World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

APR 08

INTERNATIONAL MONETARY FUND

World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

APR 08

INTERNATIONAL MONETARY FUND

Cataloging-in-Publication Data

Regional economic outlook : Asia and Pacific – [Washington, D.C.] : International Monetary Fund, 2008.
p. cm. -- (World economic and financial surveys)
APR 08.
Includes bibliographical references.
ISBN 978-1-58906-710-3

1. Asia – Foreign economic relations – United States. 2. Asia – Economic conditions – 1945-
3. Asia – Economic conditions – 1945- – Statistics. 4. Pacific Area – Economic conditions.
5. Pacific Area – Economic conditions – Statistics. I. International Monetary Fund. II. Series (World economic and financial surveys)
HC412 .R445 2008

Price: US$31.00
(US$26.00 to full-time faculty members
and students at universities and colleges)

Please send orders to:
International Monetary Fund, Publication Services
700 19th St. N.W., Washington, D.C. 20431, U.S.A.
Tel.: (202) 623-7430 Fax: (202) 623-7201
E-mail: publications@imf.org
Internet: www.imf.org

Contents

Figures

Definitions

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

- "Emerging Asia" refers to China, India, Hong Kong SAR, Korea, Singapore, Taiwan Province of China, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.
- "Industrial Asia" refers to Japan, Australia, and New Zealand.
- "Asia" refers to emerging Asia plus industrial Asia.
- "Newly industrialized economies" (NIEs) refers to Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.
- "ASEAN-5" refers to Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.
- "EU-15" (mentioned in Chapter II) includes Austria, Belgium and Luxembourg, Germany, Denmark, Spain, Finland, France, the United Kingdom, Greece, Ireland, Italy, the Netherlands, Portugal, and Sweden.
- Ex-Japan means excluding Japan.

The following abbreviations are used:

CD	Certificate of deposit
CDO	Collateralized debt obligation
CDS	Credit default swap
CLO	Collateralized loan obligation
GFSR	*Global Financial Stability Report*
IPO	Initial public offering
NEER	Nominal effective exchange rate
P/E	Price-earnings ratio
q/q	Quarter-on-quarter increase
REO	*Regional Economic Outlook: Asia and Pacific*
SAAR	Seasonally adjusted increase at an annual rate
SIV	Structured investment vehicle
VAR	Vector autoregression
WEO	*World Economic Outlook*
y/y	year-on-year

The following conventions are used:

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

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

This *Regional Economic Outlook: Asia and Pacific* was prepared by a team coordinated by Jerald Schiff and Paul Gruenwald, under the direction of David Burton of the IMF's Asia and Pacific Department. Kay Chung, Xiangming Fang, Souvik Gupta, Janice Lee, and Fritz Pierre-Louis provided research assistance, and Corinne Danklou, Yuko Kobayashi, and Livia Tolentino provided production assistance.

Executive Summary

2008 is shaping up as a challenging year for Asia. Activity in the region remains fairly buoyant, but growth in the United States and, to a lesser extent, Europe is slowing sharply. Given its extensive trade and financial linkages with the rest of the world, Asia is unlikely to delink. Moreover, the still-unfolding global financial crisis adds a dimension of uncertainty to the picture, and the balance of risks remains on the downside. Policymakers will need to remain vigilant and utilize their scope for action as conditions warrant.

Despite another year of strong growth in 2007, signs of moderating activity appeared in Asia late in the year and into early 2008. While growth remains high, led by China and India, and domestic demand is still robust, key activity indicators in recent months suggest that momentum is easing. Confidence indicators also point to a slowing pace of activity. Asia's trade performance remains positive, despite lackluster electronics exports. Part of the explanation is strong growth of exports to "nontraditional" markets in Latin America, eastern Europe and Russia, and the Middle East. Import growth has picked up in recent months, even when excluding oil, suggesting some strength in domestic demand.

Inflation pressures are rising across most of Asia. Headline inflation momentum has increased noticeably in India and the ASEAN-5 in recent months and has picked up anew in China, after having leveled off in late 2007. Core inflation has also risen, as food and commodity price rises have begun to generate some second-round effects. Moreover, producer price inflation is now running above headline inflation across much of the region, pointing to the potential for further price pressures ahead.

Exchange rate trends have become less uniform across Asia. While the region's currencies as a whole have appreciated marginally in nominal effective exchange rate (NEER) terms since the October 2007 *Regional Economic Outlook: Asia and Pacific* (REO), much of this is being driven by the sharp appreciation of the Japanese yen as carry trades are being unwound. Emerging Asian currencies as a group have weakened somewhat, led by the newly industrialized economies (NIEs) and India. Notably, the Chinese renminbi, while appreciating further against the U.S. dollar, has appreciated only modestly in NEER terms.

Asian financial markets have not been immune to the global turbulence. Equities are sharply lower than at the beginning of the turmoil, although price-earnings ratios remain elevated, and spreads have risen substantially. Risk aversion remains high, and fund managers in the region have reportedly shifted allocations toward cash and high-quality paper. However, markets have functioned well overall and there are few signs of a credit squeeze. Indeed, Asian banks' limited exposure to structured credit products and widening interest rate differentials vis-à-vis the U.S. dollar are lending support to local currency loan and debt markets in the region. Moreover, investor sentiment on long-term prospects for Asia remains positive.

The external environment facing Asia has weakened substantially since the previous REO. As a result, the baseline forecast for 2008 calls for a reduction in GDP growth for the region by 1¼ percentage points to 6.2 percent. This markdown mainly reflects lower export growth, because a drop in external demand from the United States and Europe affects the region foremost through the trade channel. Domestic demand growth should remain relatively buoyant but soften. The quarterly growth profile is projected to decline steadily throughout 2008, before recovering gradually during 2009.

The risks to the outlook remain on the downside. The main risk is a further credit market–led deterioration of global financial conditions. While foreign demand for Asian exports would be lower in such a scenario, it is likely that the financial transmission channel would be more virulent and perhaps more complicated. This channel could include (1) the balance sheet impact of lower equity and other asset prices; (2) lower consumer and business confidence, leading to sharp declines in consumption and investment; and (3) a spike in counterparty risk, leading to sharply higher borrowing costs for banks and corporates. As in the past, some upside risk to growth emanates from domestic demand in the region. This could reflect autonomous factors or, less positively, unsuccessful efforts by authorities, particularly in China, to rein in investment, or continued portfolio inflows feeding into high credit growth.

Policymakers in Asia face potentially difficult choices in this environment. The combination of ongoing growth momentum and high, rising inflation suggests that growth concerns should be balanced against price stability concerns. As such, the room for monetary policy maneuver would appear limited in a number of countries, although greater exchange rate flexibility in many countries would help dampen imported price pressures; it could also contribute to a rebalancing of global demand. However, if the region finds itself in a substantially weaker growth environment, most Asian economies would have considerable scope to ease macroeconomic policies, particularly on the fiscal front. Given the financial sector risks, monetary and supervisory authorities should step up monitoring and review contingency plans, including for central bank liquidity provision and bank capitalization.

Chapter II of this REO investigates the delinking issue by studying spillovers from the United States to Asia over the past 15 years. It concludes that Asia has not delinked and that spillovers could be significant. While spillovers have been moderate on emerging Asia *on average*—a 1 percentage point slowdown in the United States has led to a ¼–½ percentage point average slowdown (Japan is at the lower end of this range)—there are reasons to believe that the current U.S. slowdown could have a significantly larger impact. In particular, there is evidence that spillovers from the United States, in particular to China, have risen in recent years, and that financial contagion and global confidence effects (certainly in play at the moment) could raise significantly the size of spillovers. The 2001 tech recession underscores that the impact of lower U.S. growth on Asia can be substantial.

I. Overview

2008 is shaping up as a challenging year for Asia. Activity in the region remains fairly buoyant so far. But growth in the United States and, to a lesser extent, Europe is slowing sharply and the IMF's April 2008 *World Economic Outlook* (WEO) now calls for a contraction in activity this year in the former and much slower growth in the latter. Given its extensive trade and financial linkages with the rest of the world, Asia is unlikely to decouple, and growth in the region in 2008 is foreseen to decline by 1¼ percentage points to 6.2 percent. Moreover, the still-unfolding global financial crisis adds a dimension of uncertainty as to how developments in the region will evolve, and the balance of risks remains tilted toward the downside. In this environment, policymakers will need to remain particularly vigilant and be prepared to utilize their scope for stimulatory measures as conditions warrant.

Recent Macroeconomic Developments

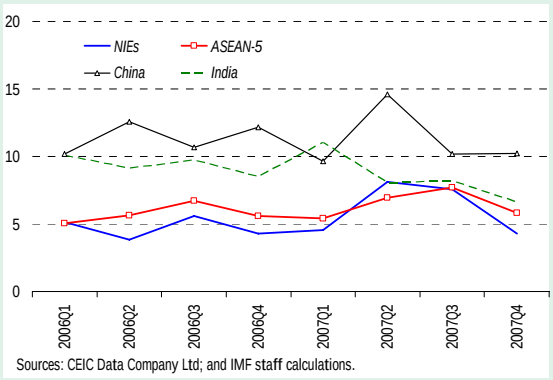
In line with the U.S.-led global slowdown, signs of moderating activity emerged in Asia in late 2007 and early 2008. While growth remains high, led by China and India, and domestic demand is still buoyant, key activity indicators suggest that momentum in the region is easing. Both export and import growth have picked up in recent months, although this development partly reflects price effects. Given the still-robust pace of activity, inflation pressures have risen as food and commodity price increases have begun to generate some second-round effects; producer price pressures have risen as well. Current account surpluses and reserve accumulation continue to be prominent in the region as exchange rate appreciation, particularly as measured on an effective basis, remains modest.

Note: The main authors of this chapter are Paul Gruenwald, Ranil Salgado, Romuald Semblat, and Olaf Unteroberdoerster. Xiangming Fang provided research assistance.

Growth

GDP growth remained strong throughout Asia in 2007, although momentum tailed off in the fourth quarter (Figure 1.1). For the region as a whole, growth in 2007 was 7.4 percent, with the emerging economies recording growth of more than 9 percent, led by China and India.[1] This was slightly above the projections in the October 2007 *Regional Economic Outlook: Asia and Pacific* (REO).

Figure 1.1. Emerging Asia: Real GDP Growth
(Quarter-on-quarter percent change, SAAR)



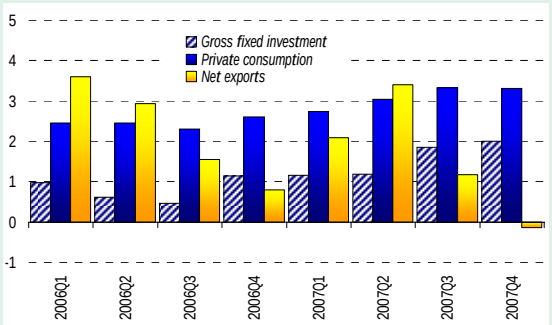
Sources: CEIC Data Company Ltd; and IMF staff calculations.

Domestic demand was again an important source of growth across much of Asia in 2007. This was particularly true in the ASEAN-5 (Figure 1.2), where domestic demand accounted for all growth in the fourth quarter, and to a lesser extent in the newly industrialized economies (NIEs) (Figure 1.3). Activity in China and India continued to be investment-led. In industrial Asia, domestic demand

[1] All figures—as well as tables and charts—in this chapter reflect the revised purchasing power parity weights released by the World Bank in November 2007. Using 2007 as a base year, China now comprises 35 percent of the region's GDP (formerly 42 percent), Japan 21 percent (16 percent), India 15 percent (17 percent), the NIEs 12 percent (9 percent), ASEAN-5 11 percent (11 percent), and Australia plus New Zealand 4 percent (3 percent).

Figure 1.2. ASEAN-5: Contributions to GDP Growth[1]

(Year-on-year change in percent of previous year's GDP)

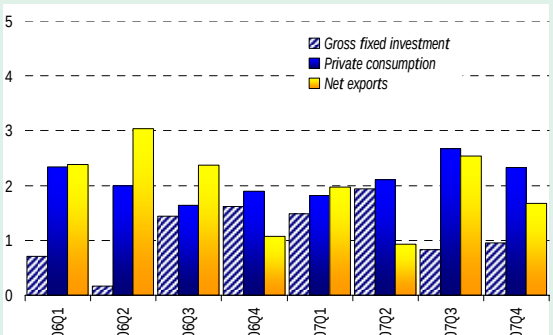


Sources: CEIC Data Company Ltd; and IMF staff calculations.

[1] Excludes Vietnam.

Figure 1.3. NIEs: Contributions to GDP Growth

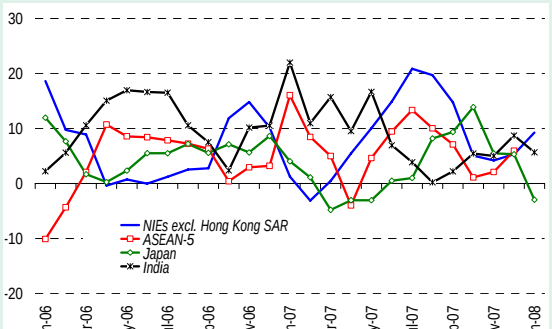
(Year-on-year change in percent of previous year's GDP)



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

Figure 1.4. Selected Asia: Industrial Production

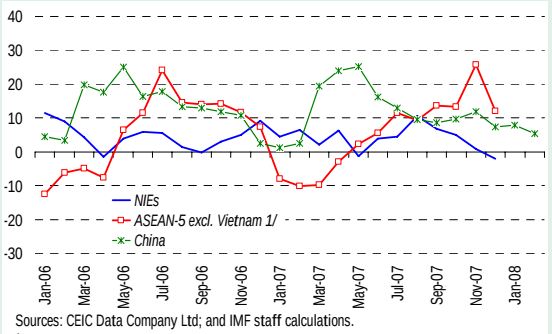
(3-month percent change of 3-month moving average, SAAR)



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

Figure 1.5. Emerging Asia: Retail Sales Volume

(3-month percent change of 3-month moving average, SAAR)



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

[1] Proxies used for Malaysia (manufacturing sales), the Philippines (car sales), and Thailand (composite consumption).

remained weak in Japan, and strong in Australia, and began to weaken in New Zealand late in the year.

Key activity indicators in Asia have begun to soften. Measured sequentially,[2] industrial production growth has declined since the third quarter of 2007, and now stands in the single digits across emerging Asia, although it has picked up recently in ASEAN-5 (Figure 1.4). Retail sales volume growth has slowed, turning negative in the NIEs and moderating in China (Figure 1.5). Business and consumer confidence are trending sideways in emerging Asia, but continue to decline in Japan. In contrast, the continued rise in non-oil imports across much of the region suggests some ongoing strength in domestic demand.

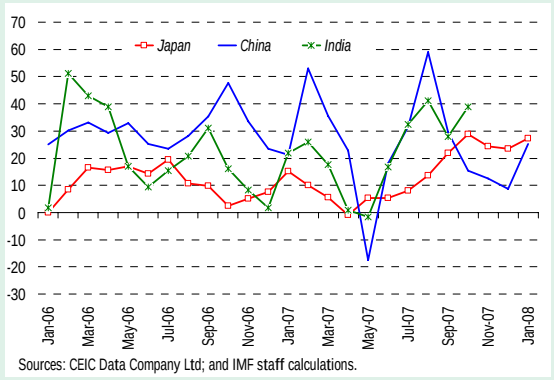
Recent trade performance has remained positive in the face of the U.S. slowdown. Export growth in the larger economies shows signs of stabilizing (Figure 1.6), while exports in NIEs and ASEAN-5 have trended higher in recent months, in the latter partly reflecting rising commodity prices (Figure 1.7).[3] A notable development in the region is the steady decline in electronics export growth apart from ASEAN-5. (For recent performance and prospects in the electronics sector, see Box 1.1.) In terms of destination, exports to the United States and the European Union—Asia's two largest trading partners—peaked in mid-2007. Exports to China

[2] Three-month percent change of the three-month moving average, calculated at a seasonally adjusted annual rate.

[3] These value measures reportedly reflect in part a sharp rise in Japan's raw materials import prices late in 2007.

Figure 1.6. Japan, China, and India: Exports of Non-Oil Goods

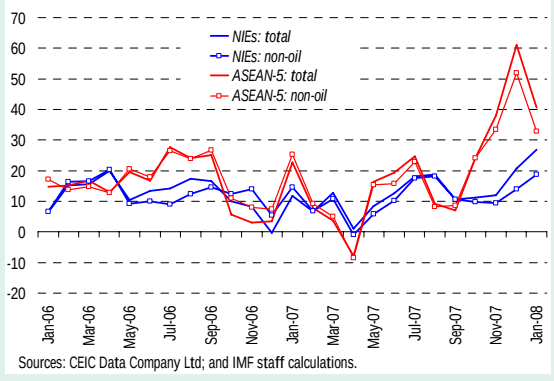
(3-month percent change of 3-month moving average, SAAR)



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

Figure 1.7. Emerging Asia: Exports of Goods

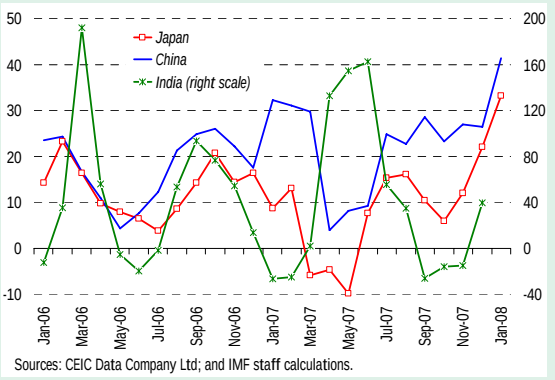
(3-month percent change of 3-month moving average, SAAR)



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

Figure 1.8. Japan, China, and India: Imports of Non-Oil Goods

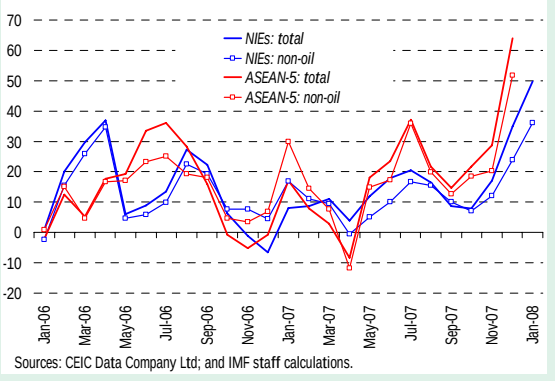
(3-month percent change of 3-month moving average, SAAR)



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

Figure 1.9. Emerging Asia: Imports of Goods

(3-month percent change of 3-month moving average, SAAR)



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

remain robust, as do exports to "nontraditional" regions such as Latin America, eastern Europe and Russia, the Middle East, and Africa (Box 1.2). Import growth has picked up as well recently, including after netting out the effects of oil (Figures 1.8 and 1.9).

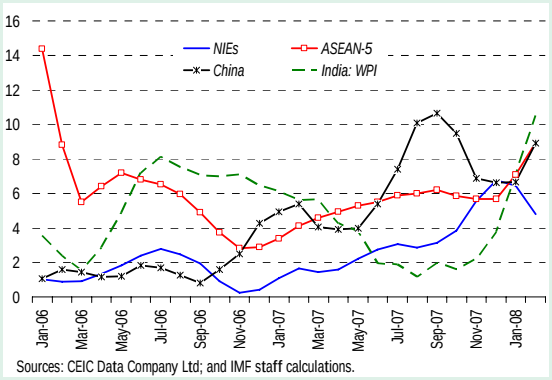
Inflation

In contrast to the situation described in the October 2007 REO, inflation pressures are now strong or rising across most of Asia (Figure 1.10). Headline inflation has increased noticeably in India in recent months and has picked up anew in China, after having leveled off in the latter part of 2007.[4] Inflation in ASEAN-5 has risen as well, but has turned down in the NIEs. In industrial Asia, inflation pressures remain a concern in Australia and New Zealand. That being said, currency appreciation in some countries in the region has dampened imported inflation pressures. While the initial rise in headline inflation in much of the region reflected supply-related food price shocks and higher global commodity prices (where they were allowed to pass through), price increases are

[4] On a year-on-year basis, headline inflation has leveled off in the NIEs at about 4 percent and jumped to 8.7 percent in China in February after having stabilized at 7 percent in late 2007. Year-on-year inflation continues to rise in ASEAN-5 and India (surpassing 6 percent and 5 percent, respectively, in February).

Figure. 1.10. Emerging Asia: Consumer Prices

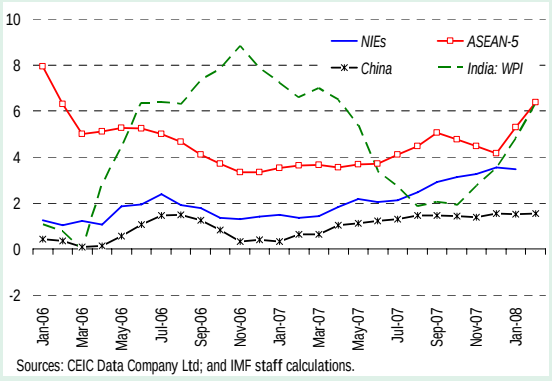
(3-month percent change of 3-month moving average, SAAR)



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

Figure 1.11. Emerging Asia: Core CPI

(3-month percent change of 3-month moving average, SAAR)



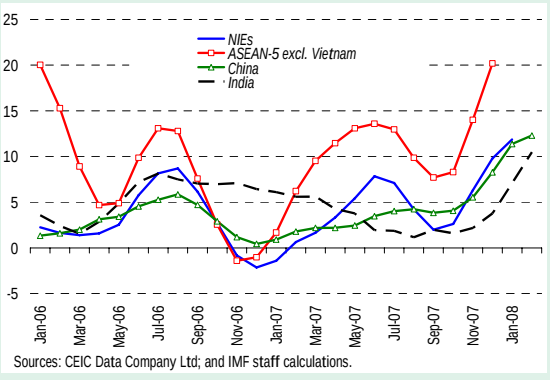
Sources: CEIC Data Company Ltd; and IMF staff calculations.

now starting to become more broad based. Core inflation has begun to rise more rapidly in recent months, especially in the ASEAN-5 and India (Figure 1.11).

Producer price inflation has also picked up sharply across Asia. This reflects higher costs for energy as well as other raw material inputs. The increase has been particularly pronounced in the ASEAN-5, where producer price inflation has risen sharply from less than 8 percent in August to reach 20 percent in December, the fastest pace in two years (Figure 1.12). China, India, and the NIEs are all now experiencing double-digit producer price increases as well. As a result, at the regional level, producer prices are currently rising faster than consumer prices, with attendant pressure on firms' profit margins (Figure 1.13).

Figure 1.12. Emerging Asia: Producer Prices

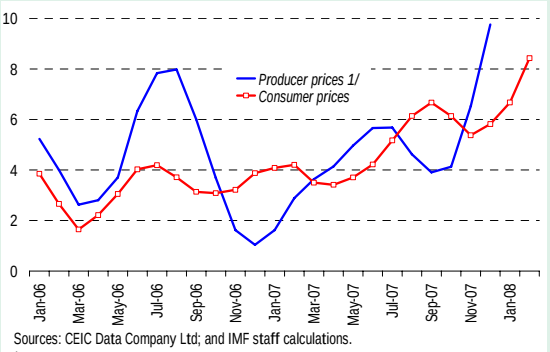
(3-month percent change of 3-month moving average, SAAR)



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

Figure 1.13. Emerging Asia: Consumer and Producer Prices

(3-month percent change of 3-month moving average, SAAR)



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

[1] Excluding Vietnam.

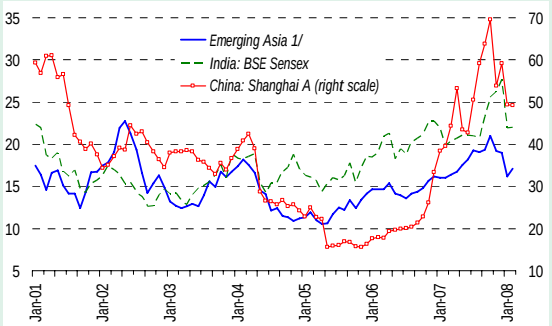
An accurate measurement of underlying inflation pressures is hampered in much of emerging Asia (largely excluding the NIEs) owing to infrequently adjusted administered prices, primarily for energy products and foodstuffs. (For a review of the impact of recent energy price developments on Asia, see Box 1.3.) In addition to complicating an assessment of building price pressures, the lack of pass-through to consumers distorts price signals and results in fiscal costs through either direct budgetary support to firms to offset cost differentials, or less transparent mechanisms, such as reduced dividend transfers from public entities absorbing such costs.

External Sector

Capital account developments in late 2007 and early 2008 in Asia have again been driven by

portfolio flows. Equity markets sold off in February–March 2008 as views by foreign investors regarding emerging Asia's growth prospects and relatively high valuations soured in response to lower growth forecasts in the advanced economies (Figure 1.14). The ongoing rise in risk aversion has led to an unwinding of carry positions in the currency markets, resulting in an appreciation in funding currencies such as the yen and some downward pressure on high-yielding target currencies, particularly in emerging Asia. Despite the adverse effects of volatility on the carry trade, regional fixed income markets have been supported to some extent by widening interest rate differentials against U.S. dollar assets.

Figure 1.14. Price-Earnings Ratio

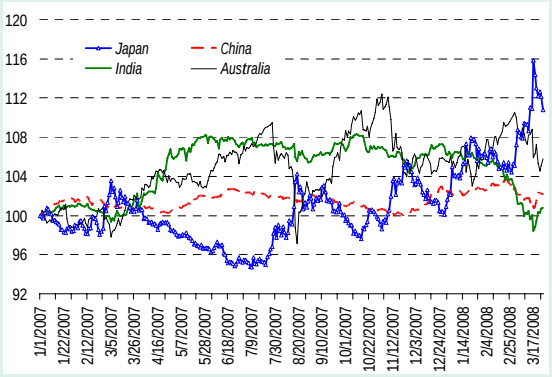


Sources: CEIC Data Company Ltd; and Datastream.
[1] Based on MSCI country index.

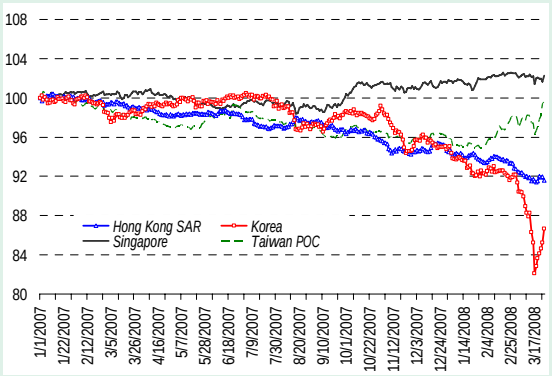
Exchange rate trends have become less uniform across Asia since the October 2007 REO. While the region as a whole has appreciated marginally in NEER terms over the period, much of this is being driven by the sharp appreciation of the Japanese yen (Figure 1.15a).[5] Emerging Asian currencies as a block have weakened somewhat, led by the NIEs (Figure 1.15b) and India, where the rupee declined by 3 percent. The Chinese renminbi was up by 2 percent over the period in NEER terms while the ASEAN-5 was flat (Figure 1.15c). Individual currency performance within the ASEAN-5 varied substantially, counter to the notion that currencies in

Figure 1.15. Nominal Effective Exchange Rates
(January 1, 2007=100)

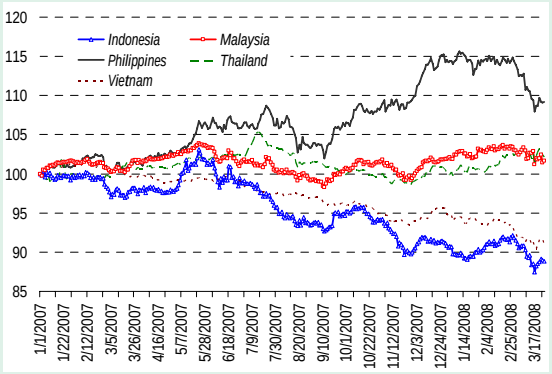
a. Selected Asia



b. NIEs



c. ASEAN-5



Sources: IMF, Information Notice System, and staff calculations.

[5] In industrial Asia, the Australian and New Zealand dollars have also appreciated sharply, including reaching two-decade highs against the U.S. dollar in March 2008.

Box 1.1. Asian Electronics Exports: Recent Developments and Outlook

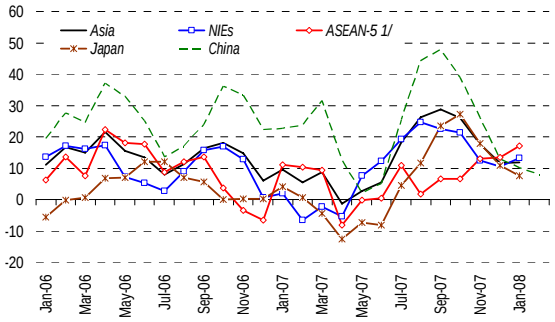
Since peaking in the third quarter of 2007, electronics exports have lost momentum across much of Asia. The slowdown has been broad based across goods categories, with electrical and office machinery decelerating especially sharply. However, sequential export growth remains relatively healthy, averaging around 13 percent. The ASEAN-5 economies, where tech export growth has been more subdued, are exceptions to this downward trend, perhaps reflecting their exposure to different market segments.

This loss of momentum has been broad based in terms of destination. Excluding Japan, exports to all major trading partners have softened in line with the deterioration in global economic conditions. In particular, exports to Europe—which have buoyed Asia's electronics exports in recent quarters—have slowed from their stratospheric rates, from annualized growth of some 80 percent in August 2007 to 7 percent in January 2008.

The moderation has occurred against the backdrop of a renewed fall in the price of semiconductors, which account for about one-third of emerging Asia's electronics exports. Following a brief hiatus during the third quarter of 2007, semiconductor prices have resumed their downward trajectory, largely reflecting softer demand and, despite some reining in since mid-2007, the persistence of excess supply conditions (forecast to continue through this year). Prices for DRAM and NAND flash memory products have also

Asia: Electronic Exports

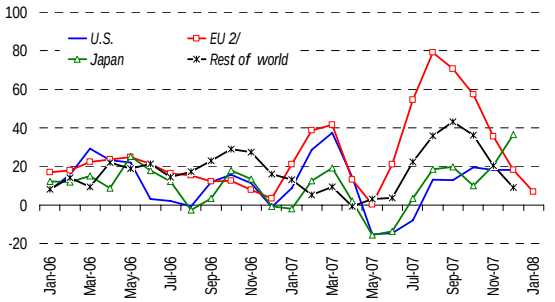
(3-month percent change of 3-month moving average, SAAR)



Sources: CEIC Data Company Ltd; and IMF staff estimates.
[1] Excludes Indonesia and Vietnam.

Selected Asia: Electronic Exports to Major Partners[1]

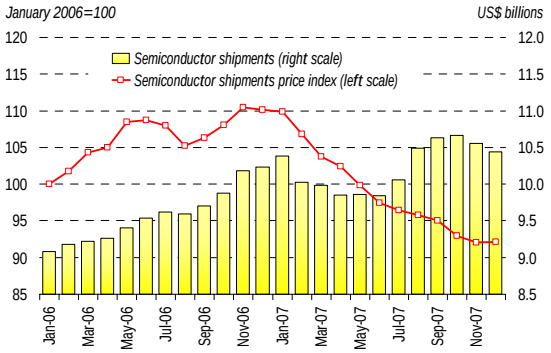
(3-month percent change of 3-month moving average, SAAR)



Sources: CEIC Data Company Ltd; and IMF staff calculations.
[1] "Selected Asia" consists of Japan, Korea, and China.
[2] Exports of electronics to EU only consist of Japan and China.

Asia-Pacific Semiconductor Shipments and Prices

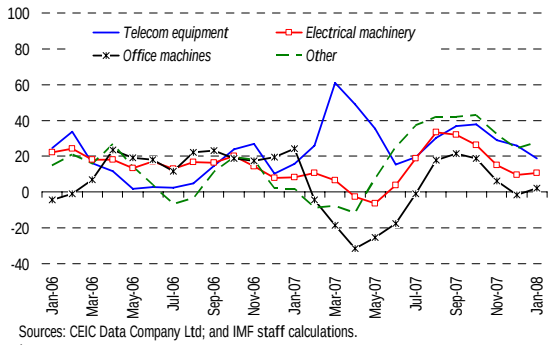
(Seasonally adjusted, 3-month moving average)



Sources: Haver Analytics; SIA Bluebook; and IMF staff estimates.

Selected Asia: Exports of Electronics by Commodity[1]

(3-month percent change of 3-month moving average, SAAR)



Sources: CEIC Data Company Ltd; and IMF staff calculations.
[1] Japan, Korea, Singapore, Hong Kong SAR, Taiwan POC, and China.

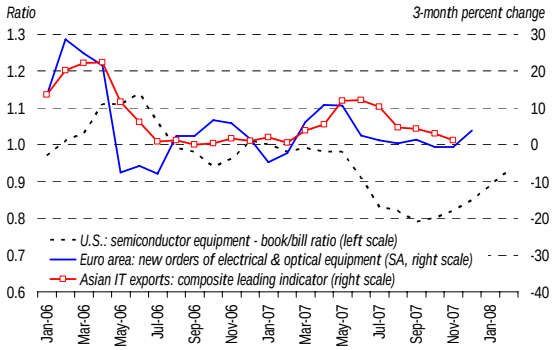
Note: The main author of this box is Murtaza Syed.

weakened since the third quarter. While the former are showing signs of having bottomed out, this is thought to reflect higher assembly costs rather than increased demand.

Forward-looking indicators are almost uniformly negative. Echoing these, a newly developed Leading Composite Index suggests a conservative outlook, forecasting a further decline in sequential Asian electronics export growth toward mid-single digits in the first quarter of 2008.[1] Financial markets also suggest weak prospects: excluding China and Korea, electronics stocks have been especially hard hit by the decline in Asian equity markets since late 2007, mirroring falls in the Nasdaq index and reflecting concerns about a sharp global slowdown, U.S. dollar weakness, and rising raw material prices. In recent months, spreads on credit default swaps have also risen to record levels for some of Asia's leading chip makers, although they retreated somewhat in late March 2008.

Electronics: Forward-Looking Indicators

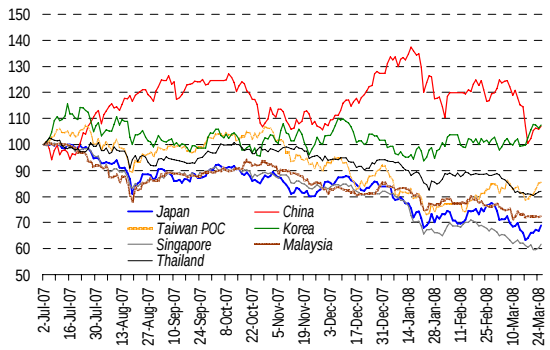
(3-month moving average)



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

Selected Asia: Electronic Stock Performance

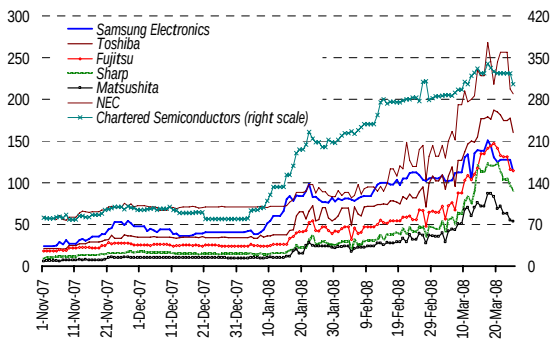
(July 2, 2007=100)



Source: Bloomberg LP.

Asian Tech Sector: Credit Default Swap Spreads

(Basis points)



Source: Bloomberg LP.

Accordingly, the near-term outlook for Asia's electronics sector has weakened, with a slowing global economy likely to dampen exports in the first half of 2008, especially for cyclically sensitive consumer electronics and related inputs. Malaysia, Singapore, Korea, and Taiwan Province of China—where electronics exports make up a significant proportion of exports and GDP—would be especially vulnerable to such a development, although the impact is unlikely to be as significant as during the technology-centered 2001 recession. This time around, much will also depend on the extent to which Europe and Japan, which have been supporting emerging Asia's electronics exports for the past year, are affected.

[1] The index is composed of a core set of leading indicators found to have the most informational content for predicting Asian electronics exports.

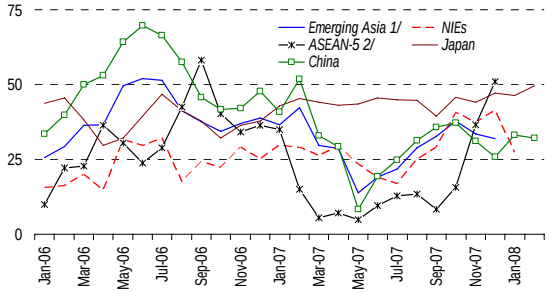
Box 1.2. Asia's "Nontraditional" Export Markets

The growth of overall Asian exports remains strong despite exports to the euro area and the United States, the region's two largest trading partners, having peaked around mid-2007. This poses somewhat of a puzzle. Part of the answer lies in buoyant exports to "nontraditional" markets, defined here as eastern Europe and Russia, the Middle East, Latin America, and Africa. Over the past several years—particularly for Korea, China, and Japan—exports to these nontraditional markets have grown relatively fast, resulting in rising export shares.[1] However, whether foreign demand from these sources will hold up in the current global slowdown and provide a meaningful offset to weaker demand from traditional export markets is an open question.

Export growth from Asia to nontraditional markets has remained high into early 2008. Measured as a 12-month percentage change of the three-month moving average, exports are growing at 40 percent to Latin America, 30 percent to both non-EU Europe and the Middle East, and 20 percent to Africa. These rates compare with 19 percent total export growth for Asia over the same period.

Selected Asia: Exports to Europe Excluding the European Union

(12-month percent change of 3-month moving average)



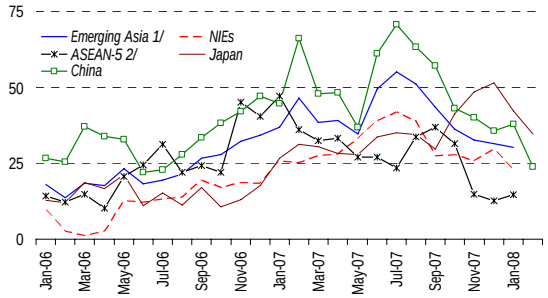
Sources: CEIC Data Company Ltd; and IMF staff calculations.

[1] Excludes India, Indonesia, Thailand, and Vietnam.

[2] Malaysia and the Philippines.

Selected Asia: Exports to the Middle East

(12-month percent change of 3-month moving average)



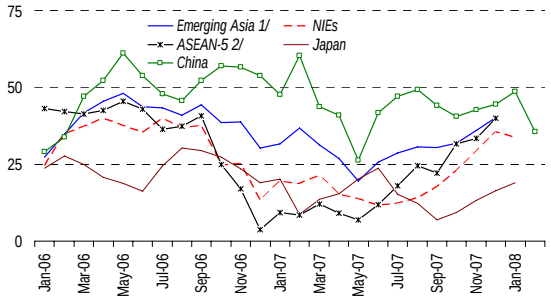
Sources: CEIC Data Company Ltd; and IMF staff calculations.

[1] Excludes India, Indonesia, Thailand, and Vietnam.

[2] Malaysia and the Philippines.

Selected Asia: Exports to Latin America

(12-month percent change of 3-month moving average)



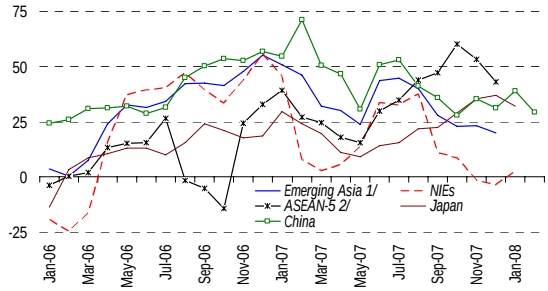
Sources: CEIC Data Company Ltd; and IMF staff calculations.

[1] Excludes India, Indonesia, Thailand, and Vietnam.

[2] Malaysia and the Philippines.

Selected Asia: Exports to Africa

(12-month percent change of 3-month moving average)



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

[1] Excludes India, Indonesia, Thailand, and Vietnam.

[2] Malaysia and the Philippines.

Note: The main authors of this box are Paul Gruenwald and Xiangming Fang.

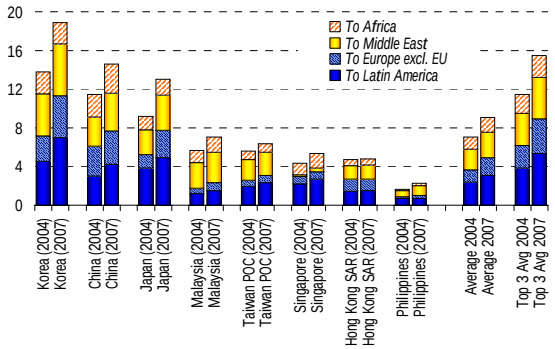
[1] Data consistency and coverage issues limited the sample to China, Hong Kong SAR, Japan, Korea, Malaysia, the Philippines, Singapore, and Taiwan Province of China. The high volatility of the data implied the need to smooth the underlying series; thus, the 12-month percentage change of the three-month moving average was used.

The fast growth of exports to nontraditional destinations has resulted in their market shares rising across Asia. For the economies in the sample, the share of exports going to nontraditional destinations rose from 7 percent in 2004 to 9 percent in 2007. However, in three cases—Korea, China, and Japan—the market share rose by twice as much and from a higher base, surging from 11½ percent of all exports in 2004 to 15½ percent in 2007. For both the entire sample and the "top three," Latin America is the most important nontraditional market.

Korea has the largest share of its exports going to the four nontraditional markets, at 19 percent in 2007, followed by China at 14½ percent, and Japan with 13 percent. Nearly 40 percent of Korea's exports to nontraditional markets go to Latin America, which also accounted for almost one-half of the 5 percentage point share gain since 2004. About one-third of China's exports to nontraditional markets go to Latin America, which, as with Korea, accounted for most of the recent growth in export shares. In contrast, Japan's recent growth to these markets has been led by exports to eastern Europe and Russia. In terms of goods, anecdotal evidence suggests that ships (Korea),[2] intra-firm exports related to outward foreign direct investment, or FDI (Japan, Korea), and consumer goods (China) are driving recent export performance to nontraditional markets.

Selected Asia: Exports to Nontraditional Markets

(In percent of total exports)



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

The other economies in the sample show much less dynamism in their export shares to nontraditional markets. Malaysia sends 7 percent of its exports to these markets and almost one-half of that amount to the Middle East, which also accounted for most of the recent share increase. The remaining four economies—Taiwan Province of China, Singapore, Hong Kong SAR, and the Philippines—have had broadly unchanged export shares to nontraditional markets over the past three years, but this needs to be viewed against the backdrop of healthy export growth overall.

A key question is whether demand from nontraditional markets will hold up as growth continues to slow in the United States and the European Union. Eastern European growth has been propelled by convergence-related demand pressures and it remains to be seen how the region, with a number of its countries dependent on external financing, weathers the ongoing financial turmoil. For the Middle East, Latin America, parts of Africa, and Russia, growth has benefited from high commodity prices, which in turn reflect marginal demand from large, fast-growing emerging economies like China and India. Continued high global commodity prices would thus partly reflect the extent to which growth in these economies is able to delink from growth in the advanced economies.

[2] Export destination data in the shipping industry may not give an accurate picture of the location of ultimate final demand since ships are initially exported (in an accounting sense) to the country of registry.

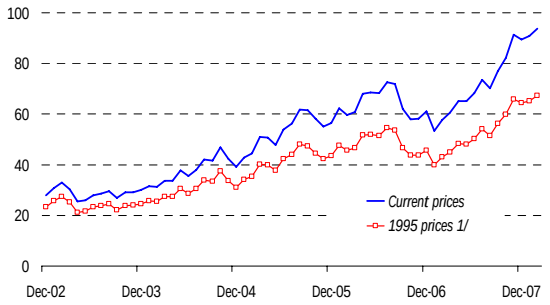
Box 1.3. Impact of High Oil Prices on Asian Economies: So Far Largely Benign?

The surge in international petroleum prices toward the end of 2007 followed significant increases since 2003. The spot price of Dubai oil increased 3.4 times over the period to just over $87 a barrel. Prices have continued to increase during the first quarter of 2008, to over $100 a barrel, and in real terms oil prices are close to their peak at the start of the 1980s.

This box looks at the impact of higher oil prices on the components of growth and inflation in Asia as well as the range of policy responses. It examines why the economic effects of the rise in oil prices have been relatively muted so far, suggesting that the impact may have been borne unevenly and that there may be concerns going forward if prices remain high.

Average Spot Oil Prices

(U.S. dollars per barrel)

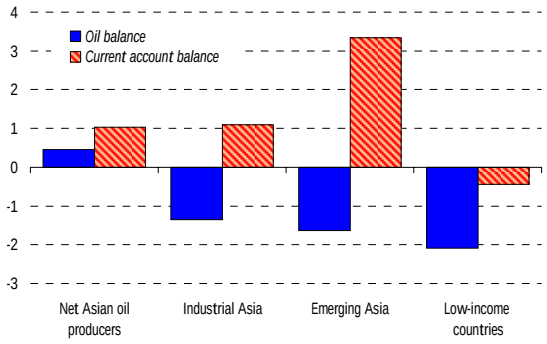


Sources: IMF, Commodity Price System; and CEIC Data Company Ltd.
[1] Deflated by U.S. CPI.

Rising oil prices worsened terms of trade for the region as a whole, but other factors have mitigated the impact. First, higher oil prices have benefited net petroleum exporters, notably Malaysia, Vietnam, Brunei, Timor-Leste, and Papua New Guinea.[1] Net oil import bills elsewhere have increased from 1¾ percent of GDP in 2003 to over 3¼ percent of GDP in 2007, with the deterioration particularly pronounced in the low-income countries.

Change in Oil and Current Account Balances, 2003–07

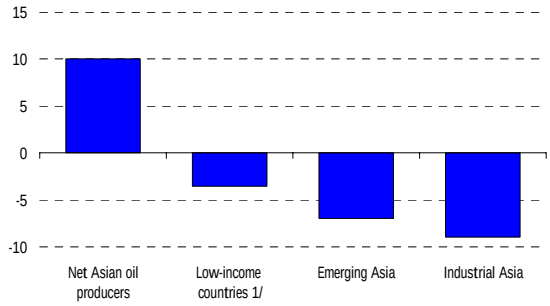
(Percentage points of GDP)



Sources: IMF, WEO database, and staff calculations.

Terms of Trade, 2003–07

(Percentage change)



Sources: IMF, WEO database, and staff calculations.
[1] Excludes Fiji and Tonga.

Nonetheless, the strong world economy has helped to boost Asian exports and spur inward investment. Therefore, despite declining oil balances the overall current account balance in the region rose by 2.3 percent of GDP between 2003 and 2007, with the rise concentrated in Japan,[2] China, and other emerging market economies. Current account deficits have generally widened among the Pacific Island economies and in Sri Lanka, while international demand has buoyed garment exports from Cambodia and Bangladesh. Moreover, rising prices of non-oil commodities such as gold and copper, and crops such as rice and wheat, have mitigated the terms of trade

Note: The main author of this box is Theo Thomas.

[1] Vietnam's net oil surplus has declined over the period, largely owing to a rapid increase in consumption. Indonesia's net oil balance turned negative in 2004. Singapore has a positive net oil balance due to its significant refining capacity, although for the purposes of this box it is not included as a producer.

[2] In the case of Japan, increased investment income and a fall in imports in 2007 boosted the current account surplus.

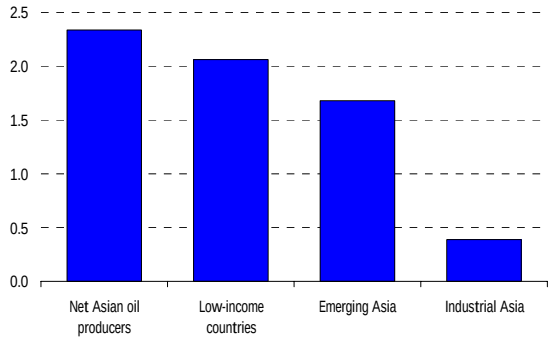
impact for some low-income countries, such as Mongolia and Papua New Guinea, as well as Indonesia.

For many countries, the rise in the U.S. dollar price of oil has also been partially offset by an appreciation of the domestic currency. For example, while the average price of oil almost tripled in U.S. dollar terms between 2003 and 2007, for a few countries, such as New Zealand and Australia, the impact in local currency terms has been closer to a doubling of prices. Conversely, in countries that have experienced large falls in the value of their currencies, such as Bangladesh, the price of oil has gone up more than 3½ times during 2003–07. Overall, this is consistent with the finding that, in the long run, a 1 percent depreciation of the U.S. dollar is associated with an increase in the nominal oil price of more than 1 percent.[3]

Inflation rates generally edged higher in Asia over 2004–07. However, inflation has risen fastest in the net oil-producing countries, where domestic demand pressures may be rising as a result of higher energy incomes, although inflation rates have also picked up in low-income countries, with a number approaching double-digit rates.

Change in Annual CPI Inflation, Averages 2004–07 less 2000–03

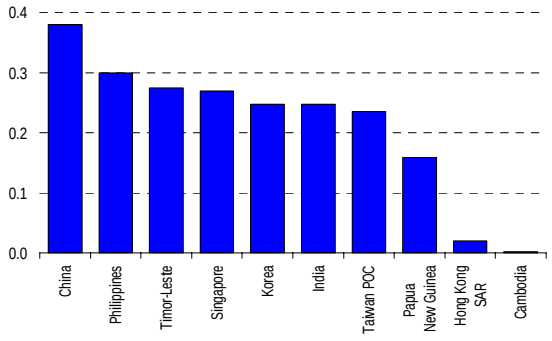
(Percentage point change)



Sources: IMF, WEO database, and staff calculations.

Estimated Direct Impact of a 10 percent Oil Price Increase on Annual Headline CPI Inflation

(Percentage points)



Source: IMF staff calculations.

Moreover, the overall increase in consumer prices has been modest relative to the global increase in the price of oil. One reason is that the direct first-round impact on retail fuel prices is fairly small, although the impact on transportation and utilities is often two or three times larger and may subsequently be magnified in other items, such as food. Second, monetary and exchange rate policy have generally been effective in containing inflation pressures. Third, the limited available information suggests that companies may not have been able, or allowed, to pass on the impact of higher energy costs to consumers in recent years, with producer prices generally rising faster than retail prices, thereby squeezing profit margins.

Country-specific energy policies and rising downstream costs have also played a significant role in determining domestic retail prices. Despite rising international prices, many countries have been moving toward more market-based pricing regimes. Over the past few years, China, Vietnam, and the Philippines have removed at least a large portion of their retail gasoline subsidies, resulting in substantial price increases. Other countries, such as Indonesia, Bangladesh, and India, have made periodic upward adjustments to their regulated prices. However, retail prices have recently not kept pace with world market price developments, and subsidies have generally grown.

[3] See Box 1.4 of the April 2008 WEO, "Dollar Depreciation and Commodity Prices."

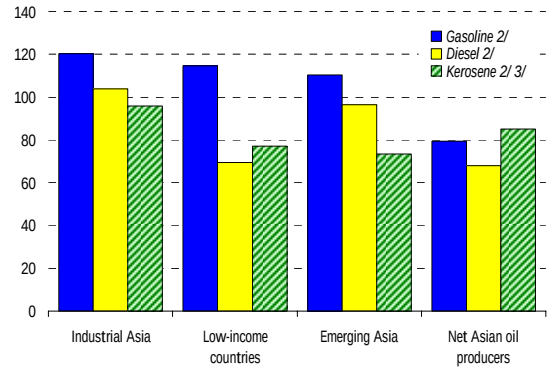
Box 1.3 *(concluded)*

Nonetheless, in all but the net oil-producing countries the relative increase in international gasoline prices has largely been passed on to consumers.

In contrast to gasoline pricing, the increase in international diesel and kerosene prices does not appear to have been passed on to consumers. The price of kerosene, in particular, is politically sensitive because it is used as cooking fuel by many rural poor. When Indonesia adjusted administered fuel prices in 2005 by about 30 percent, kerosene was exempted. Bangladesh has lowered tax rates on fuels used by the poor, such as kerosene and diesel, while taxes on gasoline remain much higher (although gasoline prices remain administered).

Petroleum Product Price Pass-Through, 2003–07[1]

(In percent)



Sources: IMF, WEO database, and staff calculations.

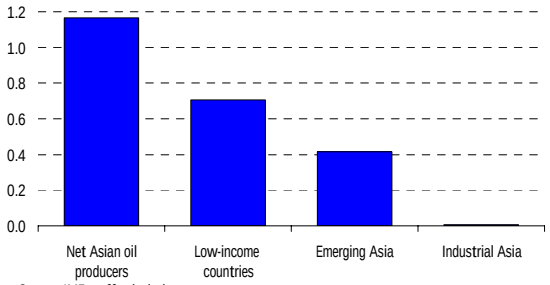
[1] Absolute change in domestic retail prices, in US$, between end-2003 and end-2007 divided by absolute change in world prices over the same period.

[2] Excludes New Zealand, Bhutan, Fiji, Mongolia, Myanmar, Samoa, Solomon Islands, Tonga, Vanuatu, and Brunei.

[3] Excludes Australia, Singapore, China, Lao P.D.R., Malaysia, and Brunei.

Explicit and Implicit Energy Subsidies, 2003–07 Average[1, 2]

(In percent of GDP)



Source: IMF staff calculations.

[1] Comprises budget oil subsidies and losses of state-owned energy enterprises.

[2] No data for Taiwan POC, Bhutan, Fiji, Mongolia, Myanmar, Samoa, Solomon Islands, Tonga, and Vanuatu.

Despite the general move toward more deregulated fuel pricing, energy subsidies remain significant as countries try to shield consumers from the full impact of higher world prices. The largest energy subsidies are in oil-producing countries, where budget subsidies often exceed 1 percent of GDP and losses by national oil and utility companies can be larger, but difficult to quantify. Owing to administered retail prices, state-owned oil companies (refineries and distributors) have also made significant losses in China, India, Bangladesh, and Sri Lanka. The fiscal costs of trying to smooth adjustments can be significant. For example during 2004–05, in response to what were thought of as temporary price increases, Thailand introduced price ceilings on petroleum products, which were subsequently abolished in 2005, having reportedly cost the government about $2.2 billion. In addition to the fiscal costs and broader efficiency considerations, generalized subsidies tend to be less effective than well-targeted safety nets at mitigating the impact of higher petroleum prices on the poor or other social groups.[4]

It is unclear whether Asia will remain relatively shielded from the effects of high global petroleum prices. Countries whose currencies have strengthened considerably, often based on strong export demand, may not be able to sustain such an appreciation in a weakening global environment. The cost to countries with large fuel subsidies is also rising and will eventually have to be addressed, most likely through more periodic price adjustments and the restructuring of loss-making national companies. The current round of energy price increases may also boost inflationary expectations unless countered by tightening monetary policy. Measures to try to reduce the impact of rising energy costs—for example, the Philippines has introduced an oil tariff reduction mechanism—will also have to be financed. The general drive for increased energy efficiency is likely to contain demand pressures only in the medium to long term.

[4] See Mati (2008) and Davis, Ossowski, and Fedelino (2003).

this group are tied closely to the Chinese renminbi. The appreciation of the Philippine peso and Malaysian ringgit have offset weaker currencies in the ASEAN-5. In the NIEs, the Hong Kong dollar and Korean won weakened sharply, offset to some extent by the ongoing strength of the Singapore dollar and, more recently, the New Taiwan dollar.

Reserve accumulation continues apace with the region's total reaching $4½ trillion in early 2008, 25 percent higher than a year earlier. China leads the region with $1.5 trillion in official reserves. As in recent years, current account surpluses were the main driver of the region's reserve accumulation in 2007, with the region's aggregate current account surplus reaching 5.2 percent of GDP. Valuation changes were also a factor in central banks that mark-to-market their reserves, since the U.S. dollar fell by 12 percent against the euro and by 6 percent against the yen during the year, and prices of U.S. treasury bills rose.

Recent Financial Market Developments

Asian markets have not been immune to contagion from the global financial turbulence. Equities are much lower than at the beginning of the turmoil, and credit spreads have increased substantially. Risk aversion remains high, and fund managers in the region have reportedly moved toward cash and high-quality paper. However, while certain segments of the credit market have remained frozen, there are few signs of a credit crunch. Indeed, limited exposure to nonperforming structured credit products, the global shortage in U.S. dollar funding, and widening interest rate differentials vis-à-vis the U.S. dollar are lending some support to local currency loan and debt markets in the region. Investor sentiment on long-term prospects for Asia remains positive.

Global contagion and growing concerns about the severity of a U.S.-led slowdown have taken a toll in Asia, particularly on equity markets (Table 1.1 and Figure 1.16). Following a volatile second half of 2007 (several indices hit new highs in October), selling began anew in January 2008 as market participants' views of Asia decoupling from the United States and Europe faded. Foreign investor sentiment broadly paralleled these market moves (Figure 1.17). Negative sentiment was exacerbated

Table 1.1. Price-Earnings Ratios[1]

(Period average)

	2008 End-February	2007	2001-07	Pre-1997 high[2]
Emerging Asia	**17.1**	**18.1**	**15.2**	**19.6**
Hong Kong SAR	19.4	20.5	17.6	16.3
Korea	12.0	13.9	12.2	16.8
Singapore	14.5	18.0	18.0	20.9
Taiwan POC	16.2	18.7	28.0	23.6
China	22.9	23.9	16.4	13.2
India	26.2	24.5	17.3	31.1
Malaysia	16.0	18.3	17.9	29.5
Indonesia	21.4	19.0	13.7	23.9
Philippines	14.2	16.8	19.2	27.7
Thailand	17.2	12.0	22.4	21.3
World	14.2	16.5	20.2	21.4
Emerging markets	15.9	16.6	14.3	17.2
Latin America	15.6	15.7	13.5	17.7
Europe & Middle East	13.1	14.1	14.6	12.4

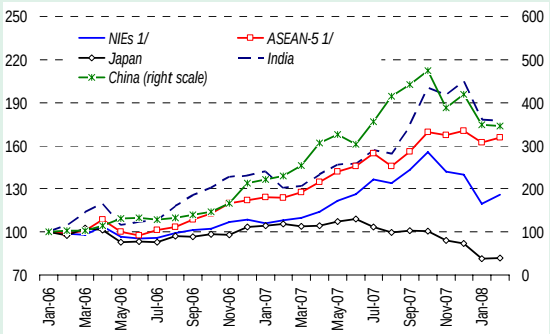
Sources: Datastream; and IMF staff calculations.

[1] Based on MSCI country index.

[2] Highest annual average 1994–97. Each economy can have a different data starting point.

Figure 1.16. Selected Asia: Stock Market Indices

(January 2006=100)

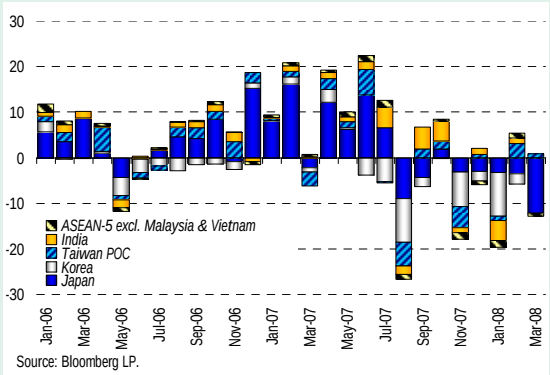


Sources: CEIC Data Company Ltd; and IMF staff calculations.

[1] Weighted by market capitalization.

Figure 1.17. Selected Asia: Net Equity Inflows

(In billions of U.S. dollars)



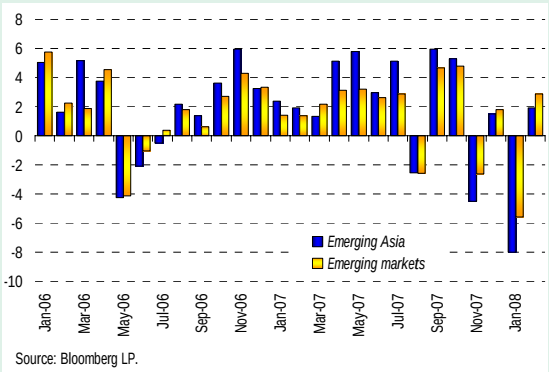
Source: Bloomberg LP.

by the delay in prospects for further Chinese capital account opening through Hong Kong SAR and the realization that the profitability growth required to sustain relatively high price-earnings (P/E) ratios had become unrealistic, especially in China.

By mid-March 2008, most Asian equity indices were down 15–25 percent for the year. Markets in Taiwan Province of China and Thailand performed comparatively well, with losses of under 10 percent reflecting perceived improvements in the political and investment environment. In Thailand, there were expectations—subsequently validated—of the removal of capital account restrictions. Shares in Vietnam were relatively weak, falling by 40 percent, as monetary policy was tightened on concerns of overheating.

Given their focus on equity long/short strategies, the total investment returns of hedge funds based in emerging Asia broadly followed equity market performance (Figure 1.18). This led to losses in August, November, and January 2008. In January alone, 90 percent of hedge funds suffered declines, with average returns of minus 8 percent. Returns bounced back in February, although year-to-date Asian-based hedge fund returns have underperformed those of eastern Europe and, by a wide margin, Latin America. Concerns about possible redemption pressures and margin calls have reportedly risen. Recent survey data suggest that, given the uncertain environment, hedge fund as well as real money managers have become more cautious in their allocation decisions. Portfolios are reportedly now cash-heavy and invested in perceived safer, liquid markets in the region.

Figure 1.18. Hedge Funds: Total Return
(In percent)



Source: Bloomberg LP.

Credit conditions have tightened in Asia in line with global trends, although there are no signs of a credit crunch. Credit default swap (CDS) spreads across a broad range—from sovereign credit (Figure 1.19a) to the i-Traxx Asia ex-Japan investment grade index (Figure 1.19b) to banking and technology-sector CDS (Figures 1.19c and 1.19d)—have continued to rise, with the price for protection in mid-March trading in many cases at more than twice the level observed at the previous peak in November 2007 despite some recent easing. (Relatedly, the collapse of Bear Stearns in mid-March had only minimal effects on credit markets in Asia.) As in the rest of world, this has affected the most leveraged borrowers, such as special situation hedge funds and private equity firms, diminishing their capacity to borrow.[6] Moreover, the market for structured credit products, particularly the cash market, remains largely shut down; volumes in the synthetic CDO market are reportedly 60–70 percent lower than in early 2007. Spreads in U.S. dollar loan markets have also widened, but to a lesser extent.[7]

By contrast, local currency loan and debt markets in Asia have been relatively resilient. Local banks in the region have maintained stable funding and—with the exception of Australia, Korea, and, to a lesser extent, India and New Zealand—remained largely free of liquidity risk, given their comparatively low loan-to-deposit ratios (Figure 1.20). Indeed, significantly tighter lending

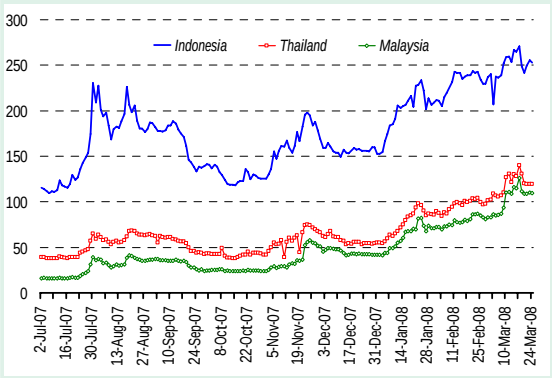
[6] Analysts report that new financing for hedge funds is no longer available from a number of leading international investment banks. Nonetheless, given generally lower leverage ratios, Asian hedge funds may be less affected than those in other regions, as wider spreads also make it easier to meet minimum internal investment hurdle rate requirements with lower leverage.

[7] In part this owes to mark-to-market issues—namely, that banks are more able to place loans in hold-to-maturity pools as default rates have not risen significantly yet. For the same reason, some banks are trying to unwind structured credit portfolios back into loans.

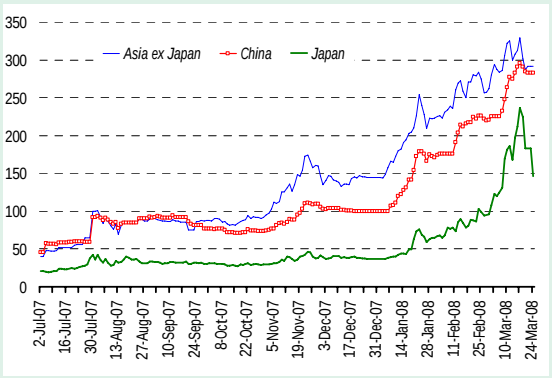
Figure 1.19. Selected Asia: Credit Risk

(Basis points)

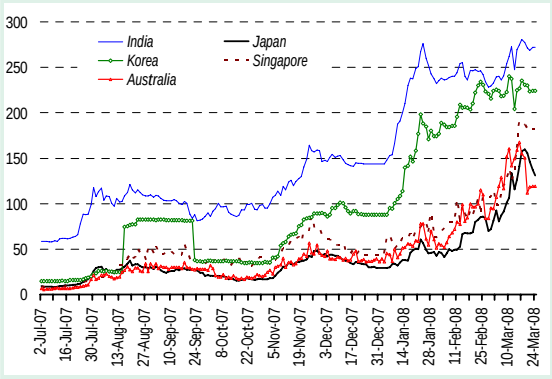
a. Sovereign Credit Default Swap Spreads



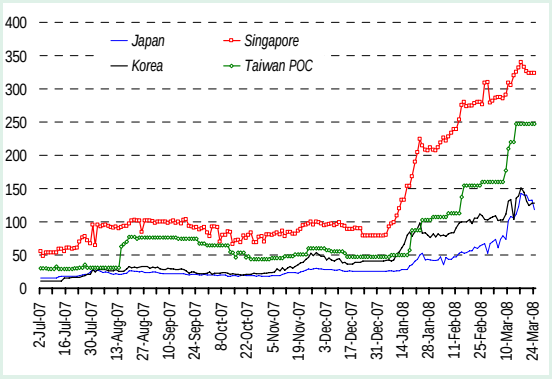
b. iTraxx Indices[1]



c. Banking Sector Credit Default Swap Spreads[2]



d. Tech Sector Credit Default Swap Spreads[2]



Sources: Bloomberg LP; and IMF staff calculations.

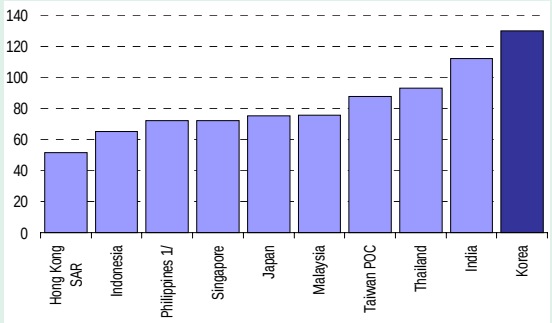
[1] iTraxx Indices are a set of CDS indices covering regions or sectors and contain the most liquid names in that market, based on a dealer poll.

[2] Country spreads are weighted averages based on relative assets.

standards by domestic banks have reportedly been limited so far only to some selected real estate markets (in Australia, New Zealand, and China, and, more recently, Singapore). Against this background, corporate bond issuers—particularly investment-grade ones—still have access to credit, albeit at higher spreads. Nonetheless, lower issuance volumes suggest that some borrowing plans are being delayed although many corporates retain sufficient internal resources to fund operations and investments.[8]

Figure 1.20. Selected Asia: Bank Loan-to-Deposit Ratios

(In percent)



Source: CEIC Data Company Ltd.

[1] Covers entire financial system.

[8] Some Chinese borrowers faced with stricter bank lending standards have reportedly turned their focus to the IPO market as a source of funding.

The resilience of funding markets in the region in part reflects limited exposure of financial institutions to structured credit products, including subprime. Although there is no comprehensive database on the issuance, transactions, and holdings of such products, data from investment banks suggest that financial institutions and, to a lesser extent, corporate treasuries in China, Korea, and Taiwan Province of China have been the most active buyers in Asia. However, given information disclosed so far and various private sector estimates, implied losses appear to be minimal as a share of assets, and therefore are unlikely to pose a systemic threat anywhere in the region. Indeed, even in the worst-case scenario, the effects of subprime and related exposure on Asia are seen to be limited to an "earnings event."[9] (Lessons for Asia from the subprime crisis appear in Box 1.4.) Moreover, entities in the region reportedly do not have significant direct exposure to monoline insurers.

Asian currency, money, and interbank markets have also remained orderly in the recent period. Liquidity in most countries in the region has remained ample. Despite the recent turbulence in global money and credit markets, the liquidity risk indicator for the main markets in the region declined from earlier peaks, although it has drifted higher in 2008 (Figures 1.21a and 1.21b).

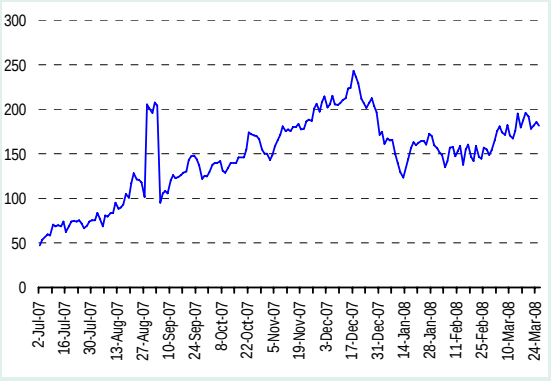
Amid rising yen-dollar volatility, a declining interest rate spread with the United States, and growing risk aversion, yen-funded carry trades have reportedly been unwound, leading to a sharp strengthening in the yen to a 12-year high in March 2008. Japanese retail investor flows into foreign securities investment trusts have declined, and Japanese yen positions by margin traders have moved into net long territory in recent months for the first time in two years. Elsewhere, fixed-income inflows owing to widening interest rate differentials with the United States have provided support to some of the region's higher-yielding currencies.

While the functioning of markets in Asia has remained smooth for the most part, some strains

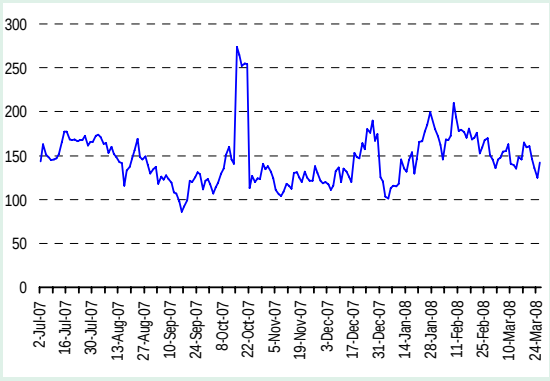
Figure 1.21. Liquidity Risk: Composite Indicator[1]

(January 2005=100)

a. Advanced Asia[2]



b. Emerging Asia[3]



Sources: Bloomberg LP; and IMF staff calculations.

[1] The index is calculated based on (1) currency bid-ask spreads, (2) spreads between interbank rates and treasury bills, and (3) daily equity market return-to-volume ratios. A higher value indicates higher liquidity risk.

[2] Includes Japan, Australia, and NIEs excluding Korea.

[3] Includes China, India, Indonesia, Thailand, and Malaysia.

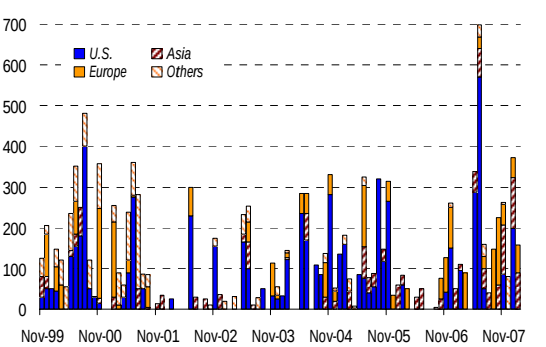
[9] Estimates from bank analysts and ratings agencies put the exposure of financial institutions in Asia excluding Japan at about ½ percent of aggregate assets, with losses ranging from ½ to 2 percent of aggregate equity.

have appeared in those countries with greater overseas funding. In Korea, money and bond markets have been jittery on concerns over the heavy reliance of domestic banks on wholesale funding. CD rates have been volatile and CDS spreads on banks increased in early 2008 as they were faced with temporary funding pressures partly reflecting domestic factors.[10] In India, sharp equity price declines starting in mid-January, the announced delays in some IPOs, and concerns about overseas financing needed by the corporate sector to sustain the investment boom led foreign investors to pull out. As sentiment changed, exporters and others followed suit by not bringing dollars onshore, leading to some dislocation in currency and swap markets. Given earlier attempts by the authorities to curb offshore borrowing, banks were also reluctant to provide dollar funds. Relatively high foreign funding of banks is also a feature in Australia and New Zealand, where borrowing costs have risen but there has not been any market disruption thus far. Maturity mismatches, elevated housing prices (a key bank asset), and swings in foreign risk appetite pose potential challenges going forward.

With global U.S. dollar markets remaining tight, some corporate and financial sector issuers have shifted to alternative sources of financing in more liquid markets. Examples are the Samurai market in Japan (Figure 1.22), as well as the nonresident Singapore dollar and Malaysian ringgit markets.[11] On the demand side, recent surveys point to growing, although still selective, fund manager interest in local currency credits, reflecting positive views on currencies and growth. These flows are providing an opportunity to develop local currency debt markets inside Asia and thereby help foster regional financial integration.

Figure 1.22. Japan Domestic Bond Issuance: Samurai Bonds

(In billions of yen)



Source: Bloomberg LP.

Despite the increased volatility from the global market turbulence, investor sentiment on longer-term prospects for Asian capital markets remains positive. For one, given the region's attractive long-term growth prospects, many global real money investors—including U.S. and European pension funds—are intent on reducing their underweight share of assets invested in the region. Also, as the supply of U.S. dollar-denominated bonds from the region is shrinking, more fund managers are considering raising their exposure to Asia in the form of local currency bonds.

Outlook and Risks

The external environment facing Asia has weakened substantially since the previous REO. Given its growing trade and financial integration with the rest of the world, Asia is unlikely to "delink." The baseline forecast for 2008 calls for a reduction in GDP growth for Asia as a whole by 1¼ percentage points to 6.2 percent as weaker external demand lowers the region's export growth. Domestic demand growth should remain relatively buoyant but soften. A modest recovery is projected for 2009. But the risks to the outlook have heightened and remain on the downside. The main risk is a further credit-led deterioration in financial market conditions with knock-on effects on trading partner growth as well as spillovers to confidence within the region.

[10] From January 1, 2008, the deductibility of interest payments on borrowing from parent banks by foreign bank branches has been cut to three times capital from six previously.

[11] For example, four Korean banks, along with one Singaporean bank, have announced plans to access the Malaysian ringgit debt market, with the average deal size expected to be $300–500 million.

Box 1.4. Asia: Lessons from the Subprime Crisis

Exposure to Subprime-Related Products and the Potential Risks

The reported subprime-related exposure of Asian financial institutions is substantially lower than that in the United States and Europe. Estimates of the aggregate exposure to subprime and related assets (CDOs and SIVs) in Asia (ex-Japan) vary from $20 billion to $30 billion (5–10 percent of the bank capital). In Japan, total subprime-related exposures of deposit-taking institutions are reported to be about $15 billion, representing 3 percent of aggregated Tier 1 capital.

It is unlikely that subprime-related losses will trigger widespread financial sector distress in Asia. Based on market data and losses announced to date, losses in Asia (ex-Japan) may amount to 15–20 percent of these exposures, or $2–5 billion. Subprime-related losses for Japanese banks have risen to $6.5 billion, still well within their capital buffers and operating profits. Consequently, the direct impact of the global credit crisis for Asian financial institutions will most likely be limited to an "earnings event."

Nonetheless, greater risk related to structured subprime-related products and liquidity pressures may emerge. Market participants have expressed discomfort with the level, quality, and timing of disclosure by some Asian financial institutions,[1] although they do not expect large surprises. Some market participants are of the view that a number of local institutions in Asia may still be unaware of their overall exposure to subprime-related structured products. In particular, some Chinese banks may have provisioned insufficiently for their likely subprime-related losses.

Why Was Subprime Exposure in Asia Much Lower than in Other Regions?

The limited reported exposure to subprime-related products in most Asian markets reflects a combination of factors:

- Many emerging Asian banks were less involved in structured credit and related derivative products. Banks in Asia (especially emerging Asia) are at an early stage in the securitization process; they were not directly involved in subprime or similar high-risk mortgage lending and did not originate complex structured credit instruments.[2] Also, Asian banks started investing in such products more recently than did financial institutions in the United States and Europe.
- In many Asian countries, bank lending has been profitable, including to consumers (in a rising per capita income environment), which has limited the need to look for higher yields in alternative investments, including structured products, outside the region.
- Asian banks rely more on traditional banking services, with revenues from fixed income, currency, and commodities businesses accounting for a significantly smaller portion of their income compared with leading western banks.[3] Moreover, Asian banks have been relatively prudent in running their own investment portfolios, which are focused mostly on government bonds and treasuries.
- According to market participants, regulators in the relatively advanced Asian economies, Japan, Hong Kong SAR, and Singapore, have had a more proactive role compared with other economies in the region,

Note: The main author of this box is Elena Loukoianova.

[1] For example, in the case of Taiwan Province of China, the biggest life insurer recently revealed that local currency CLOs were packaged with CDOs related to U.S. subprime products.

[2] Although in some cases (e.g., Taiwan Province of China) underwriting standards were weak, the decline in collateral quality to date has not been of a magnitude comparable to that in the United States.

[3] In general, these revenues account for 15–20 percent of total revenues of large western banks.

in ensuring that smaller local banks have sufficient risk management capacity before they start investing in complex structured products. For example, under Basel II, many banks in Hong Kong SAR upgraded their risk management systems, improving their capacity for prudent investment strategies. In the Philippines, the authorities have sharply limited banks' participation in structured credit markets and are watching these developments closely, in line with Basel II implementation.

Lessons from the Subprime Crisis

Although Asian subprime exposure and losses to date are low and unlikely to pose systemic concerns, the current global credit crisis presents an opportunity for financial institutions and supervisors in the region to draw lessons from the global experience.

- Markets and regulators globally were seen as ill-equipped to deal with the complexities of structured products, and shortcomings in valuation, implementation of international accounting standards, and disclosure contributed to weak due diligence and market discipline. The introduction of Basel II in several Asian economies will help supervisors strengthen their regulatory regimes. The key changes relate to (1) the Pillar 1 capital treatment of securitization of some complex products, (2) the Pillar 2 adequate stress tests and capital provisioning requirements, and (3) the Pillar 3 disclosure requirements to improve transparency of exposures to structured credit products.
- There is need for greater investment in firm-wide risk management capabilities. As market participants note, at least some Asian institutions could not easily aggregate their subprime exposure when the crisis emerged, with the recent announcement by ICICI Bank (India) being a good example of late recognition of losses. With improved risk management practices, banks and regulators need to rely more on the systematic use of stress tests and scenario analyses, including to assess liquidity risks.
- Regulators need to reinforce implementation of existing rules on the use of off-balance-sheet entities by banks and may need to strengthen guidelines regarding the circumstances under which risk transfers to off-balance-sheet entities warrant capital relief. More broadly, there will also be a need to clarify the framework and incentives for the originate-to-distribute model of securitization and risk transfer markets. Central banks and regulators should use their financial stability reports to examine these issues in greater depth.
- Supervisors should improve monitoring of liquidity positions to keep up with banks' changing risk profiles and growing vulnerability to market-based shocks. Although liquidity has not tightened appreciably in most Asian countries, national supervisors should continue to closely monitor the liquidity situation of their banking sectors and individual banking institutions to ensure their resiliency to market volatility.
- Given the recent growth in housing markets in Asia, authorities in several countries have established government housing agencies to jump-start their home mortgage market. In addition, country authorities may introduce measures to strengthen developing housing markets (1) to ensure adequate customer protection for new products, (2) to improve the secondary market for residential mortgage-backed securities (RMBSs), and (3) to harmonize mortgage regulations across banks and nonbank mortgage lenders.

The introduction of Basel II in several Asian economies, as well as global efforts to strengthen the regulatory approach to risk transfer, should help Asian authorities to address several of these challenges and safeguard financial stability in the future.

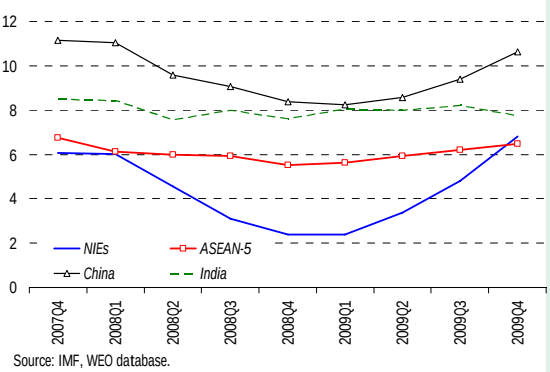
Baseline Forecast

A key input into Asia's baseline forecast is the state of the global economy. As detailed in the IMF's April 2008 WEO and *Global Financial Stability Report* (GFSR), global growth is set to decline sharply this year owing to a contraction of activity in the United States and slower growth in Europe. Asia is not expected to delink from developments in the rest of the world. (This issue is explored in Chapter II.) Indeed, the region's increased integration into the global economy on both the trade and financial fronts suggests that, if anything, Asian economies are more reliant on developments outside the region than ever before.

- Although intraregional trade is booming, reflecting the specialization of many of the region's economies as part of sophisticated production chains, final demand for Asia's exports still emanates largely from outside the region.[12] Indeed, Asia's exposure to demand elsewhere in the global economy—including the United States and Europe—continues to rise.
- On the financial side, links between Asia and the rest of the world have increased across asset classes. As has been seen in a number of recent episodes, changes in investors' risk appetite or expectations for the paths of key variables (e.g., U.S. growth or interest rates) can quickly translate into large changes in financial asset prices across Asia, with both direct (balance sheet) and indirect (confidence) effects.

Turning to the forecast itself, growth in Asia as a whole is projected to decline from 7.4 percent in 2007 to 6.2 percent in 2008, and to rise modestly in 2009 (Table 1.2). This markdown reflects lower export growth as the drop in external demand from the United States and Europe affects the region foremost through the trade channel, including the dampening effects on demand of sustained high world oil prices. The quarterly growth profile (year-on-year basis) is projected to decline steadily throughout 2008, falling by 1 percentage point for the region as a whole—but by 3 percentage points in China and the NIEs—before recovering gradually during 2009 (Figure 1.23).

Figure 1.23. Emerging Asia: Quarterly GDP Growth Forecasts
(Year-on-year percent change)



Source: IMF, WEO database.

In terms of demand components, real export growth is projected to decline by 4 percentage points in emerging Asia in 2008, led by China (Table 1.3). Domestic demand is seen as holding up reasonably well in most emerging Asian economies, supported by strong momentum, steady consumer and business confidence, and healthy household and bank balance sheets. Investment will be more affected than consumption, owing to a relatively sharp decline in India, although parts of the region will see a modest increase (Table 1.4). Consumption growth should moderate across most of the region, falling by ½ percentage point overall (one-half the pace of the decline in investment growth). (See Table 1.5.) Domestic demand should ease in industrial Asia as well. Broadly speaking, Asia's GDP growth should rebound in line with the gradual global recovery in 2009. Reflecting these developments, Asia's aggregate current account surplus is seen to decline from 5.2 percent of GDP in 2007 to about 4 percent of GDP in 2008 and 2009.

The financial contagion channel from the rest of the world to Asia is seen as secondary to the trade channel in the baseline forecast (although it contributes to larger risks—see below). This mainly reflects the reportedly low exposure of the region's

[12] See Chapter IV of the October 2007 REO, "The Evolution of Trade in Emerging Asia."

banks and other financial institutions to subprime and related structured products, and the prevalence of self-funded firms in the region. The flow of credit is thus seen to be relatively less impeded in Asian financial markets, although, as noted earlier, banks in a number of countries face some funding risks. On the other hand, the high correlation of asset markets in the region with the rest of the world implies that recent price declines in equities and key fixed income markets (e.g., U.S. agency bonds)[13] as well as increases in spreads will have direct effects on firms' balance sheets and income statements. The baseline assumes a gradual normalization of credit market conditions, with risk appetite recovering and then stabilizing, albeit at less favorable levels than before the onset of the turbulence in August 2007.

Table 1.2. Asia: Real GDP Growth

(Year-on-year percent change)

	2006	2007	2007	2008	2008	2009
			REO Oct '07		Latest Proj.	
Industrial Asia	**2.4**	**2.3**	**2.3**	**2.0**	**1.7**	**1.7**
Japan	2.4	2.1	2.0	1.7	1.4	1.5
Australia	2.6	4.1	4.4	3.8	3.2	3.1
New Zealand	1.5	3.1	2.8	2.3	2.0	2.1
Emerging Asia	**9.0**	**9.2**	**9.0**	**8.2**	**7.6**	**7.9**
NIEs	**5.6**	**5.6**	**5.0**	**4.5**	**4.0**	**4.4**
Hong Kong SAR	7.0	6.3	5.7	4.7	4.3	4.8
Korea	5.1	5.0	4.8	4.6	4.2	4.4
Singapore	8.2	7.7	7.5	5.8	4.0	4.5
Taiwan POC	4.9	5.7	4.1	3.8	3.4	4.1
China	11.1	11.4	11.5	10.0	9.3	9.5
India	9.8	9.2	8.9	8.4	7.9	8.0
ASEAN-5	**5.7**	**6.3**	**5.9**	**5.8**	**5.8**	**6.0**
Indonesia	5.5	6.3	6.2	6.1	6.1	6.3
Malaysia	5.9	6.3	5.8	5.6	5.0	5.2
Philippines	5.4	7.3	6.3	5.8	5.8	5.8
Thailand	5.1	4.8	4.0	4.5	5.3	5.6
Vietnam	8.2	8.5	8.3	8.2	7.3	7.3
Emerging Asia excl. China	**7.2**	**7.2**	**6.8**	**6.4**	**6.1**	**6.3**
Emerging Asia excl. China & India	**5.6**	**5.9**	**5.4**	**5.1**	**4.9**	**5.2**
Asia	**7.2**	**7.4**	**7.3**	**6.6**	**6.2**	**6.4**

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

Table 1.3. Asia: Real Export Growth

(Year-on-year percent change; national accounts basis)

	2006	2007	2007	2008	2008	2009
			REO Oct '07		Latest Proj.	
Industrial Asia	**8.7**	**7.7**	**6.3**	**4.0**	**5.0**	**3.9**
Japan	9.7	8.8	6.7	3.4	5.0	3.3
Australia	3.3	3.3	4.5	7.9	5.4	6.7
New Zealand	1.8	3.5	3.2	4.1	3.4	4.4
Emerging Asia	**18.7**	**13.7**	**12.6**	**12.0**	**9.6**	**11.7**
NIEs	**11.1**	**10.2**	**9.5**	**9.0**	**6.9**	**7.0**
Hong Kong SAR	9.4	7.9	6.7	6.3	5.4	5.2
Korea	11.8	12.1	12.0	10.5	8.6	7.9
Singapore	11.0	6.6	6.2	8.3	3.5	4.6
Taiwan POC	10.4	8.8	7.3	7.6	5.5	7.1
China	23.9	19.5	16.5	13.3	11.5	14.3
India	19.1	7.7	9.0	13.2	8.5	10.8
ASEAN-5	**10.5**	**6.9**	**8.8**	**9.2**	**7.8**	**8.5**
Indonesia	9.4	8.0	8.7	10.0	7.9	9.0
Malaysia	7.4	3.7	7.8	6.6	9.2	8.0
Philippines	11.2	3.1	9.1	7.3	2.6	6.0
Thailand	8.5	7.1	7.9	6.3	4.9	6.3
Vietnam	23.8	12.6	12.3	19.2	18.2	16.1
Emerging Asia excl. China	**14.0**	**8.2**	**9.1**	**10.7**	**7.8**	**9.0**
Emerging Asia excl. China & India	**10.8**	**8.6**	**7.7**	**7.3**	**7.3**	**7.8**
Asia	**15.9**	**12.2**	**11.0**	**10.0**	**8.4**	**9.8**

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

Table 1.4. Asia: Investment Growth

(Year-on-year percent change; constant prices)

	2006	2007	2007	2008	2008	2009
			REO Oct '07		Latest Proj.	
Industrial Asia	**1.9**	**1.2**	**2.2**	**2.2**	**1.8**	**2.3**
Japan	1.5	-0.1	0.7	1.9	1.1	2.0
Australia	4.9	8.1	10.1	4.0	5.3	4.2
New Zealand	-1.1	4.5	3.4	1.4	1.4	2.9
Emerging Asia	**11.6**	**10.7**	**12.4**	**11.7**	**9.8**	**10.0**
NIEs	**4.0**	**5.3**	**6.5**	**4.8**	**5.2**	**6.5**
Hong Kong SAR	7.0	6.0	9.2	8.4	14.0	8.2
Korea	3.6	4.0	5.4	3.2	3.9	6.4
Singapore	13.5	20.2	14.4	5.4	7.0	7.5
Taiwan POC	0.6	2.4	4.5	5.8	3.2	5.5
China	14.9	11.2	15.1	13.6	12.2	11.5
India	16.1	15.9	14.5	13.1	7.6	9.7
ASEAN-5	**4.1**	**7.9**	**7.3**	**11.0**	**9.5**	**9.1**
Indonesia	2.5	9.2	8.5	13.3	10.7	10.1
Malaysia	7.9	10.2	9.3	8.8	4.1	4.6
Philippines	1.4	9.5	9.3	10.5	9.9	9.8
Thailand	3.8	1.4	1.0	9.0	10.8	12.0
Vietnam	8.6	12.2	11.9	10.8	9.8	4.6
Emerging Asia excl. China	**8.7**	**10.2**	**9.9**	**9.9**	**7.4**	**8.6**
Emerging Asia excl. China & India	**4.0**	**6.5**	**6.2**	**5.1**	**7.3**	**7.7**
Asia	**8.9**	**8.2**	**9.7**	**9.3**	**7.8**	**8.2**

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

Table 1.5. Asia: Private Consumption Growth

(Year-on-year percent change; constant prices)

	2006	2007	2007	2008	2008	2009
			REO Oct '07		Latest Proj.	
Industrial Asia	**2.2**	**1.9**	**2.1**	**2.0**	**1.2**	**1.9**
Japan	2.0	1.4	1.7	1.8	0.7	1.7
Australia	2.9	4.5	4.0	3.2	3.8	2.8
New Zealand	2.4	4.3	3.8	1.4	1.7	1.6
Emerging Asia	**8.0**	**8.5**	**7.8**	**7.9**	**8.0**	**8.1**
NIEs	**3.8**	**4.3**	**3.8**	**3.6**	**3.3**	**3.5**
Hong Kong SAR	6.0	7.8	5.5	5.0	5.1	4.5
Korea	4.5	4.5	4.0	3.5	3.0	3.3
Singapore	3.3	4.6	3.6	4.0	4.0	4.3
Taiwan POC	1.8	2.6	2.7	3.2	2.8	3.2
China	10.9	11.3	10.8	11.0	10.4	10.6
India	7.4	6.9	5.8	5.7	7.4	6.9
ASEAN-5	**4.5**	**6.2**	**5.2**	**5.0**	**5.5**	**6.0**
Indonesia	3.2	5.0	4.7	4.7	5.4	5.3
Malaysia	7.1	11.7	7.0	7.0	4.8	5.5
Philippines	5.5	6.0	5.6	5.6	5.8	5.8
Thailand	3.2	1.4	1.3	2.6	5.1	6.3
Vietnam	7.5	13.2	13.2	8.0	8.0	8.4
Emerging Asia excl. China	**5.4**	**5.9**	**5.0**	**4.9**	**5.6**	**5.6**
Emerging Asia excl. China & India	**4.1**	**5.2**	**4.8**	**4.6**	**4.4**	**4.7**
Asia	**6.4**	**6.8**	**6.3**	**6.4**	**6.3**	**6.6**

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

[13] The impact here applies mainly to nonofficial holdings because these instruments held as official reserves are in many cases not marked-to-market or are held to maturity.

In emerging Asia, growth in 2008 should decline by 1½ percentage points to 7.6 percent.

- China's growth in 2008 is projected to drop by about 2 percentage points to 9.3 percent, reflecting a decline in net exports as demand from major trading partners slows. Investment should stabilize somewhat, with the authorities using administrative controls to contain excessive growth. A modest easing in consumption is forecast.
- India's growth is expected to decline by 1¼ percentage points to 7.9 percent, driven by a slowdown in investment on tightening credit conditions. Fiscal stimulus will provide a partial offset.
- Growth in the NIEs is forecast to fall by 1½ percentage points owing to the group's relative openness and oil dependency. Declines on the order of 4 percentage points in Singapore owing to a sharp decline in investment, and 2–3 percentage points in Hong Kong SAR and Taiwan Province of China are foreseen. Growth in Korea, in contrast, should decline more moderately as the drop in exports is lessened by a weaker won, while domestic demand remains solid, supported by the pro-growth policies of the new government.
- ASEAN-5 growth should decline only modestly in 2008, reflecting buoyant domestic demand and the subregion's commodity resource endowment. In Indonesia, a relatively closed economy, growth is expected to remain led by domestic demand. Growth should pick up in Thailand, assuming political normalization, and remain supported in Malaysia owing to ongoing public investment projects. The Philippines is enjoying strong consumption and remittance flows, while Vietnam will continue to face overheating pressures related to its post-WTO accession boom, although growth will decline in both economies.

In industrial Asia, growth is forecast to decline by ½ percentage point in 2008 to 1¾ percent. In Japan, the pace of activity should ease to 1½ percent owing to weaker foreign demand and tepid consumption. Growth should moderate in Australia and New Zealand as domestic demand slows owing to tighter credit conditions, in spite of continued favorable terms of trade.

Risks

Despite the markdown in 2008 baseline growth for Asia since the previous REO, the risks, on balance, remain on the downside. These relate largely to external factors linked to the potentially negative effects of a worsening of the slump in the U.S. housing market and a further deterioration of conditions in global credit and money markets.[14] As in the past, some upside risks to growth emanate from domestic demand, particularly in the larger economies in the region. The main risks to the baseline forecast are the following:

- *A further, marked deterioration of financial market conditions leading to sharply lower global growth*. This scenario includes a large deterioration of confidence, a sharp rise in counterparty risk, and concerns over the adequacy of bank capital, leading to a full-blown credit crunch in advanced economies. A protracted slowdown in activity would ensue. The trade effects of lower growth on Asia are relatively straightforward: IMF staff estimates show that a 1 percentage point reduction in U.S. growth would reduce growth in Asia by ¼ to ½ percentage point.[15] However, it is likely that the transmission of financial turbulence could be larger and more complicated, and could adversely affect domestic demand across the region. These effects could include (1) the balance sheet impact of lower equity and other asset prices; (2) lower consumer and business confidence, leading to sharp declines in consumption and investment; and (3) a spike in counterparty risk leading to sharply

[14] For details on recent financial developments and issues, see the April 2008 GFSR.

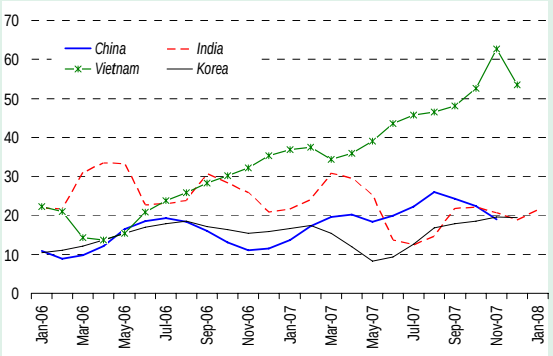
[15] As argued in Chapter II, this range may underestimate the impact on the region since there is evidence that spillovers, in particular from the United States to China, have risen in recent years.

higher funding costs for banks (and corporates). The possibility of "financial accelerator" effects (a vicious circle of a loss of confidence—deleveraging—asset price declines—capital preservation—credit crunch) kicking in implies that the impact of the financial channel could be nonlinear. The accompanying reduction in global risk aversion would also have uncertain effects on capital flows in Asia with the perceived riskier economies seeing larger outflows.

- *Domestic demand remains resilient*. An upside, and relatively low probability, risk to growth in emerging Asia would be if domestic demand were more resilient than expected, particularly in the largest economies. In China, this could reflect less-than-successful efforts by the authorities to rein in investment, while in India it could reflect continued portfolio inflows feeding into high credit growth and inflation pressures. Stronger-than-envisaged domestic demand stemming from higher-than-desirable credit growth is also a concern in Vietnam (Figure 1.24). On the other hand, if the resilience in domestic demand were the result of higher confidence and delinking, this would be a positive development for the region.

Figure 1.24. Selected Asia: Private Sector Credit Growth

(3-month percent change of 3-month moving average, SAAR)



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

Policy Implications

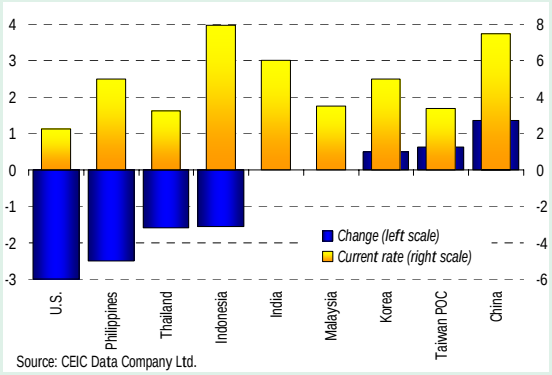
Policymakers in Asia face potentially difficult choices now. The current growth momentum and inflation levels suggest that growth concerns should be balanced against inflation concerns. As such, the room for monetary policy maneuver appears limited in a number of countries, although greater exchange rate flexibility in many countries would help. However, if the downside risks to growth materialize and the region finds itself in a substantially weaker growth environment, most Asian economies have considerable scope to ease macroeconomic policies, particularly on the fiscal front.

Monetary, Exchange Rate and Financial Sector Policies

Country authorities in Asia have used a range of tools to combat rising inflation pressures. In China, interest rates (Figure 1.25) and reserve requirements have been raised and window guidance applied in an effort to curb lending for investment, while India has used reserve requirements and benefited from a stronger rupee to contain inflation. The Philippines has used an appreciation of the peso to tighten monetary conditions (allowing for a modest lowering of policy rates), while Singapore has steepened the slope of its currency band. On the other hand, lower inflation pressures led the authorities in Indonesia and Thailand to lower rates (although inflation pressures have recently reemerged in both cases).

Figure 1.25. Selected Asia: Changes in Policy Rates Since January 1, 2007

(In percentage points)



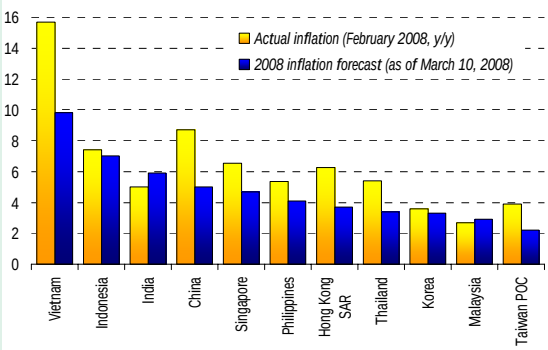
Source: CEIC Data Company Ltd.

In the baseline scenario, only a handful of countries in emerging Asia appear to have scope to loosen monetary settings in response to the projected moderation of growth. Although inflation expectations remain generally well anchored (Figure 1.26), price pressures are on the rise and monetary conditions have loosened across much of the region, particularly in the NIEs and ASEAN-5 (Figure 1.27).[16]

A potentially thorny monetary policy issue facing a number of Asian policymakers in the baseline scenario is the interaction between interest rates vis-à-vis the United States, capital inflows, and the exchange rate. With the U.S. Federal Reserve aggressively lowering policy rates, there is pressure on some Asian central banks to follow suit, including to stem interest rate sensitive inflows that could feed into undesired additional domestic bank lending and (asset price) inflation in those economies where nominal exchange rates remain sticky. However, given rising inflation pressures—and in some cases relatively new inflation-targeting frameworks—many central banks may find it difficult to lower policy rates.

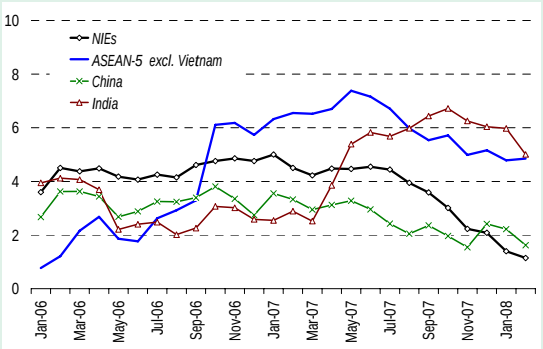
Figure 1.26. Selected Asia: Private Sector Inflation Forecasts

(Annual percentage change)



Sources: Consensus Economics; and CEIC Data Company Ltd.

Figure 1.27. Selected Asia: Real Monetary Conditions Indices



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

Should the downside risks to the forecast materialize, it is expected that a monetary policy response would be appropriate for most countries. In this scenario, growth would decline substantially and inflation pressures would be expected to moderate. This would afford room for authorities in the region to lower policy interest rates or otherwise loosen monetary settings.

Regarding specific countries' scope for monetary policy loosening in the baseline scenario, China is constrained because policy remains aimed at curbing inflation and reducing investment growth, while India has limited scope to move, particularly since inflation pressures have recently picked up. In the NIEs, Hong Kong SAR remains committed to its peg to the U.S. dollar, while in Singapore the inflation outlook is likely to remain a concern. However, there could be some scope for easing in Korea and Taiwan Province of China. In the ASEAN-5, Indonesia is facing renewed inflation pressures and Thailand has limited ammunition after the lowering of rates last year. Malaysia and the Philippines both have scope for easing, while in Vietnam any monetary policy response would need to be weighed against the risks of overheating. The situation for industrial countries is clearer. Japan is heavily constrained by interest rates already being very low, while monetary policy in Australia and New Zealand needs to remain firm until inflation pressures moderate.

[16] Here, the relative weights on real interest rates and the real effective exchange rate in the monetary conditions index equation are assumed to be constant across economies, with the former being three times the latter.

As argued in past REOs, more flexible exchange rates would be in the interest of a number of economies in the region. First and foremost, this would create room for more independent monetary policy. In cases where exchange rate pressures remain on the strong side, appreciating currencies would also help to dampen inflation pressures by lowering import costs. Moreover, where currencies remain substantially undervalued, as in China, stronger currencies would facilitate a rebalancing in the composition of growth toward nontradables as well as contribute to a resolution of global imbalances. In this connection, the focus of authorities in the region should be placed on real effective exchange rates, given that recent bilateral appreciation against the U.S. dollar has been largely neutralized in real effective terms, reflecting the dollar's decline on a multilateral basis.

Given the prominence of financial sector risks in the downside scenario, monetary and supervisory authorities in the region could usefully review their relevant contingency plans. In countries where the structure of bank funding poses vulnerabilities, central bank liquidity facilities may have to be activated, implying a need for clarity on terms of access as well as the types of collateral that the monetary authorities would accept. Careful attention should be paid to counterparty risk, especially vis-à-vis entities in regions where an increase in financial turmoil is likely to have the most negative effects. With ongoing questions regarding exposure to structured and other potentially impaired credits as well as the size of any future price movements of such products, stress testing of balance sheets takes an added importance, including in the nonbank financial sector. The authorities should carefully monitor mark-to-market exposure and funding risks and formulate plans to handle potential calls for bank recapitalization.

Fiscal Policy

Most policymakers in Asia have followed prudent fiscal policies during the recent period of strong growth. As a result, "fiscal space" has been generated that could be used to combat any serious growth slowdown (Table 1.6). Small fiscal deficits (or even surpluses) and modest debt levels suggest that, should the downside risks to growth materialize, most countries could allow automatic fiscal stabilizers to work or even run countercyclical policies if necessary, provided that these are timely and temporary.

Table 1.6. Asia: Selected Fiscal Indicators

(In percent of GDP)

	General Government Gross Debt				Central Government Fiscal Balance			
	2006	2007 Est.	2008 Proj.	2009 Proj.	2006	2007 Est.	2008 Proj.	2009 Proj.
Industrial Asia	**164.0**	**164.1**	**165.1**	**163.3**	**-3.6**	**-2.5**	**-2.6**	**-2.6**
Japan	194.7	195.5	197.5	196.0	-4.7	-3.4	-3.5	-3.5
Australia [1]	8.9	8.7	7.9	7.2	1.6	1.3	1.2	1.4
New Zealand [2]	23.3	23.6	21.8	20.0	5.1	3.4	3.6	2.2
Emerging Asia	**36.7**	**37.7**	**36.4**	**34.9**	**-0.9**	**0.2**	**-1.0**	**-0.9**
NIEs	**29.0**	**28.0**	**28.1**	**27.6**	**2.1**	**3.3**	**1.8**	**2.2**
Hong Kong SAR	1.7	1.3	1.2	0.9	4.0	7.2	-0.3	2.9
Korea [3,4]	32.2	32.1	32.9	32.9	1.8	2.7	2.3	2.4
Singapore	...	...	...	...	7.6	9.1	7.1	7.0
Taiwan POC	34.9	32.1	31.3	29.7	0.3	0.9	0.0	0.0
China [5]	16.6	21.1	19.0	17.5	-0.8	1.1	-0.8	-0.7
India [6]	80.1	79.3	79.2	77.0	-3.6	-3.2	-3.1	-3.1
ASEAN-5	**45.2**	**41.3**	**40.3**	**39.5**	**-0.9**	**-1.4**	**-1.7**	**-1.7**
Indonesia [3]	39.0	35.0	33.1	31.5	-1.0	-1.2	-2.1	-1.9
Malaysia [3]	43.3	41.8	42.6	43.2	-3.3	-3.2	-3.4	-3.4
Philippines [7]	73.9	62.3	59.1	57.1	-1.2	-1.6	-0.6	-0.5
Thailand [7,8]	41.1	38.2	38.2	38.4	0.6	0.4	-0.4	-0.4
Vietnam [7]	43.0	43.7	43.7	42.7	-0.3	-3.4	-2.1	-2.5
Asia	**72.4**	**71.6**	**69.4**	**66.4**	**-1.6**	**-0.5**	**-1.4**	**-1.3**

Sources: IMF, WEO database, and staff estimates.

[1] Fiscal year ending June. Fiscal balance for Australia includes net surplus from state-owned enterprises.

[2] Fiscal year ending June. Fiscal balance is defined as operating balance net of revaluations up to FY07 and operating balance net of gains and losses thereafter. Figures exclude net New Zealand Superannuation Fund asset returns.

[3] Central government only.

[4] Consolidated central government debt including government guaranteed debt for financial sector restructuring.

[5] Net debt.

[6] Fiscal year ending March; privatization receipts excluded from revenues.

[7] Public sector debt.

[8] Fiscal year ending September.

- China has sufficient fiscal space to keep growth relatively high (in the baseline as well as the downside scenario), including scope for bolstering social spending to reduce the high level of precautionary saving, while India, in contrast, has little room for maneuver owing to high public debt. That being said, the need for fiscal stimulus in India is seen as limited.
- In the NIEs, Hong Kong SAR and Singapore have large surpluses and strong public sector balance sheets and thus ample scope to combat a

growth slowdown, while Korea and Taiwan Province of China must be mindful of potentially large medium-term spending pressures related to rapidly aging populations.

- In the ASEAN-5, both Malaysia and Thailand have room for a fiscal policy response. Indonesia's scope for action is somewhat less since the fiscal stance has been eased via higher energy subsidies, and that in the Philippines is still limited by a relatively high public debt stock. Vietnam is constrained by ongoing overheating pressures.
- In the industrial economies, any countercyclical fiscal policy in Japan would be significantly constrained by the need to stabilize the large public debt stock. In contrast, both Australia and New Zealand have ample space to loosen fiscal policy, but have limited macroeconomic space to use discretionary fiscal policy given inflation pressures.

II. Can Asia Decouple? Investigating Spillovers from the United States to Asia

With the U.S. economy slowing and possibly facing a recession, the question arises whether Asia will be able to decouple. Views on this question range from those who think the impact on Asia will be minimal, cushioned by continued strong growth in China and India, to those who think Asia has made itself very vulnerable to U.S. shocks through a combination of growing dependence on external demand for its products and rising domestic financial imbalances, notably asset bubbles.[17] The impact of a U.S. slowdown on Asia matters not just for the region but for the world, given that in recent years Asia has been growing faster than any other region and has contributed close to half of total global growth. To shed light on this issue, this chapter uses a variety of statistical methods—correlation analysis, regressions and vector autoregressions (VARs), simulations of dynamic stochastic general equilibrium models, and recession-event studies—to estimate spillovers from the United States to Asia, how these spillovers have evolved over time, and how they vary across countries in Asia.

In a globalized world, one should not simply look at *direct* spillovers from the United States to Asia. This chapter controls for how U.S. shocks may affect Asia through their indirect effects on Europe and other parts of the world. This is particularly important because Europe has supplanted the United States as the main trading partner for many countries in the region. Moreover, given the ongoing turmoil in many credit and money markets worldwide, but particularly in the United States, the chapter looks at how financial stress may amplify real sector spillovers.

Spillovers from the United States have had a moderate effect on Asia *on average over the past 15 years,* but the evidence suggests that the impact could be substantial now. Over this relatively long period, the analysis suggests that a 1 percentage point slowdown in the United States has led to a ¼ percentage point slowdown in Japan, and to a ¼–½ percentage point average slowdown in emerging Asia, with substantial variation across countries in the region. Yet, there are reasons to believe that the current U.S. slowdown could have a significantly larger impact than suggested by these estimates:

- Long-sample estimates find virtually no spillovers from the United States to China and India, two countries with large weights in the regional aggregate. However, long-sample regressions can be problematic for such countries, which are experiencing rapid structural change. Indeed, the chapter finds evidence that spillovers have grown in recent years for these and other countries, consistent with rising trade and financial integration with the United States.
- Model simulations of U.S. demand shocks that also assume realistic declines in global confidence—a likely possibility going forward—result in growth falling by 0.8 percentage point in Asia for a 1 percentage point decline in the United States.
- The 2001 recession in the United States had a large impact on Asia, with the roughly 1¾ percentage point decline in the output gap in the former resulting in a 1¼ percent decline in the latter.[18] While many commentators have pointed to the fact that the 2001 recession was

Note: The main authors of this chapter are Roberto Guimarães-Filho, Masahiro Hori, Jacques Miniane, and Papa N'Diaye. Souvik Gupta provided research assistance.

[17] See, among others, Anderson (2008), Buchanan and others (2007), Chang and others (2007), Hak (2008), Hensley and Lupton (2007), HSBC (2008), Roubini (2007), and Wooldridge (2008).

[18] This is the GDP-weighted average of individual countries' changes in output gaps.

concentrated on electronics, a key export for the region, and hence may provide an upper-bound estimate of spillovers, it is worth noting that the current slowdown in the United States is expected by the IMF to be deeper and more prolonged than the 2001 recession, and is accompanied by substantial stress in money and credit markets.

That said, while Asia has clearly not decoupled, it may continue to enjoy solid growth. The results suggest that the current U.S. shock is likely to have a significant impact on regional growth, but the region carries considerable momentum, and it would likely take a sharper-than-currently-envisaged slowdown in the United States to derail such momentum. Nevertheless, in some countries in Asia where spillovers are estimated to be high but where growth is currently trailing the regional average, the impact of the U.S. slowdown is likely to be felt more noticeably.

Trade and Financial Exposure to the United States

Over the past two decades, Asian export growth has been driven by growth in intraregional trade. Intraregional exports now account for 41 percent of total emerging Asia exports, versus 23 percent in 1986. Growth in intraregional trade has owed much to growing trade with China, which accounts for almost 60 percent of intraregional trade growth over the past 20 years. Moreover, this contribution has been gaining momentum in recent years.

However, trade exposure to industrial countries has increased substantially over time. Most intraregional trade in Asia is occurring within vertically integrated regional supply chains that, by and large, ship intermediate goods (depending on the sophistication of the source country) that are then assembled in China into final goods for shipment to industrial countries.[19] Using highly disaggregated SITC data comprising more than a thousand categories of goods, we computed measures of indirect exposure to the United States and the European Union that account for shipments of intermediate and capital exports used as inputs to goods assembled in all third countries and then reexported to the United States and the European Union for final consumption.[20] While direct trade exposure to the United States, measured as exports to the United States as a share of GDP, has increased only modestly for Asia as a whole and has declined in four Asian countries over the past 15 years, total exposure including indirect exposure has increased for all countries but one, and has increased by larger margins than direct exposure for the region (Table 2.1).[21] Similar patterns can be observed for a group of 15 countries belonging to

Table 2.1. Export Exposure to Industrial Countries
(In percent of GDP)

	Exposure to the U.S.				Exposure to the EU-15			
	Direct		Total[1]		Direct		Total[1]	
	1994	2006	1994	2006	1994	2006	1994	2006
Japan	2.5	3.4	3.0	4.4	1.4	2.2	2.0	3.5
Australia	0.9	1.1	1.6	2.1	1.5	1.9	2.2	3.1
New Zealand	2.8	3.0	3.7	4.0	3.7	3.6	4.8	5.1
China	5.6	9.6	7.6	12.2	3.9	7.7	6.0	11.7
India	1.7	2.4	2.0	3.1	2.6	3.1	3.3	4.5
Hong Kong SAR	16.7	14.8	20.0	21.8	12.6	15.7	16.9	24.7
Korea	4.9	5.1	6.1	8.7	2.7	5.0	3.9	8.2
Singapore	23.9	17.3	31.9	30.8	17.0	20.1	25.5	35.7
Taiwan POC	10.4	9.9	12.9	15.5	5.2	7.1	7.9	13.6
Indonesia	3.3	3.5	4.5	5.6	3.4	3.7	4.8	6.4
Malaysia	18.0	22.7	25.0	31.7	11.4	13.8	18.3	25.4
Philippines	8.8	8.0	9.8	12.0	3.7	7.1	5.0	12.5
Thailand	7.0	10.5	8.9	15.1	5.2	8.7	7.5	14.7
Vietnam	1.4	15.2	2.8	18.5	6.6	15.0	8.6	20.8
Asia[2]	**7.7**	**9.0**	**10.0**	**13.3**	**5.8**	**8.2**	**8.3**	**13.6**
Industrial Asia[2]	**2.1**	**2.5**	**2.8**	**3.5**	**2.2**	**2.6**	**3.0**	**3.9**
Emerging Asia[2]	**9.2**	**10.8**	**12.0**	**15.9**	**6.8**	**9.7**	**9.8**	**16.2**

Sources: UN COMTRADE Database; and IMF staff calculations.

[1] Includes indirect exposure through exports of intermediate and capital goods via third countries. See Appendix for calculations of indirect trade exposure.

[2] Arithmetic nonweighted average.

[19] This description is itself a simplification, because China is rapidly moving from the role of a simple assembler to producing its own intermediate inputs. See IMF (2007c) for details on Asia's evolving intraregional trade.

[20] Here and elsewhere in this chapter, refer to the Appendix for details on the construction of the data and on the empirical methodology.

[21] Note that, as percent of total exports rather than GDP, total exposure to the United States has declined for many countries in the region. While this could mean that Asia has other sources of growth in the face of a U.S. slowdown, in the end this would depend on the covariance of U.S. demand and demand from other parts of the world. This is best investigated using formal econometrics, which is the purpose of the following sections.

the European Union (EU-15), which has surpassed the United States as the main trading partner for many countries in the region.

Similarly, financial integration with the rest of the world, particularly the United States, has increased dramatically. Both foreign assets held by Asian residents as well as domestic liabilities held by foreign residents have risen as a share of GDP, with the former outpacing the latter as Asia has built a substantial net foreign asset position. Perhaps more relevant for the purposes of this chapter, U.S. holdings of Asian portfolio securities (both debt and equities) and Asian country holdings of U.S. portfolio securities (same) have also increased dramatically (Table 2.2).[22] Much of the increase on the asset side has taken place in debt securities, reflecting a large accumulation of international reserves placed in U.S. treasuries.[23]

Table 2.2. Financial Exposure to the United States
(In percent of GDP)

	U.S. Holdings of Asian Portfolio Securities		Asian Holdings of U.S. Portfolio Securities	
	Dec-94	Dec-06	Dec-94	Jun-06
Japan	2.5	13.0	4.4	25.0
Australia	6.8	20.4	2.6	15.0
New Zealand	10.5	9.3	2.9	12.7
China	0.3	2.2	2.3	28.8
India	...	5.5	...	2.5
Hong Kong SAR	12.6	42.2	14.8	61.3
Korea	1.4	12.4	1.2	14.2
Singapore	8.6	35.8	42.9	129.2
Taiwan POC	0.2	19.4	13.1	39.8
Indonesia	1.2	3.7	1.0	3.4
Malaysia	11.5	9.2	6.8	10.5
Philippines	3.1	7.9	3.3	7.9
Thailand	3.1	5.7	4.4	8.2
Vietnam	...	0.1	...	4.1
Asia[1]	**5.1**	**13.3**	**8.3**	**25.9**
Industrial Asia[1]	**6.6**	**14.2**	**3.3**	**17.6**
Emerging Asia[1]	**4.6**	**13.1**	**10.0**	**28.2**

Sources: U.S. Department of the Treasury, Treasury International Capital System; CEIC Data Company Ltd.; Haver Analytics; and IMF, Information Notice System, and staff calculations.

[1] Arithmetic nonweighted average.

[22] These statistics are based on U.S. Treasury International Capital System (TICS) data. We exclude data on Asian residents' claims on U.S. banks, and U.S. residents' claims on Asian banks.

[23] The TICS data do not disaggregate between private and official sector claimants within individual countries, but only for the aggregate U.S. position.

It appears that Asia's exposure to the United States has risen sharply over the last 15 years. Has this translated into a larger synchronization between the United States and Asian business cycles, or has the emergence of autonomous domestic demand allowed the region to gradually decouple from the U.S. cycle? This is addressed in the next section.

Asia's Growth and Financial Cycles: Are They Synchronized with the United States?

Growth in Asia now appears to be substantially more correlated with the U.S. growth cycle than in the early 1990s (Table 2.3). The average correlation of growth rates with the United States has increased from 0.1 percent in the pre-Asian-crisis 1990s, to 0.4 percent since 2000. However, it is worth noting that China's GDP growth has been largely uncorrelated with U.S. growth even since 2000.[24]

Table 2.3. Growth Correlation with the United States

	1990-96	2000-07
Japan	-0.06	0.41
Australia	0.74	0.38
New Zealand	0.28	0.23
China	...	0.08
India	...	0.14
Hong Kong SAR	0.16	0.61
Korea	-0.32	0.30
Singapore	0.31	0.62
Taiwan POC	0.24	0.61
Indonesia	0.06	0.05
Malaysia	-0.26	0.52
Philippines	0.28	0.47
Thailand	-0.20	0.47
Vietnam	...	0.20
Asia[1]	**0.11**	**0.36**
High trade exposure[1, 2]	**0.09**	**0.48**
Low trade exposure[1, 2]	**0.14**	**0.24**
Western Hemisphere countries[1, 3]	...	0.34
Canada and Mexico[1]	0.41	0.49

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

[1] Arithmetic nonweighted average.

[2] Countries are ranked according to our measure of total trade exposure to the United States as of 1994.

[3] Includes Argentina, Brazil, Canada, Chile, and Mexico.

[24] This should not be taken as clear evidence that U.S. growth has no impact on Chinese growth. For instance, countercyclical policies in China may have worked to mitigate the correlation.

Moreover, a country's trade exposure to the United States appears to affect the degree to which its growth is correlated to that of the United States. Those economies with higher trade exposures—Singapore, Malaysia, or Taiwan Province of China, for example—have tended in recent years to have higher correlations. Indeed, the rank correlation coefficient between trade exposure and growth correlation over 2000–07 is quite high, close to 0.5.

Growth synchronization between Asia and the United States is high by international standards. Over the past seven years, the seven Asian countries in the sample with the highest trade exposure to the United States have been as synchronized with the United States as Canada and Mexico, two countries with deep economic ties with their neighbor (Table 2.3). Similarly, Asia as a whole has, on average, been as synchronized with the U.S. growth cycle as a group comprising Argentina, Brazil, Canada, Chile, and Mexico.

Growth correlations have fallen in the past two years, but it is too early to draw much comfort from this. Correlations over the past 18 months have been 0.19 on average, compared with 0.36 for 2000–07. However, 18 months is too short a period to draw robust inference. Indeed, correlations over the 18 months prior to the 2001 U.S. recession were also relatively low (0.23), and, as will become clear in subsequent sections, Asia did not decouple in 2001.

Financial correlations with the United States also seem to have increased in recent years. Stock markets in Asia now seem to be moving more in tandem with U.S. markets than was the case in the 1990s. On average across Asia, the correlation between monthly returns in each country's main stock index and monthly returns in the S&P 500 has increased from 0.29 between 1990 to 1996 to 0.45 between 2000 and 2007 (Table 2.4). Not surprisingly, the regional financial centers of Hong Kong SAR and Singapore exhibit some of the highest correlations. That stronger correlations are a result of greater financial integration with the rest of the world is suggested by the fact that countries with deeper *stock* links with the United States also exhibit stronger return correlations. For instance, the seven countries in the sample with the highest holdings of U.S. equity securities exhibited an average correlation of 0.56 over 2000–07, versus 0.34 for the bottom seven.

Table 2.4. Correlations in Stock Market Returns
(Main stock market index of a country with U.S. S&P 500)

	1990-96	2000-07
Japan	0.26	0.52
Australia	0.52	0.71
New Zealand	...	0.49
China	...	0.08
India	-0.01	0.45
Hong Kong SAR	0.35	0.69
Korea	0.12	0.59
Singapore	0.49	0.61
Taiwan POC	0.16	0.49
Indonesia	0.26	0.43
Malaysia	0.37	0.30
Philippines	0.34	0.45
Thailand	0.38	0.43
Vietnam[1]	...	0.10
Asia[2]	**0.29**	**0.45**
High financial exposure[2, 3]	**0.35**	**0.57**
Low financial exposure[2, 3]	**0.23**	**0.34**

Sources: Bloomberg LP.; and IMF staff calculations.

[1] Data begin in September 2000.

[2] Arithmetic nonweighted average.

[3] Countries are ranked according to their holdings of U.S. equity securities as a share of their respective gross domestic products. Rank correlations in terms of U.S. holdings of Asian equity securities are not as high.

The descriptive statistics examined so far, while informative, do not measure the size of the spillovers to Asia from U.S. growth, and do not formally control for other factors that affect Asian economic performance, notably growth in countries other than the United States. We now turn to more comprehensive econometric estimates.

Estimating U.S. Spillovers

Regression Analysis

Growth in the United States matters for Asia, and over the past 15 years it appears to have mattered substantially more than growth in Europe or intraregional growth (Table 2.5). When looking at panel regressions for Asian countries, U.S. growth appears to significantly affect growth in the region,

and the magnitude of the coefficient implies that a 1 percentage point slowdown in the United States would result in a 0.6 percentage point slowdown in Asia.[25] While the impacts from the EU-15 and Asian intraregional shocks are also positive, they are statistically insignificant and economically small. The importance of the United States for Asia stands out in contrast with the observed patterns in other regions. For instance, in the EU-15, the magnitude of the coefficient on U.S. growth is less than half of that for Asia, while EU-15 countries are strongly affected by European intraregional shocks.

Table 2.5. Growth Spillovers Among Regions

	Dependent variable: quarterly growth of countries (1991-1996 & 2001-2007)			
	All countries	By regions		
		Asia[2]	EU-15	Western Hemisphere[3]
Explanatory variables[1]				
Growth in U.S.	0.40 ***	0.61 ***	0.29 ***	0.39
Growth in EU-15[4]	0.31 **	0.06	0.81 ***	0.36
Growth in Asia[4]	0.24 **	0.15	-0.01	0.24
Number of observations	1,922	597	714	357

Source: IMF staff estimates.

Note: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

[1] Other regressors include country fixed effects, growth of the terms of trade, and controls for the Argentine crisis of 2001-02, the Mexican crisis of 1995, and German reunification of 1991.

[2] Asia includes Australia, China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and Taiwan POC.

[3] Western Hemisphere includes Argentina, Brazil, Canada, Chile, Ecuador, Mexico, and Peru. Rest of the world, not mentioned above, includes Switzerland, Israel, Norway, South Africa, and Turkey.

[4] Does not include the country of the dependent variable.

Moreover, spillovers from the United States appear to have grown in recent years, in particular for China and India. Looking at country-specific regressions for the period 1991–2007, the coefficient on U.S. growth for China and India is small—or negative—and insignificant. However, these countries have experienced dramatic structural change over the period, and some of the changes suggest that spillovers from U.S. growth have increased: trade and financial exposure is now much higher; and there is evidence that the demand elasticity of exports has gone up in recent years, as has value-added in the export sector.[26] Indeed, when the regressions are reestimated over 2001–07, estimated spillovers from the United States to China and India are significantly larger, although limited degrees of freedom prevent a tight estimation of the coefficients (Table 2.6).[27] For the region as a whole, intra-Asia growth also appears to be relatively more important now than in the past, particularly if one excludes the years 2001–02 (the bust of the information technology, or IT, bubble in the United States, which had a big impact on Asia).

Table 2.6. Recent Growth Spillovers Among Regions

	Dependent variable: quarterly growth of countries			
	Asia[2]	Japan	China	India
Explanatory variables[1]				
1991-2007				
Growth in U.S.	0.61 ***	0.33	0.07	-0.18
Growth in EU-15[3]	0.06	0.52	-0.87	-0.72
Growth in Asia[3]	0.15	-0.06	0.73 **	0.77
Number of observations	597	67	64	42
2001-07				
Growth in U.S.	0.74 **	0.33	0.80	1.52
Growth in EU-15[3]	0.11	0.20	1.24	1.96
Growth in Asia[3]	0.37	0.21	-0.26	-1.30
Number of observations	324	27	27	27
2003-07[4]				
Growth in U.S.	0.58 *	...	...	...
Growth in EU-15[3]	0.19	...	...	...
Growth in Asia[3]	0.75 *	...	...	...
Number of observations	228	...	...	...

Source: IMF staff estimates.

Note: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

[1] Other regressors include country fixed effects, growth of the terms of trade, and controls for the Argentine crisis of 2001-02, the Mexican crisis of 1995, and German reunification of 1991.

[2] Asia includes Australia, China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and Taiwan POC.

[3] Does not include the country of dependent variable.

[4] Results for Japan, China, and India are not available, as we cannot secure the satisfactory degree of freedom for the regressions.

Spillovers from U.S. growth are also positively related to a country's trade exposure to the United States. Regressing the country-specific coefficients on U.S. growth on a country's global and U.S. trade

[25] Note that this is a panel regression, and hence is not a GDP-weighted average.

[26] See Aziz and Li (2007) and Cui and Syed (2007).

[27] Alternative IMF staff assessments based on trade elasticities and calibrated multipliers from exports to GDP uncover spillovers in the range of ½–1 percentage points for China and 0.2–0.3 for India.

exposure, its financial exposure, and other control variables, shows that the more exposed to trade, in particular with the United States, a country is, the more affected its growth cycle is by U.S. growth (Table 2.7).[28] Financial exposure also has explanatory power, although the coefficients are not as consistently significant as those for trade exposure, and adjusted *R*-squares are smaller.

Table 2.7. Globalization and Spillovers
(Cross-country regression)

Dependent variable: estimated coefficients from country spillover regressions[1]		
Explanatory variables		
Trade openness		
Trade openness to the world	0.0027 **	[0.141]
Direct exposure to the U.S.	0.0350 ***	[0.166]
Total exposure to the U.S.	0.0297 ***	[0.176]
Financial openness		
Financial exposure to the world	0.0003	[0.010]
Financial exposure to the U.S.	0.0080 **	[0.113]
Index of openness in capital account transactions	0.0557	[-0.005]
Fixed exchange rate	-0.0083	[-0.026]
Fixed exchange rate x Index of openness in capital account transactions	0.3129 *	[0.058]

Source: IMF staff estimates.
Note: ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.
[1] Numbers in brackets are adjusted *R*-squares. Number of observations is 40, which includes the countries in Table 2.5 plus India and Vietnam. Since the dependent variable is an estimated coefficient from a first-stage regression, statistical significance should only be seen as indicative.

The next section looks at results from VARs, to examine the dynamic response of growth in Asia to U.S. shocks.

Vector Autoregression Analysis

The estimated spillovers from VARs are broadly consistent with those from the previous section. While the impact of U.S. growth is short lived and typically peaks after 2 to 4 quarters, it is sizable and significant for most of the Asian countries, ranging from 0 to 0.9 percentage point (Table 2.8).[29]

For instance, for the highly exposed NIEs, the average annual impact of a 1 percentage point decline in U.S. growth is 0.5 in the baseline VAR. In general, the estimated impact is larger for countries with a higher trade exposure and stronger financial linkages with the United States, as well as those with higher growth-on-growth correlations. For instance, the average spillover effect for the countries with the highest correlation in 2000–07—Singapore, Taiwan Province of China, Hong Kong SAR, and Malaysia—is almost ½ percentage point in the baseline VAR. Spillovers from the United States to China and India are found to be negligible, however, most likely due to the long sample used—1995–2007—to estimate the VARs.[30] For both countries, the estimated impulse response is small across all orderings and statistically insignificant. Because the VAR is estimated over a period in which both economies have gone through important

Table 2.8. Impact of 1 Percentage Point Decline in U.S. Growth
(In percentage points)

	Baseline VAR (1991-2007)	Augmented VAR[1] (1991-2007)
Japan	0.1	0.2
Australia	0.1	0.5
New Zealand	0.0	0.3
China [2]	0.0	0.0
India [2]	0.0	0.0
Hong Kong SAR	0.4	0.8
Korea	0.2	0.1
Singapore	0.6	0.9
Taiwan POC	0.6	0.9
Indonesia	0.0	0.4
Malaysia	0.2	0.7
Philippines	0.0	0.4
Thailand	0.0	0.5

Source: IMF staff estimates.
[1] Includes financial conditions index.
[2] Sample period is 1995-2007.

[28] The covariance appears to be highly statistically significant. However, the standard deviations in Table 2.7 are an incorrect but still indicative approximation of the true distribution of the coefficient, because the dependent variable in the regression is itself an estimate from another regression.

[29] The magnitude of spillover effects from shocks originating in the European Union (not reported in this chapter) are in general much smaller than those from the United States. Meanwhile, the impact of shocks from Japan is sizable in some cases (e.g., Malaysia and Taiwan Province of China).

[30] Unlike our regressions in the previous section, the VARs cannot be properly estimated in shorter samples because of a lack of degrees of freedom.

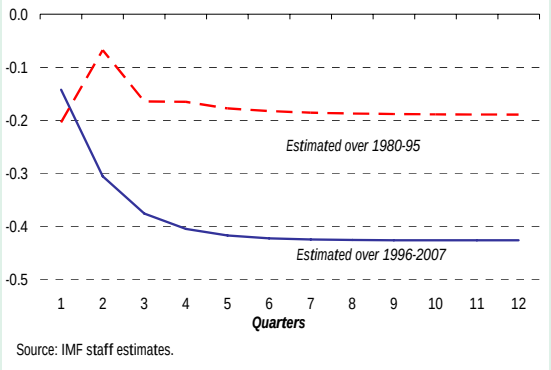
changes, the impulse responses are likely to underestimate the current sensitivity to U.S. shocks.

Spillovers are stronger when financial conditions in the United States are accounted for, suggesting that financial linkages have become an important channel for the transmission of shocks. The estimated impact of U.S. shocks on Asian countries generally increases when we augment the baseline VAR with an index proxying for financial conditions in the United States with the exceptions of Korea, China, and India (Table 2.8).[31] As in the baseline case, the results vary considerably across countries, but the estimated impact of U.S. shocks typically increases by a factor of two or more once U.S. financial conditions are taken into account. Again, countries with a higher financial exposure on average experience larger spillover effects.

Evidence from the VARs suggests, again, that spillovers from the United States have grown stronger over time. For those economies with a long sample available (Japan, Singapore, Hong Kong SAR, and Taiwan Province of China), the estimated impact of U.S. shocks is larger for the subsample 1996–2007 than for the earlier subsample, 1980–95 (Figures 2.1 and 2.2). This is consistent with the finding that the direct and indirect trade exposures to the United States as well as financial linkages have increased, amplifying the spillover effects of U.S. growth on Asia.

Figure 2.1. Impact of 1 Percentage Point Decline in U.S. Growth: Singapore

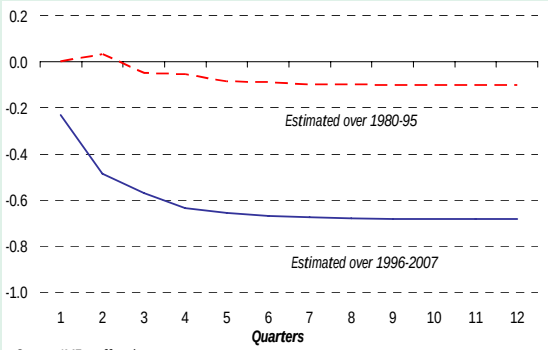
(VAR impulse response function, in percentage points)



Source: IMF staff estimates.

Figure 2.2. Impact of 1 Percentage Point Decline in U.S. Growth: Taiwan Province of China

(VAR impulse response function, in percentage points)



Source: IMF staff estimates.

We now turn to simulations using the IMF Global Economy Model (GEM), to try to gauge spillovers in specific scenarios that more realistically capture real and financial conditions present currently. Model simulations will also help estimate the potential contribution of countercyclical policies in mitigating a U.S. slowdown.

Model Simulations

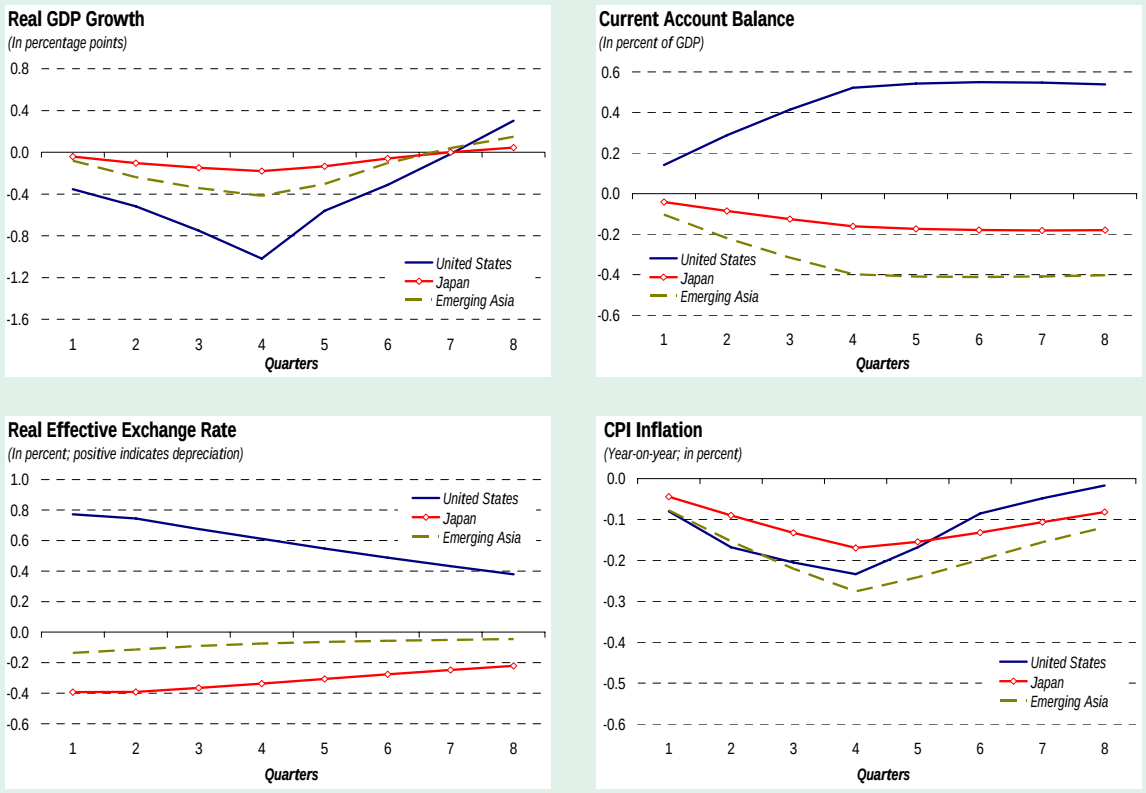
The two simulated scenarios attempt to replicate a shock to aggregate demand in the United States, and a similar U.S. demand shock accompanied by global decline in confidence, respectively. In the first scenario, we simulate a protracted slowdown (lasting 4 quarters) of 1 percentage point in the United States brought about by a decline in private investment and private consumption. In the second scenario, the slowdown in the United States, while similar in magnitude to that in the first scenario, affects consumer and business confidence (and hence spending) globally in addition to its direct impact on trade. In the current context, this could be interpreted as proxying for continued stress in financial markets. It is assumed that the additional decline in consumption and investment spending is proportional to each region's trade exposure to the United States. For Japan and emerging Asia, these

[31] The effects of the financial conditions index are not "additive" in the sense that they are not equal to the difference between the impulse responses in the two VARs. As such, the results in Table 2.8 should not be taken to imply that financial linkages are more important than trade linkages.

confidence shocks are equivalent in size to 25–35 percent of the shocks in the United States. Finally, both scenarios assume a 20-basis-point increase in risk premiums, smaller than we have observed so far in the current environment.[32]

According to the model, aggregate demand shocks in the United States induce nontrivial slowdowns in Asia, even when global confidence does not decline (Figure 2.3). The mechanisms at play are mainly related to the trade channel—with weaker economic activity in the United States reducing demand for imported goods from Japan, emerging Asia, and the rest of the world. At the same time, other mechanisms also influence these results, including relative price changes. The lower import demand in the United States improves the U.S. current account deficit by roughly ½ percent of GDP, supported by a depreciation of the U.S. dollar in both nominal and in real effective terms. In Japan and emerging Asia, currencies appreciate in nominal and real effective terms, with changes in the relative prices of their exported goods playing a key role in the magnitude of the real appreciation. These relative price changes reinforce the negative impact of the U.S. slowdown on current account surpluses in Japan and emerging Asia, which fall by ¼ percent and ½ percent of GDP, respectively. Growth falls by 0.2 percentage point in Japan and 0.4 percentage point in emerging Asia—an order of magnitude comparable with the findings elsewhere in this chapter. With lower demand and more appreciated currencies, CPI inflation declines in all regions. Monetary policies at home and in the United States are loosened to bring inflation back on target,

Figure 2.3. GEM Simulation: Spillover from U.S. Slowdown
(Without confidence effect)



Source: IMF staff estimates.

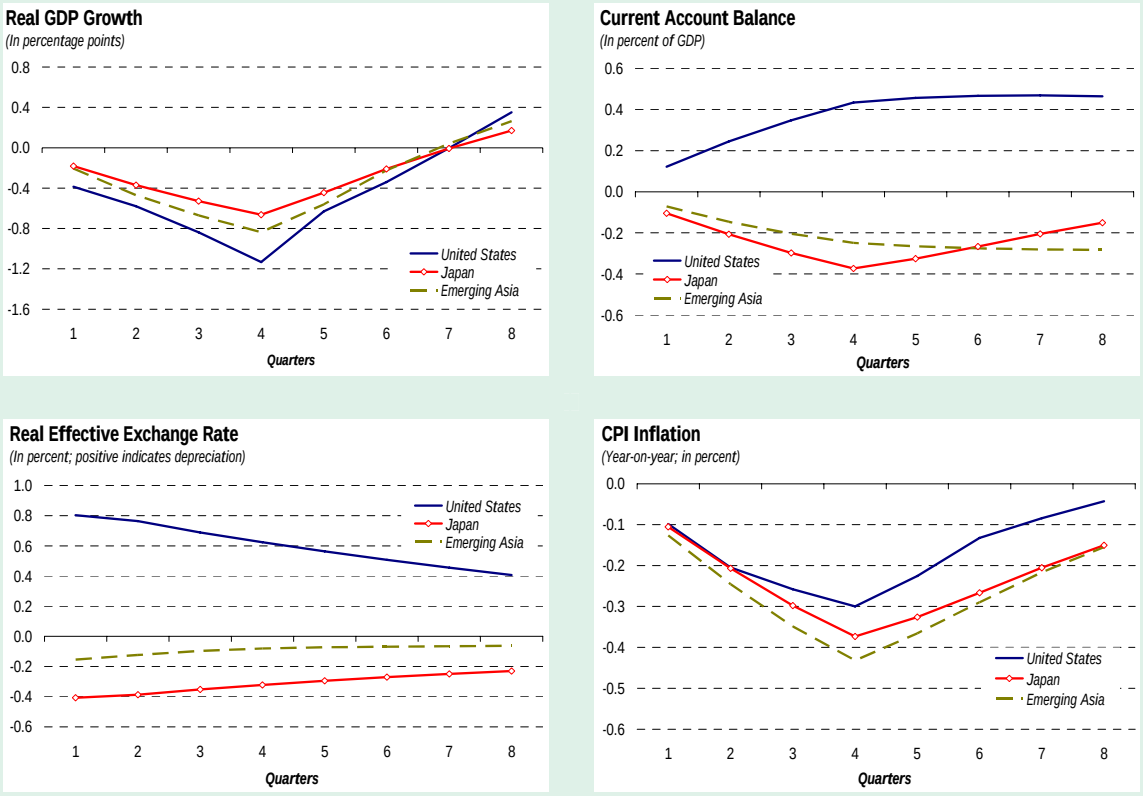
[32] See IMF (2007a) for a similar approach.

gradually offsetting the effects of the U.S. slowdown.

Not surprisingly, spillovers are significantly larger when confidence declines globally. In the second scenario, consumer and business confidence—and therefore spending—in Japan and emerging Asia are affected, and to a greater extent than in other regions because of Asia's larger trade exposure to the United States. Overall, the spillover effects are roughly twice as large as in the first scenario—growth declines by 0.7 percentage point in Japan and 0.8 percentage point in emerging Asia (Figure 2.4)—suggesting that demand shocks in the United States that are accompanied by financial disruptions affecting confidence could have significant effects on the region.

Model simulations are also a useful tool to estimate the potential contribution of countercyclical policies in mitigating the effects of a U.S. slowdown. The GEM model incorporates monetary and fiscal policies explicitly, and the effects of these policies can be measured by comparing the effect of a given U.S. slowdown assuming policy reactions in the region, and assuming no policy reactions. In particular, when we simulate the first scenario shock[33] assuming no policy reaction for four quarters, the output contraction in emerging Asia is twice as large, implying that the cumulative impact of no policies is approximately equivalent to a ½ percentage point additional slowdown (Figure 2.5). These numbers are simply indicative, in

Figure 2.4. GEM Simulation: Spillover from U.S. Slowdown
(With confidence effect)

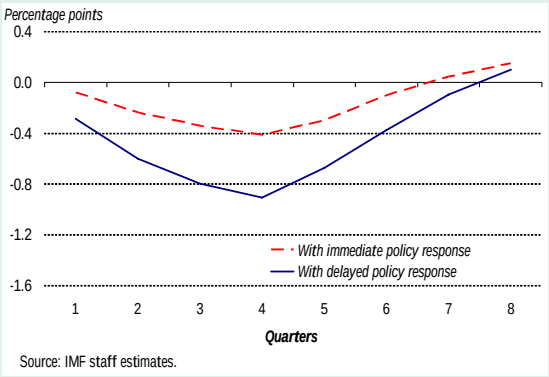


Source: IMF staff estimates.

[33] This is the aggregate demand shock with no decline in confidence.

Figure 2.5. GEM Simulation: Contribution of Countercyclical Policies

(Response of emerging Asia GDP growth to U.S. slowdown)



Source: IMF staff estimates.

Table 2.9. Impact of U.S. Recessions [1]

(In percent)

	1980	1981-82	1990-91
United States	-2.45	-2.72	-1.83
Asia [2]	-0.76	-0.40	-0.48
Strongest impact	-6.34	-2.78	-2.35
Mildest impact	1.97	1.75	1.52

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

[1] Measured as the average change in the output gap during the recession relative to the four quarters preceding the recession. Potential output is estimated using the Hodrick-Prescott filter.

[2] Includes arithmetic nonweighted average of Australia, Hong Kong SAR, Japan, Korea, Singapore, and Taiwan POC for recessions in the 1980s. New Zealand and the Philippines are added for the recession in 1990-91.

particular since countries in the region do not necessarily conduct monetary policy exactly as assumed in the model.

Because spillovers from U.S. growth may be highly nonlinear, it is important to focus on periods of particular stress in the United States to complement the analysis. The next section looks at spillovers during recent U.S. recessions.

Event Study: Impact of U.S. Recessions on Asia

Lack of data prevents one from drawing much inference on the impact of U.S. recessions on Asia in the 1980s and 1990s. On average, Asian economies appear to have suffered relatively little compared to the United States during the 1980, 1981–82, and 1990–91 U.S. recessions (Table 2.9).[34] However, quarterly GDP data for Asian economies are relatively scant for these three episodes, and the sample estimates are thus based on a small number of observations: six for the 1980s, and eight for the 1990s. Also, while the *average* Asian economy suffered a relatively mild decline in the output gap, this masks wide variations across countries. Finally, the structure of Asian economies has changed substantially since the 1980s and early 1990s, and hence it is questionable how much information can be drawn from these three recessions.

The 2001 recession had a substantial impact on Asian economies, in particular for those with larger trade exposure to the United States. Drawing on the full sample of 14 countries, output gaps declined by an average of 2 percent during the recession, very close to the estimated decline in the United States (Table 2.10). Moreover, (1) while there is a large cross-country variation, almost all countries appear to have suffered negative changes in output gaps during the 2001 recession, in contrast to previous U.S. recessions; and (2) there is a high (more than 0.7) rank correlation between the measure of total trade exposure to the United States and the change in the output gap during the recession. The reasons why the 2001 recession had such a large impact on Asia have been discussed at length, and include the facts that the shock was concentrated on electronics, which is a key export for Asia; that Europe and Japan were not providing support for the global economy before and during the recession; and that domestic demand in Asia was still recovering from the 1997–98 financial crisis.[35] While these facts may

[34] We follow the National Bureau of Economic Research (NBER)'s definition and dating of U.S. recessions. We follow other studies in assessing the impact of a recession by looking at the change in the output gap during the recession (see IMF, 2007a).

[35] See IMF (2007b) among others for more details.

suggest that the 2001 recession provides an upper-bound estimate of spillovers, it is worth noting that the current U.S. slowdown is expected to be deeper and more protracted and, unlike the 2001 recession, is being accompanied by significant stress in money and credit markets around the world.

Table 2.10. Impact of 2001 U.S. Recession[1]
(In percent)

	Hodrick-Prescott Filter	Baxter-King Filter
United States	-1.90	-1.89
Japan	-1.41	-1.49
Australia	-0.70	-0.92
New Zealand	-0.04	-0.18
China	-0.42	-1.53
India	0.16	-0.73
Hong Kong SAR	-2.84	-3.39
Korea	-0.94	-1.01
Singapore	-7.80	-7.72
Taiwan POC	-5.54	-5.59
Indonesia	0.48	0.61
Malaysia	-3.41	-3.51
Philippines	-1.17	-1.63
Thailand	-0.98	-1.15
Vietnam[2]	-0.60	...
Asia[3]	**-1.80**	**-2.17**
High trade exposure[3, 4]	**-3.19**	**-3.83**
Low trade exposure[3, 4]	**-0.41**	**-0.75**

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

[1] Measured as the average change in the output gap during the recession relative to preceding four quarters.

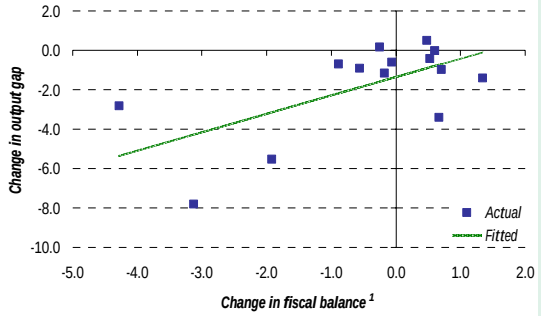
[2] Owing to short span of data, the deviation from trend could not be calculated using Baxter-King filter.

[3] Arithmetic nonweighted average.

[4] Countries are ranked according to our measure of total trade exposure to the U.S. as of 1994.

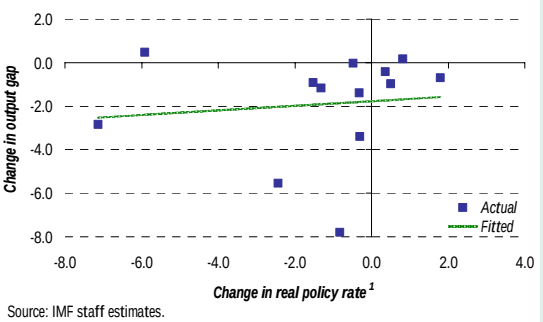
It appears that Asian countries availed themselves of countercyclical policies during the 2001 recession.[36] Looking at the relationship between changes in fiscal policy, changes in nominal and real monetary policy rates, and changes in the output gap in the region during the 2001 recession, there is a clear (and statistically significant) relationship between policy variables (notably fiscal policy) and outcomes, suggesting that those countries most affected by the U.S. recession made use of countercyclical tools when needed (Figures 2.6 and 2.7).[37] Improved macroeconomic frameworks in Asia have created room for countercyclical policies in the event that the global outlook deteriorates sharply or spillover effects are larger than expected (see Chapter I).

Figure 2.6. Change in Output Gap and Change in Fiscal Policy in Asia
(During 2001 U.S. recession)



Source: IMF staff estimates.
[1] Annual change in fiscal balance as a percentage of GDP between 2000 and 2001.

Figure 2.7. Change in Output Gap and Change in Monetary Policy in Asia
(During 2001 U.S. recession)



Source: IMF staff estimates.
[1] Difference between the highest and lowest rates over the period July 2000 - December 2002.

[36] Looking at policy reactions specifically during the 2001 recession has an advantage: the impact of the shock on the region was sufficiently severe that changes in monetary and fiscal policy around this time are likely to have been driven, at least in part, by the external event.

[37] Because the size of automatic stabilizers is relatively small in many countries in the region, changes in fiscal balances were presumably largely reflective of true fiscal stimulus.

Conclusions

The impact of the current U.S. slowdown on Asia could be significant. While spillovers from the United States to Asia have, on average, been modest over the past 15 years, the evidence suggests that they have increased over time. Moreover, the simulations and recession-event study indicate that spillovers *can* be substantially larger under specific circumstances (Table 2.11).[38] These latter results should be given an important weight in light of the potential severity of the current slowdown as well as ongoing financial stress. This being said, Asia has considerable growth momentum, suggesting that concerns about growth are largest in the most trade-exposed countries in the region[39] and in those where growth is currently least robust.

Table 2.11. Summary of Results: Impact of a U.S. Slowdown on Asia[1]

(In percentage points)

	VAR with Financial Variables	Cross-Country Regressions	GEM Basecase	GEM with Confidence Effects	2001 Recession
Japan	0.2	0.3	0.2	0.7	0.7
Australia	0.5	0.7	...	...	0.4
New Zealand	0.3	0.9	...	...	0.0
China	0.0	0.1	...	...	0.2
India	0.0	-0.2	...	...	-0.1
Hong Kong SAR	0.8	1.0	...	...	1.5
Korea	0.1	0.1	...	...	0.5
Singapore	0.9	1.1	...	...	4.1
Tawan POC	0.9	1.2	...	...	2.9
Indonesia	0.4	0.2	...	...	-0.3
Malaysia	0.7	0.5	...	...	1.8
Philippines	0.4	0.6	...	...	0.6
Thailand	0.5	1.0	...	...	0.5
Asia[2]	**0.2**	**0.3**	**0.3**	**0.8**	**0.6**
Emerging Asia[2]	**0.2**	**0.2**	**0.4**	**0.8**	**0.5**
Emerging Asia[2] (excl. China and India)	**0.5**	**0.5**	**...**	**...**	**1.1**

Source: IMF staff estimates.

[1] Scaled to 1 percentage point.

[2] Weigthed average using nominal GDP at market exchange rates.

[38] Large effects could also arise as a result of nonlinearities (e.g., large U.S. shocks having a disproportionately large spillovers), which may not be captured by our estimation methods.

[39] This is not to suggest that the trade channel will matter more than the financial channel, since countries with high trade exposure tend to have high financial exposure and historically large spillovers as well.

Appendix

Measuring Indirect Trade Exposure to the United States

To measure possible spillovers from the United States through third countries, the chapter calculates the following two indices using trade flow data from the UN Comtrade database (at 5-digit SITC levels, equivalent to more than a thousand categories of goods):

$$IndEx(i,US) = \sum_{j=all} \frac{X(i,j) \times (X(j,US)/GDP(j))}{GDP(i)}$$

$$IndEx(i,US) = \sum_{j=all} \frac{X_{Nonfinal\&Capital}(i,j) \times (X_{Final}(j,US)/(GDP_{Industry}(j) + M_{Nonfinal}(j))}{GDP(i)}$$

where $X(i,j)$ denotes country *i*'s exports to country *j*, and $M_{Nonfinal}(j)$ denotes country *j*'s nonfinal good imports. The measures take into account all possible *j*s (i.e., all possible *indirect routes to the United States)*. The first measure, the share of the sum of country *i*'s exports to third countries, weighted by these countries' direct exposure to the United States, is a broad proxy for indirect exposure. The second measure tries to take more directly into account growing triangular trade, in which intermediate/capital goods are flowing into third countries, with final products then shipped to the United States. As the results from the two measures are quite similar, the chapter reports results using the first measure (which is more intuitive) in the main text.

Correlations

Correlations between growth rates in Asian countries and in the United States are based on the three-year rolling correlation of the four-quarter moving average of quarter-on-quarter GDP growth. Rolling correlations of year-on-year growth do not materially change the results.

Regressions

The panel regressions in this chapter cover 38 countries, emerging and industrial, complemented by panel regressions for countries in each region (Asian countries, 15 countries belonging to the European Union, and countries in the Western

Hemisphere) for the period 1991–2007. The fixed-effects panel regressions have growth in the country as the dependent variable, and growth in the United States, growth in the 15 countries of the European Economic Community (EU-15), growth in Asia (REO definition), terms of trade changes, and various control dummies as explanatory variables. Regional growth aggregates were computed using 2000 market exchange rate–based GDPs as weights. Needless to say, regressions exclude the country in the left-hand side from the regional grouping in the right-hand side when estimating the regressions.

The chapter also estimates country-specific versions of the panels, and then regresses the resulting country-specific U.S. growth spillovers on the country's trade exposure, financial exposure, and other control variables. Trade exposure is measured as the sum of exports and imports as a share of GDP, as well as direct and total trade exposure to the United States as previously defined in this chapter. Financial exposure is measured as total assets and liabilities as a share of GDP using the Lane and Milesi-Ferretti (2007) data set, as well as financial exposure to the United States as previously defined. The other control variables include an index of capital account openness by Chinn and Ito (2007), among others.

Vector Autoregressions

The VAR model estimated in this chapter (ignoring exogenous variables) assumes that the global linkages can be represented by

$$B_0 y_t = k + B_1 y_{t-1} + ... + B_p y_{t-p} + u_t,$$

where $y_t = [g_t^{US} g_t^{EU} g_t^{ROWv} g_t^{JAPAN} g_t^{i}]$ is the n x 1 data vector containing the quarter-on-quarter GDP growth for the United States, the European Union, Japan, rest of the world (ROW), and Asian country i; k is a vector of constants, B_i is an n x n matrix of coefficients (i = 1, ..., p), and u_t is the vector of "structural" shocks. ROW in the baseline specification consists of a simple average of growth in Australia, Canada, and Switzerland. The results are unaffected if a larger set of countries (Australia, Canada, Denmark, Norway, New Zealand, Sweden, and Switzerland) is considered. Given their diversity, shocks to this aggregate are likely candidates for a global shock. But at the same time, given their relatively small size, they are a reasonable proxy for the rest of the world as shocks to this aggregate are unlikely to have significant contemporaneous effects on the other major regions included in the VAR.

The role of financial conditions in propagating spillovers is assessed by augmenting the baseline VAR with a financial conditions index (FCI). The FCI is calculated as the average of the S&P500 return and the Chicago Board Options Exchange Volatility Index (VIX), such that a 1 percentage point increase in volatility (VIX) or a decline in stock returns of the same magnitude represent an equal deterioration of financial conditions in the United States.[40]

The generalized impulse response functions of Pesaran and Shin (1998) are estimated along with the average of impulse response functions (IRFs) from different recursive orderings as in Bayoumi and Swiston (2007).[41] The ordering does not influence the statistical significance of the spillover effects much and the statistical significance is broadly in line with the effects obtained with generalized impulse response functions (which do not depend on the ordering the variables).[42]

The reduced-form model is estimated by OLS and results based on the generalized impulse response functions are reported in the main text. The model is estimated in first differences (quarter-on-quarter growth rates) and the lag structure is determined according to the Bayesian information criteria. The 16–84 percent error bands (roughly one standard deviation for a normal distribution) for the impulse response functions are calculated by Monte Carlo simulations with 1,000 replications. In the case of the

[40] The FCI is included in the VAR as an additional exogenous variable. The second index used for robustness includes the spread between U.S. commercial paper and treasury bill three-month yields. The results were broadly similar.

[41] Given the relative size of the individual Asian country, it is always ordered last in the alternative orderings.

[42] The impulse response functions reported are the generalized impulse response functions proposed by Pesaran and Shin (1998).

recursive orderings, the standard errors of the impulse response functions are averaged across different orderings.

Global Economy Model (GEM)

In the version of the GEM used here, the world economy consists of five regions: the United States, the euro area, Japan, emerging Asia, and the rest of the world. All regions are assumed to have a flexible exchange rate regime with the monetary authorities targeting inflation (the monetary rule is forward looking, with the policy rate depending on its lagged value, the neutral rate, and the expected inflation gap). With regard to fiscal policy, there are lump-sum taxes, capital income taxes, and endogenous labor income taxes. The government adjusts lump-sum taxes in a smooth manner to stabilize the debt-to-GDP ratio over the medium term. Fiscal policy matters in the short run because a subset of consumers is subject to liquidity constraints, and in the longer run through an ad hoc link between government debt and net foreign assets. There are financial intermediation costs (risk premiums) for accessing the international bond market but there is no distinction between gross and net positions, and hence limited scope for valuation changes, which have important wealth effects (see Lane and Milesi-Ferretti, 2007). See Faruqee and others (2005, 2006) for a fuller description of the model.

Recession-Event Study

Potential output is estimated using two standard methodologies, the Hodrick-Prescott and the Baxter-King filters, and common parameters for the filters across countries (lambda = 1600 for the HP filter). While computations of the output gap could be improved by tailoring the parameters of the filters to each specific country and by using country-specific information such as the dynamics of inflation and unemployment, applying a common and systematic methodology across countries avoids perceptions that the data were mined to generate the desired cross-sectional results.

References

Anderson, Jonathan, 2008, "The Recession and China," UBS Investment Research, China Focus (January).

Aziz, Jahangir, and Xiangming Li, 2007, "China's Changing Trade Elasticities," IMF Working Paper 07/266 (Washington: International Monetary Fund)

Bayoumi, Tamim, and Andrew Swiston, 2007, "Foreign Entanglements: Estimating the Source and Size of Spillovers Across Industrial Countries," IMF Working Paper No. 07/182 (Washington: International Monetary Fund).

Buchanan, Michael, Hong Liang, Tushar Poddar, Enoch Fung, Helen Hong Qiao, Yu Song, Mark Tan, Eva Yi, and Pranjul Bhandari, 2007, "Asian Decoupling or Re-coupling: Two Risks, Two Years and Too Priced," *Asia Economics Analyst,* Goldman Sachs, No. 07/22 (November).

Chang, Joyce, Luis Oganes, Michael Marrese, and David Fernandez, 2007, "EM Growth Fallout to be Limited Even Under a 'Black Hole' US Scenario," JPMorgan Emerging Market Research (December).

Chinn, Menzie, and Hiro Ito, 2007, "A New Measure of Financial Openness" (unpublished; May). Available via the Internet: web.pdx.edu/~ito/.

Cui, Li, and Murtaza Syed, 2007, "The Shifting Structure of China's Trade and Production," IMF Working Paper No. 07/214 (Washington: International Monetary Fund).

Davis, J.M., Analisa Fedelino, and David Ossowski, eds., 2003, *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (Washington: International Monetary Fund).

Faruqee, Hamid, Douglas Laxton, Dirk Muir, and Paolo Pesenti, 2005, "Smooth Landing or Crash? Model-Based Scenarios of Global Current Account Rebalancing," NBER Working Paper No. 11583 (Cambridge, Massachusetts: National Bureau of Economic Research).

———, 2006, "Would Protectionism Defuse Global Imbalances and Spur Economic Activity? A Scenario Analysis," NBER Working Paper No. 12704 (Cambridge, Massachusetts: National Bureau of Economic Research). Forthcoming in *Journal of Economic Dynamics and Control*.

Hak, Bin Chua, 2008, "When the United States Sneezes, Will Asia Catch a Cold?" Citigroup Global Markets, Asia Macro Views (January).

Hensley, David, and Joseph Lupton, 2007, "The Odd Decouple," JPMorgan Economic Research Note (December).

HSBC, 2008, "Balancing Deflation and Inflation," *Macro Asian Economics* (January).

International Monetary Fund, 2007a, *World Economic Outlook*, April (Washington).

———, 2007b, "Ten Years After the Crisis: How Much Stronger Is Asia?" in *Regional Economic Outlook: Asia and Pacific,* October (Washington), pp. 22–30.

———, 2007c, "The Evolution of Trade in Asia," in *Regional Economic Outlook: Asia and Pacific,* October (Washington), pp. 41–53.

Lane, Philip, and Gian Maria Milesi-Ferretti, 2007, "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004," *Journal of International Economics*, Vol. 73 (November), pp. 223–50.

Mati, Amine, 2008, "Managing Surging Oil Prices in the Developing World," *IMF Survey*, March 20.

Pesaran, M. Hashem, and Yongcheol Shin, 1998, "Generalized Impulse Response Analysis in Linear Multivariate Models," *Economics Letters*, No.58, pp. 17–29.

Roubini, Nouriel, 2007, "Asia Is Learning the Wrong Lessons from Its 1997–98 Financial Crisis: The Rising Risks of a New and Different Type of Financial Crisis in Asia" (Roubini Global Economics). Available via the Internet: rgemonitor.com/blog/roubini/193098.

Wooldridge, Duncan, 2008, "Asia: The End of the Decoupling," UBS Investment Research, Asian Focus (January).

Regional Economic Outlook
Asia and Pacific, April 2008

ISBN 978-1-58906-710-3
9 781589 067103