

04

Financial Integration



Financial Integration

Progress in Cross-border Financial Transactions

From 2010 to 2015, Asia's intraregional cross-border asset holdings grew faster than total holdings.

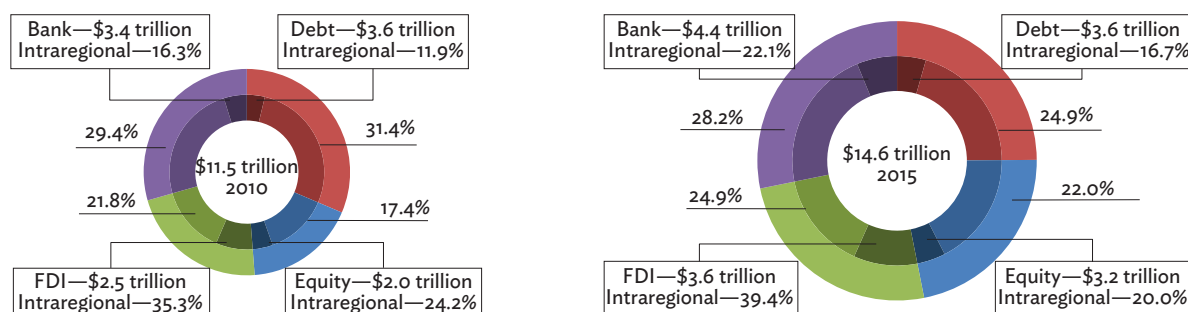
Asia's total cross-border asset holdings between 2010 and 2015 rose from \$11.5 trillion to \$14.6 trillion—a compounded annual growth rate (CAGR) of 4.9%. Intraregional holdings increased 8.8% CAGR (Figure 4.1).¹⁴ Foreign direct investment (FDI) increased from \$2.5 trillion to \$3.6 trillion. It accounted for the largest share (39.4%) of intraregional holdings to total holdings in 2015. Still, given its much larger holdings of non-Asian assets, Asia remains more financially linked to the rest of the world (ROW) than to itself.

During this period of uneven global economic recovery and diverging monetary policies in advanced economies, Asia's intraregional share of total cross-border asset holdings increased over all asset classes—except for portfolio equities, which declined from 24.2% to 20.0%. The intraregional share of Asia's cross-border debt asset holdings increased from 11.9% to 16.7%, but remained the smallest component. The share of intraregional bank claims increased to 22.1% in 2015 from 16.3% in 2010.

Growth in Asia's cross-border liabilities outpaced growth in cross-border assets, underscoring the region's continued investment attraction; the largest increase in share during 2010–2015 was in intraregional cross-border bank liabilities.

Asia's total cross-border liability holdings increased from \$11.5 trillion in 2010 to \$15.1 trillion in 2015—a 5.6% CAGR (Figure 4.2). Intraregional holdings increased

Figure 4.1: Asia's Cross-border Assets

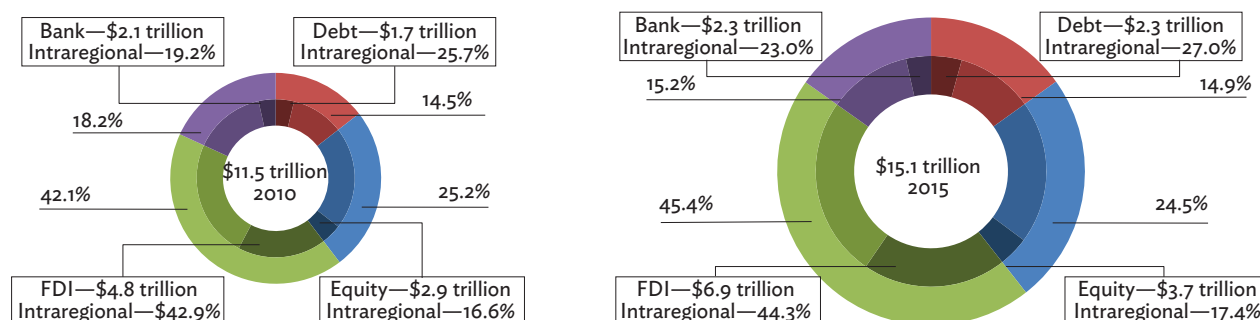


FDI = foreign direct investment.

Notes: FDI assets refer to outward FDI holdings. Bank assets refer to bank claims of Asian economies. Asia includes all 48 ADB regional members for which data are available as of December 2015.

Sources: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017); International Monetary Fund. Coordinated Direct Investment Survey. <http://cdis.imf.org> (accessed February 2017); and Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

¹⁴ Throughout this section, Asia's cross-border asset holdings refer to the stock of outbound portfolio debt, portfolio equity, and foreign direct investment (FDI), as well as cross-border bank claims. FDI stock data available only for 2009–2015.

Figure 4.2: Asia's Cross-border Liabilities

FDI = foreign direct investment.

Notes: FDI liabilities refer to inward FDI holdings. Asia includes all 48 ADB regional members for which data are available as of December 2015.

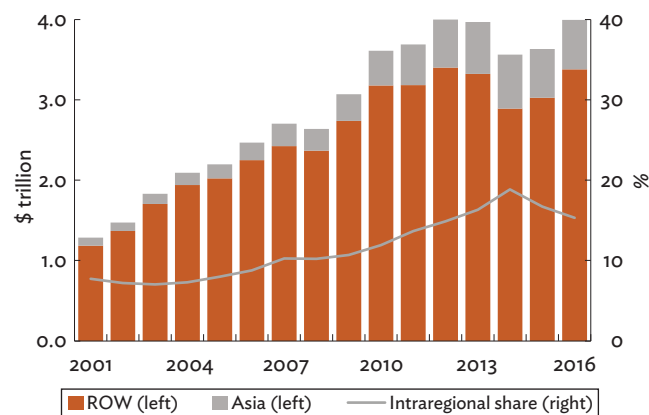
Sources: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017); IMF. Coordinated Direct Investment Survey. <http://cdsis.imf.org> (accessed February 2017); and Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

7.3% CAGR, reaching \$4.8 trillion in 2015. The larger rise in liabilities shows Asia continues to be an attractive destination for investors. The proportion of Asia's FDI liabilities also increased. The intraregional share for inward FDI rose to 44.3%, followed by debt liabilities (27.0%), bank liabilities (23.0%) and equity liabilities (17.4%). In particular, the intraregional share of Asia's cross-border intraregional bank liabilities had the largest increase in share among asset classes.

Portfolio Debt Holdings

The intraregional share of portfolio debt declined in 2016 as the steady recovery in advanced economies attracted more investors, both from the region and elsewhere.

Asia's outward portfolio debt investments rose from \$1.3 trillion in 2001 to \$4.0 trillion in 2016 (Figure 4.3).¹⁵ Between 2001 and 2014, growth in intraregional investment (15.8% annually) outpaced ROW investment (7.1%). The intraregional share grew by 7.1% to 18.9% during the period.

Figure 4.3: Outward Portfolio Debt Investment—Asia

ROW = rest of the world.

Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

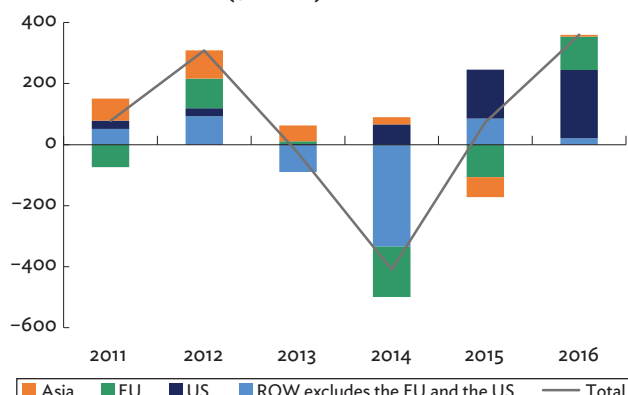
Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

However, between 2014 and 2016, after the 2013 taper tantrum, Asia's outward ROW investments grew by 8.2% CAGR, while intraregional outward investments declined 4.5%—the intraregional share fell from 18.9% to 15.3%. Regional investors increased their portfolio debt investment in the United States (US) and the European Union (EU), attracted by rising interest rates, in line with the global trend.

Asia's outward debt investments increased as higher yields attracted investors.

In 2016, Asia's outward portfolio debt investment increased \$360 billion, well above the \$73.4 billion increase during 2015 (Figure 4.4). The significant rise

¹⁵ For outward portfolio investment, several economies included in AEIR 2016 are excluded due to unavailable or lack of comparable data. They include Aruba, the Bahamas, Kingdom of Bahrain, Barbados, Chile, Curacao and Sint Maarten, Ireland, Netherlands Antilles, and Uruguay. Data on outward portfolio investment from the People's Republic of China are also excluded due to lack of comparable data for 2001–2014.

Figure 4.4: Change in Outward Portfolio Debt Investment—Asia (\$ billion)

EU = European Union, ROW = rest of the world, US = United States.
 Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

derived from a trend reversal in outward investment with the EU and within Asia. Intraregional outward investment increased \$5.8 billion—after decreasing \$64.6 billion during 2015. Outward investment to the EU increased \$109.6 billion—a sharp reversal from its \$107.1 billion decrease in 2015.

In 2016, investors from Japan flocked to the region seeking higher-yielding bonds—particularly in Australia, New Zealand, Singapore, and Indonesia. Japan, together with Australia, was also a primary contributor to the

increase in Asia's outward debt investment to the EU—Japan's EU investments increased \$41.3 billion in 2016 after declining \$74.0 billion in 2015. EU bonds, especially French bonds, are higher yielding than Japanese bonds (Reuters 2016).

While investors across the region contributed to the \$233.8 billion rise in Asia's outward investment to the US, Japan contributed most—\$168.5 billion.

The US remains top destination for Asia's outward portfolio debt investment and is increasing its share coinciding with US monetary policy normalization—the US share rose from 31.0% in 2011 to 40.6% in 2016 (Table 4.1).

In Asia, while Australia, the People's Republic of China (PRC), and Japan remain top destinations for outward portfolio debt investment, other Asian economies are seeing their share rise as well—from 5.1% in 2011 to 5.7% in 2016. Singapore, Hong Kong, China, and Indonesia were among the fastest growing destinations for Asia's outward portfolio debt investment.

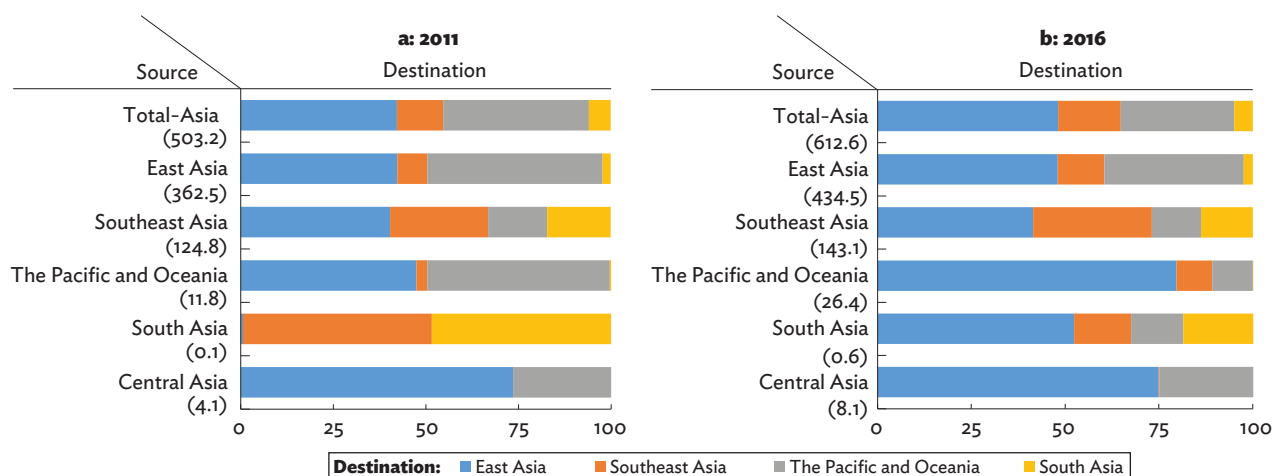
The increase in the proportion of Asia's total outward portfolio debt investment to the PRC and Japan drove East Asia's share up from 42.2% in 2011 to 48.1% in 2016 (Figure 4.5). Southeast Asia's share rose from 12.5% in 2011 to 16.7% in 2016 as Singapore (as a financial hub) continued to grow along with investment to Indonesia

Table 4.1: Destinations for Asia's Outward Portfolio Debt Investment (\$ billion)

	2016		2011		**
Asia					
Australia	171	(4.3%)	188	(5.1%)	▼
People's Republic of China	148	(3.7%)	89	(2.4%)	▲
Japan	68	(1.7%)	38	(1.0%)	▲
Other Asia	226	(5.7%)	189	(5.1%)	▲
Asia's outward portfolio debt investment to Asia	613	(15.3%)	503	(13.6%)	▲
Non-Asia					
United States	1,621	(40.6%)	1,144	(31.0%)	▲
European Union	1,034	(25.9%)	1,089	(29.5%)	▼
Cayman Islands	205	(5.1%)	476	(12.9%)	▼
Other non-Asia	521	(13.0%)	477	(12.9%)	▼
Asia's outward portfolio debt investment to non-Asia	3,381	(84.7%)	3,185	(86.4%)	▼
Asia's total outward portfolio debt investment	3,994	(100.0%)	3,688	(100.0%)	

** = direction of change in the shares to total, ▼ = decrease, ▲ = increase.

Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Figure 4.5: Asia's Intraregional Portfolio Debt Investment by Subregion (%)

Note: Numbers in parentheses are total investments (in \$ billion) from the respective subregions.

Source: ADB calculation using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Table 4.2: Sources of Asia's Inward Portfolio Debt Investment (\$ billion)

	2016		2011		**
Asia					
Hong Kong, China	226	(10.1%)	181	(9.5%)	▲
Japan	187	(8.4%)	178	(9.3%)	▼
Singapore	111	(5.0%)	104	(5.5%)	▼
Other Asia	89	(4.0%)	40	(2.1%)	▲
Asia's inward portfolio debt investment from Asia	613	(27.4%)	503	(26.4%)	▲
Non-Asia					
European Union	645	(28.9%)	555	(29.1%)	▼
United States	438	(19.6%)	416	(21.8%)	▼
International Organizations	260	(11.6%)	322	(16.9%)	▼
Other non-Asia	277	(12.4%)	110	(5.8%)	▲
Asia's inward portfolio debt investment from non-Asia	1,619	(72.6%)	1,403	(73.6%)	▼
Asia's total inward portfolio debt investment	2,232	(100.0%)	1,906	(100.0%)	

** = direction of change in the share to total, ▼ = decrease, ▲ = increase.

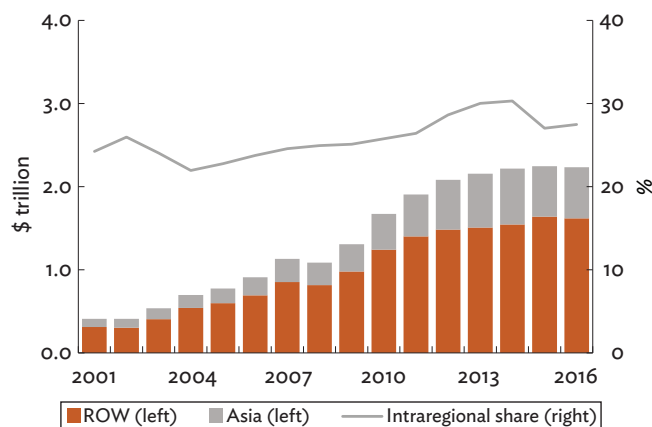
Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

and Malaysia. East Asia remained the top source of Asia's intraregional portfolio debt investment in 2016 (70.9%), despite dropping from 2011 (72.0%). Southeast Asia, the second top investment source, saw its share decrease from 24.8% in 2011 to 23.4% in 2016.

By economy, the top sources of Asia's intraregional portfolio debt investment in 2016 were the ASEAN+3 financial centers—Hong Kong, China; Japan; and Singapore (Table 4.2). However, the share of Hong Kong, China's portfolio debt investments to the PRC fell dramatically—from 80.4% in 2011 to 54.8% in 2016. Outside Asia, the EU, the US, and international

organizations remained top sources for inward portfolio debt investment to Asia. Despite a drop in non-Asia's relative share of inward portfolio debt investment—from 73.6% in 2011 to 72.6% in 2016—non-Asian economies remained the primary source of Asia's inward portfolio debt investment.

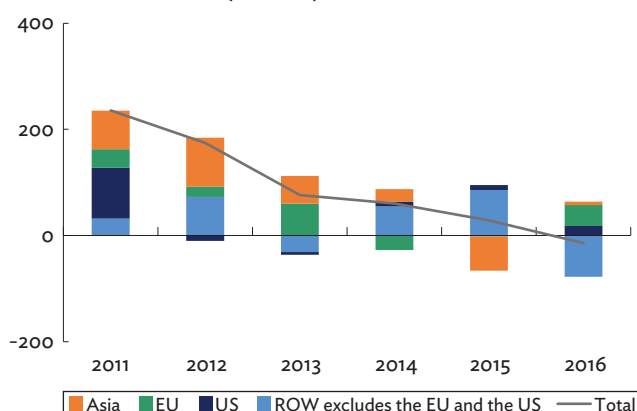
Asia's inward portfolio debt investment increased dramatically, from \$410.5 billion in 2001 to \$2.2 trillion in 2015 (Figure 4.6). In 2015, low-yielding debt securities in the EU and the US drove investors from non-Asian economies toward Asia's portfolio debt markets—investment rose from \$1.54 trillion in 2014 to

Figure 4.6: Asia's Inward Portfolio Debt Investment—Asia

ROW = rest of the world.

Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from International Monetary Fund, Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Figure 4.7: Change in Inward Portfolio Debt Investment—Asia (\$ billion)

EU = European Union, ROW = rest of the world, US = United States.

Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from International Monetary Fund, Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

\$1.64 trillion in 2015. Higher US yields drove investment to Asia down slightly—from \$1.64 trillion to \$1.62 trillion in 2016. Intraregional investment rose to \$612.6 billion as Japanese investors sought securities with higher yields than domestic debt. This increased Asia's intraregional share to 27.5%.

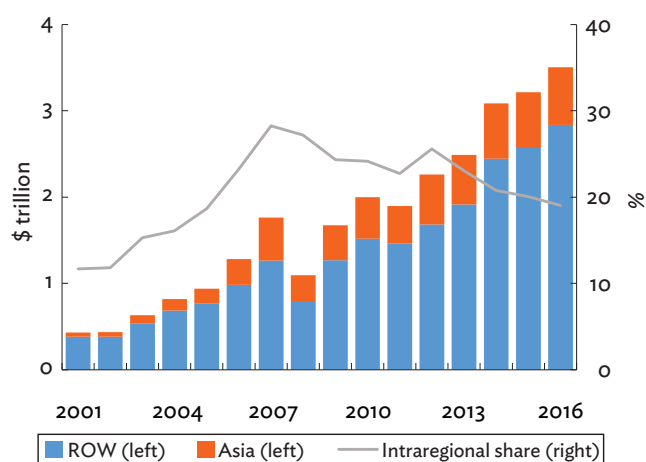
Asia's inward portfolio debt investment decreased \$13.9 billion in 2016—a reversal from its \$28.8 billion increase in 2015 (Figure 4.7)—as a result of a drastic increase in Cayman Island investment in 2015.

The United Kingdom drove much of the EU change in debt investment toward Asia, increasing its investments in Japan (\$48.7 billion). The increased inward portfolio debt investment from the US in 2016 (\$18.0 billion) also had much of it invested in Japan (\$46.6 billion), coinciding with Japan's economic recovery. Moreover, the \$77.6 billion decrease in inward portfolio debt investment into Asia, particularly the ROW excluding the EU and the US, was due to the region's relative local currency depreciation (or slowed appreciation)—triggered by the expected series of US interest rate hikes in 2016.

Portfolio Equity Holdings

In 2016, Japan's appetite for non-regional equity markets led to a decline in intraregional share of portfolio equity investments and an increase in Asia's linkage to the ROW.

Asia's outward portfolio equity investment increased from \$3.2 trillion in 2015 to \$3.5 trillion in 2016—its highest level since 2001 (Figure 4.8). The increase was largely to the ROW—from \$2.6 trillion to \$2.8 trillion. Much of the increase can be traced to Japan, which held \$1.3 trillion in outward portfolio equity securities of non-Asian economies in 2016, up from \$1.2 trillion in 2015. Intraregional outward portfolio equity investment rose from \$644.0 billion in 2015 to \$666.4 billion in

Figure 4.8: Outward Portfolio Equity Investment—Asia

ROW = rest of the world.

Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

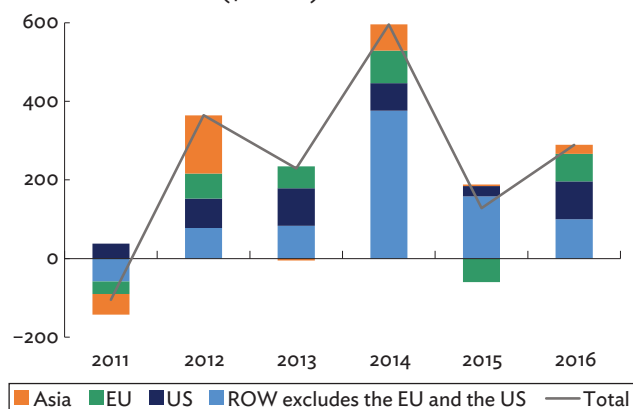
Source: ADB calculations using data from International Monetary Fund, Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

2016. However, Asia's intraregional share dropped from 20.0% in 2015 to 19.0% in 2016, given its growing linkage to the ROW. By comparison, the EU's intraregional share remained significantly above Asia's (51.0%), down from 2015 (52.7%). While intraregional shares in Latin America and the Middle East both declined from 2015 to 2016, North America's intraregional share increased (from 16.9% to 19.4%).

Intraregional outward portfolio equity investment rose in 2016 due to larger investments to the PRC and Hong Kong, China.

Asia's outward portfolio equity investment in 2016 rose by \$289.2 billion, well above the \$128.0 billion increase in 2015 (Figure 4.9). While primarily due to Japan's higher investment in the Cayman Islands and the US—by \$59.2 billion and \$56.0 billion respectively—the increase in Hong Kong, China investment to the Cayman Islands (\$50.3 billion) also contributed to the significant rise in Asia's outward portfolio equity investment during the year.¹⁶ Intraregional investment likewise rose \$22.4 billion in 2016, due to an increase in outward portfolio equity investment to Hong Kong, China from the PRC (\$26.3 billion) and to the PRC from Hong Kong, China (\$16.4 billion).

Figure 4.9: Change in Outward Portfolio Equity Investment—Asia (\$ billion)



EU = European Union, ROW = rest of the world, US = United States.
 Note: Asia includes 48 ADB regional members for which data are available as of December 2016.
 Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

¹⁶ The Cayman Islands is one of the largest offshore financial centers, acting as conduit for large international financial institutions to reduce taxes and evade onshore regulations. Investors from Asia, particularly Japan, use the Cayman Islands to indirectly access US financial markets (Fichtner 2016).

From 2011 to 2016, Asia's outward portfolio equity investment remained skewed toward the ROW than the region; unlike outward portfolio debt investment, its share of outward portfolio equity investment to non-Asian economies rose from 77.3% in 2011 to 81.0% in 2016.

The PRC remained top destination for Asia's intraregional outward portfolio equity investment (Table 4.3). The decline in intraregional share was mainly due to an increase in relative share of investment going to the Cayman Islands—from 14.6% in 2011 to 26.2% in 2016. Hong Kong, China—aside from Japan—was a major source of outward portfolio equity investment to the Cayman Islands, whose stocks are allowed to list on Hong Kong Exchanges and Clearing, Ltd. The US and the EU, along with the Cayman Islands, were the most popular destinations for Asia's outward portfolio equity investment in 2016, with much of the investment coming from Japan.

In 2016, East Asia remained top destination for intraregional portfolio equity investment (70.9%) (Figure 4.10). Southeast Asia's intraregional share inched up from 12.1% in 2011 to 12.2% in 2016. South Asia's share also rose (from 4.5% to 6.6%) due to increased investments in Pakistan and Nepal. East Asia remained the top source of intraregional portfolio equity investment, although its share slightly declined in 2016 (54.0%) from 2011 (54.2%). Southeast Asia's relative share as source of intraregional equity investments increased to 35.0% from 32.6% during the same period.

Asia continued to depend on portfolio equity investment from outside the region.

Similar to inward portfolio debt investment, the region's financial centers—Hong Kong, China; Singapore; and Japan—remained the top sources of inward portfolio equity investment (Table 4.4). Asia continues to depend on portfolio equity investment from the ROW. Despite a decline in Asia's portfolio equity investment share from the EU between 2011 and 2016 (from 26.6% to 23.6%), the EU remained ranked second behind the US—which saw its share dip slightly (from 44.4% to 44.2%).

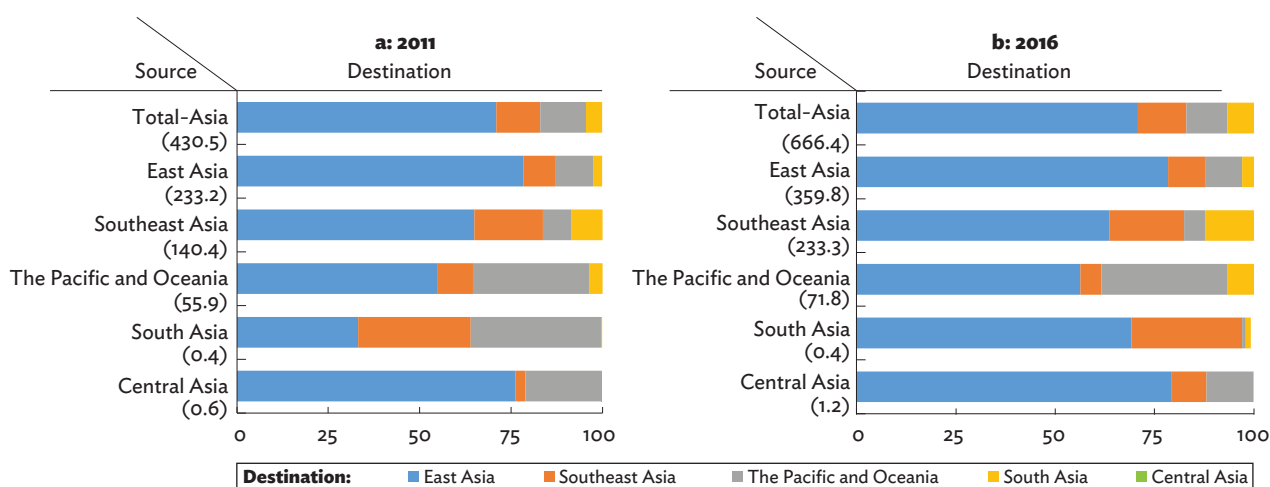
Asia's inward portfolio equity investment increased from \$653.8 billion in 2001 to \$3.9 trillion in 2016 (Figure 4.11). The increase was driven by higher

Table 4.3: Destinations of Asia's Outward Portfolio Equity Investment (\$ billion)

	2016		2011		**
Asia					
People's Republic of China	302	(8.6%)	188	(9.9%)	▼
Japan	72	(2.1%)	41	(2.2%)	▼
Australia	61	(1.7%)	48	(2.5%)	▼
Other Asia	231	(6.6%)	154	(8.1%)	▼
Asia's outward portfolio equity investment to Asia	666	(19.0%)	431	(22.7%)	▼
Non-Asia					
United States	924	(26.4%)	560	(29.5%)	▼
Cayman Islands	919	(26.2%)	277	(14.6%)	▲
European Union	536	(15.3%)	324	(17.1%)	▼
Other non-Asia	458	(13.1%)	304	(16.0%)	▼
Asia's outward portfolio equity investment to non-Asia	2,837	(81.0%)	1,465	(77.3%)	▲
Asia's total outward portfolio equity investment	3,503	(100.0%)	1,896	(100.0%)	

** = direction of change in the shares to total, ▼ = decrease, ▲ = increase.

Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Figure 4.10: Asia's Intraregional Portfolio Equity Investment by Subregion (%)

Note: Numbers in parentheses are total investments (in \$ billion) from the respective subregions.

Source: ADB calculation using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

investments in Japan (\$35.4 billion) and Singapore (\$19.7 billion), along with a reversal in investments in Taipei, China (from a \$14.7 billion contraction to a \$34.3 billion increase), Australia (from \$8.8 billion contraction to \$29.7 billion increase), and the Republic of Korea (from \$8.0 billion contraction to \$28.1 billion increase).

from countries outside Asia—such as the US (\$88.7 billion), the Netherlands (\$19.0 billion), Luxembourg (\$9.3 billion), and the Cayman Islands (\$7.7 billion)—coupled with strong intraregional equity investments from the PRC (\$27.2 billion) and Hong Kong, China (\$22.7 billion) contributed to the rise in 2016.

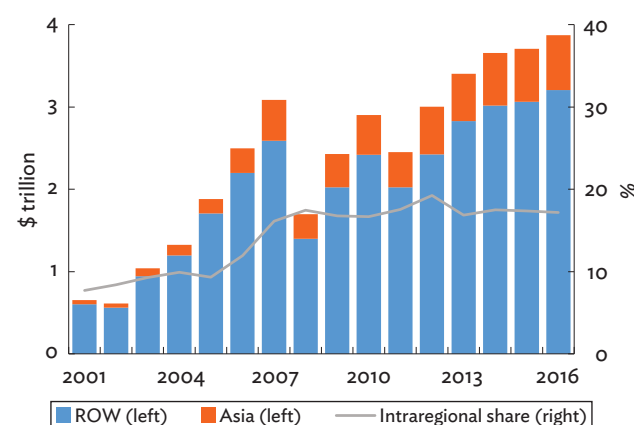
Inward portfolio equity investment rose \$167.6 billion in 2016, significantly above the \$46.7 billion increase in 2015 (Figure 4.12). Robust equity investment inflows

Table 4.4: Sources of Asia's Inward Portfolio Equity Investment (\$ billion)

	2016		2011		**
Asia					
Hong Kong, China	236	(6.1%)	143	(5.8%)	▲
Singapore	205	(5.3%)	125	(5.1%)	▲
Japan	89	(2.3%)	68	(2.8%)	▼
Other Asia	137	(3.5%)	94	(3.8%)	▼
Asia's inward portfolio equity investment from Asia	666	(17.2%)	431	(17.5%)	▼
Non-Asia					
United States	1,713	(44.2%)	1,091	(44.4%)	▼
European Union	913	(23.6%)	653	(26.6%)	▼
Canada	133	(3.4%)	87	(3.6%)	▼
Other non-Asia	449	(11.6%)	192	(7.8%)	▲
Asia's inward portfolio equity investment from non-Asia	3,207	(82.8%)	2,023	(82.5%)	▲
Asia's total inward portfolio equity investment	3,873	(100.0%)	2,453	(100.0%)	

** = direction of change in the shares to total, ▼ = decrease, ▲ = increase.

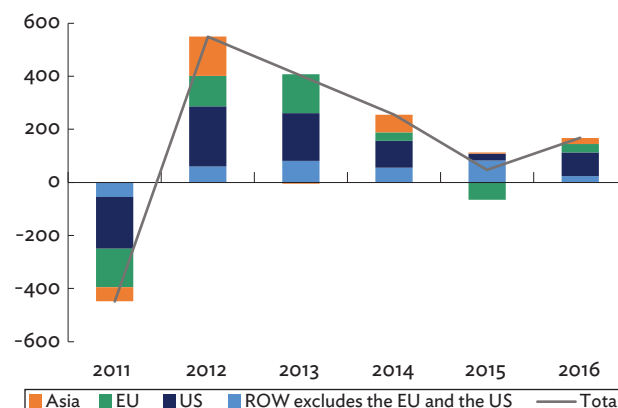
Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Figure 4.11: Inward Portfolio Equity Investment—Asia

ROW = rest of the world.

Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Figure 4.12: Change in Inward Portfolio Equity Investment—Asia (\$ billion)

EU = European Union, ROW = rest of the world, US = United States.

Note: Asia includes 48 ADB regional members for which data are available as of December 2016.

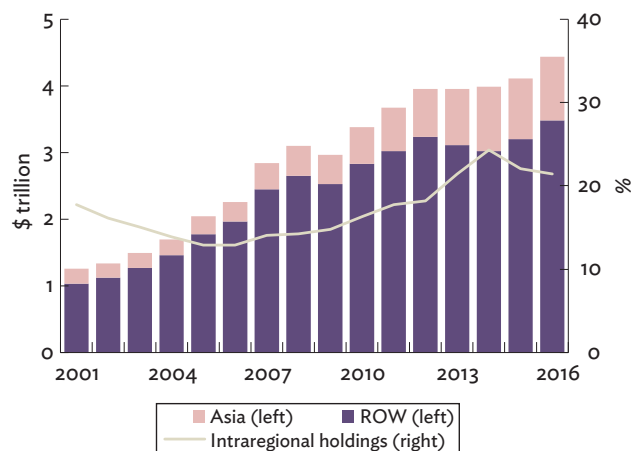
Source: ADB calculations using data from International Monetary Fund. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2017).

Bank Holdings

While Asia's cross-border bank claims and liabilities remain largely linked outside the region—in particular the US and the EU—the intraregional shares of claims and liabilities increased during 2011–2016 (from 17.8% to 21.4% for bank claims and 18.8% to 25.7% for bank liabilities).

Asia's cross-border bank claims increased from \$1.3 trillion in 2001 to \$4.4 trillion in 2016 (Figure 4.13).¹⁷ After the global financial crisis (GFC), Asia's intraregional share rapidly increased—from 14.3% in 2008 to 24.3% in 2014, before dropping to 21.4% in 2016. According to the Global Financial Stability Report (GFSR) April 2015, the EU bank retrenchment cleared the way for greater Asia bank involvement. The expansion of intraregional

¹⁷ Asian economies reporting locational banking statistics are Australia; Japan; the Republic of Korea; and Taipei, China.

Figure 4.13: Asia's Cross-border Bank Claims

ROW = rest of the world.

Note: Asia includes all 48 ADB regional members for which data are available as of December 2016.

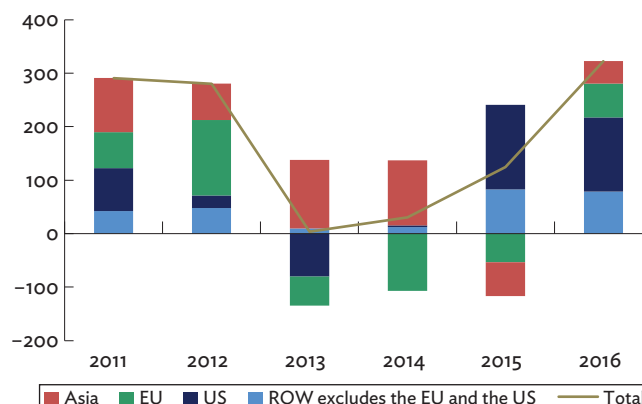
Source: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

banking could create the emergence of regional systemically important financial institutions, which requires appropriate regulation and supervision as well good risk and liquidity management (Box 4.1).

In fact, Asia's cross-border bank claims increased to \$322.5 billion in 2016, above the 2015 increase of \$124.1 billion (Figure 4.14). Japan contributed 88.7% of the 2016 increase against a backdrop of limited domestic credit demand and benign growth—which led Japanese banks to increase their overseas lending.

Japan's cross-border bank claims on Asia increased \$19.8 billion in 2016 as it capitalized on the region's continued growth. Japan's cross-border bank claims on the EU increased \$59.2 billion as it narrowed the funding gap left by retrenched EU banks (Lam 2013). Japan's cross-border bank claims on the US in 2016 also increased (\$131.3 billion) due to the yen's appreciation against the US dollar. This could be due to Japan's ability to lend long-term (for project finance) and engage in syndicated loans (IMF April 2015).

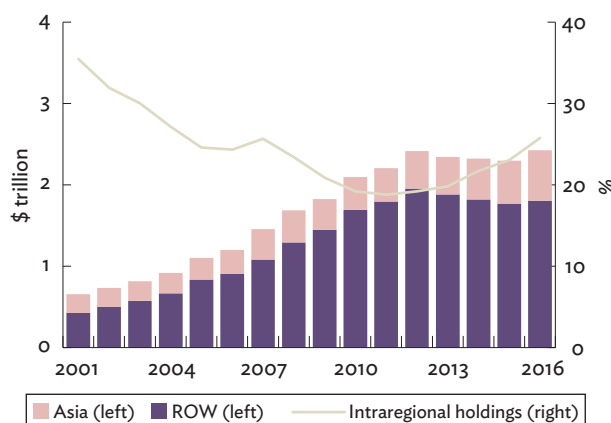
Singapore; the PRC; and Hong Kong, China remained the top intraregional destinations for Asia's cross-border bank claims (Table 4.5). The increase in relative and absolute shares of cross-border bank claims in other Asian economies helped boost intraregional share from 17.8% in 2011 to 21.4% in 2016—particularly cross-border bank claims on Indonesia, Japan, and Thailand. The US,

Figure 4.14: Change in Asia's Cross-border Bank Claims (\$ billion)

EU = European Union, ROW = rest of the world, US = United States.

Note: Asia includes all 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

Figure 4.15: Asia's Cross-border Bank Liabilities (\$ trillion)

ROW = rest of the world.

Note: Asia includes all 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

the EU and the Cayman Islands remain top destinations for Asia's bank claims—with Japan lending heavily to these regions in 2016.

Asia's cross-border bank liabilities increased from \$655.1 billion in 2001 to \$2.4 trillion in 2016 (Figure 4.15). Following tighter banking restrictions and bank retrenchments during the EU crisis, Asia's intraregional bank liabilities grew 8.6% CAGR, while cross-border bank liabilities outside Asia grew a mere

Box 4.1: Asia's Cross-border Collateral Agreements

After the 2008/09 global financial crisis, intraregional cross-border banking in Asia expanded significantly. The notable increase in intraregional banking and the emergence of large regional banks creates a new concern for the region's regulators—as a financial shock create by one bank can be transmitted from its home economy to host economies or vice versa. Cross-border banking requires additional risk management because loans provided through foreign branches and subsidiaries are in foreign currencies. Banks may face difficulties in local currency funding as onshore and offshore foreign exchange and future markets are segregated.

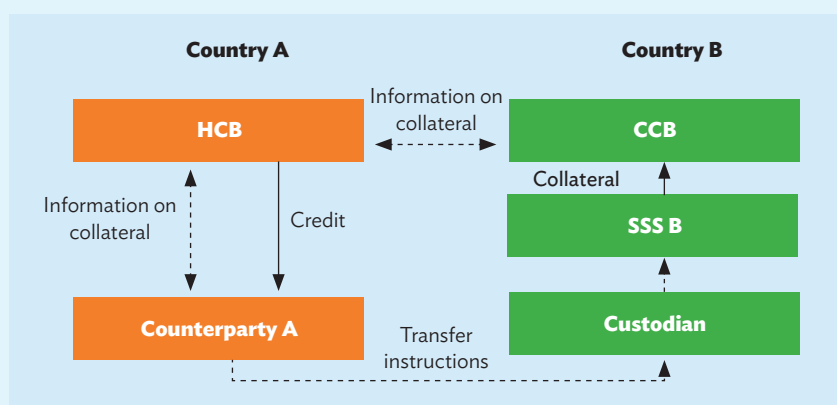
Expanding cross-border banking must coincide with good risk and liquidity management across multiple currencies and jurisdictions. The Committee on Payment and Settlement Systems recognize that cross-border collateral arrangements (CBCAs) reduce the risk of liquidity shortfalls—which create systemic risk. Among available CBCAs, the correspondent central banking model (CCBM) used by the European Central Bank (ECB) stands out. Through the CCBM, a bank can obtain euro liquidity from its home central bank under the CCBM by pledging assets held by branches in another country (box figure).

Asia has no comparable system. But after the global financial crisis, a series of CBCAs were established and some foreign assets were included as eligible collateral. In 2009, the Bank of Japan (BOJ) expanded eligibility to

government securities of the United States (US), France, and Germany. In 2011, the BOJ and Bank of Thailand (BOT) agreed to establish a CBCA, followed by the BOJ and Monetary Authority of Singapore (MAS) in 2013, and in 2015 by the BOJ and Bank Indonesia and Banko Sentral ng Pilipinas. MAS expanded eligibility of collateral for its standby facility under CBCAs with Bank Negara Malaysia (BNM), the Bank of England, BOT, Banque de France, De Nederlandsche Bank, Deutsche Bundesbank, the US Federal Reserve Bank and the BOJ. In 2012, the BOT and BNM signed a Memorandum of Understanding to enter into a CBCA.

For a more routinely operationalized cross-border collateral arrangement, linkages among central securities depositories (CSD) and real-time gross settlement systems (RTGS) by central banks (CSD-RTGS Linkages) were proposed in 2013 by the Cross-Border Settlement Infrastructure Forum (CSIF) (ADB 2014). CSD-RTGS Linkages enable local currency bonds to be settled by delivery versus payment via central banks and CSDs, ensuring secure settlement. CSD-RTGS Linkages are expected to free-up high quality domestic ASEAN+3 bonds for cross-border transactions and collateral, thus contributing to regional financial stability. Given different currencies, regulations, and different levels of market development, the CSIF needs to discuss various issues to make the linkages operational—such as the collateral frameworks of central banks varying across economies and private sector involvement.

Correspondent Central Banking Model



CCB = Correspondent Central Bank, HCB = Home Central Bank, SSS = Securities Settlement Systems.
Source: Bank for International Settlements (2006).

Table 4.5: Destinations of Asia's Cross-border Bank Claims (\$ billion)

	2016		2011		**
Asia					
Singapore	206	(4.6%)	156	(4.3%)	▲
People's Republic of China	194	(4.4%)	74	(2.0%)	▲
Hong Kong, China	184	(4.1%)	135	(3.7%)	▲
Other Asia	365	(8.2%)	287	(7.8%)	▲
Asia's cross-border bank claims on Asia	949	(21.4%)	653	(17.8%)	▲
Non-Asia					
United States	1,348	(30.4%)	1,106	(30.1%)	▲
European Union	1,192	(26.9%)	1,201	(32.7%)	▼
Cayman Islands	617	(13.9%)	350	(9.5%)	▲
Other non-Asia	328	(7.4%)	364	(9.9%)	▼
Asia's cross-border bank claims on Non-Asia	3,486	(78.6%)	3,021	(82.2%)	▼
Asia's total cross-border bank claims	4,435	(100.0%)	3,674	(100.0%)	

** = direction of change in the shares to total, ▼ = decrease, ▲ = increase.

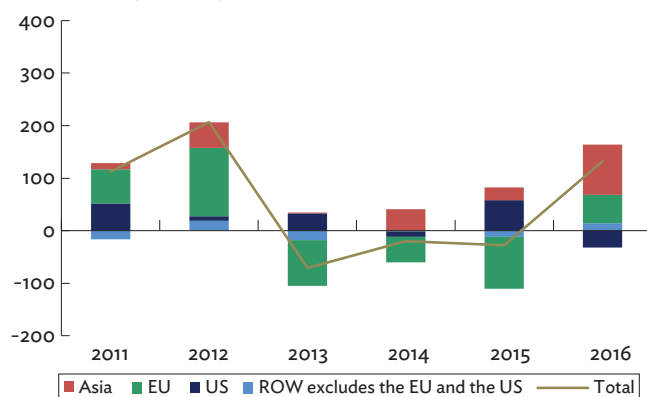
Source: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

0.1% CAGR between 2011 and 2016. This resulted in a 25.7% intraregional share.

Of the \$132.4 billion increase in 2016—from a \$27.8 billion drop in 2015—\$95.9 billion was intraregional (Figure 4.16). Japan and Australia contributed most—\$42.3 billion and \$36.7 billion, respectively. Most of their intraregional bank liabilities were to Hong Kong, China; the PRC; Singapore; and Taipei, China. Asia also increased cross-border bank liabilities with the EU (\$54.3 billion)—while Japan

increased its EU bank liabilities (\$72.6 billion), Japan's liabilities to the US declined (\$31.8 billion) along with Australia (\$33.6 billion). Higher US interest rates relative to the EU were a factor in bank borrowing. Asia's cross-border bank liabilities to the ROW excluding the EU and US also increased (\$13.9 billion). Japanese bank liabilities to Canada and the Cayman Islands increased \$13.6 billion in 2016.

Japan and Australia relied heavily on bank lending from Hong Kong, China; Singapore; and the PRC in 2016 (Table 4.6). They emerged as the top sources of Asia's intraregional bank liabilities in 2016. Outside Asia, the EU, the US, and the Cayman Islands remained top sources—though their shares declined between 2011 and 2016 in favor of Asian and other non-Asian sources.

Figure 4.16: Change in Asia's Cross-border Bank Liabilities (\$ billion)

EU = European Union, ROW = rest of the world, US = United States.

Note: Asia includes all 48 ADB regional members for which data are available as of December 2016.

Source: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

Table 4.6: Sources of Asia's Cross-border Bank Liabilities (\$ billion)

	2016		2011		**
Asia					
Hong Kong, China	241	(9.9%)	144	(6.5%)	▲
Singapore	148	(6.1%)	110	(5.0%)	▲
People's Republic of China	87	(3.6%)	21	(1.0%)	▲
Other Asia	149	(6.1%)	139	(6.3%)	▼
Asia's cross-border bank liabilities to Asia	625	(25.7%)	414	(18.8%)	▲
Non-Asia					
European Union	903	(37.2%)	953	(43.2%)	▼
United States	722	(29.8%)	665	(30.1%)	▼
Cayman Islands	53	(2.2%)	71	(3.2%)	▼
Other non-Asia	123	(5.1%)	103	(4.7%)	▲
Asia's cross-border bank liabilities to Non-Asia	1,802	(74.3%)	1,792	(81.2%)	▼
Total cross-border bank liabilities, Asia	2,426	(100.0%)	2,206	(100.0%)	

** = direction of change in the shares to total, ▼ = decrease, ▲ = increase.

Source: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed May 2017).

Analysis using Price Indicators

Asia's equity markets continue to be integrated more globally than regionally. Regional integration momentum in local bond markets weakened in the post-normalization period.

Equity

In the post-normalization period, equity market return correlations show stronger global (weaker regional) integration.

Asia's regional equity return correlation declined from 0.36 post-GFC to 0.34 in the post-normalization period (Table 4.7).¹⁸ The declining equity return correlation can be attributed to all subregions except Oceania. However, the equity return correlation between Asia and the world remained the same at 0.42. With the exception of East Asia, which posted higher equity correlation with the world, the global equity return correlation with Asia's

subregions declined between post-GFC and post-normalization periods.

Using a dynamic conditional correlation (DCC) model—a time-varying correlation model that takes into account information on historical volatilities of equity returns—Asia's intraregional equity return DCC remained below the equity return DCC between Asia and the world, in line with the simple correlation results (Figure 4.17).¹⁹ Consistent with theory, the equity return DCC between Asia and select economies and regions spiked during crises or stress, such as during Brexit and increased tension on the Korean peninsula. Also, large equity return DCC between Asia and the world could be attributable to the equity return DCC between Asia and the EU, as well as between Asia and the US.

¹⁹ Estimates of the conditional correlations use the GARCH (1,1)-DCC model in which a two-step estimation procedure is applied. First, equity return residuals of individual economies are estimated using a univariate GARCH model. These residuals are subsequently used to compute the conditional correlation of each economy's equity returns with that of another economy. The correlation estimator is defined as

$$\rho_{i,j,t} = \frac{q_{i,j,t}}{\sqrt{q_{i,i,t}q_{j,j,t}}}$$

where $\rho_{i,j,t}$ is the conditional correlation between the equity asset returns of economies i and j at time t , and constitutes the off-diagonal elements of the variance-covariance matrix.

The GARCH(1,1) process followed by the q s is as follows:

$$q_{i,j,t} = \bar{p}_{ij} + \alpha(\varepsilon_{i,t-1}\varepsilon_{j,t-1} - \bar{p}_{ij}) + \gamma(q_{i,t-1}q_{j,t-1} - \bar{p}_{ij})$$

where \bar{p}_{ij} is the unconditional expectation of the cross product.

¹⁸ The "Asia index" of each economy is created using the weighted sum of the index of individual economies, excluding the economy considered. Current GDP in US dollars is the weight for the Asia indexes. This methodology is based on Park and Lee (2011).

Table 4.7: Average Simple Correlation of Stock Price Index Weekly Returns—Asia with Asia, and the World

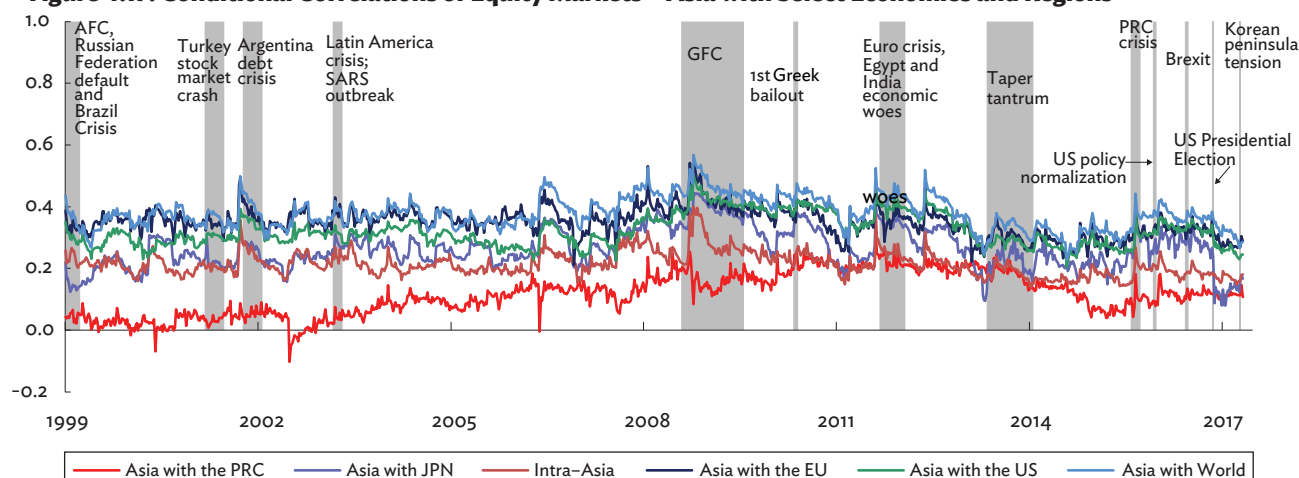
Subregion	Asia				World			
	Pre-GFC Jan 1999– Sep 2007	Post-GFC Jul 2009– Dec 2015	Post- Normalization Jan 2016– Jun 2017	**	Pre-GFC Jan 1999– Sep 2007	Post-GFC Jul 2009– Dec 2015	Post- Normalization Jan 2016– Jun 2017	**
Central Asia	0.09	0.20	0.18	▼	0.02	0.24	0.19	▼
East Asia	0.35	0.47	0.46	▼	0.42	0.56	0.62	▲
Southeast Asia	0.33	0.40	0.39	▼	0.34	0.49	0.44	▼
South Asia	0.14	0.18	0.15	▼	0.15	0.18	0.17	▼
Oceania	0.38	0.52	0.54	▲	0.55	0.70	0.66	▼
Asia	0.28	0.36	0.34	▼	0.36	0.42	0.42	–

** = direction of change in simple correlation between post-GFC and post-normalization, ▼ = decrease, ▲ = increase, – = no change, GFC = global financial crisis.

Central Asia includes Georgia, Kazakhstan, and the Kyrgyz Republic. East Asia includes the People's Republic of China; Hong Kong, China; Japan; the Republic of Korea; Mongolia; and Taipei, China. Southeast Asia includes Indonesia, the Lao People's Democratic Republic, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam. South Asia includes Bangladesh, India, Nepal, Pakistan, and Sri Lanka. Oceania includes Australia and New Zealand. Asia includes Central Asia, East Asia, Southeast Asia, South Asia, and Oceania.

Notes: Values refer to the average of pairwise correlations. Weekly returns are computed as the natural logarithm difference between weekly average of daily stock price index for the current week, and the weekly average of the daily stock price index from the previous week.

Sources: ADB calculations using data from Bloomberg; CEIC; and Stooq. <https://stooq.com/q/?s=^sti>; and World Bank. World Development Indicators <http://data.worldbank.org/data-catalog/world-development-indicators> (all accessed July 2017).

Figure 4.17: Conditional Correlations of Equity Markets—Asia with Select Economies and Regions

AFC = Asian financial crisis, EU = European Union, GFC = global financial crisis, JPN = Japan, PRC = People's Republic of China, US = United States, SARS = Severe Acute Respiratory Syndrome.

Note: Asia includes Australia; Bangladesh; the PRC; Georgia; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; the Kyrgyz Republic; the Republic of Korea; the Lao People's Democratic Republic; Malaysia; Mongolia; Nepal; New Zealand; Pakistan; the Philippines; Singapore; Sri Lanka; Taipei, China; Thailand; and Viet Nam.

Sources: ADB calculations using Bloomberg; CEIC; and Stooq. http://stooq.com/q/d/_s=^sti (accessed July 2017); and methodology by Hinojales and Park (2010).

Debt

While Asia's bond market returns continue to show increased regional linkages, its global linkages surpassed regional linkages in the post-normalization period.

Asia's bond markets have become increasingly integrated regionally as its regional bond return correlation increased from 0.34 during post-GFC to 0.40 afterward (Table 4.8).²⁰ While bond return correlation between Asia and the world declined between pre- and post-GFC periods, it spiked from 0.21 during post-GFC to 0.48 during post-normalization.

²⁰ The regional bond market is computed using the same methodology as the regional equity market.

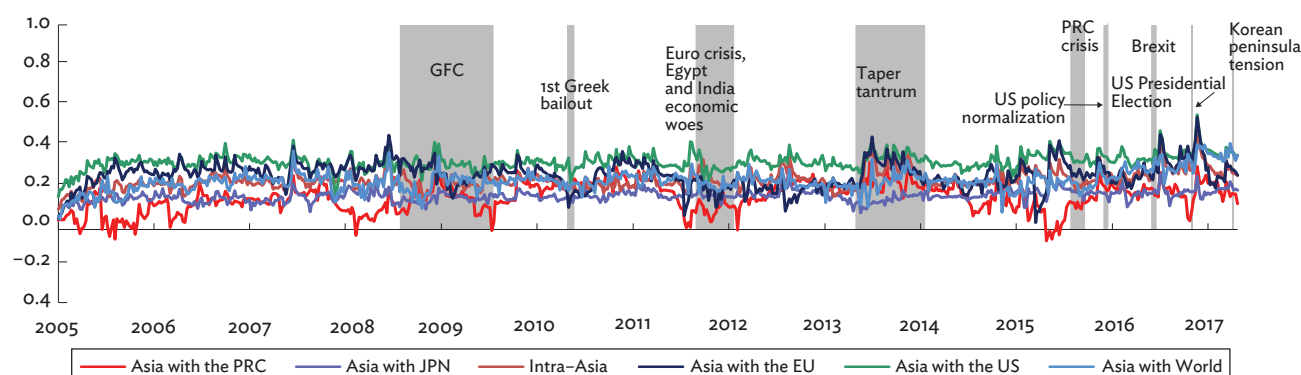
Table 4.8: Average Simple Correlation of Weekly Bond Return Index—Asia with Asia and the World

Economy	Asia				World			
	Pre-GFC Jan 2005– Sep 2007	Post-GFC Jul 2009– Dec 2015	Post- Normalization Jan 2016– Jun 2017	**	Pre-GFC Jan 2005– Sep 2007	Post-GFC Jul 2009– Dec 2015	Post- Normalization Jan 2016– Jun 2017	**
Australia	0.38	0.46	0.49	▲	0.41	0.36	0.68	▲
PRC	0.01	0.30	0.34	▲	0.04	0.03	0.28	▲
India	0.06	0.21	0.08	▼	0.23	-0.07	-0.03	▲
Indonesia	-0.15	0.23	0.32	▲	0.02	0.25	0.52	▲
Japan	0.19	0.25	0.35	▲	0.28	0.41	0.48	▲
Republic of Korea	0.15	0.47	0.52	▲	0.37	0.23	0.66	▲
Malaysia	0.22	0.44	0.29	▼	0.13	0.15	0.44	▲
Philippines	–	0.21	0.45	▲	–	0.14	0.56	▲
Singapore	0.29	0.49	0.59	▲	0.27	0.44	0.69	▲
Thailand	0.20	0.39	0.56	▲	0.29	0.19	0.56	▲
Asia	0.16	0.34	0.40	▲	0.23	0.21	0.48	▲

** = direction of change in simple correlation between post-GFC and post-normalization, ▼ = decrease, ▲ = increase, GFC = global financial crisis, – = no data available, PRC = People's Republic of China.

Notes: Values refer to the average of pairwise correlations. Weekly returns are computed as the natural logarithm difference between weekly average of daily bond return index for the current week, and the weekly average of the daily bond return index from the previous week. All bond return indexes are comprised by local currency government-issued bonds.

Sources: ADB calculations using data from Bloomberg; and World Bank. World Development Indicators <http://data.worldbank.org/data-catalog/world-development-indicators> (accessed May 2017).

Figure 4.18: Conditional Correlations of Bond Markets—Asia with Select Economies and Regions

EU = European Union, GFC = global financial crisis, JPN = Japan, PRC = People's Republic of China, US = United States.

Note: Asia includes Australia, the PRC, India, Indonesia, Japan, the Republic of Korea, Malaysia, the Philippines, Singapore, and Thailand.

Sources: ADB calculations using data from Bloomberg and methodology by Hinojales and Park (2010).

The bond return DCC between Asia and the world remained consistent with the simple bond return correlation results—trending upward following the US policy normalization (Figure 4.18). While the intraregional bond return DCC spiked during the US presidential election, it suddenly declined afterward, widening the gap between the intraregional bond return DCC and the bond return DCC between Asia and the

world. The increasing bond return DCC between Asia and the US buoyed the bond return DCC between Asia and the world. Meanwhile, the bond return DCC between Asia and the EU fell markedly in December 2016. These changes coincided with the US rate hike. Compared with the equity return DCC trend between Asia and Japan, Japan's ties to the region's bond markets are more evident in 2017.

Financial Spillovers

Equity

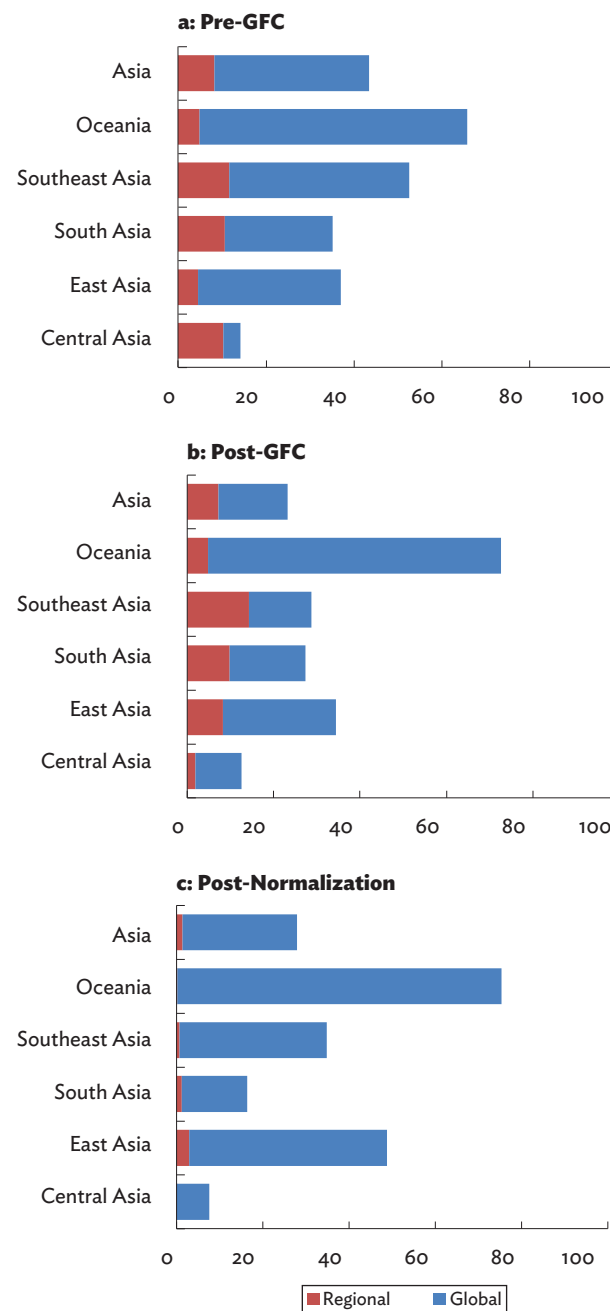
Asia's equity markets have become increasingly vulnerable to global shocks in the post-normalization period.

Increasing regional and global financial integration offers benefits such as: (i) risk sharing, (ii) improved capital allocation, and (iii) economic growth (Baele et al. 2004). However, with increasing financial integration comes the risk of greater volatility and contagion from vulnerable to stable economies. Hence, there are concerns of risk transmission channels in the post-normalization period due to increased regional and global linkages.

Asia's equity returns variance decomposition—which models risk spillovers originating from either the region or world—indicates that Asia's vulnerability to global spillovers declined between pre- and post-GFC periods (Figure 4.19).²¹ Accordingly, the regional share in Asia's variance decomposition increased between pre- and post-GFC periods, indicating Asia's increased vulnerability from contagion in the region.

However, between post-GFC and post-normalization periods, the global share of Asia's variance drastically increased, perhaps reflecting Asia's more active inward/outward portfolio equity investment flows. Except for Central and South Asia, all subregions contributed

Figure 4.19: Share of Variance in Equity Returns Explained by Global and Regional Shocks (%)



²¹ The formula for regional and the global variance decompositions are

$$VR_{c,t}^{EA} = \frac{(\beta_{c,t}^{EA})^2 \sigma_{EA,t}^2}{\sigma_{c,t}^2}$$

$$VR_{c,t}^G = \frac{(\beta_{c,t}^G)^2 \sigma_{G,t}^2}{\sigma_{c,t}^2}$$

where, $VR_{c,t}^{EA}$ and $VR_{c,t}^G$ are the regional and global variance of economy c, at time t, respectively. $\beta_{c,t}^{EA}$ and $\beta_{c,t}^G$ are the economy-specific sensitivity to the regional and global beta at time t, respectively. These were obtained from the following equation:

$$\varepsilon_{c,t} = \alpha_{c,t} + \beta_{c,t}^{EA} \varepsilon_{EA,t} + \beta_{c,t}^G \varepsilon_{G,t}$$

The formula was applied on a rolling basis, with 78 weekly data points. $\sigma_{EA,t}^2$ and $\sigma_{G,t}^2$ are the regional conditional variance and global conditional variance, estimated from the equation above. They are assumed to follow a standard asymmetric GARCH (1,1) process. $\varepsilon_{EA,t}$, $\varepsilon_{G,t}$ are the unexpected components of equity market returns, which are proxied by the error terms obtained from the regression equation

$$r_{c,t} = \delta_{0,c,t} + \delta_{1,c,t} r_{c,t-1} + \varepsilon_{c,t}$$

where $r_{c,t}$ is the weekly equity returns of each individual economy.

GFC = global financial crisis; Pre-GFC = January 1999–September 2007; Post-GFC = July 2009–December 2015; Post-Normalization = January 2016–June 2017.

Notes: Central Asia includes Georgia, Kazakhstan, and the Kyrgyz Republic. 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, Nepal, Pakistan, and Sri Lanka. Southeast Asia includes Indonesia, the Lao People's Democratic Republic; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam. Oceania includes Australia and New Zealand. Asia includes Central Asia, East Asia, South Asia, Southeast Asia, and Oceania.

Sources: ADB calculations using data from Bloomberg; CEIC; and World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (all accessed July 2017); and methodology by Lee and Park (2011).

to the increase in the share of Asia's equity variance explained by global shocks between post-GFC and post-normalization periods.

Debt

The influence of external shocks on local bond return variance grew larger in the post-GFC period, as the global share to total variance has become more significant particularly in the recent post-normalization period.

The global share to Asia's total variance in local bond returns increased during the post-normalization period, while the external (both global and regional) shock exert more significant influence broadly across local currency bond markets in the post-GFC periods, reflecting a gradual global and regional integration of these markets (Figure 4.20). During post-normalization, in particular, the global share to Singapore, the Philippines, the Republic of Korea, the PRC, and Australia increased more significantly than other economies.

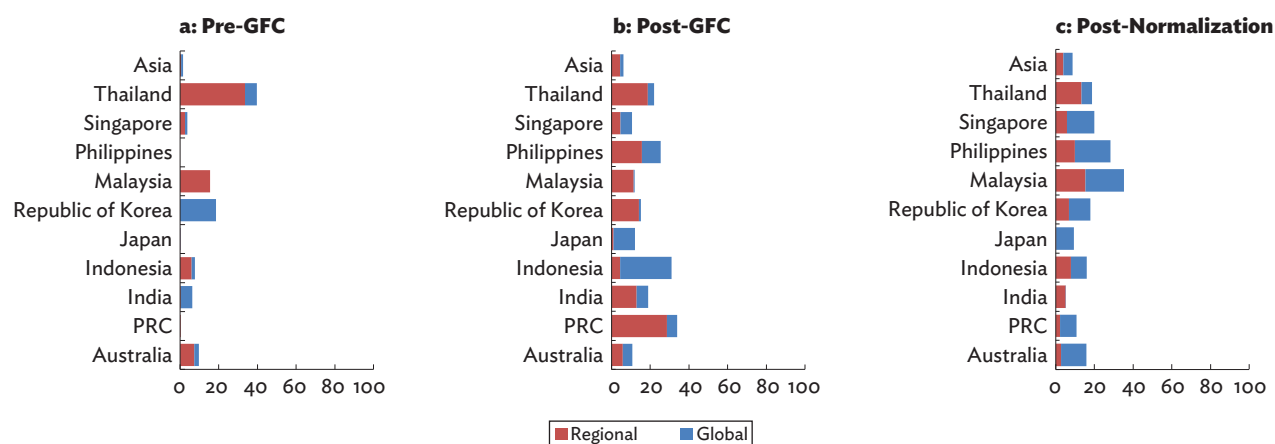
Bond Returns Convergence

The cross-border dispersion of Asia's 10-year local currency government bond yields continued to show yield convergence in 2016, both with regional markets and the US.

Estimating the cross-border dispersion of 10-year local currency government bond yields—using σ -convergence of regional local currency government bond yields with a 10-year maturity—shows that convergence of Asia's bond return fluctuations both within the region and with the US continued in 2016, suggesting increased co-movement after Brexit in June 2016 (Figure 4.21).²² While East Asia's local bond returns seemed to diverge slightly during the 2013 taper tantrum, its σ -convergence declined afterward—although it has been up slightly more recently.

Since 2006, Asia's local currency bond yields have been linked more to the US bond yields than intraregional bond markets. Asia and the US bond yields converged

Figure 4.20: Share of Variance in Local Bond Returns Explained by Global and Regional Shocks (%)



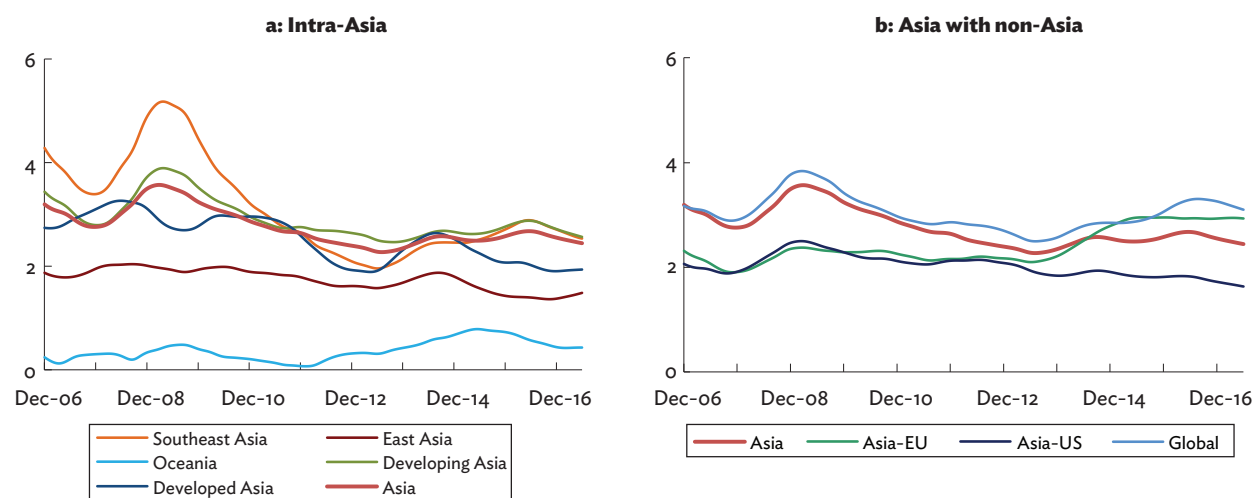
GFC = global financial crisis, PRC = People's Republic of China, Pre-GFC = January 2005–September 2007, Post-GFC = July 2009–December 2015, Post-Normalization = January 2016 – June 2017.

Sources: ADB calculations using data from Bloomberg; World Bank, World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (both accessed July 2017); and methodology by Lee and Park (2011).

²² To compute for the dispersion or σ -Convergence, each pairwise dispersion of bond yields r between economies i and j was obtained by

$$\sigma_{ij} = \left[\frac{1}{n-1} \sum_{t=1}^n (r_{it} - r_{jt})^2 \right]^{1/2}$$

The formula was applied on a rolling basis, with 52 weekly data points. Each economy's σ -convergence is the simple mean of all its pairwise dispersions. The subregional and Asia σ -convergence are the unweighted mean of each included economy's σ -convergence.

Figure 4.21: σ -Convergence of 10-year Government Bond Yields—Asia

EU = European Union, US = United States.

Notes:

- (i) Values refer to the unweighted mean of individual economy's σ -convergence, included in the subregion. Each economy's σ -convergence is the simple mean of all its pairwise standard deviation. Data are filtered using Hodrick-Prescott method.
- (ii) East Asia includes the People's Republic of China; Hong Kong, China; Japan; the Republic of Korea; and Taipei, China. Southeast Asia includes Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Oceania includes Australia and New Zealand. Developed Asia includes Japan and Oceania. Developing Asia includes Southeast Asia and East Asia. Asia includes Developed Asia and Developing Asia. Global includes Asia, Colombia, the EU, Mexico, and the US.

Sources: ADB calculations using data from Bloomberg; CEIC; and methodology by Espinoza et al (2010), and Park (2013).

further following the taper tantrum. While Asia's local currency bond yields were more linked to the EU bond yields between 2006 and 2013—the onset of the taper tantrum—it changed as Asia-EU bond yields diverged. Convergence has remained benign since.

Capital Flow Volatility

With increasing financial integration and a growing appetite for financial assets outside the region, Asia's capital flow volatilities of debt, FDI, and financial derivatives and other investments have increased, although equity volatility declined between post-GFC and post-normalization periods.

Capital flow volatility of portfolio debt, FDI, and financial derivatives and other investments increased between post-GFC and post-normalization periods, while portfolio equity decreased (Table 4.9).

FDI remained the least volatile type of financial flow in the region during post-normalization (0.64). Against the post-GFC period, the increased volatility of FDI in the post-normalization period is attributed to Central Asia,

East Asia, and South Asia. The increase in portfolio debt volatility (from 0.96 during the post-GFC period to 1.27 afterward) was mainly due to the increase in Oceania's portfolio debt volatility (from 2.86 to 3.20), as well as the increase in Southeast Asia's portfolio debt volatility (from 0.83 to 1.06). The increase in volatility for financial derivatives and other instruments (from 1.37 post-GFC to 1.45 afterward) is also mainly attributed to South Asia and Oceania.

Table 4.9: Capital Flow Volatility—Asia (standard deviation of net capital inflow levels as % of GDP)

Subregion	Portfolio (Debt)				Portfolio (Equity)			
	Pre-GFC	Post-GFC	Post-	**	Pre-GFC	Post-GFC	Post-	**
	Q1 1999– Q3 2007	Q3 2009– Q4 2015	Normalization Q1 2016– Q4 2016		Q1 1999– Q3 2007	Q3 2009– Q4 2015	Normalization Q1 2016– Q4 2016	
Central Asia	4.21	4.38	3.18	▼	1.88	1.03	0.39	▼
East Asia	1.94	1.39	1.39	▲	1.99	1.21	1.02	▼
South Asia	0.00	0.85	0.73	▼	0.90	1.04	0.65	▼
Southeast Asia	1.11	0.83	1.06	▲	1.05	0.70	1.01	▲
Oceania	3.33	2.86	3.20	▲	3.54	1.96	1.00	▼
Asia	1.44	0.96	1.27	▲	1.61	0.93	0.72	▼
Subregion	FDI				Financial Derivatives and Other Investments ^a			
	Pre-GFC	Post-GFC	Post-	**	Pre-GFC	Post-GFC	Post-	**
	Q1 1999– Q3 2007	Q3 2009– Q4 2015	Normalization Q1 2016– Q4 2016		Q1 1999– Q3 2007	Q3 2009– Q4 2015	Normalization Q1 2016– Q4 2016	
Central Asia	4.20	2.68	3.69	▲	4.27	6.59	5.69	▼
East Asia	0.69	0.63	0.74	▲	3.42	1.85	1.67	▼
South Asia	0.29	0.55	0.91	▲	1.65	1.33	2.71	▲
Southeast Asia	1.77	1.20	0.59	▼	3.04	2.89	2.31	▼
Oceania	3.55	1.47	0.84	▼	2.89	1.91	4.96	▲
Asia	0.67	0.48	0.64	▲	2.52	1.37	1.45	▲

** = direction of capital flow volatility between post-GFC and post-normalization, ▼ = decrease, ▲ = increase.

– = no data available, FDI = foreign direct investment, GDP = gross domestic product, GFC = global financial crisis.

^a “Other Investments” includes: (i) other equity; (ii) currency and deposits; (iii) loans (including use of International Monetary Fund (IMF) credit and IMF loans); (iv) nonlife insurance technical reserves, life insurance and annuities entitlements, pension entitlements, and provisions for calls under standardized guarantees; (v) trade credit and advances; (vi) other accounts receivable/payable; and (vii) special drawing rights (SDR) allocations (SDR holdings are included in reserve assets).

Notes: Central Asia includes Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, and Tajikistan. East Asia includes the People’s Republic of China; Hong Kong, China; Japan; the Republic of Korea; and Mongolia. South Asia includes India and Sri Lanka. Southeast Asia includes Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam. Oceania includes Australia and New Zealand. Asia includes Central Asia, East Asia, South Asia, Southeast Asia, and Oceania.

Sources: ADB calculations using data from CEIC; and International Monetary Fund. Balance of Payments and International Investment Position Statistics. <http://www.imf.org/external/np/sta/bop/bop.htm> (both accessed May 2017).

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