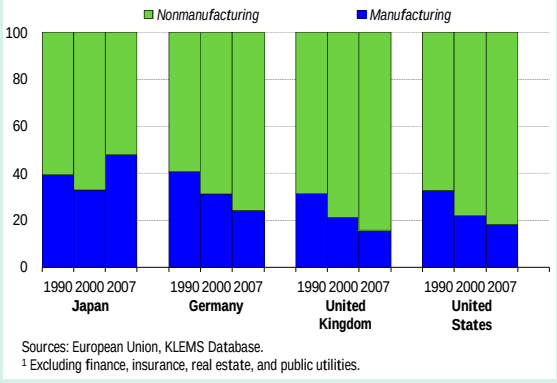
[3] India's National Economic Advisory Council, for example, has called the state of physical infrastructure a "binding constraint" on expansion and a "significant contributor to lower competitiveness" (Rangarajan, 2010).
[4] See Appendix Table 3A.1 for details.

and capital intensity, such as Japan, the United States, and the euro area (Figure 3.6).

In contrast, in Japan and the NIEs, the issue is one of composition rather than the overall level of investment. In these economies, investment has shifted over time toward manufacturing and large firms, particularly in the export sector, since the Asian crisis.

- In Japan, for instance, the share of the nonmanufacturing sector in overall investment has fallen from 70 percent in 2000 to just over 50 percent in 2007 (Figure 3.7). Despite broadly similar economic structures, this decline contrasts sharply with developments in comparator economies, such as the United States, the United Kingdom, and Germany, where the starting share was similar but has now risen to about 80 percent. In particular, the share in total investment of the four main exporting sectors—automobiles, machinery, electronics, and steel—rose from 19 percent to 31 percent in Japan.

Figure 3.7. Composition of Investment By Sector[1]
(In percent of total, at constant 1995 prices)



Sources: European Union, KLEMS Database.
[1] Excluding finance, insurance, real estate, and public utilities.

- At the same time, investment has lagged behind for smaller firms and in the services sector (Figure 3.8). These divergent trends are clearly highlighted in Korea, where rising regional competition has put pressure on labor-intensive SMEs, particularly in low-end manufacturing.[5] SMEs also seem to suffer from excess capacity, while low productivity in the services sector, where many of these firms operate, has been a constraint on investment.

- Therefore, even in Japan and the NIEs, where investment levels do not seem obviously low, there may be scope for supporting rebalancing by reorienting capital spending toward firms and sectors more directly linked to the domestic economy.

C. What Drives Investment in Asia?

The two key aspects of investment in Asia—the fall in the share of investment in GDP in some economies and the shift in composition in others—are at the core of the rebalancing debate. This section attempts to explain both features of the data with a view to establishing what specific policies might help on the Asian side of the global rebalancing effort.

Explaining the Fall in Aggregate Investment

Could the fall in the private investment share simply reflect a decline in the relative price of capital goods? Following the Asian crisis, several economies introduced structural and financial market reforms that may have raised their efficiency in producing capital goods in the past decade.[6] Another question is whether, as the importance of IT capital has increased, the productivity gains in that sector have contributed

[5] Country-specific experiences vary, but the rise of China has intensified competitive pressures particularly on the SMEs in the region. In the case of Korea for example, SMEs have either scaled down operations or shifted production to China (Kang and Kim, 2006). The sectors most directly affected appear to be textiles and basic manufacturing.

[6] More generally, Hsieh and Klenow (2007) document an inverse relationship between the relative price of capital goods and the level of development. This implies that as economies grow over time the relative price of capital falls as they become more efficient at producing capital goods.

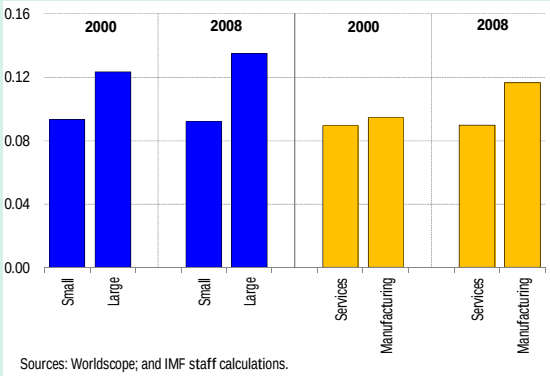
to a decline in the relative price of capital (DeLong, 2002). In such a case, the decline in the share of nominal investment spending in nominal GDP may simply reflect a fall in the relative price of capital goods.

On balance, however, the evidence suggests that falling relative prices are unlikely to explain the decline in the investment rate. If this explanation were valid, we would expect to see a strong positive correlation between the change in the relative price of capital and the change in the investment share of GDP.[7] However, the evidence suggests that in Asia the opposite is true (Figure 3.9). In fact, the relative price of capital and the investment rate appear to be negatively correlated. The decline in the investment share was associated with lower relative prices in only half the cases, possibly reflecting the differential pace of structural and financial reforms across regional economies, or compositional differences in the mix of IT and non-IT capital goods employed. Moreover, the economies that have witnessed the largest falls in the investment share of GDP have also seen the largest increases in the relative price of capital goods. And there is considerable variation across the region: Hong Kong SAR, Japan, and Singapore all experienced a similar decline in the investment share, but with differing declines in the relative price of capital goods. Clearly, at the very least, this explanation cannot account for trends across the region as a whole.

Instead, estimates from a standard regression approach suggest that at the aggregate level, the decline in the investment rate may have been caused by structural changes following the Asian crisis (Table 3.1). The regression framework used is an Arellano-Bond GMM estimation, which allows for the inclusion of lagged values of investment spending and a set of controls—GDP

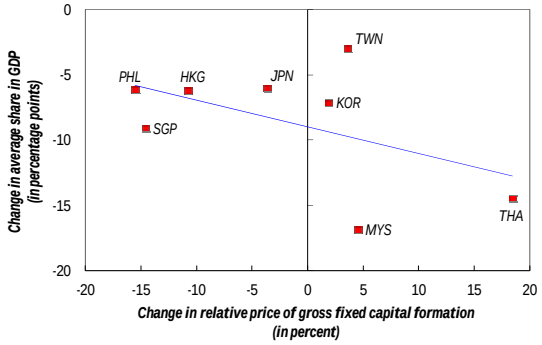
[7] The relative price of capital is measured using the ratio of the investment deflator to the overall GDP deflator from the IMF's World Economic Outlook database.

Figure 3.8. NIEs: Firm-Level Investment Rate, by Size and by Sector
(Median investment-to-capital ratio)



Sources: Worldscope; and IMF staff calculations.

Figure 3.9. Export-Oriented Asia: GFCF–Change in Share versus Change in Relative Price
(Comparison between 1990–97 and 2000–07)



Sources: IMF, WEO database, and staff calculations.

Table 3.1. Determinants of Private Investment Spending[1]

Lagged private investment	0.772 ***	0.742 ***	0.748 ***	0.745 ***	0.710 ***
	(0.039)	(0.040)	(0.040)	(0.045)	(0.036
Real interest rate	0.0319 *	0.030 *	0.0328 *	0.014	0.006
	(0.017)	(0.018)	(0.017)	(0.011)	(0.011)
GDP growth	0.360 ***	0.328 ***	0.340 ***	0.331 ***	0.299 ***
	(0.046)	(0.040)	(0.039)	(0.040)	(0.041)
Volatility		–0.224 ***	–0.241 ***	–0.250 ***	–0.310 ***
		(0.060)	(0.060)	(0.064)	(0.077)
Manufacturing share of value added			0.091	0.054	0.089
			(0.072)	(0.063)	(0.062)
Ease of doing business				0.244	0.343 **
				(0.157)	(0.174)
Financial development					21.270 *
					(12.210)
Financial development (squared)					–15.210 *
					(9.228)
Observations	412	412	369	338	260
Number of countries	44	44	42	39	37
Autocorrelation in first-differenced errors (p-value)[2]	0.8779	0.926	0.938	0.671	0.339

Source: IMF staff estimates.
[1] Dependent variable: private investment-to-GDP ratio. Arellano–Bond estimation technique used. Robust standard errors in parentheses.***, **, and * indicate significance at 1, 5, and 10 percent levels, respectively.
[2] Arellano–Bond test of no second-order autocorrelation in first-differenced errors.

growth as a proxy for the aggregate return on investment, the standard deviation of GDP growth over rolling four-year windows to capture macroeconomic uncertainty, the real interest rate, the manufacturing share of value added, an index of financial market development, and a measure of the ease of doing business (or the perceived investment climate)—along with country-specific, time-invariant fixed effects.[8] Across a large cross-country panel of emerging and advanced economies, the approach identifies the following key determinants:

- The aggregate return on investment (average growth) is positively associated with investment spending. Following the Asian crisis, average real GDP growth in emerging Asia (excluding China and India) slowed appreciably. The slowdown in real GDP growth relative to the precrisis period reduced investment spending by 2½ percentage points of GDP on average.

- Macroeconomic uncertainty (volatility) is negatively correlated with investment spending. As uncertainty rises, firms hold back on costly and potentially irreversible investment since they prefer the option value of waiting until the uncertainty clears. Growth in emerging Asia has been relatively more volatile as the recovery from the 1997–98 downturn gave way to the tech boom and bust cycle that was then followed by a period of solid growth, which ended sharply with the current crisis. This higher volatility over the past decade has depressed investment spending in the region by approximately 1 percentage point of GDP relative to the early 1990s.

- A surprising deterioration in investors' perceptions of the business climate has also dampened investment. The altered perceptions are associated with a further decline in investment spending of three-quarters of a percentage point of GDP compared with the early 1990s.

In addition, infrastructure weaknesses may be constraining investment in emerging Asia. Increases in the stock of infrastructure can boost investment through several channels. Improved connectivity (better roads, bridges, and telecommunications) will reduce transport and communication costs, facilitate internal specialization, and allow for an improved division of labor within the country. Furthermore, the decline in transportation costs can support clustering of industries, with attendant gains in productivity that raise the return on investment through knowledge spillovers and agglomeration effects (Krugman, 1991 and Venables, 2006). This is particularly important for countries such as India, Indonesia, and China (where vast distances separate potential producers and end users). Power and energy infrastructure that minimizes work stoppages and disruptions in production and distribution can also augment returns on investment by raising productivity. Better roads, electricity, and water supply will enhance health and education investments, reducing inequality and raising the human capital of the work force.[9]

Empirically, improvements in infrastructure appear to have a powerful impact on private investment spending in the region. Across four commonly used indicators of infrastructure (electricity generation, telephone lines, cell phone subscribers, and road length), there is strong evidence of a positive association with private

[8] The index of financial development (Abiad, Detragiache, and Tressel, 2008) is a normalized average across seven indicators (banking supervision, privatization, entry barriers, directed credit, credit ceilings, interest rate controls, and securities market reform). The measure of ease of doing business is based on an index compiled by the International Country Risk Guide (www.prsgroup.com/ICRG.aspx) and largely reflects perceptions of corruption in the private and public sectors.

[9] Calderon and Serven (2004a, 2004b) point out that improvements in infrastructure are associated with reduced inequality and higher growth. But there may still be an equity-efficiency trade-off in the short term when current needs in the education and health sectors must be weighed against the requirements for infrastructure.

investment spending.[10] Estimates from a simple regression framework as outlined above suggest that electricity and roads have the strongest impact on private investment, while increases in the number of telephone lines and cell phone subscribers are also positively associated with higher private investment (Table 3.2).[11]

Table 3.2. Effect of Infrastructure on Private Investment Spending[1]

Lagged private investment	0.701 ***	0.741 ***	0.673 ***	0.422 ***
	(0.050)	(0.054)	(0.046)	(0.081)
Real interest rate	–0.026	0.006	0.018	–0.038
	(0.024)	(0.026)	(0.021)	(0.027)
Growth rate of GDP	0.244 ***	0.285 ***	0.228 ***	0.153 **
	(0.049)	(0.050)	(0.042)	(0.077)
Volatility	–0.104 *	–0.164 ***	–0.032	–0.345 ***
	(0.057)	(0.048)	(0.044)	(0.108)
Electricity	2.204 **			
	(1.122)			
Telephones		1.420 **		
		(0.592)		
Cell phones			0.689 ***	
			(0.186)	
Roads				4.015 ***
				(1.236)
Observations	316	325	325	120
Number of countries	41	42	42	32
Autocorrelation in first-differenced errors (p-value)[2]	0.347	0.758	0.72	0.267

Source: IMF staff estimates.
[1] Dependent variable: private investment-to-GDP ratio. Arellano–Bond estimation technique used. Robust standard errors in parentheses.***, **, and * indicate significance at 1, 5, and 10 percent levels, respectively.
[2] Arellano–Bond test of no second-order autocorrelation in first-differenced errors.

Why Has the Composition of Investment Changed?

What explains the shift in investment away from services and small firms in more developed parts of the region since the Asian crisis? Firm-level panel data is used to estimate the standard neoclassical investment model, which relates current investment to expectations of future profitability through the Tobin's *Q* ratio, defined as the ratio of the stock market valuation of the firm to the replacement cost of its capital stock.[12] The model is estimated using a first-differenced GMM approach and augmented by additional regressors, including (i) cash flow, which measures the internal funds available to finance investment projects and is typically used in the literature as a proxy for financing constraints; (ii) leverage, measured by the debt-to-assets ratio, as a proxy for the effect of financial restructuring on investment; and (iii) the standard deviation of returns on the weekly stock price index to capture the potential negative impact of uncertainty on investment.

In recent years, several factors appear to be inhibiting investment by domestically oriented firms. In the period after the Asian crisis the firm-level relationship between investment and fundamentals was relatively weak, lending support to the hypothesis of over-investment. In the postcrisis period, however, a much stronger link has emerged, with the relative importance of different factors varying based on firm characteristics (Table 3.3):

- Expectations of future profitability are significant drivers of investment spending for most firms in the NIEs and, to a lesser extent, Japan. In these economies, relatively lower returns on investment by small firms and in the service sector may be contributing to the unbalanced composition of investment.

  In the NIEs and in Japan, inadequate access to external finance is a binding constraint on investment for small and domestically oriented firms. Despite significant progress in financial restructuring since the Asian crisis, a legacy of excess leverage and dependence on debt financing continues to hold back investment for some firms (Figure 3.10). By necessitating repayments regardless of

[10] These physical stocks of infrastructure do not adjust for quality differences across countries, but are preferable as indicators of infrastructure services to expenditure-based measures, which often capture other categories of spending (Pritchett, 1996).

[11] Greater use of telephones (particularly mobile phones) is increasingly seen as an important facilitator of business activities. For an example of how the spread of mobile telephones has enhanced price discovery, eliminated waste, and enhanced efficiency in a specific industry, see Jensen (2007) on the impact of cell phones on the fisheries industry in Kerala, India.

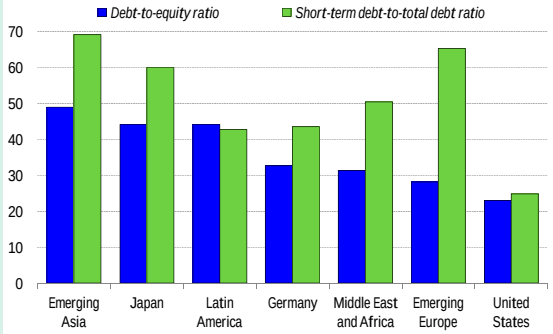
[12] See chapter Appendix 3.1 for details.

Table 3.3. How Would an Improvement in Fundamentals Affect Investment in Asia?

Drivers	Region	Type of firm	Effect on investment
10 percent increase in profitability	NIEs	Small firms	3 percent
	ASEAN-4	Large firms	2 percent
10 percent increase in external finance	NIEs	Domestically oriented; labor-intensive	2 percent
	Japan, ASEAN-4	Small firms; domestically oriented; service sector	2 percent
10 percent decrease in leverage	NIEs	Service sector	3 percent
	Japan	Small firms; domestically oriented; labor-intensive; service sector	2–5 percent
	ASEAN-4	Large firms; export oriented; manufacturing sector	4-6 percent
10 percent decrease in risk	NIEs	Service sector	4 percent
	Japan	Labor-intensive firms	3 percent
	ASEAN-4	Export oriented; manufacturing sector; capital-intensive firms	3–5 percent

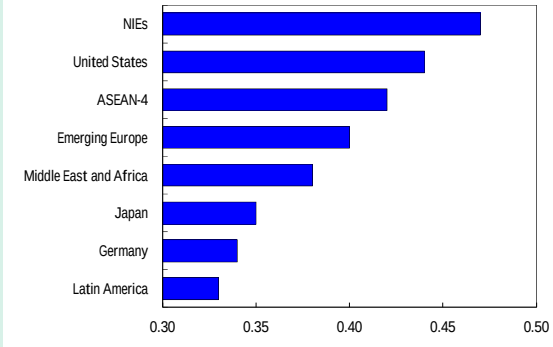
Source: IMF staff estimates.

Figure 3.10. Corporate Sector Leverage: 2000–08
(In percent)



Source: IMF, Corporate Vulnerability Utility Database.

Figure 3.11. Uncertainty: 2000–08
(Standard deviation of weekly stock price index)



Source: IMF staff calculation.

profitability, excessive debt financing can retard investment, particularly in longer-term and more risky projects. In the NIEs, such effects seem to be evident in the services sector. In Japan, they inhibit investment by smaller firms, nonexporters, and those using labor-intensive technology. The results suggest that greater reliance on equity could promote investment by such firms.

- Uncertainty also has powerful dampening effects on investment in the services sector in the NIEs and labor-intensive firms in Japan. In part, the effect of uncertainty may reflect the close integration of these economies with global markets and their associated susceptibility to global shocks (Figure 3.11). In addition, with greater competition at each step of the supply chain, firms are possibly less able to adjust markups procyclically and use them as buffers against external shocks. This may have made them more cautious in their investment decisions than would have been the case previously.[13]

Overall, smaller, more domestically oriented, labor-intensive, and service sector firms in the NIEs and in Japan have faced stronger headwinds to their investment compared with larger, exporting, capital-intensive, and manufacturing firms. These headwinds are reflected in the greater sensitivity of their investment to profitability, internal funding, leverage and risk, as well as the generally lower improvement in these indicators relative to larger, exporting, capital-intensive, and manufacturing firms since the Asian crisis (Table 3.4).[14]

[13] Linden, Kraemer, and Dedrick (2009) illustrate the supply chain of the iPod and demonstrate how Asian firms capture very little of the value added at each stage compared with the share garnered by the U.S.-based providers of the intellectual capital behind the product, suggesting limited profit margins in the Asian segments of the chain.

[14] In the case of the ASEAN-4, financing constraints are found to be even more binding and applied across a broader range of firms, while detrimental effects of leverage and risk

(continued)

Moreover, these headwinds appear to be specific to the region and do not affect firms in other emerging and advanced economies to the same extent.

- In other emerging economies, investment is less affected by risk or capital structure. The detrimental effects of uncertainty and the overhang of debt were less pronounced than in Asia reflecting, respectively, the relatively more open nature of Asian economies, and the relatively heavier reliance of Asian firms on short-term funding.

- Outside the region, financing constraints and leverage do not have as dominant a role in advanced economies with well-developed capital markets. German firms operating in a similar bank-oriented financing environment as firms in the NIEs and Japan display much the same cross-sectional pattern in financing constraints. However, there is less evidence in recent years of financing constraints or detrimental effects of debt financing in the case of firms in the United States and United Kingdom, partly reflecting more diverse sources of funding for small companies, including bond markets, equity funding, and venture capital.

D. Policy Implications: How Can Asia Facilitate Rebalancing Through Investment?

To help rebalance Asia's economies, private investment needs to be raised in some cases, such as the ASEAN-4, while in other economies, such as Japan and the NIEs, it needs to be reconfigured toward domestically oriented sectors. At the same time, the region's pressing infrastructure needs are a constraint on private investment and growth and will have to be addressed urgently. This section discusses potential policy responses to meet these challenges suggested by the econometric results and best practices for funding infrastructure investments based on cross-country evidence.

were mostly concentrated in larger firms and the export sector.

Table 3.4. NIEs and Japan: Changes in Fundamentals, 1990–97 versus 2000–07 by Firm
(Median)

	NIEs			Japan		
	1990–97	2000–07	Percent change	1990–97	2000–07	Percent change
Small						
Tobin's *Q*	2.9	2.1	–28.0	3.2	1.5	–52.7
Cash flow-to-capital stock	0.2	0.2	11.9	0.1	0.1	2.9
Debt-to-assets	18.4	18.8	2.2	28.6	19.9	–30.1
Uncertainty	0.3	0.5	42.1	0.3	0.4	8.3
Large						
Tobin's *Q*	2.5	1.9	–24.6	2.5	1.7	–30.7
Cash flow-to-capital stock	0.1	0.2	94.0	0.1	0.1	4.1
Debt-to-assets	41.8	26.4	–36.9	36.1	22.4	–37.8
Uncertainty	0.4	0.4	22.5	0.3	0.3	13.3
Services						
Tobin's *Q*	2.8	1.9	–30.1	4.5	1.7	–62.7
Cash flow-to-capital stock	0.1	0.2	36.0	0.1	0.1	4.3
Debt-to-assets	24.8	21.4	–13.8	30.8	20.3	–34.0
Uncertainty	0.3	0.5	36.7	0.3	0.3	10.7
Manufacturing						
Tobin's *Q*	2.6	1.9	–27.9	2.6	1.6	–39.4
Cash flow-to-capital stock	0.1	0.2	34.7	0.1	0.1	4.2
Debt-to-assets	32.7	23.9	–26.9	35.0	22.0	–37.1
Uncertainty	0.4	0.4	25.6	0.3	0.3	3.7
Domestic						
Tobin's *Q*	3.1	1.9	–39.2	3.4	1.5	–56.0
Cash flow-to-capital stock	0.2	0.2	–18.4	0.1	0.1	2.1
Debt-to-assets	19.8	23.6	19.4	30.2	20.4	–32.4
Uncertainty	0.3	0.5	48.0	0.3	0.3	7.8
Exporters						
Tobin's *Q*	2.6	2.1	–19.5	2.7	1.8	–36.1
Cash flow-to-capital stock	0.1	0.2	46.6	0.1	0.2	3.9
Debt-to-assets	31.3	22.2	–29.0	34.4	22.4	–34.9
Uncertainty	0.4	0.5	30.7	0.3	0.3	10.6
Labor-intensive						
Tobin's *Q*	3.4	2.5	–27.2	3.5	1.8	–48.6
Cash flow-to-capital stock	0.2	0.2	9.2	0.2	0.2	10.4
Debt-to-assets	22.2	18.5	–16.9	27.9	19.3	–30.9
Uncertainty	0.3	0.5	39.3	0.3	0.3	15.2
Capital-intensive						
Tobin's *Q*	2.4	1.7	–27.1	2.5	1.5	–40.9
Cash flow-to-capital stock	0.1	0.2	51.0	0.1	0.1	3.3
Debt-to-assets	32.5	26.5	–18.6	38.6	24.1	–37.7
Uncertainty	0.4	0.5	30.8	0.3	0.3	2.3

Source: IMF staff estimates.

Policies Suggested by Empirical Results

The empirical results presented in this chapter suggest that policies to boost private investment could focus on four broad areas: (i) increasing the returns on investment; (ii) improving access to external financing to reduce the cost of capital,

especially for smaller and domestically oriented firms; (iii) reducing excess leverage and promoting SME restructuring to create space for new investment; and (iv) strengthening risk management and bolstering the business climate to reduce uncertainty.

First, raising the rate of return on investment will be important.

- *In some parts of the region, the tax code is an obvious candidate,* since taxes raise the bar for investment to be profitable and fall especially hard on capital-intensive industries. Japan, for instance, has among the highest average and marginal effective corporate tax rates (AER and MER) in the Organisation for Economic Co-operation and Development (OECD) (Figure 3.12).[15] Lowering the corporate tax rate may be an effective strategy for reducing distortions and boosting domestic and foreign investment. Accelerating depreciation allowances for industrial buildings, which are the lowest among the G-7, and extending corporate tax-loss carry forwards to allow firms to recoup some of the losses incurred in the early years of large investments may also help (IMF, 2010a).[16] Elsewhere, such as in Korea where effective tax rates are already low by OECD standards due to generous tax exemptions, changes in taxation are likely to have a relatively more modest impact.[17]

- *On the other hand, tax incentives are unlikely to be cost-effective.*[18] Their key weaknesses include costliness, scope for abuse by taxpayers, lack of transparency, introducing distortions into business decisions, and ineffectiveness, relative to other measures, in reaching intended goals. Instead, international evidence suggests that establishing a simple, credible, broad-based and transparent corporate tax regime may be a better strategy for creating an environment conducive for investment (Botman, Klemm, and Baqir, 2008).

Second, improving access to external financing would lower the cost of capital for smaller businesses and firms in the nontradable sectors. Problems faced by SMEs in accessing financing typically reflect an incomplete range of financial products, regulatory rigidities, gaps in the legal framework, and information asymmetries between financiers and firms. Possible strategies to mitigate these effects include:

- *Deepening and broadening financial systems.* Only Korea and Malaysia have sizable corporate bond markets among emerging economies in the region, while the rest rely on relationship-based financing through banks (Figure 3.13). Encouraging corporate bond market development would help open up additional channels for funding (IMF, 2007).

- *Improving the financial infrastructure for smaller and more service-oriented firms* by encouraging more lending on risk-based terms; reforming collateral laws to allow a wider range of securitization (beyond real estate and other fixed assets), as is being done in Japan through a program accepting inventories and accounts receivables as collateral; and deepening credit information and extending the coverage of credit registries. The latter was

[15] The average effective rate (AER) is the proportion of lifetime pretax profit that is taken in tax and is an important determinant of the location of investment. The marginal effective tax rate (MER) is the difference between the before- and after-tax returns on a project that an investor finds just worthwhile, and affects the desired level of investment.

[16] Buildings are subject to straight line depreciation only, with a much longer useful tax life than elsewhere (50 years against, for example, 39 years in the United States). Japan currently allows for a seven-year carry forward period, compared with 20 years in the United States.

[17] A wide range of incentives are currently provided under the special tax treatment and control law of 1999. Moreover, the literature suggests that tax effects on investment may be secondary if other factors, such as the quality of governance, regulatory framework, infrastructure, macropolitical stability, and labor market conditions, are problematic. See Norregaard and Khan (2007) for a review.

(continued)

[18] Among others, see Zee, Stotsky, and Ley (2002) for a survey of the evidence.

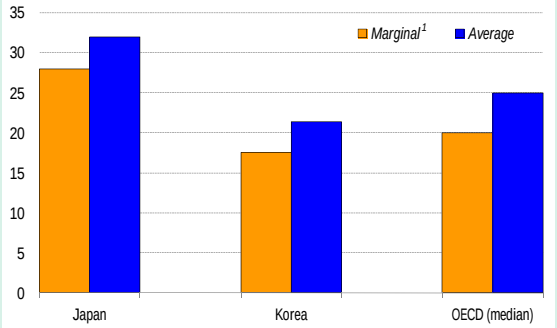
initiated in the Philippines through the establishment of the Credit Information Corporation in 2008.

- *Widening the pool of venture capital funding available for start-ups in new emerging sectors.* Targeted tax breaks or allocating a larger share of the public pension funds to venture capital investments could support the industry, which is relatively underdeveloped, even in advanced parts of Asia (Figure 3.14).[19] More funding could also be drawn in by providing information on venture capital investment performance and developing performance benchmarks on emerging equity exchanges (such as JASDAQ in Japan).[20]

Third, reducing leverage and improving incentives for corporate restructuring will help create space for new investment.

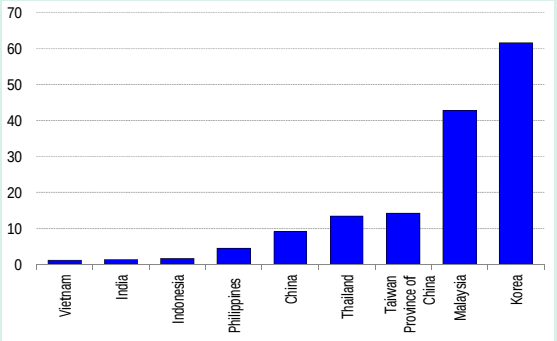
- *As the global recovery firms up, restructuring could be promoted by phasing out credit guarantees.* Significant progress has been made on corporate and financial restructuring over the last decade, but smaller companies have tended to fall behind (IMF, 2006a, 2006b). This partly reflects the still-sizable credit guarantees for SMEs, which can limit their incentives for restructuring and create an entry barrier by making it difficult for many newer firms to access bank credit (McKinsey, 2000).[21] In Korea, for instance, banks tend to direct loans to existing and well-established

Figure 3.12. Effective Corporate Tax Rates in OECD
(In percent)



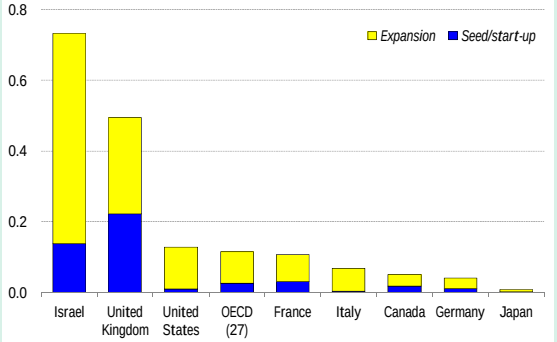
Sources: Institute for Fiscal Studies; and IMF staff estimates.
[1] Plant and machinery, and equity financed.

Figure 3.13. Selected Asia: Size of the Corporate Bond Market, 2009
(In percent of GDP)



Sources: Asian Development Bank; and Bank for International Settelements.

Figure 3.14. Selected Advanced Economies: Venture Capital Investment
(In percent of GDP)



Source: OECD, 2008.

[19] In Japan, for instance, the Government Pension Investment Fund does not undertake any alternative investments such as venture capital, real estate, and private equity. By contrast, a number of OECD countries allocate some share of their assets to such investments, including California Public Employees' Retirement System (14 percent) and New Zealand Superannuation Fund (11 percent). See also IMF (2010c).

[20] In the United States and Europe, VentureOne and Thomson Financial store information on start-ups—including profitability and investment flows—regularly used by venture capitalists and institutional investors.

[21] Uesugi, Sakai, and Yamashiro, 2006 suggest that credit guarantees can lead to a significant increase in leverage and

(continued)

do not translate into efficiency gains in the case of high-risk firms.

SMEs that have secured credit guarantees, since most of the associated default risk is borne by the government. While these guarantees declined from 8 percent of GDP in 2001 to about 6 percent in 2005, they remained almost thirty times larger than in the United States.[22] Over the longer term, attention should shift away from relying on guarantees to addressing the root cause of SMEs' limited access to credit. Improvements in the financial infrastructure can improve credit availability, including by expanding credit information sharing, allowing the securitization of movable assets, and developing venture capital markets for SMEs (Beck and Demirgüç-Kunt, 2006).

- *Assisting the exit of nonviable companies would also help,* including through out-of-court workouts and further reforms to streamline bankruptcy procedures. Combined with reforms to the public support system, these measures could jumpstart a market for private-led restructuring of distressed SMEs, similar to what took place for large enterprises after the Japanese banking crisis in the 1990s. In the same vein, after the Asian crisis, the Korea Asset Management Corporation successfully created a market for distressed Korean corporate debt by purchasing NPLs from banks and repackaging them for eventual sale to investors.[23] A similar restructuring and consolidation of the SME sector might be accomplished by promoting asset management companies that specialize in repackaging distressed debt of small firms.

Fourth, reducing uncertainty would help lower the risks associated with long-term investment decisions. The empirical results suggest that investment decisions can be affected by uncertainty about many aspects of the operating environment, such as demand, prices, costs, and exchange rates. In addition, risk related to policies, notably the tax code and other business regulations, could deter private investment. Options to address this include:

- *Promoting the use of financial instruments to manage risks.* Even in relatively advanced parts of the region, international comparisons suggest that large exporters tend to underinsure against credit, commodity, and marketable security price risk. SMEs undertake much less hedging in general (Heaney and others, 1999).

- *Further improvements to the perceptions of the ease of doing business.* While the structural reforms implemented since the Asian crisis have potentially made a substantive difference in the region's investment climate, it appears that perceptions have not yet caught up with the new reality. Surveys suggest that a streamlined process for business creation, greater labor market flexibility, an improved legal and regulatory framework for entrepreneurs and bankruptcy, and a more transparent tax system could help reduce investor perceptions of risk in many parts of the region (Guimaraes and Unteroberdoerster, 2006; and IMF, 2008b). Ongoing efforts in these areas—the adoption of a competition law in Hong Kong SAR, the lowering of restrictions on foreign investment in the services sector in Malaysia, the establishment of one-stop shops to reduce administrative delays in Indonesia and Malaysia—could make it more attractive for companies to expand operations domestically rather than overseas.

Meeting Infrastructure Needs

Government financing and provision of infrastructure may not be sufficient to meet the growing needs of the region. Over the next decade, emerging Asia's total infrastructure needs are estimated to be in the vicinity of US$7.5 trillion (AsDB, 2009). While several governments across the region have stepped up their allocation to infrastructure as part of crisis-

[22] More recently, credit guarantees have increased significantly across the region as part of the policy response to the crisis (see Box 1.7 in IMF, 2009a).

[23] See Kang and Kim (2006).

induced stimulus packages, their ability to sustain elevated levels of investment in roads, telecommunications, and electricity in the years ahead may be limited by other demands on their budgets, shrinkages in fiscal space, and diminishing tolerance of bond investors for rising sovereign expenditure.[24]

Public-private partnerships offer an alternative provision mechanism, but effective design of these vehicles calls for coordinated action on many fronts. Historically, the provision of infrastructure has been almost entirely in the public domain in Asia and elsewhere, including in advanced economies. As pressures on government budgets have intensified worldwide, more attention has been paid to hybrid public-private forms of provision. The projects initiated under this organizational form offer some important lessons for the design of future public-private partnerships:

- The Theun Hinboun hydropower project implemented jointly by Thailand and Lao PDR between 1994 and 1998 has turned out to be highly profitable (AsDB, 2009). Potential time inconsistency and hold-up problems (which may arise in instances where firms are asked to sink capital into a multiyear project, but then are subsequently exposed to midcourse changes in tariff or tax policies) were solved by the Lao PDR government committing to meet its obligations under a 30-year license, backed up by the establishment of an offshore escrow account pledged to the investors in the project.

- The new international airport terminals at Delhi and Mumbai have been financed through a joint venture with 74 percent private consortium equity. Construction began in 2006 and is nearing completion in both cities. Regulatory uncertainty has been mitigated by having a dedicated regulator with sole legal jurisdiction over the projects. The new Airports Economic Regulatory Authority is focused entirely on monitoring services at the airports and has laid out clear ex ante guidelines on pricing and cost pass-through and the quality of services.

- A general principle in public-private partnerships is that optimal risk sharing involves allocating the burden of a particular risk to the entity best placed to bear it. Construction and operating risks are best borne by the private concessionary while the government entity bears the political and regulatory risks (Akitoby, Hemming, and Schwartz, 2007). A transparent sharing of risks along these lines can minimize delays, cost overruns, and funding disruptions. At the same time, the delineation of risks may be blurred if, for example, the government guarantees the debt raised by the private entity. In such instances, a clear accounting of the contingent fiscal risk will help anchor expectations and align sovereign borrowing costs more closely with fundamentals.

Measures to unlock savings and channel them into targeted infrastructure investment funds may help meet some of the funding shortfall. An innovation under consideration in India is the establishment of dedicated funding intermediaries with well-defined capital adequacy norms that can issue tax-free infrastructure bonds and tap into pension and insurance fund holdings. This will help overcome the problems of a bank-heavy funding structure where banks typically encounter an asset-liability mismatch when they lend long term to infrastructure projects, but rely largely on short-term wholesale funding and retail deposits.

[24] The disconnect between infrastructure finance needs and government ability to raise funding through general tax revenue is already acute in developing and emerging market contexts. Because the tax base tends to be narrower than in advanced economies, the marginal cost of generating additional revenue is likely to be relatively high (Swaroop, 1994).

E. Summary

Looking ahead, a strategy for rebalancing growth in Asia will have many dimensions. One such dimension is the level and composition of investment. In some economies, such as the ASEAN-4, investment appears to be low relative to the level of development. In other parts of the region, such as Japan and the NIEs, the composition of investment is skewed toward export-oriented, capital-intensive firms in the manufacturing sector to the detriment of domestically oriented, labor-intensive firms in the services sector.

The pattern of investment could be influenced by financial reforms and improvements in infrastructure. In Japan and the NIEs, increasing investment by smaller, domestically oriented firms would help rotate the composition of investment toward nontradable sectors and promote rebalancing. Policies likely to advance this objective include promoting risk-based financing, SME restructuring through the reform of bankruptcy laws, and streamlining tax codes and regulations. In the ASEAN-4 economies, where the main concern is the overall level of investment, improvements in infrastructure could also help crowd in private investment and lift potential growth. How Asia adjusts to the postcrisis world of reduced external demand depends crucially on whether the region's economies create conditions conducive to investment-led rebalancing.

Appendix 3.1. Firm-Level Analysis

The data used in the empirical analysis include all listed nonfinancial firms in our selected jurisdictions covered in the Worldscope database during the period 1989–2008. The Worldscope database is well known for its standardized presentation of global investment portfolios and its good coverage of historical data. The database covers more than 96 percent of the world's market value represented by it. One important advantage of using the database is that it provides standardized data for countries with different reporting practices, yielding relatively more reliable cross-country comparisons. Several firms entered the data set after 1995, implying somewhat shorter series for them. Outliers were excluded from the analysis based on standard criteria.

The company-specific variables included are those that potentially affect firm-level investment decisions, as suggested by the standard model of investment outlined in Chapter I. These variables are obtained primarily from cash flow statements and include expected future profitability (Tobin's *Q*), cash flow, sales growth, leverage (defined as total debt to total assets) and uncertainty (measured as the standard deviation of returns on the weekly stock price index for the firm). The capital stock measure was estimated using the standard perpetual inventory method, with the net book value of plant, property, and equipment was treated as the starting value, and subsequent values determined using data on investment, disposals, and acquisitions.

Incorporating the standard adjustments for debt, Tobin's *Q* is defined as:

$$Q_{it} = \left[\frac{V_{it} + B_{it} - C_{it}}{p_t (1-\delta) K_{i,t-1}} \right] \quad (1)$$

where V is the firm's fundamental value or the expected present discounted value of future payments to shareholders; B is the book value of its outstanding debt; C is current assets; p is the price of the investment good; δ is the capital depreciation rate (assumed to equal 8 percent); and K is the replacement value of the firm's capital stock.

Model

The firm-level panel data were used to estimate the standard neoclassical investment model, which relates current investment to expectations of future profitability through Tobin's *Q* ratio, augmented by additional factors. The model estimated can be expressed as follows:

$$\Delta\left(\frac{I}{K}\right)_{it} = c_t + b\Delta Q_{it} + c\Delta Z_{i,t} + \Delta\varepsilon_{it} \qquad (2)$$

where I/K is the investment rate, Q is Tobin's Q,[25] and Z is a vector of additional variables.

The models were estimated using a GMM approach to allow for endogeneity and measurement error in the dependent variables. Estimation was in first-differences and included year dummies, to control for firm-and time-specific effects. This approach yields consistent estimates provided there is no higher-order serial correlation in the residuals and the instruments are valid.[26] Diagnostic tests were used to verify these conditions.[27]

Table 3A.1. Selected Financial Indicators for Firms
(Median)

	Selected Asia			Nonregional comparators[1]					
	ASEAN-4	NIEs	Japan	United States	United Kingdom	Germany	Emerging Europe	Middle East and Africa	Latin America
Investment Rate									
1990–97	0.19	0.17	0.14	0.15	0.14	0.18	...	...	...
2000–07	0.10	0.11	0.09	0.12	0.11	0.11	0.16	0.15	0.12
Profitability (in percent)									
Operating margins[2]									
1990–97	11.14	7.14	4.16	7.17	6.56	0.33	...	...	...
2000–07	6.23	5.05	4.42	5.63	5.29	1.95	5.07	7.66	10.54
Valuation									
Tobin's Q									
1990–97	3.35	2.76	2.98	3.11	2.38	2.06	...	...	...
2000–07	2.00	2.07	1.73	3.35	2.39	1.82	2.67	2.39	1.94
Liquidity									
Current ratio[3]									
1990–97	1.25	1.27	1.36	1.93	1.35	1.75	...	...	...
2000–07	1.55	1.54	1.44	1.86	1.27	1.59	1.42	1.37	1.40
Capital intensity									
Capital-labor ratio									
1990–97	43.63	94.52	163.09	38.23	20.55	42.23	...	...	...
2000–07	31.66	68.16	113.38	57.88	32.46	58.53	46.23	24.98	76.48
Leverage (in percent)									
Debt to equity									
1990–97	66.63	63.13	88.57	49.49	38.46	55.60	...	...	...
2000–07	43.59	41.13	42.49	41.02	39.85	51.14	29.67	42.08	50.72
Short-term debt to total debt									
1990–97	68.48	56.73	47.52	14.96	48.41	48.33	...	...	...
2000–07	65.05	68.00	59.02	13.88	35.21	41.07	63.58	45.85	38.59

Sources: Worldscope; and IMF staff calculations.

[1] Emerging Europe includes Czech Republic, Hungary, Poland, Russia, and Turkey. Middle East and Africa includes Israel, Egypt, Morocco, Pakistan, and South Africa. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

[2] Operating earnings (EBIT) in percent of sales.

[3] Current assets to current liabilities.

[25] Defined as the ratio of the stock market valuation of the firm to the replacement cost of its capital stock.

[26] The instruments reported are lagged values of the dependent variable and our regressors, but results were robust to using alternative instrument sets.

[27] The models were assessed based on tests for serial correlation (m1 and m2) and instrument validity (Hansen).

Table 3A.2. Investment Equations, Full Sample (1991–2008)[1, 2]

	ASEAN-4	NIEs	China	India	Emerging Europe	Middle East and Africa	Latin America	Japan
Tobin's *Q*	0.010	0.012 **	–0.011	–0.000	0.010	0.015 **	0.004	0.007 **
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Liquidity[3]	0.150 **	0.006	–0.009	0.205 **	0.119 **	0.051 *	0.247 **	0.012
	(0.07)	(0.03)	(0.10)	(0.08)	(0.05)	(0.03)	(0.06)	(0.04)
Leverage[4]	0.000	–0.001	0.001	0.001	–0.000	0.000	–0.001	–0.002 **
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Uncertainty[5]	–0.127 **	–0.119 **	–0.044	–0.065	0.111	–0.048	–0.050	–0.062 **
	(0.06)	(0.05)	(0.15)	(0.14)	(0.11)	(0.07)	(0.06)	(0.03)
				p-value of specification tests				
m1	0.000	0.000	0.071	0.000	0.001	0.000	0.000	0.000
m2	0.283	0.407	0.329	0.804	0.488	0.186	0.156	0.196
Hansen-test	0.280	0.291	0.256	0.787	0.814	0.278	0.196	0.189
Number of firms	1505	3223	1066	513	410	451	566	2695
Number of observations	7481	14784	3527	2375	1610	2404	3528	10649

Sources: Worldscope; and IMF staff estimates.

[1] Dependent variable is investment rate. First-differenced GMM specifications, with lagged dependent variable and year dummies. Instruments are lagged values of regressors.

[2] Robust standard errors in parentheses, with * indicating significance at 10 percent and ** at 5 percent level.

[3] Cash flow-to-capital ratio.

[4] Debt-to-assets ratio.

[5] Standard deviation of return on weekly price index (annualized).

Table 3A.3. Asia: Investment Equations, Sub-Sample Analysis[1, 2]

ASEAN-4	Time period		Size		Market exposure		Capital intensity		Sector	
	Precrisis	Postcrisis	Big	Small	Foreign	Domestic	High	Low	Manufacturing	Services
Tobin's *Q*	0.027 **	0.004	0.011 **	0.002	0.006	0.015	0.013 **	0.019 **	0.006	0.010
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Liquidity[3]	–0.093	0.161 **	–0.003	0.169 **	–0.019	0.103 *	0.077 **	–0.033	–0.052	0.115 **
	(0.09)	(0.08)	(0.05)	(0.08)	(0.03)	(0.06)	(0.04)	(0.09)	(0.05)	(0.05)
Leverage[4]	0.002	–0.000	–0.003 **	0.001	–0.002 **	–0.001	–0.000	–0.000	–0.002 **	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Uncertainty[5]	0.203	–0.139 **	–0.034	0.065	–0.119 **	–0.050	–0.138 **	0.081	–0.083 *	0.022
	(0.13)	(0.07)	(0.07)	(0.08)	(0.04)	(0.07)	(0.06)	(0.06)	(0.05)	(0.07)
	p-value of specification tests									
m1	0.032	0.000	0.000	0.001	0.000	0.000	0.000	0.005	0.000	0.000
m2	0.269	0.199	0.836	0.454	0.839	0.995	0.708	0.895	0.548	0.633
Hansen-test	0.116	0.735	0.112	0.409	0.077	0.120	0.297	0.540	0.201	0.385
Number of firms	389	1375	753	809	654	851	1129	556	901	604
Number of observations	1040	6441	3572	3447	3884	3597	3838	1740	4590	2891
NIEs	Time period		Size		Market exposure		Capital intensity		Sector	
	Precrisis	Postcrisis	Big	Small	Foreign	Domestic	High	Low	Manufacturing	Services
Tobin's *Q*	0.005	0.010 **	0.018 **	0.010 **	0.015 **	0.007	0.017 **	0.008 *	0.019 **	0.010
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Liquidity[3]	0.171	–0.008	0.029	–0.000	0.039	0.140 **	0.054	0.097 **	0.046	–0.012
	(0.14)	(0.04)	(0.05)	(0.03)	(0.05)	(0.05)	(0.04)	(0.03)	(0.03)	(0.03)
Leverage[4]	0.009	–0.002	0.000	–0.000	–0.003 **	0.000	–0.001	0.002	–0.002	–0.002 *
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Uncertainty[5]	–0.049	–0.108 *	–0.129 *	–0.055	–0.156 **	–0.013	–0.038	–0.072	–0.085 *	–0.103 *
	(0.11)	(0.06)	(0.07)	(0.05)	(0.07)	(0.04)	(0.05)	(0.08)	(0.05)	(0.05)
	p-value of specification tests									
m1	0.074	0.000	0.001	0.000	0.000	0.000	0.005	0.015	0.000	0.001
m2	0.526	0.757	0.376	0.187	0.083	0.694	0.087	0.200	0.088	0.558
Hansen-test	0.505	0.512	0.161	0.259	0.173	0.550	0.272	0.396	0.275	0.873
Number of firms	607	3085	1622	1703	1695	1528	2182	1445	2137	1086
Number of observations	1634	13150	7110	6685	9531	5253	7657	4461	9966	4818
Japan	Time period		Size		Market exposure		Capital intensity		Sector	
	Precrisis	Postcrisis	Big	Small	Foreign	Domestic	High	Low	Manufacturing	Services
Tobin's *Q*	0.017 **	0.005 *	0.005 *	0.004	0.008 **	0.005	0.010 **	0.004	0.012 **	0.002
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Liquidity[3]	–0.179	0.045	0.012	0.089 *	–0.012	0.103 *	–0.019	0.103 **	0.038	0.092 *
	(0.13)	(0.04)	(0.05)	(0.06)	(0.04)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)
Leverage[4]	0.000	–0.002 **	–0.002 **	–0.002 **	–0.002 **	–0.001 *	–0.002 **	–0.002 **	–0.002 **	–0.002 **
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Uncertainty[5]	–0.033	–0.063 **	–0.072 **	–0.057	–0.054 *	–0.011	–0.088 **	–0.064 **	–0.042	–0.024
	(0.09)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
	p-value of specification tests									
m1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
m2	0.52	0.150	0.211	0.220	0.120	0.165	0.734	0.207	0.856	0.201
Hansen-test	0.344	0.267	0.185	0.625	0.131	0.852	0.322	0.271	0.253	0.916
Number of firms	356	2529	1244	1553	1014	1681	1371	1395	1635	1060
Number of observations	1256	9393	5298	4590	5102	5547	4869	4465	7029	3620

Sources: Worldscope; and IMF staff estimates.

[1] First-differenced GMM specifications, with lagged dependent variable and year dummies. Instruments are lagged values of regressors.

[2] Robust standard errors in parentheses, with * indicating significance at 10 percent and ** at 5 percent level.

[3] Cash flow-to-capital ratio.

[4] Debt-to-assets ratio.

[5] Standard deviation of return on weekly price index (annualized).

IV. Low-Income Countries and Pacific Islands

A. Introduction

Asian low-income and Pacific Island economies experienced a strong rebound during the first half of 2010. Growth was helped by macroeconomic stimulus and by strong global demand for commodities and garments. Looking ahead, however, many of these economies face important challenges, some of which are discussed in this chapter. A key priority for many low-income countries is fiscal consolidation, which, as discussed in Section B, will help to create space for much needed development spending and also reduce debt sustainability concerns that have increased in a few cases owing to high government deficits. To raise their growth potential and reduce vulnerabilities, several economies are undertaking important reforms. Sections C and D focus on the outlook and challenges in Sri Lanka and Mongolia, respectively. Meanwhile, several Pacific Island countries will need fiscal reforms to cope with an expected reduction of overseas assistance during the next decade, and Section E discusses the cases of the Marshall Islands, Micronesia, and Palau.

B. Postcrisis Fiscal Adjustment in Asian Low-Income Countries

Fiscal positions in Asian low-income countries (LICs) deteriorated significantly during the global crisis, largely reflecting surges in expenditure.[1] Although governments in Asian LICs (apart from Vietnam) in general did not spend much on temporary stimulus measures, they did support the economy by increasing wages, improving safety nets, and accelerating development projects that were planned prior to the crisis. Widening fiscal deficits in these countries have raised debt sustainability concerns and pointed to the need for fiscal consolidation.

However, Asian LICs' fiscal challenges go beyond consolidation, as these countries also face large financing needs for development spending. To create fiscal space for development spending without damaging fiscal sustainability, Asian LICs need to enhance revenue mobilization and to improve expenditure efficiency. Revenue mobilization is of higher priority across Asian LICs that are stuck in a "low-revenue, low-expenditure" equilibrium. Improving efficiency is essential for those that have less scope for enhancing revenues, and for commodity exporters that face volatile revenues and are more likely to suffer from procyclical fiscal policies.

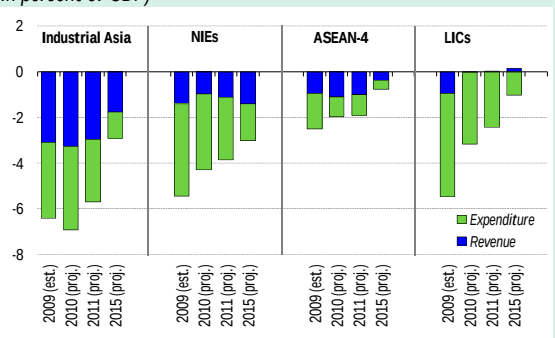
On average, Asian LICs' fiscal deficit as a share of GDP widened by more than 5 percentage points in 2009 relative to precrisis levels, close to Newly Industrialized Economies (NIEs) but more than in the ASEAN-4 (Figure 4.1). The only exception was Bangladesh, whose fiscal deficit narrowed in 2009 due to capacity constraints in implementing the budgeted expenditures.

The higher deficit among Asian LICs resulted mainly from higher expenditure. With robust growth during the crisis and relatively narrow tax bases (few taxes are related to volatile asset prices), Asian LICs on average did not suffer as large a collapse in revenue-to-GDP ratios as industrial and emerging Asia (Figure 4.2). On the

Note: The main authors of this chapter are Ran Bi and Svitlana Maslova (section B), Brian Aitken (section C), Steven Barnett, Julia Bersch, and Yasuhisa Ojima (section D), and Kiichi Tokuoka (section E).

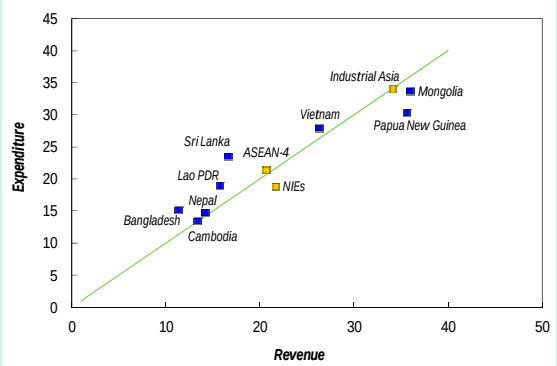
[1] The low-income countries (LICs) comprise Bangladesh, Cambodia, Lao PDR., Mongolia, Nepal, Papua New Guinea, Sri Lanka, and Vietnam.

Figure 4.1. Asia: Changes in Fiscal Balance Relative to Precrisis Level
(In percent of GDP)



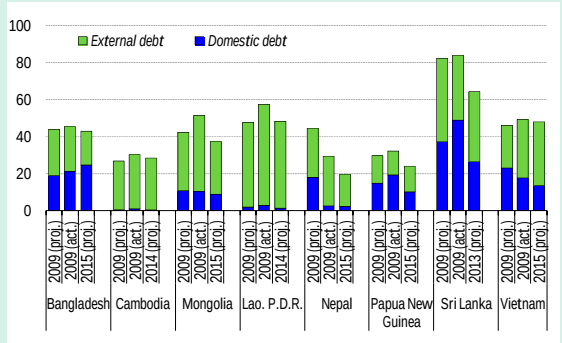
Source: IMF staff estimates.
[1] Changes in fiscal balances from pre-crisis levels are calculated as the difference from 2005-2007 average.

Figure 4.2. Asian LICs: Expenditure versus Revenue
(Average over 2005–08, in percent of GDP)



Source: IMF staff estimates.

Figure 4.3. Asian LICs: Public Debt[1]
(In percent of GDP)



Sources: National authorities; and IMF, *Debt Sustainability Analysis*, and staff projections.
[1] Projections for 2009 refer to those made before the global financial crisis.

other hand, expenditures (in percent of GDP) increased more significantly in Asian LICs than in other regional economies. A large part of the surge in expenditure was for planned projects that coincided with (but were unrelated to) the crisis (e.g., preparation for the Southeast Asian Games in Lao PDR; starting of liquefied natural gas projects in Papua New Guinea; and acceleration of postwar reconstruction spending in Sri Lanka). Although some of the one-off increases in expenditure would be reversed relatively easily, a large part of the increase in fiscal deficits is structural.

Fiscal deteriorations in Asian LICs have increased debt sustainability concerns in these countries. Most of the Asian LICs ended up with higher public debt ratios by end-2009 than envisaged before the crisis (Figure 4.3). Although external debt sustainability is not yet a problem in these countries, their external debt trajectories could enter an unsustainable path in the absence of decisive fiscal consolidation. Costly domestic financing, the need to rebuild government deposits, vulnerabilities in the financial sectors, external and exchange rate risks, and large contingent liabilities all point to the need for fiscal consolidation to maintain public debt sustainability. Based on staff estimates, apart from Bangladesh, Asian LICs need to narrow their fiscal deficits by about 3–5 percent of GDP from 2009 to 2015 to preserve debt sustainability. Bangladesh, though not facing the challenge of fiscal consolidation, needs to enhance both revenue and capital expenditures.

In the meantime, more development spending is needed in Asian LICs to improve both physical and human capital and reduce the gap with emerging Asia (World Economic Forum, 2009). What should Asian LICs do to meet both the financing needs for development and their fiscal consolidation targets?

- *Enhancing revenue.* Many Asian LICs, especially those with low revenue-to-GDP ratios, have begun another round of tax reforms mainly by

introducing or reforming value-added taxes (VAT) and strengthening tax administration (Bangladesh, Cambodia, Nepal, Lao PDR, Sri Lanka, and Vietnam) (Table 4.1). In past tax reforms, some countries have been more successful than others. One successful example is Vietnam, which has increased its tax yield from an average of about 20 percent of GDP during 2001–04 to an average of 24 percent of GDP during 2005–08. Since 2005, Vietnam has reformed its tax policies by improving the design of the corporate income tax, the VAT, and the personal income tax. In the meantime, tax administration has been strengthened by introducing a new law, reorganizing the General Department of Taxation based on tax administration function, replacing the traditional system of administrative assessment with a self-assessment system, and upgrading both information technology systems and staff training. Another example is Nepal, where domestic revenue increased by about 4 percent of GDP from 2005/06 to 2008/09, largely driven by reforms in customs administration and the Inland Revenue Department (IRD). The authorities have developed a comprehensive reform strategy for the customs department, and have embarked on a range of measures to curb tax evasion, broaden the tax base, and improve the audit function of the Large Taxpayers Office, as well as of the IRD in general.

- *Strengthening fiscal discipline and improving expenditure efficiency.* Fiscal discipline can be strengthened by adopting a medium-term fiscal framework or a fiscal rule. These fiscal institutions are particularly important for commodity exporters, which tend to face volatile and uncertain revenues and are more likely to suffer from procyclical fiscal policies. For example, in Mongolia, pressures appear to be building to increase spending, on account of surging mineral revenues, although the recent passage of a fiscal responsibility law that includes numerical rules will help contain these pressures and promote fiscal discipline. Expenditure efficiency gains can be achieved by containing real growth in primary current expenditure (e.g., wage bills), reprioritizing projects (e.g., by exiting from low quality projects or collaborating with the private sector), and tightening poorly targeted subsidy schemes. Finally, expenditure policies could be underpinned by public financial management (PFM) reforms. Several Asian LICs have started to undertake PFM reforms. Vietnam, for example, is expected to approve a new State Budget Law to align fiscal reporting and accounting with international standards, institute medium-term planning, introduce performance budgeting, and reduce overlap of budgetary responsibilities between various levels of government. Cambodia also launched PFM reforms, and has made substantial progress over the last five years in moving toward a medium-term expenditure framework and improving cash management. It has now entered the second stage of PFM reforms, focusing on strengthening budget integration, improving fiscal monitoring and reporting, and reinforcing controls over payroll and procurement.

Table 4.1. Asian LICs: Planned and Ongoing Fiscal Reforms

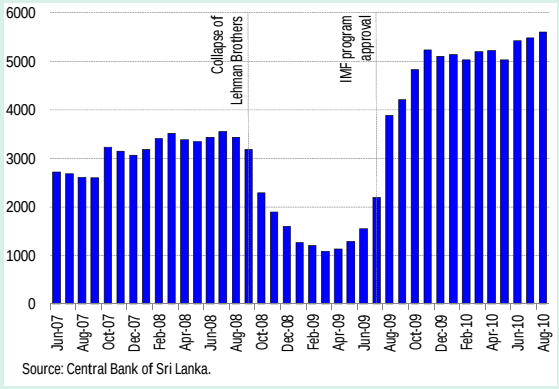
	Bangladesh	Cambodia	Lao PDR	Nepal	Sri Lanka	Vietnam
Revenue Side						
VAT introduction or reform	X	X	X		X	
Income tax reform	X				X	
Excises reform		X				
Investment tax reform					X	
Trade tax reform					X	
Tax administration reform		X	X	X	X	X
Expenditure Side						
Review wage bills/allowances		X				
Reprioritize development projects			X			X
Reduce/eliminate subsidies				X	X	
Reduce recurrent expenditure					X	
Public Financial Management	X	X	X	X		X

Source: National authorities.

C. Sri Lanka: At a Crossroads

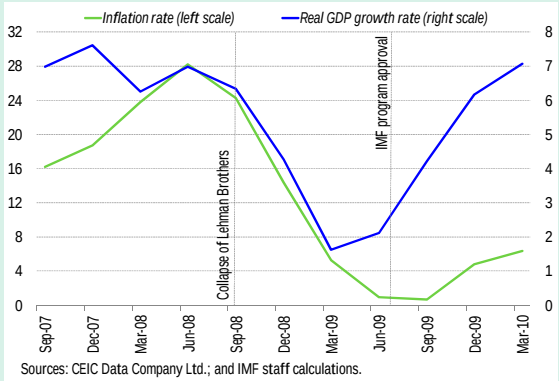
The three-decade war distorted economic policy, hindered development, and reduced Sri Lanka's growth potential. Carrying out a national, integrated investment strategy proved very difficult with the country in a persistent state of conflict—infrastructure suffered, and political uncertainty and security concerns held back private domestic and foreign investment. In an effort to offset these concerns, the government relied on sweeping tax concessions to attract investment, resulting in an erosion of the tax base and chronically high budget deficits financed in large part by external borrowing. The tax system became increasingly ad hoc and distorted, with a narrowing portion of economic activity taxed at high rates. Public debt grew to unsustainable levels as security and interest expenditures increased, with the resulting debt dynamics raising the risk of ultimate debt distress.

Figure 4.4. Sri Lanka: Gross Official Reserves
(In millions of U.S. dollars)



Source: Central Bank of Sri Lanka.

Figure 4.5. Sri Lanka: Inflation and GDP Growth
(Year-on-year, in percent)



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

As a result, the country was left with few policy options to manage the unfolding global crisis. In the face of a sudden reversal in capital flows at the end of 2008 and heavy intervention by the central bank to maintain the de facto peg, foreign exchange reserves fell to dangerously low levels by March of 2009 (Figure 4.4). Inflation was successfully brought under control through tight monetary policy, but as expected this resulted in a slowdown of output growth and a surge in banks' nonperforming loans, compounded by a decline in exports as global demand weakened in 2009 (Figure 4.5). Budget revenues remained weak and the deficit high.

Short-term vulnerabilities eased significantly following the end of the war in May and the approval of the IMF program in July 2009. A sharp increase in foreign investor enthusiasm led to large and persistent capital inflows. Remittances also increased, and exports began to rebound. The central bank responded by aggressively purchasing foreign exchange to prevent an appreciation of the rupee, boosting reserves to historically high levels.

With the end of the war and the crisis averted, future growth prospects have improved markedly. But the country is now at a crossroads, and significant near- and medium-term macroeconomic challenges need to be addressed if Sri Lanka is to take full advantage of the current favorable environment. First, fundamental tax reform is needed to simplify the existing system, broaden the tax base, spread the tax burden more equitably, and support economic growth, all while boosting the revenue-to-GDP ratio. The resulting fiscal space would allow increased public capital spending on reconstruction and infrastructure as well as social spending. But higher growth potential requires investment significantly higher than historical levels, and it is clear that these investment needs cannot be met through the government budget alone. Private-sector investment needs to play a critical role. To foster

this investment, policies will need to be geared toward preserving macroeconomic stability, ensuring external competitiveness, facilitating capital market development, and improving the investment climate. These challenges are intertwined and cross-cutting, but each is focused on the ultimate goal of restoring and boosting further Sri Lanka's growth potential over the medium term.

D. Mongolia: A Remarkable Turnaround

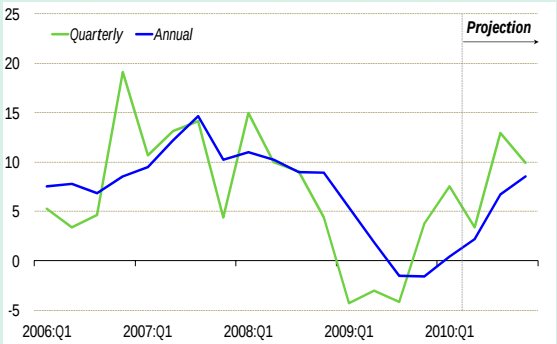
The global financial crisis pushed the Mongolian economy to the verge of economic collapse early last year, with international reserves plummeting and the government running low on cash to finance the budget. Now, the economy is set to grow by 8 percent this year, international reserves have reached an all time high, and fiscal policy has been put on sound footing (Figure 4.6). What explains this remarkable turnaround?

The first and foremost factor behind the turnaround is the authorities' strong policy implementation in the wake of the crisis. Their IMF-supported program aimed to stabilize markets and put the economy on a strong, sustainable, and equitable growth path. Their strategy centered on the following:

- *Flexible exchange rate*. In early 2009 the authorities implemented a flexible exchange rate regime with central bank intervention limited to a transparent twice-weekly auction. This regime was buttressed by an upfront 400 basis-point hike in the policy interest rate, which calmed markets and helped stabilize capital flows.

- *Healthier public finances*. A large fiscal adjustment in 2009 was achieved mainly through a reprioritization of spending. The fiscal adjustment continued in 2010 and, aided by the rebound in copper prices and the economic recovery, the budget deficit is expected to fall to 2 percent of GDP.

Figure 4.6. Mongolia: Real GDP
(Year-on-year percent change)



Source: IMF staff calculations.

- Furthermore, parliament passed a comprehensive fiscal responsibility law that builds the foundation for lasting fiscal discipline and will help prevent a reemergence of boom-bust policies.

- *Protecting the poor*. Spending on the poor was protected during the fiscal adjustment, and social transfers actually increased during the program period. In addition, the authorities plan to soon introduce a targeted poverty benefit that will significantly strengthen the social safety net.

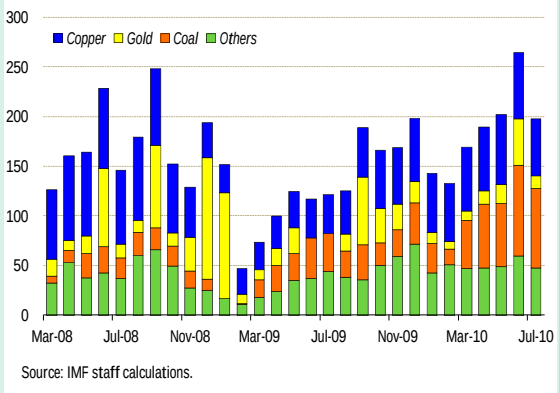
- *Bolstering the banking system*. Confidence in the system is being restored, and risks have been contained even as two important banks were put into receivership. A revised banking law was adopted that will strengthen the regulatory framework. A second piece of legislation to recapitalize banks has been submitted to parliament and banking supervision has been strengthened, including through the issuance of improved supervision regulations.

The IMF-supported program has provided confidence, financing, and breathing space for the authorities to adjust policies more gradually. It has also catalyzed significant financial contributions from the World Bank, the Asian Development Bank, the Japan International Cooperation Agency, and many other bilateral donors.

The success of the Mongolia program illustrates how the IMF has refocused its lending. The program's conditions were restricted to those areas necessary to return the country's economy to strong growth. The program also adjusted flexibly as economic circumstances evolved. For example, when growth in 2009 turned out to be weaker than expected, the fiscal deficit targets were loosened to support the economic recovery.

Strong demand from China and a rebound in copper prices, a key export for Mongolia, also contributed to Mongolia's rapid reversal of fortunes. Coal production has expanded rapidly this year, and coal exports are up 170 percent, while copper exports are up 80 percent driven largely by the recovery in global copper prices (Figure 4.7).

Figure 4.7. Mongolia: Mineral Exports
(In millions of U.S. dollars)



Source: IMF staff calculations.

The outlook for Mongolia's economy is extremely favorable. The signing of a landmark investment agreement in late 2009 to develop the Oyu Tolgoi mine—referred to by some as the biggest undeveloped copper-gold project in the world—has been a cornerstone for the development of Mongolia's substantial mineral resources. The development of other major projects, such as the massive Tavan Tolgoi coal deposits in southern Mongolia, is also under way. The economy is growing strongly and this ongoing development of the mineral sector points to a bright future.

The authorities' policy reforms have laid a solid foundation for managing the pending boom in the mineral sector and ensuring that Mongolia's substantial mineral wealth leads to a period of sustained economic growth that spreads prosperity to all Mongolians.

E. Fiscal Challenges for Compact Countries—Marshall Islands, Micronesia, and Palau

Many Pacific Island countries (PICs) face significant fiscal adjustment and reform challenges in the coming years. The need for these adjustments and reforms arises from many sources, including trade liberalization and declining overseas assistance. The latter is a concern especially for Marshall Islands, Micronesia, and Palau, as an important source of foreign aid that has greatly supported economic development in these economies in the past, the U.S. Compact grants, is expected to dry up within 15 years. This section focuses on these countries, and discusses the expenditure and revenue measures that are needed to ensure their long-term fiscal sustainability.

The Compact of Free Association (the "Compact") is a treaty between the United States and each of three Pacific Island countries—Marshall Islands, Micronesia, and Palau. The Compact entered into force in FY1986 in both Marshall Islands and Micronesia and in FY1994 in Palau.[2] Under the Compact, the United States controls defense and security matters in these countries. In exchange, the United States has committed to provide grants (Compact grants) through the end of the second Compact period, which is FY2023 for both Marshall Islands and Micronesia, and FY2024 for Palau.[3] Compact grants come in the form of budget support and federal services (e.g., postal).

[2] Fiscal year ending on September 30.

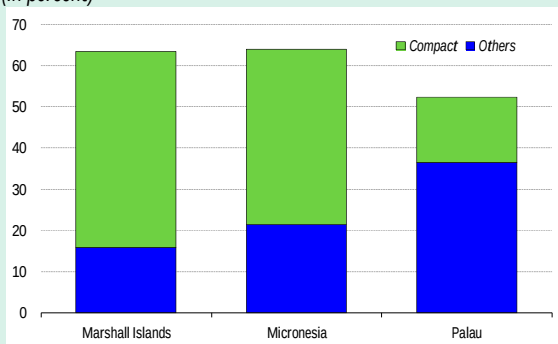
[3] The first Compact period ended in FY2003 in both Marshall Islands and Micronesia and in FY2009 in Palau.

These three economies depend heavily on Compact grants. In recent years, the shares of (current and capital) grants in overall revenue have been in the range of 50–65 percent, and Compact grants constitute an important fraction of total grants (Figure 4.8). In Palau, the share of Compact grants is relatively low as Palau has been quite successful in obtaining non-Compact (capital) grants, partly thanks to its favorable development prospects (e.g., tourism).

The dependence on grants translates into large underlying fiscal imbalances. Although these countries' overall fiscal deficits are about zero, current deficits excluding grants are between 15 percent and 35 percent of GDP, reflecting large current expenditure and a small domestic revenue base (relative to other Pacific Island countries) (Figure 4.9). High current spending is driven by large civil service wage bills and subsidies for utilities, fuel, and public enterprises (Figure 4.10). Tax bases (excluding nontax revenue such as fees) are narrow due in part to exemptions and inefficient tax administrations, and there is a need to replace distortionary gross revenue taxes with more efficient profit or other taxes (Figure 4.11).

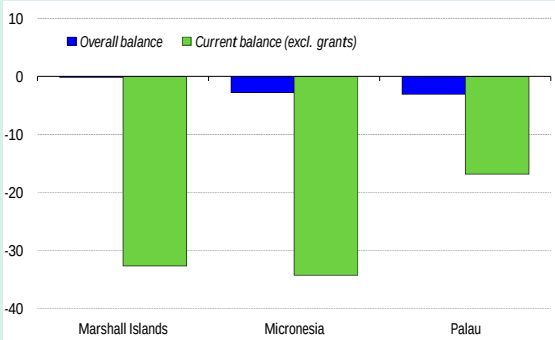
The performance of the Compact Trust Funds has also fallen short of expectations. Under the Compact, the United States set up a trust fund (Compact Trust Fund) in each of the Compact countries and has financially contributed to those funds. The purpose of the funds is to provide a steady stream of income once Compact grants expire. So far, the performance of the funds has generally failed to meet expectations, particularly in recent years due to the global financial crisis. For example, by FY2009, the Compact Trust Fund in Palau had accumulated US$140 million (70 percent of GDP), compared to US$260 million expected by this date at the outset (FY1995) (Figure 4.12). This is mainly due to lower-than-expected returns—12½ percent was initially anticipated but the fund returned only

Figure 4.8. Compact Countries: Share of Grants in Overall Revenue, FY2008[1]
(In percent)



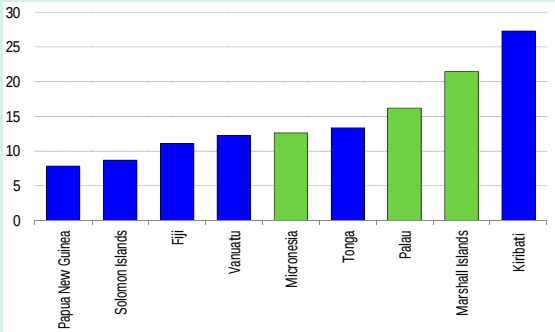
Source: National authorities.
[1] Fiscal year ending on September 30.

Figure 4.9. Compact Countries: Fiscal Balance, FY2008[1]
(In percent of GDP)



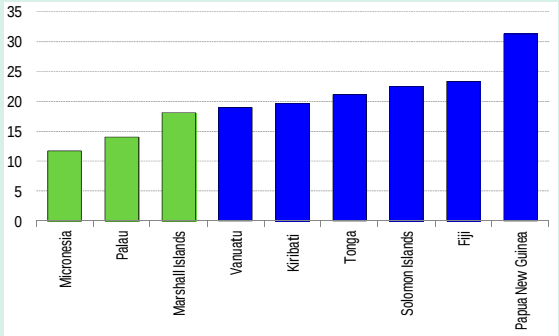
Source: National authorities.
[1] Fiscal year ending on September 30.

Figure 4.10. Pacific Island Economies: Public Wage Expenditure, 2007[1]
(In percent of GDP)



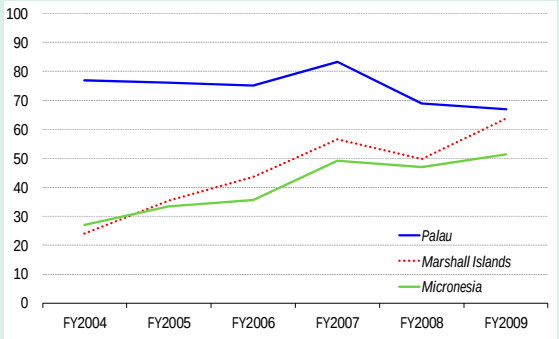
Source: IMF, Palau *Article-IV Staff Report*, 2010.
[1] FY2007 for Palau, Marshall Islands, Micronesia, and Tonga.

Figure 4.11. Pacific Island Economies: Tax Revenue, 2007[1]
(In percent of GDP)



Source: IMF, Palau *Article-IV Staff Report*, 2010.
[1] FY2007 for Palau, Marshall Islands, Micronesia, and Tonga.

Figure 4.12. Compact Trust Fund Balance[1]
(In percent of GDP)



Source: National authorities.
[1] Fiscal year ending on September 30.

7½ percent per year (although 7½ percent is not low by international standards).

Given their current fiscal positions, significant fiscal adjustment is needed in these countries to ensure fiscal sustainability, assuming that Compact grants will end at the end of the current Compact period (FY2023 or FY2024). The required size of adjustment estimated by IMF staff varies across the three countries, reflecting country-specific circumstances (and differences in the estimation methods). However, the common message is that the needed improvement in the fiscal balance is substantial—in the range of 5–8 percentage points of GDP over the next five years.

In all of the Compact countries, fiscal adjustment requires a combination of expenditure and revenue measures. Among the three countries, Marshall Islands has already started taking concrete expenditure measures to achieve the necessary consolidation. Micronesia and Palau acknowledge the need for fiscal adjustment. Looking forward, a priority for these two countries is to start implementing comprehensive reforms.

Marshall Islands

- *Expenditure measures.* The FY2010 budget envisages elimination of vacant positions and significant spending cuts in goods and services. That said, Marshall Islands would still need to take further expenditure measures to meet its targeted savings.
    - *Civil service rationalization.* The public sector wage bill has doubled over the past decade, and now is one of the highest among the Pacific Island economies. Building on the elimination of vacant posts, a combination of civil service pay cuts and reductions in employment would need to be implemented.
    - *Limiting financial support to state-owned enterprises (SOE).* Public support to SOEs has reached 3-4 percent of GDP annually during the past several years. Subsidies to SOEs could be reduced, including through improving efficiency and raising tariffs (e.g. electricity).
- *Revenue measures.* The authorities already have a plan to implement comprehensive revenue reform, which could involve broadening the personal income tax base; strengthening tax administration by unifying the social security and tax offices; and shifting from the distortionary gross revenue tax to the VAT.

Micronesia

- *Expenditure measures.* Despite the recent successful payroll reductions, current

expenditure is still high at about 60 percent of GDP—well above the Pacific Islands average (35 percent of GDP). There remains significant scope for a further reduction in public employment and subsidies to state governments and SOEs.

- *Revenue measures.* Given the relatively small personal income tax base, greater information sharing between the national and state governments on self-employed contractors could help boost revenue. Over the medium term, passing the planned tax reform package (currently facing political opposition), which mainly consists of the VAT and the net profits tax, is critical.

Palau

- *Expenditure measures.* While wage cuts in FY2009 are an important step forward, a further reduction may be required in light of relatively high wage expenditure. Curtailing subsidies to SOEs (e.g., water and sewage services) would also be a key to achieve the recommended adjustment.

- *Revenue measures.* As recognized by the authorities, eliminating import duty exemptions and shifting to cost, insurance and freight (CIF) evaluation could generate substantial revenue. Replacing the gross revenue tax with a less distortionary corporate income tax (as tax administration capacity develops) could also be considered.

- *Strengthening budget processes.* To complement the expenditure and revenue measures, continued efforts to fix weaknesses in the budget process and improve cash control are critical. In this respect, creation of a cash management committee, which ensures a transparent allocation of cash resources, would be helpful.

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