
REGIONAL COOPERATION AND INTEGRATION

Introduction

As in previous issues, the *Asian Economic Integration Monitor (AEIM) April 2014* describes and analyzes recent trends in the cross-border flow of goods (trade), financial assets, and people across Asia, as well as macroeconomic interdependence in the region. In recent years, progress has been mixed: intraregional trade shares fell slightly in January–August 2013, but flows of foreign direct investment (FDI) continue to rise along with debt holdings in 2012. Equity investments are up after declining in recent years, with migration down slightly and intraregional tourist flows moderating. As economic links strengthen, Asia's economies are becoming more dependent on each other.

Trade integration has shown several interesting trends. In all five subregions—Central Asia, East Asia, South Asia, Southeast Asia, and the Pacific and Oceania—intra-subregional trade has dropped somewhat. But inter-subregional trade between each subregion and the rest of Asia is rising, with South Asia the exception due to India's slower growth (**Table 2**). Integration within Central Asia, and the Pacific and Oceania remains limited, yet their integration with the rest of Asia is strong, particularly in the Pacific and Oceania. More and better transport links are key to further integration, along with efforts to promote trade and labor mobility. The combined share of intra- and inter-subregional trade in South Asia and East Asia has dropped. It suggests that trade with economies outside Asia is gaining in importance, particularly when the recovery in the United States (US) and Europe—Asia's main market for final goods—is back on track.

Another important trend is deepening, more efficient production networks—seen through a shift in export origin. For example, rising demand from Southeast Asia has led Japanese firms to export their products from factories outside Japan—including those located in Southeast Asia. This is why Japan's share of trade in Southeast Asia has been declining. It helps show the dynamics of value chains within Asia's production network.

Financial integration can be seen through the continued rise in cross-border bond holdings, a recovery in intraregional equity flows after a persistent fall since the start of global financial crisis, and accelerated FDI within the region (**Figure 12**). Cross-market dispersion of equity

returns narrowed as did bond yields—except in East Asia (which is more affected by the global bond market). To reduce overreliance on banks for long-term infrastructure investment, Asia's local currency bond markets has been growing steadily.⁴ Cooperation on regulatory standardization and market harmonization significantly helped increase cross-border flows, which reached 15% for bonds and 25% for equities in 2012.

Despite the sharp drop in global FDI, flows from the People's Republic of China (PRC), Japan, and the Republic of Korea to Southeast Asia has increased. Investor strategies to deal with rising production costs in East Asia, growing production networks, progress toward an ASEAN Economic Community (AEC), and emerging geopolitical trends are all contributing factors. And FDI flows within Southeast Asia are rising, as FDI follows increased trade. While European banks remain a dominant external credit source in terms of outstanding loans, Japanese banks (along with Australian banks) are lending more. Also, bank credit flows from Japan and Australia are less volatile than those from Europe, benefiting Asian economies.

Migration reflects economic and socio-cultural ties. While Asia's migration flows remain steady, tighter regulations in host economies have eased flows slightly. Rising incomes in source economies may also be a factor. For some, remittances back home offer a mechanism to spread risks and mitigate income shocks. Tourism is another important income source. And while intraregional tourism remains high, it has fallen slightly as flows between the PRC and Japan decline.

Given these integration trends, it is not surprising that the degree of macroeconomic interdependence in Asia remains strong and continues to deepen. The PRC's increasing role is behind much of this, but it is not always symmetric.⁵

The process continues to be market-driven and institution-lite. Yet, the importance of bilateral and regional institutions for cooperation remains. While high intraregional trade may reflect economic specialization,

⁴Total outstanding bond market size at end-2013 for nine Emerging East Asian economies (the PRC; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam) reached \$7.4 trillion—or 57% of gross domestic product (GDP), a 12% increase from 2012. And this was despite the market turbulence during mid-2013.

⁵See section of macroeconomic interdependence in this and previous issues of *AEIM*.

Table 2: Progress in Regional Integration

Subregions	Production Networks and Trade						Capital Markets				Macroeconomic Links		Migration	
	Intra-subregional FDI (%)		Intra-subregional Trade (%)		Intra-subregional Equity Holdings (%)		Intra-subregional Bond Holdings (%)		Intra-subregional Output Correlations		Intra-subregional Tourism (%)		Migrant to Population Ratio (%)	
	Jan–Aug 2012		2013		2012		2012		2008–2012		2012		2013	
ASEAN+3 ¹	41.77	▼	45.88	▼	22.14	▲	8.72	▲	0.58	▲	80.67	▼	0.61	▲
Central Asia	–		6.31	▼	0.18	▲	–		0.28	▲	31.46	▲	1.26	▼
East Asia	54.67	▲	33.61	▼	17.53	▲	5.53	▲	0.63	▲	70.05	▼	0.29	▲
South Asia	–		4.25	▼	0.11	▲	0.64	▼	0.24	▲	12.07	▲	0.63	▼
Southeast Asia	17.35	▲	24.49	▼	9.20	▲	11.29	▲	0.52	▲	70.05	▲	1.04	▲
The Pacific and Oceania	1.61	▼	6.98	▼	6.30	▲	1.41	▼	0.13	▲	20.57	▼	2.64	▲
Subregions	Inter-subregional FDI (%)		Inter-subregional Trade (%)		Inter-subregional Equity Holdings (%)		Inter-subregional Bond Holdings (%)		Inter-subregional Output Correlations		Inter-subregional Tourism (%)		Migrant to Population Ratio (%)	
	Jan–Aug 2012		2013		2012		2012		2008–2012		2012		2013	
ASEAN+3 ¹	23.76	▲	10.03	▲	4.67	▲	6.68	▲	0.35	▲	4.87	▲	0.13	▲
Central Asia	–		30.94	▲	12.67	▲	12.76	▲	0.30	▲	3.62	▼	0.08	▲
East Asia	5.73	▼	18.04	▲	4.35	▲	7.16	▲	0.40	▲	13.45	▲	0.13	▲
South Asia	22.77	▲	29.06	▼	16.95	▼	24.94	▲	0.31	▲	36.26	▲	0.12	▲
Southeast Asia	57.88	▲	43.63	▲	32.48	▼	24.32	▼	0.39	▲	22.60	▼	0.45	▲
The Pacific and Oceania	32.38	▲	62.44	▲	11.03	▼	4.49	▲	0.21	▲	43.02	▲	0.39	▲
TOTAL	FDI (%)		Trade (%)		Equity Holdings (%)		Bond Holdings (%)		Output Correlations		Tourism (%)		Migrant to Population Ratio (%)	
	2012		Jan–Aug 2013		2012		2012		2008–2012		2012		2013	
Asia ²	58.05	▲	54.08	▼	25.24	▲	14.80	▲	0.33	▲	78.72	▼	0.77	▲
ASEAN+3 ¹	65.53	▲	55.91	▼	26.81	▲	15.39	▲	0.43	▲	85.54	▼	0.74	▲
Central Asia	–		37.25	▲	12.85	▲	12.76	▲	0.30	▲	35.08	▼	1.34	▼
East Asia	60.40	▼	51.64	▼	21.88	▲	12.69	▲	0.44	▲	83.50	▼	0.43	▲
South Asia	22.77	▲	33.31	▼	17.06	▼	25.58	▼	0.30	▲	48.32	▲	0.75	▼
Southeast Asia	75.23	▲	68.13	▲	41.68	▲	35.61	▲	0.42	▲	92.65	▼	1.49	▲
The Pacific and Oceania	33.99	▼	69.42	▲	17.34	▲	5.90	▼	0.19	▲	63.59	▲	3.02	▲

▲ = increase from previous period; ▼ = decrease from previous period; – = data unavailable.

Note: Data calculated for Asia unless otherwise noted.

¹Includes ASEAN (Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam) plus the People's Republic of China; Hong Kong, China; Japan; and the Republic of Korea.

²Total Asia equals total intra-Asia (using intraregional data).

FDI—includes ASEAN; Australia; the People's Republic of China; Hong Kong, China; India; Japan; the Republic of Korea; New Zealand; and Pakistan. Data for Australia and New Zealand start from 2001.

Trade—national data unavailable for Bhutan, Kiribati, Nauru, Palau, Timor-Leste, and Tuvalu; no data available on the Cook Islands, the Marshall Islands, and the Federated States of Micronesia. Jan–Aug 2013 compared with full year 2012.

Equity holdings—based on investments from Australia; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; the Republic of Korea; Malaysia; New Zealand; Pakistan; the Philippines; Singapore; Thailand; and Vanuatu. Data unavailable for Azerbaijan, Bhutan, the Federated States of Micronesia, Palau, Samoa, Tonga, Turkmenistan, and Tuvalu. Data start from 2001.

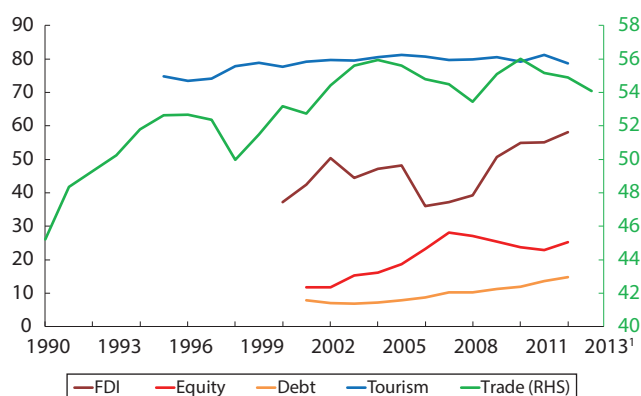
Bond holdings—based on investments from Australia; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; the Republic of Korea; Malaysia; New Zealand; Pakistan; the Philippines; Singapore; Thailand; and Vanuatu. Data unavailable for Azerbaijan, Bhutan, the Federated States of Micronesia, Palau, Samoa, Tonga, Turkmenistan, and Tuvalu. Data start from 2001.

Output correlations—based on simple averages of 3-year rolling bilateral correlations of annual growth rates (difference of natural logarithms) of detrended gross domestic product series (2005 base year). Data unavailable for Afghanistan, the Cook Islands, the Marshall Islands, the Federated States of Micronesia, Myanmar, Nauru, Palau, Timor-Leste, and Tuvalu. 2008–2012 average compared with 2000–2007 average.

Migrant to population ratio—share of migrant stock to population in 2013 (compared with 2010).

Source: ADB calculations using data from ASEAN Secretariat; *Asia Regional Integration Center*, ADB; CEIC; *Coordinated Portfolio Investment Survey*, International Monetary Fund; *Direction of Trade Statistics*, International Monetary Fund; Organisation for Economic Co-operation and Development; *Trends in International Migrant Stock*, Department of Economic and Social Affairs, United Nations; United Nations Conference on Trade and Development; World Tourism Organization; and *World Economic Outlook Database October 2013*, International Monetary Fund.

Figure 12: Regional Integration Indicators—Asia
(intra-regional as % of total)



FDI = foreign direct investment, RHS = right-hand scale.

Notes:

¹Jan–Aug 2013 data for Trade.

FDI—includes ASEAN (Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam); Australia; the People's Republic of China; Hong Kong, China; India; Japan; the Republic of Korea; New Zealand; and Pakistan. Data for Australia and New Zealand start from 2001.

Trade—national data unavailable for Bhutan, Kiribati, Nauru, Palau, Timor-Leste, and Tuvalu; no data available on the Cook Islands, the Marshall Islands, and the Federated States of Micronesia.

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Source: ADB calculations using data from ASEAN Secretariat; *Asia Regional Integration Center*, ADB; CEIC; *Coordinated Portfolio Investment Survey*, International Monetary Fund; *Direction of Trade Statistics*, International Monetary Fund; Organisation for Economic Co-operation and Development; United Nations Conference on Trade and Development; and World Tourism Organization.

strong production networks, and falling demand from advanced economies, free trade agreements (FTAs) also contribute. Regional initiatives to harmonize regulations, cooperation on trade facilitation, and trade finance boost intraregional trade as well.

Still limited in scope, financial cooperation in East and Southeast Asia has expanded and gradually deepened. The Asian Bond Markets Initiative (ABMI) and Asian equity exchange cooperation are notable examples of easing cross-border flows across the region.⁶ The proposed ASEAN+3 Multi-Currency Bond Issuance Framework (AMBIF) to support local currency bond markets is the most recent example.

⁶Cooperation among stock exchanges in ASEAN, as well as between ASEAN and the PRC, Japan, and the Republic of Korea has been growing. Collaboration between two rivals, for example—the Singapore Exchange Limited (SGX) and Hong Kong Exchanges & Clearing Limited (HKEx)—will not only strengthen Hong Kong, China as a hub for renminbi and Singapore as a foreign exchange hub, but it will also serve as a gateway for the futures market across all of Asia.

Financial cooperation has another important virtue. To the extent increased integration also means increased contagion during crises, regional cooperation on economic surveillance and in providing financial safety nets is imperative. The ASEAN+3 Economic Review and Policy Dialogue process provides the enabling environment to operationalize the Chiang Mai Initiative Multilateralization (CMIM) framework.⁷ Supplementing the CMIM, bilateral swap agreements have also been a useful line of defense.⁸ In South Asia, Finance Ministers from the South Asian Association for Regional Cooperation (SAARC) are developing a regional surveillance mechanism similar to that in ASEAN+3. In May 2013, the Reserve Bank of India established a SAARC swap arrangement of \$2 billion to provide short-term liquidity support and strengthen regional economic and financial ties.

Regional cooperation in tourism, such as the ASEAN Tourism Strategic Plan of 2011–2015, also promotes connectivity through tourism heritage sites, tourism portals, and eco-tourism projects. Emerging geopolitical trends may have hurt some tourist flows recently, but it merely underlines the need for greater regional cooperation.

A theme chapter in this issue is devoted to regional cooperation in disaster management. Asia is the most vulnerable region to natural disasters. In fact, direct physical losses from disasters outpaced economic growth in recent years. Costs have increased from 0.4% of GDP in 1991–2010 to 0.6% the last 3 years. Strengthening a regional pooling mechanism to build financial resilience against disasters is imperative. Indeed, ASEAN+3 has cited disaster risk insurance as an important area for further financial cooperation.⁹ More still needs to be done, and building a regional mechanism to facilitate access to international reinsurance and capital markets can also be explored.¹⁰

⁷CMIM facilities could provide a significant complement to domestic macroprudential policies and safety nets when market pressure intensifies, as was the case during a market turmoil following last year's market turmoil.

⁸Swap facilities were originally created to facilitate trade finance by allowing signatories to use swap lines to promote trade settlement in local currencies (including renminbi), reducing foreign exchange risk and transaction costs. To date, 12 Asian central banks have signed bilateral swap agreements with the People's Bank of China, accounting for roughly 65% of the PRC's total swap amount.

⁹See the Joint Statement of the 16th ASEAN+3 Finance Ministers and Central Bank Governors' Meeting, 3 May 2013, Delhi, India.

¹⁰ADB supports the capacity development for integrated risk management in Indonesia, the Philippines, and Viet Nam, where potential disaster risk financing products such as insurance, sovereign disaster liquidity insurance, standby emergency credit, a catastrophe bond program, or a combination of these are explored and piloted. In 2013, ADB also established the Integrated Disaster Risk Management (IDRM) Fund supported by the Government of Canada to assist the development of regional IDRM solutions in line with the disaster risk management priorities of developing economies in Southeast Asia.

Updates on Trade Integration

Is trade in Asia truly integrated? The best way to ascertain this is by examining trade status and trends from a subregional perspective. The status of trade integration (high or low) and its trend (increasing or decreasing) primarily depends on the size of the region. Subregional analysis is useful because the level of integration over a wider area is dominated by the “large” subregions—such as East Asia, which includes the PRC and Japan—overshadowing the integration trends in subregions that deviate from the overall Asian performance, such as South Asia. Trade links between subregions (inter-subregional trade) is also important.

The level of integration depends on how one selects integration indicators. The most widely used is intraregional trade share—a region’s share of total regional trade. While trade shares (including intraregional trade shares) have been used as a general measure of integration, it does not work for trend analysis or cross-regional comparisons because shares are higher if a large economy is included in a regional or subregional group. To overcome this “weight” problem, calculating trade bias is better. A region’s bias toward itself is called intraregional trade intensity. The share and bias/intensity can be computed based on several formulas:¹¹

$$\begin{aligned} \text{Region } i\text{'s intraregional trade share} &= T_{ii} / T_i \\ \text{Region } i\text{'s intraregional trade intensity} &= (T_{ii} / T_i) / (T_j / T_w) \\ \text{Region } i\text{'s trade bias toward region } j &= (T_{ij} / T_i) / (T_j / T_w) \end{aligned}$$

where

T_{ii} = exports of region i to region i plus imports of region i from region i

T_{ij} = exports of region i to region j plus exports of region j to region i plus imports of region i from region j plus imports of region j from region i

T_i = total exports of region i to the world plus total imports of region i from the world

T_j = total exports of region j to the world plus total imports of region j from the world

T_w = total world exports plus imports

¹¹For details, see ADB. 2013. *Asian Economic Integration Monitor* October 2013. Manila. page 15.

Regional and Subregional Trade Integration

Asia’s intraregional trade share increased from 45.2% in 1990 to 54.9% in 2012. Asia’s trade shares vary significantly across subregions and by individual economy.

Asia’s intraregional trade has grown significantly and has remained above 50% since the start of 2000 (see Figure 12). While the intraregional trade share in Asia reached 54.9% in 2012, the trade share of each subregion with Asia varies—35.8% for Central Asia; 52.9% for East Asia; 33.5% for South Asia; 67.9% for Southeast Asia; and 68.4% for the Pacific and Oceania (**Figure 13**).¹²

The trends by subregion vary as well. Central Asia expanded rapidly (16.3% in 2000 to 35.8% in 2012), East Asia stayed virtually the same (52.3% to 52.9%) South Asia grew somewhat (29.6% to 33.5%), while Southeast Asia increased (60.9% to 67.9%) along with the Pacific and Oceania (56.8% to 68.4%).

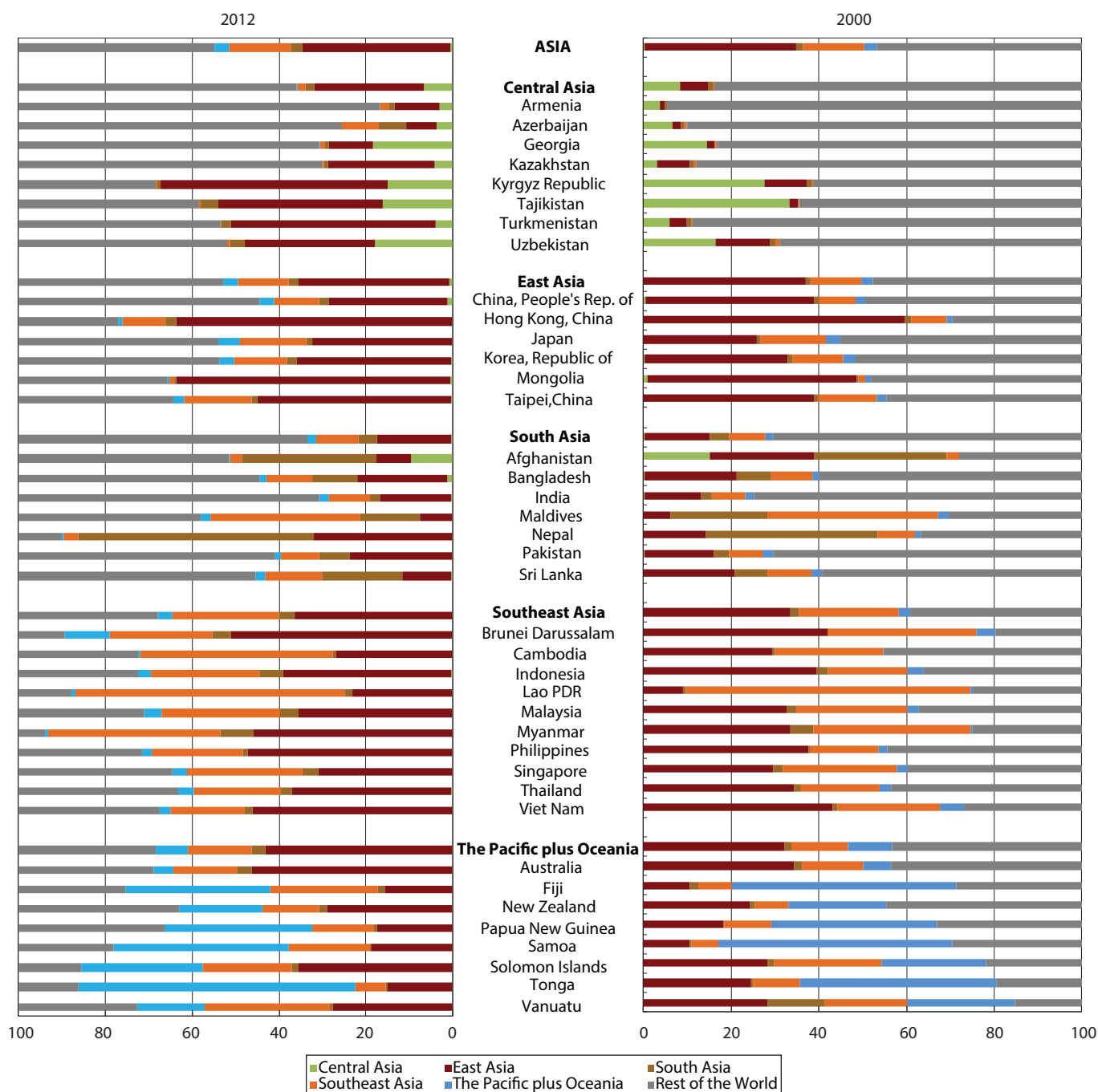
For individual economies, the share of an economy’s total trade with Asia to its total trade with the world was above 80.0% in Brunei Darussalam (89.4%), the Lao PDR (87.9%), Myanmar (93.8%), Nepal (90.0%), Solomon Islands (85.6%), and Tonga (86.2%). In contrast, this share was below 40.0% in Armenia (17.1%), Azerbaijan (25.7%), Georgia (30.8%), Kazakhstan (30.2%), and India (30.8%). It is interesting that trade with Asia is quite high in several Central Asian economies such as the Kyrgyz Republic (68.5%), which implies that the Central Asia is heterogenous in terms of direction of trade.¹³

Intra-subregional trade shares vary significantly—with Central Asia small and dropping (8.3% in 2000 to 6.7% in 2012), East Asia high and falling (36.8% to 34.9%), South Asia small and slightly down (4.4% to 4.3%); Southeast Asia high and rising (22.8% to 24.6%); and the Pacific and Oceania small and dropping (10.1% to 7.5%) (see Figure 13). The reason for the wide variations is that the weight of these subregions in world trade also varies significantly—the smaller a subregion is, the lower the intra-subregional share is. As a result, share analysis is limited and does not work for making cross-subregional comparisons. Thus, the fact that East Asia has higher intra-subregional share than Southeast Asia does not mean that the East Asian trade is better connected than ASEAN’s, for example.

¹²Not to be confused with a subregion’s share in that subregion’s total trade or intra-subregional share. Asia’s share in each subregion’s total trade is comparable across subregions, unlike intra-subregional trade share.

¹³See page 21 for further analysis of Central Asian trade.

Figure 13: Regional Trade Share¹ (%)



Lao PDR = Lao People's Democratic Republic.

¹Trade share refers to the percentage of trade with a region to total trade of the economy or region.

Source: ADB calculations using data from *Direction of Trade Statistics*, International Monetary Fund.

Box 2: Japan's Trade Deficit: Comparing Price and Quantity

Many say Japan's trade has changed dramatically, especially after the 2011 earthquake and tsunami. It recorded its largest trade deficit ever in 2013. Are these changes serious and structural?

Most of what one reads is about trade based in US dollar terms. But the yen has fluctuated significantly against the US dollar since the monetary "arrow" of Abenomics was introduced early last year. For example, in US dollar terms Japan's 2013 imports declined from 2012 (**Box table 1**).

But to analyze trade, quantity is critical. With export and import prices available, decomposing values into price and quantity factors helps. Japan's Ministry of Finance publishes an index that contains value, price, and quantity (**Box figure**).¹ Direction of trade is also important (**Box table 2**).

The change in the quantity of imports between 2012 and 2013 was actually quite marginal.² The low price elasticity of imports implies that any changes would be structural. Japan's volume of trade is no longer seriously affected by foreign exchange rates as many companies established production bases in Asia to overcome the damage from earlier yen appreciations—and many products consumed in Japan are produced across Asia, not in Japan itself. So it is the import price increase caused by depreciation that contributes to the increase in import values.³ So historically high import values should not be a surprise.

So more critical perhaps is exports. Despite the weak yen, export volumes declined in 2013.^{4,5} The direction of trade offers some clues as to why. Export volumes to the People's Republic of China (PRC) are down. Political tensions have apparently affected exports to the PRC, which plays an important role in Japanese production networks. Japan's export volumes to the European Union (EU) continue to drop rapidly, due to Europe's slow economic recovery. Also, Japan's trade through its corporations do not necessarily appear as Japanese exports—production bases in Asia directly export products (say, automobiles) to non-Japanese markets (say the United States [US]).

In sum, because Japan had established a system relatively resilient to changes in foreign exchange rates, import trade volumes showed only nominal shifts. Its export performance

¹The term used is "unit value". In constructing the index, the Ministry of Finance first computes the unit value index and then the quantum index is computed by dividing the value index by the price index.

²Moreover, the import volume was higher during the second half of 2013 (109.0) than the first half (101.9).

³Export/import unit prices are not only reflected by the change in exchange rate, but are also affected by other factors such as change in US dollar-denominated commodity prices such as oil.

⁴The high share of imported intermediate input (raw materials, etc.) in Japan's export production makes difficult for Japanese industries to increase price competitiveness. In fact, export prices increased in 2013 by 11%, which is almost the same as the import price increase (14%).

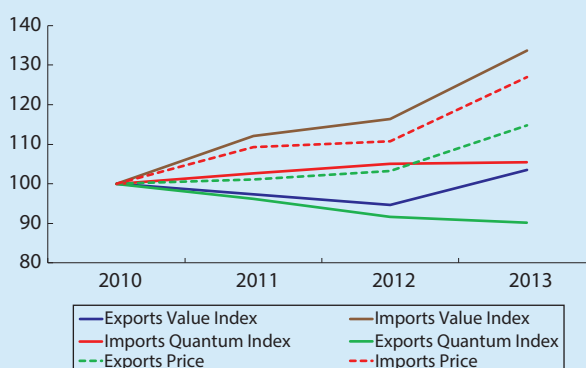
⁵There is no large difference between the first half of 2013 (88.7) and the second half of the year (91.7).

1: Japan's Trade—2013

	Japanese yen		US Dollar	
	Value (billion)	Change (y-o-y, %)	Value (billion)	Change (y-o-y, %)
Export	69,774	9.5	720.0	-10.2
Import	81,243	14.9	838.3	-5.7
Balance	-11,468	65.2	-118.3	35.6

Source: ADB calculations using data from *Trade Statistics of Japan*, Ministry of Finance.

Value, Quantum, and Price of Trade—Japan



Source: *Trade Statistics of Japan*, Ministry of Finance.

2: Export and Import Quantum Index—2013 (2010=100)

	World	Asia	of which		US	EU
			PRC	Southeast Asia		
Export	90.2 (-1.5)	87 (-1.6)	79.4 (-2.7)	94.9 (-4.3)	105.9 (-2.4)	79.7 (-6.8)
Import	105.4 -0.4	103.3 (-1.0)	104.2 -0.5	100.7 (-2.1)	99.1 (-2.1)	121.1 -5.1

PRC = People's Republic of China.

Note: Values in parenthesis are year-on-year growth.

Source: ADB calculation using data from *Trade Statistics of Japan*, Ministry of Finance.

depended on demand from its trading partners, dominated by economic rather than political factors. However, given the sharp yen depreciation, the question remains whether changes in trade volumes are structural, which could trigger a reorganization of production networks. Thus, it is increasingly important to monitor first, how a weaker yen affects trade between corporations—which is significantly structural as corporations try to optimize production; and second, how Japanese corporations develop their PRC+1 policies to mitigate the overreliance on the PRC as production or trading partner—again given that this is the first time in modern times the yen has faced rapid depreciation.⁶

⁶The yen depreciated around 22% between 2012 and 2013. Before this, the largest depreciation was in 1995–1996 (15%), with the second largest between 2000 and 2001 (13%).

Asia's trade bias—a better measure for understanding the level of trade linkages—declined between 2000 and 2012, even as trade shares increased.

The trade bias of Asia as a whole, the five subregions, and individual Asian economies, toward all of Asia and each of its subregions can be calculated (**Table 3**). Asia's regional bias toward itself (Asia's intraregional bias) declined from 2.0 in 2000 to 1.6 in 2012. Unlike in the case of intraregional trade shares, bias analysis suggests that the level of integration is declining, though it is still high (above 1.0). This is not necessarily bad as declining intraregional bias implies Asia is integrating with other parts of the world economy.

Trade bias toward Asia is declining, except for Central Asia.

At the subregional level, Central and South Asia's trade bias toward Asia as a whole remains very low (both around 1), which contrasts with their growth in trade shares—and shows that the subregions are not yet well connected with the rest of Asia. The bias toward Asia is 1.6 for East Asia and 2.1 for both Southeast Asia and the Pacific and Oceania. This order of magnitude—high in Southeast Asia and the Pacific and Oceania; mid-level in East Asia; and low in South Asia and Central Asia—is the same as the trade share results due to the mathematical relationship between share and bias indicators.

In terms of trend, Central Asia saw a significant increase (0.6 in 2000 to 1.1 in 2012), though the absolute level remains low. However, in all subregions except Central Asia, the Asian bias has declined since 2000. The decline is large for East Asia (2.0 to 1.6), but small in South Asia (1.1 to 1.0), Southeast Asia (2.3 to 2.1); and stayed the same in the Pacific and Oceania (2.1 to 2.1). Thus, the main contributor of declining intraregional bias is the decline in East Asia's bias, meaning its trade is becoming more outward-oriented. Overall, Asia's share in subregional total trade remained steady or slightly increased in all subregions except Central Asia. This means that except for non-Central Asia, Asia's share increased slightly as bias declined while the region's weight in total world trade increased. The bottom line remains the same—Asia's trade share to East Asia stayed almost unchanged (52.2% in 2000 and 52.9% in 2012), but bias declined (2.0 to 1.6); Asia's trade share to South Asia and Southeast Asia slightly increased, but bias fell slightly (1.1 to 1.0 in South Asia in 2012; 2.3 to 2.1 in Southeast Asia).

Country trade bias toward Asia shows that those within the same subregion tend to have similar regional bias (see Table 3). In Southeast Asia, for example, the highest is Brunei Darussalam (2.7) with the lowest Thailand (1.9). Economies in East Asia and the Pacific and Oceania also have similar trade biases, while each subregion appears to have a different bias toward other subregions (see below). However, the situation is very different for Central Asia and South Asia. The economy with the highest Asian bias in Central Asia is the Kyrgyz Republic (2.1), with the lowest Armenia (0.5). This means that the trade structures of Central Asian economies are quite heterogeneous given the difference in geographical contiguity—particularly with East Asia (see below). Likewise, the regional bias of economies within South Asia is also heterogeneous: While India's bias toward Asia is low (0.9), other South Asian economies' bias toward Asia is high (at least higher than 1; sometimes higher than 2). This is because they trade heavily with India.

Unlike other subregions, Southeast Asia holds high levels of intra-subregional trade bias.

It is remarkable that Southeast Asia's intra-subregional bias is very high and has stayed almost the same as in 2000 (3.7 in 2000 to 3.6 in 2012). This implies that ASEAN policies to integrate intra-ASEAN trade—such as ASEAN Free Trade Agreement (AFTA)—has been at least partially successful.

For East Asia, intra-subregional bias declined (2.0 to 1.6). The fact that the intra-regional bias of Asia as a whole and the intra-subregional bias of East Asia are the same in both years implies Asia's intra-regional bias is dominated by East Asia.

In South Asia, the decline in intra-subregional bias is substantial (4.0 in 2000 to 1.6 in 2012), but this simply reflects that India's trade is more globalized—as a result, the tie between India and the rest of South Asia grew relatively weak.¹⁴ For South Asia excluding India, trade bias among themselves rose (5.8 to 7.7) and their links outside South Asia grew weaker.¹⁵ Thus, small South Asian economies' over-dependence on India is slowly changing. But this also means that these economies

¹⁴India's bias towards the rest of South Asia declined from 6.6 in 2000 to 4.7 in 2012. The rest of South Asia's bias toward India declined from 8.0 to 4.7.

¹⁵The bias of South Asia excluding India outside slightly declined from 0.9 in 2000 to 0.89 in 2012. The bias of the rest of the world toward South Asia, excluding India, declined from 0.90 to 0.88 in 2012.

Table 3: Regional Bias of Asian Trade¹

Economies	2012						2000					
	Asia	Central Asia	East Asia	South Asia	Southeast Asia	The Pacific plus Oceania	Asia	Central Asia	East Asia	South Asia	Southeast Asia	The Pacific plus Oceania
Asia	1.6	1.0	1.6	1.0	2.1	2.1	2.0	0.7	1.9	1.3	2.3	2.2
Central Asia	1.1	11.3	1.2	0.9	0.3	0.1	0.6	34.6	0.4	0.9	0.1	0.0
Armenia	0.5	5.1	0.5	0.6	0.3	0.2	0.2	16.9	0.1	0.5	0.0	0.0
Azerbaijan	0.8	6.2	0.3	2.5	1.2	0.1	0.4	29.2	0.1	0.6	0.1	0.2
Georgia	0.9	29.8	0.5	0.4	0.1	0.2	0.6	63.7	0.1	0.2	0.1	0.1
Kazakhstan	0.9	6.9	1.2	0.3	0.1	0.1	0.5	14.0	0.4	0.9	0.1	0.0
Kyrgyz Republic	2.1	24.3	2.5	0.4	0.0	0.0	1.5	121.6	0.5	0.9	0.1	0.0
Tajikistan	1.8	26.2	1.8	1.7	0.0	0.0	1.3	146.3	0.1	0.2	0.0	0.0
Turkmenistan	1.6	6.4	2.2	1.0	0.0	0.0	0.4	25.6	0.2	1.1	0.0	0.0
Uzbekistan	1.6	29.0	1.4	1.4	0.1	0.0	1.2	72.6	0.7	1.1	0.1	0.0
East Asia	1.6	1.1	1.6	0.8	1.7	2.0	2.0	0.5	2.0	1.0	1.9	1.9
PRC	1.4	2.0	1.3	1.0	1.5	2.1	1.9	1.7	2.1	1.1	1.3	1.6
Hong Kong, China	2.3	0.0	3.0	1.0	1.4	0.6	2.6	0.0	3.3	1.3	1.3	1.0
Japan	1.6	0.2	1.5	0.5	2.2	3.0	1.7	0.2	1.4	0.8	2.4	2.5
Korea, Rep. of	1.6	0.6	1.7	0.9	1.8	2.1	1.8	0.7	1.8	1.2	1.9	2.3
Mongolia	2.0	0.9	3.0	0.2	0.2	0.3	1.9	3.6	2.7	0.3	0.3	1.0
Taipei, China	2.0	0.4	2.1	0.6	2.2	1.6	2.1	0.1	2.2	0.8	2.2	1.6
South Asia	1.0	0.6	0.8	1.6	1.4	1.3	1.1	0.9	0.8	4.0	1.3	1.5
Afghanistan	1.6	15.7	0.4	12.5	0.4	0.1	2.7	66.4	1.3	27.7	0.5	0.0
Bangladesh	1.4	2.1	1.0	4.3	1.5	1.1	1.5	0.9	1.2	7.3	1.5	1.1
India	0.9	0.4	0.8	0.9	1.4	1.4	0.9	0.6	0.7	2.3	1.2	1.4
Maldives	1.8	0.0	0.4	5.6	5.0	1.5	2.6	–	0.3	20.5	6.3	1.9
Nepal	2.7	0.0	1.5	21.9	0.5	0.3	2.4	–	0.8	36.0	1.4	1.1
Pakistan	1.2	0.2	1.1	2.9	1.3	0.9	1.1	0.8	0.9	3.3	1.2	1.8
Sri Lanka	1.4	0.4	0.5	7.5	1.9	1.4	1.5	–	1.2	6.8	1.6	1.8
Southeast Asia	2.1	0.2	1.7	1.4	3.6	2.1	2.3	0.1	1.9	1.7	3.7	2.1
Brunei Darussalam	2.7	0.0	2.4	1.7	3.4	6.5	3.0	0.0	2.3	0.2	5.5	3.3
Cambodia	2.2	0.0	1.3	0.3	6.5	0.2	2.1	0.0	1.6	0.4	4.0	0.3
Indonesia	2.2	0.6	1.8	2.1	3.6	1.9	2.4	0.1	2.2	2.3	2.9	3.0
Lao PDR	2.7	0.0	1.1	0.7	9.0	0.6	2.8	0.0	0.5	0.6	10.5	0.5
Malaysia	2.2	0.1	1.7	1.7	4.0	2.5	2.4	0.0	1.8	1.8	4.1	2.1
Myanmar	2.9	–	2.1	3.1	5.8	0.3	2.8	–	1.9	4.8	5.8	0.5
Philippines	2.2	0.0	2.2	0.4	3.1	1.3	2.1	0.0	2.1	0.4	2.5	1.5
Singapore	2.0	0.0	1.4	1.5	3.9	2.2	2.3	0.0	1.7	2.0	4.2	1.8
Thailand	1.9	0.5	1.7	1.0	2.9	2.3	2.1	0.2	1.9	1.4	2.9	1.9
Viet Nam	2.1	0.0	2.2	0.8	2.5	1.6	2.7	0.4	2.4	0.9	3.8	4.3
The Pacific plus Oceania	2.1	0.1	2.0	1.3	2.1	4.3	2.1	0.0	1.8	1.4	2.1	7.7
Australia	2.1	0.1	2.2	1.4	2.1	2.8	2.1	0.0	1.9	1.6	2.3	5.0
Fiji	2.3	–	0.7	0.6	3.6	20.7	2.7	–	0.6	1.9	1.2	39.9
New Zealand	1.9	0.2	1.3	0.8	1.9	11.8	2.1	0.1	1.4	1.0	1.3	17.3
Papua New Guinea	2.0	–	0.8	0.3	2.1	21.1	2.5	–	1.0	0.2	1.7	29.6
Samoa	2.4	–	0.9	0.1	2.7	24.9	2.6	–	0.6	0.4	1.0	41.8
Solomon Islands	2.6	–	1.7	0.6	3.0	17.3	2.9	–	1.6	1.4	4.0	18.7
Tonga	2.6	–	0.7	0.2	1.0	39.5	3.0	–	1.4	0.3	1.8	35.0
Vanuatu	2.2	–	1.3	0.3	4.2	9.8	3.2	–	1.6	12.2	3.0	19.2

– = unavailable, PRC = People's Republic of China, Lao PDR = Lao People's Democratic Republic.

¹Trade bias is the ratio of a trading partner's share to a country/region's total trade and the share of world trade with the same trading partner. It is equal to $(t_{ij}/T_{ij})/(t_{iw}/T_{iw})$ where t_{ij} is the dollar value of total trade of country/region i with country/region j , T_{ij} is the dollar value of the total trade of country/region i with the world, t_{iw} is the dollar value of world trade with country/region j , and T_{iw} is the dollar value of world trade. An index of more than one indicates that trade flow between countries/regions is larger than expected given their importance in world trade. Zero indicates value less than 0.1

Source: ADB calculations using data from *Direction of Trade Statistics*, International Monetary Fund (IMF).

are becoming isolated from India and from the rest of the world.

Intra-subregional bias is high but declining in Central Asia (34.6 in 2000 to 11.3 in 2012), meaning the subregion is not well connected to the rest of world, but is quickly improving. Its bias toward Asia is neutral (bias around 1) despite the subregion's extremely high intra-subregional bias, indicating the subregion is not well connected with the rest of Asia.¹⁶

Intra-subregional bias is also high but declining in the Pacific and Oceania (7.7 in 2000 to 4.3 in 2012). But it is important to note that trade here is dominated by trade with Australia and, to a lesser degree, New Zealand. The level and trend of intra-subregional bias came from Australia's slightly weakening trade ties with the rest of the subregion.¹⁷ Thus, small Pacific Island countries appear less dependent on Australia for trade. Excluding Australia, intraregional bias becomes as high as 8.3 (in 2012). The Pacific intra-subregional bias (excluding Australia and New Zealand) rose as high as 31.4 in 2012.

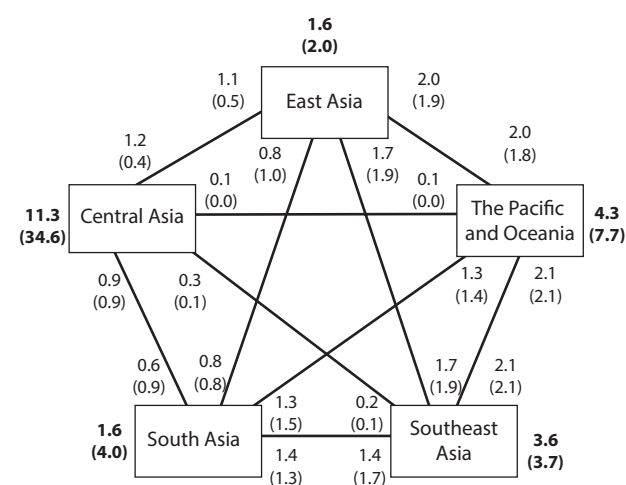
The trend of intra-subregional share and bias vary where subregional trade weight is rising in world trade (compare Figure 13, Table 3). When the weight of a subregion's trade increases, the decline in bias becomes larger than its share. For example, intra-subregional share of South Asia and Central Asia declined only slightly, but the decline in bias of the two subregions is large. In the case of Southeast Asia, intra-subregional share increased, but its bias declined. The trend of share and bias are almost identical for East Asia and the Pacific and Oceania (because their weight in world trade has stayed almost the same).

Inter-subregional Trade Linkages

Trade links between each subregion can be mapped (Figure 14). For example, Central Asia's trade bias toward East Asia is 1.2, while East Asia's trade bias toward Central Asia is 1.1. Central Asia's intra-subregional bias is 11.3.

Trade bias between two subregions tends to be symmetric. If one region has a large or small bias

Figure 14: Inter-subregional Trade Connectivity Diagram
(2000 and 2012)



Note: Numbers indicate trade bias in 2012 and 2000 (in parenthesis). Values in boldface are intra-subregional trade bias indexes, while values along the lines are inter-subregional trade bias indexes. Trade bias is the ratio of a trading partner's share to a country/region's total trade and the share of world trade with the same trading partner. Trade bias equals $(t_{ij}/T_{ij}) / (t_{iw}/T_{iw})$ where t_{ij} is the dollar value of total trade of country/region i with country/region j , T_{ij} is the dollar value of the total trade of country/region i with the world, t_{iw} is the dollar value of world trade with country/region j , and T_{iw} is the dollar value of world trade. An index of more than one indicates that trade flow between countries/regions is larger than expected given their importance in world trade. A value of 0.0 indicates a value less than 0.05 but higher than 0.0001.

Source: ADB calculations using data from *Direction of Trade Statistics*, International Monetary Fund.

toward another region, the reverse tends to be the same because barriers to trade—(both natural barriers (geographical) or policy-related (trade procedures)—make trade between the two unfavorable compared with trade to the rest of the world (which tends to be equal). For example, Central Asia's bias toward Southeast Asia is low (0.3), as is the reverse (0.2). The only exception is the bias between Central Asia (0.9) and South Asia (0.6).

The linkage between East Asia and South Asia is low, while Southeast Asia is well connected with East Asia and South Asia.

Trade relationships between the three major subregions (East, Southeast, and South Asia) are worth closer examination. The linkage between East and Southeast Asia is particularly high—at 1.7 in 2012, below the 1.9 in 2000. Thus, East Asia's bias toward Southeast Asia is higher than its bias toward itself (1.6). The linkage between Southeast Asia and South Asia is also high (1.4 in 2012), almost the same as the intra-subregional bias of South Asia (1.6 in 2012). Here, the bias toward each other increased from 2000 (1.3). The linkage of East Asia to South Asia is not only weak but is also becoming weaker

¹⁶A subregion's bias toward the entire region is the weighted average of the subregion's bias toward other subregions and the subregion's bias toward itself (intra-subregional bias).

¹⁷Australia's bias toward the rest of the Pacific and Oceania declined from 25.0 in 2000 to 17.0 in 2012. The rest of the Pacific and Oceania's bias toward Australia declined from 23.1 in 2000 to 15.4 in 2012.

(0.8 in 2012). In 2000, East Asia's bias toward South Asia was as high as 1.¹⁸

Central Asia and the Pacific are isolated from other parts of Asia.

Landlocked, Central Asia is a relatively isolated subregion.¹⁹ It has low bias toward South Asia, Southeast Asia, and the Pacific and Oceania (a negative bias is lower than 1). Its linkage with East Asia is relatively high (though just higher than 1). But there is heterogeneity of economies that belong to this group in terms of trade bias. The three Caucasus economies (Armenia, Azerbaijan, and Georgia) have a regional bias below 0.5 toward East Asia—and this affects their low bias toward Asia as a whole. In contrast, Central Asian economies such as Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan have a high bias toward East Asia and Asia as a whole because of their geographical proximity to and increasing trade with the PRC.

Careful interpretation is needed for the Pacific and Oceania's linkage with others, because the group is significantly affected by Australia. In fact, the subregion's bias toward East Asia is 2, almost the same as Australia—while all others in the subregion have low bias toward East Asia (many below 1). Australia has a strong bias toward East Asia and Southeast Asia. The Pacific DMCs have significantly high bias toward Australia and, to a lesser degree, Southeast Asia, while the majority has negative bias toward East Asia and South Asia. Though the level remains low (negative bias), the tie between the subregion excluding Australia and the world outside the subregion is growing gradually.²⁰

Updates on Financial Integration

Financial integration across Asia continues to deepen in both quantity and price measures.

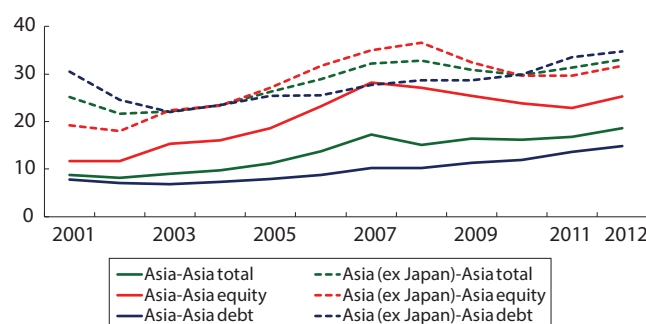
Financial integration can be measured by quantity indicators such as the amount of Asian financial assets

that are held by Asian investors. While Asian investors continue to prefer investing in their own markets (“home bias”) or outside the region (“global bias”), intraregional holdings of equity and debt securities continued to rise in 2012, as global risk aversion waned and the region's growth differential with advanced economies attracted more investors. In particular, intra-Asian bond holdings rose from 13.6% in 2011 to 14.8% in 2012. Excluding Japan (which tends to hold a large share of US assets), intra-Asian bond holdings is even higher at 31.6% in 2012. During the same period, intra-Asian equity holdings also rose from 22.8% to 25.2% (**Figure 15**).

Financial integration can also be gauged through the extent of cross-border FDI and bank credit flows. Despite decelerating FDI to Asia, the share of intraregional FDI in the region has risen; particularly to Southeast Asian economies. In 2012, FDI to Asia fell 7.6% to \$416 billion. Despite this drop, the share of Asia's intraregional FDI increased to 58.1% in 2012 from 55.1% in 2011. New Zealand and Southeast Asian economies emerged as the top destinations of FDI from Asia; while the PRC, Japan, the Republic of Korea and some big Southeast Asian economies are major sources of FDI outflows. A strong positive correlation between FDI and trade flows in the region has also been noted (**Box 3**).

Japanese bank lending to the region continues to increase, supporting regional production networks, particularly in Southeast Asia. In the year to third quarter of 2013, the share of Japanese bank claims in Asia's total liabilities to foreign banks was broadly stable at 11.8%.

Figure 15: Cross-Border Portfolio Holdings—Asia (% share)



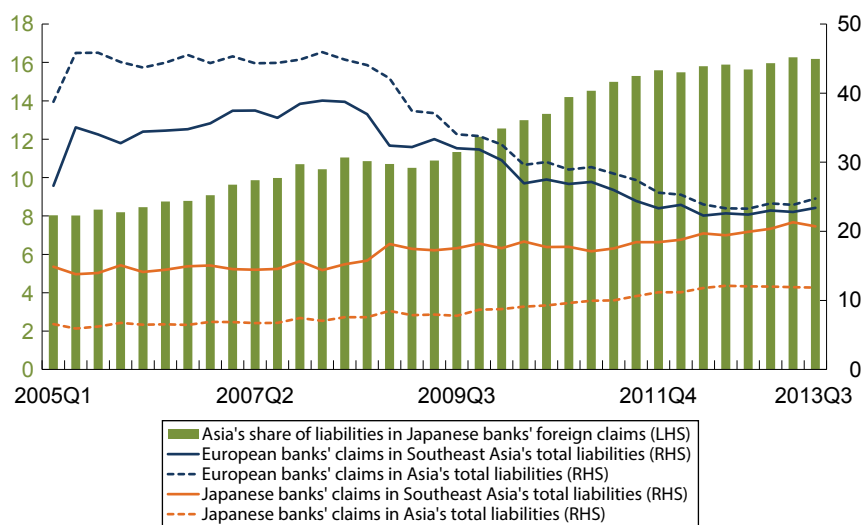
Notes: Data refer to the reporter economy's cross-border holdings of portfolio securities issued by the partner economy as a share of the reporter economy's total cross-border portfolio securities holdings. The data does not include reporting economy's holdings of securities issued by domestic issuers. Legend convention XX-YY refers to XX=reporter economy and YY=partner economy. Reporting economies under Asia includes Hong Kong, China; India; Indonesia; Japan; Kazakhstan; the Republic of Korea; Malaysia; Pakistan; the Philippines; Singapore; Thailand; and Vanuatu. Partner economies under Asia include all ADB member economies. Source: ADB calculations using data from *Coordinated Portfolio Investment Survey*, International Monetary Fund.

¹⁸South Asia's bias toward East Asia was 0.8 in 2000.

¹⁹Only Europe has relatively strong trade links with Central Asia.

²⁰The bias of the Pacific and Oceania excluding Australia toward outside the subregion increased slightly from 0.75 in 2000 to 0.78 in 2012. The bias of the world excluding the Pacific and Oceania toward the subregion excluding Australia also slightly increased from 0.72 in 2000 to 0.74 in 2012.

Figure 16: Japanese and European¹ Banks' Foreign Claims in Asia (% share out of total claims)²



LHS = left-hand scale, RHS = right-hand scale.

¹European banks (excluding UK banks) based on Bank for International Settlements' (BIS) definition.

²Total foreign claims of banks reporting to BIS.

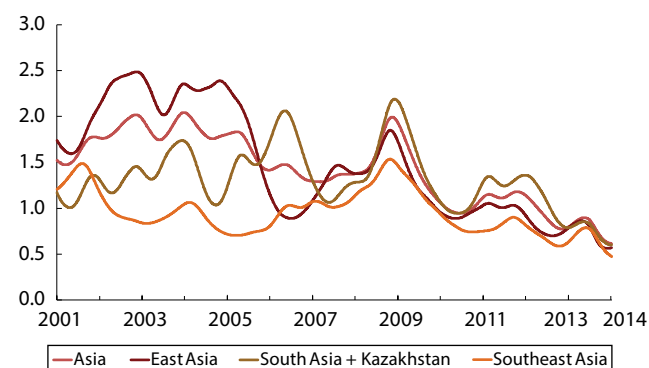
Source: ADB calculations using data from BIS (Table 9D). Data accessed on 2 April 2014.

However, the share of Japanese bank claims in Southeast Asia's total liabilities to foreign banks continued to increase to 20.7% in the third quarter of 2013 from 19.4% a year ago (**Figure 16**). Generally speaking, Japanese bank lending to the region supports Japan's increasing role in Asia's regional production networks. Over the years, Japanese firms have expanded their production bases in the region. And with future expansion plans in the smaller Southeast Asian economies (such as Viet Nam and the Lao PDR), Japan's crossborder lending to offshore Japanese affiliates is expected to increase. More importantly, it is evident that Japanese bank credit flows to Asia is also more stable compared with those from Australia, Europe, and the US; and Australia's bank lending is also increasing (**Box 4**).

Asian equity markets moved more synchronously during the year as markets calmed after the turmoil over QE tapering in the US.

The extent of integration in Asian financial markets can also be measured through price indicators such as the co-movements of financial asset returns—specifically by cross-market dispersion of daily stock-index returns and of 10-year bond yields. Last year, there was greater dispersion in daily equity returns due to the (i) expected US QE tapering, (ii) slowdown of the PRC, and

Figure 17: Cross-Market Dispersion of Equity Returns (%)



Note: Cross-market standard deviation of daily stock market returns, de-trended using Hodrick-Prescott filter. Asia includes East Asia, South Asia plus Kazakhstan, and Southeast Asia. East Asia includes the People's Republic of China; Hong Kong, China; Japan; the Republic of Korea; Mongolia; and Taipei, China. South Asia includes Bangladesh, India, Pakistan, and Sri Lanka. Southeast Asia includes Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam. Data until 31 Mar 2014.

Source: ADB calculations using data from Bloomberg.

(iii) political tension in the Middle East.²¹ However, since the beginning of 2014, cross-market dispersion among Asian equity returns narrowed, reaching its lowest since 2001 (**Figure 17**). While common global factors might have driven the trend, financial integration has certainly played a role in the narrowing cross-market dispersion of equity returns. Most markets posted gains early

²¹ADB. 2013. *Asian Economic Integration Monitor* October 2013. Manila. p. 17–23.

Box 3: Foreign Direct Investment to Asia

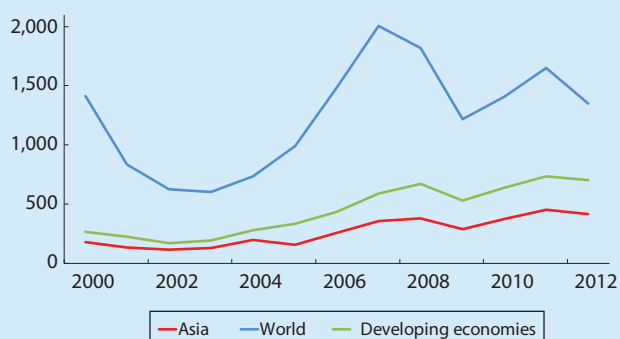
Despite the sharp decline in global foreign direct investment in 2012, inflows to Asia slowed only marginally due to increasing Asian investments to ASEAN.

While global foreign direct investment (FDI) fell over 18% in 2012—to \$1.35 trillion—inflows to Asia remained more resilient, falling 7.6% to \$416 billion (**Box figure 1**). In general, investors remained skeptical of advanced economies and continued to be attracted by Asia's positive growth outlook. FDI flows to Asia account for about a third of global FDI. Interestingly, cumulative FDI to Asia totaled \$2,257.7 billion from 2006 to 2012, or double the \$1,161.3 billion during the 2000–2006 period. In 2012, half the FDI went to the more dynamic East Asia economies, while over a quarter went to ASEAN economies, with one-sixth to Oceania.

Normally, the largest FDI heads toward big economies such as the People's Republic of China (PRC); Hong Kong, China; Australia; Singapore; India; and Indonesia. However, when it comes to growth, some smaller economies such as Cambodia and the Philippines do well, consistent with their recent economic promise. Since 2000, FDI to South Asia remained very small (about 6%) compared with total inflows to Asia. Worse, FDI to several South Asian economies—India, Sri Lanka, and Bangladesh—fell by double-digits in 2012.

Despite the overall drop in FDI to the region in 2012, Asia's intraregional share of new FDI increased modestly—to 58% (**Box figure 2**). In terms of degree of regional bias by economy, it is clear that a larger proportion of FDI going to Cambodia, the PRC, Indonesia, the Republic of Korea, the Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, New Zealand, Thailand, and Viet Nam originates within

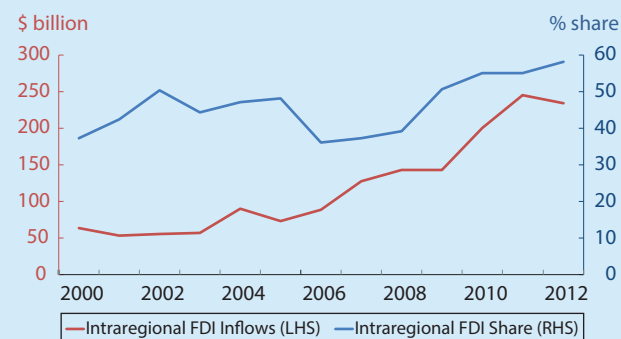
1: FDI Inflows—Asia, Developing economies, and World
(\$ billion)



Note: Asia refers to the 48 ADB member economies. Developing economies are as defined from the United Nations Conference on Trade and Development (UNCTAD) database.

Source: ADB calculations using data from UNCTAD.

2: Intraregional FDI Inflows—Asia



FDI = foreign direct investment, LHS = left-hand scale, RHS = right-hand scale.

Note: Asia includes ASEAN; Australia; the People's Republic of China; Hong Kong, China; India; Japan; the Republic of Korea; New Zealand; and Pakistan. Data for Australia and New Zealand start from 2001. Missing 2012 data were estimated using actual value from previous period.

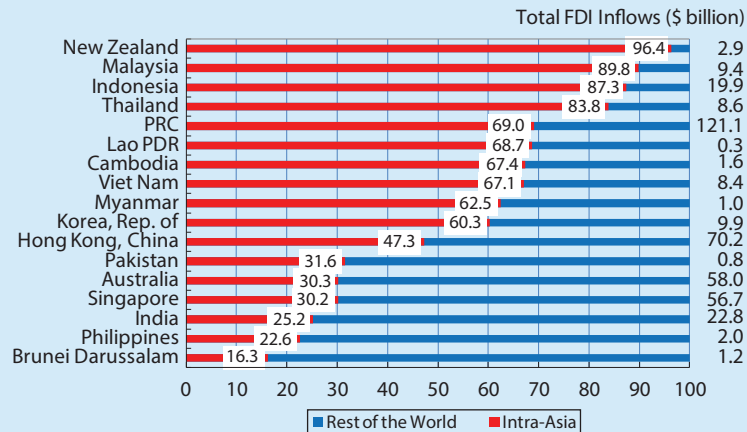
Source: ADB calculations using data from ASEAN Secretariat, CEIC, Organisation for Economic Co-operation and Development, and United Nations Conference on Trade and Development.

Asia—their intraregional FDI shares range from 60% to 93%. In contrast, FDI inflows to Australia; Brunei Darussalam; Hong Kong, China; India; Pakistan; the Philippines; and Singapore are mostly from outside the region (**Box figure 3**).

FDI flows to ASEAN more than doubled over the past 3 years, apparently in support of ASEAN's increased exports to other Asian economies; the same holds true for FDI going to the PRC, Japan, and the Republic of Korea.

In the last 5 years, ASEAN received over \$400 billion in FDI—of which \$271 billion came from within Asia (\$68 billion of this was intra-ASEAN). FDI to ASEAN economies appears somewhat associated with their exports. For instance, examining the share of FDI to ASEAN or “+3” economies (the PRC, Japan, and the Republic of Korea) from their key partners; and the share of export outflows from ASEAN or “+3” economies to the same set of partners shows that an increase (or decrease) in the share of FDI from a partner is often linked to an increase (or decrease) in export share to that partner (with the correlation coefficient for these pairs of flows at about 0.4) (**Box figures 4, 5**). In particular, the strong FDI coming from the PRC and the Republic of Korea to ASEAN coincided with strong export flows from ASEAN to the PRC and the Republic of Korea. Similarly, intra-ASEAN FDI has also increased along with intra-ASEAN trade. There are also increasing FDI heading from larger ASEAN economies into the “+3” economies—also associated with increasing exports from the “+3” to ASEAN. One can better see the link between FDI and trade by plotting the

3: FDI Inflows—Asia (% of total, 2012)

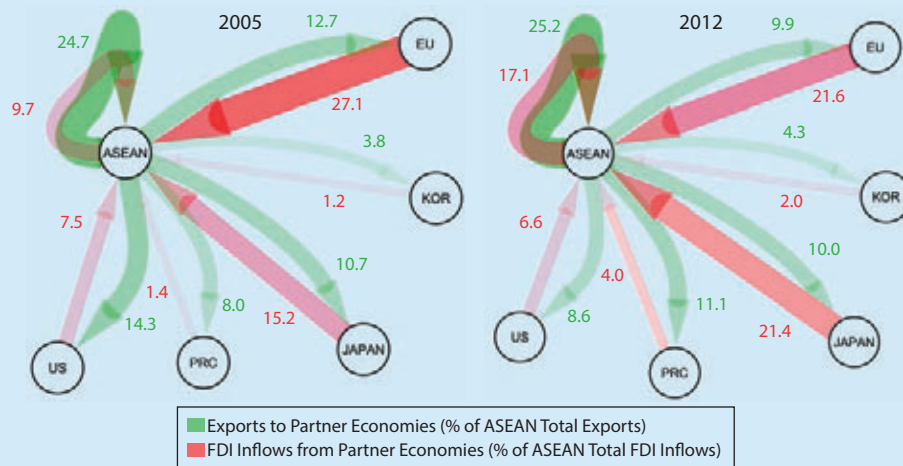


FDI = foreign direct investments; PRC = People's Republic of China; Lao PDR = Lao People's Democratic Republic.

Notes: 2011 data for Brunei Darussalam and the Lao PDR; 2009 data for Myanmar.

Source: ADB calculations using data from ASEAN Secretariat, CEIC, Organisation for Economic Co-operation and Development, and United Nations Conference on Trade and Development.

4: Exports and FDI Share—ASEAN (% of total)



PRC = People's Republic of China, EU = European Union, FDI = foreign direct investment, KOR = Republic of Korea, US = United States.

Rendered in Cytoscape 3.0.2

Source: ADB calculations using data from ASEAN Secretariat; CEIC; *Direction of Trade Statistics*, International Monetary Fund; and Organisation for Economic Co-operation and Development.

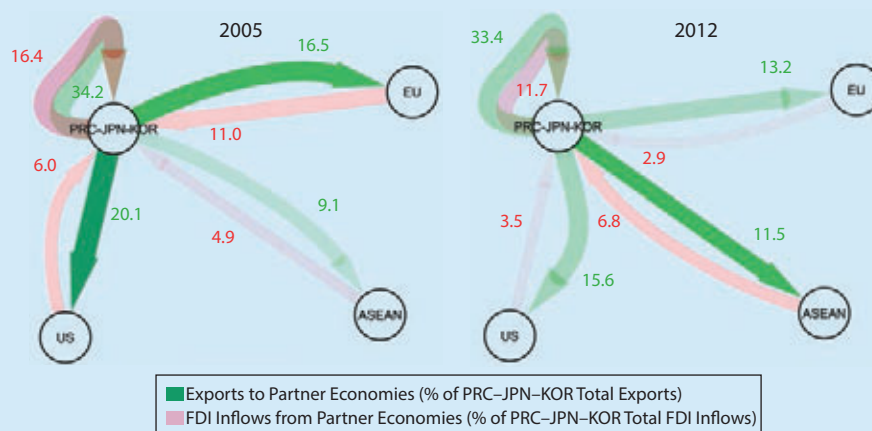
log of FDI inflows with the log of trade flows; and FDI inflows as a percent of GDP with share of trade flows as a percent of GDP (**Box figure 6, 7**). It is clear that there is a strong positive correlation between FDI and trade—although the strength of the correlation weakens as a share to GDP.

Theoretically, the link between trade and FDI is easy to explain. For instance, under the factor proportion hypothesis,

the strong feedback relationship between trade and FDI stems from how firms tend to send capital overseas to take advantage of factor endowment and price differentials across economies—also the primary driver of trade. Similarly, under intra-industry trade theory, the interdependence between trade and FDI is a result of intra-firm vertical integration in terms of trade, outsourcing, and investment.

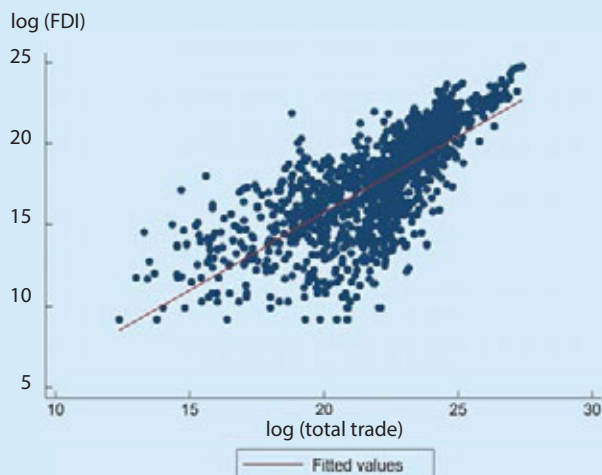
Box 3 continued

5: Exports and FDI Share—PRC, Japan, and Republic of Korea (% of total)



PRC = People's Republic of China, EU = European Union, FDI = foreign direct investment, JPN = Japan, KOR = Republic of Korea, US = United States. Rendered in Cytoscape 3.0.2
Source: ADB calculations using data from ASEAN Secretariat; CEIC; *Direction of Trade Statistics*, International Monetary Fund; and Organisation for Economic Co-operation and Development.

6: Scatter Plot of the log of FDI with the log of Total Trade—ASEAN

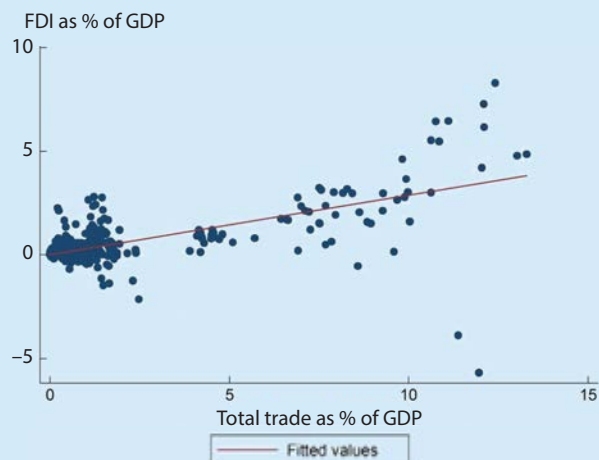


FDI = foreign direct investment.

Note: Total trade refers to the sum of exports and imports.

Source: ASEAN Secretariat, CEIC, Organisation for Economic Co-operation and Development, United Nations Commodity Trade Databases, United Nations Conference on Trade and Development, and national sources.

7: Scatter Plot of FDI as % of GDP with Total Trade as % of GDP—ASEAN



FDI = foreign direct investment.

Note: FDI inflows and total trade are computed as a percentage of nominal GDP. Total trade refers to the sum of exports and imports.

Source: ASEAN Secretariat, CEIC, Organisation for Economic Co-operation and Development, United Nations Commodity Trade Databases, United Nations Conference on Trade and Development, and national sources.

To test this interdependence hypothesis, a simple gravity model of FDI inflows to ASEAN was estimated using a fixed effect pooled regression model. In the model, bilateral FDI flows were estimated as a function of the reporter and partner country's nominal GDP and GDP per capita; a physical distance variable; bilateral trade flow; a time-varying free

trade agreement (FTA) dummy; and the lag of the FDI flows. To control for other economic conditions that may affect FDI inflows, other indicators such as the current account to GDP ratio and annual policy rates were also included. Fixed-effect dummies were also included to proxy for omitted variables at the country level. More importantly, two alternative

Pooled Regression of FDI on Trade

Independent Variables	Dependent Variables	
	Log of FDI inflows	FDI inflows (as % of GDP)
Log of GDP per capita (partner)	0.12	-0.001
Log of nominal GDP (partner)	0.37***	0.001*
Log of total trade	0.50***	
Share of total trade to GDP (recipient)		0.02*
Log of Distance	-0.35**	-0.002
Log of FDI lag 1 period	0.50***	
FDI inflows (as % of GDP, lag 1 period)		0.61***
Log of current account (% of GDP)	-0.11	-0.003
Log of policy rates (%)	-0.41	-0.005
FTA Dummy	0.03	0.002
Brunei Darussalam	-	-
Cambodia	-	-
India	-	-
Indonesia	-0.26	-0.004
Lao PDR	-	-
Malaysia	-0.49	-0.006
Myanmar	-	-
Pakistan	-	-
Philippines	-0.70**	-0.009**
Singapore	-	-
Thailand	-0.71	-0.01
Viet Nam	0.06	-0.006
Constant	-2.76	0.02
Number of observations	341	341
Adjusted R-squared	0.8092	0.5012
F-stat	123.81***	12.12***

*** indicates significance at 1%; ** indicates significance at 5%; * indicates significance at 10%.

Notes:

1. Country names are used as fixed effect dummies with Bangladesh as the base country.
2. Due to missing observations which tend to retain extreme values, the data were truncated by dropping 5% of the observations based on the upper and lower bound of FDI growth rates.
3. The smaller sample size in logged FDI model is due to omitted negative FDI flows (i.e. log transformation permits only positive values). To make the results comparable, we restricted the sample in the shares model such that the included FDI values (including the lags) are positive.

Source: ADB calculations using data from UN Commodity Trade Database for the trade data; *World Economic Outlook October 2013*, International Monetary Fund for the GDP variables; United Nations Conference on Trade and Development, ASEAN Secretariat, Organisation for Economic Co-operation and Development, and CEIC for the FDI variable; and CEPII and University of Macalester for distance variable.

specifications for FDI and trade flows were used: (i) the log of level specification; and (ii) a percent of GDP specification (**Box table**).¹

This simple modelling exercise yielded several interesting results. First, it confirmed the interdependence between the flow of FDI and trade at the 1% significance level. Using FDI inflows as dependent variable, the coefficients show that a 10% increase in total trade will increase FDI inflows by 5%. Using FDI as percent of GDP, a 10% increase in trade share will increase FDI share by 0.2%. The second result appears more reasonable given that the log-level specification could be overestimating the effects—as both FDI and trade variables grow with economic size (non-stationary).² The estimated gravity coefficients are also intuitive. Physical distance—a proxy for the cost of acquiring information—acts as a barrier or deterrent to accessing FDI from other countries, although this effect is not seen when FDI as a percent of GDP is used. Previous period FDI also significantly increases current FDI levels by 0.5 (for log-level specification) to 0.6 (for FDI as a share of GDP). This suggests that FDI inflows are quite persistent. Moreover, the size and income level of the source economy is a more significant determinant of FDI inflows to the region than the size and income level of the destination economy.

Using FDI shares to GDP as dependent variables also yield the same results, with trade shares showing interdependence with FDI share to GDP at the 10% level of significance. The distance variables, however, become insignificant. None of the control variables, including the free trade agreement (FTA) dummy, are significant. Beta coefficients to compare the various determinants of FDI inflows were also derived. Based on the beta coefficients, previous period FDI is the most important determinant of FDI inflows. This is followed by total trade and nominal GDP variables of the source economy. Meanwhile, distance affects FDI inflows the least. Using FDI shares, previous period FDI shares have the largest effect, followed by trade shares. It is interesting that the size and income of the destination economy did not appear significant—although this could be due to its correlation with trade flows. Only the fixed effect for the Philippines is significant (but negative), which suggests there is something else that makes it less attractive to FDI.

¹In the final estimates, the GDP and GDP per capita of the home economy were excluded as coefficients were insignificant and it appears that, *ceteris paribus*, FDI inflows to the reporting country are more dependent on the partner's GDP. Lagged values were also used previously but were dropped due to insignificant coefficients or inconsistent estimates.

²This is the reason why an alternative specification based on FDI inflows and trade flows as percent of GDP was also used.

Box 4: Australian and Japanese Bank Credit Flows to Asia: Rising and More Stable

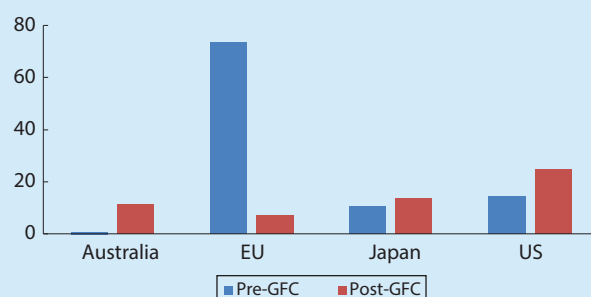
Intraregional bank lending—particularly from Japan and Australia to other Asian economies—has emerged as a new source of external financing in Asia. As European banks deleveraged and cut Asian exposure after the global and eurozone financial crises, Japanese and Australian banks increased lending to the region (**Box figure 1**). Quarterly bank credit flows from Europe fell, while Australia and Japan lending picked up after the global financial crisis, reaching on average close to \$14 billion from Japan and \$11 billion from Australia—though both declined somewhat after 2012. Quantitative easing by the United States (US) Federal Reserve also encouraged US banks to lend more to Asia, with bank credit flows to Asia up to \$90 billion during the third quarter of 2009. In 2013 (until September), European Union (EU) bank credit flows to Asia rebounded strongly, indicating improved financial conditions there.

Before the global financial crisis, EU bank credit flows to Asia averaged \$73 billion a quarter, well above the \$11 billion from Japan and \$0.7 billion from Australia. The pattern changed dramatically after the 2008/09 global financial crisis. Average quarterly EU bank credit flows fell to \$7 billion during 2009–2013 due to deleveraging, while Japanese flows rose to \$14 billion and Australian flows to \$11 billion. US bank credit flows also increased from \$14 billion to \$25 billion per quarter after the global financial crisis (**Box figure 2**). At the same time, average quarterly bank credit flows from Australia and Japan combined totaled \$25 billion, marginally above those from the US and much higher than the EU.

From 2004 to 2013, bank credit flows from Japan were much less volatile than those from Australia, the EU, and the US (**Box table**). European flows gyrated before and after

the 2008/09 global financial crisis, while those from Japan remained relatively steady. Both measures of volatility—standard deviation and coefficient of variation—suggest that EU flows were the most volatile and flows from Japan were the most stable. US flows were also more stable than those from the EU. More stable external financing benefit Asian economies, contributing to economic growth and resulting in less financial volatility.

2: Average Quarterly Bank Credit Flows to Asia—Australia, EU, Japan, and US (\$ billion)

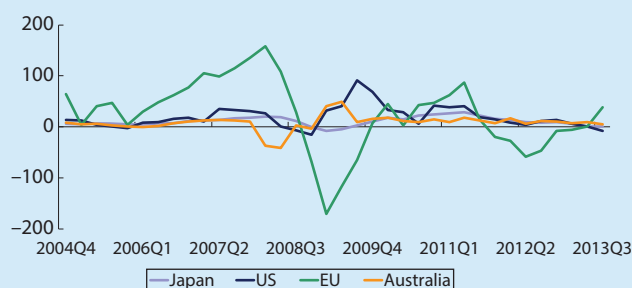


EU = European Union (27 members), US = United States, GFC = global financial crisis.

Note: Data refers to the average quarterly flows as defined in Box figure 1. Pre-GFC coverage is from 2004Q4 to 2008Q2. Post-GFC coverage is from 2009Q3 to 2013Q3.

Source: ADB calculations using data from Table 9B (Consolidated foreign claims of reporting banks-immediate borrower basis), Bank for International Settlements.

1: Bank Credit Flows to Asia—Australia, EU, Japan, and US (\$ billion)



EU = European Union (27 members), US = United States.

Note: Data refers to the 4-quarter moving average of bank credit flows. Flows are calculated as the quarter-on-quarter difference in outstanding claims.

Source: ADB calculations using data from Table 9B (Consolidated foreign claims of reporting banks-immediate borrower basis), Bank for International Settlements.

Volatility of Bank Credit Flows to Asia—Australia, EU, Japan, and US (2004–2013)

Indicator	Australia	EU	Japan	US
Standard Deviation (\$ billion)	15.2	69.1	8.6	21.4
Average (\$ billion)	8.1	24.7	10.9	19.0
Coefficients of Variation	1.9	2.8	0.8	1.1

EU = European Union (27 members), US = United States.

Note: Flows are calculated as 4-quarter moving average of the difference in the outstanding claims by end of the quarter.

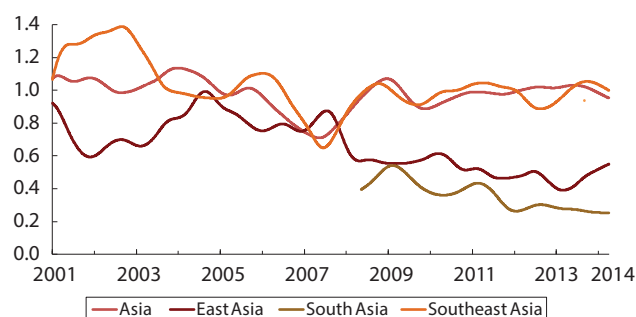
Source: ADB calculations using data from Table 9B (Consolidated foreign claims of reporting banks-immediate borrower basis), Bank for International Settlements.

in the year on healthy corporate earnings, improved market sentiment, and higher foreign capital inflows. In East Asia, equity markets are more subdued—given concerns over slowing growth prospects in the PRC and the early success of structural reform in Japan. In Southeast Asia, while a number of domestic risk factors worried investors, the stronger US recovery provided a lead for equity markets. South Asian markets also continue to converge with major markets in India and Pakistan enjoying bullish runs—given increased market confidence on India's national elections.

Dispersion in Asian bond yields also contracted slightly in recent months even as efforts to promote local bonds stepped up; bond yields in Southeast Asia were less convergent compared with the rest of the region.

Last year, the coefficient of variation for 10-year bond yield spreads had increased due to the massive selloff by foreign investors which affected economies with weaker macroeconomic fundamentals more.²² However, in early 2014, the dispersion of bond yields in Asia decreased marginally (**Figure 18**). For instance, after a significant increase, the coefficient of variation of bond yield spreads for Southeast Asian economies has slightly moderated. Given quite open bond markets, different domestic factors, and widely dissimilar asset risk classes, bond yields in ASEAN could continue to be divergent. It is likely Indonesia's improving current

Figure 18: Coefficient of Variation of 10-Year Bond Yield Spreads



Note: Coefficient of variation of 10-year government bond yield spreads over benchmark United States Treasuries, detrended using Hodrick-Prescott filter. Asia includes East Asia, South Asia, and Southeast Asia. East Asia includes the People's Republic of China; Hong Kong, China; Japan; the Republic of Korea; and Taipei, China. South Asia includes India, Pakistan, and Sri Lanka. Southeast Asia includes Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam. Data until 31 Mar 2014.

Source: ADB calculations using data from Bloomberg.

account might lead to lower bond spreads, while easing growth prospects in the Philippines could attract less capital flows, pushing its yields to move above last year's level. The coefficient of variation of bond yields in South Asia remains relatively stable (albeit slightly declining). In contrast, the coefficient of variation of 10-year bond yield spreads on East Asian bonds has increased, yet remained lower than that in Southeast Asia.

The use of the renminbi for international transactions within and outside Asia has been growing rapidly—through offshore bond issuances, trade settlement, and a widening array of currency swap arrangements.

Renminbi bond issuances outside the PRC and Hong Kong, China have grown rapidly. As of December 2013, cumulative issuance was close to the total issued by Hong Kong, China-based companies. The renminbi is also increasingly used in trade settlement and trade finance. According to the Society for Worldwide Interbank Financial Telecommunication (SWIFT), the renminbi's share of world currency payments more than tripled—to 1.1% in December 2013 from 0.3% in October 2011. In trade finance, it is the second most used currency for letters of credit and collection (as of November 2013, the renminbi had an 8.7% market share, according to SWIFT).

In the third quarter of 2013, renminbi use within Asia (excluding the PRC and Hong Kong, China) has grown 109%.²³ Central banks in Asia have also been looking to the renminbi to diversify holdings and reduce risk. To date, 12 Asian central banks—of a total of 23 banks, including those from Europe—have bilateral swap agreements with the PRC. Asian central banks account for about 65% of PRC's total swap amount, which currently totals CNY2.6 trillion. Indonesia is the most recent Asian economy to renew its swap agreement with the PRC (October 2013). Singapore renewed its swap agreement in March 2013.

²²Generally speaking, the coefficient of variation for 10-year bond yields in the region is large, reflecting the varied risk classes of Asian bonds.

²³Still, this is smaller compared to renminbi use in Europe, where its use in payments rose 163% y-o-y in the third quarter of 2013.

Macroeconomic Interdependence between the PRC, Japan, and the Republic of Korea

The PRC, Japan, and the Republic of Korea are important to the global economy. They are the second, third, and fifteenth largest economies in the world, respectively. Their combined nominal GDP at market exchange rates is some 20% of the world total (**Table 4**). This is about the same as their combined share in world population, though they trade less than their economic weights. As world exporting powers, they have accumulated large amounts of foreign exchange reserves, 46.4% of the world total. Through sophisticated and extensive production networks and supply chains, they are closely linked to each other, and to other economies—particularly those in East and Southeast Asia. Understanding how they connect is important, as is their macroeconomic interdependence.

Economic links between the PRC, Japan, and the Republic of Korea

Trade links between the three economies have deepened during the past 20 years, and their relative strength has also shifted somewhat.

While Japan and the Republic of Korea are the PRC's first and second largest import suppliers, the PRC is Japan's biggest trading partner, and the PRC and Japan are the Republic of Korea's two largest trading partners (**Table 5**). In recent years, PRC exports to Japan and the Republic of Korea topped 3% of its GDP, after peaking

at 5.9% in 2005. While the share of PRC exports to the Republic of Korea has been steady over the past decade, the share of PRC exports to Japan has fallen, partly due to the sluggish performance of the Japanese economy, as well as the PRC diversifying its trade globally. Japan's exports to the other two have grown significantly over the past two decades, and now account for about 4% of its GDP—even as Japan's exports to the PRC, after growing rapidly in the 2000s, slowed in 2012. As junior partner, the Republic of Korea's exports to the PRC and Japan are far more important to its economy—close to 17% of the Republic of Korea's GDP—with the PRC growing more important than Japan over the past 10 years.

While a significant portion of trade between the three economies is in intermediate goods, domestic value-added (as embodied in their exports to each other)

Table 5: Trade Links—PRC, Japan, and Republic of Korea
(% of GDP)

	1990	2000	2010	2012
Exports of PRC to:				
Japan	2.7	4.0	2.3	2.1
Korea, Rep. of	0.1	1.0	1.2	1.0
World	19.4	27.0	28.7	25.9
Exports of Japan to:				
PRC	0.2	0.8	3.0	2.7
Korea, Rep. of	0.6	0.7	1.2	1.1
World	9.6	10.5	14.3	14.0
Exports of Rep. of Korea to:				
PRC	0.0	3.9	12.6	13.3
Japan	4.5	3.8	2.8	3.5
World	23.7	32.5	46.5	49.7

PRC = People's Republic of China.

Note: Exports are computed as the average of the reporters' exports and its corresponding partners' imports. Values are expressed as percentage of exporter's GDP. GDP used is in current \$ values.

Source: ADB calculations using data from *Direction of Trade Statistics* and *World Economic Outlook October 2013*, International Monetary Fund.

Table 4: Selected Indicators—PRC, Japan, and Republic of Korea¹ (2013)

	Population² (million)		Nominal GDP (\$ billion)		Exports (\$ billion)		Imports (\$ billion)		Foreign Reserves less gold (\$ billion)	
PRC	1,351	(19.2%)	8,939	(12.4%)	1,430	(11.9%)	1,273	(10.4%)	3,840	(32.9%)
Japan	128	(1.8%)	5,007	(6.9%)	474	(4.0%)	546	(4.4%)	1,237	(10.6%)
Korea, Rep. of	50	(0.7%)	1,198	(1.7%)	369	(3.1%)	341	(2.8%)	342	(2.9%)
Combined	1,529	(21.7%)	15,144	(21.2%)	2,273	(18.9%)	2,160	(17.6%)	5,419	(46.4%)

PRC = People's Republic of China.

¹Percentage share to world total in parentheses. Foreign reserves and nominal GDP in market exchange rates. Exports and imports cover the period Jan–Aug 2013.

²Population data covers 2012 only as 2013 data is unavailable.

Source: ADB calculations using data from *Direction of Trade Statistics* and *Currency Composition of Official Foreign Exchange Reserves*, International Monetary Fund (IMF); and *World Development Indicators*, World Bank.

has been rising fast (**Table 6**). As the PRC economy is increasingly driven by domestic demand and is diversifying export destinations, value-added embodied in its exports to Japan fell from 2.9% in 1995 to 1.4% of GDP in 2009, while the PRC's total domestic value-added in its exports remained steady. As a share of the PRC's total exports, domestic value-added in PRC exports to the Republic of Korea stayed relatively stable. Yet, by comparing the shares of exports and domestic value-added, PRC exports to Japan contain more added value than those to the Republic of Korea. Domestic value-added in Japan's exports to the Republic of Korea from 1995 to 2009 remained steady at about 0.5% of GDP. But the value-added in Japan's exports to the PRC doubled in about 10 years—to 1.4% of GDP in 2009. Domestic value-added in the Republic of Korea's exports to the PRC increased from 1.4% of GDP in 1995 to 4.2% in 2009

Table 6: Trade Links: Value Added (% of GDP)

	1995	2000	2005	2009
PRC				
Japan	2.9	2.9	2.5	1.4
Korea, Rep. of	0.5	0.6	0.7	0.5
Total	16.3	18.1	21.9	16.6
Japan				
PRC	0.4	0.7	1.3	1.4
Korea, Rep. of	0.5	0.5	0.6	0.5
Total	8.0	9.3	11.7	10.2
Korea, Rep. of				
PRC	1.4	2.6	3.1	4.2
Japan	3.9	3.6	2.3	2.0
Total	20.8	24.8	23.3	28.1

PRC = People's Republic of China.

Note: Data refers to domestic value added embodied in foreign final demand.

Source: OECD-WTO Trade in Value (TiVA) Database May 2013.

as the Republic of Korea's exports to the PRC expanded rapidly. However, the value-added in the Republic of Korea's exports to Japan fell nearly half—to 2.0% of GDP in 2009, despite a steady ratio of exports to GDP. This suggests a fast rising share of intermediate goods in the Republic of Korea's exports to Japan.

This section shows clearly that exports (and domestic value-added of exports) of Japan and the Republic of Korea have become more dependent on the PRC. PRC exports—and the value-added of its exports—shifted toward other economies, with the share of value-added in its exports to Japan falling over the past decade, while those of the Republic of Korea remained stable. Exports and value-added of exports of Japan to the Republic of Korea were low but stable in the past two decades, while those of the Republic of Korea to Japan fell over the same period. Compared with trade links to the PRC, it appears that trade links between the Republic of Korea and Japan are also waning.

Financial links between the three—while still weaker than trade—are strengthening rapidly, with capital flowing largely from Japan to the PRC and the Republic of Korea.

FDI has been the traditional channel for financial flows, but portfolio flows and other investment has increased recently. The PRC attracts significant FDI worldwide. And this includes FDI from Japan and the Republic of Korea. In 2005, about 16% of FDI going to the PRC (\$11.7 billion) came from Japan and the Republic of Korea—though the share fell to 8.6% (\$10.4 billion) in 2012 (**Table 7**).

Table 7: Financial Links: Foreign Direct Investments—PRC, Japan, and Republic of Korea¹ (\$ million)

	2001		2005		2012	
PRC inflows from:						
Japan	2,916	(7.2%)	6,530	(9.0%)	7,352	(6.1%)
Korea, Rep. of	1,490	(3.7%)	5,168	(7.1%)	3,038	(2.5%)
World	40,715		72,406		121,073	
Japan inflows from:						
PRC	5	(0.0%)	12	(0.4%)	71	(4.1%)
Korea, Rep. of	49	(0.2%)	29	(1.0%)	558	(32.2%)
World	28,982		2,778		1,732	
Rep. of Korea inflows from:						
PRC	58	(0.7%)	2	(0.0%)	246	(2.2%)
Japan	996	(11.5%)	1,469	(24.2%)	4,123	(37.1%)
World	8,643		6,066		11,117	

PRC = People's Republic of China.

¹Values in parentheses are inflows of foreign direct investments (FDI) as percentage share to reporter economy's FDI inflows from the world. PRC data refers to FDI utilized.

Source: ADB calculations using data from CEIC and Organisation for Economic Co-operation and Development.

Japan attracted much less FDI in recent years, much coming from the Republic of Korea (32.2% of the 2012 total). Japan continues to be one of the largest investors in the Republic of Korea, accounting for 37.1% of the total. The PRC has also increased its investment in Japan and the Republic of Korea recently. For 2012, official data indicate Japan invested \$17.4 billion (or 14.3% of its total FDI) in the PRC (11%) and the Republic of Korea (3.3%), and held accumulated stock of \$118.5 billion—out of some \$1 trillion of its total outward direct investment (**Table 8**). However, the share of Japan's direct investment in the PRC has been falling since 2010.

While portfolio and banking flows among the three—particularly from Japan to the PRC and the Republic of Korea—rose steadily in dollar amounts, their shares

of total flows have fallen as flows to other economies expanded faster (**Table 9**). Data on portfolio flows, though incomplete, show Japan's portfolio investments in the PRC and the Republic of Korea increased substantially—from \$7.5 billion in 2001 to about \$34.6 billion in 2012. During the same period, the Republic of Korea invested about \$12 billion in PRC and Japanese securities, up from \$333 million in 2001, with most of the increase going to the PRC. Japanese banks more than doubled their lending to the PRC and the Republic of Korea—from \$43.5 billion in 1996 (more than 10% of its total lending overseas) to \$112.4 billion in 2012, though its share fell to 3.5% of the total (see Table 8).

Table 8: Japan's Outward FDI and Bank Claims¹ (\$ million)

	1996		2000		2005		2012
FDI Flows							
PRC	2,324	(9.9%)	937	(3.0%)	6,589	(14.4%)	13,485 (11.0%)
Korea, Rep. of	403	(1.7%)	1,082	(3.4%)	1,784	(3.9%)	4,007 (3.3%)
Total	23,426		31,557		45,781		122,551
FDI Stocks							
PRC	8,097	(3.1%)	8,699	(3.1%)	24,553	(6.4%)	92,967 (9.0%)
Korea, Rep. of	3,464	(1.3%)	4,192	(1.5%)	8,217	(2.1%)	25,526 (2.5%)
Total	258,609		278,445		386,585		1,037,698
Bank Claims (outstanding)							
PRC	17,800	(4.3%)	11,314	(1.0%)	18,698	(1.1%)	62,377 (1.9%)
Korea, Rep. of	25,722	(6.2%)	11,000	(0.9%)	16,308	(1.0%)	50,075 (1.6%)
Total	411,743		1,165,110		1,652,897		3,223,447

FDI = foreign direct investments, PRC = People's Republic of China.

¹Values in parentheses are in percentage of total.

Source: ADB calculations using data from Table 9B (consolidated foreign bank claims of reporting banks—immediate borrower basis). Bank for International Settlements and Haver Analytics.

Table 9: Financial Links: Portfolio Flows—PRC, Japan, and Republic of Korea¹ (\$ million)

	2001		2005		2012	
PRC inflows from:						
Japan	1,669	(8.2%)	4,074	(3.5%)	10,423	(1.6%)
Korea, Rep. of	157	(0.8%)	101	(0.1%)	6,651	(1.0%)
World	20,417		116,213		644,169	
Japan inflows from:						
PRC	—		—		—	
Korea, Rep. of	176	(0.03%)	1,463	(0.1%)	5,440	(0.4%)
World	540,800		1,295,878		1,430,816	
Rep. of Korea inflows from:						
PRC	—		—		—	
Japan	5,835	(7.5%)	7,456	(3.0%)	24,228	(5.1%)
World	77,340		250,776		471,965	

— = unavailable, PRC = People's Republic of China.

¹Values in parentheses are portfolio inflows percentage share to reporter economy's portfolio inflows from the world.

Source: ADB calculations using data from *Coordinated Portfolio Investment Survey*, International Monetary Fund.

Table 10: Tourist Arrivals—PRC, Japan, and Republic of Korea¹ (In thousands)

	1995		2005		2010		2013	
PRC from								
Japan	1,305	(2.8%)	3,390	(2.8%)	3,722	(2.8%)	2,878	(2.2%)
Korea, Rep. of	529	(1.1%)	3,545	(2.9%)	4,085	(3.1%)	3,969	(3.1%)
World	46,113		120,259		133,762		129,078	
Japan from								
PRC	221	(6.7%)	653	(9.8%)	1,413	(16.4%)	1,314	(12.7%)
Korea, Rep. of	874	(26.4%)	1,747	(26.2%)	2,440	(28.3%)	2,456	(23.7%)
World	3,315		6,675		8,610		10,364	
Rep. of Korea from								
PRC	178	(5.2%)	710	(12.4%)	1,875	(21.3%)	4,327	(35.5%)
Japan	1,667	(48.8%)	2,440	(42.6%)	3,023	(34.4%)	2,748	(22.6%)
World	3,416		5,730		8,798		12,176	

PRC = People's Republic of China.

¹Values in parentheses are percentage of each reporting economy's total arrivals from the world.

Source: ADB calculations using data from CEIC and *Data on Outbound Tourism*, World Tourism Organization.

More people have been travelling between the PRC, Japan, and the Republic of Korea due to geographical and cultural proximity.

In 2013, Japan attracted more tourists from the Republic of Korea than from the PRC—2.5 million versus 1.3 million, even though the PRC economy is seven times the Republic of Korea's and has a population 26 times as large (**Table 10**). While Japan's population is more than double the Republic of Korea's, since 2005 more tourists from the Republic of Korea has visited the PRC. Combined, tourists from Japan and the Republic of Korea going to the PRC rose from 3.9% of total visitors in 1995 to 5.3% in 2013. More PRC tourists visited the Republic of Korea than those visiting Japan, with the number of tourists going to the Republic of Korea above the number visiting Japan since the mid-2000s. Bucking the trend, tourism between Japan and the PRC has fallen over the past few years. Yet, Japan may have hosted more foreign workers from the PRC. According to official statistics, the number of foreign workers in 2011 was about 686,000 in Japan and 600,000 in the Republic of Korea, and it is possible a significant portion came from the PRC.²⁴

Business cycle co-movements between the PRC, Japan, and the Republic of Korea

International trade links generate both demand and supply spillovers across economies, which can increase the degree of business cycle co-movement. A positive shock to demand in one economy would increase demand for imports, thus boosting demand in other economies. Similarly, a positive shock to supply would lower prices of goods produced in one economy, which would transmit to other economies via cheaper imports. However, increased trade links may lead to increased specialization. And if industry-specific shocks are more important in driving business cycles, then business cycles in different regions could diverge.²⁵ Yet if common shocks dominate those industry-specific shocks, they would lead to a higher degree of business cycle co-movement.²⁶ Moreover, production networks amplify industry-specific shocks across economies linked by production networks. So they turn industry-specific shocks into common ones, resulting in business cycle synchronization. Similarly, international financial links can transmit shocks across economies as investors' risk perception affects financial markets and capital flows.

²⁴Japan Institute for Labor Policy and Training. 2013. *Databook of International Labor Statistics 2013*. <http://www.jil.go.jp/english/estatis/databook/index.htm>

²⁵P. Krugman. 1993. Lessons of Massachusetts for EMU. In F. Torres and F. Giavazzi, eds. *Adjustment and Growth in the European Monetary Union*. Cambridge: Cambridge University Press.

²⁶J. Frankel and A. Rose. 1998. The Endogeneity of the Optimum Currency Area Criteria. *Economic Journal*. 108. pp. 1009–1025.

GDP growth rates of the three economies were moderately correlated with each other over the past two decades, possibly due to increasingly close linkages; the growth correlation between the PRC and Japan and between the PRC and the Republic of Korea has risen over time.

From 1993 to 2013, while GDP growth rates in Japan and the Republic of Korea were more correlated than with the PRC, the correlation coefficient between Japan and the Republic of Korea is not statistically different from those between the PRC and Japan or the PRC and the Republic of Korea (**Table 11**). However, the growth correlation between the PRC and the other two rose from statistically insignificant from zero in the 10 years from 1993 to 2003 to significantly positive during the second decade. Specifically, the Republic of Korea's growth became more correlated with the PRC's, with the correlation coefficient between the two rising significantly—from 0.26 in the first decade to 0.67 in the second. While also rising, the correlation coefficients between Japan and the Republic of Korea during the two decades were not statistically different from one another.

Economic growth in the three East Asian economies is strongly linked with growth in the US.

Among the three, Japan has the strongest correlation with US growth, with the PRC insignificantly correlated—PRC correlation coefficients for the entire sample period

and two sub-periods are not statistically different from zero. However, both Japan and the Republic of Korea have become more correlated with the US from the first to second decade—correlation coefficients rose to 0.83 and 0.62, respectively. It appears that the global financial crisis, which originated in the US, drove synchronization between business cycles in the US, Japan, and the Republic of Korea, but not with the PRC.

Vector autoregression (VAR) analysis confirms that shocks to PRC growth would have significant impact on growth in Japan and the Republic of Korea.

An unrestricted VAR with four lags includes quarterly GDP growth rates of the three economies and the US over the entire 1993–2013 sample period. Impulse responses of the VAR show that a shock to PRC growth would affect GDP growth in Japan and the Republic of Korea significantly after one quarter with the effects lasting two to three quarters. The shocks to growth in Japan and the Republic of Korea, however, would not affect PRC growth significantly (**Figure 19**). Nor would shocks to Japan and the Republic of Korea affect each other. The results are consistent with the trade link analysis (including both gross exports and the value-added embodied in exports), as value-added is a part of GDP. As a major economic partner to the three, a US shock would affect growth in all three, with the impact on Japan's growth lasting four quarters; that on the PRC and the Republic of Korea is only significant in the second quarter.

Table 11: Correlation Coefficients: GDP Growth Rates

	1993Q1–2013Q4	1993Q1–2003Q1	2003Q2–2013Q4
PRC–Japan	0.32 [0.11,0.5]	0.18 [–0.13,0.47]	0.41 [0.13,0.64]
PRC–Korea, Rep. of	0.34 [0.13,0.51]	0.26 [–0.05,0.52]	0.67* [0.46,0.81]
Japan–Korea, Rep. of	0.52 [0.34,0.66]	0.54 [0.28,0.73]	0.79 [0.64,0.88]
PRC–US	0.08 [–0.13,0.29]	–0.09 [–0.38,0.23]	0.27 [–0.04,0.53]
Japan–US	0.56 [0.39,0.69]	0.02 [–0.29,0.33]	0.83* [0.7,0.9]
Korea, Rep. of–US	0.36 [0.16,0.53]	0.03 [–0.28,0.34]	0.62* [0.39,0.77]

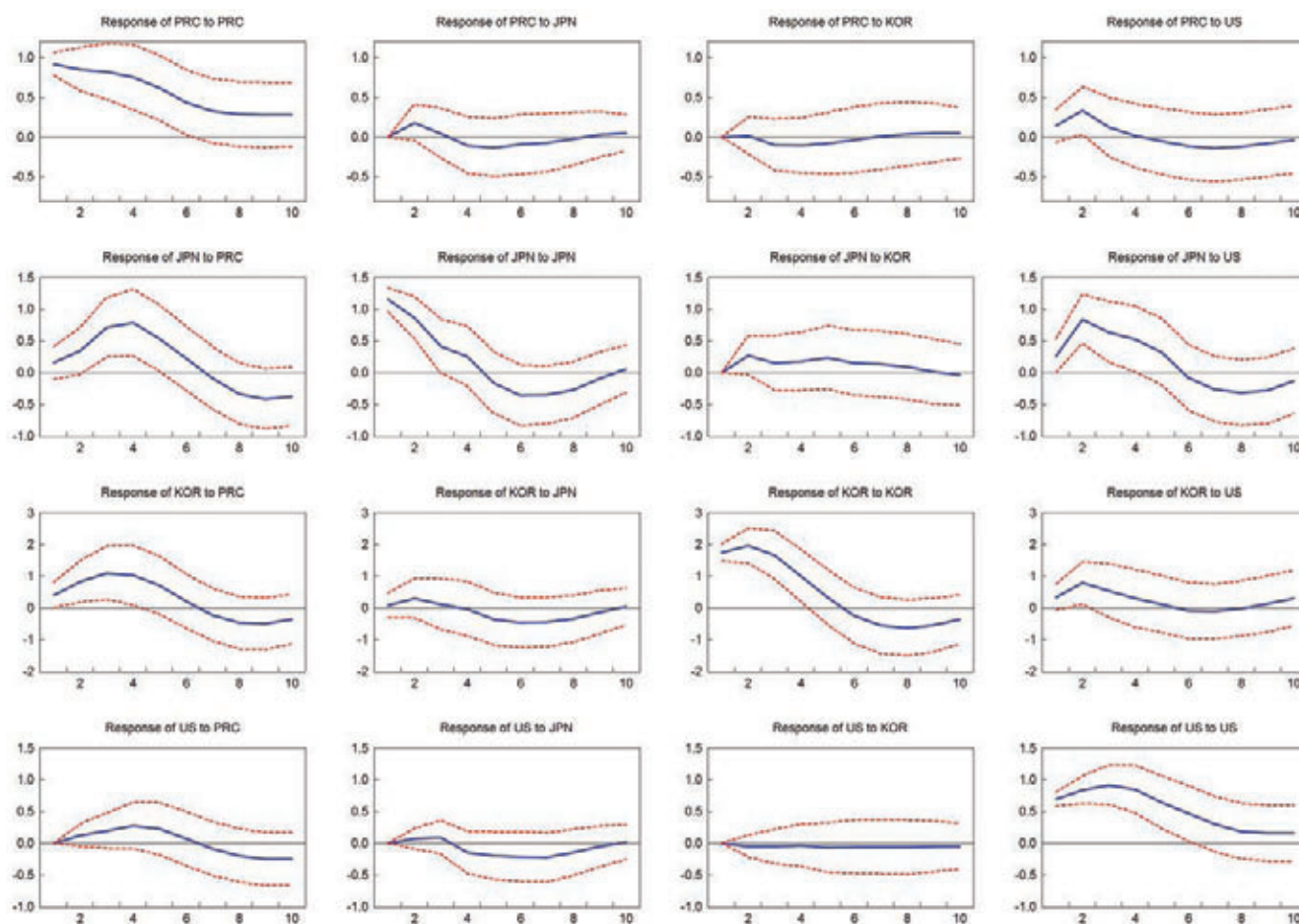
* indicates that the statistic is significantly higher than 1993Q1–2003Q1.

Note: Figures reflect pairwise correlations. 95% confidence intervals are reported in square brackets. Japan data only up to 2013Q3.

Source: ADB calculations using data from Haver Analytics.

Figure 19: VAR Analysis: Impulse Responses to a Shock from One Economy (percentage points)

Response to Cholesky One S.D. Innovations ± 2 S.E.



PRC = People's Republic of China; JPN = Japan; KOR = Republic of Korea; US = United States; VAR = vector autoregression.

Notes: Impulse response functions calculated based on the estimated VAR model. Cholesky ordering is as follows: US, PRC, JPN, KOR.

Source: ADB calculations using data from Haver Analytics.

Variance decomposition of the VAR indicates that US growth can explain about 30% of variance in Japan's growth, but very little in the variation in the PRC or the Republic of Korea (**Table 12**). In contrast, PRC growth explains over 20% of the variance of both Japan and the Republic of Korea's growth, while growth of Japan and the Republic of Korea explains little in the variation of PRC's growth, and in each other's. The VAR results clearly suggest that while the three economies are closely linked to the US, PRC growth has a significant explanatory power in the variation of growth of both Japan and the Republic of Korea. VAR analysis for the two sub-sample periods yields similar results. Comparing the second half of the sample period with the first half, the responses of growth of Japan and the Republic of Korea to a shock in PRC growth lasts longer and PRC growth can explain more variations in the growth of Japan and

the Republic of Korea. In other words, the effect of a shock to PRC growth has grown large over time. The impact of US growth has also become more significant on Japan's growth during the second decade, but not on the PRC and in the Republic of Korea.

In sum, the PRC, Japan, and the Republic of Korea have built close economic links between themselves over the past two decades. This is not only because of their proximity, but also due to their production networks and supply chains—and in part with Japanese investments in the PRC and the Republic of Korea. Close trade and financial links have also brought about a high degree of macroeconomic interdependence and business cycle co-movement. With the PRC economy growing larger and driven by idiosyncratic shocks, economic growth in Japan and the Republic of Korea is increasingly

Table 12: VAR Analysis: Share of Growth Variance Due to Each Economy (%)

Quarterly Average	PRC	Japan	Korea, Rep. of	US
PRC				
Q1–Q5	93.2	1.3	0.4	5.1
Q6–Q10	92.3	2.0	0.8	4.9
Japan				
Q1–Q5	14.8	60.2	2.1	22.9
Q6–Q10	27.9	41.3	3.6	27.2
Korea, Rep. of				
Q1–Q5	15.1	0.9	77.1	6.9
Q6–Q10	23.0	3.9	66.3	6.8
US				
Q1–Q5	2.7	0.9	0.2	96.2
Q6–Q10	6.3	4.4	0.5	88.8

PRC = People's Republic of China ; US = United States; VAR = vector autoregression.

Note: Based on estimated VAR model. Cholesky ordering is as follows: US, the PRC, Japan, and the Republic of Korea.

Source: ADB calculations using data from Haver Analytics.

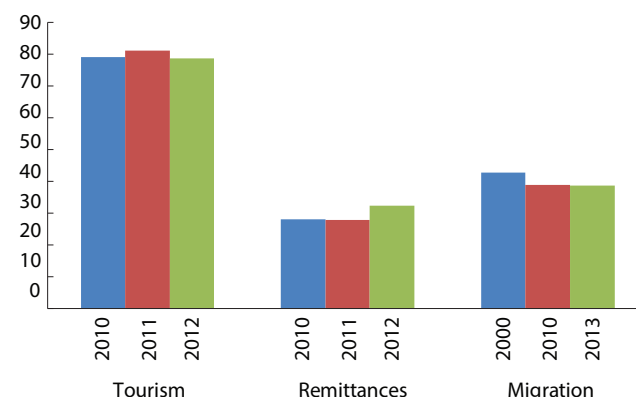
correlated to the PRC. And the effect on growth in Japan and the Republic of Korea of a shock in PRC growth is becoming significant and long-lasting.

Updates on Labor Mobility and Remittances

More Asians are migrating and travelling around the region, strengthening economic and cultural ties; while remittances provide households a means to spread risk and mitigate income shocks.

Early estimates for 2013 suggest the number of Asian migrants living within the region increased from 29.6 million in 2010 to 30.8 million; although the share of Asian intraregional migration remained broadly stable since 2010 at around 39% (**Figure 20**). During the period, South Asia had the highest intraregional migration share (over 40%), followed by Southeast Asia (30.2%) and East Asia (21.7%) (**Figure 21**). While Southeast Asia's intraregional migration share increased modestly, those in most other subregions remained

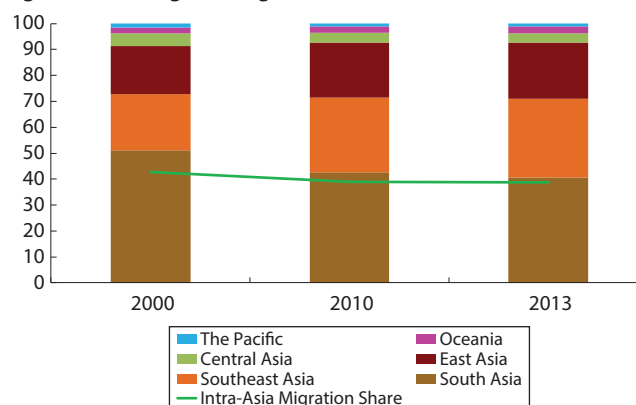
Figure 20: Labor Mobility and Remittances Intraregional Shares—Asia (% of total)



Notes: Tourism share = Asian tourists to Asia/Asian tourists to world; Remittance share = Asia's remittance from world; Migration share = Asian migrants to Asia/Asian migrants to world.

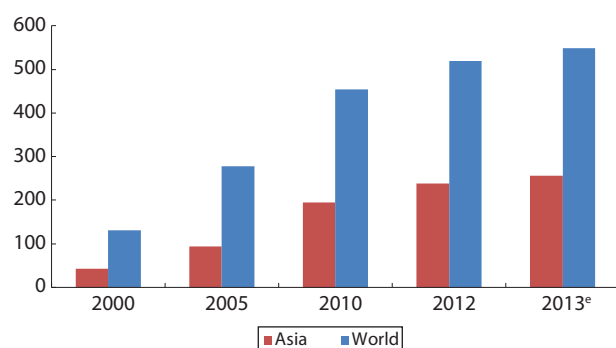
Source: ADB calculations using *Data on Outbound Tourism*, World Tourism Organization; *Bilateral Remittance Estimates using Migrant Stocks, Host Country Incomes, and Origin Country Incomes*, World Bank; and *Trends in International Migrant Stock*, Department of Economic and Social Affairs, United Nations.

Figure 21: Intraregional Migration Share—Asia (% of total)



Source: ADB calculations using data from *Trends in International Migrant Stock: Migrants by Destination and Origin*, Department of Economic and Social Affairs, United Nations.

relatively flat, with South Asia's share declining. This flat or downward migration trend may reflect tightening migration policies—after the global financial crisis—in most host economies; while the fall in share for South Asia may reflect India's weaker growth. Generally, wide disparities in income and employment opportunities remain the primary driver for migration; with middle- and high-income economies (Malaysia, Thailand, and Singapore, for example) hosting workers from low- and lower-middle-income economies (such as Bangladesh, Cambodia, the Lao PDR, and Myanmar). Recently, the flow of overseas workers has weakened somewhat due to stricter immigration policies in several host economies and expanding income opportunities in labor surplus economies.

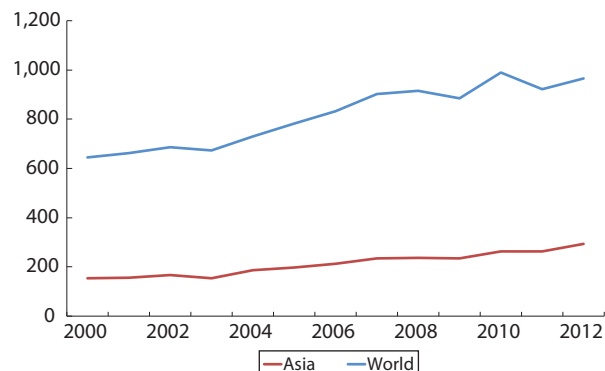
Figure 22: Total Remittance Inflows—Asia and World (\$ billion)

e = estimate.

Source: ADB calculations using data from *Annual Remittances Data*, World Bank.

Along with the rise in Asian migration, income remittances grew 7.4% to over \$256 billion in 2013 (**Figure 22**). Remittances to Asia account for 46.7% of global remittance inflows. Its growth rate nearly matches the 7.5% for all developing economies and exceeds the world's 5.8% expansion. South Asia accounted for over 44% of total remittance inflows to Asia, followed by East Asia (28%) and Southeast Asia (21%). In value, the top five remittance recipients were India, the PRC, the Philippines, Bangladesh, and Pakistan. As a proportion of total reserves, the top five recipients were Tajikistan, Pakistan, Armenia, Bangladesh, and Nepal. The share of intraregional remittance inflows rose from 27.9% in 2011 to 32.4% in 2012, closing the gap between intraregional migration share and intraregional remittance share. The increase in intraregional remittances could come partly from the fact that migrants in East Asia, Southeast Asia, and Oceania—whose shares have gone up—remit larger amounts of labor income back home.

As global economic conditions improve, growth in Asia's outbound tourism has grown 12.3% to 294 million in 2012 (**Figure 23**). This is the third straight year Asian tourism flows had strong growth, since falling 1.6% in Asia and 3.0% globally in 2009. Despite this growth, the share of intraregional tourist arrivals in Asia moderated to 78.7% in 2012 from 81.3% in 2011. Recent data suggest this drop is partly explained by slowing tourism flows between the PRC and Japan. In 2013, the number of PRC tourists visiting Japan fell 7.9% in contrast to double digit growth in 2012. Similarly, the growth of Japanese tourists visiting the PRC plummeted over 18% beyond the previous year's 3.8% drop. Interestingly, there is no marked deceleration in tourist flows between the PRC and the Republic of Korea.

Figure 23: Outbound Tourism—Asia and World (million)

Source: ADB calculations using *Data on Outbound Tourism*, World Tourism Organization.

It appears that migration and remittance inflows spread risk and act as a co-insurance strategy for poor households and family groups.

One study sees labor migration partly as a household response to absolute poverty.²⁷ The general proposition is that labor moves from low-income to high-income economies—referred to as labor mobility from South to North—to earn higher income that can be sent back home. A slight variation of this theory is that migration or remittance inflows act as a mechanism for households to cope with relative deprivation.²⁸ In 2013, after the devastation brought by Typhoon Haiyan in the Philippines, a large proportion of male household members moved to nearby cities and provinces to earn income to send back to their families. This anecdotal evidence seems to suggest that a key motivation for migration—whether domestic or international—is to provide for family affected by income shocks or lifecycle risks.²⁹ In this sense, migration and remittances spread risk and act as social insurance to help secure additional income and accumulate small capital for investment.³⁰

²⁷K. Hampshire. 2002. Fulani on the Move: Seasonal Economic Migration in the Sahel as a Social Process. *The Journal of Development Studies*. 38(5). pp.15–36.

²⁸O. Stark, E. J. Taylor, and S. Yitzhaki. 1988. Migration, Remittances and Inequality: A Sensitivity Analysis Using the Extended Gini Index. *Journal of Development Economics*. 28(3). pp. 309–322; M. Quinn. 2006. Relative Deprivation, Wage Differentials and Mexican Migration. *Review of Development Economics*. 10(1). pp. 135–153.

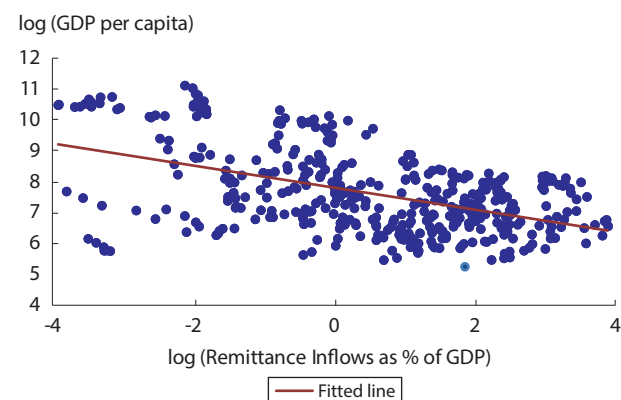
²⁹H. de Haas. 2007. Remittances, Migration and Social Development: A Conceptual Review of the Literature Social Policy and Development. *Programme Paper Number 34*. Geneva: United Nations Research Institute for Social Development.

³⁰Also, pull factors such as better career prospects, higher wages and lifestyle choices are likely to be strong reasons for migration.

Cross-section analysis of remittance data shows that remittance inflows are negatively correlated with income levels and are a more stable source of financial flows compared with FDI, bank lending, or portfolio inflows.

It appears there is a strong negative relationship between per capita GDP and the importance of remittance inflows (**Figure 24**). This suggests that remittance inflows are negatively correlated with income. Hence, *ceteris paribus*, one would expect poorer economies to rely more on remittance inflows to support and raise their income levels. The share of remittance inflows for economies such as Tajikistan, Pakistan, Bangladesh, the Kyrgyz Republic, Sri Lanka, the Philippines, and India, are quite high. Moreover, not only do remittance inflows provide additional income, it is also a more stable source of financial resources. The coefficient of variation for various types of capital flows—including remittance inflows—for the period 2008–2012 show that the volatility of remittance inflows is smaller compared with other types of capital flows. In particular, the volatility of equity inflows is about 60% higher than that of remittance inflows (**Figure 25**).

Figure 24: GDP Per Capita vs Remittance Inflow—Asia



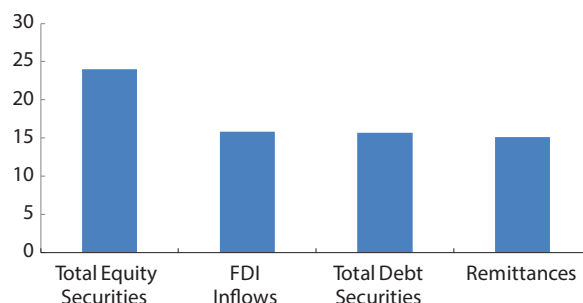
GDP = gross domestic product.

Source: ADB calculations using data from *World Development Indicators* and *Annual Remittances Data*, World Bank.

The coefficient of variation for selected Southeast Asian economies for the 2000–2012 period shows a contrast in the volatility of remittance inflows between economies with a higher share of “primary-educated” than “highly-educated” emigrant populations. Economies with relatively more highly-educated emigrants—such as the Philippines—have more stable remittance inflows than economies with more primary-educated emigrants such as the Lao PDR and Myanmar. This shows that while remittance inflows are relatively less volatile than other types of capital flows, they are also subject to some volatility due to differences in skill level.

Generally speaking, the stability of remittance inflows stems from several structural factors—such as the stock of migrant population, skills of the migrant population, and economic conditions of destination economies. Given the right set of structural factors, remittance inflows tend to stabilize regardless of cyclical shock, such as the volatility of economic conditions in destination economies, changes in migrant intake policies, exchange rate variation, or geo-political tensions.

Figure 25: Coefficient of Variation of Different Types of Capital Flows—Asia



Note: Covers 2008 to 2012 period.

Source: ADB calculations using data from *Annual Remittances Data*, World Bank; *Coordinated Portfolio Investment Survey*, International Monetary Fund; ASEAN Secretariat; Organisation for Economic Co-operation and Development; CEIC; and UNCTAD.

Data availability on hazards, exposure, vulnerabilities, and losses is key for strengthening financial resilience and disaster preparedness.

Another priority is to develop and promote a regional platform for collecting and disseminating data on assessing and modeling risks. These are useful tools for developing a common regional perspective of disaster risk. It will enhance understanding of different calamity risk financing strategies and tools—along with their potential benefits and limitations, including preconditions—that support the development of disaster risk financing instruments.

Key priorities for developing disaster risk financing markets and strengthening financial resilience should include business continuity planning, enhancing technical and institutional capacities, and coordinating various governmental authorities across all levels.

In a difficult economic environment, financial exposure to natural disasters has a clear impact on recovery. Economies across Asia urgently need to address their financial disaster readiness if they are to cope with the fallout from events that are both more frequent and more costly. Insurance coverage is a powerful component of disaster risk management, ensuring that firms have sufficient liquidity to manage any disruption. But this is only one component of a wider risk management plan to support corporate recovery from a supply chain disruption. While insurance can cover some of the losses, insurance alone is a costly strategy and should not be seen as a panacea.

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