

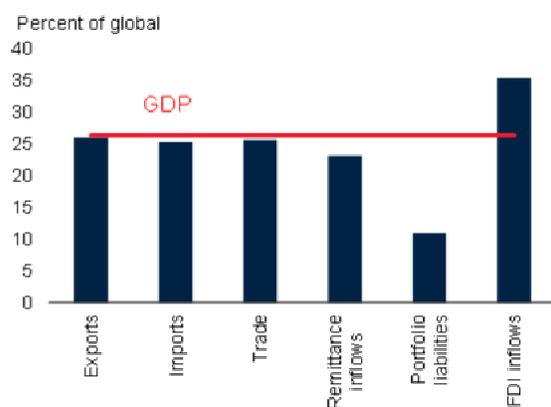
BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific

Countries in East Asia and Pacific (EAP) are deeply integrated with the global economy and with each other. China has become the largest trading partner and source of FDI for the region, although Japan remains one of the largest sources of FDI for several economies. Reflecting this integration, a growth slowdown in China could result in sizeable spillovers to a large number of countries, while a slowdown in Japan would primarily affect Malaysia, Thailand, and Indonesia. Slowdowns in major advanced economies outside the region could also have sizeable spillovers.

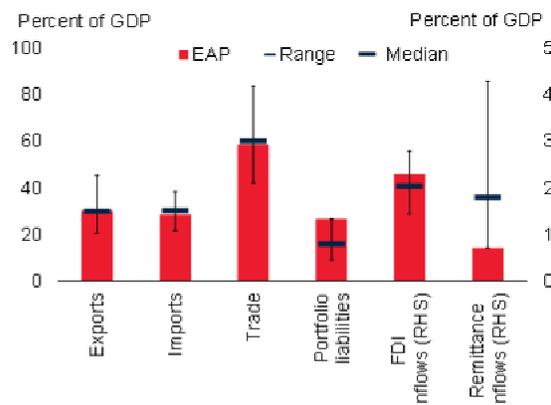
FIGURE 2.1.1.1 Cross-region comparisons

The region is open to global trade and finance.

A. EAP: Share of global activity, trade and finance, 2014



B. EAP: Trade and finance in regional comparison, 2014



Sources: IMF October 2015 World Economic Outlook, IMF International Financial Statistics, IMF Direction of Trade Statistics, UNCTAD FDI/TNC database, IMF Coordinated Portfolio Investment Survey, World Bank Remittance and Migration Database, World Bank World Development Indicators.

B. The red bars denote exports, imports, trade, remittance inflows, portfolio liabilities and FDI inflows in percent of GDP on average across EAP countries. The vertical line denotes the range of averages for all six developing regions.

Note: This box was prepared by Ekaterine Vashakmadze, Nikola Spatafora, and Duygu Guven. Modeling work was done by Raju Huidrom and Jesper Hanson. Research assistance was provided by Trang Nguyen and Qian Li.

Introduction

EAP is characterized by deep regional and global integration through trade and investment flows.¹ The region accounts for about 25 percent of global trade (Figure 2.1.1.1), and its economies are among the most integrated into global value chains. Intra-regional trade and foreign direct investment (FDI) are substantial: in 2014, countries within the region accounted for 51 percent of the region's trade and 44.1 percent of its FDI inflows.

Deep intra-regional trade and financial integration has fostered growth. These ties are also conduits for the transmission of growth fluctuations, in particular from China and Japan. Such transmission can arise both through direct economic links and through common shifts of investor sentiment across the region. China's gradual slowdown over the past year has been accompanied market volatility and real-sector headwinds. Looking ahead, spillovers are a key concern, given the risk of a faster-than-expected slowdown in China, and the still-fragile recovery in Japan.

This box discusses two key issues:

- How open is EAP to global and regional trade and financial flows?
- How large are the potential intra-regional spillovers from the region's two largest economies, China and Japan?

The findings suggest that spillovers from growth fluctuations in China are sizeable, and affect a wide range of countries. For now, spillovers arise primarily through trade channels, given the region's deeply integrated supply chains, and more limited intra-regional non-FDI financial flows. Spillovers from growth shocks in Japan are modest in general, but pronounced in Thailand, which relies heavily on FDI from Japan.

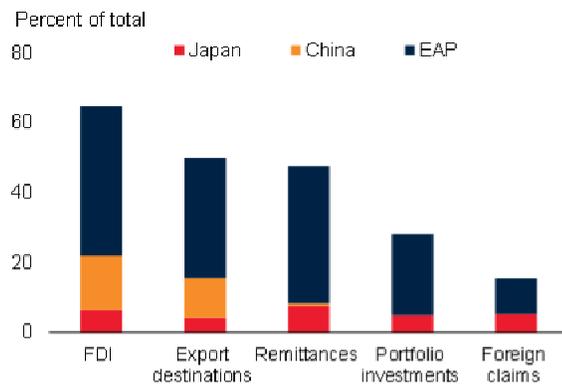
¹Throughout this box, EAP is defined as consisting of developing EAP and high-income EAP. In turn, developing EAP comprises: American Samoa, Cambodia, China, Fiji, Indonesia, Korea, Kiribati, Lao PDR, Malaysia, the Marshall Islands, Micronesia, Mongolia, Myanmar, Palau, Papua New Guinea, the Philippines, Samoa, the Solomon Islands, Taiwan, China, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, and Vietnam. High-income EAP comprises: Australia; Hong Kong SAR, China; Japan; New Zealand; and Singapore.

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

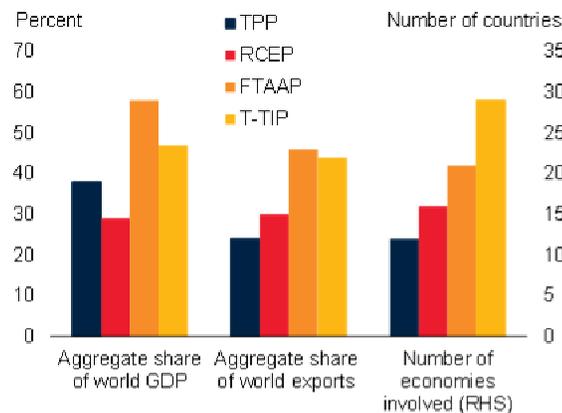
FIGURE 2.1.1.2 Regional integration

Countries in the region are deeply integrated with each other. China is a major export destination and source of FDI for EAP countries. Japan remains one of the largest sources of FDI and portfolio inflows for several economies in EAP.

A. Within-region integration, 2014



B. Major actual and potential free trade agreements



Sources: International Monetary Fund (IMF), World Economic Outlook (WEO), International Finance Statistics (IMF), Direction of Trade Statistics (DOTS), Coordinated Direct Investment Survey (CDIS); World Bank; Schott (2014), United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP).

A. EAP includes American Samoa, Cambodia, China, Fiji, Indonesia, Japan, Kiribati, Lao PDR, Malaysia, Marshall Islands, Micronesia, Mongolia, Myanmar, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Timor Leste, Tonga, Tuvalu, Vanuatu, Vietnam, Australia; Hong Kong SAR, China; Japan, New Zealand, and Singapore. Portfolio liabilities data include: Australia; Hong Kong SAR, China; Indonesia, Japan, Korea, Malaysia, Mongolia, New Zealand, Philippines, Singapore, and Thailand. FDI inflow data include: Australia; Hong Kong SAR, China; Indonesia, China, Japan, Korea, Malaysia, Mongolia, New Zealand, Philippines, Samoa, Singapore, and Thailand. Portfolio investment denotes stocks of portfolio investment liabilities.

B. FTAAP=Free Trade Area of the Asia-Pacific, RCEP=Regional Comprehensive Economic Partnership, TPP=Trans-Pacific Partnership Agreement, TTIP=Transatlantic Trade and Investment Partnership.

How open is the region to global and regional trade and financial flows?

EAP is characterized by large trade flows, including intra-regional flows (Figure 2.1.1.2). The region includes two of the world's largest trading economies (China and Japan). It also hosts two global trading hubs (Hong Kong SAR, China and Singapore). As a result, trade exceeds 45 percent of GDP in three-quarters of the region's economies, and 150 percent of GDP in Cambodia, Malaysia, Thailand, and Vietnam. Intra-regional exports account for more than 60 percent of total exports in China; Hong Kong SAR, China; Malaysia; Singapore; and Thailand.

The region contains several large commodity importers and exporters. Demand from China for metals and energy has grown rapidly since 2000, reflecting the sharp expansion of the industrial sector. China now accounts for more than half of the global demand for metals, and 23 percent of the global demand for primary energy (Figure 3.5, Chapter 3).² Several EAP countries, including Indonesia, Malaysia, and Mongolia, are globally important commodity producers.³

Since 2000, intra-regional trade has gradually tilted from Japan to China, for commodity importers and exporters alike (Figure 2.1.1.4). The share of trade with China has doubled since 2000 for Australia, Japan, and the Republic of Korea, and tripled for Malaysia and New Zealand. China is now the largest trading partner for Australia; Hong Kong SAR, China; Malaysia; Myanmar; New Zealand; and Thailand. It represents the second-largest trading partner for Indonesia and Lao PDR, and the third-largest for the Philippines. That said, Japan remains an important trading partner for Australia, Indonesia, Malaysia, the Philippines, and Thailand.

China is an increasingly important source of final demand for the rest of the region, for both commodities and manufactures. A large and rapidly growing share of the rest

²In contrast, China's consumption of most agricultural commodities (except edible oils) has grown broadly in line with global consumption since 2000. Underlying this, consumption of industrial commodities, including metals and energy, tends to respond to economic activity. Consumption of food commodities (especially grains) is mainly associated with population growth (Baffes et al. 2015).

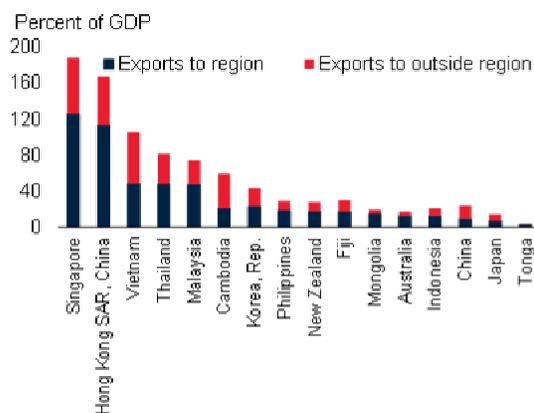
³Commodity exports in these countries account for 6–30 percent of their GDP. Indonesia's share of global exports is 20 percent or more for aluminum, coal, natural rubber, nickel, palm oil and rubber. Malaysia's share of global exports is 35 percent for palm oil, and 5 percent for petroleum gas. Thailand's share of global exports is 20 percent or more for natural rubber and rice (World Bank 2015b).

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

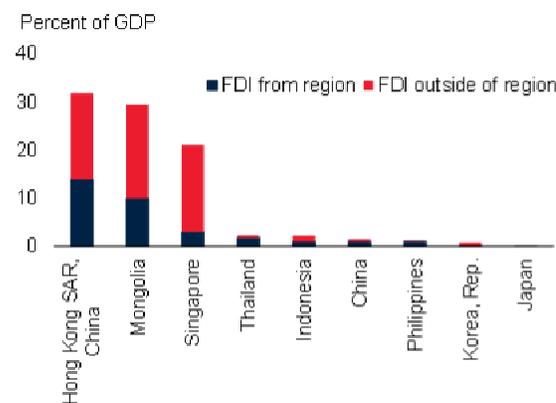
FIGURE 2.1.1.3 Main spillover channels

Each of these charts shows trade and financial links as a percent of the region's GDP—red for outside the region, blue for inside the region. All regional economies are deeply integrated within the region through trade, FDI, and remittances.

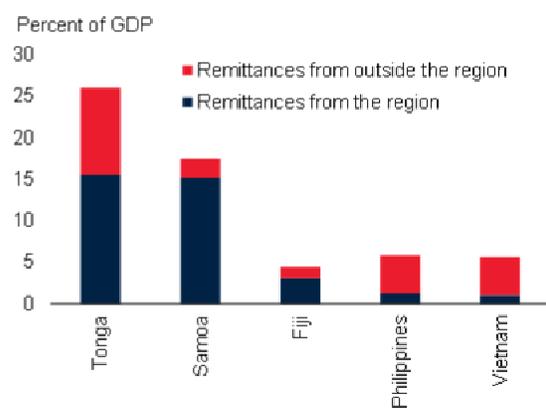
A. Export destinations, 2014



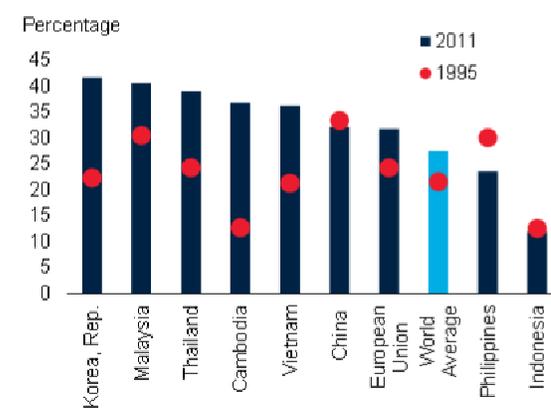
B. FDI inflows, 2008-12



C. Remittance inflows, 2014



D. Foreign value added share of gross exports



Sources: International Monetary Fund (IMF), WB, UN Comtrade, Organization for Economic Co-operation and Development (OECD).
 D. This indicator reflects the share of total gross exports contributed by foreign value added in an industry's exports. The sum over all industries is the total foreign value added share of gross exports. (OECD 2015).

of the region's value added is accounted for by exports used to meet final demand from Chinese consumers (World Bank 2015c). This applies to both the commodity- and non-commodity trade. Malaysia, Thailand, and Vietnam are among the countries most dependent on final demand from China for non-commodity merchandise.

Trade liberalization has encouraged, and will continue to boost, trade and supply-chain integration. China joined the World Trade Organization in 2001; it has implemented free trade agreements (FTAs) with a wide range of countries, and is in discussions on many others,

including three comprehensive Free Trade Agreements that are currently under negotiation (Chapter 4.1, and Figure 2.1.3 and Table 2.1.1.1).⁴ Partly as a result of trade liberalization, regional economies, especially the Republic of Korea and the ASEAN countries, are highly integrated

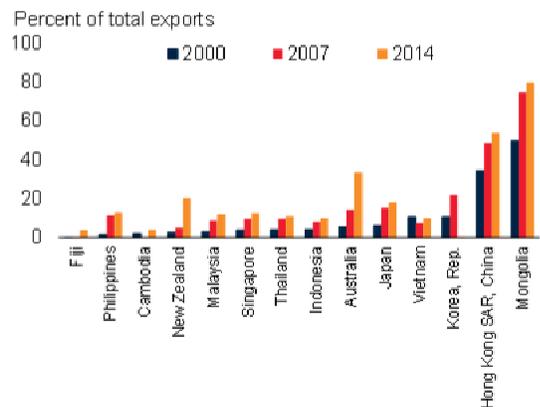
⁴China has implemented FTAs with ASEAN, other countries in Asia (Korea and Pakistan), Latin America (Chile, Costa Rica, and Peru), the Pacific (New Zealand), and Europe (Iceland and Switzerland). Negotiations are advanced for FTAs with Australia, the Gulf Cooperation Council (Bahrain, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates), Japan, Norway, and Sri Lanka. FTAs with Columbia, Georgia, India, and Moldova are under consideration.

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

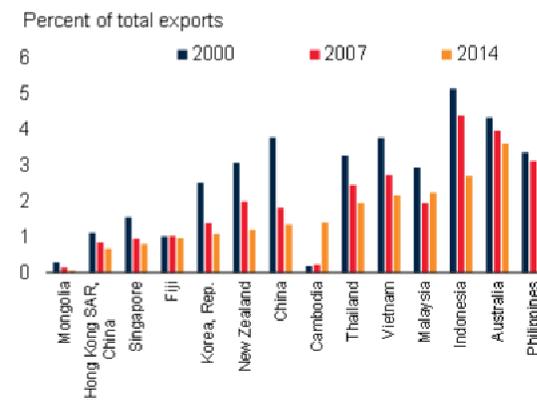
FIGURE 2.1.1.4 Trade and finance with China and Japan

There has been a shift in within-region trade from Japan to China since 2000. For most countries (except the Philippines), the share of exports to China has grown steeply and that to Japan has declined. For FDI, however, Japan remains one of the largest sources. Outbound tourism from China has also increased significantly.

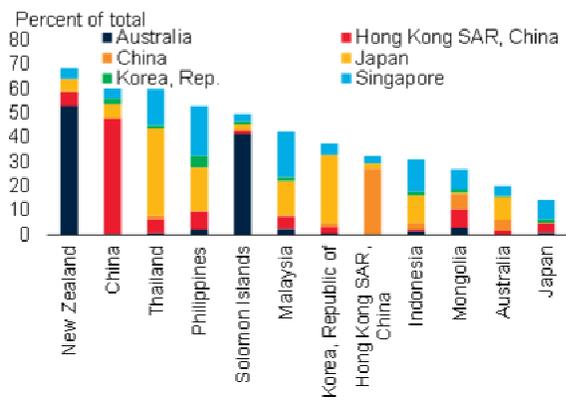
A. Exports to China



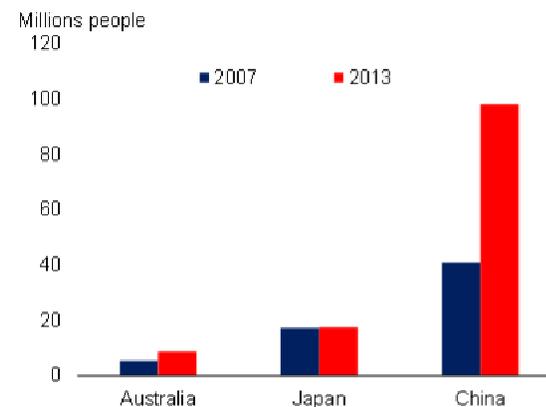
B. Exports to Japan



C. FDI flows to the region, 2014



D. Total outbound tourism, 2013



Sources: UN Comtrade.

into regional and global value chains (Figure 2.1.1.3).⁵

Intra-regional tourism has also grown robustly, with China accounting for a rapidly rising share. China has become the world's largest source of tourists (UNWTO 2015). There were 62 million outbound Chinese tourists in the first half of 2015, compared with 41 million in the whole of 2007 (China Tourism Research Institute 2015).

⁵As measured by the Global Value Chain Participation Index. This measures the share of imported inputs used to produce a country's exports, and the share of a country's exports that serve as intermediate inputs into other countries' exports (OECD 2009).

Chinese tourists are particularly important for Cambodia, Lao, PDR, Malaysia, Thailand, Vietnam, and some Pacific Islands (Fiji and, especially, Palau). For instance, in Thailand, they account for 18 percent of all tourists and over 2 percent of GDP in tourism revenues.

The region is also characterized by large FDI inflows and outflows. Developing EAP accounts for more than half of all FDI inflows to developing regions. FDI has typically gone into a wide variety of sectors, including manufacturing (Cambodia, Indonesia, Vietnam), construction (Cambodia and Lao PDR), tourism

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

(Cambodia, Indonesia, Thailand), and resource extraction (Lao PDR, Mongolia, Myanmar). China was the world's largest recipient of FDI in 2014, and the second-largest source of FDI after the United States.⁶ Chinese investors have been heavily involved in power projects in Lao PDR, garment manufacturing projects in Cambodia, and mining in Mongolia. Japan remains an important source of FDI flows to Thailand (accounting for 40 percent of total inflows), Korea, Malaysia, and the Philippines (Figure 2.1.1.4).

The EAP region attracts substantial portfolio investment, most of which goes to Australia, Korea, Malaysia and Singapore (Figure 2.1.1.5). Modest portfolio flows to China relative to its size reflect remaining restrictions on such flows.⁷ Several regional economies have deep capital markets, including Australia; Hong Kong SAR, China; Japan; Korea; Malaysia; New Zealand; and Singapore. However, economies in EAP are more financially integrated with the major global financial centers than with each other (Park and Shin 2015; Kim et al. 2014).

How large are the potential intra-regional spillovers from the region's two largest economies, China and Japan?

Growth fluctuations in the two largest countries in the region, China and Japan, would generate spillovers on other countries in the region. The transmission channels include bilateral trade, including trade in intermediate goods within regional supply chains; FDI; and (especially for the Pacific Islands) tourism. A growth decline in China would also affect global commodity markets, further reducing demand and prices. Lower export volumes and weaker terms of trade would reduce growth prospects in commodity-exporting countries. In addition to the trade and financial channels for the transmission of growth fluctuations within the region, there may be significant spillovers through the confidence channel even though those are hard to estimate econometrically (Box 3.2).

⁶In 2000, China established a sovereign wealth fund to encourage companies to invest abroad. It also began easing restrictions on FDI flows. These actions resulted in sizeable FDI into foreign natural resources, including oil and minerals.

⁷The Chinese government actively encourages the use of the renminbi (RMB) in international trade. As a result, transactions volume has grown rapidly, to make the RMB the seventh most traded currency globally, with 1.72 percent of world payments settlements as of September 2014. The RMB is now the second most used currency in international trade finance.

To capture direct as well as indirect effects, we used a Bayesian structural VAR to estimate spillover effects, using quarterly data from 1998Q1 – 2015Q2. For each country, the variables included are as follows, in order they are used in the model: growth in the G7 excluding Japan; the JPMorgan Emerging Market Bond Index; growth in Japan, China, and Korea; trade-weighted average commodity prices; growth in the affected country; and the real effective exchange rate of the affected country. Explicit trade linkages (perhaps overestimated in the case of Hong Kong SAR, China because of large share of re-exports to China) should not affect estimation results, since the VAR model does not explicitly include variables for direct trade links, it is rather estimating direct growth on growth impact.

The model has a recursive structure, with earlier variables assumed to be contemporaneously unaffected by later variables. Spillovers are measured as the cumulative response of growth to a 1 percentage point decline in growth in China or Japan, upon impact, after one year, and after two years.

The estimated magnitude of these spillovers varies across countries, particularly with respect to growth fluctuations in China (Figure 2.1.1.6):

- *Spillovers from China.* A one-off, 1-percentage-point decline in China's growth reduces growth particularly sharply in the trading hub of Singapore; and in Hong Kong SAR, China.⁸ After two years, their growth rates also decrease by around 1 percentage point.⁹ Growth in Indonesia, Malaysia, and Thailand decreases by around 0.4 percentage point. Japan and Korea are affected to a much smaller degree. The magnitude of spillovers from China could be more pronounced if growth fluctuations are amplified via the confidence channel. In a historical decomposition, pre-crisis, China's growth appears to have contributed significantly to growth in the rest of the region. Since 2011, the slowdown in China weighed on activity in the rest of the region. These estimates are based on a sample period during which China's integration into global and regional trade was rapidly increasing.

⁸Explicit trade linkages (perhaps overestimated in the case of Hong Kong SAR, China because of large share of re-exports to China) should not affect estimation results, since the VAR model does not explicitly include variables for direct trade links.

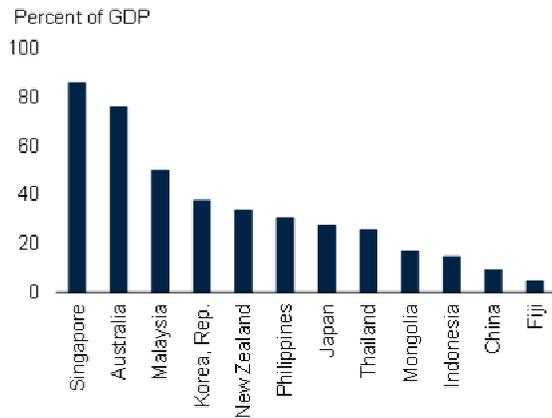
⁹The impulse is quite persistent. After two years, the cumulative decline in China's output amounts to 2 percent of the baseline.

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

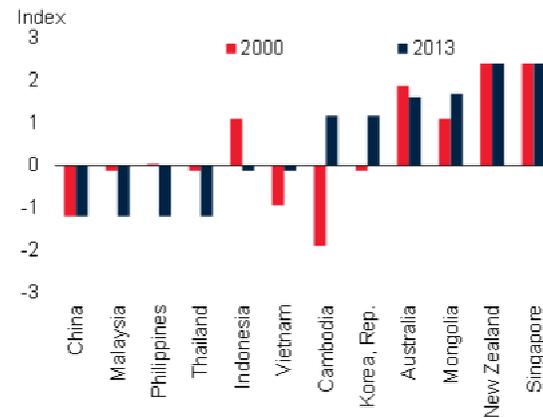
FIGURE 2.1.1.5 Portfolio liabilities and capital account restrictions

Portfolio investment inflows are largest into Japan and Korea. They are modest in China, partly as a result of capital account restrictions.

A. Portfolio liabilities, 2011-2014



B. Capital account restrictions



Source: Coordinated Portfolio Investment Survey (CPIS), IMF, Chinn and Ito (2006).

A. Stock of portfolio liabilities, average for 2011-14.

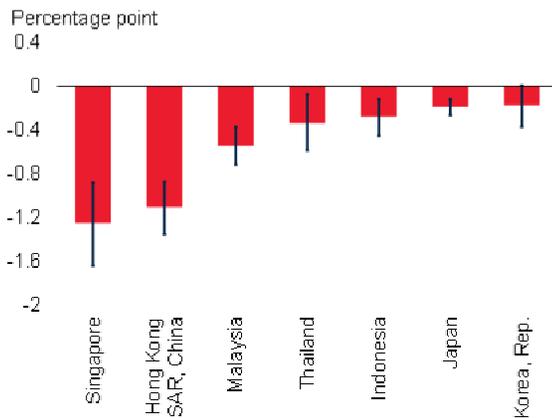
B. Chinn-Ito index is defined as an index measuring a country's degree of capital account openness.

The index by Chinn and Ito (2006) is based on binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Negative values indicate less-than-average financial openness.

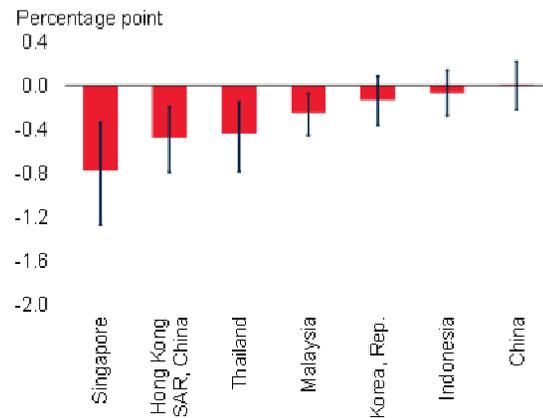
FIGURE 2.1.1.6 Intra-regional spillovers

Spillovers from a growth slowdown in China would be sizeable for Hong Kong SAR, China; Thailand; Malaysia; Singapore; and Indonesia. Spillovers from a growth slowdown in Japan mainly affect Thailand, reflecting deep FDI and trade links.

A. Response of growth to 1 percentage point decline in growth in China



B. Response of growth to 1 percentage point decline in growth in Japan



Source: World Bank.

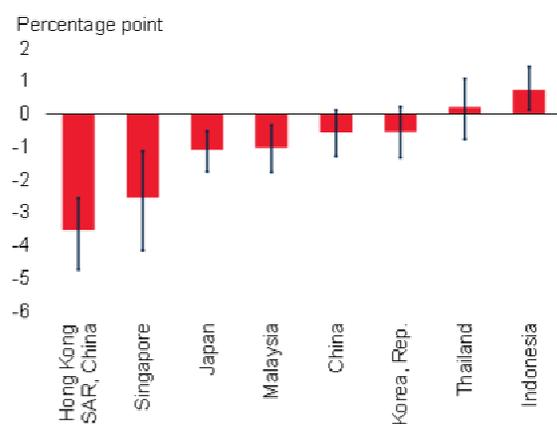
Note: Based on a Bayesian structural VAR model. The maximum data coverage is 1998Q1-2015Q2; time series coverage for some countries is shorter. The model is estimated for each spillover destination country. For instance, when Thailand is the spillover destination country, the variables are included, in the following Cholesky ordering: G-7 growth, EMBI, Japan's growth, China's growth, Korea's growth, Thailand's trade-weighted commodity prices, Thailand's growth, and Thailand's real effective exchange rates. Global spillovers refer to spillovers from the G7 countries. The model includes a dummy that captures the global financial crisis of 2008-09. Further details of the model, including the construction of the trade weighted commodity prices, are provided in Annex 3.2 of Chapter 3. Solid bars represent the median responses and the errors bars represent the 33-66 percent confidence bands.

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

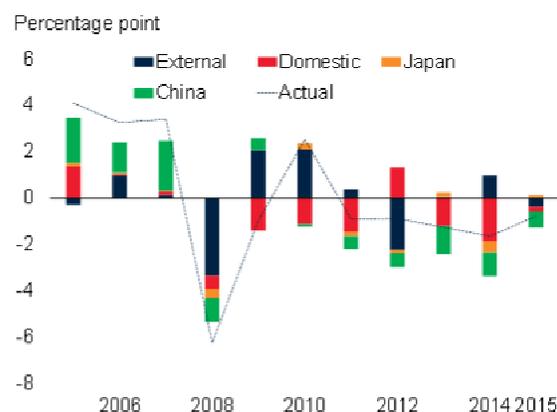
FIGURE 2.1.1.7 Spillovers from G7 excluding Japan

Spillovers from the G7 (excluding Japan) are larger than spillovers from China and Japan, especially for the highly open economies of Hong Kong SAR, China; Korea; Malaysia; Singapore; and Thailand. China's growth bolstered EAP growth during the pre-crisis years, but has since weighed on regional growth. Since 2010, the slowdown in China and Japan growth has accounted for a significant portion of the slowdown in the rest of EAP region, especially in 2014 and 2015.

A. Spillovers from G7 excluding Japan



B. Contributions to EAP growth



Source: World Bank.

A. B. Based on a Bayesian structural VAR model. The maximum data coverage is 1998Q1-2015Q2; time series coverage for some countries is shorter. The model is estimated for each spillover destination country. For instance, when Thailand is the spillover destination country, the variables are included in the following Cholesky ordering: G-7 growth (excluding Japan), EMBI, Japan's growth, China's growth, Korea's growth, Thailand's trade-weighted commodity prices, Thailand growth, and Thailand's real effective exchange rates. Global spillovers refer to spillovers from G7 excluding Japan. The model includes a dummy that captures the global financial crisis of 2008-09. Further details of the model, including the construction of the trade-weighted commodity prices, are provided in Annex 3.2 of Chapter 3.

B. Demeaned growth rates. Actual is the simple average growth of Hong Kong SAR, China, Indonesia, Malaysia, Singapore, and Thailand. External variables include G7 growth (excluding Japan), EMBI, trade-weighted commodity prices, real effective exchange rate. Domestic variable is growth of the spillover destination country.

- *Spillovers from Japan.* Spillovers from Japan are considerably smaller. A 1-percentage-point decline in Japan's growth reduces growth by 0.8 percentage point in Singapore, 0.5 percentage point in Thailand (which has deep FDI links with Japan) and Hong Kong SAR, China, 0.3 percentage point in Malaysia, and smaller amounts elsewhere.

Other studies find similar results (Table 2.1.1.2). For instance, Duval et al. (2014) report that a 1 percentage point decline in China's growth would lower growth in the median Asian economy by about 0.3 percentage point after a year, as compared with 0.1 percentage point for the median non-Asian economy. The IMF (2011) estimates that a 1-percentage-point growth decline in Japan would reduce growth in China by 0.18 percentage point, and by less than this in Indonesia and Korea.¹⁰

Shocks to growth in major advanced countries outside the region, such as the G7 (excluding Japan), also have a material impact. The most open and diversified regional economies—including Hong Kong SAR, China; Singapore; Japan; and Malaysia—are particularly vulnerable to growth fluctuations in the G7 (excluding Japan) (Figure 2.1.1.7). Quantitatively, the spillovers on EAP countries from a 1-percentage-point decline in growth in G7 countries (excluding Japan) are in several cases more than twice as large as the spillovers from an equivalent slowdown in China, and seven times as large as the spillovers from Japan.¹¹ The sizeable implications of G7 (excluding Japan) growth shocks reflect both the globally diversified nature of the region's exports, and the amplification of these shocks through their impact on China and Japan.

Conclusion

Countries in EAP are highly exposed to external shocks, including those originating from developing countries within the region, advanced economies outside the region, and to a lesser degree, Japan. China has experienced a

¹⁰Since Japan's financial sector is largely domestically oriented, financial spillovers from Japan are smaller than those from other systemically important economies.

¹¹Since the volatilities of growth for G7 (excluding Japan), China and Japan are historically different we also estimated impulse defined in terms of a 1-standard-deviation decline in growth. In this case, for Thailand and Indonesia, the spillovers from growth in China are larger than the spillovers from G7 growth (excluding Japan); for Singapore, the spillovers from G7 growth (excluding Japan) are slightly larger; and for most other countries, the two spillovers are comparable in magnitude.

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)

gradual growth slowdown since 2010. Meanwhile, Japan has struggled to emerge from recession, and a series of deflationary shocks. Slowing or weak activity in the two largest economies in the region has already weighed on growth in EAP countries. In addition, EAP countries, with their highly diversified export markets, have also been held back by the anemic recovery in high-income countries outside the region.

The magnitude of spillovers, and financial spillovers in particular, is likely to increase. So far, regional links are

mainly based on trade, foreign direct investment, and tourism. Going forward, financial integration could accelerate. For example, if China were to liberalize more fully its capital account, it could generate large capital flows to other emerging markets, as Chinese investors diversify their assets (Bayoumi and Ohnsorge 2013, Hooley 2013). This would yield benefits, including through greater investment, but would at the same time raise the potential for the transmission of shocks.

TABLE 2.1.1.1 Membership of major actual and potential free trade agreements

	ASEAN	APEC	RCEP	TPP	FTAAP	T-TIP
Brunei Darussalam	X	X	X	X	X	
Malaysia	X	X	X	X	X	
Singapore	X	X	X	X	X	
Vietnam	X	X	X	X	X	
Indonesia	X	X	X		X	
Philippines	X	X	X		X	
Thailand	X	X	X		X	
Cambodia	X		X			
Lao PDR	X		X			
Myanmar	X		X			
Australia		X	X	X	X	
Japan		X	X	X	X	
New Zealand		X	X	X	X	
Korea, Rep.		X	X		X	
China		X	X		X	
Canada		X		X	X	
United States		X		X	X	X
Mexico		X		X	X	
Chile		X		X	X	
Peru		X		X	X	
Taiwan, China		X			X	
Hong Kong SAR, China		X			X	
Papua New Guinea		X			X	
Russian Federation		X			X	
India			X			
European Union						X

Source: World Bank.

Notes: ASEAN (Association of Southeast Asian Nations), APEC=Asia-Pacific Economic Cooperation, FTAAP=Free Trade Area of the Asia-Pacific, RCEP=Regional Comprehensive Economic Partnership, TPP=Trans-Pacific Partnership Agreement, TTIP=Transatlantic Trade and Investment Partnership.

BOX 2.1.1 Regional integration and spillovers: East Asia and Pacific (continued)**TABLE 2.1.1.2 Literature review**

Author	Methodology	Results
World Bank (2016)	Bayesian SVAR (structural vector autoregression)	A 1 percentage point growth slowdown in China and Japan reduces growth in Malaysia and Thailand between -0.2 and -0.5 percentage point after two years, respectively.
Ahuja and Nabar (2012)	Panel regression	Growth slowdown in China would affect major commodity exporters with less diversified economies, such as Indonesia. Economies that lie within the Asian regional supply chain—Republic of Korea; Taiwan, China; and Malaysia—would also be adversely affected.
Duval et al. (2014)	Panel regression based on new value-added trade data for 63 advanced and emerging economies during 1995–2012	A 1 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.
Inoue, Kaya, and Ohshige (2015)	GVAR (global vector autoregressive)	A slowdown in China's real GDP growth has a significant impact on neighboring countries, especially commodity exporters (e.g., Indonesia). Export-dependent countries on the EAP production cycle (Japan, Malaysia, Singapore, and Thailand) are also severely affected.