

World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

Sustaining the Momentum: Vigilance and Reforms

APR 14



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Definitions

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

- “ASEAN” refers to Brunei Darussalam, Cambodia, Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam, unless otherwise specified.
- “East Asia” refers to China, Hong Kong SAR, the Republic of Korea, and Taiwan Province of China.
- “Emerging Asia” refers to China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.
- “Industrial Asia” refers to Australia, Japan, and New Zealand.
- “South Asia” refers to Bangladesh, India, and Sri Lanka.
- “Asia” refers to ASEAN, East Asia, Industrial Asia, and South Asia.
- “EU” refers to the European Union.
- “G-7” refers to Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
- “G-20” refers to Argentina, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, the Russian Federation, Saudi Arabia, South Africa, Turkey, the United Kingdom, and the United States.

The following abbreviations are used:

AEs	advanced economies
AEC	ASEAN Economic Community
ASEAN	Association of Southeast Asian Nations
BCS	business cycle synchronization
CCR	countercyclical capital requirements
CDS	credit default swap
CFM	capital flow measure
CPI	consumer price index
DTI	debt-to-income
FDI	foreign direct investment
FESR	Framework for Economic and Social Reforms
FY	fiscal year
GDP	gross domestic product
GFC	global financial crisis
GIMF	Global Integrated Monetary and Fiscal model
ICR	interest coverage ratio
IT	information technology
LICs	low-income countries

LTV	loan-to-value
MIEs	middle-income economies
MPPs	macroprudential policies
OECD	Organization for Economic Cooperation and Development
PICs	Pacific Island countries
SMP	Staff-monitored program
VAR	vector autoregression
VIX	Chicago Board Options Exchange Market Volatility Index
WEO	<i>World Economic Outlook</i>

The following conventions are used:

- In tables, a blank cell indicates “not applicable,” ellipsis points (. . .) indicate “not available,” and 0 or 0.0 indicates “zero” or “negligible.” Minor discrepancies between sums of constituent figures and totals are due to rounding.
- In figures and tables, shaded areas show IMF projections.
- 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, FY2009).
- 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 $\frac{1}{4}$ 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 Romain Duval of the IMF’s Asia and Pacific Department, under the overall direction of Changyong Rhee and Nigel Chalk. Contributors include Nasha Ananchotikul, Rahul Anand, Elif Arbatli, Dennis Botman, Kevin Cheng, Mali Chivakul, Matteo F. Ghilardi, Roberto Guimarães-Filho, Joong Shik Kang, Yitae Kim, Yuko Kinoshita, Kum Hwa Oh, Shanaka Peiris, Richa Saraf, Jongsoon Shin, Yiqun Wu, Zoltan Zakab, Longmei Zhang, and Edda Zoli. Shi Piao, Sidra Rehman, and Dulani Seneviratne provided research assistance. Socorro Santayana provided production assistance. Joanne Johnson of the IMF’s Communications Department edited the volume and coordinated its publication and release, with the assistance of Heidi Grauel. This report is based on data available as of April 4 and includes comments from other departments and some Executive Directors.

Executive Summary

Asia is well positioned to meet the challenges ahead provided it stays the course on reforms. The region has strengthened its resilience to global risks and will continue as a source of global economic dynamism. Recent actions taken to address vulnerabilities are starting to bear fruit. However, with the risk of further bouts of volatility ahead, policy complacency will be penalized. Asia's reform momentum must therefore be nurtured so as to secure the region's position as the global growth leader.

Growth in Asia is projected to remain steady at 5.4 percent in 2014 and 5.5 percent in 2015. External demand is set to pick up alongside the recovery in advanced economies, and domestic demand should remain solid across most of the region. With the expected upcoming tightening of global liquidity, Asia will face higher interest rates and potential bouts of capital flow and asset price volatility. Nevertheless, despite some tightening, financial conditions should remain supportive, underpinned by still-accommodative monetary policies, strong credit growth, and exchange rates that remain weaker than they were a year ago.

External risks remain. A sudden or sharper-than-anticipated tightening of global financial conditions remains a key downside risk. Economies with weaker fundamentals would be the most affected, similar to what happened a year ago when market participants abruptly revised their expectations of U.S. Federal Reserve tapering. Since then, though, policymakers in Asia have taken policy actions to address vulnerabilities and we now see those actions starting to bear fruit. As an indicator of this improving resilience, India, Indonesia, and other Asian emerging markets were able to better weather the bout of global financial volatility in January.

Asia also faces several risks originating from within the region. A sharper-than-envisaged slowdown in China—due to financial sector vulnerabilities and the temporary cost of reforms along the transition toward a more sustainable growth path—would have significant adverse regional spillovers. In Japan, there is a possibility that Abenomics-related measures could prove less effective in boosting growth than envisaged unless strongly supported by structural reforms. Domestic and global political tensions could also create trade disruptions and weaken investment and growth across the region. In some frontier economies, high credit growth has led to rising external and domestic vulnerabilities.

Domestic vulnerabilities could magnify some of these risks. For the bulk of Asia, financial stability risks appear contained and bank balance sheets have scope to absorb negative shocks. However, as global interest rates and term premiums move higher, vulnerabilities stemming from pockets of high corporate and household leverage could become more salient. If economic conditions become less hospitable, corporate defaults may occur and investment by highly leveraged firms could take a hit. However, with the size of debt owed by distressed firms being relatively small as a share of GDP, corporate sector risks do not appear systemic (see Chapter 2).

Growing regional integration is propelling Asia's growth but could also amplify the impact of global and regional shocks. Events over the past year have been a reminder of Asia's exposure to policy decisions in advanced economies. As highlighted in Chapter 3, trade and financial channels are a growing source of interconnectedness causing greater output co-movement across the region.

(continued)

Intraregional business cycle synchronization has grown, and Asia is twice as exposed as other regions to growth shocks originating from China. Financial integration in Asia lags well behind trade integration, but it is still capable of exacerbating cycles during negative global events. Insofar as trade and financial integration continue to grow, policymakers need to seek out ways to maximize the growth benefits while preparing to manage the vulnerabilities arising from the expanding channels for spillovers.

In order to cope with risks from financial interconnectedness, Asian policymakers have been active in deploying macroprudential policies (see Chapter 4). These tools are neither a silver bullet nor a substitute for warranted macroeconomic policy adjustment, but they have served the region well. Some of these macroprudential measures, particularly those related to restraining housing market excesses, are found to have had a measurable effect in lowering credit growth, slowing house price inflation, and dampening leverage. Macroprudential tools should continue to be used as a *complement* to mitigate the effects of volatile capital flows—particularly if they were to decisively turn around—and potentially disruptive movements in asset prices.

How can other policies help Asia strengthen its resilience to risks and retain its growth leadership? For much of the region, a continuation of recent macroeconomic policies appears to be the right recipe. This would involve a gradual fiscal consolidation while, with inflation pressures staying muted across most of Asia, maintaining monetary policies at their current supportive stance and normalizing gradually as economic slack diminishes and risks recede. However, economies where inflation outturns are high and above their central bank's comfort zones may need to hike rates in the coming months to ensure that inflation is firmly on a downward path. Any volatility in capital flows should be met with exchange rate adjustment and sparing use of foreign exchange intervention.

Finally, there is also ample scope for structural reforms in Asia. The agenda varies, involving, *inter alia*, regulatory reforms and higher infrastructure investment in India, ASEAN, and frontier Asia; financial system liberalization and measures to rebalance growth away from investment in China; labor and product market reforms in Japan; and tax and spending reforms in many economies. These reforms are critical not only to sustain Asia's growth leadership over the medium term, but also, in some cases, to maintain investor confidence and secure financial stability in the near term.

1. Asia's Momentum Is Set to Continue

Introduction and Main Findings

The main findings of the analysis in this chapter are as follows:

- The outlook for Asia is one of steady growth. GDP growth is forecast to improve slightly in 2014–15 to 5.5 percent, helped by stronger growth in advanced economies, healthy labor markets, and robust credit growth (see forecasts for individual economies below).
- An unexpected tightening of global liquidity remains the main external risk, particularly for emerging economies. On this front, recent policy actions taken to address vulnerabilities (for example, in India and Indonesia) have started to bear fruit, as evidenced by the more muted reaction of regional financial markets to the bout of global volatility in early 2014.
- Asia is also facing various risks originating from within the region. These include a sharper-than-envisaged slowdown and financial sector vulnerabilities in China, less effective Abenomics, and political tensions and uncertainty.
- The initial impact of *Abenomics* has been strong but appears to be waning. The third arrow of Abenomics—structural reforms—is essential for Japan to avoid the risk of falling back into lower growth and deflation, a further deterioration in the fiscal situation, and an overreliance on monetary stimulus, with negative consequences for the region.
- *China's planned reforms*, against the background of rising vulnerabilities, are far-reaching and have the potential to transform the economy. Implementation will be key. The reforms could enhance *welfare* by boosting

private consumption and making growth more sustainable, although the economy could initially slow down somewhat. While the near-term impact on the rest of Asia is generally expected to be small, most economies in the region would benefit from the rising consumption in China.

- The recent growth slowdown in *ASEAN-5* has been more cyclical than structural and has reflected domestic factors more than external ones. The pickup in global demand will play a supportive role going forward.
- Against this background, in most economies, the normalization of monetary conditions can wait but should be considered as economic slack diminishes and risks recede. Rate hikes should continue where inflation remains high. On the fiscal front, a gradual fiscal consolidation remains appropriate in most economies across the region. Macroprudential and capital flow measures could also be considered to ensure financial stability and address disruptive asset price movements. In the event of adverse shocks, the policy response will differ based on countries' fundamentals and vulnerabilities.

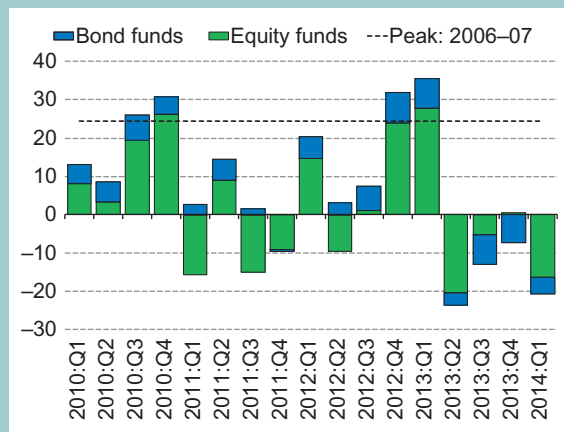
Recent Developments: Steady Growth Amid Financial Volatility

Portfolio flows into Asia, which had reached record highs a year ago, saw a sharp *and persistent* reversal in the wake of the May 2013 “tapering episode” (Figure 1.1). As risk aversion spiked, sentiment quickly turned especially against emerging market (EM) economies perceived to have weaker fundamentals. During this period, most economies in the region made only limited use of their reserves to counter the currency pressures (Figure 1.2).

Indeed, for most countries, reserves are now higher than they were a year ago, with the main

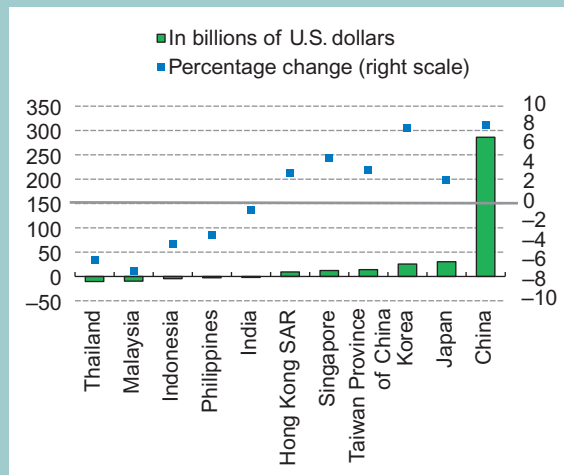
The main author of this chapter is Roberto Guimarães-Filho. Sidra Rehman and Dulani Seneviratne provided research assistance.

Figure 1.1
Asia: Equity and Bond Funds—Quarterly Net Flows During 2010–14¹
 (In billions of U.S. dollars)



Source: Haver Analytics.
¹ Includes exchange traded fund flows and mutual fund flows for Emerging Asia, Australia, New Zealand, Singapore, Hong Kong SAR, Taiwan Province of China, and Korea. 2014:Q1 is based on monthly data available between January–March 2014.

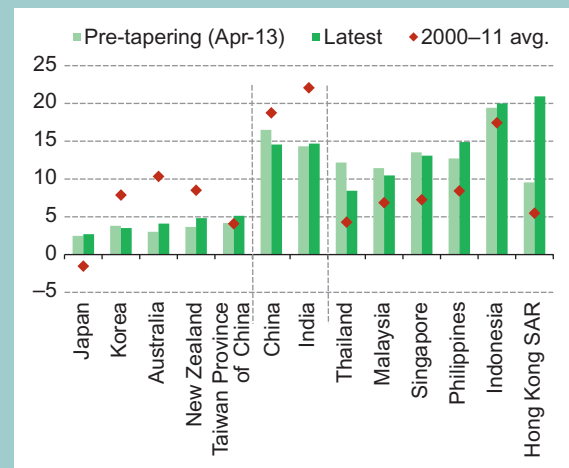
Figure 1.2
Selected Asia: Foreign Exchange Reserve Accumulation
 (Change since April 2013)



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

exceptions of Indonesia and Thailand. Along with other emerging markets, emerging Asian economies also faced large capital outflows in January 2014, although they proved more resilient to this latest bout in global volatility.

Figure 1.3
Selected Asia: Private Sector Credit Growth
 (Year-over-year; in percent)



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

While the financial environment for emerging markets has been challenging, financial conditions across Asia have remained broadly conducive. Domestic credit growth and corporate bond issuance have been strong (Figure 1.3); indeed, corporate leverage for the region as a whole has risen, as companies tried to take advantage of still favorable global liquidity conditions (see Chapter 2). Equity markets rebounded from their spring 2013 lows as global and regional economic prospects improved (Figure 1.4). In a number of cases, weaker exchange rates also contributed to keep financial conditions accommodative. Foreign bank lending to emerging Asia, on the other hand, did lose some of its momentum during the course of the year (Figure 1.5).

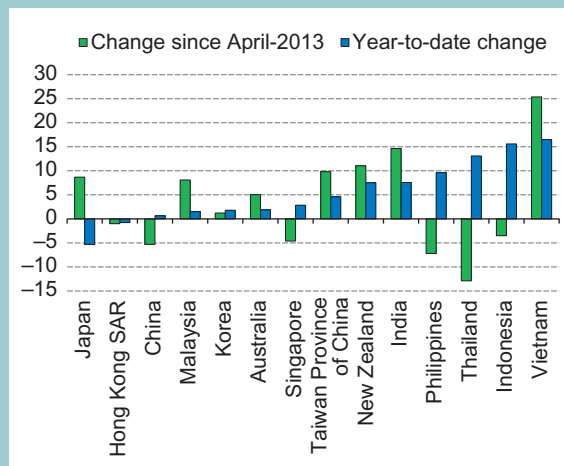
Activity across Asia picked up in the second half of 2013. GDP growth improved across most of the region during the past year, and recent high-frequency indicators, while somewhat mixed, point to a solid expansion continuing into 2014 (Figure 1.6). There have been two important drivers:

- *Exports*, particularly of electronics destined for the United States and the Euro area, have gained momentum over the last year

Figure 1.4

Asia: Stock Markets

(Change of stock market index, in percent)

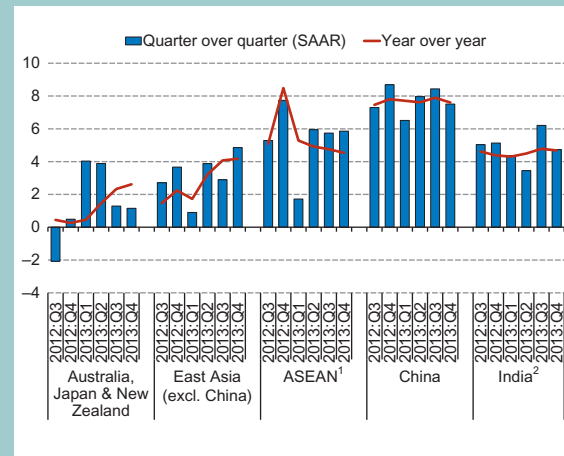


Sources: Bloomberg L.P.; and IMF staff calculations.

Figure 1.6

Asia: Changes in Real GDP at Market Prices

(In percent)



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

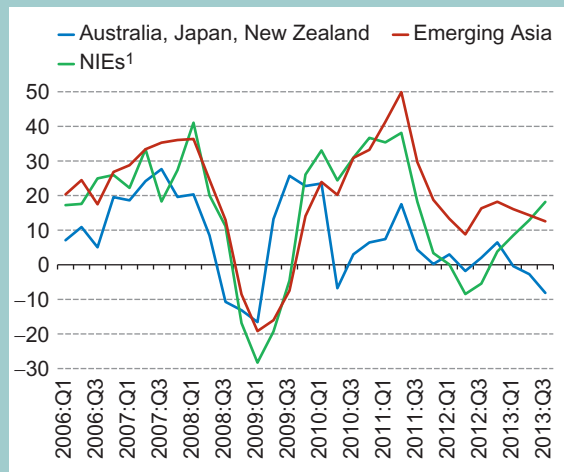
¹ ASEAN includes Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

² India's GDP is at factor cost.

Figure 1.5

Consolidated Foreign Claims

(Immediate risk basis; year-over-year change; in percent)



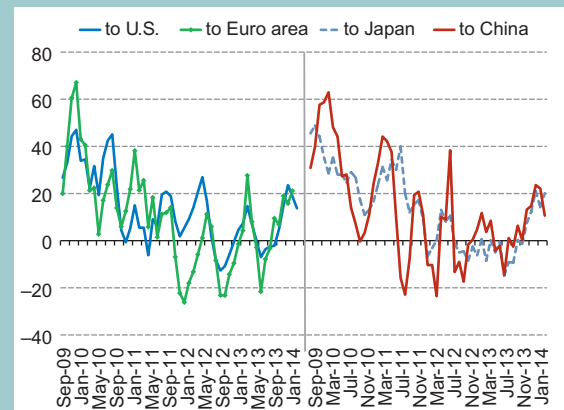
Sources: Bank for International Settlements; and IMF staff calculations.

¹ NIEs include Korea, Hong Kong SAR, Singapore, and Taiwan Province of China.

Figure 1.7

Selected Asia: Exports to Major Destination¹

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



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

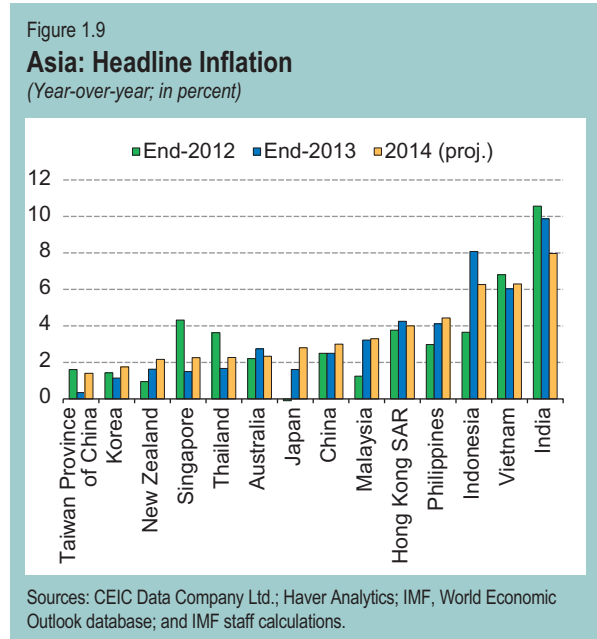
¹ Selected Asia includes Japan, Malaysia, Thailand, the Philippines, Singapore, and East Asia. Vietnam excluded due to data lag.

(Figure 1.7). In China and Korea, where the share of more sophisticated products has been on the rise, exports have done particularly well. However, some “hollowing out” is still taking place in higher-cost economies and among those that have been slow to innovate and

move up the value chain (for example, Malaysia and the Philippines). Improving exports meant that, for most of the region, external positions strengthened in 2013. However, for some of the ASEAN economies (Malaysia and Indonesia) worsening terms of trade had contributed to lower their current account balances.

- *Domestic demand* has been generally solid and retail sales across much of Asia have picked up, especially in the second half of 2013 (Figure 1.8). In Japan, in particular, wealth effects from rising equity prices have supported private consumption.

Amid flat or declining global commodity prices, and with some slack remaining in most economies,



inflation has generally been low across most of the region (Figures 1.9 and 1.10). India and Indonesia have been notable exceptions, although even there inflation has started to recede, particularly once adjustment is made for increases in administered fuel prices. Nevertheless, in both countries, high food inflation remains a significant economic and social issue. Malaysia, the Philippines, and Hong Kong SAR saw a modest pickup in inflation as activity growth continued to reduce slack in their economies, but inflation fell in Vietnam, Singapore, and Thailand while remaining generally low elsewhere in Asia.

Current account balances have generally improved on the back of stronger global demand and, in some cases, import compression (Figure 1.11). In India, measures aimed at curbing gold imports, as well as weaker domestic demand, helped strengthen the trade balance. Exports were also supported by a more competitive rupee. Indonesia has also started to see an improvement in its current account balance as policy tightening and other measures compressed imports. In Korea, the increase in the current

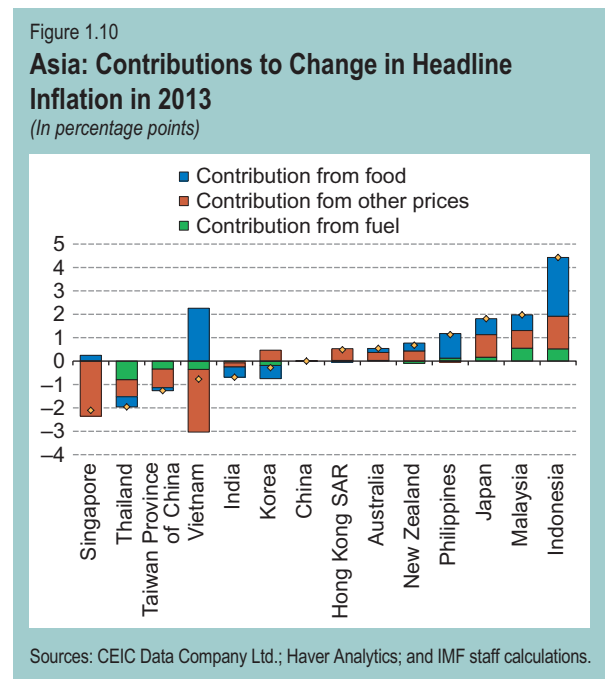
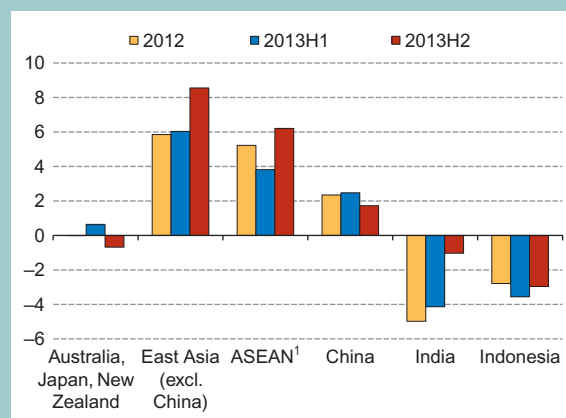


Figure 1.11

Asia: Current Account Balances (In percent of GDP)



Sources: CEIC Data Co. Ltd.; Haver Analytics; IMF, *World Economic Outlook* database; and IMF staff calculations.

¹ ASEAN includes Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

account surplus was helped by stronger global demand and improvements in productivity, which kept unit labor costs low (despite the appreciation of the won vis-à-vis the Japanese yen, in particular). China has bucked regional trends, with its current account balance declining slightly by 0.2 percentage points to 2.1 percent of GDP.

Regional Outlook: Growth Should Remain Robust and Inflation Generally Low

Asia should experience robust growth throughout 2014 and 2015. GDP growth is forecast at 5.4 percent in 2014 and 5.5 percent in 2015 (Table 1.1), a modest improvement over 2013. Stronger growth in advanced economies and generally more competitive exchange rates will help propel Asia's exports. Domestic demand across the region is expected to continue to be underpinned by healthy

Table 1.1. Asia: Real GDP
(Year-over-year change; in percent)

	Actual Data and Latest Projections					Difference from 2013 Oct Update		
	2011	2012	2013	2014	2015	2013	2014	2015
Australia	2.6	3.6	2.4	2.6	2.7	0.0	-0.2	-0.2
Japan	-0.5	1.4	1.5	1.4	1.0	-0.4	0.1	-0.2
New Zealand	1.9	2.6	2.4	3.3	3.0	-0.2	0.3	0.6
East Asia	8.2	6.5	6.7	6.8	6.7	0.0	0.2	0.2
China	9.3	7.7	7.7	7.5	7.3	0.1	0.3	0.3
Hong Kong SAR	4.8	1.5	2.9	3.7	3.8	0.0	-0.6	-0.6
Korea	3.7	2.0	2.8	3.7	3.8	-0.1	0.0	-0.2
Taiwan Province of China	4.2	1.5	2.1	3.1	3.9	-0.1	-0.6	0.0
South Asia	6.7	4.9	4.5	5.5	6.4	0.5	0.3	0.1
Bangladesh	6.5	6.1	5.8	6.0	6.5	0.0	0.0	0.0
India	6.6	4.7	4.4	5.4	6.4	0.6	0.3	0.1
Sri Lanka	8.2	6.3	7.3	7.0	6.5	1.1	0.3	0.0
ASEAN	4.7	5.8	5.1	5.0	5.3	0.2	-0.4	-0.1
Brunei Darussalam	3.4	0.9	-1.2	5.4	3.0	-2.7	-0.8	-4.4
Cambodia	7.1	7.3	7.0	7.2	7.3	0.0	0.0	0.0
Indonesia	6.5	6.3	5.8	5.4	5.8	0.5	-0.1	-0.2
Lao P.D.R.	8.0	7.9	8.2	7.5	7.8	-0.1	-0.3	0.2
Malaysia	5.1	5.6	4.7	5.2	5.0	0.0	0.3	-0.2
Myanmar	5.9	7.3	7.5	7.8	7.8	0.7	0.9	0.9
Philippines	3.6	6.8	7.2	6.5	6.5	0.4	0.4	1.0
Singapore	6.0	1.9	4.1	3.6	3.6	0.5	0.2	0.0
Thailand	0.1	6.5	2.9	2.5	3.8	-0.2	-2.8	-1.2
Vietnam	6.2	5.2	5.4	5.6	5.7	0.1	0.2	0.3
Pacific Island countries and other small states¹	5.4	3.5	2.6	3.5	4.6	-0.6	-0.1	0.1
Emerging Asia²	7.9	6.7	6.5	6.7	6.8	0.2	0.2	0.1
Asia	5.9	5.3	5.2	5.4	5.5	0.1	0.1	0.1

Source: IMF staff projections.

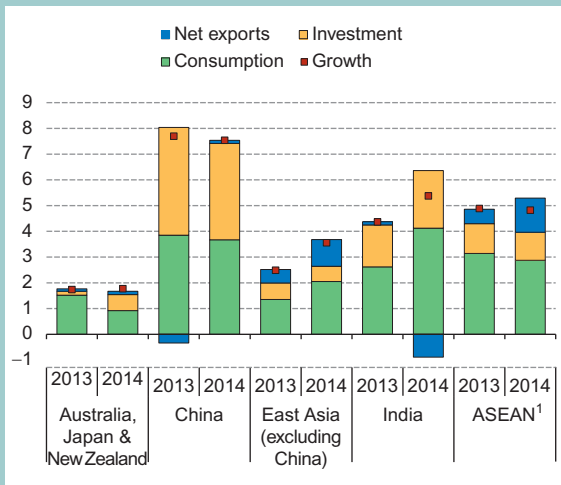
¹ Simple average of Pacific Island countries and other small states which include Bhutan, Fiji, Kiribati, Maldives, Marshall Islands, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

² Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. India's data is reported on a fiscal year basis.

Figure 1.12

Selected Asia: Contributions to Projected Growth

(Year-over-year; in percentage points)



Sources: IMF, *World Economic Outlook* database; and IMF staff calculations.

¹ ASEAN includes Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

labor markets and, particularly in ASEAN (see Theme 4 below), solid credit growth (Figure 1.12).¹ The slowing pace of capital inflows may be a countervailing factor, although its impact on credit growth is less than its effect on asset prices (Box 1.1 and Box 1.2). Recent indicators are consistent with this outlook, showing a modest upturn going into 2014 (Figure 1.13). This is also borne out by estimates of future growth rates extracted from equity prices (Figure 1.14).

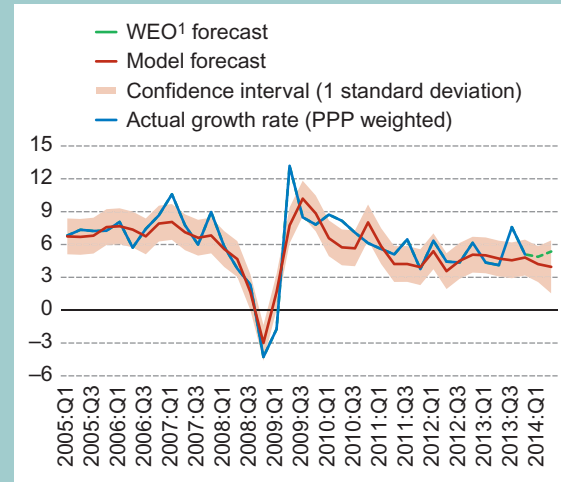
Inflation is expected to remain contained across much of the region (Figure 1.15). Output gaps are expected to close only gradually across Asia and commodity prices are forecast to remain soft in the near term (April 2014 *World Economic Outlook*). Indeed, in Korea, Thailand, and New Zealand, inflation is expected to remain well below the official central bank target. As in 2013,

¹ With the exception of business confidence in Japan, (consumer and business) sentiment indicators have moved mostly sideways across most countries in the region. However, their link with the cycle appears generally weak.

Figure 1.13

Indicator Model for Asia: Projected Versus Actual Real GDP Growth

(Quarter-over-quarter annualized; in percent)



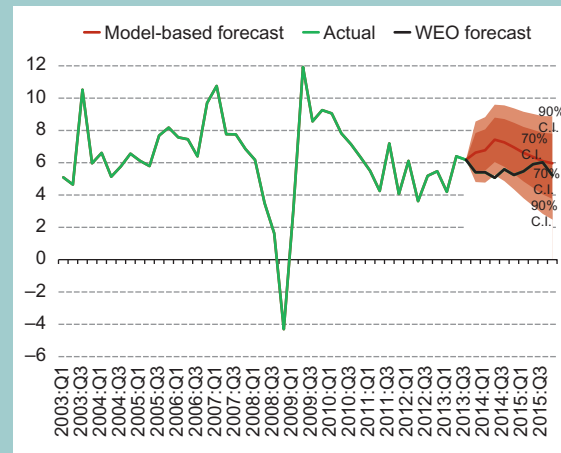
Source: IMF staff calculations.

¹ IMF, *World Economic Outlook* database.

Figure 1.14

Gordon Equity Price Model for Asia: Projected Versus Actual Real GDP Growth¹

(Quarter-over-quarter annualized; in percent)



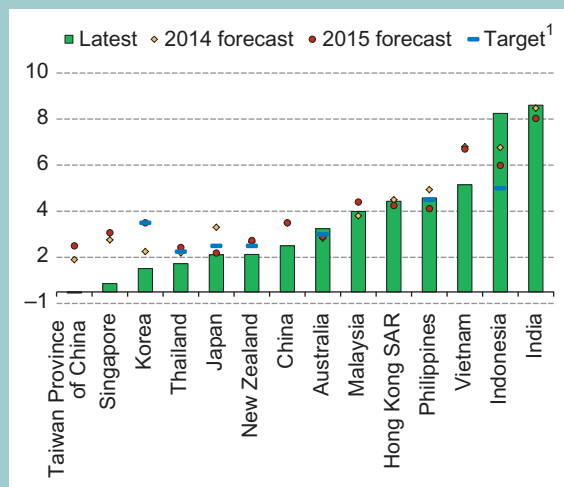
Source: IMF staff calculations.

¹ C.I. = confidence interval; WEO = IMF, *World Economic Outlook* database.

India and Indonesia are likely to confront relatively high inflation rates, but price pressures are expected to be on a downward path, in part due to the recent tightening of monetary policy.

Figure 1.15

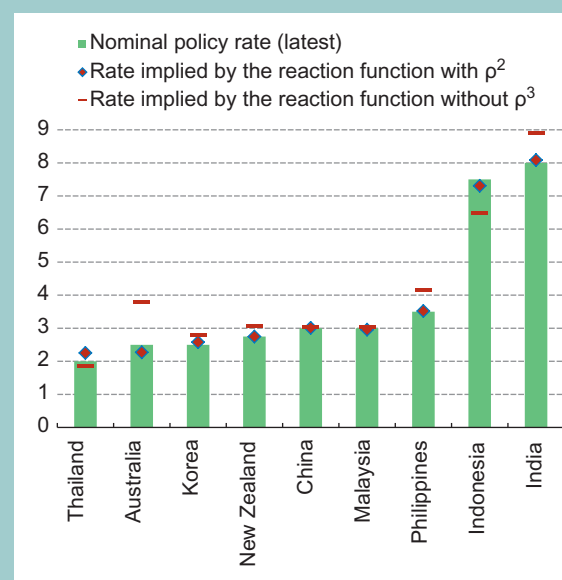
Asia: Headline Consumer Price Inflation
(Year over year, in percent)



Sources: CEIC Data Company Ltd.; Haver Analytics; country authorities; IMF, World Economic Outlook database; and IMF staff projections.
¹ Target refers to the midpoint of the headline inflation target band (Australia, Indonesia, Japan, Korea, New Zealand, and the Philippines). Core inflation and core inflation target band midpoint (Thailand).

Figure 1.16

Asia: Estimated Central Bank Reaction Functions¹
(In percent)



Sources: Haver Analytics; and IMF staff estimates.

¹ Estimated as of January 2014 with monthly data.

² Estimated as $i_t = \rho^* i_{t-1} + (1 - \rho)^*(\alpha + \gamma_1 E_t[\pi_{t+1} - \pi^*] + \gamma_2 E_t[\text{OutputGap}_{t+1}] + \delta_1 \text{REER}_t + \delta_2 \text{US_3Myield}_t) + \varepsilon_t$.

³ Estimated as $i_t = \alpha + \gamma_1 E_t[\pi_{t+1} - \pi^*] + \gamma_2 E_t[\text{OutputGap}_{t+1}] + \delta_1 \text{REER}_t + \delta_2 \text{US_3Myield}_t + \varepsilon_t$.

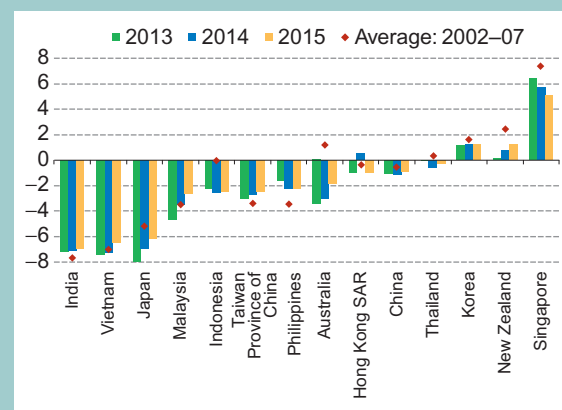
Monetary and fiscal policies are expected to remain broadly accommodative. On the monetary front, policy rates are currently in line with levels implied by past behavior of central banks (Figure 1.16). Reflecting subdued inflation and limited demand pressures, monetary policy is expected to remain generally accommodative in 2014, although in a few cases (Indonesia, and to a lesser extent India) interest rate hikes are likely to weigh on growth. On the fiscal front, policies will be mostly neutral in 2014 with underlying fiscal balances mostly unchanged compared with 2013 (Figure 1.17). Only Japan and Malaysia are expected to undergo a relatively more noticeable fiscal tightening in 2014 (which will continue into 2015).

Macroeconomic developments will differ across the region.

- In *China*, the unveiling of the government's reform agenda in 2013 has boosted sentiment but progress on economic rebalancing remains incomplete and investment continues to be a major growth driver (see Theme 3 below). However, there are some burgeoning signs that consumption is set to play a larger role in

Figure 1.17

Selected Asia: Cyclically Adjusted Fiscal Balance
(In percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.

the economy and efforts to cool down credit growth, raise the cost of capital, and dampen investment growth should continue. Growth is expected to slowly decelerate to

Are Capital Flows and Global Risk Aversion Driving Asset Prices in Asia?¹

Since the mid-2000s, capital flows to Asia have become increasingly large and volatile.² At the same time, asset prices in Asia have also experienced large swings, in many instances coinciding with episodes of capital flow surges and reversals and underscoring the potential vulnerability to global bouts of volatility. This box estimates the effects to which capital flows are impacting asset returns and volatility of equities, bonds, and currencies using a Multivariate GARCH (MGARCH) model. The model accounts for the time-varying nature of asset price volatility as well as interdependencies between those volatilities. The results point to significant effects of capital flows and shifts in global risk sentiment on asset returns and volatility, especially during crisis periods.

To quantify the impact of capital flows and global risk aversion on asset prices, an MGARCH model is estimated on stock returns, bond yields, and exchange rates for 13 Asian economies. The MGARCH model, which allows for time-dependent volatility, is appropriate in this case as it is well-established that asset returns exhibit a significant volatility clustering—that is, higher volatility tends to be followed by high volatility. To measure capital flows, weekly EPFR portfolio flow data from 2004 to 2013 are used along with the Chicago Board Options Exchange Volatility Index (VIX) to control for global risk aversion. The model also allows for a shift in volatility during August 2008 to June 2009.

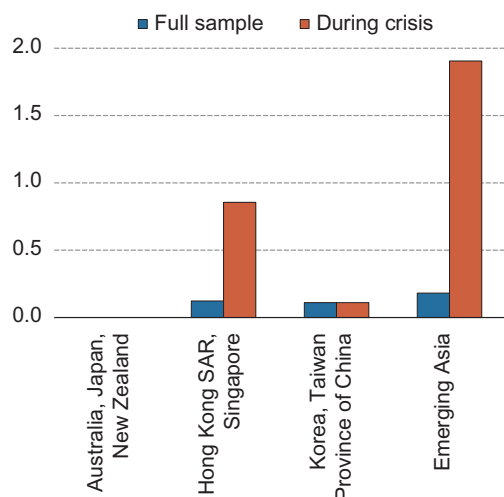
The estimation results show that capital inflows generally have an economically significant impact on financial asset returns, especially during the global financial crisis.

- In the case of the *stock market*, the average impact of foreign equity flows in industrial Asia (Japan, Australia, and New Zealand) seems to be small. However, in the rest of Asia, a one standard deviation increase of equity inflows is associated with a 0.2 percentage point increase (on average) in stock returns. Furthermore, this impact rose sharply during the global financial crisis (Figure 1.1.1), which could be due to a number of factors (*not* captured in the model specification), including changes in liquidity and investor base.
- In the *bond market*, the average effect of foreign bond flows on yields is generally smaller compared with that of equity returns, but also tends to increase substantially during the global financial crisis (Figure 1.1.2) for emerging Asia, Hong Kong SAR, and Singapore.

Figure 1.1.1

Impact of Equity Inflows on Equity Return¹

(Percentage point change in equity returns per one-standard-deviation increase in equity flows)



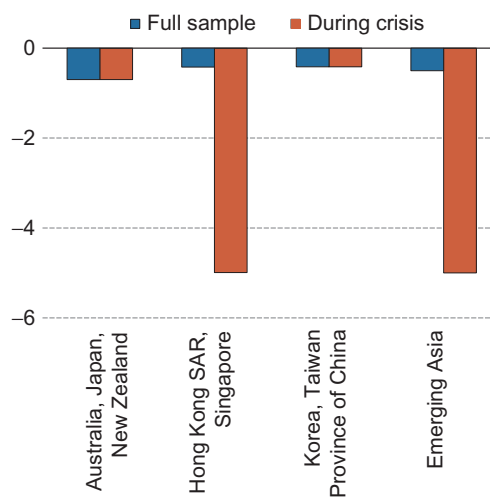
Source: IMF staff estimates.

¹ Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, and Thailand.

Figure 1.1.2

Impact of Bond Inflows on Change in Bond Yields¹

(Basis point change in bond yields per one-standard-deviation increase in bond flows)



Source: IMF staff estimates.

¹ Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, and Thailand.

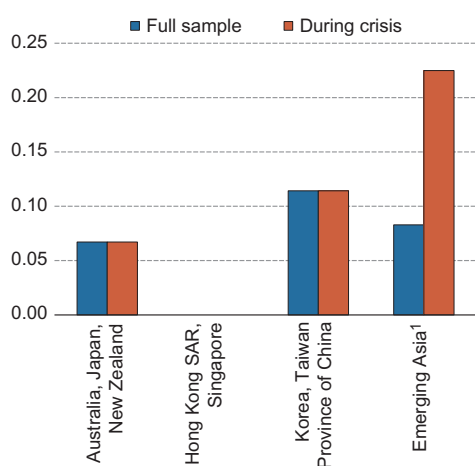
¹ The main authors are Nasha Ananchotikul and Longmei Zhang.

² See IMF *Regional Economic Outlook: Asia and Pacific*, April 2011, for details.

Box 1.1 (continued)

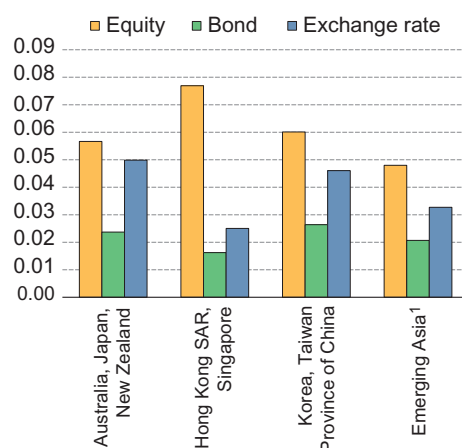
- For *exchange rates*, the effect of portfolio flows in *emerging Asia* is comparable to the other country groups considered in noncrisis periods (Figure 1.1.3). In addition, the effect is significantly larger during the crisis (subsample) period, driven mainly by India and Indonesia. There is also some evidence that equity flows have a bigger impact on exchange rate movements than bond flows.³
- Global risk aversion has a significant effect on the level and volatility of Asian asset prices (Figure 1.1.4). There is also differentiation: a rise in risk aversion (as measured by the VIX) benefits the yen but leads to weaker EM Asian currencies; the impact on local equity market volatility depends on the degree of financial openness (Figure 1.1.5); and the impact on bond market volatility is linked to the level of domestic inflation (Figure 1.1.6). This suggests that financial conditions in countries with weaker fundamentals might be more exposed to changes in global risk aversion. The effect of capital flows on asset prices is also likely to depend on the exchange rate regime; indeed, the effect of capital flows (and global volatility) on equity returns and volatility appears particularly large in Hong Kong SAR and Singapore.

Figure 1.1.3
Impact of Portfolio Flows on Exchange Rate
(Percentage point appreciation per one-standard-deviation increase in portfolio flows)



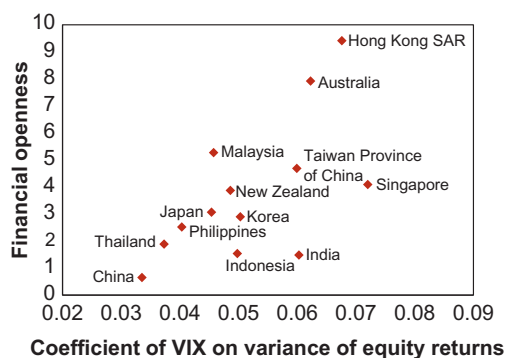
Source: IMF staff estimates.
¹ Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, and Thailand.

Figure 1.1.4
The Coefficient of the VIX on Variance of Asset Returns



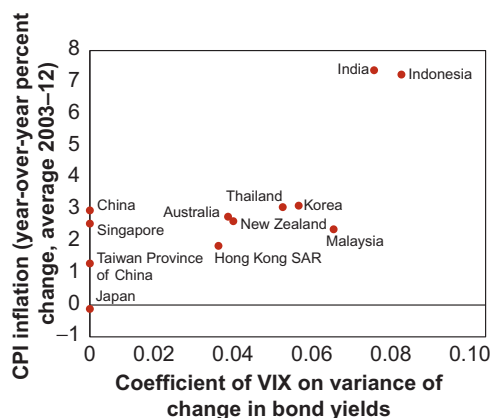
Source: IMF staff estimates.
¹ Emerging Asia includes China, India, Indonesia, Malaysia, the Philippines, and Thailand.

Figure 1.1.5
Impact of VIX on Equity Volatility versus Financial Openness¹



Source: IMF staff estimates.
¹ Financial openness is measured as absolute size of portfolio liabilities to GDP, 2003–12 average.

Figure 1.1.6
Impact of VIX on Bond Volatility versus Inflation



Source: IMF staff estimates.

³ This is also supported by empirical analysis when the impact of equity and bond inflows on exchange rate are studied separately.

Box 1.2

Have Capital Inflows Boosted Credit in Asia?¹

Between the early 2000s and mid-2013 capital inflows to Asia were buoyant—with a sharp, but brief, downswing at the time of the global financial crisis. During this period credit growth has also boomed across most of the region. However, the literature on the link between the two is somewhat inconclusive and the empirical correlation between inflows and credit growth is weak.²

Here a VAR model for 14 Asian economies is estimated at quarterly frequency between 2000 and 2013.³ The results suggest that:

- The contribution of capital flows to the variation in credit growth is generally small: only 9 percent of the variation in real credit growth is explained by net capital flows after four quarters (Figure 1.2.1). This result holds when FDI flows are excluded from the net capital flows measure as well as when gross inflows are used (instead of net flows as in the baseline specification). Broadly consistent results are also obtained using a similar model estimated with monthly data (EPFR), as shown in Figure 1.2.2.⁴
- The contribution of capital flows to the variation in credit growth is higher at 14 percent for ASEAN economies (excluding Singapore). In particular, the contribution of net capital flows to domestic credit growth is negligible in Hong Kong SAR and Singapore (likely reflecting their roles as international financial centers).
- In general, the impact of capital flows on credit growth is smaller for those with more flexible exchange rates, consistent with the evidence in Magud, Reinhart, and Vesperoni (2012).

The analysis also suggests that domestic (demand and financial) conditions will continue to play an important role in determining credit developments. But going forward, because capital flows—including gross bank flows—have become more volatile, they could be playing a bigger role in determining domestic credit conditions. The declining share of flows that is being intermediated through the banking system, with a shift in composition to portfolio flows, could also increase the importance of capital flows “shocks” in explaining credit growth. Finally, the results do not imply that capital flows are not having a broader impact on domestic financial conditions in Asia. Instead, the effects of capital flows are likely increasingly being transmitted through their impact on bond and equity prices, rather than domestic credit.

¹ The main authors are Sidra Rehman and Edda Zoli.

² Sizable capital inflows have been found to be good predictors of credit booms (Mendoza and Terrones, 2008; IMF, 2011b) but the limited empirical evidence on credit growth determinants in Asia suggests that domestic factors are more important drivers (Elekdag and Han, 2012).

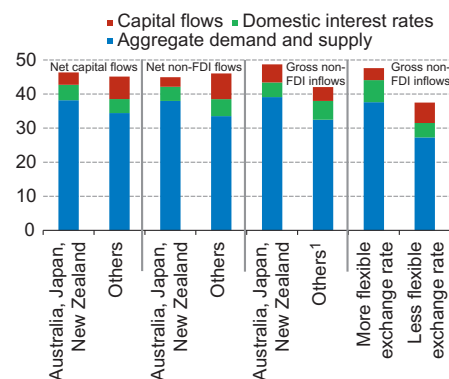
³ The baseline VAR includes the following variables: real GDP growth, the inflation rate, short-term interest rates, growth in real credit to the private sector, net capital flows in percent of GDP, and the VIX as exogenous variable. Shocks were identified using the Cholesky decomposition, with the five endogenous variables ordered as listed. Results are robust to alternative orderings.

⁴ Monthly GDP is estimated using the Chow-Lin method and industrial production series. Combined equity and bonds EPFR flows (in percent of GDP) are used as a proxy for capital flows. The VAR also includes the nominal effective exchange rate as additional endogenous variable. Results are robust to alternative ordering of the variables.

Figure 1.2.1

Variance Decomposition of Real Credit Growth to the Private Sector

(In percent, after four quarters)



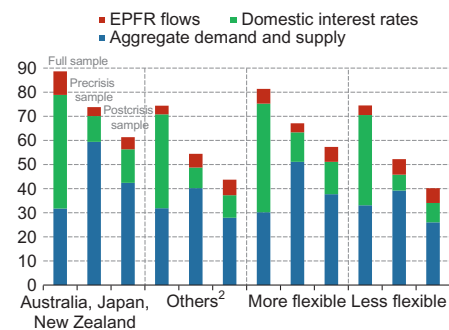
Sources: CEIC Co. Ltd.; Haver Analytics; IMF, International Financial Statistics and World Economic Outlook databases; and IMF staff calculations.

¹ Others include China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China, Thailand, and Vietnam.

Figure 1.2.2

Variance Decomposition of Real Credit Growth to the Private Sector¹

(In percent, after 12 months)



Sources: CEIC Co. Ltd.; Haver Analytics; IMF, World Economic Outlook database; and IMF staff calculations.

¹ Universe of funds limited to those reporting in 2005.

² Others include China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China, Thailand, and Vietnam.

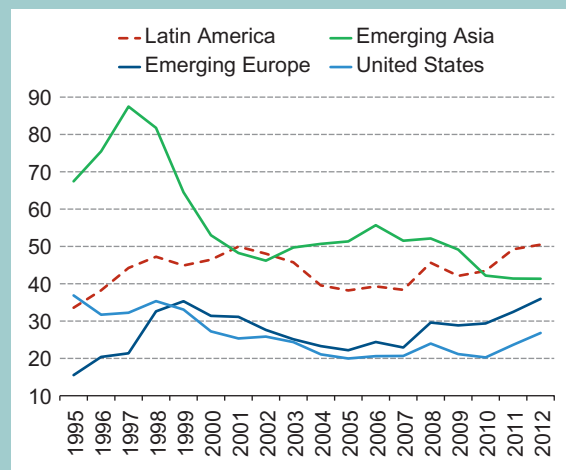
7.5 percent in 2014 and 7.3 percent in 2015 to a more sustainable path. The inflation outlook is expected to remain benign (with headline inflation averaging 3 percent in 2014 and 2015), but concerns about overinvestment and credit quality should mean a continuation of the steady withdrawal of monetary support for the economy. This should imply slower credit growth and higher interest rates during the course of the year.

- *Japan's* GDP growth picked up to 1.5 percent in 2013 and industrial production, retail sales, and consumer confidence have been strong. While wage growth has remained low, asset prices and expanding credit have helped underpin domestic demand. A weaker yen has benefited exports, albeit less than expected so far. Going forward, fiscal consolidation will be a growing headwind and supportive measures (including higher public investment and corporate tax cuts) will partly offset the impact of the consumption tax hike and the phasing out of past stimulus. However, a weaker currency and strong monetary support should ensure relatively loose financial conditions that will support private domestic demand. Overall, GDP growth is expected to remain above potential but would slow to 1 percent in 2015. Headline inflation will rise to 2.8 percent this year (around 1 percent of which is due to the consumption tax hike) and moderate to 1.7 percent in 2015. Underlying measures of inflation and inflation expectations are expected to stay in the 1–2 percent range.
 - *India's* growth remained subdued in 2013–14 with GDP at factor cost projected to grow by 4.4 percent. The slowdown has become generalized across sectors of the economy as supply bottlenecks continued to bind. In 2014–15 growth should improve to 5.4 percent (still below trend) as approved investment projects are implemented, exports benefit from improved competitiveness and global growth, and business and consumer confidence have been lifted by recent policy actions. However, inflation will remain an important challenge even though it is expected to moderate
- (reaching 8.5 percent year-over-year by end-2014 and 7.5 percent by end-2015).
- *Australia's* economy is likely to grow below trend as the investment phase of the mining boom passes its peak and begins to decline. Growth is expected to remain broadly stable at 2.6 percent in 2014, with a modest pickup going in 2015. New Zealand, in contrast, should accelerate in 2014 as post-earthquake reconstruction gathers steam, with private consumption and external demand strengthening.
 - *Korea's* economy continued to struggle with a two-speed economy in 2013 with a robust performance by exporters but moribund domestic demand. In 2014–15 the recovery should continue with growth accelerating to 3.7 percent as exports are further lifted by trading partner demand and domestic demand, although still subdued, benefits from past fiscal stimulus and accommodative monetary policy.
 - *ASEAN's* growth momentum lost some steam in 2013, impacted by higher inflation and rising interest rates in Indonesia and political uncertainties in Thailand (see Theme 4). Developments in *ASEAN* are likely to remain uneven. *Indonesia* will slow (to 5.4 percent) this year as higher real interest rates weigh on the domestic economy even as the current account improves from a weaker currency. In *Thailand*, political tensions have hurt sentiment and will slow the economy in the first half of 2014 as private demand weakens and public investment plans are delayed. However, *Malaysia* and *the Philippines* are on a more positive trajectory with growth expected to remain robust in 2014–15.
 - In *frontier and developing economies* (FDEs), the economic outlook is for continued solid growth underpinned by the ongoing recovery in world trade. In *South Asian* FDEs, growth is projected to average 6.5 percent in 2014–15, with domestic demand in *Bangladesh* recovering as activities normalize following a year of political unrest. However, in *Cambodia*, political tension about the electoral process may hurt sentiment and hold back investment in 2014 even though

Figure 1.20

Debt-to-Equity Ratio

(In percent; median)



Source: IMF, Corporate Vulnerability Utility.

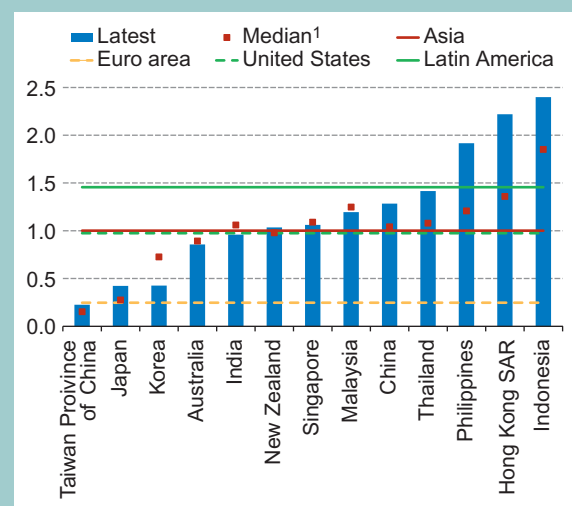
- *Corporate vulnerabilities appear manageable.* Average corporate leverage, especially in emerging Asia, has started to increase in the aftermath of the global financial crisis, as bank credit to non-financial firms and corporate issuance have picked up.³ But this rise is modest in comparison to the spike in leverage observed in the mid-1990s (Figure 1.20). There are, however, concerns largely related to the concentration of leverage among weaker firms in India and Indonesia and the potential for greater corporate strains in China as borrowing costs rise and growth slows (see Chapter 2).
- *Household debt has increased, but also appears manageable.* Credit to households has risen rapidly in Korea, Malaysia, and Thailand, and household debt-to-GDP ratios now stand above 60 percent in these countries (as well as in Hong Kong SAR and Singapore). The strength of household balance sheets in these economies is dependent on house price prospects, and

³ While the simple average of the leverage ratio in emerging Asia increased by 8 percentage points in 2012, the median increased by less than 1 percentage point during the same period. Other measures (for example, using debt weights) also show a moderate increase in the average leverage (Chapter 2).

Figure 1.21

Selected Asia: Return on Bank Assets

(In percent)



Sources: Bankscope; and IMF staff calculations.

¹ Median for 2000–12. Latest values available since 2012 are used.

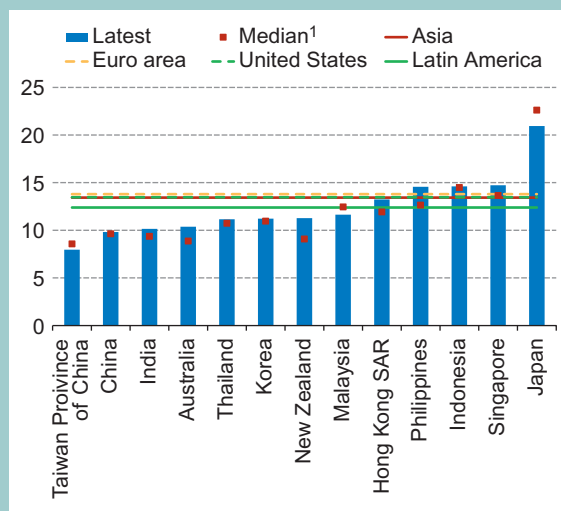
across most of Asia, housing valuation ratios do not appear to be out of line with historical levels (see Chapter 2). There are exceptions to these trends, however, including Hong Kong SAR, New Zealand, and Singapore where high house price increases have led policymakers to introduce or tighten macroprudential measures (see Chapter 4 and Box 2.1).

- *Banks have continued to strengthen their balance sheets* (Figures 1.21–1.24). Tier 1 capital levels have increased across many countries, although they remain below those in other regions, including Latin America. Bank liquidity, as conventionally defined, has declined in Malaysia, Indonesia, Singapore, and India and is below average levels in other regions.⁴ Banks' profitability has improved as growth has boosted non-interest revenues (with the notable exception of Korean banks). Finally, non-performing loans—which, however, are a backward-looking indicator—have been declining across the region.

⁴ In India, for instance, assets for the purpose of meeting the statutory liquidity requirement stand at about 26 percent of net liabilities.

Figure 1.22

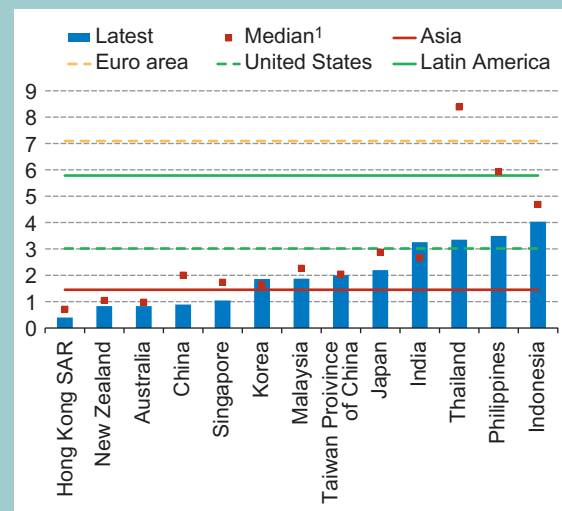
Selected Asia: Tier 1 Capital Ratio
(In percent)



Sources: Bankscope; and IMF staff calculations.
¹ Median for 2000–12. Latest values available since 2012 are used.

Figure 1.24

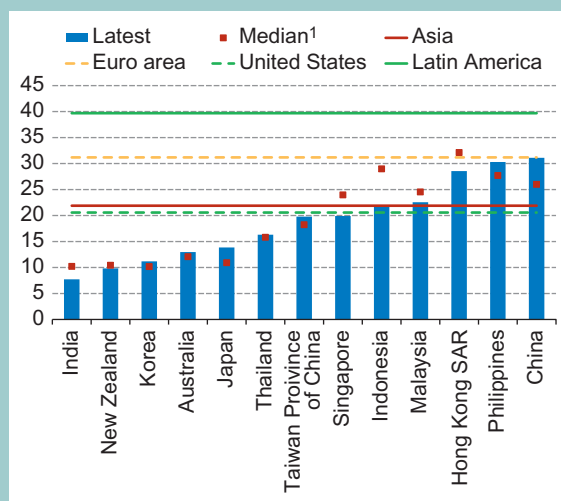
Selected Asia: Nonperforming Loans Ratio
(In percent)



Sources: Bankscope; and IMF staff calculations.
¹ Median for 2000–12. Latest values available since 2012 are used.
The coverage may differ significantly from core financial soundness indicator data reported to the IMF.

Figure 1.23

Selected Asia: Liquidity Ratio
(In percent)



Sources: Bankscope; and IMF staff calculations.
¹ Median for 2000–12. Latest values available since 2012 are used.
Total liquid assets/total deposits + short-term borrowing + other short-term liabilities. In India's case, assets used for the purpose of meeting the statutory liquidity requirement are about 26 percent of net liabilities. The estimates shown in this chart exclude such assets.

Theme 1: Preparing for the Risks Ahead

The external environment is uncertain, particularly for emerging markets, and Asia is facing various idiosyncratic domestic risks. There are four broad risks confronting the region in 2014 and 2015:

- *A continued tightening of global liquidity.* As growth in the United States improves, global interest rates will rise and Asia will face a further tightening in financial conditions. Bouts of capital flow and asset price volatility are likely along the way with exchange rates, equity prices, and government bond yields affected by changes in global risk aversion and capital flows (see Box 1.1). Economies with weaker fundamentals, higher inflation, and a greater reliance on global finance and trade are likely to be the most affected. In some cases, the impact could be amplified by domestic

financial vulnerabilities arising from leverage among firms and households or balance sheet risks in the banking system, although these are generally manageable (Chapter 2). For households, higher market interest rates could coincide with declines in housing prices, wealth, and, ultimately, consumption. For firms, the effect of weaker exchange rates on unhedged foreign exchange liabilities could lead to financial distress and lower investment.

- *A sharper-than-envisaged slowdown and financial sector vulnerabilities in China.* Risks associated with recent rapid credit growth and increasing disintermediation into the nonbank financial system may come to the fore, particularly as the cost of capital rises and overall growth slows. Nonbank financial intermediation continues to grow rapidly and nonbank financial intermediaries' assets account for about 25 percent of GDP.⁵ This represents an important source of systemic risks, and strains have already been seen in the default of some trust products. High local government debt is another potential systemic issue that could amplify vulnerabilities and lead to a deterioration of banks' asset quality. Looking ahead, there is likely to be continued news of credit problems among the trusts or potential debt servicing problems among local governments. As in recent months, this could spark adverse financial market reaction both in China and globally. While structural reforms hold the promise of sustainable, balanced growth (see Theme 3 below), their transitional costs could also weaken activity in the near term. A sharper-than-envisaged slowdown in China would also have significant spillovers for the rest of the region, especially in economies linked to the regional supply chain and commodity exporters.

⁵This is based on the definition of the Financial Stability Board; the data are from the IFS and consists of claims of nonbank financial corporations on other depository corporations at the end of 2012. In China's case, it includes, for example, trust loans, entrusted loans, and undiscounted bankers' acceptances.

- *Less effective Abenomics.* In Japan, there is a risk that policy measures could prove less effective than envisaged in terms of supporting growth, failing to increase nominal wages, sustaining the recent increase in inflation expectations, or boosting private investment (see Theme 2 below). Economies with strong trade and FDI linkages with Japan, such as Korea, Thailand, and Indonesia, are likely to be among the most exposed to such an outcome.
- *Political/geopolitical tensions and uncertainty.* Domestic and global political tensions could cause trade disruptions or weaken growth. Some countries in the region will have elections (India and Indonesia) while, in others, domestic political tensions have affected investment and activity (Thailand and Bangladesh). Strong intraregional trade integration, which has contributed to greater business cycle synchronization and spillovers over the years (Chapter 3), could transmit geopolitically related disruptions along the regional supply chain. Regional integration and policy coordination efforts could also be adversely affected.

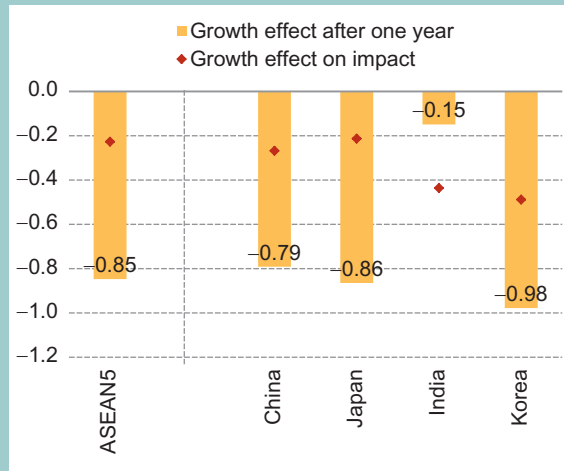
Policy simulations and event studies are consistent with a significant effect on Asian economies of an *unexpected* tightening in global liquidity.

- Simulations show that a positive U.S. growth shock, which would induce higher U.S. interest rates as a result of *tighter monetary* policy, would benefit Asia's growth.⁶ However, if the rise in long-term U.S. yields went beyond what would be justified by a stronger U.S. economy, the growth of Asian economies might instead weaken. For instance, the *combination* of a 1 percent positive growth shock in the U.S. with a 100 bps shock to long-term government bond yields (beyond that driven by the response of U.S. monetary policy to higher U.S. growth) could generate a moderate growth slowdown in most Asian economies, reflecting

⁶The simulations are run using the IMF's *Flexible Suite of Global Models (FSGM)* and an alternative *Global Vector Autoregression (GVAR)* model. Figure 1.25 and associated text are based on the GVAR results.

Figure 1.25

Impact of a Combined 1 Percent U.S. Growth and 100 Basis Points Interest Rate Shock on Asia
(In percentage points)



Source: IMF staff estimates.

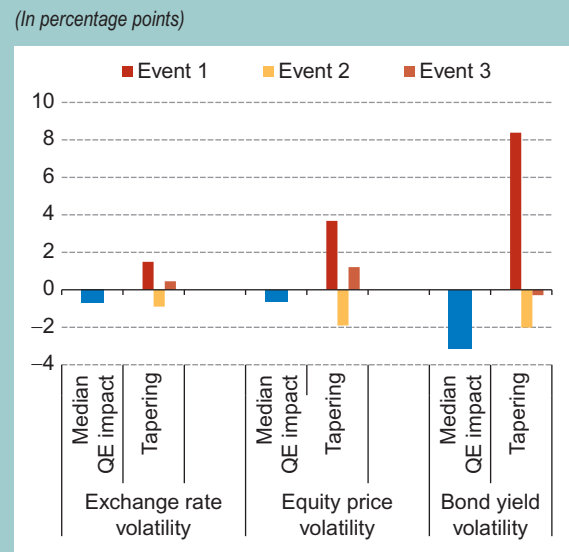
weaker domestic demand as well as trade (including through third-market countries) and commodity-price linkages (Figure 1.25).⁷ That slowdown would be sharper in economies that attempt to resist the exchange rate depreciation that would normally occur in such a scenario.

- *Event studies* also suggest significant effects of unexpected news regarding tapering on asset prices. QE announcements have tended to reduce implied volatilities in equity returns, bond yields, and exchange rates (Figure 1.26). By contrast, the May 2013 tapering episode increased financial volatility in all three major asset markets across Asia. Subsequent announcements have led to lower market volatilities, perhaps reflecting market anticipation of these policies. QE announcements were also generally associated with an increase in the size of the upside tail of the distribution of future equity prices (based on options markets), while the May 2013 tapering increased the downside tail risk (Figure 1.27).

⁷ See Cashin and others (2012) for a description of the methodology and an application.

Figure 1.26

Impact on Volatility of Quantitative Easing and Tapering Announcements During First Three Months¹
(In percentage points)

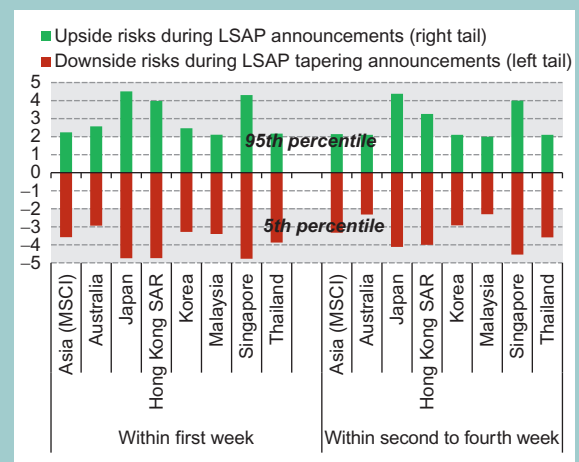


Sources: Bloomberg L.P.; and IMF staff calculations.

¹ QE = quantitative easing. QE tapering events 1, 2, and 3 correspond to May 2013, September 2013, and January 2014 (median of weekly changes since the events are shown).

Figure 1.27

Estimated Impact of Unconventional Monetary Policies on Asian Equity Prices¹
(Maximum t-statistic during LSAP 1–3 and tapering events)



Source: IMF staff estimates.

¹ LSAP = large-scale asset purchase. Maximum upside and downside risks during the specified periods are shown.

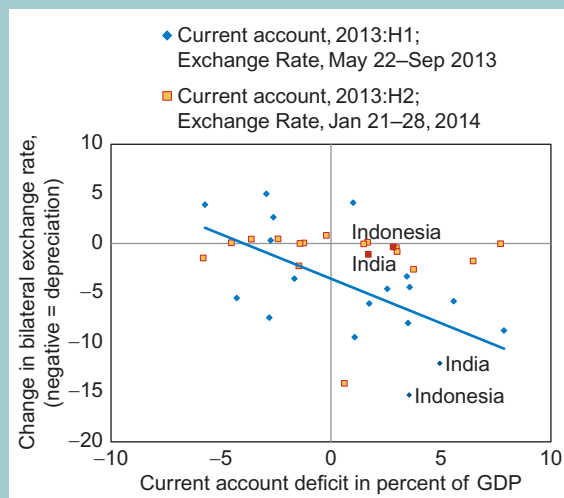
How should policies preempt and respond to these downside risks?

The policy response to adverse shocks will differ based on countries' fundamentals and vulnerabilities. Over the past year, countries in the region have tackled the challenges associated with rising global interest rates and slowing growth due to structural impediments. Actions taken have included policy rate hikes, increases in fuel prices, and other supply-side measures in India and Indonesia as well as a significant fiscal adjustment in Malaysia (encompassing tax increases, spending cuts, and fuel price adjustments). These efforts have started to pay dividends in Indonesia and India, as inflation is on a downward trend and the current account deficits in both countries are on a declining path. Despite greater financial volatility, Asian markets have weathered the January 2014 spike in global risk aversion well, unlike other EMs that had delayed policy adjustments (Figure 1.28). However, the transition remains unfinished. Going forward, continuing to improve fundamentals and ensuring a coherent, well-communicated macroeconomic policy mix will be key to reducing the fallout

from global financial shocks; it will also allow for a positive differentiation for Asian economies by investors and sustain Asia's resilience and growth leadership.

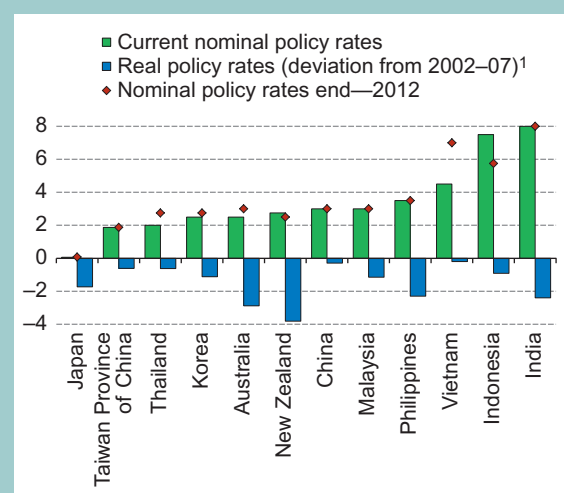
- Monetary policy.* Across most of *emerging Asia*, given the relatively benign near-term inflation outlook, countries appear to have space to maintain the current supportive stance of monetary policy. However, a gradual normalization of monetary conditions should be considered as economic slack diminishes and risks recede (Figure 1.29). In *India*, further increases in the policy rate will likely be needed to put inflation firmly on a downward path, while *Indonesia* should stand ready to further increase policy rates to fend off potential inflationary pressures. In both countries, if balance of payments pressures re-intensify, a policy tightening would help reduce vulnerabilities and contain the inflationary impact of any exchange rate depreciation. Elsewhere in emerging Asia, in the event of an abrupt tightening of global financial conditions, many of the region's central banks

Figure 1.28
Exchange Rate Change Versus Current Account Deficit
 (In percent)



Sources: Bloomberg L.P.; IMF, World Economic Outlook database, and Global Data Source; and IMF staff calculations.

Figure 1.29
Selected Asia: Policy Rates
 (In percent)



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

¹ Real policy rate is based on 1-year ahead inflation forecast from Consensus Economics. For Japan the uncollateralized overnight rate is used.

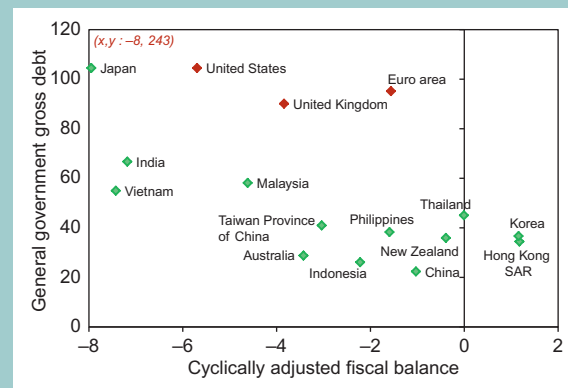
could capitalize on low inflation and their policy credibility to loosen monetary policy and cushion the blow on growth—as some of them did in 2013. In *Japan*, the inflation momentum is expected to slow this year given fiscal adjustment. Risks of an incomplete exit from deflation means that monetary policy actions will remain focused on raising inflation expectations. In *China*, the challenge is to slow the growth of credit, especially in the shadow banking sector, and minimize the buildup of risks in the financial sector without causing a steep deceleration in growth. This warrants continued interest rate liberalization and slower M2 growth, even if growth were to modestly undershoot the official target. In many FDEs, particularly *Mongolia*, *Lao People’s Dem. Rep.*, and *Cambodia*, tightening monetary policy to curb credit growth will also be important to help reduce external imbalances.

- *Exchange rate and FX intervention policies.* Over the past year, countries have generally pursued flexible exchange rates and used foreign exchange intervention only sparingly in the face of capital flow volatility. This strategy should continue, particularly in the event that balance of payments pressures resume. In countries with more than adequate reserves, some intervention to smooth volatility may also be appropriate.
- *Macprudential policies.* Macprudential policies (MPPs) having been used more extensively in Asia than in other regions both before and after the global financial crisis. This has resulted in a tight stance that has helped foster financial stability. The current stance appears broadly justified given the baseline outlook of a steady growth recovery, continued strong credit growth in many countries, and pockets of elevated asset prices (particularly housing prices, see Box 2.1). If there were sharp, unexpected swings in credit or asset prices (either up or down) there is still scope to respond in a countervailing way with a range of MPP tools. In particular, if asset prices or the financial accelerator begin to work in reverse,

this may necessitate an easing of some of the measures that were taken in recent years to curb upward pressures in credit or asset prices (Chapter 4).

- *Fiscal policies.* For most countries in Asia, a gradual fiscal consolidation remains appropriate, alongside reforms to raise tax revenues and change the composition of spending so as to prioritize infrastructure and social spending (see IMF, 2013c). This would rebuild the fiscal space needed to cope with future downturns and promote inclusive growth by boosting productivity and helping lower income inequality. Structural fiscal positions are weaker than before the global financial crisis and public debt is high in Japan, India, and to a lesser extent Malaysia (Figure 1.30). In *Japan*, recent fiscal consolidation measures are a welcome step but a concrete medium-term fiscal consolidation strategy beyond 2015 is still needed. In *India*, while public debt and deficits are high, the former is on a sustainable downward trajectory; adhering to the government’s path for fiscal adjustment would support confidence and free resources for public investment and social spending. Central government debt in *China* is low, but the size of public debts and deficits

Figure 1.30
Selected Countries: Public Debt and Fiscal Balance
 (In percent of GDP; 2013)



Source: IMF, World Economic Outlook database.

is significant once local government debt and off-balance sheet spending are incorporated. There is a need to reverse the upward trajectory of local government debt, accompanied by a reform of intergovernmental fiscal relations that bridges the gap between local government revenue and expenditure responsibilities. Malaysia's medium-term adjustment plan will lessen its fiscal vulnerabilities while Vietnam ought to take the opportunity of a positive near-term growth outlook to address its fiscal

deficit so as to tackle bank and state-owned enterprise (SOE) reforms.

- *Structural reforms.* Potential growth in Asia is still higher than in other regions, and for many economies the quality of specialization and the sophistication of industry and exports bode well for medium-term growth (Box 1.3). Nonetheless, productivity has decelerated in recent years and the region needs a new wave of reforms to boost potential growth and to

Box 1.3

Productivity Growth and Production Structure: The Role of Trade Diversification and Services¹

Medium-term growth prospects for emerging Asia have recently become a focus of economic debates in the region. Various statistical approaches in IMF (2013c) indicate that the slowdown in potential growth in India and China is partly attributable to a decline in trend total factor productivity (TFP) growth. Given that TFP growth in key Asian economies has decelerated or reached a plateau (ASEAN, with an exception of the Philippines), accelerating TFP growth seems key to boosting potential growth.

An important driver of productivity growth, including in Asia, is the sophistication of exports of both goods and—increasingly with the ICT revolution—services. More sophisticated exports may facilitate structural transformation and moving up the value-added chain, which in turn is a key feature of economic development. Hausmann and Klinger (2006) and Hidalgo (2009) develop a model of structural transformation and empirically show that the speed of structural transformation depends on current goods exports being closely related to other, more sophisticated goods involving higher value-added. In their model higher sophistication and diversification can lead to higher productivity (Hausmann, Hwang, and Rodrik [HHR], 2007).

To assess the effect of sophistication on Asian TFP growth, TFP growth is regressed on measures of sophistication in both services and manufacturing. Other control variables from the productivity growth literature and measures of industry trade diversification are also included. The data consists of a non-overlapping five-year panel of 123 countries from 1991–2012.²

Results suggest that (see Table 1.3.1):

- Institutional quality, services export sophistication, and trade diversification are significant drivers of productivity growth.
- While the value of goods trade or sophistication does not seem to matter, goods export diversification appears to be important, potentially because it provides a basis for discovery of productive capacities.³

¹ The main authors are Shanaka J. Peiris and Rahul Anand (APD).

² TFP growth is obtained from the Total Economy database 2013 and the results are broadly applicable to using labor productivity data from the WDI database from the World Bank. Goods and services exports sophistication measures are computed as in HHR (2007) and Anand and Peiris (2014), while export diversification is measured by a Theil index calculated by Papageorgiou and Spatafora (2012) using product data at the four-digit SITC level.

³ The use of the Economic Complexity Index (ECI) rather than export goods sophistication proposed by Hidalgo (2009) is not significant.

(continued)

Box 1.3 (continued)

- Services export sophistication is an important driver of productivity growth, probably reflecting the revolution in ICT and the rapid growth in modern services exports in India, the Philippines, and Singapore.
- China and Thailand's current degree of export diversification bodes well for their future TFP growth.

Table 1.3.1

VARIABLES	TFP	TFP	TFP	TFP	TFP	TFP
Initial per capita income relative to U.S.	-0.101*** 0.020	-0.130*** 0.027	-0.157*** 0.029	-0.103*** 0.020	-0.103*** 0.020	-0.122*** 0.020
Service export sophistication	3.490** 1.275			3.134* 1.315	3.321* 1.326	2.980* 1.166
Goods export sophistication	-1.450 1.321			-1.456 1.320	-1.5 1.317	
Years of schooling	-0.573 0.375	0.137 0.367	-0.053 0.367	-0.569 0.375	-0.594 0.376	-0.517 0.360
Private bank credit to GDP	-0.0271*** 0.007	-0.014 0.008	-0.012 0.008	-0.0278*** 0.007	-0.0257** 0.008	-0.0223** 0.007
Initial agriculture value added to GDP	-0.006 0.010	-0.004 0.014	0.003 0.013	-0.006 0.010	-2.30E-3 0.013	-0.004 0.010
Government effectiveness	0.0457* 0.018	0.0669** 0.023	0.0770** 0.024	0.0407* 0.018	0.0433* 0.018	0.0528** 0.017
Old age dependency ratio	-0.16 0.111	-0.202 0.144	-0.304* -0.142	-0.153 0.111	-0.145 0.113	-0.177 0.108
Export diversification	-0.880** 0.289			-0.880** 0.288	-0.837** 0.289	
ECI	0.539 0.598	-0.505 0.746	-0.454 0.791	0.521 0.598	0.507 0.602	0.888 0.579
Trade-to-GDP		0.009 0.012				
Employment share of industry			-0.154* 0.060			
Employment share of services			0.046 0.038			
FDI				0.063 0.598		
Banking crises					-0.056 0.331	
Constant	-6.024 12.01	3.235 2.825	8.882* 3.549	-2.643 12.40	-4.122 12.46	-17.76* 8.617
Observations	271	298	267	271	267	287
R-squared	0.324	0.169	0.256	0.329	0.318	0.280
Number of countries	75	77	75	75	74	77

Source: IMF staff estimates.

Standard errors are in the second line for each variable.

*** p < 0.01, ** p < 0.05, * p < 0.1

continue to attract inward investment (see Box 1.4). The agenda varies across economies. In *India*, *Frontier Asia*, and *ASEAN*, it involves removing structural impediments to growth through regulatory reforms and higher

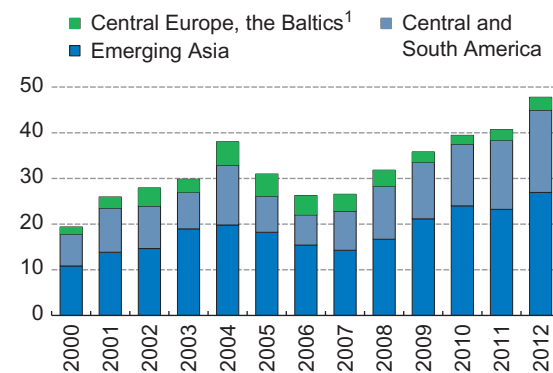
infrastructure investment. In *China*, reforms to liberalize the financial system and raise the cost of capital are key to improving resource allocation, reducing the dependence of the economy on credit, and rebalancing growth

Box 1.4

Motives for Foreign Direct Investment in Asia¹

In 2012, emerging Asia attracted about a quarter of world FDI flows (Figure 1.4.1). In contrast with emerging Europe, FDI inflows had risen sharply since the global financial crisis. FDI inflows to emerging Asia also contributed to an increasing share of global FDI flows into developing economies.

Figure 1.4.1

Emerging Market Economies: Inflows from Foreign Direct Investment, 2000–12*(In percent of world foreign direct investment inflows)*

Source: UNCTAD.

¹ The group includes Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

Better export performance is considered to be one of the main benefits from FDI, and one of the major reasons why countries compete to attract FDI (Kinoshita, 2011). Greater export intensity tends to be associated with those Asian economies that have larger stocks of FDI (such as Malaysia, Thailand, or Vietnam). In addition, increased integration via supply chain links is associated with a greater presence of FDI in the manufacturing sector, which has been associated with higher potential growth.²

In addition, while potential growth in Asia is still higher than in the rest of the world, productivity growth across much of the region has slowed in recent years. Against this backdrop, the region needs to continue to push ahead with reforms to improve its institutions and business climate, which would help offset the effects of rising wages on FDI and continue to make Asia an attractive FDI destination.

This box examines the determinants of FDI in 11 Asian countries during 2000–12.³ The main findings are (see Table 1.4.1):

- Trade openness, institutional quality, and wage costs are important determinants of FDI in Asia;
- Institutional quality is particularly important for FDI in the manufacturing sector;

¹ The main author is Yuko Kinoshita (OAP).

² The data include Bangladesh, Cambodia, China, India, Indonesia, Malaysia, Myanmar, the Philippines, Sri Lanka, Thailand, and Vietnam.

³ Positive spillovers from FDI to exports may be weaker in countries that receive FDI mainly in the primary and/or tertiary sectors.

(continued)

Box 1.4 (continued)

- Low wages are complementary to institutional quality. In the absence of good institutions, low wages alone do not seem enough to attract FDI; and
- Low wages and information and communications technology infrastructure are substitutes. Even if a country has relatively high wages, it can offset the adverse impact on FDI through good ICT infrastructure.

Table 1.4.1 Selected Asia: Determinants of FDI, 2000–12¹Dependent variable = $\log(\text{FDI}/\text{GDP})$

	(1) FE	(2) FE	(3) FE	(4) FE	(5) FE	(6) FE	(7) FE	(8) FE	(9) FE	(10) FE
	All	All	All	All	All	All	All	All	ASEAN5+ China	ASEAN5+ China
Log (GDP)	0.143 (0.117)	0.0783 (0.0642)	1.739 (1.290)	0.323 (0.262)	0.284 (0.228)	-0.0632 (-0.0515)	0.0898 (0.0737)	1.640 (1.209)	3.619 (1.121)	-4.996* (-1.889)
Log (GDP per capita)	1.450 (1.200)	1.542 (1.281)	0.0169 (0.0129)	1.241 (1.012)	1.275 (1.027)	1.684 (1.383)	1.474 (1.225)	0.147 (0.112)	-1.847 (-0.594)	6.915*** (2.909)
Log (inflation)	-0.0354 (-0.728)	-0.0344 (-0.711)	-0.0288 (-0.609)	-0.0369 (-0.759)	-0.0375 (-0.772)	-0.0351 (-0.726)	-0.0373 (-0.771)	-0.0266 (-0.561)	0.0622 (0.992)	-0.0162 (-0.242)
Trade openness	0.406** (2.544)	0.386** (2.539)	0.408** (2.629)	0.398** (2.488)	0.414*** (2.665)	0.330* (1.939)	0.383** (2.522)	0.376** (2.535)	0.799* (1.891)	0.232 (0.492)
Institution	0.487 (1.638)	0.498* (1.675)	3.516*** (2.833)	0.509* (1.707)	0.499* (1.677)	0.543* (1.813)	0.513* (1.729)	3.436*** (2.738)	12.54*** (4.258)	1.116** (2.407)
Log (private credit/GDP)	0.150 (1.297)	0.142 (1.174)	0.109 (0.953)	0.176 (1.484)	0.160 (1.304)	0.159 (1.375)	0.168 (1.373)	0.123 (1.043)	-0.276 (-1.096)	0.120 (0.503)
Log (wage)	0.908*** (3.987)	0.906*** (3.980)	0.197 (0.549)	0.959*** (4.109)	0.945*** (4.074)	0.994*** (4.197)	0.985*** (4.155)	0.212 (0.582)	-1.372* (-1.707)	1.473*** (4.377)
Infrastructure	0.138 (0.740)		0.145 (0.802)	-0.146 (-0.430)		-0.340 (-0.812)				1.736** (2.023)
ICT infrastructure		0.0966 (0.749)			-0.0140 (-0.0786)		-0.170 (-0.650)	0.0534 (0.421)	0.0559 (0.248)	
Log (wage)* Institution			0.666** (2.510)					0.647** (2.407)	2.359*** (3.859)	
Log (wage)* Infrastructure				-0.0784 (-1.000)	-0.0535 (-0.898)					0.384* (1.770)
Log (wage)* ICT Infrastructure						-0.0897 (-1.272)	-0.0745 (-1.169)			
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.623	0.623	0.646	0.627	0.626	0.629	0.628	0.645	0.805	0.756
Number of countries	11	11	11	11	11	11	11	11	6	6
N	125	125	125	125	125	125	125	125	71	71

¹ Bangladesh, China, Cambodia, India, Indonesia, Malaysia, Pakistan, the Philippines, Sri Lanka, Thailand, and Vietnam.

t-statistics in parentheses

*** p < 0.01, ** p < 0.05, * p < 0.1

away from investment. In *Japan*, a concrete medium-term fiscal consolidation plan beyond 2015 and further product and labor market reforms remain priorities. In the small states, particularly the Pacific Island countries, reforms should focus on improving the business environment, attracting FDI, and increasing integration with the rest of the Asia Pacific region more broadly (Box 3.2 in Chapter 3).

Theme 2: Abenomics—Temporary Stimulus or a Break with the Past?

About 18 months have elapsed since Prime Minister Shinzo Abe announced his economic revival plan to lift Japan out of decades-long deflation and low growth. So far, “Abenomics”—as his plan has been dubbed—has delivered a significant pickup

in growth and raised inflation. However, private investment has yet to recover decisively and wage growth, a key yardstick to gauge success in re-inflating the economy, has remained modest.

So far, a significant weight in the Abenomics policy package has been geared toward providing fiscal and monetary stimulus, in the expectation that this will kick-start growth and allow Japan to exit from deflation. To what extent, then, do recent achievements reflect merely the impact of stimulus or can be attributed to a broader regime shift toward a self-sustaining recovery and higher long-term growth? This section takes stock of policy actions and the outcomes so far. It concludes by outlining the remaining policy challenges Japan faces going forward.

The policy actions:

- *Aggressive monetary easing.* Efforts by the Bank of Japan's Quantitative and Qualitative Monetary Easing (QQME) have included adopting a 2 percent inflation target and aiming to double the monetary base in about two years to 50 percent of GDP through large-scale asset purchases. The goal of these policies has been to eliminate deflation and move the economy onto a path of sustained positive inflation. Judged against this objective, the policy efforts have been largely successful in raising inflation and inflation expectations.
- *Fiscal policy.* The strategy has involved short-term stimulus combined with a path to medium-term fiscal consolidation. Stimulus spending in 2013 reached 0.7 percent of GDP and, in 2014, first steps to fiscal consolidation will be taken with a withdrawal of fiscal support of around 1¼ percent (largely a result of the hike in the consumption tax rate and a rolling off of past stimulus measures). The government has also reaffirmed its target of achieving a primary balance by 2020. The near-term fiscal strategy has been effective but a clear, detailed and concrete consolidation plan that goes beyond 2015 is not yet in place.
- *Supply-side reforms.* Policies to raise private investment and potential growth will ensure that the economic recovery is sustained, even as fiscal and monetary support is scaled back. A

few concrete measures have been announced—including the passage of legislation for Special Economic Zones, farmland consolidation (which will improve agricultural productivity and may pave the way for lower subsidies to farmers), and engagement in discussions on the Trans-Pacific Partnership (TPP). But further steps, including implementation of announced measures, are needed.

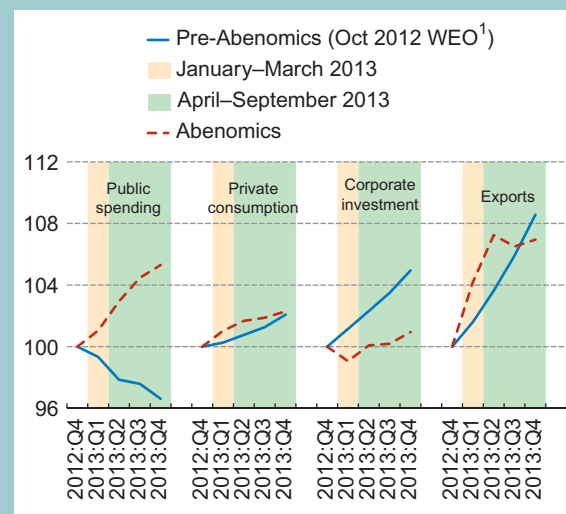
The initial impact of Abenomics has been strong but it appears to be waning:

- *GDP growth* accelerated sharply in the immediate aftermath of Abenomics, rising to just over 4 percent in the first half of 2013—thanks to sizable stimulus spending, robust private consumption growth (underpinned by stronger sentiment and wealth effects from soaring equity prices), and stronger exports (benefiting from a weaker yen) (Figure 1.31). However, recent data hint that this economic momentum may be losing steam as fiscal stimulus winds down, and the effects of higher stock prices and a weaker currency start to fade.
- Significant progress has been made on raising *headline inflation*, which reached 1.7 percent year-over-year in March. While initially the

Figure 1.31

Japan: Components of Real GDP

(Index, 2012:Q4 = 100)



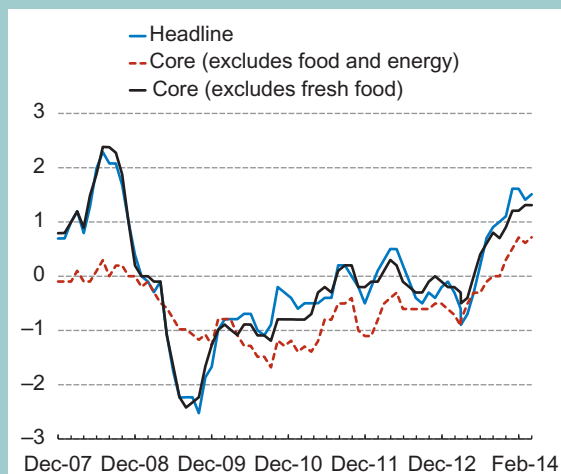
Sources: Haver Analytics; and IMF staff calculations.

¹ WEO = IMF, World Economic Outlook database.

Figure 1.32

Japan: Year-over-Year Inflation

(In percent)



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

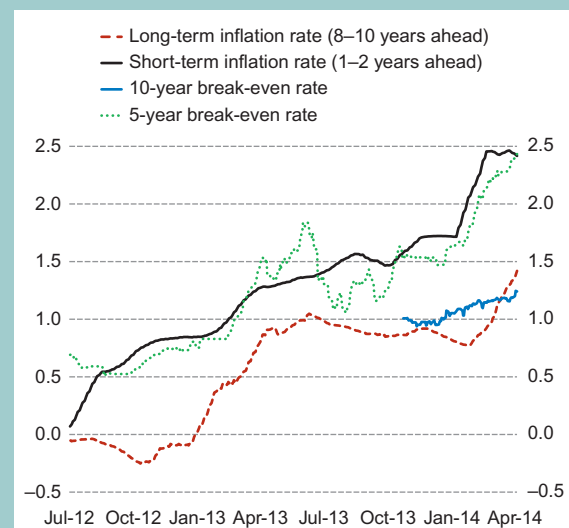
increase reflected mainly higher energy costs, more recently core inflation has also picked up (Figure 1.32). Most importantly, various indicators point to an increase in inflation expectations (Figure 1.33). However, the rise in inflation expectations appears to be leveling off, perhaps due to uncertainty about the direction of policies including the commitment to tackle the fiscal and structural challenges facing Japan.

- Despite higher inflation and a tightening of the labor market, *wage growth* remains anemic. Basic wages have continued to decline and earnings have risen modestly but only due to bonus payments and overtime pay. Wage growth is also being held back by structural factors, including the ongoing shift from full-time to part-time workers. The sluggishness in wage growth may reflect caution by employers and the still-weak cyclical position of the economy. In this regard, the outcome of the wage bargaining round in the spring of 2014 will be of critical importance.
- *Portfolio rebalancing* has yet to take off. A critical transmission mechanism of QQME is to induce more bank lending and create incentives for greater investment into riskier yen instruments and foreign assets. After the

Figure 1.33

Japan: Inflation Expectations¹

(Year-over-year; in percent)



Source: Bloomberg L.P.

¹ Inflation rate estimated as 1-month moving average of implied CPI index based on inflation swap bid and ask points. Break-even rate calculated as the difference between the nominal yield on a fixed-rate instrument and the real yield (fixed spread) on an inflation-linked instrument of similar maturity and credit quality.

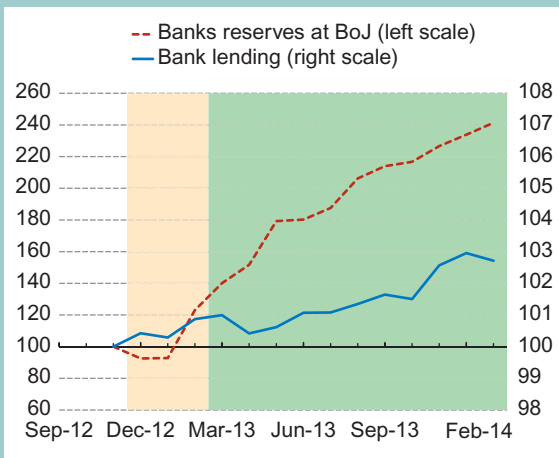
announcement of QQME in April 2013, several large banks and institutional investors announced plans to diversify their portfolios, and Japanese government bond (JGB) holdings have declined as a share of domestic banks' assets. Since then, though, bank reserves at the Bank of Japan have increased and bank lending has picked up only moderately since early 2013 (Figure 1.34). Also, so far there has been no major wave of private portfolio reallocation into foreign currency assets, and overseas lending by Japanese banks has only risen in line with historical trends (Figure 1.35).

To sum up, the first phase of Abenomics has gone well—monetary and fiscal stimulus and exchange rate depreciation have helped growth and caused inflation expectations to pick up. However, a successful transition to self-sustained, deflation-free growth remains uncertain. Without additional reforms Japan risks falling back into lower growth and deflation, a further deterioration in the fiscal situation, and an overreliance on monetary stimulus with negative consequences for the region (see Box 1.5).

Figure 1.34

Japan: Bank Lending and Reserves

(Index, Dec. 2012=100)

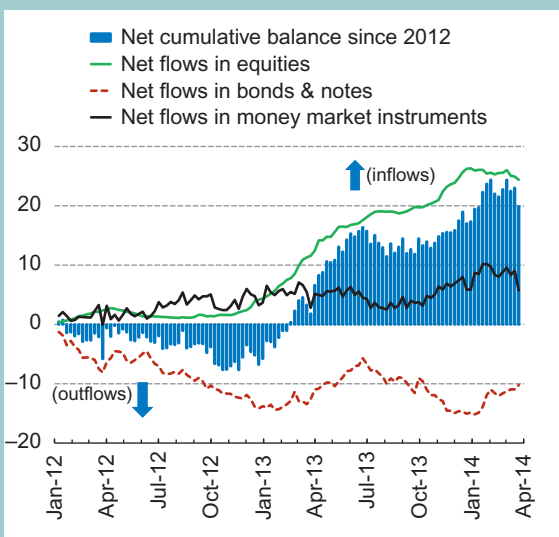


Source: Haver Analytics.

Figure 1.35

Japan: International Transaction in Securities

(In Trillion Yen)



Source: Japan Ministry of Finance.

¹ Cumulative position since January 2012.

Policy priorities ahead include:

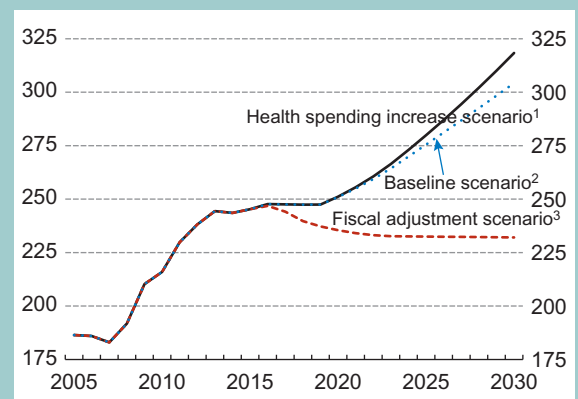
- *Monetary policy.* The Bank of Japan could emphasize or adapt its forward guidance to put a greater priority on progress toward the inflation target being sustained, while de-emphasizing that the target will be achieved in about two years.

- *Fiscal policy.* After implementation of the two stages of the consumption tax increase, the gross debt-to-GDP ratio will stabilize but in the absence of further fiscal consolidation it would start rising again after 2019. Higher health care spending has the potential to further weaken the fiscal position and debt dynamics (Figure 1.36). In light of this, the second consumption tax hike should proceed as planned without resorting to multiple rates. A further priority should now be to outline a detailed medium-term consolidation plan, based on both revenue and spending measures, that outlines how primary balance will be achieved by 2020. Policy measures could include further increases to the consumption tax as well as pension and health care reforms.
- *Supply-side reforms.* A successful launch of a broad range of structural reforms would reignite investment and help sustain growth. Investment could be supported by tax reforms, market deregulation, and corporate governance reforms. The new framework legislation on

Figure 1.36

Japan: Gross Public Debt

(In percent of GDP)



Sources: Cabinet Office, Japan; and IMF staff estimates and projections.

Note: Gross debt of the general government, including the social security fund.

¹ An increase in health spending as estimated is assumed. See Kashiwase, Nozaki, and Saito (2013) for details.

² Automatic withdrawal of fiscal stimulus and consumption tax increase to 10 percent in 2015 are assumed.

³ Policy adjustment scenario assumes an 11 percent of GDP improvement (baseline scenario + 5½ points) in the structural primary balance between 2011 and 2020, which would put the debt-to-GDP ratio on a sustainable path.

Box 1.5**Successful Abenomics: Good for Japan, Good for Asia¹**

The transmission of the effects of “Abenomics” to other countries is complex. Spillover channels are likely to operate mainly through the exchange rate, higher growth in Japan, financial interlinkages, and product supply chains.

Previous IMF analysis suggested that a complete package of reforms—that includes a credible and concrete medium-term fiscal consolidation strategy and ambitious structural reforms—would create positive spillovers to most of Japan’s trading partners by increasing demand for their exports and encouraging capital flows into these countries.² However, these effects were found to vary across economies, with those facing more direct competition from Japanese producers benefiting less (such as Korea).

Relative to these model predictions, spillover effects within Asia so far have been modest:

- The pace of Japan’s export recovery has been slower than initially forecast given the magnitude of the yen depreciation. At the same time, most neighboring countries’ exports have remained strong. While hard to disentangle, the slower export growth in Japan could be attributable to longer-than-usual lag (J-curve) effects, geopolitical tensions with China, increased overseas production by Japanese firms, or an expectation by firms that the depreciation is temporary (weakening the impact of yen depreciation on exporters’ prices). Also, a decline in the attractiveness of Japanese products relative to competitors might have been at work.
- Despite the yen depreciation, the growth in Japan’s imports has been strong and broad-based. Initially, higher imports were concentrated in energy but they have increasingly included consumer and investor goods, reflecting the expansion in domestic activity.
- So far, portfolio outflows have been small. In fact, there has been a significant foreign inflow into Japanese equity markets (see Figure 1.35 in the main text), offsetting a modest pickup in bond outflows to advanced economies.
- Outward foreign direct investment and overseas bank lending have increased, including to Indonesia, Thailand, and Vietnam, but essentially in line with past trends. This appears to be driven more by proximity to fast-growing markets rather than any direct effect of Abenomics or the movements in the currency.

However, if negative real wage growth in Japan persists it could create adverse spillovers to the region. Model simulations using the IMF’s Flexible System of Global Models (FSGM) show that negative real wage growth in Japan, by itself, should not have major implications provided it does not undermine consumer and investor confidence (Scenario I in Figure 1.5.1 and Figure 1.5.2). However, if lower real wages are accompanied by declining investor sentiment,³ growth in Japan would be substantially weaker. Spillovers to Asia could occur through a stronger yen and reduced demand for imports amid possibly tighter financing conditions in Japan. The exchange rate channel matters most for key competitors (China and Korea), while Japan’s growth is the key factor for other trading partners. Thus, if declining confidence was accompanied by yen appreciation, the net effect on trading partners would be small or even positive for some countries (Scenario II). And if longer-term interest rates were to rise in Japan (because of increased fiscal sustainability concerns) then growth would fall further, with negative spillover effects on trading partners (Scenario III).

¹ The main authors are Dennis Botman, Joong Shik Kang (both APD), and Zoltan Zakab (RES).

² See the IMF’s 2013 Spillover Report for further discussion about potential spillover effect in the medium to long term (<http://www.imf.org/external/np/pp/eng/2013/070213.pdf>).

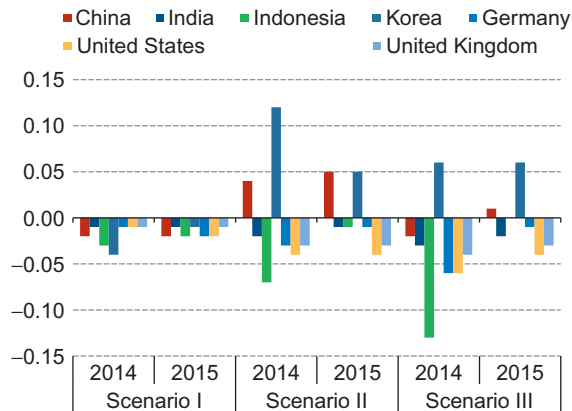
³ Modeled through a 33 percent decline in stock prices.

Box 1.5 (continued)

Figure 1.5.1

Impact on GDP of Growth in Trading Partners

(In percentage points)

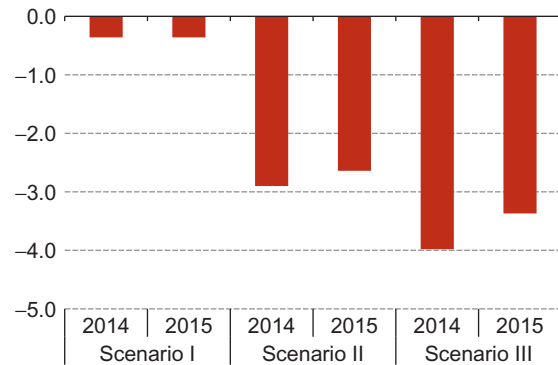


Source: IMF staff calculations.

Figure 1.5.2

Impact on Japan's GDP Growth

(In percentage points)



Source: IMF staff calculations.

In sum, there remain positive spillovers from Japan to the rest of Asia that are, as yet, unrealized. Successful completion of the wage-bargaining round in the spring and ambitious action on fiscal and structural reforms have the potential to improve confidence and stimulate investment and consumption. This would raise growth in Japan and increase the scope for positive spillovers to the rest of Asia.

special zones also needs to be fleshed out. Measures should also be taken to reduce labor market duality and make non-regular workers more productive, encourage female employment, and relax immigration requirements to address labor shortages. Unconventional labor policies—including wage growth incentives or a hike in minimum wages—could also be useful in catalyzing a faster pace of nominal wage growth.

Theme 3: How Will China's Reforms Shape China and Asia?

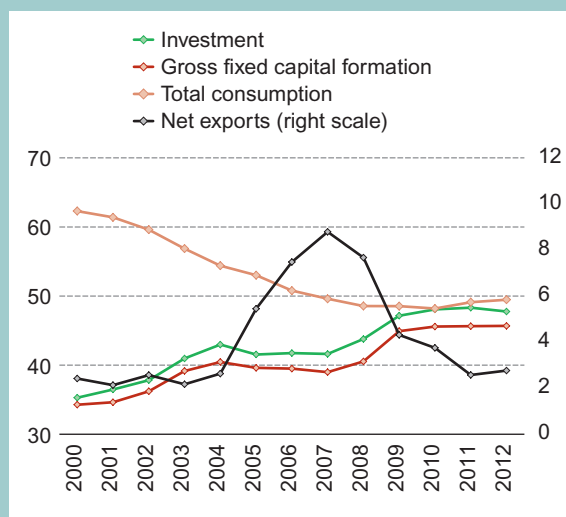
China's policy making has entered a new reform cycle in 2014. China's Third Plenums have often marked important turning points in economic direction. The most recent one was no different and lays out a comprehensive and ambitious reform agenda, which will help accelerate economic

rebalancing toward private consumption and deliver more sustainable growth. In some areas, while concrete measures have already been put in place, more time is needed to convert the reform blueprint into policies. Going forward, *implementation* will be key to ensure the success of the reforms. So far, rebalancing efforts have yielded mixed results: investment has remained a major growth driver, even after growth decelerated, and the share of consumption in GDP has barely increased (Figure 1.37).

Fiscal reforms aim to strengthen local government finances, align subnational governments' revenues and expenditure responsibilities, adopt a medium-term fiscal plan, and reform the tax system (with greater reliance on indirect, property, and environmental taxes). Social security reform also features prominently in the agenda, with a goal of improving the coverage and portability of pensions and health insurance while ensuring actuarial soundness of social security funds (including

Figure 1.37

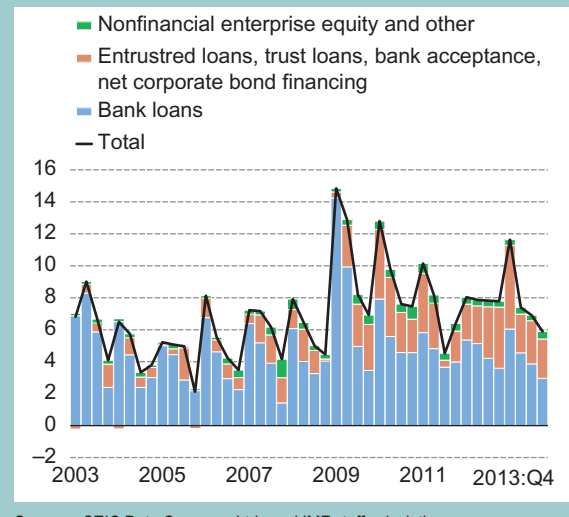
China: GDP Expenditure Components
(In percent of GDP)¹



Source: IMF staff calculations.
¹ Expenditure-based GDP.

Figure 1.38

China: Social Financing Flows
(In percent of GDP)¹



Sources: CEIC Data Company Ltd.; and IMF staff calculations.
¹ In percent of four-quarter rolling sum of quarterly GDP.

through parametric reforms such as raising the retirement age).

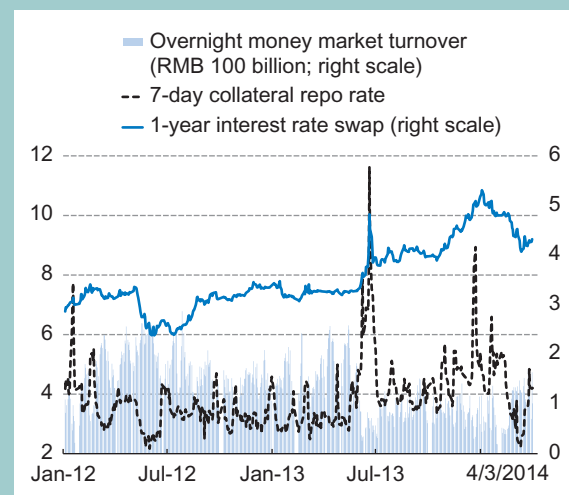
Financial reforms are a step away from quantitative controls on credit and toward letting interest rates play a more important role in resource allocation. The financial reform agenda envisages allowing private investors to own small and medium-sized commercial banks, accelerating interest rate liberalization, establishing a deposit insurance system, and strengthening financial supervision and the resolution framework. Promoting bond market development is also a priority to reduce the reliance on credit (Figure 1.38). While some financial measures could create some near-term volatility in China’s capital markets (Figure 1.39), the authorities will likely address money market volatility by injecting liquidity during the transition period, with room for maneuver reinforced by the benign inflation outlook.

While implementation will be critical, major structural reforms in the Third Plenum blueprint are expected to transform the economy:

- *Deregulation of SOEs and private sector participation:* Private sector participation is expected to increase across the board as barriers to entry

Figure 1.39

China: Interest Rate Structure
(In percent; pa)



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

are lowered in several segments of the services sector, including health care, urban transport, environmental protection, and financial services. This should boost productivity, lower the price of nontradables and stimulate consumption.

- *Pricing reforms:* The price of natural gas as well as water user charges are planned to be liberalized, including by introducing fees for industrial use and tiered pricing in some areas. Prices for utilities and transportation are also expected to be adjusted to reflect market conditions more closely.
- *Hukou, demographics, and urbanization:* The reforms encompass some relaxation of the residency policies, benefiting small- and medium-sized urban centers. Local governments are expected to relax the one-child policy for some groups of families (where one member of the couple is the only child), which should lower the saving rate substantially and increase rural and urban consumption, while paying (demographic) dividends down the road.
- *Environment:* Additional private sector investment in equipment and provision of environmental protection services are expected. Improvements in energy efficiency and air quality in major cities should also help boost private sector involvement.

Illustrative model-based simulations of the reforms show some rebalancing toward private consumption over the medium term.⁸ The main reforms considered include:

- *Fiscal reforms.* An increase in government consumption for health care and general transfers for education is assumed. It is financed by a reduction in public investment and corporate taxation. Reflecting this, there is a gradual reduction in the private saving rate relative to baseline.
- *Financial system reforms.* With increased competitiveness in the financial system, the cost of capital faced by *private* sector firms is

⁸ In addition to the reform assumptions outlined in the text, in the simulations export subsidies are cut, and consumption taxes are lowered to offset the fiscal impact. Over time, the stronger real exchange rate boosts the consumption of tradables while the higher cost of capital lowers investment, creating a countervailing force on the current account balance.

assumed to be reduced relative to that faced by SOEs. Foreign exchange intervention policy is gradually phased out, most likely leading to a reduction in export price competitiveness.

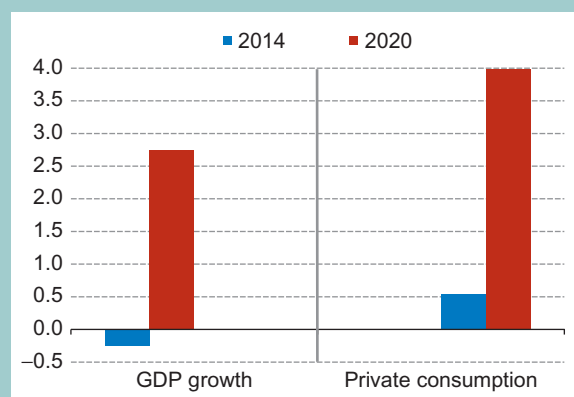
- *Reforms to boost productivity and labor force participation.* Structural reforms are assumed to lift economy-wide productivity by 1.5 percent and productivity in nontradables by a further 1.5 percent. The labor force participation rate rises by 3 percentage points.

The results suggest that reforms would be *welfare* enhancing by making growth more sustainable and boosting private consumption, which would also foster economic rebalancing. Assuming full implementation of these reforms, growth would slow in the near term as public investment is reduced (Figure 1.40). Largely as a result, the current account strengthens initially. But productivity gains boost growth in the medium term, raising household income and consumption (which is also supported by higher government spending and transfers, and lower consumer taxes). Private consumption (as a share of GDP) would rise over the medium term as a result, reaching nearly 37.5 percent of GDP—4 percentage points above the baseline, supporting domestic and external rebalancing and making growth more sustainable.

Figure 1.40

China: Illustrating Impact of Reform Implementation

(Deviation from baseline; GDP growth: year-over-year percentage change; private consumption: in percent of GDP)



Source: IMF staff estimates.

The near-term impact of Chinese reforms on the rest of Asia is generally small. The simulation results suggest that exports and current account balances across most countries in the region benefit from the rising consumption in China. However, the magnitude of the effect of the reforms on exports and current account balances in other countries is dependent on the extent of their trade linkages with China and the sensitivity of exports to an appreciation of the Chinese renminbi. Over a longer horizon, falling domestic savings in China increases global interest rates, causing some reduction in investment and GDP growth in the rest of the world, including for most of Asia.

Theme 4: What Is Happening to Growth in ASEAN?

Growth has slowed in the last few years in many emerging market (EM) economies, both within (China, India) and outside (Brazil and Russia) Asia.⁹ ASEAN economies also decelerated, and trends within ASEAN have diverged. After staging an impressive recovery following the global crisis, growth in the ASEAN-5 economies (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) moderated, dropping by an average of nearly one percentage point in 2013 compared with the 2010–12 period, with the exceptions of the Philippines and Indonesia. The decline in real GDP growth was mainly due to the lower contribution of investment and private consumption, particularly in Thailand and Malaysia, but weak exports were also a drag on growth.

Policy developments in ASEAN-5 have been partly responsible for divergent growth dynamics, and other cyclical factors will continue to play an important role going forward:

- In *Indonesia*, risks have receded and tightening measures aimed at addressing external imbalances have started to bear fruit. Export growth has picked up in the fourth quarter of

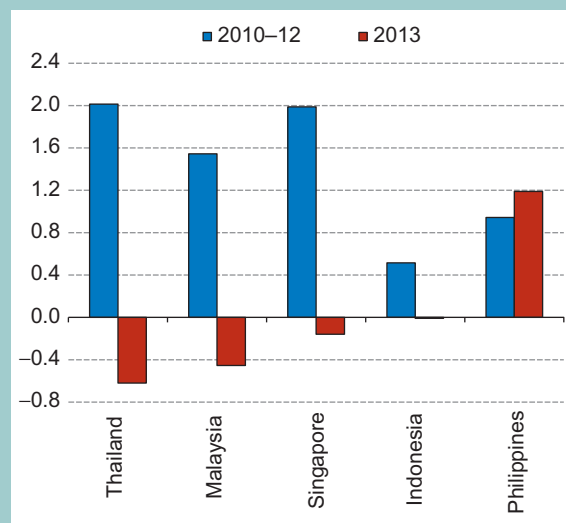
2013, helped in part by the weaker exchange rate. Together with the front-running of mineral ore exports (ahead of restrictions on them starting in January 2014), and import compression partly due to weaker activity, the current account balance has improved. Recent policy tightening will continue to weigh on investment demand throughout 2014. Administered fuel price hikes lifted headline inflation in late 2013, but their impact has already peaked. Vulnerabilities remain, including pockets of leverage in the corporate sector.

- *Malaysia* has also taken decisive action to address its comparatively high public debt, but robust private domestic demand and a benign inflation environment will help keep growth on a steady path. A tightening of monetary conditions may be needed to prevent second-round effects from recent fuel price hikes or a rise in inflation expectations.
- While *Thailand's* outlook will remain clouded by political uncertainty, fiscal and external balances are likely to improve in 2014, particularly as the economy slows and government spending is delayed in the first half of 2014, creating space for further policy accommodation if needed.
- In *the Philippines*, supply constraints caused by the latest hurricane did not dent growth prospects, but food price pressures have created risks to monetary policy, and the peso depreciation could also impact core inflation, especially if domestic demand stays strong. Official goals of rapid and inclusive growth will likely provide a boost to growth as infrastructure spending is ramped up in a context where the near-term fiscal deficit target remains manageable.
- In *Singapore*, growth will also be partly shaped by fiscal efforts to “restructure and redistribute.” As with the 2013 budget, fiscal efforts in 2014 will likely include measures to help small and medium-sized enterprises and boost social spending on health and education. Given fiscal measures and a labor market straining at full employment, real wages at the lower end could rise, boosting domestic

⁹ Growth in China, India, Brazil, and Russia in 2013 fell by 1.7 percentage points on average compared with 2011, and by 4.6 percentage points compared with the precrisis period (2005–07).

Figure 1.41

Cyclical Growth in ASEAN-5 Economies (In percent)



Sources: IMF, World Economic Outlook database; and IMF staff estimates.

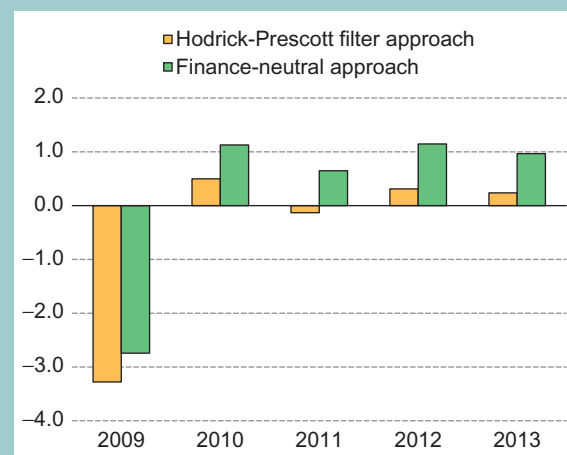
demand and helping cushion the blow from the slowdown in the housing market.

More broadly, much of the slowdown in 2013 appears to have been cyclical. A trend (potential) growth for each economy is estimated using conventional filtering methods but explicitly allowing for the impact of the credit cycle, whose influence on the cyclical position may not be adequately captured by standard estimates of the output gap.¹⁰ The estimates indicate that the financial cycle indeed has acted as an amplifier of the economic cycle in ASEAN-5. The “finance-neutral” estimates of potential output, even more than standard statistical filters, show

¹⁰ Standard approaches include, for example, the Hodrick-Prescott (HP) filter or multivariate estimates based on inflation dynamics. Following Borio, Disyatat, and Juselius (2013), the analysis extends the HP filter approach by incorporating real credit to the output gap equation to extract information about the output gap itself and trend GDP. The idea is to incorporate information about the financial cycle based on the notion that a financial accelerator plays a key role in explaining the cyclical variation of output. Because of data limitations and to ensure comparability across economies, only the real credit (demeaned) was included in the trend-cycle model, but in principle other financial variables can be included.

Figure 1.42

Output Gap Estimates, ASEAN-5 Average (In percent)



Source: IMF staff estimates.

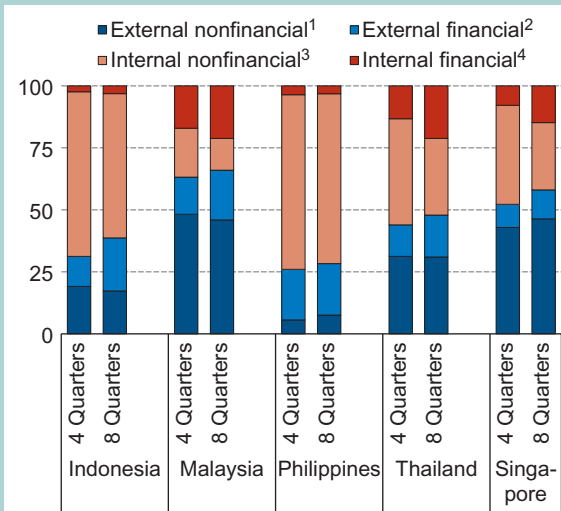
a large contribution of the cyclical component to growth after the global financial crisis. In particular, the cyclical component of activity also accounted for a large share of the slowdown in 2013, broadly consistent with the moderation in the credit cycle. This pattern is more pronounced in Malaysia and Singapore where the slowdown was particularly sharp (Figure 1.41) and credit expansion had been remarkably strong. The findings also suggest that the cyclical position of ASEAN-5 economies might be stronger than conventionally estimated when the financial cycle is accounted for (Figure 1.42).

Furthermore, the recent cyclical slowdown seems to have reflected idiosyncratic domestic factors more than common external factors. According to econometric models incorporating external and internal factors, the latter have been the main culprit for the recent slowdown.¹¹ Historically, based on the variance decomposition of output,

¹¹ Recursive vector autoregressions (VARs) are estimated and variance decompositions are calculated to gauge the importance of external variables. External variables include a global commodity price index, trade-weighted world output, the U.S. short-term interest rate, and the VIX index. Domestic variables include domestic real GDP, the price level, the short-term interest rate, and the nominal effective exchange rate.

Figure 1.43

Variance Decomposition of Output in ASEAN-5
(Percentage contribution to total output variation)



Source: IMF staff estimates.

Note: The model is identified using country-specific vector autoregression at quarterly frequencies during 1992:Q1–2013:Q4 with a recursive ordering (Cholesky). Lag length is based on standard information criterion.

¹ Commodity prices and trade-weighted world output.

² U.S. short-term rate and VIX.

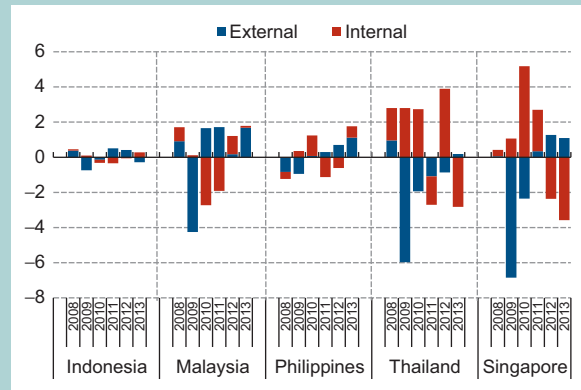
³ Domestic real output and price level.

⁴ Domestic short-term rate and the nominal effective exchange rate.

domestic factors appear to explain a large share (60–75 percent) of fluctuations in activity in Indonesia, the Philippines, and Thailand (Figure 1.43), while for Singapore and Malaysia external factors are more important. Generally, foreign demand is more important than external financial conditions, but domestic financial factors appear to play a significant role in Malaysia and Thailand (explaining close to a fifth of output

Figure 1.44

Historical Decomposition of Output Deviation
(In percent)



Source: IMF staff estimates.

fluctuations). Since 2008, external factors have generally contributed negatively to ASEAN growth, with domestic factors mostly offsetting their impact as fiscal and monetary stimulus were deployed (Figure 1.44). In 2013, however, as stimulus was withdrawn, the positive contribution of domestic factors fell, and even became a net drag on growth in Thailand and Singapore.

In summary, with the exception of the Philippines where growth picked up, ASEAN growth has slowed most recently on account of cyclical factors. These have been mostly domestic, but external factors have also played an important role. Going forward, the anticipated upturn in global demand conditions should become more of a supportive factor, particularly in Malaysia and Singapore.

2. Corporate Leverage in Asia: A Fault Line?

Introduction and Main Findings

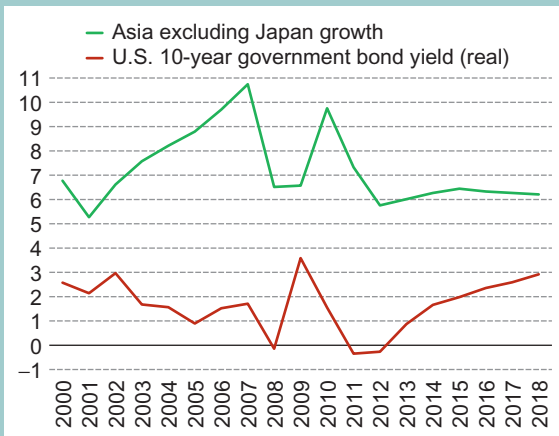
In the aftermath of the global financial crisis, corporate leverage in *emerging Asia* has risen and may represent a “fault line.” This fault line is hidden beneath the surface but has the potential to amplify shocks as global liquidity conditions tighten, interest rates rise, and growth slows (Figure 2.1). While the outlook for the region remains solid (Chapter 1), household indebtedness has risen across the region (Box 2.1) as has corporate leverage in the major emerging economies (Figure 2.2). This could weigh on growth as interest rates rise and firms and households enter a deleveraging cycle, cutting both investment and consumption to strengthen their balance sheets. In a worst-case scenario, corporate and household defaults could rise, with adverse effects on bank balance sheets, the availability and price of credit, and growth. Unlike in Emerging

Asia, corporate leverage ratios have remained broadly stable or have declined in *advanced Asia* (Figure 2.2).

This chapter documents the dynamics of corporate indebtedness in advanced and emerging Asia and analyzes the implications for investment. Using firm-level data covering 18,000 companies during 1995–2012, it assesses the overall level and *distribution of* debt and leverage over time in 14 emerging and advanced Asian economies. In addition, liquidity and solvency indicators are used to gauge the extent to which leverage could represent a source of systemic risk. Finally, to assess the macroeconomic risks of corporate leverage, simple stress tests are performed to quantify the effects of interest rate and growth shocks on firms’ solvency and the potential impact on investment decisions.

Figure 2.1

Asia: Real GDP Growth and U.S. Real Rates (Excluding Japan)

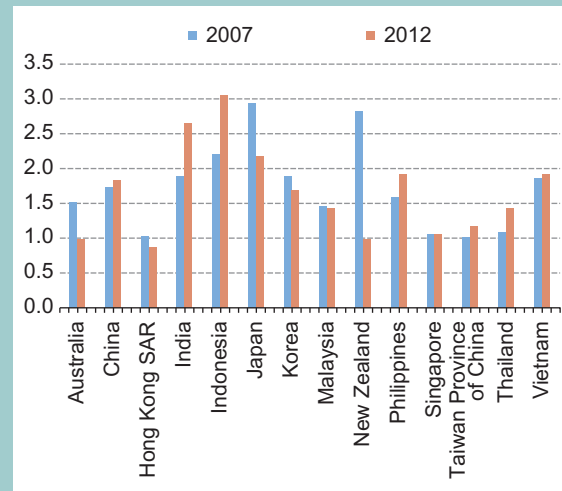


Source: IMF, World Economic Outlook database.

Figure 2.2

Leverage Ratio Comparison¹

(Total debt weighted average, 2007 and 2012)



Sources: Thomson Reuters Worldscope; and IMF staff calculations.

¹ Leverage ratio is measured by total debt/common equity.

The main authors are Roberto Guimarães-Filho, Shi Piao, and Longmei Zhang.

Box 2.1

Rising Household Debt and House Prices in Asia: Are Household Balance Sheets at Risk?¹

How indebted are households in Asia?

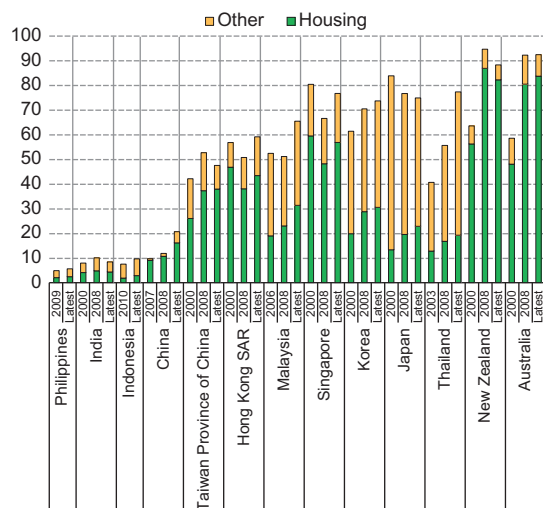
In addition to the rise in corporate leverage, rapid credit growth has also fueled growing household indebtedness across parts of Asia. This could make household balance sheets more vulnerable to slowing income growth or rising interest rates, with broader implications for consumption growth.

- *There is considerable heterogeneity in bank credit to households (as a share of GDP) across Asia.* Since 2009, this ratio has been growing particularly rapidly in Korea, Malaysia, and Thailand. Total household debt ranges from a low of 10 percent in India to nearly 100 percent in Australia and New Zealand. In China, the ratio is low (at about 20 percent) but has doubled since 2008 (Figure 2.1.1).
- *Mortgage credit accounts for a significant share of total credit to households in many Asian economies.* In the cases of Australia, New Zealand, and Hong Kong SAR mortgage lending accounts for more than two-thirds of household credit, while in Korea, Malaysia, and Singapore the corresponding figure is between one-half to two-thirds (Figure 2.1.1). Even in countries where credit to households is relatively small (such as China, India, and Indonesia) mortgage lending has been growing fast and accounts for a significant share of the total.

While the rapid growth in household indebtedness can create vulnerabilities, households also have significant buffers that mitigate these risks. First, household saving rates are generally high in Asia (IMF, 2011a). Second, households' deposits and financial assets are significant and can be a short-term buffer in case liquidity shocks hit. This is the case for instance in China and Indonesia, where household debt as a ratio of their deposits remains low (Figure 2.1.2).²

Figure 2.1.1

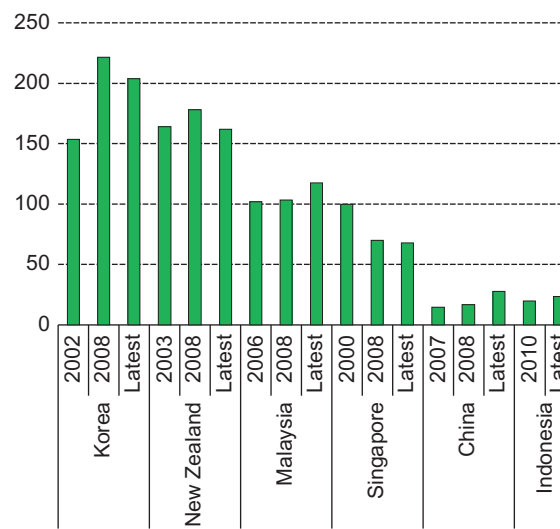
Asia: Household Debt
(In percent of GDP)



Sources: CEIC Data Company Ltd.; Haver Analytics; World Economic Outlook database; and IMF staff calculations.

Figure 2.1.2

Asia: Household Debt
(In percent of deposits)



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

¹ The main authors are Roberto Guimarães-Filho and Sidra Rehman.

² However, information about the distribution of assets and liabilities across households is generally limited, and it is unclear *a priori* that the highly indebted households are those holding large financial assets.

Box 2.1 (continued)*Are house prices overvalued?*

The potential for strains in household credit will also depend greatly on house price prospects, given the importance of housing in households' assets across Asia. Sharp price declines could rapidly weaken household balance sheets, undermine confidence and domestic demand, and have knock-on implications for lenders.

House prices rose rapidly across most of Asia during the last decade (Figure 2.1.3). With the notable exception of Australia and New Zealand, the house price cycle in Asia has been somewhat asynchronous with respect to that of the U.S. and other advanced economies that experienced a bust in 2007–08. Hong Kong SAR stands out with house prices rising nearly 90 percent since 2008, followed by Malaysia and Taiwan Province of China where price appreciations have been 40 and 30 percent, respectively. The upswing has typically been much tamer elsewhere in the region, although in some cases house prices had increased considerably in the decade before 2008 (India and, to a lesser extent, Australia, New Zealand, and China).

Price-to-rent ratios have also increased in a number of economies, most notably Hong Kong SAR and Taiwan Province of China, but also Australia and New Zealand during the global boom (2003–07). In Hong Kong SAR and New Zealand rents are well above historical averages and current price-to-rent ratios are some 20–40 percent higher than historical averages, hinting at overvaluation.³ In Taiwan Province of China, Malaysia, and Australia price-to-rent ratios are also considerably above historical averages. In China and India, *aggregate* indices show relatively stable price-to-rent ratios, but in the major cities (including Shanghai and Mumbai) price increases have been well in excess of either rent or income growth. Not surprisingly, in Japan, the house price-to-rent ratio has declined over most of the sample.⁴

Econometric evidence also suggests that there are significant risks of overvaluation in a number of property markets in the region. Most price-to-rent series appear non-stationary, suggesting that prices and rents generally do not co-move one for one.⁵ Standard vector error correction models that include real, seasonally adjusted measures of prices and rents and a long-term interest rate (as an exogenous variable) are estimated to gauge the potential deviation of prices from the levels implied by rents. A long-run cointegration relationship—with a coefficient of one—is found between prices and rents for most countries.⁶ For New Zealand and Hong Kong SAR, current prices are considerably above the level suggested by the long run relationship—consistent with the deviation of price-to-rent ratios from historical averages and an indication that a future correction of house prices could be in the cards. In Hong Kong SAR's case, the assessment is corroborated by the significant “buy-rent” gaps found by existing user-cost models. Deviations in the price-to-rent ratio are also noticeable in the cases of Malaysia and Australia.

What would be the implications of a decline in house prices?

Given that rapidly rising credit has often been associated with an upward cycle in house prices, there is a potential for the housing-credit cycle to unwind in some countries. A decline in house prices would lower the value of collateral and tighten credit availability, creating an adverse financial accelerator effect. This would create a wealth effect with

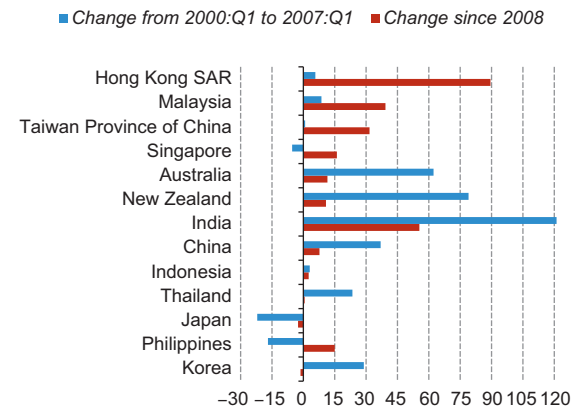
³ Some challenges associated with the data on house prices and rents complicate such assessments. For example, the presence of rent subsidies can distort price-to-rent ratios. Also, the geographical coverage of real estate price indices is sometimes limited, which can be an issue if housing cycles differ within a country.

⁴ A broadly similar picture for all economies considered emerges when price-to-income ratios are used.

⁵ Unit root tests applied to the individual series generally fail to reject the null of a unit root in the price-to-rent series, but panel unit root tests are more favorable to stationarity.

⁶ The restriction is statistically rejected at the 5 percent level only in the Korea and Thailand models, although the deviation of prices from the estimated long run levels is robust to whether the proportionality restriction is imposed or not.

Figure 2.1.3

Housing Prices
(Percentage change, real)

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

(continued)

Box 2.1 (continued)

falling housing wealth weighing on consumption (Figure 2.1.4). In addition, there is a potential for the housing correction to erode asset quality of the banking system. However, in many of the economies experiencing rapid house price inflation in recent years (e.g., Hong Kong SAR, Singapore, Malaysia, New Zealand, and Australia), banks tend to have sufficient buffers to absorb house price shocks, including strong capital positions. Therefore, house price declines are unlikely to have a major impact on bank credit.

What happened when house prices collapsed in the past? The incidence of housing “busts” in the region has been relatively small (Figure 2.1.5), taking place during the Asia financial crisis and in 2009.⁷ During these “busts,” for most countries consumption growth remained robust, suggesting that wealth effects were relatively weak or offsetting factors such as policies to stimulate household credit and consumption were at play (or both). The dynamics of house prices around these “bust episodes” has also varied considerably. In Japan, Hong Kong SAR, Korea, and Thailand, prices remained on a declining path for more than two years after the bust. In other cases, including Singapore and India, house prices bounced back rather quickly, which could have been due to policy responses, external factors (capital inflows), or domestic institutional differences.⁸

Bottom line

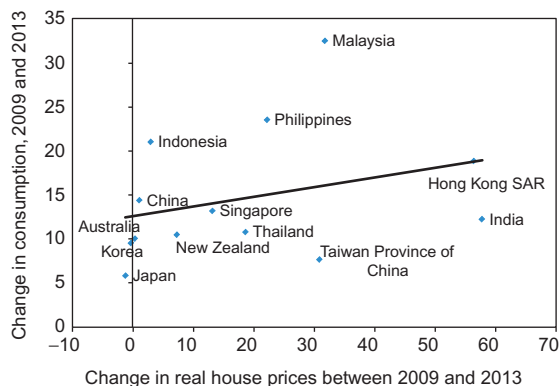
Rising household indebtedness represents an emerging vulnerability in the region, particularly where it has grown rapidly, posing risks to domestic demand. A sharp decline in house prices could be both a trigger and an amplification mechanism for these risks. Model-based estimates suggest that the likelihood of significant house price corrections is higher in Hong Kong SAR, New Zealand, and Malaysia. But large declines should not be ruled out in other economies, particularly in cities where prices have grown much faster than rents. However, based on historical episodes, the actual wealth effects (after accounting for policy reactions) associated with house price declines might be small.

Finally, while credit growth has helped fuel house prices, for much of the region, regulatory restrictions and macroprudential measures ensure that down-payments are relatively high and homeowners have significant equity buffers in their homes, mitigating the likelihood of bank losses.

⁷ Following Bordo and Jeanne (2002) a bust is identified when there is a four-quarter rolling average decline in the real house price index relative to a threshold. The latter is equal to the sample average (to account for trends) minus 1.3 times the standard deviation of year-on-year changes in the real house price index. A bust is identified in the early 1990s for Japan, during the Asian crisis for Korea, Hong Kong SAR, Singapore, and the Philippines, and during the global financial crisis for Australia and New Zealand. China has no periods classified as busts according to the methodology used here.

⁸ For example, in some jurisdictions, foreclosures and repossession of collateral happen rather quickly, which tends to accelerate the house price dynamics, especially in the event of a bust. However, in countries such as Korea, Malaysia, and Thailand, nonbank financial institutions and government-owned financial institutions play an important role in household credit (including mortgage lending) and are often subject to a different regulatory and supervisory regime than banks, creating potential sources of risk.

Figure 2.1.4

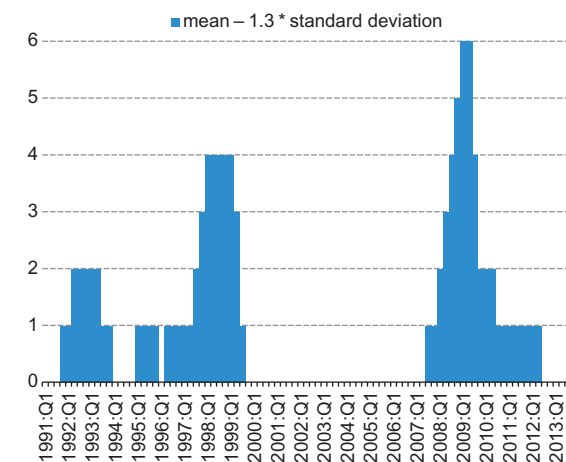
Real House Prices and Real Consumption Growth
(In percent)

Sources: CEIC Data Company Ltd.; Haver Analytics; World Economic Outlook database; and IMF staff calculations.

Figure 2.1.5

House Price Busts

(Number of countries with house price busts in progress)



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

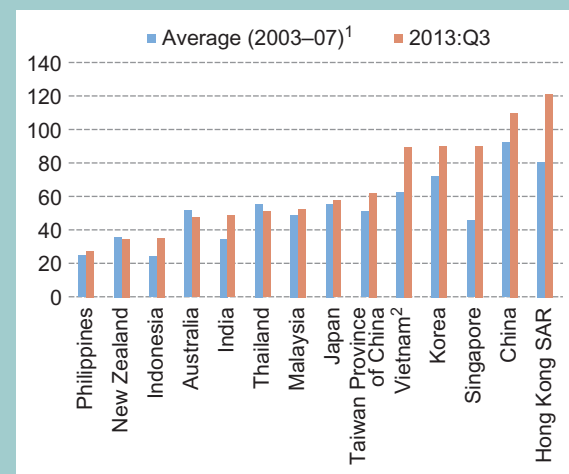
The main findings of the analysis are as follows:

- Aggregate measures of corporate leverage do not suggest that it is a near-term macroeconomic risk. The increase in leverage that has taken place in recent years is modest both relative to the excessive levels prevailing before the Asian crisis and relative to current levels in other emerging markets, particularly Latin America.
- In some countries, even though aggregate measures are not excessive, a large share of corporate debt is concentrated in only a few, highly leveraged firms. The distribution of leverage does matter and Asia clearly has “pockets” of highly leveraged firms—including in China, Japan, India, and Korea—that may pose a risk to macroeconomic stability. But an important mitigating factor is that in these countries, the debt owed by the highly leveraged firms is small relative to the overall size of the economy.¹
- The most leveraged firms are also less liquid, less profitable, and have weaker solvency indicators than other firms. This could amplify the risks to macroeconomic and financial stability. An illustrative stress test shows the potential for higher interest rates and a decline in economic growth to significantly increase the share of total debt accounted for by distressed companies, particularly in Vietnam and Indonesia.
- High leverage and weak cash flow significantly affect a firm’s ability to invest, particularly in emerging Asia. Dynamic panel estimates show that leverage has a negative effect on investment, while the impact of cash flow is positive, even after taking into account firms’ expected profitability. The effects are also generally larger for smaller firms, likely reflecting the greater credit constraints they face.

¹ Even assuming that the distribution of leverage is similar for companies *not covered in the data used here*, the total debt in the high leverage bucket is manageable (generally less than 10 percent of GDP).

Figure 2.3

Nonfinancial Corporate-Credit-to-GDP Ratio (In percent of GDP)



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

¹ Except for Singapore, which is average for 2004–07, and for China, which is average for 2007 only.

² For Vietnam graph shows private-sector-credit-to-GDP ratio.

The Facts: How Leveraged Are Asian Firms?

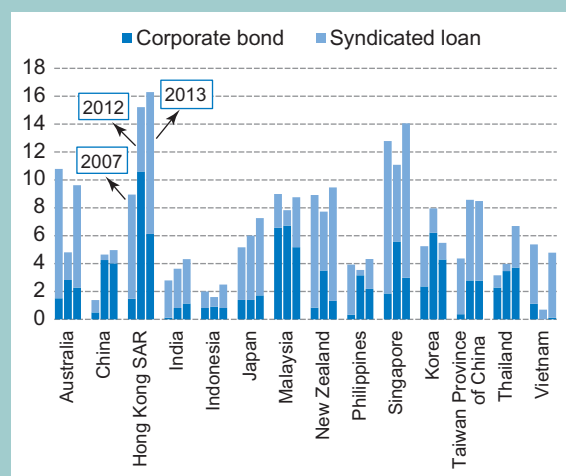
Bank and nonbank credit to Asian firms have risen in the past few years. The growth of bank credit to nonfinancial firms has been very strong. This has led to a rise in bank credit-to-GDP ratios in nearly all economies in the region (Figure 2.3), particularly in the financial centers of Hong Kong SAR and Singapore (which have been an increasing source of funding for firms across the region). Credit has also risen dramatically in some countries, particularly China and Vietnam.

In addition to bank-intermediated flows, corporate bond issuance has also picked up in recent years. The volume of issuance by Asian firms has surpassed the levels before global financial crisis (Figure 2.4), with particularly dramatic growth in the high yield/non-investment grade segments. This reflects both the forces of financial globalization, as larger firms have successfully issued abroad, and the low global interest rate environment, which has led to the search for yield by global investors and a compression in corporate risk premiums across the board.

Figure 2.4

Corporate Bond and Syndicated Loan Issuance

(In percent of GDP, 2007, 2012, and 2013)



Sources: Dealogic; and IMF staff calculations.

As global interest rates start to rise, corporate vulnerabilities concealed by the easy credit environment may come to the fore. While corporate profitability has remained relatively robust in Asia, reflecting a combination of strong growth and relatively low borrowing costs, a rapid rise in corporate borrowing has increased leverage. This has raised questions about the long-term solvency of the corporate sector, particularly in economies where a significant share of corporate debt is owed by companies with relatively low liquidity and low profitability (in relation to their debt service).

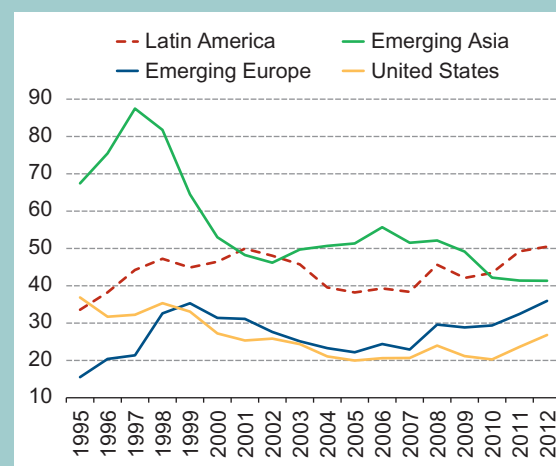
Nevertheless, so far, the rise in *aggregate* leverage has been modest and does not ring alarm bells. The leverage ratio (measured by debt to common equity) has declined dramatically since the late 1990s and has only risen by less than 2 percentage points between 2010 and 2012 (for listed companies), standing at 42 percent (compared with an increase of 14 percentage points to 52 percent in Latin America during the same period, see Figure 2.5).² The regional average leverage (based on market-cap weights) has even declined in recent years. However, as seen in Figure 2.2, once aggregate leverage is computed

²The data coverage for 2013 is relatively poor and the most recent figures refer to 2012, unless otherwise noted. Also, fiscal years are used and are the same for all companies in a given country, but can differ across economies.

Figure 2.5

Debt-to-Equity Ratio

(In percent; median)



Source: IMF, Corporate Vulnerability Utility.

using debt-owed as weights (which effectively accounts for any potential concentration of debt), there has been an increase in the key *emerging* economies in the region, particularly India and Indonesia. Meanwhile, many *advanced* Asian economies have seen a decline in average corporate leverage.

Corporate profitability has remained high, helped by continued solid economic growth. In most countries, profitability indicators (return on assets) have remained close to the levels before the global financial crisis. While profitability fell in the aftermath of the crisis—particularly in China and Indonesia—it has since recovered quickly.

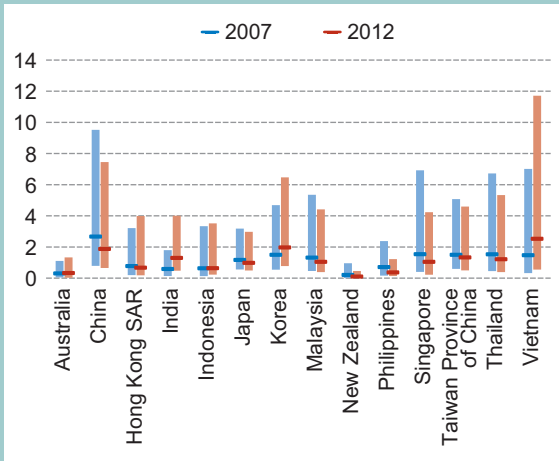
The average maturity of debt has been stable (Figure 2.6). Short-term debt has increased modestly in India, Korea, and Vietnam, while declining in China, Malaysia, and Thailand. However, in all economies the dispersion of maturities is rather wide and there may be pockets of rollover and liquidity risks in the system.

However, real borrowing costs are set to continue to rise across the region.³ Over the past few years

³The data are based on company-specific balance sheet information, and only has good company coverage of interest expenses up to 2012. Hence the data do not capture the rise in borrowing costs that took place after May 2013 in many economies.

Figure 2.6

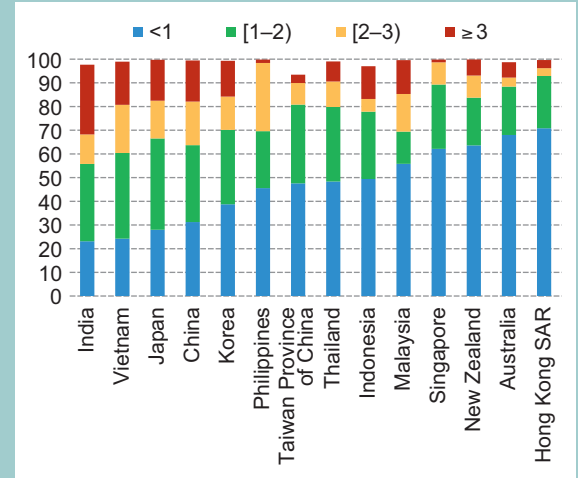
Short-Term-to-Long-Term Debt Ratio Comparison¹
(Median, 25th and 75th percentiles, 2007 and 2012)



Sources: Thomson Reuters Worldscope; and IMF staff calculations.
¹ Short-term-to-long-term debt ratio is calculated as short-term debt and current portion of long-term debt/long-term debt. The lines inside the bars indicate the median.

Figure 2.8

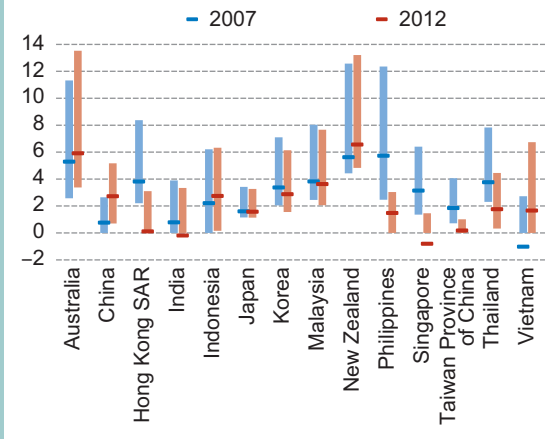
Corporate Debt by Leverage Ratio¹
(In percent of total corporate debt, 2012)



Sources: Thomson Reuters Worldscope; and IMF staff calculations.
¹ Leverage ratio is measured as total debt/common equity.

Figure 2.7

Real Average Interest Rate Comparison¹
(Median, 25th and 75th percentiles, 2007 and 2012)



Sources: Thomson Reuters Worldscope; and IMF staff calculations.
¹ Average interest rate is measured as interest expense on debt/total debt × 100. The lines inside the bars indicate the median.

the real costs of borrowing have fallen in line with lower global interest rates (although China and Vietnam have been exceptions) and borrowing costs are now at multi-year lows (Figure 2.7). However, that situation is expected to shift going forward as global liquidity recedes and interest rates rise.

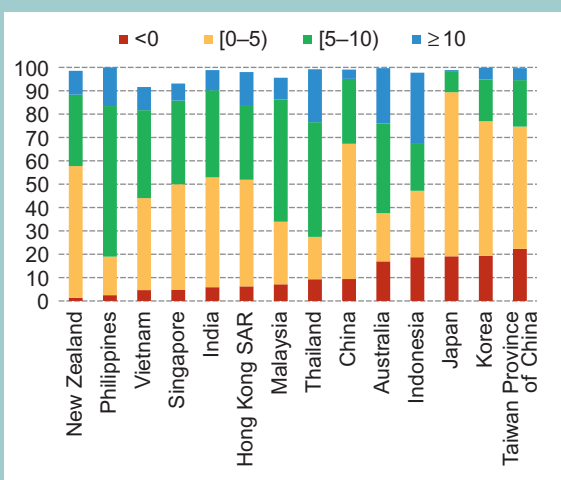
And this may place strains on parts of the corporate sector. Upon digging beneath the country averages, more disaggregated data point to a considerably large share of debt being accounted for by weaker firms. This is evident in Figure 2.8 (and Annex Figure 2.1), which shows the concentration of corporate debt for different levels of leverage.⁴ In India, for example, about a third of total corporate debt is owed by companies with high leverage (that is, with debt-to-equity ratios above 3). Similarly, the concentration of debt in highly leveraged firms is also severe in Vietnam and, to a lesser extent, in China, Japan, and Korea. In addition, the distribution of debt (by leverage) has become more concentrated in most countries over the last five years. The next section looks into the characteristics of Asia’s highly indebted firms and discusses their potential to amplify future shocks to interest rates or profitability.

⁴The findings shown in Figure 2.8 are robust across several dimensions, for instance to whether common or total equity, gross or net debt, or debt to total assets are used. In Figure 2.8 and some of the subsequent figures, the bars do not add up to 100 percent because of the missing data on common equity.

Figure 2.9

Corporate Debt by Return on Assets

(In percent of total corporate debt, 2012)

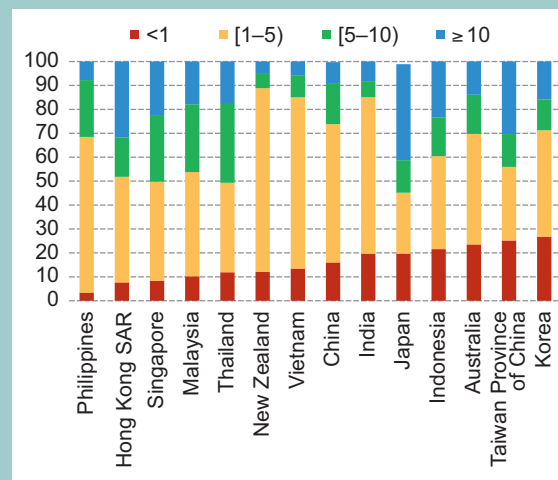


Sources: Thomson Reuters Worldscope; and IMF staff calculations.

Figure 2.10

Corporate Debt by Interest Coverage Ratio¹

(In percent of total corporate debt, 2012)



Sources: Thomson Reuters Worldscope; and IMF staff calculations.

¹ Interest coverage ratio is measured by earnings before interest/total interest expense.

The Risks: What Are the Characteristics of Asia's Highly Leveraged Firms?

A careful assessment of disaggregated data suggests that the most leveraged firms in Asia tend to have lower profitability and lower interest coverage ratios, and to be less liquid. As such, the corporate sector may be more vulnerable to interest rate and profitability shocks than the aggregate data would suggest. In addition, other factors may influence how sensitive corporate default risk is to leverage. A number of firm attributes might act as mitigating factors or amplification mechanisms.⁵ Specifically:

- Profitability.** A significant percentage of corporate debt in some countries is owed by firms that have low or negative profits (Figure 2.9). For example, in Korea and Japan, almost 20 percent of corporate debt is owed by firms with negative profits. In India and China about

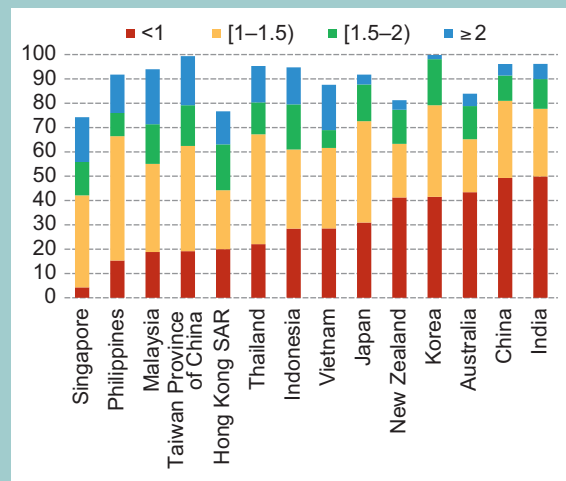
⁵ A mitigating factor in many Asian economies (notably China) is the presence of state-owned enterprises, which tend to have government guarantees—in their case, some of the risk may ultimately be fiscal.

half of the corporate debt is owed by firms with return on assets that are below 5 percent (including some owed by firms with negative profitability).⁶

- Solvency.** Similarly, a significant share of debt is linked to companies with a low ratio of profits to interest expenses (interest coverage ratio, or ICR). For example, more than 20 percent of the debt is owed by firms with an ICR that is less than one in Australia, Korea, Japan, India, and Indonesia. These low-ICR companies also tend to have the highest leverage ratios (Figure 2.10 and Annex Figure 2.2 for selected Asian economies).
- Liquidity.** Less liquid firms owe a significant share of corporate debt (Figure 2.11). In the case of India and China about half of corporate debt is owed by companies with current ratios below one. For Japan, Indonesia, Australia, and Korea this is the case for 30 to 40 percent of corporate debt.

⁶ In any case, comparisons based on profitability must be interpreted with caution since they are influenced by the overall nominal growth rate of the economy in question as well as its cyclical position.

Figure 2.11

Corporate Debt by Current Ratio¹*(In percent of total corporate debt, 2012)*

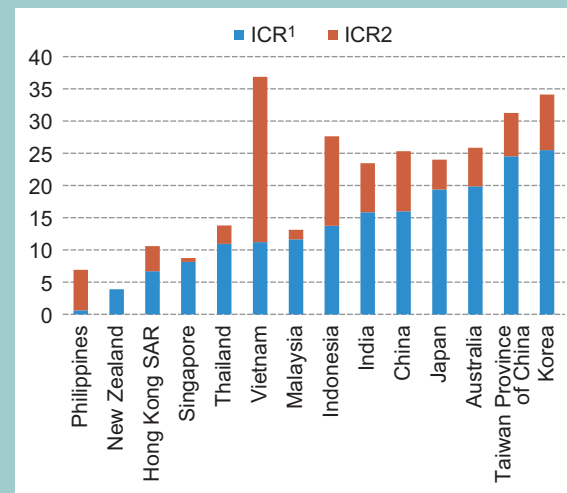
Sources: Thomson Reuters Worldscope; and IMF staff calculations.

¹ Current ratio is measured as total current assets/total current liabilities.

To further gauge the vulnerabilities associated with a prospective rise in interest rates, an illustrative “stress test” on individual firms’ balance sheets is performed. If average borrowing costs rise by 200 basis points or if profit growth falls by 20 percent, the share of debt owed by firms with an ICR less than one would clearly increase (Figure 2.12). In Indonesia and Vietnam, there would be a sharp rise in the amount of “debt at risk” (debt owed by companies with an ICR less than one), but as noted above, this debt is relatively small in relation to GDP in most countries (generally less than 10 percent with the exceptions of China and Australia). This indicates that the corporate sector is potentially more exposed to macroeconomic shocks than the aggregate data suggest and that this could act as a propagating mechanism that fuels a future downward movement in the cycle. But this is not a systemic risk since the “debt at risk” is small in relation to GDP.

A sharp exchange rate depreciation would also put pressure on corporate balance sheets. While detailed data on net foreign exchange (FX) exposures (particularly on hedging) are scant, the Spring 2014 *Global Financial Stability Report* (GFSR) considers the

Figure 2.12

Stress Test: Debt of Firms with Interest Coverage Ratio Less than One*(In percent of total corporate debt, 2012)*

Sources: Thomson Reuters Worldscope; and IMF staff calculations.

¹ ICR = interest coverage ratio. ICR is measured as earnings before interest/total interest expense. ICR2 is estimated by raising 200 basis points of interest rate.

effect of a 10 percent depreciation on the interest coverage ratio of firms. According to the 2014 GFSR stress tests, among the Asian economies considered, only India and Indonesia would face significant risks with the median ICR for the entire corporate sector falling below one.⁷ Foreign currency debt could also pose potential rollover and liquidity risks in the event of a sudden stop in gross capital inflows or a sharp increase in outflows. These risks could be significant, because the stock of outstanding foreign currency bonds has reached all-time highs across most of the region and bond issuance (Figure 2.4) has been particularly strong, even in 2013; companies issued bonds on favorable terms before the May 2013 tapering episode, and more tactically later in the year, on the expectation that global borrowing costs would rise further.

⁷ In the absence of detailed data, this exercise assumes that 50 percent of FX liabilities are unhedged. Another reason to interpret this exercise with caution is the lack of comprehensive data on the foreign currency composition of firms’ assets.

The Implications for Growth: Is Leverage a Constraint on Investment?

According to standard theoretical models of investment, the impact of leverage on investment cannot be clearly predicted beforehand. In the absence of financial frictions, leverage should have no effect on investment. In the Modigliani-Miller model, a company's financial structure and policy (in particular the composition of its liabilities) is irrelevant to its investment decisions. However, with financial imperfections (such as in the financial accelerator model of Bernanke, Gertler, and Gilchrist [1999]) a higher leverage ratio is associated with a higher risk premium, and that in turn raises external financing cost and reduces investment.⁸

To investigate the effect of leverage on investment, a firm-level panel data set that covers nearly 18,000 companies in 14 emerging and advanced Asian economies over 1995–2012 is used.⁹ The baseline model is a dynamic panel, as specified in the equation below,

$$\left(\frac{I}{K}\right)_{i,t} = \alpha_i + \alpha_t + \theta \left(\frac{I}{K}\right)_{i,t-1} + \beta Q_{i,t} + \gamma CF_{i,t} + \delta L_{i,t} + \varepsilon_{i,t},$$

where I/K is the investment ratio, defined as capital expenditure divided by gross fixed assets; Q stands for average Tobin's Q , defined as the sum of market capitalization and total debt divided by total assets; L stands for the leverage ratio, defined as total debt divided by common equity (book value); CF refers to cash flow, as captured in earnings before tax and appreciation, then normalized by gross fixed assets. The model includes time and firm fixed effects. To address the potential endogeneity of the leverage

⁸ In the Bernanke-Gertler-Gilchrist model, the expected return on capital (a measure of the cost of external financing) is a negative function of the ratio of net worth to the value of capital.

⁹ The data are from Thomson Reuters Worldscope and the number of firms varies significantly across countries, from 111 in New Zealand to about 3,500 in Japan. The data are at an annual frequency and are unbalanced (i.e., there are missing values for some of the firms, some of the time).

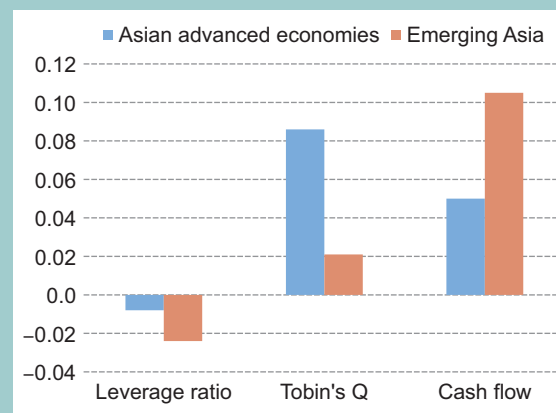
ratio, cash flow and asset price, the Arellano-Bover system-GMM estimator is applied.

The regression results show that higher corporate leverage and low cash flow have a significant negative impact on investment in Asia. This seems to suggest that highly leveraged firms generally face more difficulty in obtaining external financing which then weighs on their ability to invest. The positive effect of firms' cash flow on investment is consistent with findings from other studies (e.g., Hubbard, 1998), and also suggests that financial frictions are at play. The empirical work also shows that Tobin's Q has a positive effect on investment, indicating that firms with higher expected profitability tend to invest more.¹⁰

Both leverage and cash flows appear to have stronger effects on investment in *emerging Asia* (Figure 2.13). This may reflect greater financial

Figure 2.13

Asia: Regression Results—Asian Advanced Economies Versus Emerging Asia¹



¹ Emerging Asia includes China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam; Asian advanced economies include Australia, Hong Kong SAR, Japan, Korea, New Zealand, Singapore, and Taiwan Province of China. Results are significant at the 95 percent confidence level.

¹⁰ Interestingly, the estimated effects of leverage and cash flow on investment are slightly larger in the period after the global financial crisis. Despite abundant liquidity, the results suggest some form of segmentation; the higher sensitivity of investment to cash flow could reflect constraints that have been more binding for a potentially large subgroup of firms.

frictions in emerging Asia and a greater reliance on internally generated earnings to finance investment (because financial systems are generally less developed and information asymmetries are larger). In contrast, in advanced economies investment decisions are more strongly related to the expected profitability of potential investments (reflected in their Tobin's Q) than to the level of leverage.

The effect of leverage on investment also depends on a firm's size and its perceived ability to repay debt. For smaller firms (defined as the bottom 10 percentile of the asset size distribution), the impact of leverage is about four times greater than it is for firms of average size (Figure 2.14).¹¹ This is not surprising, since smaller firms are more likely to face more severe information asymmetries and greater credit constraints, making their external financing premium more sensitive to the leverage ratio. Also, for firms with lower ICRs, the impact of leverage on investment is higher, since lower

ICRs indicate that the firms face a higher risk premium and greater difficulty in obtaining external financing.¹²

The Bottom Line

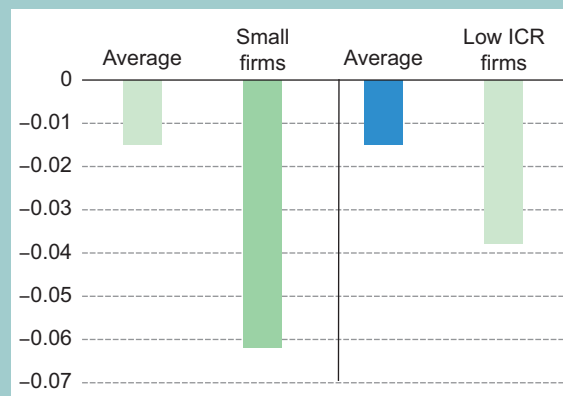
Some broad messages emerge from this analysis:

- Recently corporate leverage in *emerging* Asia has been rising, but so far it appears to be manageable as it is well below historical averages. In particular, the recent increase in leverage pales in comparison with the deleveraging that took place in the late 1990s.
- While corporate balance sheets appear healthy, a growing share of corporate debt in Asia is becoming concentrated in the weakest segments of the corporate sector. Overall risks are manageable as the “debt at risk” is small as a share of corporate debt (and GDP). But vulnerabilities are likely to be larger than aggregate data suggest. In particular, for some countries, rising real interest rates and lower growth are likely to create a significant deterioration in the underlying quality of corporate debt.
- Higher leverage has the potential to be an increasing drag on investment going forward. This is particularly true for investment by smaller firms or by companies with weaker balance sheets. If the buildup in leverage continues, it could adversely affect investment, especially in emerging Asia economies and in smaller firms across the region.

From a policy perspective, given the concentration risks associated with the rise in corporate leverage, a major priority should be enhancing financial supervision to ensure that

Figure 2.14

Regression Results: Leverage Ratios Across Different Groups of Firms¹



¹ ICR = interest coverage ratio. “Small firms” refers to firms with sizes in the bottom tenth percentile in terms of assets in the sample. “Low ICR firms” refers to firms with ICRs below 10 percent in the sample. Results are significant at the 95 percent confidence level.

¹¹ The small-firm dummy is interacted with leverage in the investment regression.

¹² In the case of unlisted firms, the effect of leverage on investment is also likely to be strong, since those firms tend to be smaller than the average listed firms, and according to some studies they are more similar to the smaller firms.

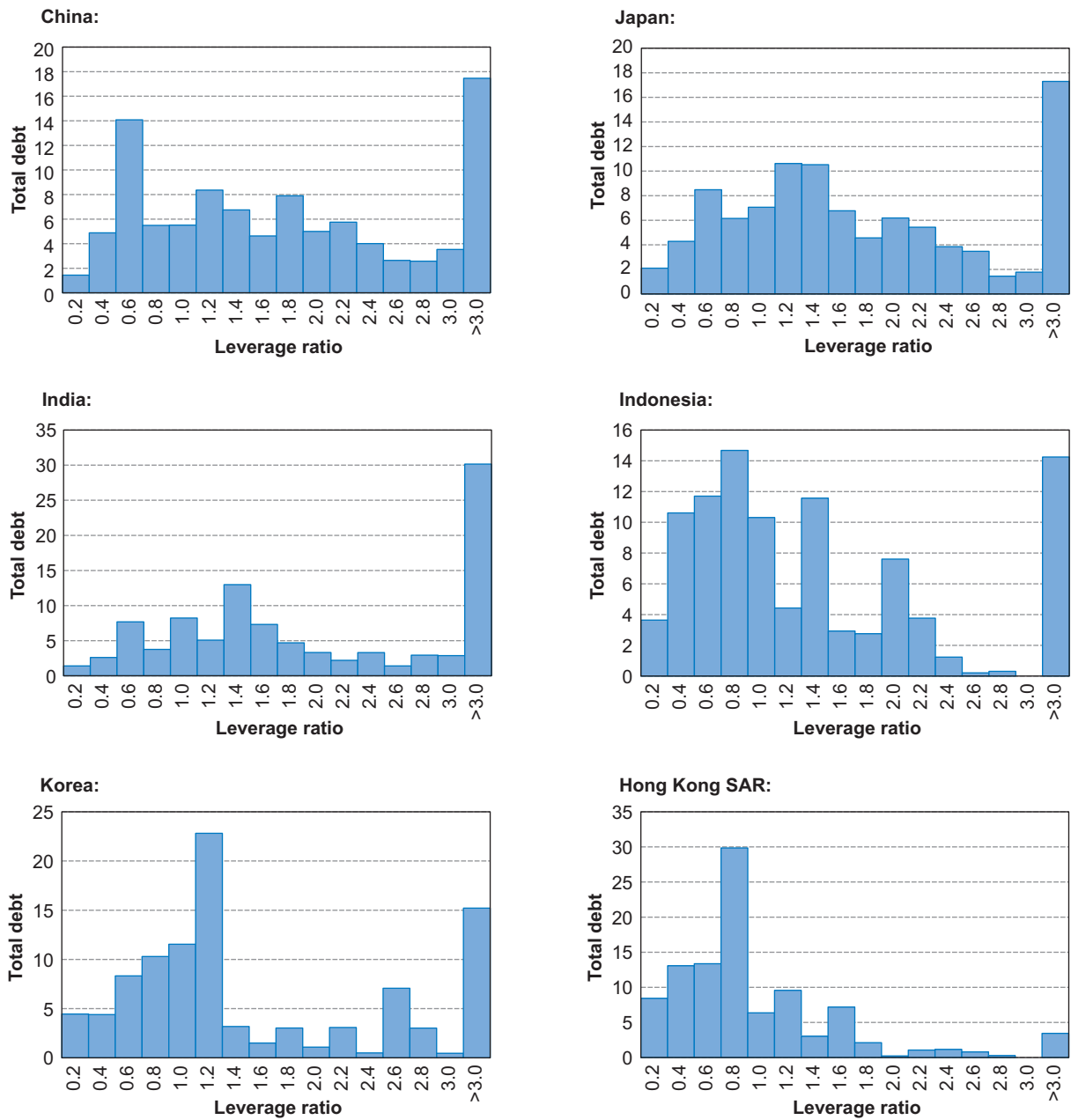
lending standards are maintained, especially in countries where credit growth has been strong or where a large share of debt is owed by relatively weak corporations. Some countries should also be prepared to handle rising corporate stress, particularly as financing costs rise alongside a normalization of global monetary and financial

conditions. But as global interest rates rise, sustaining the growth momentum will also be vital to boost the profitability of firms as well as their capacity to contract debt at less favorable terms going forward and to repay existing debt without major cutbacks in investment.

Annex Figure 2.1

Distribution of Debt by Leverage Ratio¹

(In percent of total corporate debt, 2012)

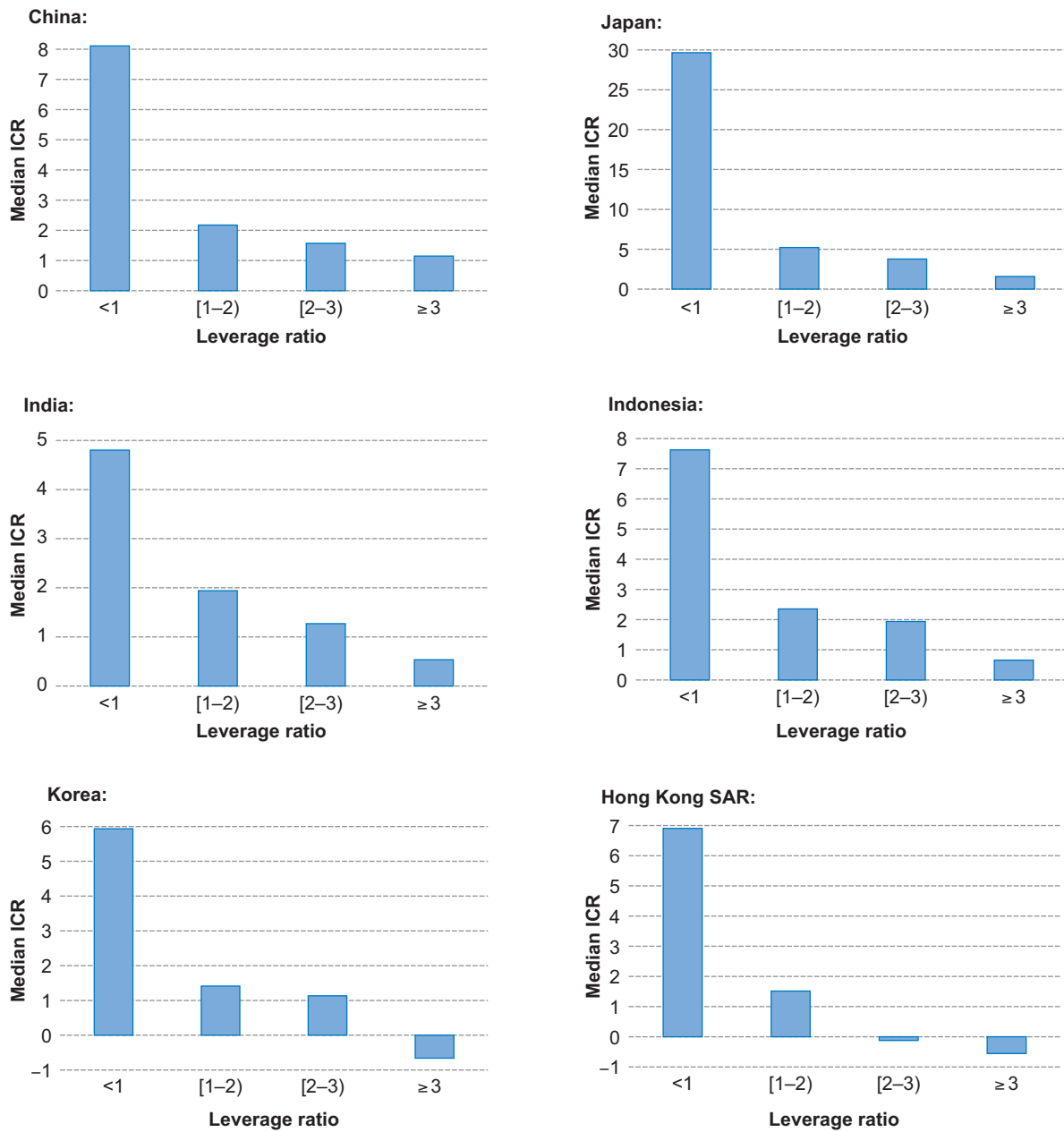


Sources: Thomson Reuters Worldscope; and IMF staff calculations.

¹ Leverage ratio is measured as total debt/common equity.

Annex Figure 2.2

Interest Coverage Ratio by Leverage Ratio Bucket¹
(Year of 2012)



Sources: Thomson Reuters Worldscope; and IMF staff calculations.

¹ ICR = interest coverage ratio. Leverage ratio is measured as total debt/common equity. ICR is measured as earnings before interest/total interest expense.

3. Does Growing Regional Integration Make Asian Economies Move More in Sync?

Introduction and Main Findings

In recent decades, especially during the 1990s, trade integration within Asia has proceeded faster than in other regions. In value-added terms, intraregional trade grew on average by over 10 percent a year from 1990 to 2012, twice the pace seen outside of Asia. While Asia's overall trade openness today does not particularly stand out compared to other regions—partly reflecting the presence of several large, less open economies—the intensity of intraregional trade does stand out, especially within ASEAN. Concomitantly, financial integration within the region—as well as between the region and the rest of the world—has started to catch up, although it still lags behind trade integration.

Have these increases in trade and financial integration strengthened the propagation of growth shocks between regional partners, leading Asian economies to move more in lockstep? What role is China playing in driving growth spillovers and thereby business cycle synchronization (BCS) in the region? Will the regional integration agenda and a bigger China further increase the transmission of shocks and BCS in the future? These questions matter for understanding the likelihood and impact of synchronized growth slowdowns across the region and determining what policies are best for preventing and responding to them. Based on a unique dataset covering value-added in goods and services traded over the past two decades, this chapter takes a fresh look at these issues. The main findings are the following:

- Not surprisingly, the region's economies are most synchronized during major crises. Specifically, GDP growth co-movement jumped during the 1997–98 crisis and again (to a lesser extent) during the 2008–09 global

financial crisis. However, even excluding these exceptional periods, the business cycle in the region's economies has become steadily more synchronized over the past two decades.

- Bilateral trade intensity *in value-added terms*—but *not* bilateral *gross* trade—has a significant effect on BCS, likely reflecting the propagation of shocks through the trade channel. The greater the value-added traded between Asian economies, the greater their co-movement, *all else equal*. Over the past two decades, the increase in value-added in trade has accounted for around one-quarter of the increase in synchronization in Asia.
- Countries that have significant intra-industry trade or that export similar goods also see greater cyclical synchronization. This perhaps reflects the similarity in industrial structures across such countries and the importance of industry-specific shocks in driving the cycle. The largest ASEAN economies stand out along these two dimensions.
- Financial integration magnifies the impact on BCS of large adverse global shocks such as the global financial crisis. By contrast, in normal times, greater financial integration tends to lower the correlation of the cycle across countries, possibly by facilitating international reallocation of capital when a shock hits one country. However, this is less of a factor in Asia, where cross-border flows are relatively smaller.
- Spillovers from China's growth shocks are about twice as large for Asia as for non-Asia. This makes the rest of Asia more vulnerable to any sharp slowdown in China, and means that China is likely to be an increasingly important factor in driving regional cycles as Asia's dependence on Chinese final demand (*in value-added terms*) continues to grow.

The main authors are Kevin Cheng and Romain Duval. The analysis relies on Duval and others (2014).

- Going forward, insofar as trade and financial integration rise, so will BCS. Regional trade integration—which by most measures stopped growing over the last decade—will only increase insofar as policymakers show the political will to reduce trade barriers in sensitive areas, including services. But if this happens, BCS is likely to rise further. With the increasing importance of final demand from China for other Asian economies, growth shocks originating from China will become a growing source of spillovers and co-movement across the region, while shocks from advanced economies will matter less. Greater regional financial integration will have a more ambiguous effect on BCS, but it could amplify spillovers in crisis periods.
- The main challenge for policymakers will be to reap the substantial growth benefits from greater regional integration while minimizing the potential vulnerabilities arising from higher BCS, particularly the risk of larger and more synchronized falls in incomes during crises. Policies to strengthen individual economies' resilience to shocks, as well as broad financial safety nets, can play a role in this regard.

Is Activity Moving More in Sync in Asia?

The main characteristics of business cycle co-movement in Asia are illustrated in Figure 3.1. Key patterns may be summarized as follows:

- BCS spikes during major crises. Not surprisingly, for Asia, the crisis of the late 1990s had an even bigger effect than the global financial crisis (top left panel).¹
- Excluding crisis periods, BCS is typically much lower, but it has nonetheless been rising steadily

¹ All calculations and regressions in this chapter are based on annual data for 63 countries, including 34 advanced economies (7 of them in Asia) and 29 emerging market economies (8 of them in Asia).

around the world over the past two decades. This increase has been particularly large in Asia and Latin America, although synchronization in both regions is still less than between euro area economies during the 2000s.

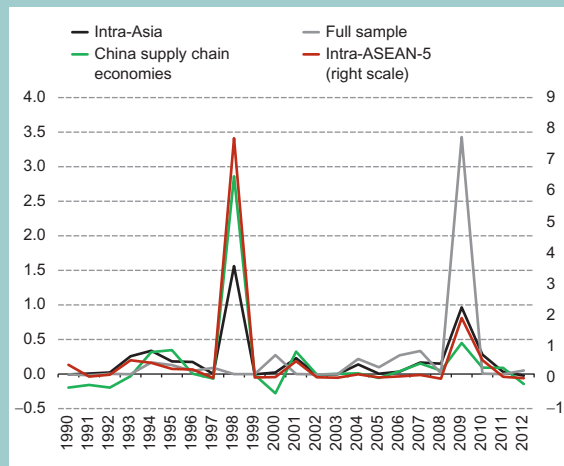
- Within Asia, BCS appears to be particularly high among ASEAN-5 economies (Indonesia, Malaysia, the Philippines, Singapore, and Thailand). These findings are robust to alternative approaches for measuring BCS, that is, to using either the quasi-instantaneous correlation proposed in IMF (2013d)² or the standard correlation coefficient (top right and bottom left panels).
- China's output co-movements with the rest of Asia have increased, but Asian economies have continued to co-move more with Japan—whose cycle has been small in amplitude, however—and the United States (bottom right panel). This likely reflects the continued importance of global factors in driving business cycles across the region (see Duval and others, 2014) and, as regards ASEAN's co-movement with Japan, the impact of the 2011 earthquake and tsunami. Among all Asian economies studied here, India has the lowest degree of output co-movement with its regional peers, suggesting that its cyclical fluctuations are more driven by domestic shocks.

What accounts for these patterns, in particular for the trend rise in BCS in Asia, its high level in ASEAN, and the spikes in BCS during crises? The remainder of this chapter explores the role of trade integration and also examines the impact of financial integration and macroeconomic policy synchronization.

² Unlike the standard (Pearson) correlation coefficient, which has to be computed over a time interval, the quasi-correlation can be calculated at any point in time. For a given pair of countries i and j , it is equal to the product of deviations of growth rates in i and j from their sample averages, divided by the product of standard deviations of growth rates in i and j over the sample. For details, see Duval and others (2014).

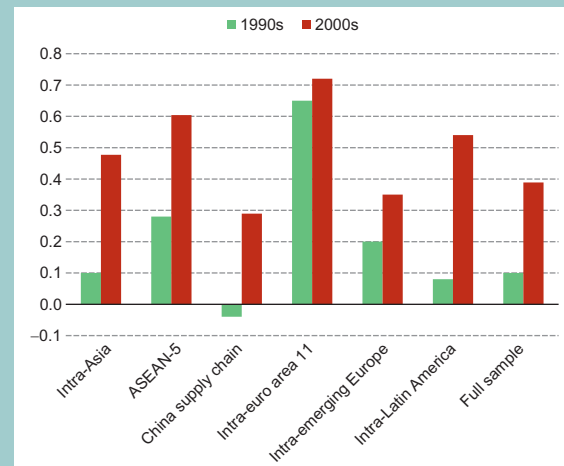
Figure 3.1

Median Quasi-Correlations by Region¹



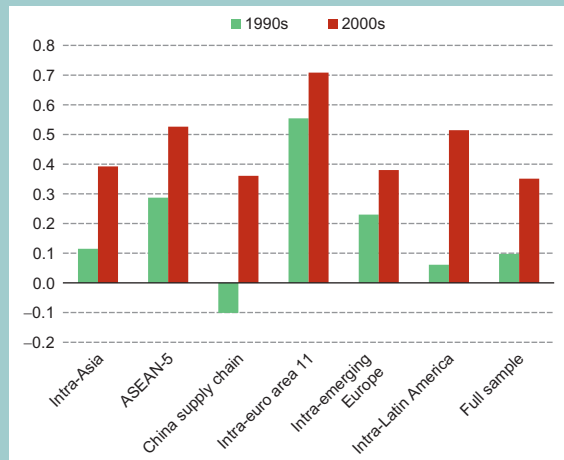
Quasi-Correlations by Region^{1,2}

(Excluding crisis periods)



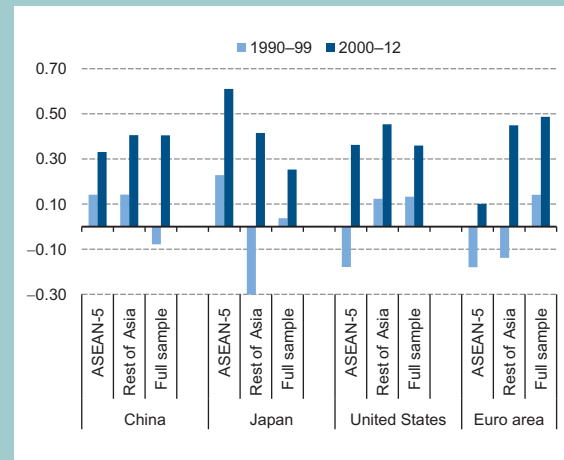
Bilateral Pearson Growth Correlations by Region^{1,2}

(Excluding crisis periods)



Average Bilateral Pearson Growth Correlations

(Excluding crisis periods)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.

¹ China supply chain economies include China, Korea, Malaysia, the Philippines, Taiwan Province of China, and Thailand. They are identified based on the intensity of their trade linkages (in value-added terms). Unlike the usual (Pearson) correlation coefficient, which has to be computed over a time interval, the quasi-correlation can be calculated at any point in time. For a given pair of countries *i* and *j*, it is equal to the product of deviations of growth rates in *i* and *j* from their sample averages, divided by the product of standard deviations of growth rates in *i* and *j* over the sample. For details, see Duval and others (2014). Crisis periods are years 1998 and 2009.

² Euro area includes the 11 countries that adopted the euro in 1999.

The Role of Trade Integration

Both the intensity and the type of trade between economies can make them co-move, either by propagating shocks from one to another or by making the same shocks commonly shared:

- First, greater trade linkages provide more conduits for changing demand conditions in

one country to spill over to others, potentially with a complex series of amplifying feedback loops. The main novelty of this chapter is to focus on trade in value-added. This is a better measure of interdependence between trading partners than gross trade, on two grounds: (1) it nets out two-way trade in intermediate inputs, which otherwise would overstate trade dependence between partners; (2) it includes

indirect trade linkages *via* third countries (for example, value-added exported by country *i* to country *k* for use as intermediate inputs into goods that are then re-exported to country *j*), which if not accounted for would understate trade dependence between partners (*i* and *j*).

- Second, where there is significant vertical trade integration (trade in intermediate goods used as inputs into production processes) between two economies and a lack of substitutability of inputs, this can create a propagation mechanism that transmits shocks up and down the vertical supply chain, even in the absence of a shock to final demand, for example in the wake of the earthquake and tsunami in Japan in 2011.
- Finally, a greater amount of intra-industry trade (bilateral trade of similar goods) and similar trade specialization (same structure of exports to all trading partners) between two countries should be an indication that they have a similar industrial structure.³ Therefore, if they are hit predominantly by industry-specific shocks, they should show greater co-movement.

The above findings suggest that, depending on the nature of shocks, four dimensions of trade can influence BCS, namely: trade intensity, the degree of vertical integration, the prevalence of intra-industry trade, and the similarity of trade specialization between two economies. These factors show the following key changes over the past two decades.

Trade intensity. Trade openness has increased more rapidly in Asia than elsewhere since 1990, and

³ While the similarity of trade specialization and the intensity of intra-industry trade would seem to bear a close relationship *a priori*—as both are indicative of similar industry structures—this is not the case in the data since for any given country pair the time series correlation between these two variables is typically low. This is because two countries can export similar goods and services to third countries (high-trade specialization similarity) without necessarily exporting these goods and services to each other (low intra-industry trade), for instance.

so has intraregional trade, although these trends have come to a halt since the mid-2000s (Figure 3.2). This is the case even after netting out trade in intermediate inputs by using value-added trade data—which take into account the increasingly important supply chain networks across the globe and the region (see, for example, IMF, 2011a)—rather than gross trade data.⁴

Vertical integration. Vertical integration has also increased more in Asia than elsewhere, with China playing a pivotal role. The share of foreign value-added embedded in total exports has generally increased in Asia economies, particularly in China and in East Asia reflecting the “China supply chain” network (Figure 3.3). Value-added to/from China has increased rapidly across Asian economies, while that to/from Japan has declined (Figure 3.4). This reflects both China’s growth in size (and thus its greater absorption of any given country’s exports) and its move up the value chain (and thus its growing market share in global trade for intermediate goods). Within ASEAN-5, vertical integration with partners is also significant although it has not increased much. Furthermore, the nature of integration with partners differs between China and Japan, with China specializing comparatively more in downstream activities (such as assembling, even though China is now increasingly moving up the value chain) and Japan specializing in upstream activities (providing various intermediate goods as inputs) (Figure 3.5). Finally, although the United States and the EU remain by far the largest final consumers of Asia’s supply chain products, the importance of final demand coming from China has increased rapidly over the past two decades (Figure 3.6).

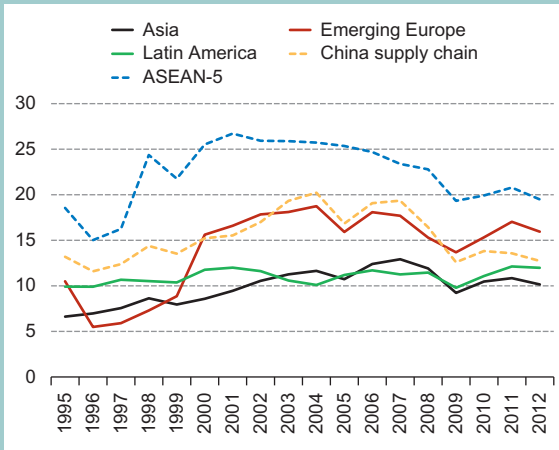
⁴ These data build on the recent joint initiative by the Organization for Economic Cooperation and Development (OECD) and the World Trade Organization (WTO) on trade in value added in goods and services. They are interpolated and extrapolated up to 2012 using an approach described in Duval and others (2014), where a detailed definition of each of the trade and other variables presented in this chapter can also be found.

3. DOES GROWING REGIONAL INTEGRATION MAKE ASIAN ECONOMIES MOVE MORE IN SYNC?

Figure 3.2

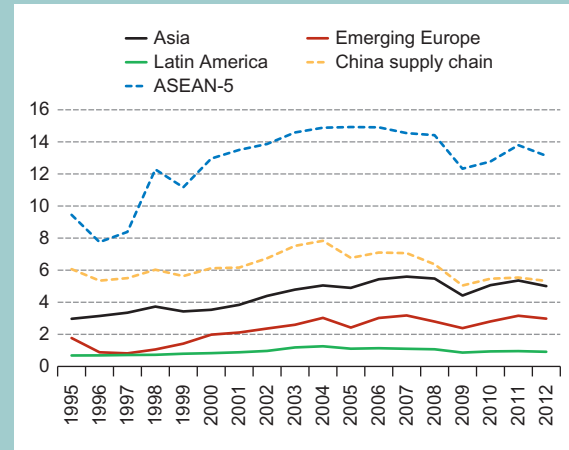
Trade Intensity with the World¹

(In percent of GDP)



Intraregional Trade Intensity²

(In percent of GDP)



Sources: Organization for Economic Cooperation and Development and World Trade Organization, Trade in Value-Added database; and IMF staff estimates.

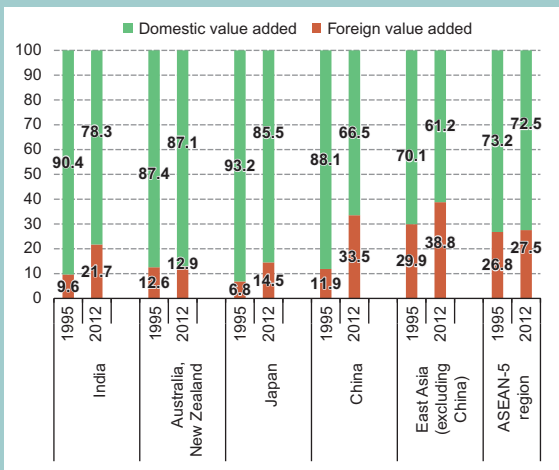
¹ For each region, based on the sum of trade intensity of economies in that region with the world. China supply chain includes China, Korea, Malaysia, the Philippines, Taiwan Province of China, and Thailand.

² For each region, based on the sum of trade intensity of economies in that region with each other. China supply chain includes China, Korea, Malaysia, the Philippines, Taiwan Province of China, and Thailand.

Figure 3.3

Domestic and Foreign Value-Added Embedded in Exports¹

(In percent of total gross exports)



Sources: Organization for Economic Cooperation and Development and World Trade Organization, Trade in Value-Added database; and IMF staff estimates.

¹ Values for 2012 are estimates.

Intra-industry trade and similarity in trade specializations.

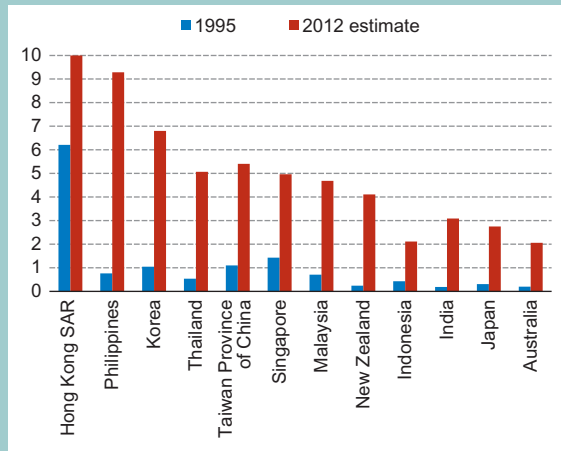
The degree of intra-industry trade has barely increased across Asia but, on average, it is slightly higher than in the rest of the world (Figure 3.7).⁵ However, for ASEAN-5 the effect of having a similar industrial structure could be a more important factor in driving synchronization. Indeed, ASEAN-5 faces higher intra-industry trade and higher correlation between trade specializations—although the latter has declined since the 1990s, possibly reflecting increased specialization along the regional supply chain (Figure 3.8). This would mean that if most shocks are industry-specific, cycles should co-move more in ASEAN-5 than elsewhere.

⁵ Note that conceptually, intra-industry trade differs from vertical trade since the former should reflect two-way trade in similar (finished or intermediate) goods, while the latter typically involves trade in different goods since many parts and components along the supply chain belong to different industries.

Figure 3.4

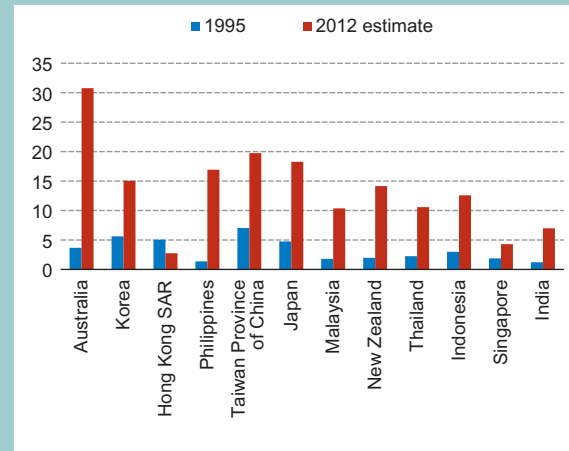
Foreign Value-Added Embedded in Each Economy's Exports from: China

(In percent of total exports of each economy)



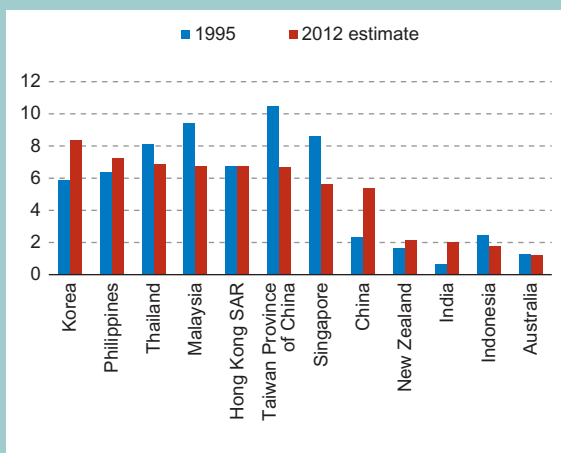
Domestic Value-Added Embedded in Each Economy's Exports to: China

(In percent of total exports of each economy)



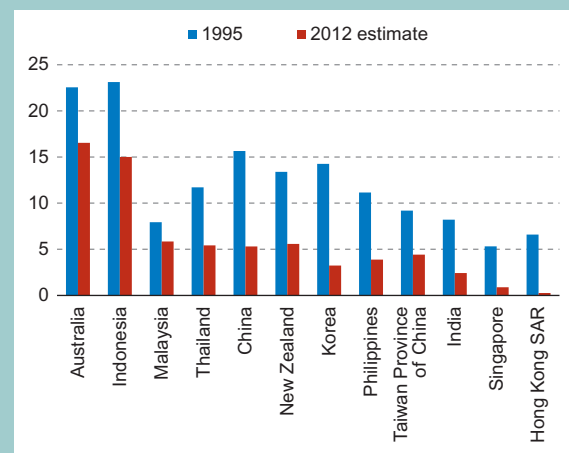
Japan

(In percent of total exports of each economy)



Japan

(In percent of total exports of each economy)



Sources: Organization for Economic Cooperation and Development and World Trade Organization, Trade in Value-Added database; and IMF staff estimates.

To take the analysis of these stylized facts further, the impact on BCS of each of these trade dimensions is assessed by means of econometric analysis. The growth correlation between each possible pair of economies within a broad sample of 63 Asian and non-Asian economies is expressed as a function of trade and other observed explanatory variables (such as financial integration) and unobserved variables (such as geographical

proximity). The methodology and key results are provided in Box 3.1.

The results from the empirical analysis confirm the following:

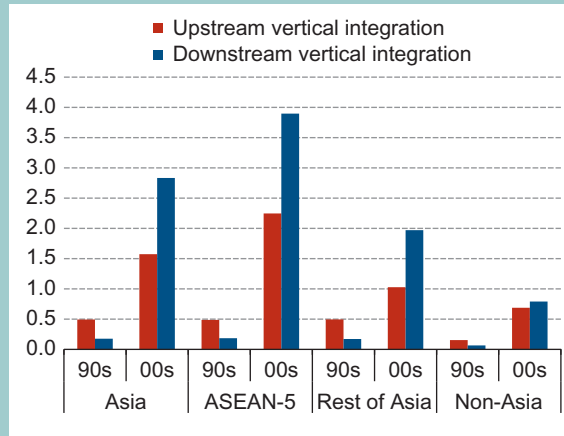
- Bilateral trade intensity—in valued-added rather than in gross terms—is an important factor in explaining the synchronization of cycles. Based on its estimated impact, it has accounted for

3. DOES GROWING REGIONAL INTEGRATION MAKE ASIAN ECONOMIES MOVE MORE IN SYNC?

Figure 3.5

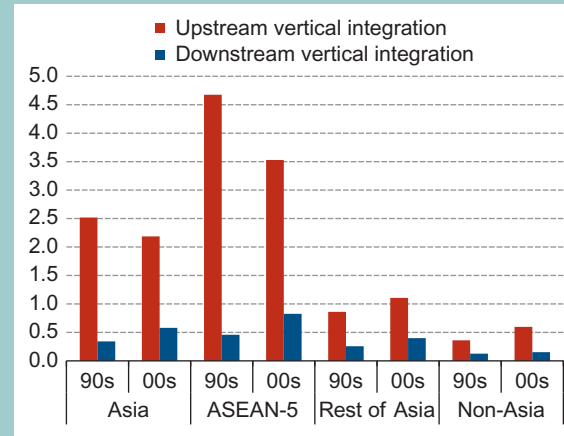
Median Vertical Trade with China¹

(In percent of GDP)



Median Vertical Trade with Japan²

(In percent of GDP)



Sources: Organization for Economic Cooperation and Development and World Trade Organization, Trade in Value-Added database; and IMF staff estimates.

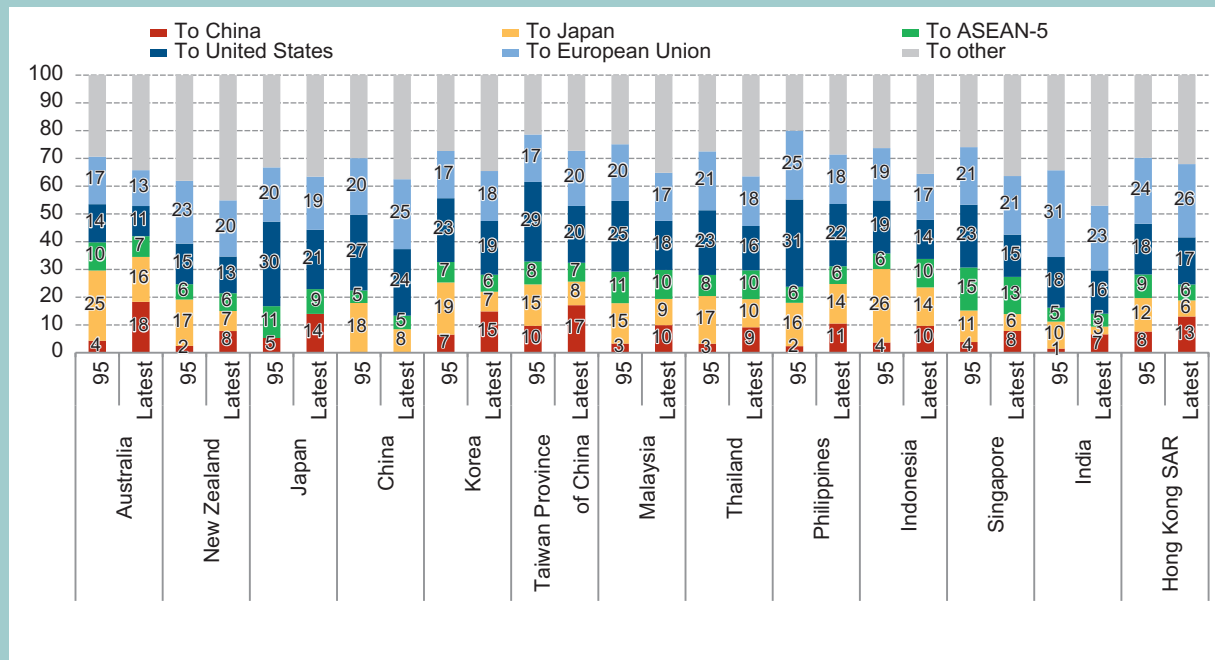
¹ Calculated as period medians of the median country pair. Upstream vertical integration of China with country j is defined as value added from China embedded in country j's exports; and downstream vertical integration of China with country j is defined as value added from country j embedded in China's exports.

² Calculated as period medians of the median country pair. Upstream vertical integration of Japan with country j is defined as value added from Japan embedded in country j's exports; and downstream vertical integration of Japan with country j is defined as value added from country j embedded in Japan's exports.

Figure 3.6

Value-Added Exported to Partner Countries for Final Demand

(In percent of total value added exported for final demand by the country)

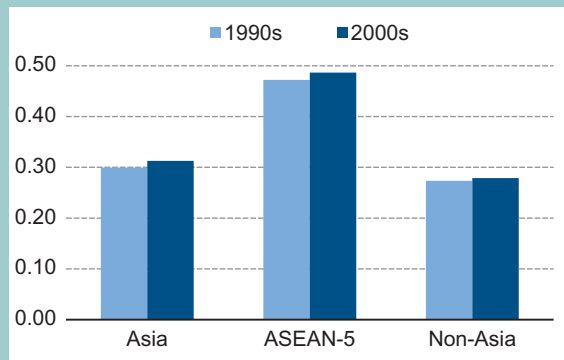


Sources: Organization for Economic Cooperation and Development and World Trade Organization, Trade in Value-Added database; and IMF staff estimates.

Figure 3.7

Degree of Intra-Industry Trade

(Median intra-industry trade intensity—Grubel-Lloyd Index; ranges from 0 to 1)

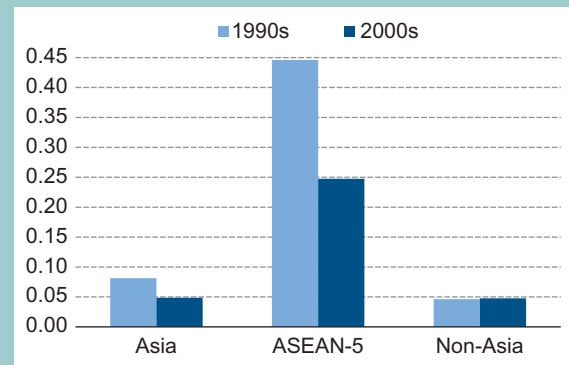


Sources: United Nations, COMTRADE database; and IMF staff estimates.

Figure 3.8

Correlation of Trade Specializations

(Median bilateral correlations of trade specialization)



Sources: United Nations, UNCTADstat database; and IMF staff estimates.

over a fourth of the trend rise in BCS in Asia, excluding crisis periods. The effect is bigger in crisis times, suggesting that trade integration offers an important channel for propagating shocks across borders. Trade is also one among several channels through which Pacific Island countries (PICs) have become gradually more connected to regional economies (Box 3.2).

- A higher degree of intra-industry trade and greater similarity in trade specializations has also led to greater co-movement. This suggests that industry-specific shocks are important and that having a similar economic structure means that economic cycles are likely to be correlated. However, while they are significant, these variables are quantitatively of little importance in explaining the trend rise in BCS in Asia because they have themselves changed little over time.
- The degree of vertical integration does not seem to have a distinct effect on synchronization over and above its impact through trade intensity. When vertical integration is measured as the extent to which one country's exports incorporate (foreign) value-added imported from another country (that is, intermediate inputs), it does not

distinctly affect synchronization. This could be because this additional effect is only relevant for specific supply shocks (such as natural disasters) and country pairs (such as the 2011 tsunami in Japan or the 2013 floods in Thailand) or because in many cases inputs are substitutable allowing supply chain disruptions to be mitigated.⁶

The Role of Financial Integration

The empirical analysis also finds that greater banking and portfolio integration between two economies reduces their output co-movement most of the time (see Box 3.1). This is consistent with standard international business cycle theory, which predicts that the more financially integrated a pair of economies is, the more capital is likely to move from one economy to the other if a shock (such as a productivity shock) raises the return on capital in the latter economy, causing cycles to further diverge. In Asia, intraregional banking integration

⁶ Using sector-level data for a sample of Asian and non-Asian economies, di Giovanni and Levchenko (2010) find greater output co-movement among industries that are more vertically integrated.

Box 3.1

Assessing the Drivers of Business Cycle Synchronization and Spillovers¹

Dynamic panels are used to assess the drivers of business cycle synchronization (BCS). The regressions aim to explain BCS between a pair of economies based on a set of explanatory variables including trade integration, trade characteristics, financial integration, and macroeconomic policy synchronization, depending on the specifications. All unobserved, time-invariant, country-pair idiosyncratic influences on BCS, such as geographical proximity or the existence of a common language, are also controlled for through country-pair fixed effects. Finally, global common shocks affecting countries across the board, which can make them co-move simultaneously, are accounted for by means of time fixed effects. Specifically, the estimated specification is written as:

$$QCORR_{ijt} = \alpha_{ij} + \alpha_t + f(TRADE_{ijt-1}, FINANCE_{ijt-1}, POLICY_{ijt-1}) + \varepsilon_{ijt},$$

where $QCORR_{ijt}$ is the instantaneous quasi-correlation between the growth rates of countries i and j at time t ; α_{ij} is a country-pair fixed effect, α_t is a time dummy, TRADE captures the four trade variables mentioned in the text, FINANCE includes financial integration variables, and POLICY includes policy synchronization variables. The trade, finance and policy variables enter the regressions lagged one period to mitigate endogeneity concerns (since higher BCS would likely induce more trade and more co-movement), and in various combinations depending on the specifications.

Key results—which are robust to estimation over a shorter period that excludes the global financial crisis—are presented in Table 3.1.1. While gross trade does not seem to matter for BCS (column 1), trade in value-added is a significant driver (column 2). This confirms the importance of focusing on value-added trade when assessing growth spillovers between countries. The intensity of intra-industry trade between economies and the correlation of their trade specializations also increase BCS (column 3), and the results are robust to instrumenting trade integration to address its potential endogeneity with respect to BCS (column 4).² Banking integration appears to reduce BCS on average (column 5), and so does portfolio integration (column 6). However, these findings are not very robust, and in fact financial integration appears to significantly *increase* BCS in crisis times (column 8), as shown by the positive interaction between this variable and a time dummy for the global financial crisis (for a similar result, see also IMF, 2013d). Likewise, the impact of trade integration is bigger in crisis times (column 8). Finally, more synchronized fiscal policies increase bilateral co-movement and, along similar lines, more divergent monetary policies and more volatile bilateral exchange rates reduce it (column 7).

Finally, in a complementary but separate exercise, the propagation of growth shocks originating from China to its trading partners through the trade channel is assessed by estimating the following equation on quarterly data:

$$g_{it} = \alpha_i + \beta t + \varphi_1(l) shock_{China,t} + \varphi_2(l) shock_{China,t} TradeLink_{iChina,t-1} + \varphi_2(l) TradeLink_{iChina,t-1} + X'_{it} \beta + \varepsilon_{ij},$$

where g_{ij} is the quarterly GDP growth rate of country i at time t , $shock_{china,t}$ is a shock to China's growth (identified simply here as the residual growth rate that remains after removing China's average growth rate over the sample period and the average growth rate of all countries during a given quarter, following Morgan, Rime and Strahan, 2004), and X_{it} includes other controls, including controls for global growth drivers like the world oil price and global financial uncertainty (measured by the VIX). $TradeLink_{iChina,t-1}$ captures bilateral trade linkages with China (for which a quarterly series is obtained by interpolating available end-year observations for bilateral *value-added* using quarterly fluctuations of bilateral *gross* trade); the most significant variable turns out to be the value-added “exported” to China for final demand purposes (as a share of the exporting country's GDP). The positive coefficients φ_2 imply that dependence on China as a source of external final demand is a propagation mechanism for growth shocks originating from China.

¹ The main authors are Romain Duval and Dulani Seneviratne.

² The instruments used include time-varying gravity variables, comprising: (1) the product of the real GDP of the two countries; (2) a World Trade Organization membership dummy; (3) the degree of trade cooperation between countries; (4) a geographical distance index; and (5) the average import tariff of the two countries.

Box 3.1 (continued)

Table 3.1.1 Business Cycle Synchronization and Trade Integration¹

Dependent Variable: Quasi-correlation of output growth rates	OLS	OLS	OLS	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A: Trade Integration				B: Financial Integration & Policy Synchronization			C: Crisis vs. Non-crisis
Trade Intensity (Gross)	0.0399 (0.0262)							
Trade Intensity		0.0488*** (0.0154)	0.0632*** (0.0152)	0.295*** (0.0709)	0.575*** (0.0898)	0.851*** (0.280)	0.466*** (0.180)	0.430*** (0.0987)
Intra-industry Trade			0.00313*** (0.00116)	0.00326*** (0.00119)				
Trade Specialization Correlation			1.261*** (0.157)	1.419*** (0.166)				
Banking Integration					-0.0343*** (0.0127)	-0.0488*** (0.0140)	-0.0543*** (0.0125)	-0.00410 (0.0124)
Portfolio Integration						-4.897* (2.620)		
FDI Integration						-1.338 (0.952)		
Fiscal Policy Coordination							0.0587*** (0.0127)	
Monetary Policy Divergence							-0.00339** (0.00149)	
Exchange Rate Volatility							-0.136*** (0.0168)	
Trade Intensity * GFC dummy								0.753*** (0.170)
Banking Integration * GFC dummy								0.383*** (0.0633)
R-squared	0.58	0.58	0.58	0.58	0.65	0.77	0.66	0.68
Observations	18224	18619	18619	18614	12159	2860	9095	12115

Source: IMF staff estimates.

¹ Standard errors, clustered at country-pair level, are given in parentheses. GFC = global financial crisis. * p < 0.10, ** p < 0.05, *** p < 0.01.

Box 3.2

Pacific Island Countries: Regional Integration and Growth Spillovers¹

Integration of the Pacific Island countries (PICs) with Australia, New Zealand, and emerging Asia has strengthened over the last two decades, increasing the PICs' exposure to regional business cycles. Indeed, spillovers from regional economies are more important for PICs than those from advanced economies outside the Asia-Pacific region, and co-movement of output between the PICs and regional economies have strengthened (Figure 3.2.1). This regional integration has greatly benefited the PICs, but poses new challenges.

The main channels of spillovers are different across the PICs given their heterogeneity. They include, to varying degrees, tourism, remittances, FDI, aid, and financial linkages. Traditional trade partners (Australia and New Zealand) account for 30 percent of PICs' total trade, while trade with emerging Asia has accelerated in recent years to about the same share. Tourism has gradually become important for several PICs; it now accounts for between one-fifth and one-half of GDP in Fiji, Palau, Samoa, and Vanuatu. Remittances are also an important channel of spillover in Kiribati, Samoa, Tonga, and Tuvalu. Australia is by far the largest foreign investor in the region, but investments from emerging Asia have also increased in recent years. And aid flows average 20 percent of PICs' GDP, with Australia among the largest aid providers. PICs' financial sector is dominated by foreign banks, particularly Australian banks. Several PICs—including Kiribati, Tuvalu, and the Compact countries (Marshall Islands, Micronesia, and Palau)—have large trust funds with assets invested offshore, including in

¹ The main author is Yiqun Wu.

Box 3.2 (continued)

regional financial markets. Although remittances and aid have provided some countercyclical support in the past, they have been also subject to the cyclical position of the originating countries.

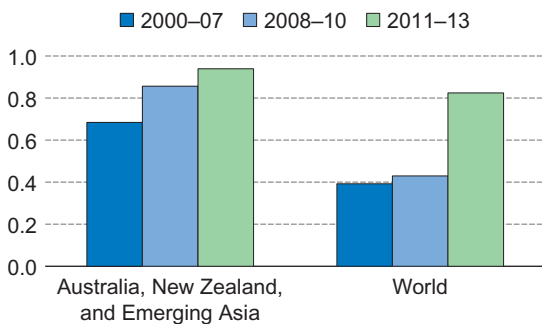
Integration between the PICs and emerging Asia—especially China—has grown rapidly, although from a low base (Figure 3.2.2). PICs’ exports to emerging Asia have increased sevenfold since the early 1990s, while their imports from emerging Asia have expanded more than fourteen times—with China becoming, for example, Solomon Islands’ largest trading partner. Tourist arrivals and FDI from China have also surged recently in several PICs, including Fiji and Vanuatu. And China’s role will further strengthen with the recent commitment to disburse US\$2 billion to the Pacific islands in concessional loans (one of them devoted to infrastructure).

Staff estimates suggest important growth spillovers from regional economies to PICs.² Australia is by far the main source of direct and indirect spillovers, except for the Compact countries, for which the United States has the largest impact, likely reflecting U.S. aid. Spillovers from New Zealand, directly or through Australia, are also large for several PICs. The impact of shocks from emerging Asia on PICs’ growth has increased over the last decade. In the short run, the elasticity of output with respect to regional partners is generally greater than one.

Continued integration of PICs with regional economies would help boost potential growth in PICs. Tapping emerging Asia’s growth, including—but not limited to—tourism and agriculture will be key and could be greatly facilitated by enhanced regional cooperation and increased connectivity.³

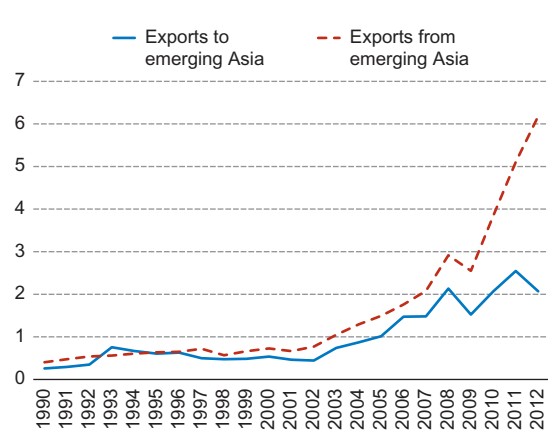
With increased integration, effects of external shocks on PICs will be further amplified and these economies will need more policy space. PICs need to strengthen their resilience to adverse shocks by quickly rebuilding policy buffers to avoid procyclical monetary and fiscal responses.⁴ While rebuilding policy buffers, additional assistance from development partners will continue to be critical for supporting long-run growth prospects. Implementing structural reforms and creating a more investor-friendly business environment would also help attract FDI. In addition, public investment in infrastructure, health, and education will attract private investment, including in the tourism sector.

Figure 3.2.1
Pacific Island Countries: Integration with World and Regional Economies¹
(GDP growth rate correlations)



Sources: IMF, World Economic Outlook database; and IMF staff estimates.
¹Figures report correlation of growth between regional economies and Pacific Island countries (PICs), and between the world and PICs, respectively.

Figure 3.2.2
Pacific Island Countries: Trade with Emerging Asia
(In billions of U.S. dollars)



Sources: IMF, Direction of Trade Statistics database; and IMF staff calculations.

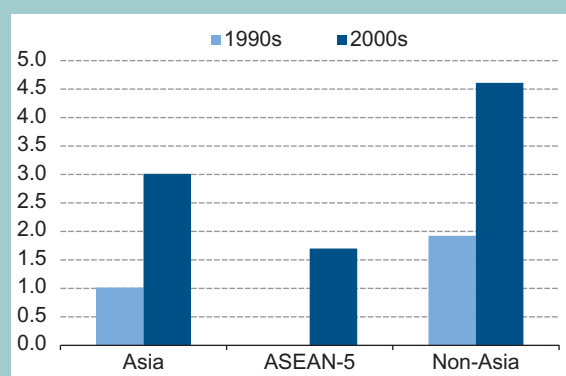
² Sheridan, Tumbarello, and Wu (2012) developed a vector error correction analysis for each PIC to gauge the impact of global and regional spillovers.

³ Recent gravity regression results underscore the importance of establishing tourism links with large and fast-growing source countries (Chen and others, forthcoming).

⁴ See Tumbarello and others (2013) for an analysis of fiscal procyclicality in the Pacific Islands.

Figure 3.9

Median Bilateral Banking Integration¹ (In percent of total external position with the world)



Sources: Bank for International Settlements; and IMF staff estimates.

¹ Calculated as period medians of the median country pairs in each group (for a definition of the variable, see Appendix II in Duval and others, 2014). Data for the 1990s are unavailable for ASEAN-5 as a whole.

is relatively low (Figure 3.9), so banking integration is likely to have had only a limited effect on the co-movement of cycles in normal times.

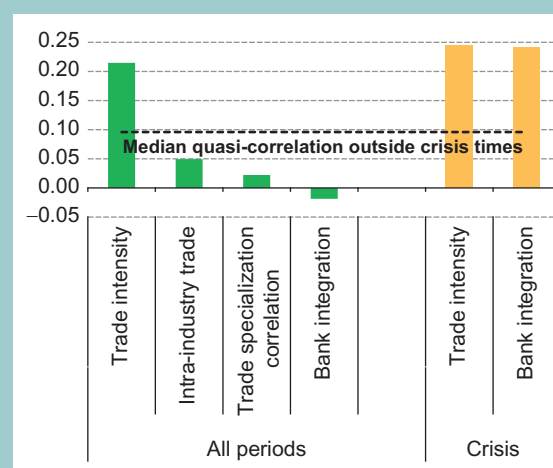
However, during periods of crisis, banking integration does appear to increase the synchronization of cycles across countries. In such cases, global banks pull funds away from all countries, amplifying output co-movement for those that are more financially integrated and reliant on foreign capital flows (Kalemli-Ozcan, Papaioannou, and Perri, 2013). As Figure 3.10 shows, the estimated impact on BCS of greater banking integration was large during the global financial crisis, and similar to the effect of greater trade integration. Nevertheless, for Asia, this effect is still somewhat smaller than was witnessed in other regions.

The Role of Synchronized Macroeconomic Policies

Apart from trade and financial integration, macroeconomic policy matters for BCS, including in Asia. Specifically, if two countries synchronize their policies—whether on purpose or not—by implementing expansionary or contractionary

Figure 3.10

Illustrative Impact of Explanatory Variables on Co-movement: Crisis Versus Non-crisis Times^{1,2}



Source: IMF staff estimates.

¹ Based on the estimated impact on business cycle synchronization of moving from the 25th percentile to the 75th percentile of the cross-country distribution of the variable considered.

² Given model uncertainty, the coefficients used to compute the contribution of each explanatory variable are the median values across the models in columns (1) and (3) in Tables 3 and 4 of Duval and others (2014).

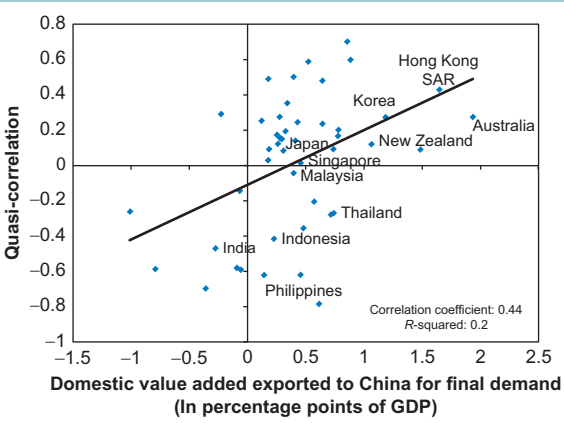
policies at the same time, bilateral output co-movement would be expected to rise, all else equal. Accordingly, the empirical analysis assesses the impact on BCS of simple indicators of synchronization of monetary and fiscal policy *shocks*—that is, abstracting from the systematic response of macroeconomic policies to cyclical developments—as well as the effect of exchange rate policies. The analysis finds that all three raise BCS. *On average*, Asia does not stand out relative to non-Asia as regards the synchronization of macroeconomic policies: in Asia, fiscal policy synchronization is low, even though it rose in 2009 with the widespread stimulus implemented in the aftermath of the global financial crisis; monetary policies are not more synchronized and bilateral exchange rates are no less volatile than elsewhere.

The Role of Spillovers from China

A further source of output co-movement in Asia is the growing importance for other economies of China's domestic demand. In its (declining) role as

Figure 3.11

Change in Output Co-movement with China and Value-Added Exported to China for Final Demand
(Change from early 2000s to latest)

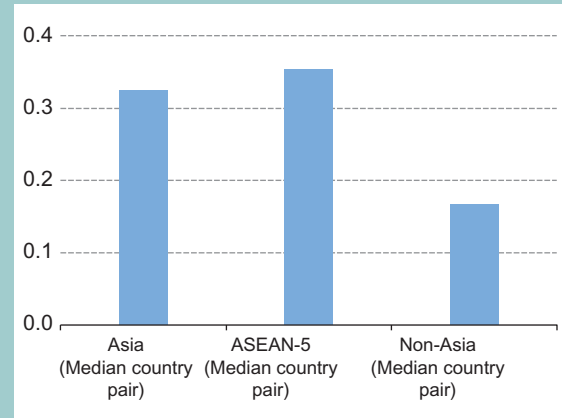


Sources: IMF, World Economic Outlook database; Organization for Economic Cooperation and Development and World Trade Organization, Trade in Value-Added database; and IMF staff estimates.

Figure 3.12

Estimated Impact of 1 Percent Growth Surprise in China on Partner Country Growth¹

(Median GDP growth impact after one year, in percentage points)



Source: IMF staff estimates.

¹ Estimates based on column (3) of Table 5 in Duval and others (2014).

the “assembly hub” of Asia, China’s economy does not *directly* affect its trade partners much since it primarily propagates shocks coming from advanced economies primarily through the regional supply chain. But China is now a growing source of final demand as well, and with a large share of that final demand being met by production in other parts of Asia, China has a bigger direct impact than in the past. And indeed, economies whose trade dependence on China’s final demand have increased over the past decade have generally experienced a greater increase in their cyclical co-movement with China during the period (Figure 3.11).

Further empirical analysis (see Box 3.1 for details) finds that economies that depend more on China for their export of final goods and services are more affected by growth shocks originating from China (Korea, Malaysia, Thailand, Taiwan Province of China, as opposed to India or Japan whose value-added exported to China makes only a small share of their total GDP). Based on these results, Figure 3.12 suggests that a one percentage point decline in China’s growth may lower GDP growth in the median Asian economy by about 0.3 percentage point after a year, compared with 0.15

in the median non-Asian economy. These numbers are fairly close to those obtained in one of the two approaches followed by Ahuja and Nabar (2012) and in IMF (2012a), but they are larger than the other set of estimates.

Implications for the Future

The analysis in this chapter implies that BCS among Asian economies should continue to rise insofar as economic integration increases further.

On the trade front, further integration hinges on trade liberalization in sensitive areas, including services. This will require significant policy commitment, including from ASEAN policymakers as part of the ASEAN economic community. Living standards would get a boost, but so would spillovers within the region. Increasing the share of value-added from trade would drive greater economic co-movement in the coming years, and it could be a propagation mechanism that transmits shocks during crises. A mitigating factor is the potential increase in trade specialization (that is, the decline in similarity of export structure) across the

region that further trade liberalization might also foster.⁷

Growth shocks emanating from China are also likely to increasingly affect shock propagation and synchronization in the region as the (already strong) role of China as a source of final demand grows in importance. By contrast, China's role as a conduit for external shocks may diminish insofar as its role as the region's "assembly hub" continues to decline.

Greater financial integration is likely to have a more ambiguous effect going forward. In crisis times, financial linkages will likely strengthen spillovers and the synchronization of cycles. However, in normal times, the likely effect of greater cross-border financial flows is more ambiguous, according to both theory and empirical evidence.

The main challenge for policymakers will be to minimize these side effects so as to reap the economic benefits that greater integration can have for productivity, regional savings allocation, resilience to shocks from outside the region, and, ultimately, living standards. Domestic policies can help, for example, by maintaining the macroeconomic policy space needed to respond to shocks, and the degree of exchange rate, wage, and price flexibility needed to adjust to them. As trade and financial integration rise, so will BCS. Provided

adequate monetary and fiscal space is built and maintained to allow counter-cyclical policies to be run, macroeconomic policies are likely to become more aligned as a result.

A case can also be made for increasing international policy cooperation, for instance on financial oversight and crisis management. In particular, stronger co-movement among the most integrated economies means they would tend to face synchronized downturns and—depending on the nature of the shocks they would face—simultaneous external financing pressures. Self-insurance through further reserve accumulation can help individual countries buffer such shocks, but this approach is costly and does not provide risk sharing between countries. This points to a potential stabilizing role for broader financial safety nets. In the case of ASEAN economies, these include the Chiang Mai Initiative Multilateralisation, of which China, Japan, and Korea are also members, as well as bilateral swap lines between regional central banks. These regional initiatives can usefully complement bilateral swap lines with nonregional central banks and the global financial safety net provided by the IMF, which will be most useful in the event of shocks affecting or spilling over to the region as a whole.

⁷ Greater trade specialization could reduce output *synchronization* as industry-specific shocks would have more heterogeneous effects across different economies, but it might still increase output *volatility* by making economies less diversified.

4. Macroprudential Policy and Capital Flow Measures in Asia: Use and Effectiveness

Introduction and Main Findings

Prolonged periods of substantial capital inflows, booming real estate markets, and rapid credit growth have raised financial stability challenges across many parts of Asia since the mid-2000s. In some cases, macroeconomic policies alone have struggled to address these risks to financial stability. The global financial crisis vividly demonstrated the need for policymakers to have an overarching framework to both monitor and ensure systemic financial stability. Against this backdrop, policymakers in Asia and other regions have increasingly used a range of policy tools that explicitly focus on systemwide risks—macroprudential policies. In addition, some countries have also utilized capital flow management measures to counter large capital inflows.¹

Drawing on a newly constructed database, this chapter reviews the use of key macroprudential policies (MPPs) and capital flow measures (CFMs) in 13 Asian economies and 33 economies in other regions since 2000. It then provides empirical evidence about their effects on relevant macro-financial variables, using cross-country and bank-level panel econometric analysis as well as event studies. Finally, the chapter discusses whether, and under which conditions, such measures should be recalibrated in the event that capital flows, credit growth, and asset price dynamics either slow down or reverse.

The main author is Edda Zoli. The chapter is based on Zhang and Zoli (2014). Sidra Rehman provided research assistance.

¹ As discussed in IMF (2012b, 2013a), macroprudential measures are designed to limit systemic vulnerabilities, while capital flow measures are specifically designed to limit capital flows by nonresidents. There can be overlap between the two, as policies to contain systemic risks from capital flows (for example, regulation to discourage foreign-currency borrowing) can be considered both macroprudential and capital flow measures.

A number of conclusions specific to Asia emerge from the analysis:

- Macroprudential instruments have been used more extensively in Asia than in other regions. This has been particularly true of measures related to the housing market. By contrast, Asian economies, which have comparatively less open financial accounts, have taken a smaller number of measures than others to discourage transactions in foreign currency and residency-based CFMs.
- MPPs and CFMs have sometimes been used as a counter-cyclical tool. Usually they have been used to dampen the macroeconomic and financial stability risks associated with large capital inflows, but they were also used counter-cyclically in 2009 with policies loosened as the global financial crisis unfolded.
- Housing-related macroprudential instruments have had an impact—particularly caps on loan-to-value ratios and the taxation of housing transactions. In particular, such instruments have helped lower credit growth, slow house price inflation, and dampen bank leverage in Asia (although the latter effect is quite small).
- There appears to be little evidence that non-housing related macroprudential policies and CFMs have had a systematic and measurable effect on lending, leverage, or portfolio inflows in Asia. However, these policies may have had an impact on the distribution of risks in the financial system and the resilience of the system in the face of systemic pressures. For example, foreign-exchange-related measures can contain currency and liquidity mismatches, without having a strong impact on loan growth or asset prices.

While some MPPs appear to have helped mitigate the buildup of financial risks, experience still needs to be gained on whether and how they could be recalibrated in the event of asset price declines,

slowing credit growth, and/or capital flow reversals. While fine-tuning these policies seems out of reach, certain measures might be eased to avoid excessive deleveraging in the face of sharp, unexpected swings in credit or asset prices.

More specifically, in the event of a downturn in the financial cycle:

- Accumulated capital buffers could be used to avoid a procyclical contraction in loan supply. In this respect, the adoption of countercyclical capital requirements and dynamic provisioning could be helpful to foster the buildup of buffers in the upward phase of the cycle in the future.
- Reserve requirements could be lowered to release additional liquidity.

- The appropriateness of easing housing-related tools and measures to discourage foreign currency transactions is more controversial. However, there may be a case for relaxing these instruments especially where regulation is very tight, after assessing the soundness of banks' and households' balance sheets.

Asia's Use of Macroprudential and Capital Flow Measures

Since 2000, among the 46 economies in our sample (13 from Asia), a variety of instruments has been used to mitigate systemic risks in the financial sector and influence capital flows (Box 4.1). Asia stands out among regions as a heavy user of

Box 4.1

The Macroprudential Toolkit¹

Country authorities in Asia and other regions have used a variety of policy instruments to mitigate systemic risks and influence capital flows. The toolkit has typically included the following:

- *Housing-related measures* to address risks in the housing market which include loan-to-value (LTV) and debt-to-income (DTI) ratio caps, higher risk weights requirements on mortgage loans in the calculation of capital-asset ratios, larger loan loss provisions requirements on mortgage loans, and housing- or land-related taxation (for example, stamp duties).
- *Consumer loan measures*, such as debt service limits on credit cards and personal loans.
- *Credit limits*, such as explicit ceilings on banks' credit growth or their loan-to-deposit ratio.
- *Capital measures*, including countercyclical capital requirements and restrictions on profit distribution.
- *Dynamic provisioning*, which requires building a cushion of reserve provisions during the upswing phase of the business cycle.
- *Reserve requirements on deposits in local currency*.
- *Other liquidity tools*, such as the minimum core funding ratio requiring banks to hold sufficient retail and longer-dated wholesale funding, or other liquidity ratio requirements.
- *Measures to discourage transactions in foreign currency*, such as broad limits on foreign currency borrowing, specific reserve requirements on foreign currency deposits, or additional provisioning requirements on foreign exchange lending.
- *Residency-based CFMs*, which affect cross-border financial activity discriminating on the basis of residency—often referred to as capital controls (for example, unremunerated reserve requirements on nonresident deposits, withholding tax, or restrictions on nonresident holdings of domestic assets).

¹ The main author is Edda Zoli.

housing-related measures and as a limited user of CFMs (Figure 4.1)²:

- In Asia, caps on loan-to-value (LTV) ratios are the most actively used tool, as several economies have faced overheating housing markets over the past decade (Figure 4.1, panel 1). A tightening of LTV ratios has occurred more than twice as often in Asia as it has in Central and Eastern Europe/ Commonwealth of Independent States (CEE/ CIS) and advanced Europe and North America.
- Changes in reserve requirements on local currency deposits have been common in Asia, probably reflecting their role as a monetary policy tool (as in China and India) (Figure 4.1, panel 2).³
- Other liquidity tools, credit limits, dynamic provisioning, restrictions on consumer loans, and capital measures have all been rather rarely utilized in Asia (Figure 4.1, panels 3 and 4).
- Measures to discourage transactions in foreign currency have been used less frequently in Asia, especially when compared with the CEE and Latin America, where foreign-exchange-denominated or indexed loans have been more widespread (Vandenbussche, Vogel, and Detragiache, 2012). In Asia, however, they were deployed for example in Korea and the Philippines.

²To numerically code changes in macroprudential policies and capital flow measures, a simple binary variable is created that takes value 1 for tightening actions and -1 for loosening ones. This approach treats all policy actions identically to avoid an arbitrary assessment on the strength of each policy measure. A drawback is that differences in the magnitude of the individual actions taken are ignored. Overall, 353 episodes of policy tightening and 125 episodes of loosening are identified over the period across different regions. Of these, 139 tightening and 41 loosening policy actions took place in Asia.

³Reserve requirements are categorized as macroprudential policies in a number of studies (for example, IMF, 2013a; Tovar, Garcia-Escribano, and Martin, 2012).

- Residency-based capital flow management measures have been less actively employed in Asia than in some other regions.

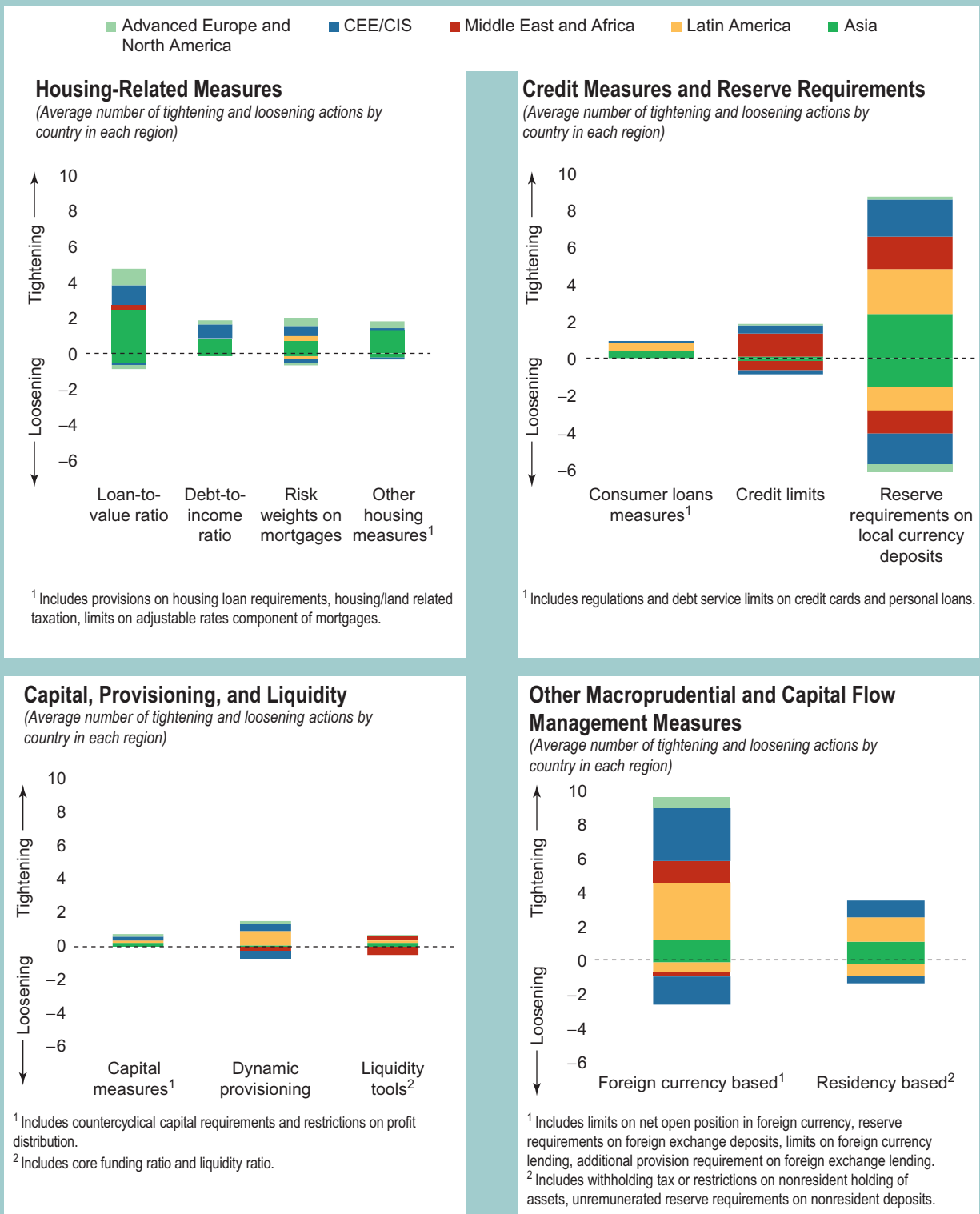
Two aggregate indices were constructed—one for macroprudential policies and one for capital flow measures—by cumulating all the individual policy actions taken in each area since 2000⁴ (Figures 4.2 and 4.3). Based on that index, there appears to have been a structural tightening of the MPP stance over time that is particularly pronounced in Asia. MPPs were most heavily used in the precrisis boom period during 2006–07, and then again after the crisis as capital flowed back into the region and asset prices inflated (Figure 4.2). The economies that experienced large capital inflows or housing and credit booms (Hong Kong SAR, Korea, Singapore, and Thailand) were the heaviest users. There has been a widespread tightening of CFMs too, including in Asia, although relatively closed financial accounts have in some cases limited the need for active use of such measures (Figure 4.3).

There is significant cross-country heterogeneity within Asia in the tools that have been used. New Zealand introduced a minimum requirement

⁴The MPP index aggregates housing-related and non-housing-related domestic prudential measures, while the CFM index summarizes policy actions aimed at discouraging transactions in foreign currency as well as residency-based capital flow management measures. This categorization involves some degree of judgment, given the overlap between certain macroprudential and capital flow management measures. Nevertheless, it tries to reflect as closely as possible the broad definitions of macroprudential and capital flow measures discussed in footnote 1. One caveat is that the impact of pre-2000 actions on the overall stance is not taken into account, as the sample starts in 2000. Also, since the action indices treat all tightening or loosening episodes alike, regardless of their magnitude, the cumulative index over time is, admittedly, an imperfect indicator of macroprudential policy stance, which to some extent may bias cross-country comparisons. For example, Asian policymakers tend to make more frequent but smaller policy changes than their Latin American counterparts. Hence, the cumulative MPP and CFM indices over time might overestimate the difference in stance between Asia and Latin America.

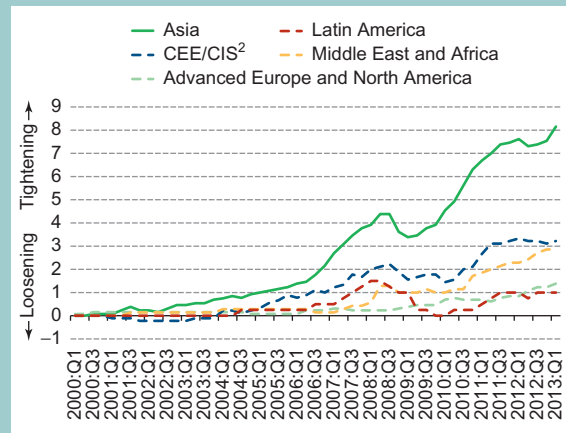
Figure 4.1

Use of Instruments Across Regions



Source: IMF staff estimates.

Figure 4.2

Macroprudential Policies: Cumulative Actions by Region(Average per country in each region; 2000:Q1–2013:Q1)¹

Source: IMF staff calculations.

¹ Index summing up housing-related measures, credit measures, reserve requirements, dynamic provisioning, and core funding ratio. Simple average across countries within country groups.² Central and Eastern Europe and Commonwealth of Independent States.

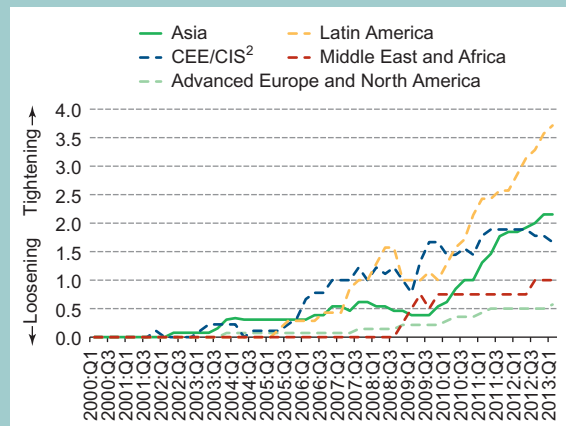
restrictions. Hong Kong SAR and Singapore have predominantly relied on housing-related tools. Korea, in addition to housing measures, also imposed a levy on bank non-deposit foreign currency liabilities and a ceiling on bank foreign-exchange derivative positions (Box 4.2). China and India have been heavy users of reserve requirements (as a monetary policy tool). Among ASEAN economies, domestic prudential tools and reserve requirements on foreign-exchange deposits have been used. Capital flow measures have been used in Indonesia and Thailand, including minimum holding periods for central bank bills in the former, and withholding taxes for nonresident investors in the latter.

The Impact of Macroprudential and Capital Flow Management Policies in Asia

To describe the broad effects associated with changes in MPPs and CFMs, an event study is used. It examines 110 episodes of MPP and 29 episodes of CFM tightening in Asia. The study finds the following:

- The tightening of MPPs has been followed (with a one-quarter lag) by a decline in credit growth. By contrast, CFM tightening measures were not followed by a change in the pace of credit growth (Figure 4.4, panel 1).
- MPP tightening has been followed by a decline in real housing price growth (Figure 4.4, panel 2), particularly for those policies specifically related to housing (where house price growth has fallen by around 5 percentage points after five quarters). CFM tightening measures have been followed by a small decline in housing inflation.
- A tightening of CFMs was followed by lower inflows of portfolio equity, but had little impact on debt inflows (Figure 4.4, panels 3 and 4). MPP tightening was not associated with any subsequent reduction in either equity or debt security inflows.

Figure 4.3

Capital Flow Management Measures: Cumulative Actions(Average per country in each region; 2000–2013:Q1)¹

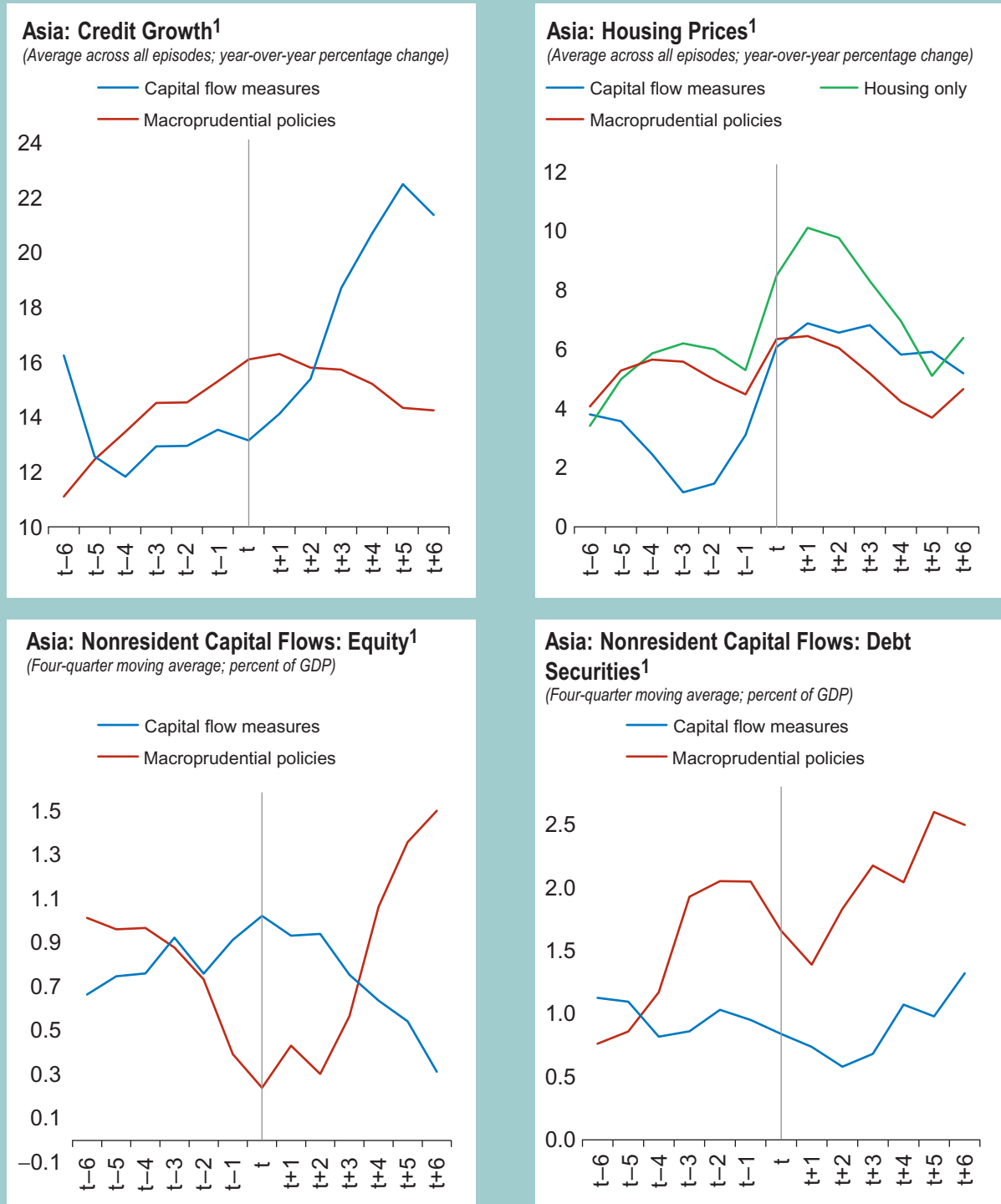
Source: IMF staff calculations.

¹ Index summing up foreign currency and residency-based measures. Average across countries within country groups.² Central and Eastern Europe and Commonwealth of Independent States.

on core funding and, recently, has revised its macroprudential framework to introduce countercyclical capital buffers, overlays to sectoral capital requirements, and LTV

Figure 4.4

Event Study



Sources: CEIC Data Co Ltd.; Haver Analytics; IMF, *World Economic Outlook* database; and IMF staff estimates.

¹ Relevant tightening policies introduced over the period 2000:Q1–2013:Q1. Excludes overlapping episodes within four quarters.

Box 4.2

Foreign-Exchange-Related Macprudential Policy in Korea¹

Korea has traditionally been highly vulnerable to capital flow reversal mainly due to short-term borrowing in the banking sector creating maturity mismatches and foreign exchange liquidity problems. The aggregate short-term external debt of Korean banks reached US\$160 billion in 2008:Q3²—a sharp increase from the US\$60 billion level in 2006:Q1—but in the four months following the Lehman Brothers bankruptcy, nearly US\$70 billion left the country. The volatility of capital flows has been higher in Korea than in other economies during the global financial crisis (Ree, Yoon, and Park, 2012).

To mitigate vulnerabilities from short-term foreign borrowing, Korea adopted a series of macroprudential policies beginning in June 2010, including ceilings on banks' foreign exchange derivatives position and a macroprudential stability levy on noncore foreign exchange liabilities. The former measure intends to reduce maturity and currency mismatches. The ceiling is designed to be adjusted depending on the credit cycle. The stability levy is a tax on banks' noncore foreign currency liabilities. It is also adjustable and can be used as a countercyclical tool when capital flow surges seriously threaten financial stability, with the maximum rate of 50 basis points. Its proceeds flow into the Foreign Exchange Stabilization Fund, which is separate from the government budget and can be used as a buffer in the event of financial crisis. Other important measures include limits on foreign currency bank loans and prudential regulations to improve the foreign exchange risk management of financial institutions.

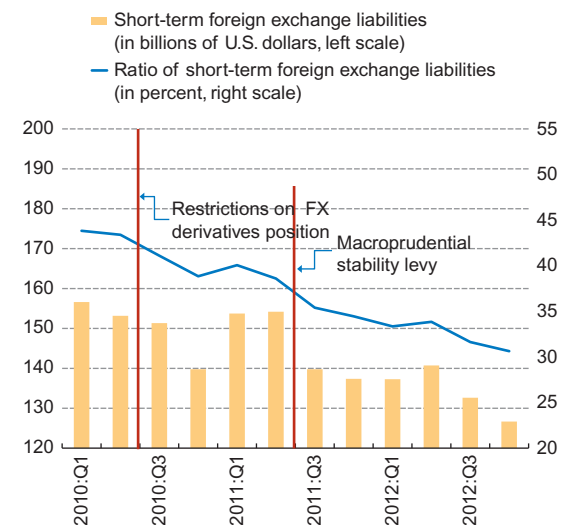
While Korea's experience in the use of these tools is limited, preliminary evidence suggests that these tools have been effective in limiting overexposure to funding shocks and putting a brake on procyclical lending. Indeed, banks' short-term net external debt, including that of foreign banks' branches, declined steadily from US\$153 billion in June 2010 to US\$126 billion in December 2012, and the short-term external debt ratio fell continuously, reaching 30.6 percent by the end of 2012, after peaking at 51.9 percent in the third quarter of 2008 (Figure 4.2.1). The sensitivity of capital inflows to global conditions fell after the imposition of the levy, relative to a comparison group of countries (Bruno and Shin, 2013). Rollover risks for domestic banks also diminished, since their external debt maturities lengthened. The sensitivity of exchange rate volatility to changes in the VIX declined, too, reflecting lower foreign exchange liquidity mismatches (Ree, Yoon, and Park, 2012).

¹ The main author is Yitae Kim.

² This included debt owed by the branches of foreign banks operating in Korea.

Figure 4.2.1

Korea: Impact of Macroprudential Policy on Bank Foreign Exchange Liabilities



Sources: Bank of Korea; and IMF staff calculations.

To isolate the impact of MPP and CFM measures on relevant macro-financial variables, while controlling for other factors that may have also affected these variables, a multivariate model is estimated in a panel of 13 Asian economies over the period 2000:Q1–2013:Q1.⁵ For comparison, the model is also separately estimated on a larger panel of 46 economies, including 33 additional countries from other regions. The main control variables comprise GDP growth, as a proxy for demand pressure, domestic interest rates, and the VIX, as a proxy for global factors.⁶ The estimates point to the following:

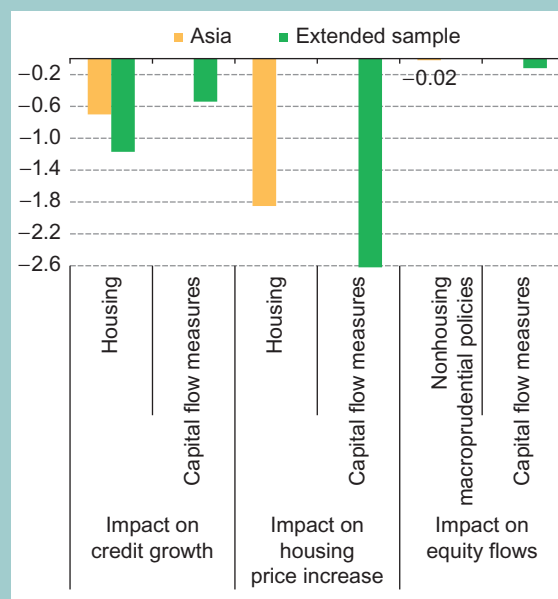
- Housing-related measures have mitigated private credit growth in Asia, but this is not true for other MPP instruments and CFMs. On average, a tightening in housing-related tools is estimated to have reduced credit growth in Asia by 0.7 percentage point after one quarter and by 1.5 percentage points after a year—a significant but not very large impact, considering that sample credit growth averaged around 10 percent (Figure 4.5). A complementary analysis that looks at 74 banks in 11 Asian economies verifies that housing-related tools have had a significant impact on bank loan growth and, to a lesser extent, on banks’ leverage (Figure 4.6). The significant impact of housing-related MPPs is also visible in the broader sample of countries.

⁵ Other cross-regional empirical analyses on macroprudential policies and capital flow measures include Lim and others (2011), Qureshi and others (2011), Kuttner and Shim (2012), Arregui and others (2013), Dell’Ariccia and others (2012), IMF (2013a, b). Country-focused empirical studies on Asia include Wang and Sun (2013) on China; Hong Kong Monetary Authority (2011) and Ahuja and Nabar (2011) on Hong Kong SAR; Igan and Kang (2011), Bruno and Shin (2013), and Kim (2013) on Korea.

⁶ The model is specified as fixed-effect dynamic panel regressions, and estimated with the Arellano-Bond generalized method of moment’s procedure. See Zhang and Zoli (2014) for details.

Figure 4.5

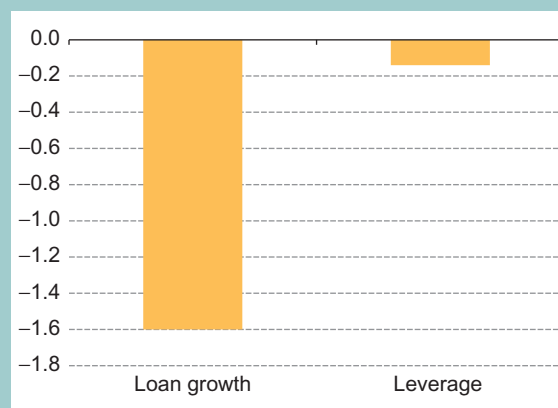
One-Quarter Impact of Macroprudential and Capital Flow Measures on Macro-Financial Variables
(In percent)



Source: IMF staff estimates.

Figure 4.6

Impact of Housing Measures on Bank Loan and Leverage in Asia
(In percent)



Source: IMF staff estimates.

- Housing-related instruments have also dampened property price expansion in Asia. A tightening lowered house price growth by about 2 percentage points after one-quarter—a sizable impact given that average housing

price growth was about 4 percent. On the other hand, CFMs have had little effect. This contrasts with results from the full sample where CFMs are found to have affected housing prices—a result driven entirely, however, by measures to discourage foreign exchange transactions, including household loans to finance housing purchases, in the CEE/CIS.

- LTV ratios and housing taxes have been particularly effective in Asia in lowering housing prices and credit growth.
- CFM policies have discouraged portfolio equity inflows and affected the pace of credit expansion in the full country sample, but have not had a significant effect in Asia, possibly because their use was less frequent there than in other regions. Neither CFM nor MPP measures are found to have had an impact on debt inflows.

It is important to note that macroprudential tools seek to contain the buildup of financial imbalances, including in specific sectors, and to enhance resilience against financial cycle downturns, but they are not intended to play a broader role in economic management. Therefore, their effectiveness in mitigating systemic vulnerability cannot be assessed only by their impact on the macro-financial variables analyzed in this chapter. For example, foreign-exchange-related measures can contain currency and liquidity mismatches within the banking system without having a strong impact on loan growth or asset prices.

On the other hand, it has to be recognized that macroprudential policy also entails costs, mainly arising from higher intermediation charges and their effect on long-run output (Arregui and others, 2013). Furthermore, it is important to stress that macroprudential policy cannot achieve its goal of containing systemic vulnerabilities by itself. On the contrary, it needs to be supported by strong microprudential policy, including effective supervision and enforcement, and complemented by appropriate monetary and fiscal policies (IMF, 2013a).

The Use of Macroprudential Policies As the Tide Flows Out⁷

Some MPPs do appear to have helped mitigate the buildup of financial risks, but can these policies still be useful in the event of asset price declines, slowing credit growth, and/or capital flow reversals?

MPPs were typically eased in emerging Asia during the global financial crisis with reserve requirements lowered in China, India, and Malaysia and the LTV cap increased in Thailand. Reflecting this, the average MPP index declined in 2008–09. Among advanced economies, MPPs were on average kept on hold, as reflected in a flat MPP index around the crisis (Figure 4.7). As such, any empirical assessment of the effectiveness of relaxing MPPs is constrained by the small number of past easing episodes. Still, relative to 2009, macroprudential instruments are now much tighter and there may be scope for some countercyclical loosening on policies if the macro-financial cycle starts to turn.⁸

Deciding on whether, under which conditions, and over what time frame to roll back MPPs involves some judgment by the regulators, based on indicators of systemic risk. The main challenge is to strike a balance between preserving future resilience to shocks and averting a severe downturn of the financial cycle. Generally speaking, policymakers could consider loosening MPPs to prevent excessive deleveraging in the downward phase of the financial cycle, particularly if that is associated with a weak phase of the economic cycle (Committee on the

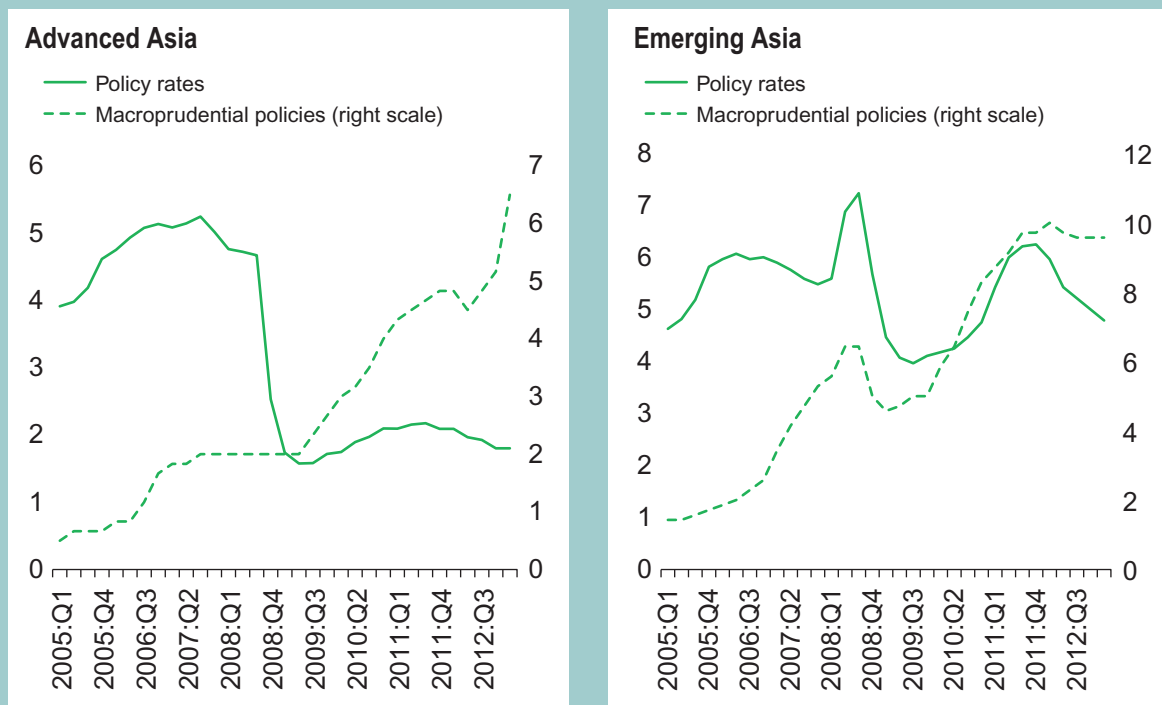
⁷ This section focuses mostly on MPPs instead of CFMs, given that the former were used more intensively in Asia. For a broader discussion on CFMs recalibration amid capital flow reversal, see IMF (2012b).

⁸ On theoretical grounds, the use of MPPs as countercyclical tools can be justified in a context where financial frictions create procyclicality in the financial system, exacerbating business cycle fluctuations (for example, see Angeloni and Faia, 2013; N'Diaye, 2009; and Box 4.3).

Figure 4.7

Use of Monetary Policies Versus Macroprudential Measures

(Policy rates, simple average in percent; index, cumulative)



Source: IMF staff estimates.

Note: Advanced Asian economies include Australia, Hong Kong SAR, Korea, New Zealand, Singapore, and Taiwan Province of China. Emerging Asia includes China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

Global Financial System, 2012).⁹ Research has shown that credit and asset price cycles typically accentuate each other, and recessions associated with credit crunches or house price busts are deeper and longer than others (Claessens, Kose, and Terrones, 2011a and 2011b). Therefore, a

⁹ When the financial and economic cycles are not in sync, the optimal course of policy may be more controversial, and different individual MPP and CFM instruments may need to be recalibrated in different directions. For example, in Indonesia after May 2013, amid capital flows reversal and falling equity prices, but continued demand pressure and high inflation, LTV limits on second and third properties, LTV-linked reserve requirements, and secondary reserve requirements were tightened, while the minimum holding period for central bank bills was shortened in September 2013 to increase their liquidity and boost the efficacy of monetary operations.

timely easing of MPPs may reduce the likelihood of, and damage from, such credit or housing price collapses. On the other hand, easing regulation as the economy enters a downturn could lower resilience and possibly jeopardize financial stability going forward. The rolling back of policies will ultimately depend on (1) how acute is the downswing of the financial cycle; and (2) the specific MPPs measures in place.

If macroeconomic conditions weaken and banking sector losses grow, but there is no confidence crisis, then accumulated **capital buffers** can be released to avoid banks excessively deleveraging for regulatory reasons and to dampen any procyclical contraction in loan supply (Committee on the Global Financial System, 2012). If, however, solvency and liquidity of the banking system are questioned, then bank capital and liquidity

requirements may instead need to be *raised procyclically* to restore market confidence.¹⁰

These considerations provide support for the adoption of countercyclical capital requirements (CCRs) and dynamic provisioning, which are specifically designed to build buffers during the upswing phase of the cycle that can be used during a downswing (Box 4.3). Even though there is little empirical evidence about their effectiveness and they are no silver bullet,¹¹ these instruments seem helpful particularly in increasing the predictability of regulatory changes through the cycle. At present, they barely exist in Asia,¹² although with the implementation of Basel III the adoption of a countercyclical capital buffer is likely to become more widespread.

The countercyclical use of **reserve requirements** is relatively uncontroversial. Indeed, reserve requirements have been used actively in emerging markets, possibly also because they may be perceived as being able to dampen credit cycles while having less of an impact on capital flows than changes in policy interest rates (Federico, Vegh, and Vuletin, 2012).

On the other hand, the case for easing **housing-related tools**—which have been used most often in Asia and seem the most effective—in the downward phase of the cycle is less clear cut. Lags in the impact of these tools and uncertainty about their quantitative effects raise doubts about the feasibility and appropriateness of fine-tuning them. Furthermore, changing the regulations periodically could generate uncertainty, and possibly reduce

their future effectiveness by creating expectations of subsequent reversals. In this regard, a rule-based approach in conducting macroprudential policy—although difficult to design—would be more predictable, transparent, easily communicated, and could possibly serve as a commitment device. Easing housing-related tools, which operate by affecting mostly credit demand, may also have a lower impact in a downturn than tightening does in an upswing.¹³ Furthermore, loosening LTV and debt-to-income (DTI) ratio caps as the housing market deteriorates could attract less creditworthy buyers into the market just as the cycle turns, thus harming household balance sheets and potentially weakening financial stability further down the road, especially if house prices are to fall significantly. In this respect, easing housing tax measures is likely to have less of an adverse impact on balance sheets.

In spite of the above arguments, there might be a case for relaxing some instruments in those economies where regulation is particularly tight. Looking specifically at Asia, macroprudential housing regulation is currently very stringent in Hong Kong SAR and Singapore; this suggests that some reversal may become warranted should house prices fall steeply below their estimated equilibrium level (Box 4.4). Monitoring market developments will be critical in deciding whether and when measures should be recalibrated. The case for easing will also be stronger if there is evidence of adequate capacity for servicing household debt, considering also the expected mortgage rates normalization in the medium term.

¹⁰ For example, in the United States in 2009 in the midst of the financial crisis, several large banks were required to raise capital after the Supervisory Capital Assessment Program was conducted (Bernanke, 2009).

¹¹ Apart from theoretical exercises and assessments that are numerically simulated, empirical studies of how the CCR mechanism actually works are absent. Jimenez and others (2012) provide some empirical evidence on the effectiveness of dynamic provisioning in Spain.

¹² China introduced the CCR in 2010 and New Zealand introduced the CCR framework in 2013.

¹³ Igan and Kang (2011) find some evidence of a smaller housing price response to LTV and DTI loosening than to tightening in Korea, although the response of mortgage loans appears to be symmetric. The econometric analysis in this chapter also suggests that easing housing measures has been less effective than tightening both in Asia and the full sample of 46 economies—although this result needs to be interpreted with caution, given the limited number of easing episodes in the sample. On the other hand, IMF (2012c) found no difference in the effect of LTV loosening and tightening.

Box 4.3

Countercyclical Capital Requirements Amid Capital Flows Volatility: Possible Benefits for Asia¹

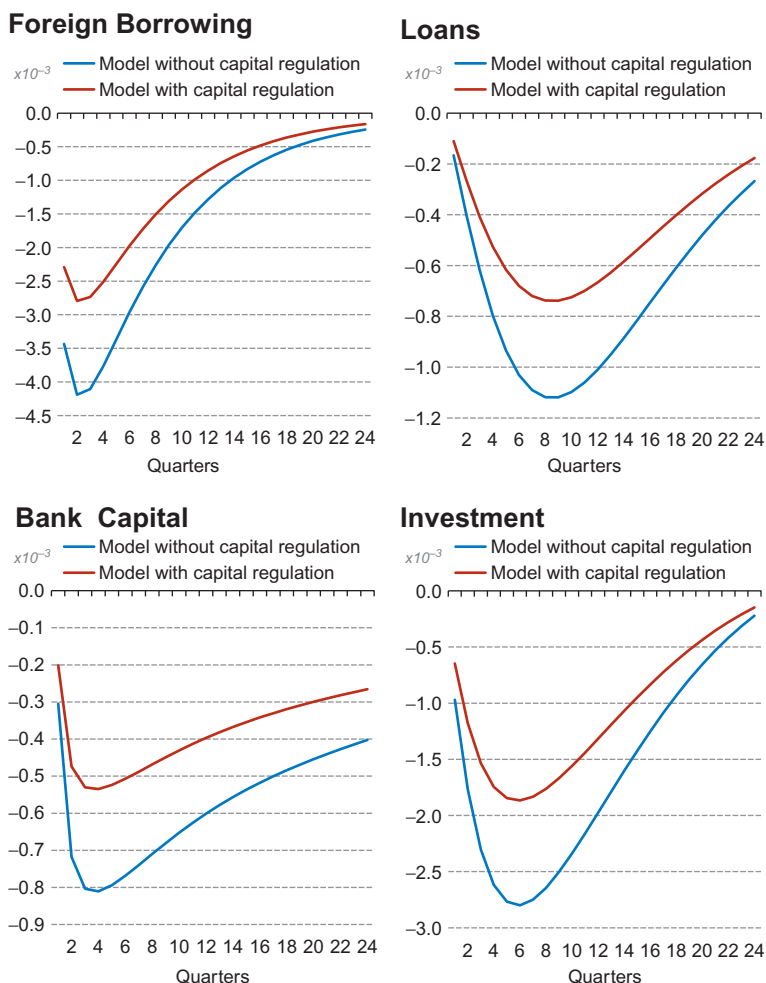
Managing the macroeconomic stability implications of volatile capital inflows and associated buildup of systemic risks is of great importance to Asia, especially in a context where such flows are expected to remain volatile (see Chapter 1).

To explore how countercyclical capital requirements (CCRs) can help lessen the amplitude of the business cycle, an open economy Dynamic Stochastic General Equilibrium model, calibrated on an Asian emerging economy,² is constructed. In this set up, loan supply partly depends on wholesale foreign borrowing, asset prices, and bank capital, which in turn are larger in the upturn phase of the cycle. A reversal of capital flows raises the cost of capital and lowers credit and investment. The ensuing downturn further intensifies the drop in bank capital, and accelerates the credit and investment decline. This financial accelerator fosters inefficient economic fluctuations (such as excess volatility in lending, investment, and output).

With a CCR, the release of the accumulated capital buffer dampens the size of the credit contraction as capital flows reverse, by making it easier for banks to meet regulatory capital requirements (Figure 4.3.1). Specifically, in this model the CCR can lower the impact of capital outflows on investment by one-third and reduce the volatility of both loans and output by around 50 percent, thus helping prevent boom and bust cycles.

Figure 4.3.1

Foreign Borrowing Shock (Percent deviation from steady state)



Source: IMF staff calculations.

¹ Shock is calculated as impulse response to a 1 percent increase in the standard deviation of the domestic country's external risk premium.

¹ The main authors are Matteo F. Ghilardi (RES) and Shanaka J. Peiris (APD). The analysis is based on Ghilardi and Peiris (forthcoming).

² As far as possible, parameters are chosen based on quarterly data for the Philippines. Elsewhere the parameters reflect broad characteristics of emerging economies.

Box 4.4

Macroprudential Policies and House Prices in Hong Kong SAR and Singapore¹

Singapore and Hong Kong SAR—the two regional financial centers in Asia—have relied extensively on macroprudential policies targeting the housing sector in recent years. The use of these tools intensified after 2009, following a sharp rebound in real housing prices and a surge in mortgage loans. Between 2009:Q2 and 2011:Q2, real house prices in Singapore went up by more than 40 percent, though they stabilized afterward (Figure 4.4.1). Real house prices in Hong Kong SAR rose by about 90 percent from 2009:Q1 to 2013:Q3, while toward the end of 2013, prices started to level off in nominal terms.

Several factors have played a role in driving house prices in these economies. The supply of housing is rather inelastic and is mainly driven by public land auctions, contributing to lags in supply expansion. In parallel, strong income growth and persistently low interest rates after the global financial crisis supported domestic demand for housing.² Foreign investors further boosted demand for real estate.

A wide range of macroprudential policies have been used to enhance financial stability amidst rising house prices and credit growth (Figure 4.4.2). LTV limits have been tightened (that is, lowered) sharply in both economies. While Singapore has used LTV limits to target second (and plus) mortgages and mortgages with high tenors, Hong Kong SAR targeted all mortgages, applying tighter caps to luxury properties, investment properties, and borrowers with sources of income from abroad. Hong Kong SAR has also tightened the DTI ratio limit, which had been introduced back in 1997, while Singapore adopted a DTI limit in 2013. Hong Kong SAR further imposed higher risk weight requirements for mortgages. Real estate taxes and loan tenor limits have also been used in both economies. For example, in Hong Kong SAR stamp duty measures were introduced to cool down the housing market in 2010, 2012, and 2013.

Macroprudential policies have contributed to cooling down somewhat the housing market in both economies. In Singapore, after the introduction of LTVs, the share of borrowers with single mortgages increased, and speculative transactions fell. For Hong Kong SAR, empirical evidence suggests that the changes in LTV limits helped reduce transaction volumes and slowed house price inflation (Ahuja and Nabar, 2011). LTV limits also dampened borrowers' leverage and credit growth and lowered the impact of a property price correction on mortgage default risk (Hong Kong Monetary Authority, 2011; Wong, Tsang, and Kong, 2014).

Both countries have also had periods where they loosened their macroprudential policies. Singapore lowered stamp duties during the Asian crisis as the macroeconomic environment deteriorated. In addition, as housing markets weakened, Singapore eliminated the capital gains tax during the 2001 recession and raised the LTV ceiling in 2005. In Hong Kong SAR, the LTV limit for luxury properties was tightened in 1997 and then reversed in 2001 as prices collapsed. However, recalibrating macroprudential tools maybe more complicated in the current juncture, given the need to coordinate a much broader and more extensive set of measures now in the system.

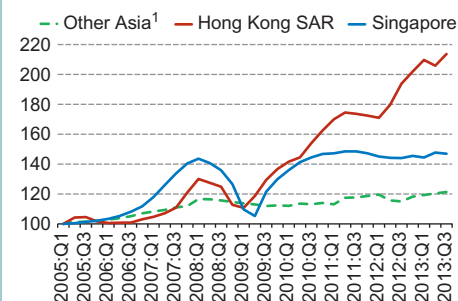
¹ The main authors are Elif Arbatli and Mali Chivakul.

² In both Singapore and Hong Kong SAR, domestic interest rates are closely linked to global rates given their exchange rate regimes and open capital accounts.

Figure 4.4.1

Real House Price Index

(2005:Q1 = 100)

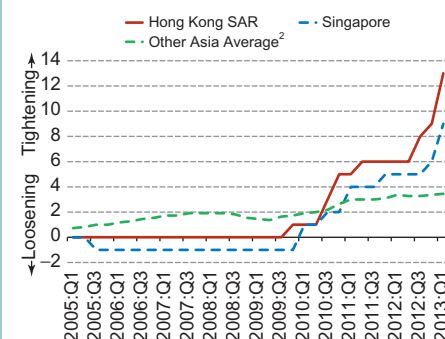


Sources: CEIC Data Company Ltd.; Haver Analytics; national authorities; and IMF staff calculations.

¹ Other Asia includes Australia, China, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Taiwan Province of China, and Thailand.

Figure 4.4.2

Macroprudential Policies Related to Housing: Cumulative Actions

(Average per country in each region; 2000:Q1–2013:Q1)¹

Source: IMF staff calculations.

¹ Index summing up housing-related measures. Simple average across countries within country groups.

² Other Asia includes Australia, China, India, Indonesia, Korea, Malaysia, New Zealand, Philippines, Taiwan Province of China, Thailand, and Vietnam.

The appropriateness of easing **measures to discourage foreign exchange transactions** in a downward phase of the financial cycle or amid capital flow reversal is also controversial. Relaxing restrictions on bank foreign exchange borrowing could allow the most creditworthy institutions to access additional funding from abroad, and this could have a positive impact on domestic loan supply. Similarly, easing reserve requirements on foreign exchange deposits could help avoid excessive deleveraging that may otherwise take place. On the other hand, easing these instruments

when the risk of exchange rate depreciation is heightened could lower resilience and jeopardize financial stability. Again, regulators would need to closely assess lenders' and borrowers' balance sheets soundness before making any policy change. Instead, residency-based CFMs, such as unremunerated reserve requirements on nonresident deposits and withholding taxes or restrictions on nonresident holdings of domestic assets, could be eased in the face of capital flows reversal to reduce disincentives for foreign investors.

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