

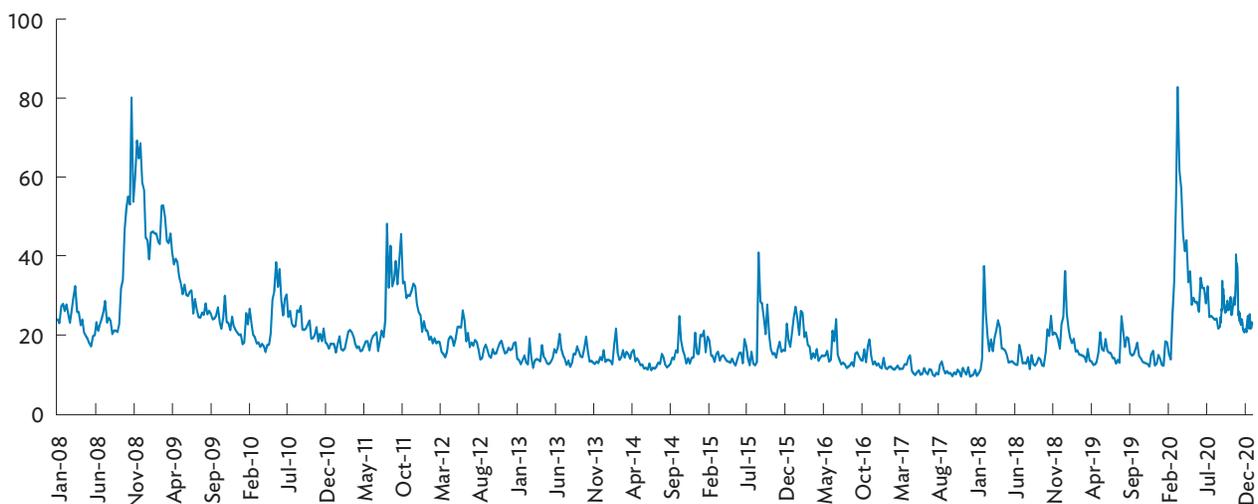
4 Financial Integration Heightened Financial Vulnerabilities amid the Pandemic

The onset of the COVID-19 pandemic led to a spike in global financial volatility, a deterioration in investor sentiment, and tighter liquidity conditions in March 2020.

As the World Health Organization declared the coronavirus disease (COVID-19) outbreak a global pandemic on 11 March 2020, investor sentiment deteriorated quickly. The Chicago Board Options Exchange's volatility index (VIX), a measure of risk aversion, reached levels last seen during the 2008 global financial crisis (Figure 4.1). The index rose sharply in early March as economies implemented strict quarantine measures, and its peak in the week of 10 March was slightly higher than the peak reached in October of 2008.

The pandemic and related containment measures hit the economies hard around the world. As risk-off sentiment spread globally, emerging market assets were sold off. Sovereign credit default swaps (CDS) spreads of selected Asian economies widened sharply (Figure 4.2). Amid massive unwinding of risky assets and flight to safety, short-term dollar funding markets tightened (Figure 4.3). Offshore dollar funding costs in emerging market economies, likewise, rose sharply amid disruptions of the dollar supply. The cross-currency basis swap versus the United States (US) dollar widened in mid-March, particularly for the won and ringgit, and to a much greater degree than it did for major currencies, such as the euro, pound sterling, or yen (Figure 4.4).

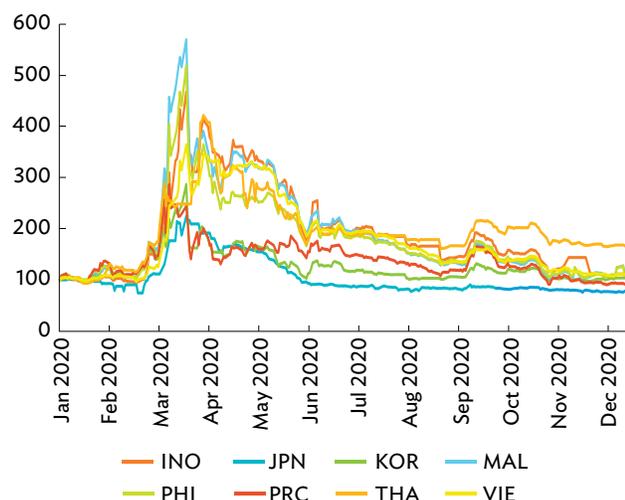
Figure 4.1: Volatility Index



Note: The volatility index refers to the adjusted close value.

Source: Chicago Board Options Exchange. Volatility Index. <http://www.cboe.com/vix> (accessed January 2021).

Figure 4.2: Credit Default Swaps—Selected Asian Economies (spreads index, 2 January 2020 = 100)

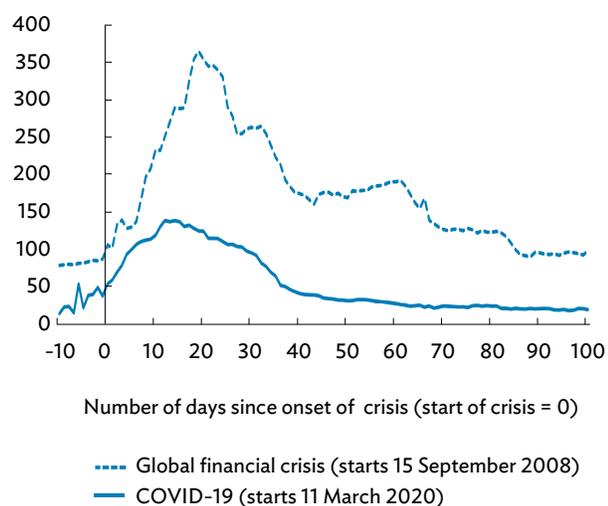


INO = Indonesia, JPN = Japan, KOR = Republic of Korea, MAL = Malaysia, PHI = Philippines, PRC = People's Republic of China, THA = Thailand, VIE = Viet Nam.

Notes: A credit default swap is a financial derivative that insures against the risk of default by one party. A higher index value reflects a higher spread, which is associated with higher default risk.

Source: ADB calculations using data from Bloomberg.

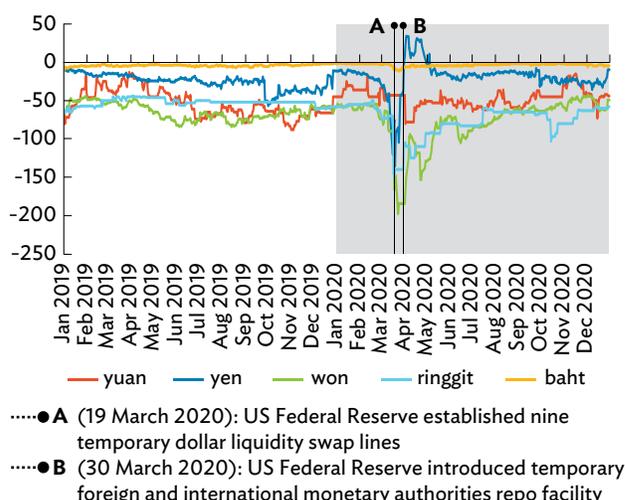
Figure 4.3: LIBOR–OIS Spread—Global Financial Crisis versus COVID-19 (basis points)



COVID-19 = coronavirus disease, LIBOR = London Inter-Bank Offered Rate, OIS = Overnight Index Swap.

Source: ADB calculations using data from Bloomberg.

Figure 4.4: Cross-Currency Basis Swap Spread against the United States Dollar (basis points)



US = United States.

Note: 3-month cross-currency basis swap for the yen, ringgit, and yuan; 6 months for the baht, and 3 months for the won versus 6 months for the US dollar.

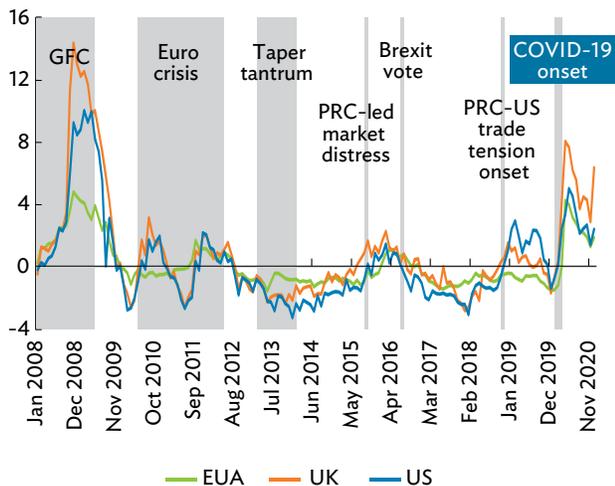
Source: Bloomberg.

The deterioration in investor sentiment and tighter liquidity conditions, due to the COVID-19 pandemic and its impact on economic and financial conditions led to financial market stress around the world. Financial stress indexes climbed in the euro area, the United Kingdom and the US. In Asia, they spiked in India, Indonesia, Japan, the Philippines, Singapore, and Thailand (Figures 4.5a and 4.5b).

Equity prices in the region plunged in mid-March 2020, along with the region’s currencies and a sharp reversal in portfolio equity flows.

Asset prices in the region dropped significantly in March. Benchmark stock prices in India; Indonesia; Japan; the Republic of Korea; the Philippines; Singapore; Thailand, and Viet Nam lost more than 30% of their values on 2 January 2020 by mid-March (Figure 4.6). But the slump in the region’s benchmark equity prices from the onset of the pandemic was less severe in 2020 than during the 2008 global financial crisis (Figure 4.7).

Figure 4.5a: Financial Stress Index—Euro Area, the United States, and the United Kingdom



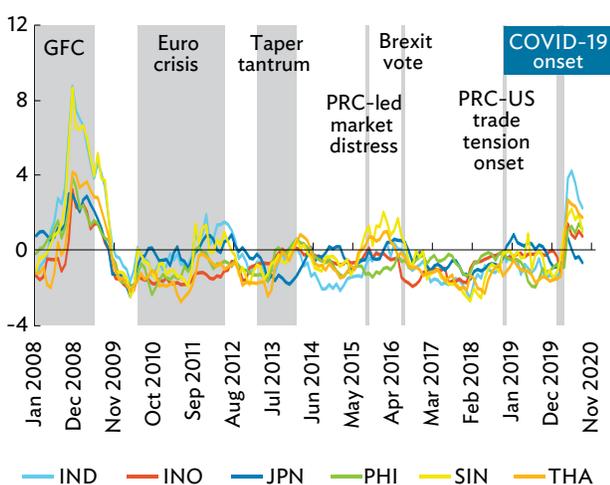
COVID-19 = coronavirus disease, EUA = euro area, GFC = global financial crisis, PRC = People's Republic of China, UK = United Kingdom, US = United States.

Notes:

- (i) Based on principal components analysis on data from 4 major finance sectors: the banking sector, debt, equity, and foreign exchange markets.
- (ii) Principal components are based on the banking sector price index, sovereign yield spreads, stock market volatility, stock price index return, and exchange market pressure index.

Sources: ADB calculations using data from Bloomberg; CEIC; Haver Analytics; the International Monetary Fund. International Financial Statistics. <http://data.imf.org/IFS> (accessed January 2021); and methodology by Park and Mercado (2014).

Figure 4.5b: Financial Stress Index—Selected Asian Economies



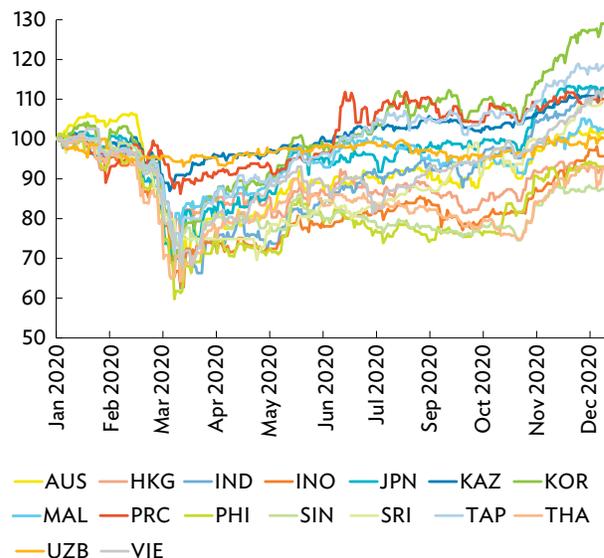
COVID-19 = coronavirus disease, GFC = global financial crisis, IND = India, INO = Indonesia, JPN = Japan, PHI = Philippines, PRC = People's Republic of China, SIN = Singapore, THA = Thailand, US = United States.

Notes:

- (i) Based on principal components analysis on data from 4 major finance sectors: the banking sector, debt, equity, and foreign exchange markets.
- (ii) Principal components are based on the banking sector price index, sovereign yield spreads, stock market volatility, stock price index return, and exchange market pressure index.

Sources: ADB calculations using data from Bloomberg; CEIC; Haver Analytics; the International Monetary Fund. International Financial Statistics. <http://data.imf.org/IFS> (accessed January 2021); and methodology by Park and Mercado (2014).

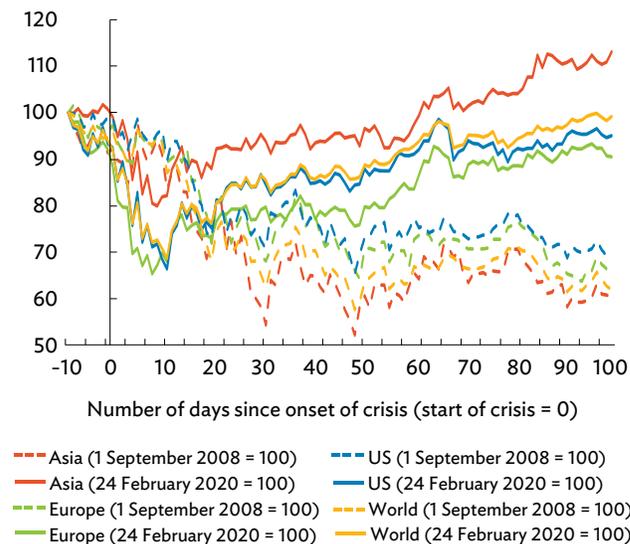
Figure 4.6: Stock Price Index—Selected Asian Economies (2 January 2020 = 100)



AUS = Australia; HKG = Hong Kong, China; IND = India; INO = Indonesia; JPN = Japan; KAZ = Kazakhstan; KOR = Republic of Korea; MAL = Malaysia; PHI = Philippines; PRC = People's Republic of China; SIN = Singapore; SRI = Sri Lanka; TAP = Taipei, China; THA = Thailand; UZB = Uzbekistan; VIE = Viet Nam.

Source: ADB calculations using data from Bloomberg.

Figure 4.7: Comparison of Equity Market Slump—Selected Economies



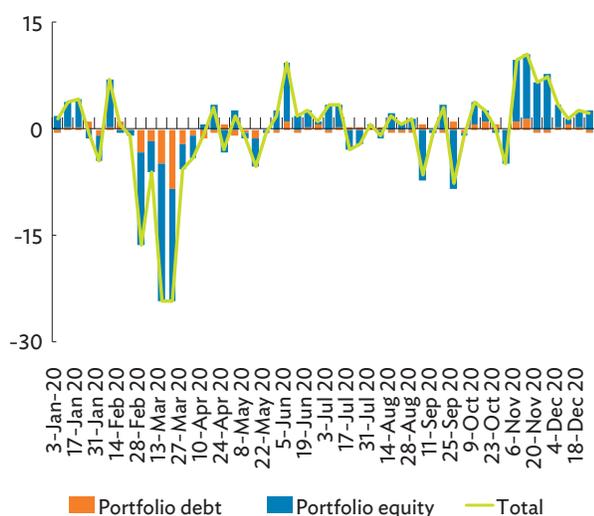
US = United States.

Note: Onset of the crises is defined as follows: Collapse of Lehman Brothers 15 September 2008 (global financial crisis); and imposed lockdown in Italy 9 March 2020 (COVID-19 pandemic).

Sources: ADB calculations using data from Google Finance. <http://google.com/finance>; Investing.com. <https://www.investing.com/indices/msci-world-historical-data>; MSCI. MSCI World Index. <https://www.msci.com/eqb/esp/performance/106.0.all.xls>; and S&P Dow Jones Indices. Dow Jones Industrial Average Index. <https://us.spindices.com/indices/equity/dow-jones-industrial-average> (all accessed August 2020).

The drop in equity prices was accompanied by nonresident portfolio outflows in the region last March (Figure 4.8). Reported nonresident portfolio equity outflows reached \$19 billion in the week of 13 March, and this accounted for a large share of the overall portfolio outflows to emerging market economies in that week. The recorded nonresident portfolio outflows repeated a familiar pattern of nonresident capital flow retrenchment or flight to safety as asset prices fall during episodes of financial stress.

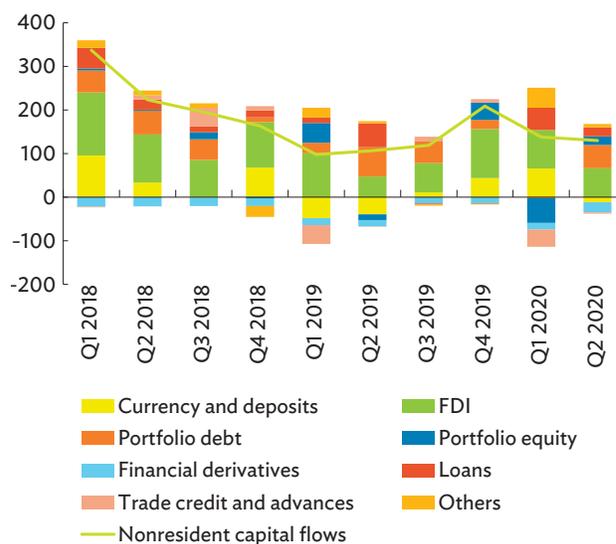
Figure 4.8: Nonresident Portfolio Flows—Selected Asian Economies (\$ billion)



Sources: ADB calculations using data from the Institute of International Finance and national sources.

Total nonresident financial flows to selected Asian economies dropped by 34% in the first quarter (Q1) of 2020, compared with the previous quarter, to reach \$138 billion (Figure 4.9). Nonresident portfolio equity outflows in Q1 2020 amounted to \$57 billion, which is a significant turnaround from equity inflows of about \$40 billion in Q4 2019. Aside from nonresident portfolio equity outflows, trade credit and advances also reported outflows, amounting to \$39 billion. The drop in trade credits and advances was also observed during the 2008–2009 global financial crisis. However, there were increases in some of the components of capital inflows in Q1 2020. Currency and deposits grew by 50% in the same quarter to \$66 billion, from \$44 billion in Q4 2019, implying nonresident investors' move to more liquid assets. Loan inflows increased to \$52 billion, suggesting higher cross-border demand for credit.

Figure 4.9: Nonresident Capital Flows—Selected Asian Economies (\$ billion)



FDI = foreign direct investment.

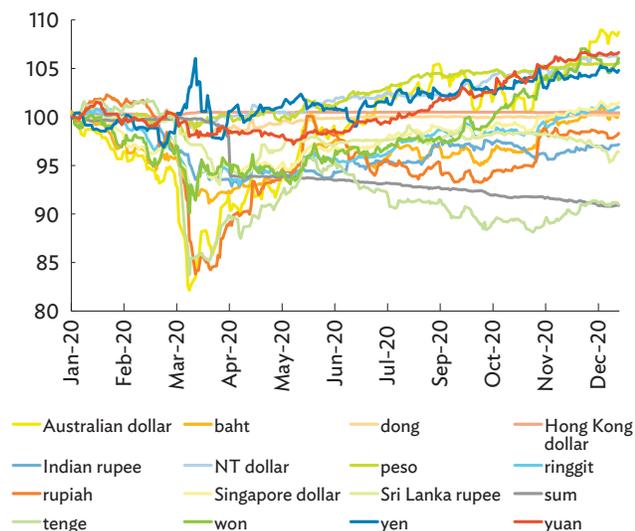
Note: Asia includes Bangladesh; Cambodia; Hong Kong, China; India; Indonesia; Kazakhstan; Mongolia; Nepal; the People's Republic of China; the Philippines; the Republic of Korea; Taipei, China; and Thailand.

Source: ADB calculations using data from the International Monetary Fund. Balanced of Payments. Accessed from CEIC.

Regional currencies also weakened during the onset of the COVID-19 global pandemic, but to varying degrees (Figure 4.10). The Australian dollar, rupiah, and tenge lost more than 10% of their values on 2 January 2020 by mid-March. The Brunei dollar, Indian rupee, won, ringgit, Singapore dollar, and baht lost about 5%, while the yuan, peso, Sri Lanka rupee, and dong lost less than 5% of their values.

Swift policy responses across the region and elsewhere helped ease liquidity conditions and restored investor sentiment by June 2020.

In response to the COVID-19 pandemic and subsequent financial market stress, authorities implemented measures to navigate economic overhang and ease financial strains. These included fiscal support, policy rate cuts, liquidity support, and credit provisions, among others. For instance, central banks in Asia slashed policy rates, on average, by around 50 basis points from March to May 2020 (Figure 4.11). In response to exchange rate pressures and volatility, and to support foreign

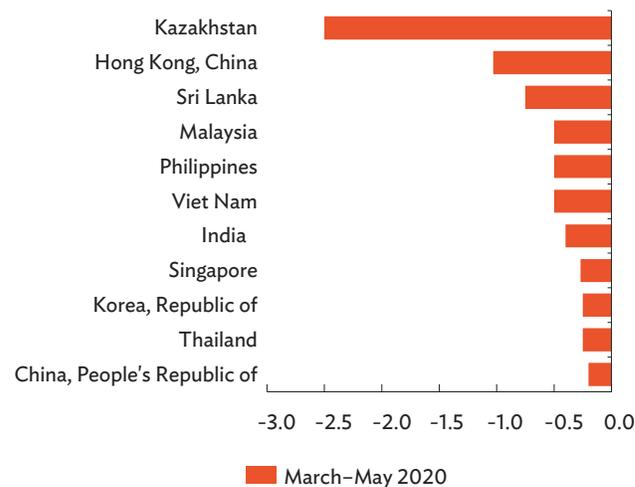
Figure 4.10: Exchange Rate, \$/LCU—Selected Asian Currencies (2 January 2020 = 100)

LCU = local currency unit.

Source: ADB calculations using data from Bloomberg.

exchange liquidity, central banks or monetary authorities entered into bilateral currency swap arrangements with the US Federal Reserve and/or with other central banks with international currency, including the Bank of Japan.²⁴ Moreover, some emerging market central banks, including some in the region, implemented unconventional monetary policy measures through local currency bond purchase programs, including government securities, either to support monetary policy or market liquidity. Initial assessment of this measure suggests their success as local currency bond yields fell with minimal effect on the exchange rate (Arslan, Drehmann, and Hofmann 2020).

These swift policy actions by authorities, within and outside the region, eased financial conditions greatly and restored investor sentiment by June 2020. Equity prices and exchange rates trended upward after April 2020 (Figures 4.6 and 4.10). In fact, stock prices in Australia; India; Japan; Kazakhstan; the People's Republic of China (PRC); the Republic of Korea; Malaysia; Sri Lanka; Taipei, China; and Viet Nam traded above their start-of-the-year values as of the end of December. However, for some economies in

Figure 4.11: Policy Rate Cuts—Selected Asian Economies

Source: ADB calculations using data from CEIC.

the region, shares have yet to reach their start-of-the-year values in 2020. The Australian dollar, yen, won, ringgit, peso, NT dollar, and baht surpassed their start-of-the-year values as of the end of December, but several regional currencies did not. The extent to which regional exchange rates reacted was significantly more moderate than during the 1997 Asian financial crisis and the global financial crisis. Nonresident portfolio equity outflows stopped, and debt inflows resumed by June 2020 (Figure 4.8).

But risks of financial volatility remained at large in the rest of 2020.

Although financial conditions improved as early as June 2020, rising cases of COVID-19 infections, the possibility of localized or wider lockdowns and border closures being reimposed, and weak economic prospects in the second half of the year continued to fuel uncertainties and test investor risk sentiment. The VIX remained elevated as of the end of December 2020, along with financial stress indexes for selected advanced and Asian economies (Figures 4.1, 4.5a, and 4.5b). Moreover, dollar funding costs remained high; and equity prices remained below their start-of-the-year values for some economies in the region (Figures 4.4 and 4.6). Total nonresident financial

²⁴ In addition to the US Federal Reserve's standing swap lines with major central banks, the establishment of nine temporary dollar liquidity swap lines (19 March 2020), including with regional central banks in Australia, New Zealand, the Republic of Korea, and Singapore, as well as the introduction of the temporary foreign and international monetary authorities repo facility (31 March 2020) to a broader group of foreign central banks and other international monetary authorities were effective in arresting panic in the US dollar funding market.

flows to selected Asian economies slipped lower to \$130 billion in Q2 2020, down by 6% from Q1 2020 (Figure 4.9). Although portfolio equity inflows resumed, other components of capital inflows declined in Q2 2020, including currency and deposits; and loan inflows. Should investor sentiment deteriorate, renewed financial market turbulence and tighter liquidity conditions may resurface.

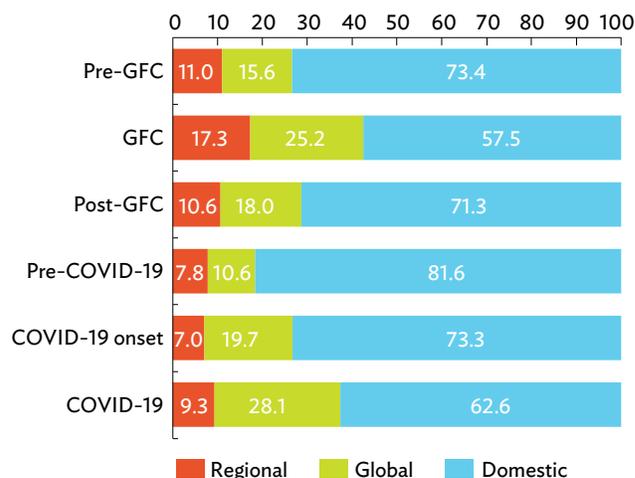
Given the global nature of the ongoing pandemic and associated economic impact, the share of global shocks in the variation of Asian asset price returns rose sharply and remained larger than the share of regional shocks.

The share of global shocks that explain the variation of equity returns in Asia rose to around 20% in Q1 2020, which was almost double the share reported in the final trimester of 2019 (Figure 4.12). The global share further rose to around 28% for the rest of the year, reflecting the global nature of the pandemic and its associated economic and financial uncertainties. In contrast, the proportion of regional shocks initially slipped to around 7% in Q1 2020, which was slightly lower than that was reported in the previous period. But, like global shares, the share of regional shocks increased to 9.3% for the rest of 2020. Across subregions of Asia, East Asia's equity markets showed the strongest sensitivity to global and regional shocks at the start of the COVID-19 pandemic, followed by Oceania.

Similarly, the proportion of global shocks that explain the variation of bond returns rose to almost 11% in Q1 2020 (Figure 4.13). This was also higher than the share registered in the final trimester of 2019. The global share increased further to 17% for the rest of 2020. The proportion of regional shocks, likewise, increased from January to March 2020, compared with September to December 2019, and remained stable for the rest of the year. Across subregions, the increase in the share of global shocks was highest for Oceania during the onset of the pandemic, while the increase in the proportion of regional shocks was strongest for South Asia.

Compared with the 2008–2009 global financial crisis, the shares of global and regional shocks that account for the variations in equity returns were considerably lower during the onset of the COVID-19 pandemic, while the share of domestic

Figure 4.12: Variance Decomposition—Equity Returns



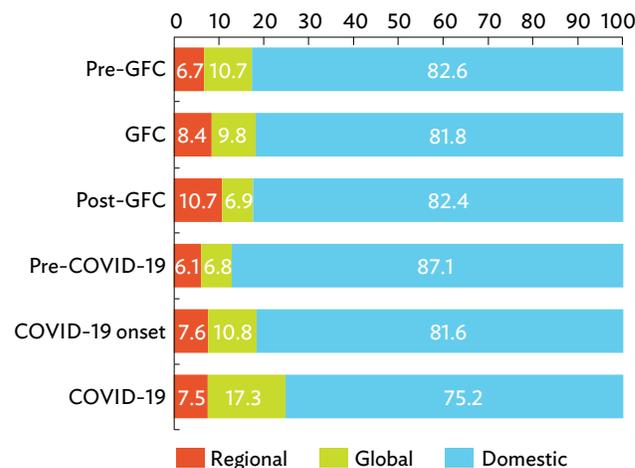
COVID-19 = coronavirus disease, GFC = global financial crisis.

Note: Pre-GFC = January 1999 to September 2007, GFC = October 2007 to June 2009, Post-GFC = July 2009 to December 2015, Pre-COVID-19 = September to December 2019, COVID-19 onset = January to March 2020, COVID-19 = April to December 2020.

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

Sources: ADB calculations using data from Bloomberg; CEIC; and methodology by Lee and Park (2011).

Figure 4.13: Variance Decomposition—Bond Returns

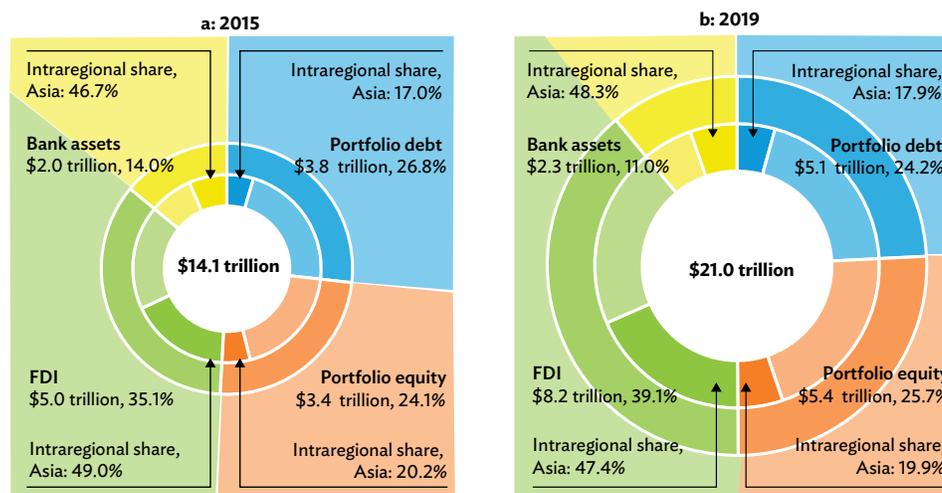


COVID-19 = coronavirus disease, GFC = global financial crisis.

Note: Pre-GFC = January 1999 to September 2007, GFC = October 2007 to June 2009, Post-GFC = July 2009 to December 2015, Pre-COVID-19 = September to December 2019, COVID-19 onset = January to March 2020, COVID-19 = April to December 2020.

Asia includes Australia; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; Malaysia; the People's Republic of China; the Philippines; the Republic of Korea; Singapore; Thailand; and Viet Nam.

Sources: ADB calculations using data from Bloomberg; CEIC; and methodology by Lee and Park (2011).

Figure 4.14: Cross-Border Assets—Asia

FDI = foreign direct investment.

Notes: FDI assets refer to outward FDI holdings. Bank assets refer to bank claims and limited to loans and deposits. Asia includes ADB regional members for which data are available.

Sources: ADB calculations using data from the Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed October 2020); International Monetary Fund (IMF). Coordinated Direct Investment Survey. <http://cdis.imf.org> (accessed December 2020); and IMF. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2020).

shocks was higher (Figures 4.12 and 4.13). The stronger impact of global and regional shocks in 2008 and 2009 reflected the financial nature of the global crisis, whereas the ongoing COVID-19 pandemic is a global health crisis.

Recent Trends in Asia's Cross-Border Financial Assets and Liabilities

Asian investors continued to hold considerably more non-regional assets and liabilities than regional ones.²⁵

Asia's total cross-border financial asset holdings reached \$21.0 trillion at the end of 2019, which was significantly greater than \$14.1 trillion registered at the end of 2015

(Figure 4.14).²⁶ Most of the region's investment holdings in the 2019 amount took the form of direct investment assets (\$8.2 trillion), followed by portfolio equity (\$5.4 trillion) and portfolio debt (\$5.1 trillion), and then banking sector loan and deposit holdings (\$2.3 trillion). But around two-thirds of Asia's asset holdings were placed in non-regional economies, and about one-third in regional economies.

Asia's outward portfolio debt holdings increased from \$4.5 trillion in 2018 to \$5.1 trillion in 2019, recording a 12% increase while continuing the trend over the past years.²⁷ The Asian investors' outward portfolio equity holdings rebounded strongly to \$5.4 trillion in 2019, after declining to \$4.5 trillion in 2018. Meanwhile, Asia's cross-border total bank claims (including loans, deposits, debt securities, and other instruments) continued to rise in 2019 to \$6.6 trillion, from \$6.3 trillion in 2018.

²⁵ Asia's reporting economies include Australia; Bangladesh; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; Malaysia; Mongolia; New Zealand; Pakistan; Palau; the People's Republic of China; the Philippines; the Republic of Korea; Singapore; and Thailand.

²⁶ The values reported for total cross-border assets, liabilities, and net position do not reflect total values in the International Investment Position. This is because reported values include only those with available bilateral breakdown to decompose regional and non-regional holdings and liabilities. Throughout this chapter, cross-border investment holdings include foreign direct investment (FDI), portfolio equity, portfolio debt, and banking sector loan and deposit assets (claims) and liabilities. Unlike previous editions of this report, banking sector cross-border claims and liabilities refer to loans and deposits instead of total claims and liabilities, which include debt securities and other instruments.

²⁷ The overall increase or decrease in stock portfolio holdings and liabilities is attributed to changes in flows and valuation changes of existing portfolio holdings and liabilities.

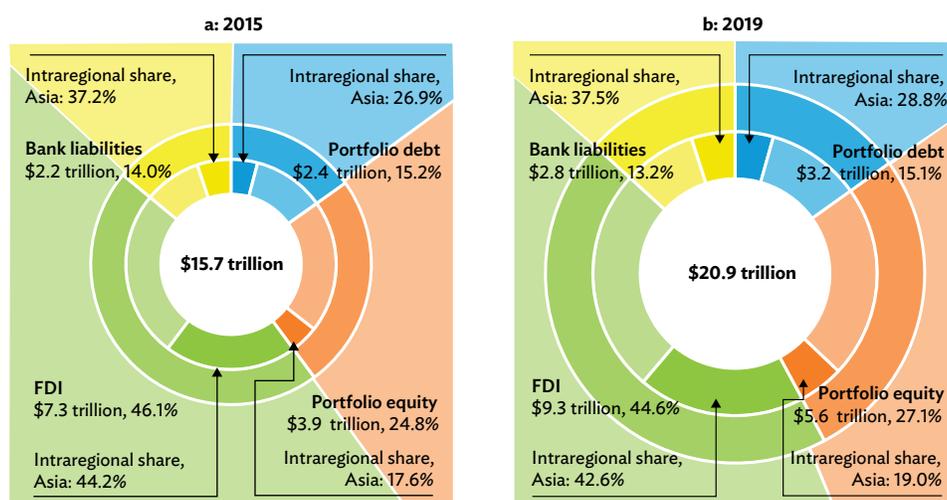
The region's total external financial liabilities also inched higher to \$20.9 trillion by the end of 2019, up from \$15.7 trillion for 2015 (Figure 4.15). Most of the region's liabilities at the end of 2019 were foreign direct investments (\$9.3 trillion), followed by portfolio equity (\$5.6 trillion), portfolio debt (\$3.2 trillion), and then banking sector loan and deposit liabilities (\$2.8 trillion). Two-thirds of these liabilities were held by non-regional economies, and one-third by regional economies. As two-thirds of Asia cross-border investment holdings and liabilities were placed in non-regional economies and in the form of direct investments, the region remained exposed to changing non-regional profit earnings outlook, investor sentiment, and liquidity conditions (Box 4.1).

Inward debt portfolio investment grew to \$3.2 trillion in 2019, from \$2.9 trillion in 2018, while the value of inward equity portfolio investment rose considerably to \$5.6 trillion, after dropping to \$4.7 trillion in 2018. The intraregional share of inward portfolio debt holdings increased to 28.8% in 2019 from 27.1% in 2018, and that of inward portfolio equity investment rose to 19.0%

from 18.3% in the same period. Asia's banking sector cross-border liabilities (including loans, deposits, debt securities, and other instruments) slightly increased in 2019 to \$3.8 trillion from \$3.7 trillion in 2018. The fact that Asian banks' cross-bank claims exceed their cross-border liabilities highlights the region's role as a net global lender, while the downward trending intraregional shares imply Asian banks' increasing integration within the global banking network.

As the region held more debt assets than debt liabilities, but more equity liabilities than equity assets, it retained its long debt, short equity position as of the end of 2019. The net debt position rose from \$1.2 trillion at the end of 2015 to \$1.5 trillion at the end of 2019, while the net equity position improved from -\$2.8 trillion in 2015 to -\$1.3 trillion in 2019. The major share of its long debt and short equity positions were with non-regional economies, as of the end of 2019, mirroring the regional breakdown of its international investment assets and liabilities. Annex 4a provides additional discussions on trends in Asia's cross-border assets and liabilities.

Figure 4.15: Cross-Border Liabilities—Asia



FDI = foreign direct investment.

Notes: FDI liabilities refer to inward FDI holdings. Bank liabilities are limited to loans and deposits. Asia includes ADB regional members for which data are available.

Sources: ADB calculations using data from the Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed October 2020); International Monetary Fund (IMF). Coordinated Direct Investment Survey. <http://cds.imf.org> (accessed December 2020); and IMF. Coordinated Portfolio Investment Survey. <http://cpis.imf.org> (accessed September 2020).

Box 4.1: Global Financial Risk and Banking Sector Flows

Asia and the Pacific rely heavily on the banking sector for cross-border financial intermediation. Yet cross-border bank flows or transactions, either within or outside the region, are channels through which policies and risks spill over across economies. They depend on a host of factors, including similarities and familiarities, economic linkages, and transaction costs. Based on the asset trade literature, it is expected that economies closer to one another tend to have greater economic ties; lower information asymmetries and transaction costs; and are more similar compared with those that are farther apart.^a Banks are, likewise, expected to lend more to international customers about whom information is easily obtained and monitoring costs are lower. Consequently, cross-border bank flows tend to be greater among economies with closer geographic proximity. The empirical literature offers a wide range of evidence showing the inverse relationship between cross-border banking flows and information asymmetries (Brei and von Peter 2018; Herrmann and Mihaljek 2013).

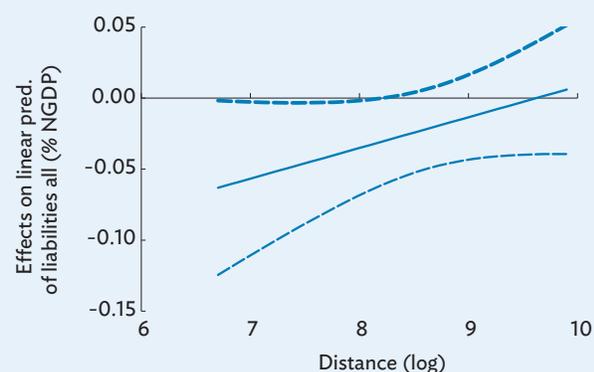
As bilateral bank flows tend to decline as information asymmetries increase, it is of interest to assess how this

relationship evolves during episodes of global financial uncertainty. For example, both the 2008 global financial crisis and onset of the COVID-19 pandemic in 2020 led to heightened investor risk aversion, as measured by the Chicago Board Options Exchange's volatility index (VIX). Do these and similar episodes of global financial uncertainties exacerbate information asymmetries, leading to a greater decline in bilateral bank flows between economies that are more distant? Or do banks reduce transactions more with economies that are closer or with less information asymmetries?

To address this question, quarterly adjusted bilateral banking sector data were used, ranging from the first quarter of 2004 to the first quarter of 2020 for 44 Asia and Pacific economies and their bilateral regional and non-regional counterparty economies using the Bank for International Settlements' Locational Banking Statistics. Adjusted values were used to capture banking sector cross-border flows.^b The data refer to total banking liabilities based on reported values of counterparty economies. A gravity equation was estimated including bilateral factors such as distance, trade, colonial relationship, common spoken language, and common legal origins. Country, partner, and year fixed effects were also included. VIX and an interaction term between VIX and distance were added.^c But since the interacted variables are both continuous, we report marginal effects of an increase in VIX on bilateral banking sector liabilities at different levels of distance.^d

The conditional marginal effects suggest that the region's bilateral bank inflows decline more for economies that are closer to one another when global risk aversion rises. In contrast, it decreases less or even increases at some point for more distant economies when global risk increases. For instance, log distance 9 and 10 reflect the distance between East Asia with Europe and the Americas. Hence, we do not find any evidence that global risks exacerbate information asymmetries, based on our sample. On the contrary, we provide more evidence that global financial risks can have greater regional impact, in line with Mercado (2020). This finding may reflect the limited degree of regional banking integration in the region and offers support on the importance and significance of regional financial safety net initiatives.

Box Figure: Conditional Marginal Effects of CBOE VIX with 95% CIs



CBOE = Chicago Board Options Exchange, CIs = confidence intervals, NGDP = nominal gross domestic product.

Sources: ADB calculations using data from the Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm>; Centre d'Etudes Prospectives et d'Informations Internationales (the French Research Center in International Economics). GeoDist database. <http://www.cepii.fr/CEPII/en/welcome.asp>; and International Monetary Fund. Direction of Trade Statistics. <https://data.imf.org/DOT> (all accessed August 2020).

^a See Choi, Rhee, and Oh (2014), Portes, Rey, and Oh (2001), and Portes and Rey (2005) on portfolio flows; Brei and von Peter (2018), Herrmann and Mihaljek (2013), and Papaioannou (2009) on bank flows; di Giovanni (2005) on mergers and acquisitions; and Daude and Fratzscher (2008) and Mercado (2020) on all types of foreign- and domestic-driven investment flows.

^b The values were adjusted by exchange rate changes as well as structural breaks from the bilateral holdings data.

^c See Mercado (2020) for similar approach using total bilateral capital flows.

^d Distance were in log values, and bilateral banking liabilities flows are in percent of an economy's annual nominal GDP.

Source: Asian Development Bank.

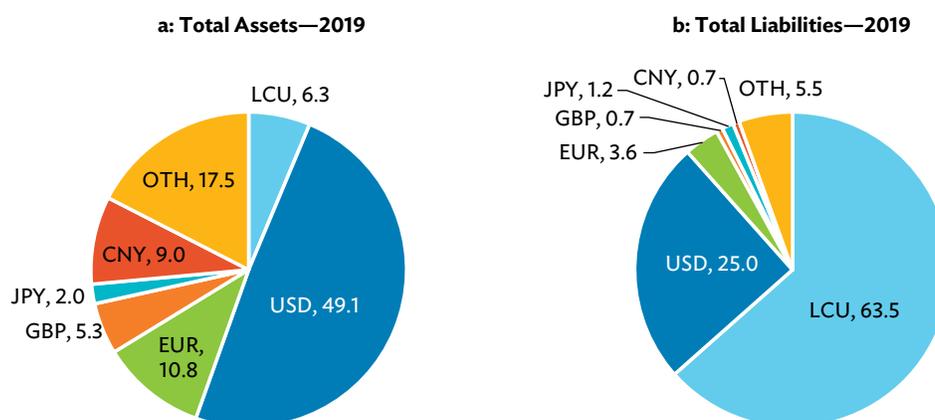
The currency compositions of Asia's international investment assets and liabilities indicate the prominence of the US dollar.²⁸

Almost half of Asia's international asset holdings were denominated in US dollars (USD) as of the end of 2019, followed by other currencies (OTH) at 18% and then euros (EUR) at 11%. In contrast, almost two-thirds of its external liabilities were dominated in local currencies (LCU), followed by USD at 25% (Figure 4.16). Consequently, the region had a foreign currency net asset position and local currency net liabilities position. As the currency shares remained largely stable over the past decade, these are unlikely to change considerably, at least in the short term (Figure 4.17). Asia's foreign and local currency net positions suggest that a uniform movement of regional currencies versus all currencies will generate welfare effects through valuation gains or losses. But the

size of the effects will depend on the individual economy's degree of financial integration, such that the greater the financial integration measure, the stronger the valuation gains or losses will be, and, hence, the corresponding welfare effects. Moreover, the dominance of the US dollar implies that changes in the exchange rate versus the dollar will have stronger valuation and welfare impacts compared with other currencies.

Across types of investments, equity-type assets, which include FDI equity and portfolio equity, were mostly denominated in other currencies as it is assumed that currency composition of these investments closely track geographic positions. Equity-type liabilities were denominated in local currency as foreign direct and portfolio equity ownerships are mostly denominated in the host country currency (Figure 4.18a). The currency compositions of debt-type investments highlight the

Figure 4.16: Currency Composition of Asia's International Investment Positions (%)



CNY = yuan, EUR = euro, GBP = pound, JPY = yen, LCU = local currency unit, OTH = other currencies, USD = United States dollar.

Notes:

(i) CNY and JPY are classified as LCU for the People's Republic of China and Japan, respectively.

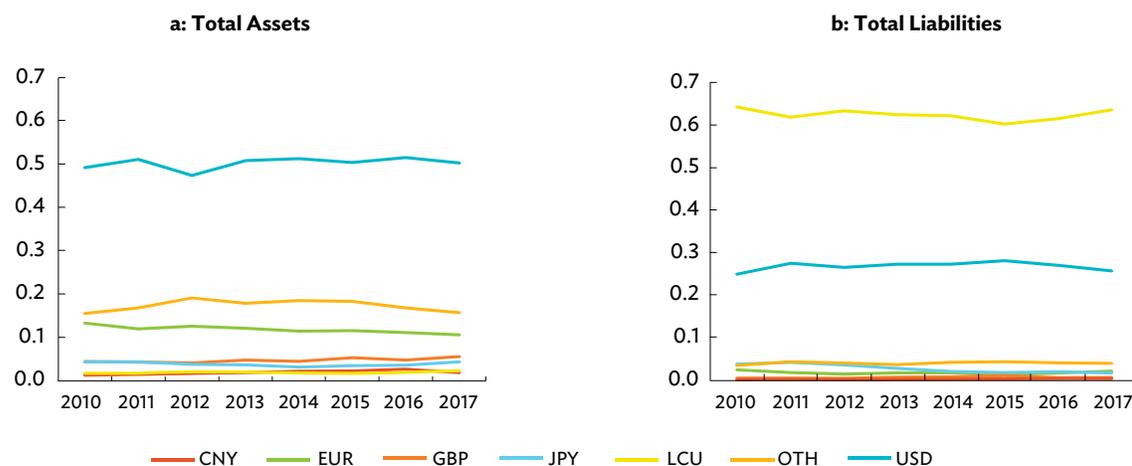
(ii) Values were estimated using currency weights for 2017 and International Investment Positions for 2019, and shown as percent of total.

(iii) OTH shares were derived as residual values.

(iv) Asia includes Australia; Hong Kong, China; India; Indonesia; Japan; Malaysia; New Zealand; Pakistan; the People's Republic of China; the Philippines; the Republic of Korea; Singapore; Sri Lanka; and Thailand.

Sources: ADB calculations using data from Bénétrix et al. (2019); and International Monetary Fund. Balance of Payments and International Investment Position Statistics. <http://data.imf.org/IIP> (accessed September 2020).

²⁸ In this analysis, we use the currency decomposition of the International Investment Position (IIP), which reports the total external assets and liabilities of all sectors across all types of instruments, providing comprehensive analysis on currency breakdown. The primary data set used comes from Bénétrix et al. (2019) and includes the IMF Survey on currency composition of IIP for selected economies, including those from the Asia and Pacific region. Their data set updated the currency composition data set of Lane and Schambaugh (2010a), Lane and Schambaugh (2010b), and Bénétrix, Lane, and Schambaugh (2015) by adding institutional surveys and national sources.

Figure 4.17: Currency Shares of Asia's International Investment Assets and Liabilities (share of total)

CNY = yuan, EUR = euro, GBP = pound, JPY = yen, LCU = local currency unit, OTH = other currencies, USD = United States dollar.

Notes:

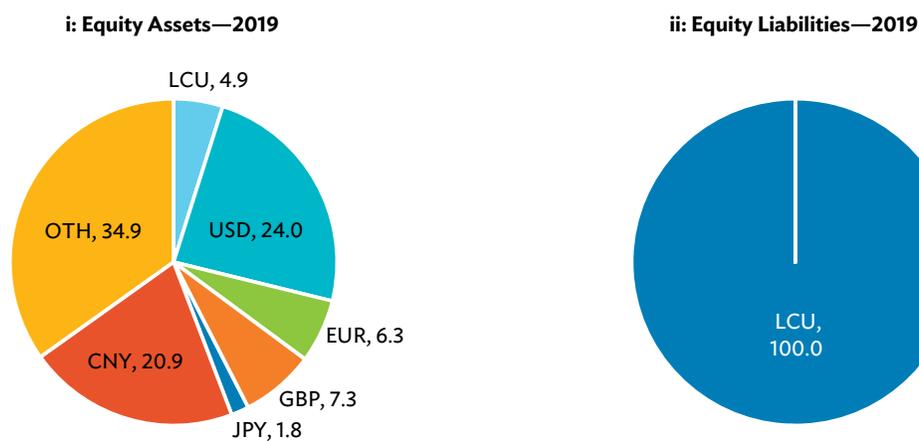
(i) CNY and JPY are classified as LCU for the People's Republic of China and Japan, respectively.

(ii) OTH shares were derived as residual values.

(iii) Data refer to annual median shares of individual economies.

(iv) Asia includes Australia; Hong Kong, China; India; Indonesia; Japan; Malaysia; New Zealand; Pakistan; the People's Republic of China; the Philippines; the Republic of Korea; Singapore; Sri Lanka; and Thailand.

Sources: ADB calculations using data from Bénétrix et al. (2019); and International Monetary Fund. Balance of Payments and International Investment Position Statistics. <http://data.imf.org/IIP> (accessed September 2020).

Figure 4.18a: Currency Composition of Asia's International Equity Investments (%)

CNY = yuan, EUR = euro, GBP = pound, JPY = yen, LCU = local currency unit, OTH = other currencies, USD = United States dollar.

Notes:

(i) CNY and JPY are classified as LCU for the People's Republic of China and Japan, respectively.

(ii) Values were estimated using currency weights for 2017 and International Investment Positions for 2019, and shown as percent of total.

(iii) OTH shares were derived as residual values.

(iv) Equity investments include foreign direct investment equity and portfolio equity.

(v) Asia includes Australia; Hong Kong, China; India; Indonesia; Japan; Malaysia; New Zealand; Pakistan; the People's Republic of China; the Philippines; the Republic of Korea; Singapore; Sri Lanka; and Thailand.

Sources: ADB calculations using data from Bénétrix et al. (2019); and International Monetary Fund. Balance of Payments and International Investment Position Statistics. <http://data.imf.org/IIP> (accessed September 2020).

dominance of the US dollar. For debt assets, which include FDI debt, portfolio debt, other investments, and official reserves, about 63% were denominated in the US dollar, followed by the euro (13%) and other currencies (9%). In contrast, half of debt liabilities, including FDI debt, portfolio debt, and other investments, were denominated in US dollars, followed by local currency (28%), and other currencies (10%) (Figure 4.18b).

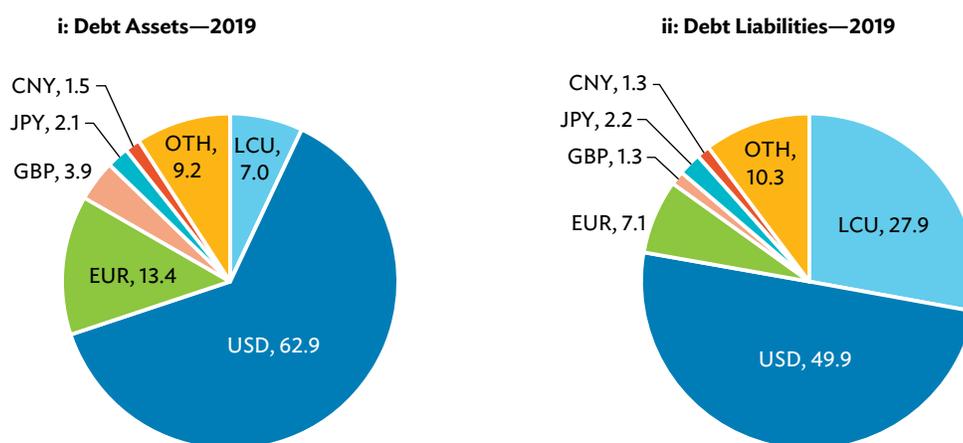
The dominance of the US dollar is more pronounced on the region's trade invoices.

Recent studies have shown the dominant role of the US dollar in the pricing of merchandise exports and imports, despite the relatively lower share of the US on bilateral trade (Adler et al. 2020; Boz et al. 2020; Gopinath 2015; and IMF 2019a). For instance, exports of an economy are mostly priced in US dollars even if it trades with economies other than the US. The dominant currency pricing paradigm implies when a country's exchange rate depreciates, its import prices rise in the short term, leading

to lower imports. But prices faced by export partners will not change because their exchange rate relative to dominant currency remains unchanged. Consequently, the country's exports remain the same (Adler et al. 2020). Hence, under dominant currency pricing, a depreciation of the domestic exchange rate leads to lower imports, and muted response of export volume in the short term.

In Asia, most recent available data indicate that around 87% of the region's merchandise good exports were invoiced in the US dollar, although the US accounted for only about 9% of the region's merchandise exports (Figure 4.19). A similar pattern emerges for merchandise good imports. Around 77% of the region's imports were invoiced in the US dollar, but the US accounted for only about 5% of the region's merchandise imports. The dominance of the US dollar in the region's trade invoicing was striking when compared with other economies (Figure 4.20). For other emerging and developing economies, around 57% of exports and 48% of imports were invoiced in US dollar; and a significant share was in euros.

Figure 4.18b: Currency Composition of Asia's International Debt Investments (%)



CNY = yuan, EUR = euro, GBP = pound, JPY = yen, LCU = local currency unit, OTH = other currencies, USD = United States dollar.

Notes:

(i) CNY and JPY are classified as LCU for the People's Republic of China and Japan, respectively.

(ii) Values were estimated using currency weights for 2017 and International Investment Positions for 2019, and shown as percent of total.

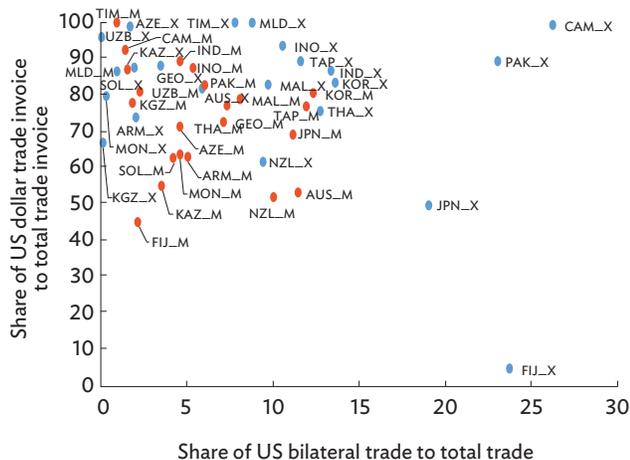
(iii) OTH shares were derived as residual values.

(iv) Equity investments include foreign direct investment equity and portfolio equity.

(v) Asia includes Australia; Hong Kong, China; India; Indonesia; Japan; Malaysia; New Zealand; Pakistan; the People's Republic of China; the Philippines; the Republic of Korea; Singapore; Sri Lanka; and Thailand.

Sources: ADB calculations using data from Bénétrix et al. (2019); and International Monetary Fund. Balance of Payments and International Investment Position Statistics. <http://data.imf.org/IIP> (accessed September 2020).

Figure 4.19: Asia's Trade with the United States and US Dollar Invoicing (%)



contractionary or expansionary effect on global trade. For instance, an appreciation of the US dollar versus all other currencies will raise domestic prices of imports for other economies. This, in turn, will lower import demand, which will lead to less global trade (Adler et al. 2020). Third, the dominant currency pricing is intertwined with dominant currency financing, whereby the US dollar is commonly used in cross-border corporate external financing (Figure 4.18b). The dominance of the US dollar in trade invoicing leads to a larger demand for US dollar deposits, which makes US dollar funding cheaper than other currencies (Gopinath and Stein 2018). This reinforces US dollar dominance in both trade pricing and financing.

Looming Financial Risks Stemming from COVID-19

COVID-19 has unraveled global financial markets, putting Asia's financial resilience to a test and raising the specter of financial volatility and instability in the region. Although financial market jitters were quickly quelled through swift and aggressive policy interventions around the globe, it still reveals several looming financial risks that policy makers need to consider. Already high levels of debt, both sovereign and private, will inevitably increase, with the possibility that a deterioration of debt quality in the aftermath of the pandemic will threaten regional banking sector stability. Furthermore, the pandemic exposed the Asian banking sector's structural vulnerability given the liquidity mismatches associated with increased international activity and a reliance on US dollar funding by non-US banks.

The COVID-19 pandemic poses an ongoing challenge to regional economies with elevated debt levels as large-scale policy responses could entail further debt accumulation.

A decade of historically low interest rates since the global financial crisis has resulted in elevated debt-to-GDP ratios globally. This pattern also played out in Asia,

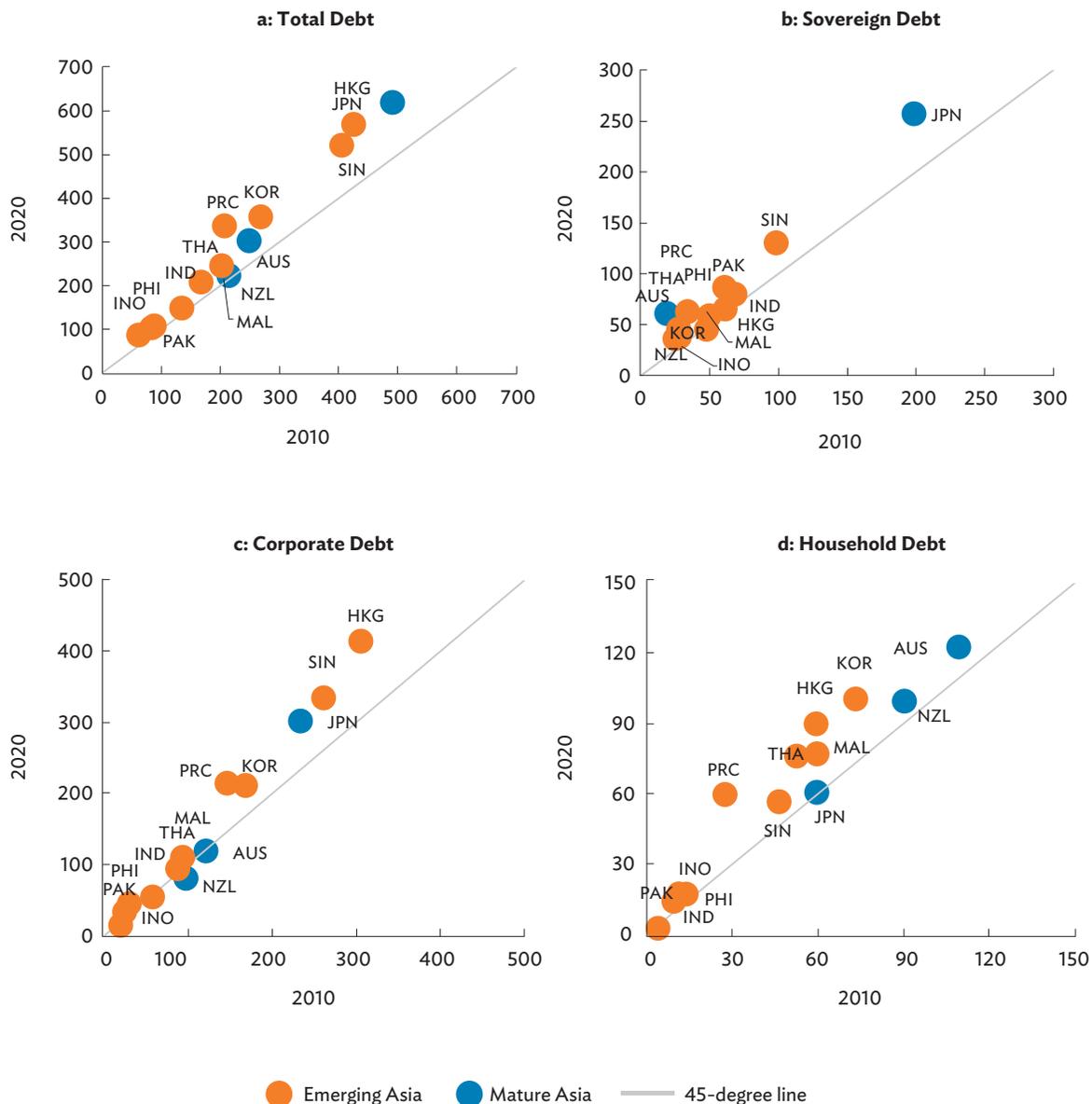
as emerging economies exhibit particularly high and rising debt levels (Figure 4.22), with Hong Kong, China; the PRC; the Republic of Korea; and Singapore exhibiting strong increases as of 2020 compared with 2010. While public debt levels have increased throughout Asia since 2010, especially in Japan, private debt (i.e., corporate and household) has risen considerably in developing Asia, most notably in Hong Kong, China; the PRC; the Republic of Korea; Singapore; and Thailand. The current pandemic could expose the already heavily indebted economies in the region to additional challenges, as large-scale policy responses to COVID-19 will inevitably result in increased debt. The increase is expected to materialize across all sectors, amid (i) fiscal spending at large scale, (ii) accommodative monetary policy resulting in low interest rates for firms and households, and (iii) revenue reduction due to lackluster economic growth. It is estimated that Asia's public debt-to-GDP ratio could rise from 56.7% in 2019 to 65.8% in 2020, and to 69.4% by 2021 (IMF 2021). Transiting toward normalized fiscal balances post-COVID-19 will be crucial to assuring debt sustainability in the region moving forward.

Looming risks of high debt levels could weaken Asia's banking and corporate sectors.

In case interest rates would normalize, interest payments and debt rollover risks may arise. A possible sluggish economic recovery, combined with ballooning debt levels, could prompt credit rating agencies to downgrade certain economies' creditworthiness, further lifting interest rates and exacerbating these risks. As for private sector debt, the risks are similar as weaker corporate earnings and worsening credit conditions could result in insolvencies weighing on banking sector resilience and producing adverse social effects.

This in turn could spell trouble for Asian banks and corporations, particularly micro, small, and medium-sized enterprises (MSMEs), due to the looming risk of debt quality deterioration. Given the dominant role of banks in Asia's financial systems, this could

Figure 4.22: Sectoral Debt, 2010 versus 2020*—Asia (% of GDP)



* = As of Q3 2020.

AUS = Australia; GDP = gross domestic product; HKG = Hong Kong, China; IND = India; INO = Indonesia; JPN = Japan, KOR = Republic of Korea; NZL = New Zealand; PAK = Pakistan; PHI = Philippines; PRC = People’s Republic of China; SIN = Singapore; THA = Thailand.

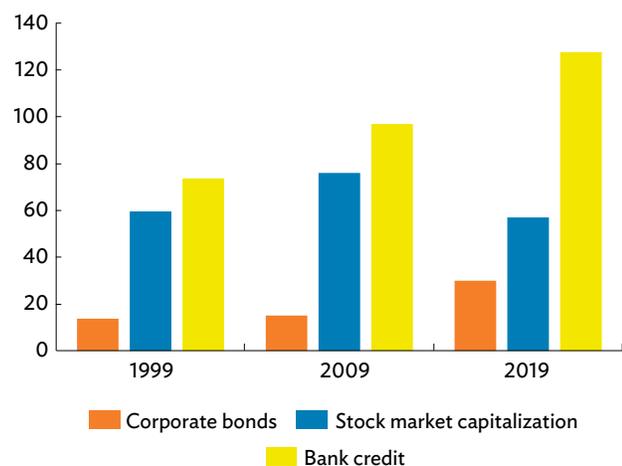
Notes: Economy grouping based on Institute of International Finance definition. Emerging Asia includes HKG, IND, INO, KOR, MAL, PAK, PHI, PRC, SIN, and THA. Mature Asia includes AUS, JPN, and NZL.

Source: Institute of International Finance. Global Debt Monitor December 2020. <https://www.iif.com/Research/Capital-Flows-and-Debt/Global-Debt-Monitor> (accessed January 2021).

breed widespread financial instability and drag on economic recovery. As banks remain the biggest source of corporate financing in emerging Asia

(Figure 4.23), safeguarding banking sector health is a prerequisite for sustained economic development and recovery post-COVID-19.

Figure 4.23: Corporate Financing—Emerging Asia (% of GDP)



GDP = gross domestic product.

Notes:

- (i) Emerging Asia includes India, Indonesia, the Republic of Korea, Malaysia, the People's Republic of China, the Philippines, Thailand, and Viet Nam.
- (ii) 1999 corporate bond data for the Republic of Korea, Malaysia, the Philippines, Thailand, and Viet Nam as of 2000; and 1999 stock market capitalization data for Viet Nam as of 2000.
- (iii) 2009 corporate data as of 2010 for India; and 2009 stock market capitalization data for Indonesia as of 2010.

Sources: AsianBondsOnline; CEIC; Haver Analytics; and national sources (all accessed April 2020).

Credit conditions could tighten when temporary financial relief extended to the corporate sector is lifted and regulatory forbearance phased out, highlighting risks of rising nonperforming loans (NPLs).

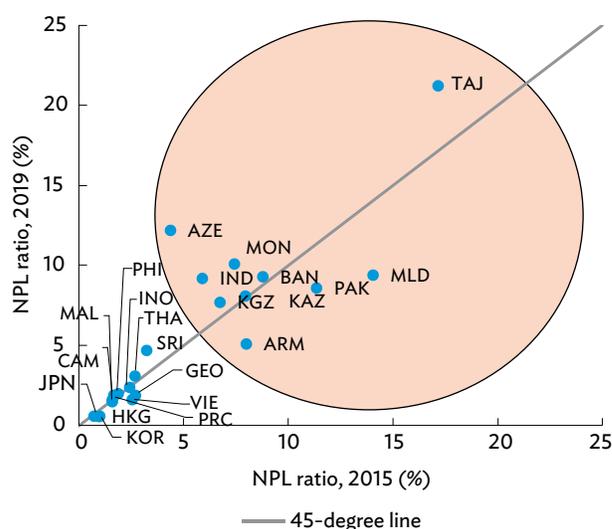
Should corporate earnings fall, corporations will face challenges in their debt servicing capacity, possibly resulting in defaults. Thus far, large-scale fiscal stimulus helped considerably to prevent the occurrence of corporate defaults, while regulatory forbearance has relieved pressure from banks in addressing NPLs. Ample liquidity has been provided to the corporate sector to avoid an insolvency crisis. However, when temporary relief is lifted and regulatory forbearance tapers off, corporate defaults may materialize, and banks could become exposed to rising NPLs. This, in turn, could contribute to a deterioration in banks' balance sheets and therefore impede their capacity for financial intermediation, and thus result in negative macrofinancial effects. In addition, financial instability and an economic downturn could disproportionately affect MSMEs, which typically do not have access to capital markets, further amplifying adverse

social effects. Usually, MSMEs, representing the backbone of the economies, would be the most vulnerable in case credit conditions tighten. It is therefore important to prepare for a smooth transition, to monitor financial health of banks and assure sufficient credits to solvent MSMEs.

Deterioration of banking and corporate sector debt quality could undermine economic recovery and weaken future growth.

Past crises have shown that problems associated with debt quality can have long-lasting effects on the finance sector, still weighing on banks' balance sheets years after the crisis. In Asia, more than 2 decades after the Asian financial crisis, NPL ratios in the region have stabilized at a considerably lower level than during crisis periods, also due to strong postcrisis reforms, a combination of micro- and macroprudential policies, and sound macroeconomic conditions. However, in some Central, East, and South Asian economies, NPL ratios have been rising recently (Figure 4.24). Although moderate relative to levels during the Asian financial crisis, increasing NPL

Figure 4.24: Development of NPLs, 2015 versus 2019— Selected Asian Economies (NPL ratio, %)



ARM = Armenia; AZE = Azerbaijan; BAN = Bangladesh; CAM = Cambodia; GEO = Georgia; HKG = Hong Kong, China; IND = India; INO = Indonesia; JPN = Japan; KAZ = Kazakhstan; KGZ = Kyrgyz Republic; KOR = Republic of Korea; MAL = Malaysia; MON = Mongolia; MLD = Maldives; NPL = nonperforming loan; PAK = Pakistan; PHI = Philippines; PRC = People's Republic of China; SRI = Sri Lanka; TAJ = Tajikistan; THA = Thailand; VIE = Viet Nam.

Source: ADB calculations using data from Central Bank of Mongolia. <https://www.mongolbank.mn/eng>; CEIC; the International Monetary Fund. Financial Soundness Indicators. <https://data.imf.org>; and World Bank. World Development Indicators. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators> (all accessed July 2020).

ratios, alongside the buildup of debt and default risks, pose challenges to financial stability in the region. Given the nature and persistence of NPLs, these challenges may last beyond the actual COVID-19 pandemic.

Experiences of other regions, like the European sovereign debt crisis, illustrate the long-lasting effects of deteriorating debt quality. The global financial crisis and succeeding European sovereign debt crisis reversed a downward trend in NPL ratios in the euro area, with certain economies, mainly in Southern Europe, severely affected. In spite of a gradual decline to 3.6% in 2019, the euro area NPL ratio remained three times higher than equivalent ratios in the US and the United Kingdom in that year, and precrisis levels have not yet been reached. This underlines the strong persistence of NPL ratios and the sustained impact they have on banking sector health.

The significance of banking sector instability and a rise in distressed assets is further underscored by the macrofinancial feedback effects of NPLs. Empirical investigation of the determinants and effects of bank-specific NPLs in Asia points to the effect NPLs have on the real economy and financial variables. In particular, a rise in NPL ratio prompts a reduction in gross domestic product, a tightening of credit supply, and an increase in unemployment rate (ADB 2017; Lee and Rosenkranz 2020).

The growing interconnectedness of Asian and global financial markets, moreover, highlights the risks of cross-border spillovers and contagion effects triggered by global shocks and financial distress.

Previous financial crises demonstrated how weaknesses in finance sectors can spread to neighboring economies. Analysis of direct and indirect banking sector exposure of emerging economies to crisis-afflicted economies points to the elevated risk of contagion in the form of capital outflows due to increased interlinkages during crisis periods (ADB 2017; Park and Shin 2017, 2018, 2020a, 2020b). At a time of such heightened interconnectedness, a buildup in NPLs can further heighten global banking instability, owing to

their macrofinancial and possible spillover effects (Park and Shin 2020a).

Empirical evidence shows that emerging market borrowers could suffer a significant increase in capital outflows if the NPL ratios of both lenders and borrowers rise. This has been evidenced from 2000 to 2017, as globally active lenders withdrew capital from emerging market borrowers when they experienced a rise in NPL ratios. Park and Shin (2020a) find that international banks withdraw funds from emerging economies in response to the increase in the NPL ratios of either advanced or emerging economies, or both (Table 4.1). Given the looming risk of a rise in credit risk in the wake of the COVID-19 pandemic, regional policy makers need to carefully monitor financial conditions and take preemptive action today.

Table 4.1: Impact of Nonperforming Loans on Banking Outflows from Emerging Market Economies
(LBS total cross-border foreign claims)

Variables	(1)	(2)	(3)	(4)	(5)
NPL ratio lender	0.851*** [0.088]	0.909*** [0.114]	0.688*** [0.118]	0.875*** [0.119]	0.696*** [0.121]
NPL ratio borrower		0.519*** [0.044]	0.481*** [0.045]	0.587*** [0.051]	0.495*** [0.049]
Year fixed effects	No	No	Yes	No	Yes
R-squared	0.008	0.03	0.084	0.049	0.111
Observations	11,113	6,176	6,176	4,428	4,428

LBS = locational banking statistics, NPL=nonperforming loan.

Notes: The dependent variable is the growth rate of banking outflows calculated using BIS LBS total cross-border foreign claims. Columns (1), (2) and (4) are estimated by pooled ordinary least squares. Year fixed effects are added in columns (3) and (5) but the coefficients are not reported. Columns (4) and (5) include the following non-reported additional regressors: Increase in current account; Real exchange rate change; Increase in credit; Reserve/M2; GDP growth; Inflation; and Rule of law. The sample period is from 2000 to 2017. Numbers in brackets are robust standard errors. The asterisks denote significance levels. *** at 1%, ** at 5%, and * at 10%.

Source: Park and Shin (2020b).

Amid flight to safety, global demand for the US dollar soared, threatening local financial stability in emerging Asian economies which remain heavily exposed to US dollar funding risks.²⁹

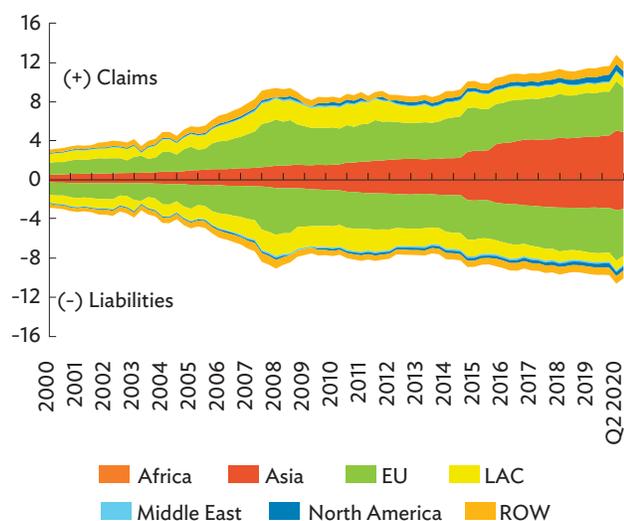
At the peak of the COVID-19 pandemic in March, the fear of economic recession and the risk-off sentiment unraveled global financial markets, putting Asia's

²⁹ This section draws from Park, Rosenkranz, and Tayag (2020).

financial resilience to a test and making Asian banks vulnerable to US dollar funding activities. While multiple factors are behind the surge in demand, it has been a global rush to unwind carry trades that have driven a rise in global US dollar funding costs, also resulting in capital outflows as discussed above.

Asian banks' cross-border assets and liabilities have risen considerably since the aftermath of the global financial crisis (Figure 4.25), with the majority denominated in foreign currency (83.5% of cross-border claims and 75.6% of cross-border liabilities as of Q2 2020, primarily in US dollars), and cross-border banking operations of Asian banks having considerably expanded both in claims and liabilities.

Figure 4.25: US Dollar Cross-Border Bank Holdings by Non-US Banks (\$ trillion)



EU = European Union, LAC = Latin America and the Caribbean, ROW = rest of the world, US = United States.

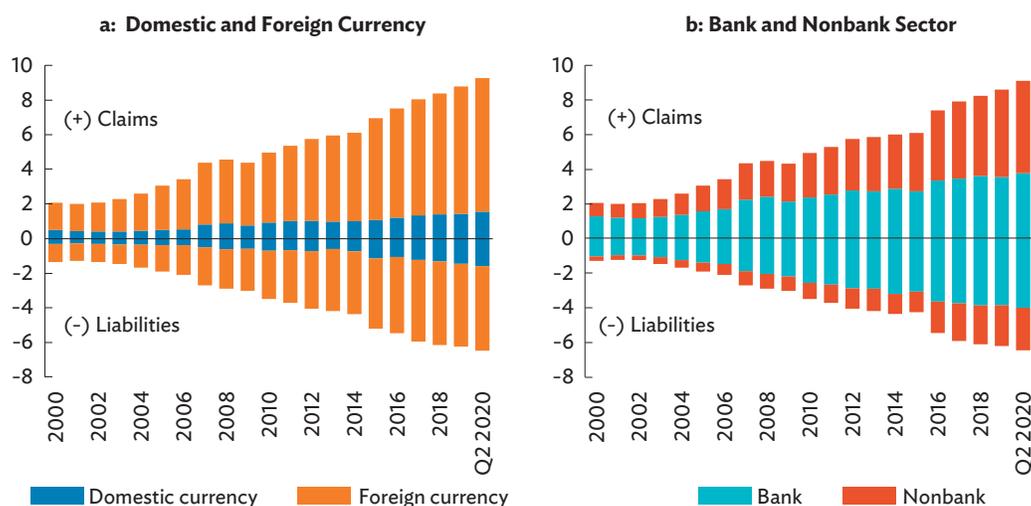
Notes: Africa includes South Africa (beginning Q3 2009). Asia includes Australia; Hong Kong, China (beginning Q4 2014); India (beginning Q4 2001); Japan; the People's Republic of China (beginning Q4 2015); the Philippines (beginning Q4 2016); the Republic of Korea (beginning Q1 2005); and Taipei, China (beginning Q4 2000). EU includes Austria (beginning Q4 2013), Belgium, Cyprus (beginning Q4 2008), Denmark, Finland, France (beginning Q1 2010), Germany, Greece (beginning Q4 2003), Ireland, Italy (beginning Q2 2012), Luxembourg, the Netherlands (beginning Q4 2014), Portugal (beginning Q1 2012), Spain (beginning Q1 2014), Sweden, and the United Kingdom. Latin America and the Caribbean includes the Bahamas, Brazil (beginning Q4 2002), Cayman Islands, Chile (beginning Q4 2002), Mexico (beginning Q4 2003), and Panama (beginning Q4 2002). Middle East includes Bahrain. North America includes Canada. ROW includes Bermuda (beginning Q4 2002); Guernsey (beginning Q4 2001); Isle of Man (beginning Q4 2001); Jersey (beginning Q4 2001); Macau, China (beginning Q4 2013); Norway (beginning Q1 2014); the Russian Federation (beginning Q4 2015); and Switzerland.

Sources: ADB calculations using data from the Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed October 2020); and Park, Rosenkranz, and Tayag (2020).

The landscape of non-US global banks' activities in US dollar funding has changed since the global financial crisis. Severely hit by the global financial crisis and the European sovereign debt crisis, European banks have reduced their cross-border US dollar assets. Meanwhile, non-European, non-US banks—particularly in Australia, Canada, Japan, and Singapore—came to pick up the slack left by European banks (Remolona and Shim 2015; IMF 2019b). As a result, since Q4 2016, Asia has accounted for the highest share of cross-border claims denominated in US dollars by non-US global banks, highlighting the growing role of Asian banks in the global US dollar funding market.

In line with global trends, Asian banks have also been increasingly engaged with nonbank counterparts in cross-border banking activities, with 58.6% of Asian banks' claims and 38.1% of their liabilities being on nonbanks (e.g., life insurers, pension funds, or hedge funds) as of Q2 2020 (Figure 4.26). While the cross-border activities of foreign banks have remained largely stable in recent years, activities with nonbanks have ballooned. This pattern stems from financial regulatory reforms following the global financial crisis aimed to limit excessive risk taking and leverage of global banks. Consequently, nonbank financial institutions, such as pension funds or life insurers, have emerged to assume a greater share of dollar-denominated cross-border activities. As the nonbanks are less stringently regulated and have higher market concentration, BIS (2020) points toward the possible risk of them acting as an amplifier of global financial conditions and market volatility, thus threatening financial stability.

This rising exposure to foreign currency-denominated activities yields several risks as global banks not based in the US (non-US global banks) need to rely on foreign exchange swaps, given their limited access to a stable US dollar deposit base or US monetary policy operations. The fact that currency hedging mechanisms and instruments remain underdeveloped in the region further highlights associated vulnerabilities. As discussed on page 70, interbank money markets came under severe strain in March 2020 and the price for obtaining US dollars through a cross-currency basis swap—in a way an emergency US dollar liquidity

Figure 4.26: Gross Cross-Border Bank Claims and Liabilities—Asia (\$ trillion)

Notes: Asia includes Australia; Hong Kong, China; Indonesia; India; Japan; Malaysia; the People's Republic of China (PRC); the Philippines; the Republic of Korea; Singapore; and Taipei, China. Data for Indonesia beginning 2010, India beginning 2001, Malaysia 2007, the PRC beginning 2015, the Philippines beginning 2016, and the Republic of Korea beginning 2005. For total claims, domestic currency for Hong Kong, China (2000–2012) and Malaysia were deduced by subtracting foreign currency claims from total claims. For total liabilities, domestic currency for Hong Kong, China (2000–2012); Malaysia; and Singapore were deduced by subtracting foreign currency liabilities from total liabilities.

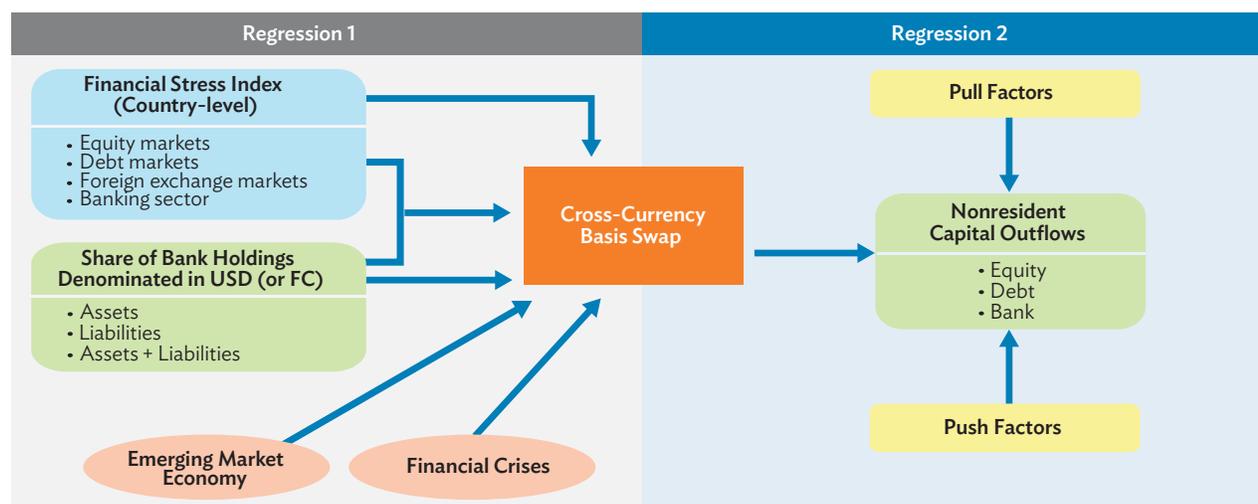
Sources: ADB calculations using data from Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed October 2020); and Park, Rosenkranz, and Tayag (2020).

facility—spiked for several emerging Asian currencies (Figures 4.3 and 4.4).

Asian banks' reliance on US dollar funding markets exposes the structural vulnerability of the region's financial systems during times of crisis, and so poses risks to regional financial stability as a sudden squeeze in global dollar liquidity can have significant destabilizing effects. In particular, financial stress by global non-US banks can trigger a sharp contraction in cross-border international lending, even while emerging Asian economies maintain overall solid financial conditions. Additionally, as the US dollar appreciates sharply because of its safe asset quality, emerging Asian borrowers will face difficulties in repaying or rolling over their US-dollar-denominated debt. A depreciation of the bilateral exchange rate against the US dollar is linked to a worsening of balance sheets of US dollar-indebted economies and the tightening of financial conditions

through a financial channel of the exchange rate (ADB 2017, 2019; Hoffmann, Shim, and Shin 2017, 2019).

An empirical analysis reveals that the exposure of the domestic banking system to US dollar funding (i) is significantly and positively associated with a widening cross-currency basis swap, and (ii) also amplifies the effect of financial stress on the cross-currency basis swap. The cross-currency basis swap is, moreover, particularly costly during crisis periods—especially for emerging market economies. In turn, a widening in the cross-currency basis swap—i.e., a higher marginal dollar funding cost—is also significantly and positively related to nonresident capital outflows, especially driven by debt and bank flows (Figure 4.27). Consequently, the financial vulnerability experienced by non-US global banks due to their US dollar activities rises with their exposure. This is especially valid for emerging economies.

Figure 4.27: Determinants of the Cross-Currency Basis Swap and Effect on Nonresident Capital Outflows

FC = foreign currency, USD = United States dollar.

Note: Park, Rosenkranz, and Tayag (2020) includes more detailed discussion of the regression results illustrated in this figure.

Source: Park, Rosenkranz, and Tayag (2020).

The COVID-19 pandemic offers an opportunity to regain reform momentum and strengthen regional financial cooperation. The recent agreement reached by ASEAN+3 finance ministers on enhancing the Chiang Mai Initiative Multilateralization (CMIM) underpins the region's commitment to strengthen the regional financial safety net.

While marking the 10th anniversary of the original CMIM agreement this year, in September 2020, ASEAN+3 finance ministers agreed to enhance CMIM by (i) increasing the IMF de-linked portion from 30% to 40%, (ii) clarifying the conditionality framework for the IMF de-linked portion, and (iii) institutionalizing voluntary and demand-driven local currency contributions. These measures will strengthen the crisis responsiveness by CMIM through giving more discretion to ASEAN+3 countries and CMIM's regional surveillance unit, AMRO. Amid increasingly interconnected financial markets, both regionally and globally, these efforts underpin the complementary role of the regional financial safety net (e.g., CMIM and AMRO) with global layers, such as provided by the IMF.

Regional policy makers need to remain vigilant against the potential impact of COVID-19 on financial stability, collectively working on risk identification, mitigation, and response.

It is important to sustain market confidence and ensure adequate liquidity. While the region's macrofinancial positions so far remained sound during the pandemic, policy makers should remain vigilant against financial market distress and tightening liquidity conditions. Therefore, maintaining sound macrofinancial policies that are supportive of the economy and help stabilize financial markets is key. Given that Asia's financial system remains largely bank-based, it is important to safeguard banking sector resilience, including through action to prevent corporate defaults that would weigh on banks' balance sheet quality.

The ongoing COVID-19 pandemic provides impetus for strengthening regional financial cooperation. Deeper regional and global financial interconnectedness can result in faster transmission of shocks across borders, highlighting the risk of financial contagion. These patterns have been apparent

during past crisis episodes. Consequently, the ongoing COVID-19 calls for collective action, which is crucial in safeguarding regional financial stability and resilience.

Asia needs to further strengthen its regional financial safety nets. The latest reform of CMIM in September 2020 contributed to enhanced financial resilience. Yet, several options can further bolster the region's financial safety nets, including an increase in the CMIM's capacity (e.g., through paid-in capital) or a possible widening of the CMIM's mandate such as the recapitalization of systemically important financial institutions. While the operability of the CMIM has yet to be tested, 10 successful test runs have been completed. AMRO's surveillance function during COVID-19 also plays an important role in monitoring and safeguarding financial stability in Asia. In addition, under the current pandemic, multilateral institutions' financial crisis support has been significant, highlighting their complementary role in the global and regional financial safety net. ADB, for example, has committed a \$20 billion COVID-19 response package, including through its crisis-related policy-based lending toolkit.

The region should continue developing and nurturing vibrant local currency bond markets to help address the structural vulnerabilities inherent in Asian financial systems such as reliance on their strong dollar dependency as well as to alleviate the reliance on bank-based finance. Greater availability of local currency long-term securities can reduce short-term needs for US-dollar liquidity and reduce currency and maturity mismatches. Also, the investor base needs to be broadened, including through encouraging more domestic investors such as government pension funds and regional life insurers to buy long-term securities. Given that these investors would have their liabilities primarily denominated in domestic currency, they would not be compelled to withdraw funds from the region because of currency mismatches on their balance sheets. As a result, large swings in capital flows could be

mitigated. In that regard, the ASEAN+3 Multi-Currency Bond Issuance Framework (AMBIF), a policy initiative under the Asian Bond Markets Initiative, supported the creation of a corporate bond market in Cambodia in 2018, which even preceded the formation of a sovereign bond market in Cambodia.

The current pandemic has seen the substantial elevation of public debt levels, which may rise further as the pandemic continues. Unwinding and managing these levels sustainably will remain a priority beyond COVID-19, and public spending should be productive and well-targeted to support the most vulnerable and provide the investment needed for a sustainable recovery. Strong international leadership is, moreover, vital to mitigating further debt problems, which threaten to unfold once policy stimulus begins to unwind, if not sufficiently addressed early on.

Domestic resource mobilization will play an important role in that regard, which necessitates both strengthened domestic tax systems and regional cooperation in international taxation. Policies need to take into consideration an acceleration of the digitalization of the global economy amid COVID-19.

High and rising NPLs require early and preemptive measures. A sharp increase in NPLs could destabilize regional financial systems and compromise swift post-pandemic economic recovery. Growing cross-border banking activities and the rise of big regional financial institutions—of potentially systemic importance—underpin the risk of financial contagion in the region in the event of a surge in NPLs, which could not only compromise economic recovery, but also threaten regional financial stability. Consequently, early and preemptive action is needed to prevent corporate defaults, strengthen NPL resolution mechanisms, and develop distressed asset markets; allowing banks and financial institutions to swiftly dispose of NPLs as they arise.

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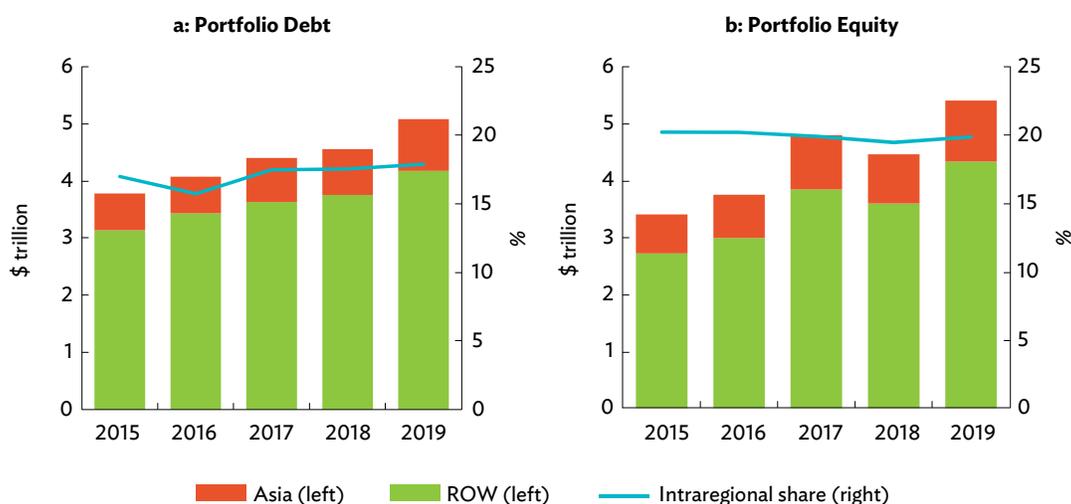
Annex 4a: Updates on Asia's Cross-Border Financial Assets and Liabilities

International portfolio debt holdings of Asian economies continued to increase in 2019 as cross-border portfolio equity holdings rebounded sharply in 2019, after a considerable decline in 2018.

Asia's cross-border portfolio debt asset holdings increased from \$4.5 trillion in 2018 to \$5.1 trillion in 2019, recording an 11.6% increase and continuing its upward trend over the past years (Annex Figure 4a.1a).¹ The value of the region's cross-border portfolio equity asset holdings, likewise, grew in 2019 (Annex Figure 4a.1b). After declining from \$4.8 trillion in 2017 to \$4.5 trillion in 2018, cross-border equity asset holdings rebounded sharply to \$5.4 trillion in 2019. The increase in the value of Asia's total cross-border portfolio asset holdings in 2019, which amounted to \$1.5 trillion, was primarily due to the increase in the value of Japan's total cross-border portfolio asset holdings, which grew by \$542 billion, underpinning its important role as global portfolio investor.

The value of Asia's cross-border portfolio debt assets increased by \$526 billion in 2019 (Annex Figure 4a.2a). The increase in the value of US bond holdings, amounting to \$242 billion, accounted for the bulk of the total increase, amid rising US interest rates in the first half of 2019. This was in contrast to 2018 when the value of the region's cross-border portfolio debt asset in the US declined by \$12 billion. The amount of the region's holdings of European Union (EU) debt securities, likewise, increased by \$106 billion in 2019, which was more than the \$86 billion increase in 2018. The bulk of the increase reflected improvements in the value of Japan's holdings of debt securities from France, Spain, and Germany. As in past years, Asian investors, specifically from Japan; Australia; and Hong Kong, China, saw the value of their portfolio debt holdings in the Cayman Islands rise, by around \$29 billion in 2019. The value of the region's intraregional portfolio debt assets, likewise, grew by \$110 billion, more than thrice the 2018 increase of \$30 billion.

Annex Figure 4a.1: International Portfolio Assets—Asia

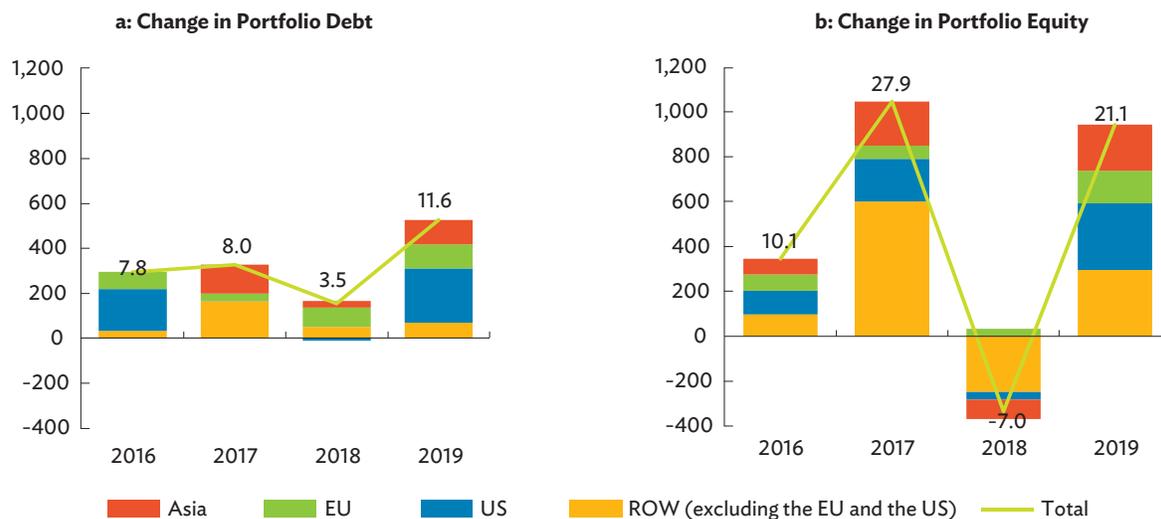


ROW = rest of the world.

Note: Asia includes ADB regional members for which data are available.

Source: ADB calculations using data from the International Monetary Fund. Coordinated Portfolio Investment Survey. <http://data.imf.org/CPIS> (accessed September 2020).

¹ The overall increase or decrease in stock portfolio holdings and liabilities is attributed to changes in flows and valuation changes of existing portfolio holdings and liabilities.

Annex Figure 4a.2: Change in International Portfolio Assets—Asia (\$ billion)

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

Notes: Asia includes ADB regional members for which data are available. Labels refer to year-on-year percentage change.

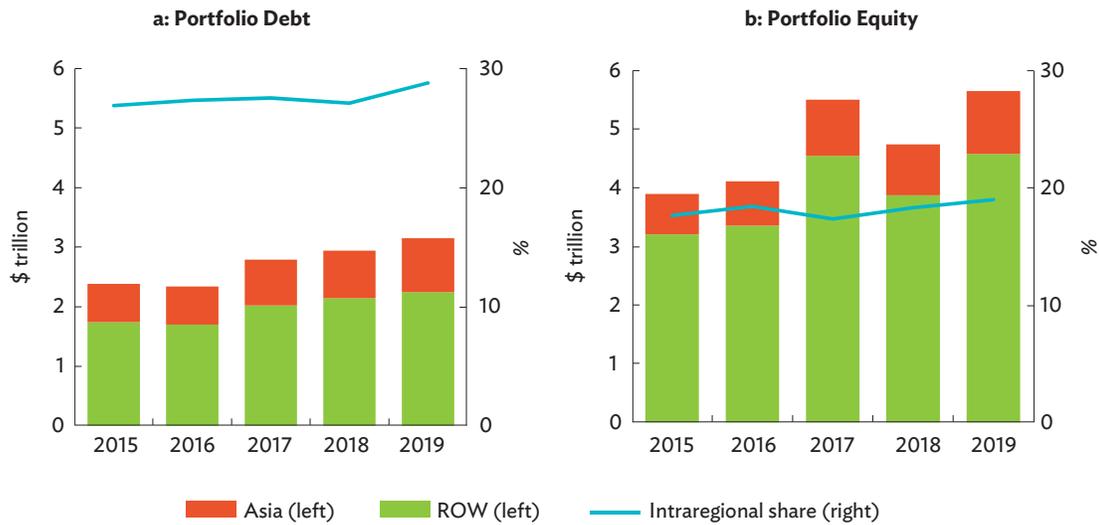
Source: ADB calculations using data from the International Monetary Fund. Coordinated Portfolio Investment Survey. <http://data.imf.org/CPIS> (accessed September 2020).

The value of the region's cross-border portfolio equity holdings grew by \$942 billion in 2019 (Annex Figure 4a.2b). Holdings of US equities gained attraction in 2019, rising by \$297 billion in 2019 amid better-than-expected performance of US stock markets. Holdings of equities in global financial hubs such as Japan (with \$132 billion), Australia (\$59 billion), and the Republic of Korea (\$37 billion) accounted for large shares of the increase in the value of the region's US equity investments. The amount of Asia's cross-border portfolio equity assets with the rest of the world (ROW) also rose. In particular, portfolio holdings in the Cayman Islands increased by \$262 billion, with investments from Hong Kong, China accounting for \$150 billion and from Japan \$61 billion. Although these figures indicated increased risk appetite, some part of the increase may also be attributed to favorable rules in the People's Republic of China (PRC) and PRC investors' preference for Cayman Islands' equity securities with investment routed through Hong Kong, China (Cayman Compass 2018). Increased risk appetite also entails betting on the region's equity markets. The value of the region's intraregional equity investment grew by \$206 billion, after declining by \$87 billion in 2018.

While the growth in the region's international portfolio debt liabilities remained subdued, the value of its cross-border portfolio equity liabilities increased in 2019 after falling in 2018.

Asia's cross-border portfolio debt liabilities rose to \$3.2 trillion in 2019, from \$2.9 trillion in 2018, while the value of its portfolio equity liabilities increased to \$5.6 trillion, after dropping to \$4.7 trillion in 2018 (Annex Figure 4a.3). This pattern mirrored Asia's robust economic and financial performance in 2019 and the associated appetite for Asian securities, specifically equities. Hence, one can observe investors' appetite for returns, characterized by significantly larger increases in Asian equity holdings. The trend also reflected the increase in the amount of the region's intraregional portfolio liabilities. The value of the region's interregional portfolio debt liabilities increased by \$98 billion in 2019, while the amount of its interregional portfolio equity liabilities, likewise, increased by \$705 billion in the same year.

Annex Figure 4a.3: International Portfolio Liabilities—Asia

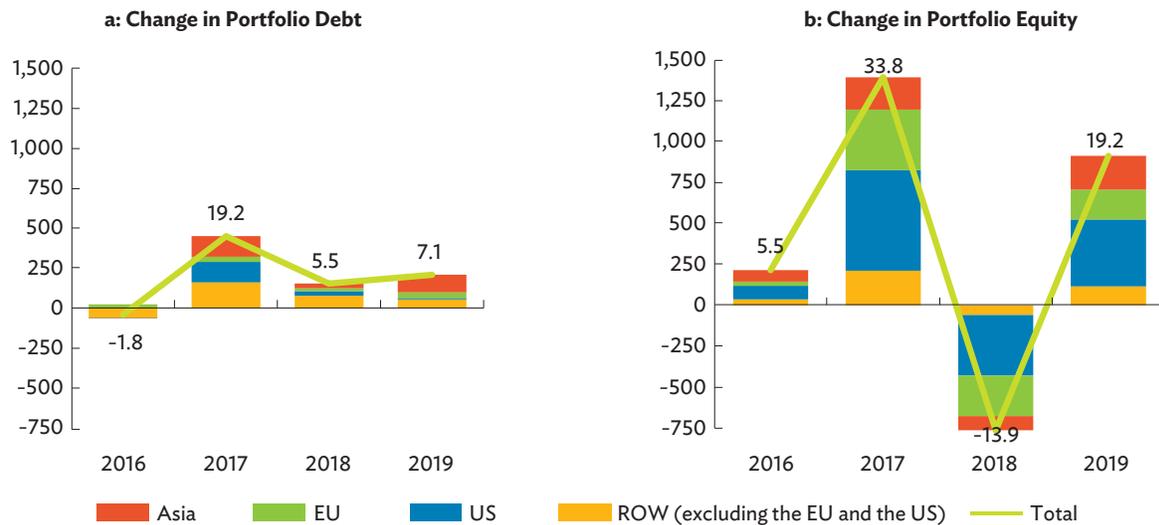


ROW = rest of the world.

Note: Asia includes ADB regional members for which data are available.

Source: ADB calculations using data from the International Monetary Fund. Coordinated Portfolio Investment Survey. <http://data.imf.org/CPIS> (accessed September 2020).

Annex Figure 4a.4: Change in International Portfolio Liabilities—Asia (\$ billion)



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

Notes: Asia includes ADB regional members for which data are available. Labels refer to year-on-year percentage change.

Source: ADB calculations using data from the International Monetary Fund. Coordinated Portfolio Investment Survey. <http://data.imf.org/CPIS> (accessed September 2020).

The increase in the value of Asia’s cross-border portfolio debt liabilities was primarily driven by the increase in the amount of portfolio debt liabilities in Asia, as the amount of intraregional debt liabilities grew by \$110 billion in 2019, more than thrice the increase in 2018 (Annex Figure 4a.4a). The PRC’s bond market was the most

appealing even intraregionally. Besides considerable cross-border trading and holdings between Hong Kong, China and the PRC, the demand for bonds issued in the PRC grew after JP Morgan announced in September 2019 the inclusion of PRC bonds in its government bond index for emerging markets.

The noticeable increase in value of international investors' holdings of Asian equities in 2019 was driven by the increase in the value of US investors' equity holdings in the region, which grew by \$407 billion, after declining significantly in 2018 (Annex Figure 4a.4b). The EU's holdings of Asian equities also bounced back, with an increase of \$182 billion in 2019, after declining by \$247 billion in 2018. Specifically, the value of EU equity holdings of Japanese equities grew by \$45 billion in 2019.

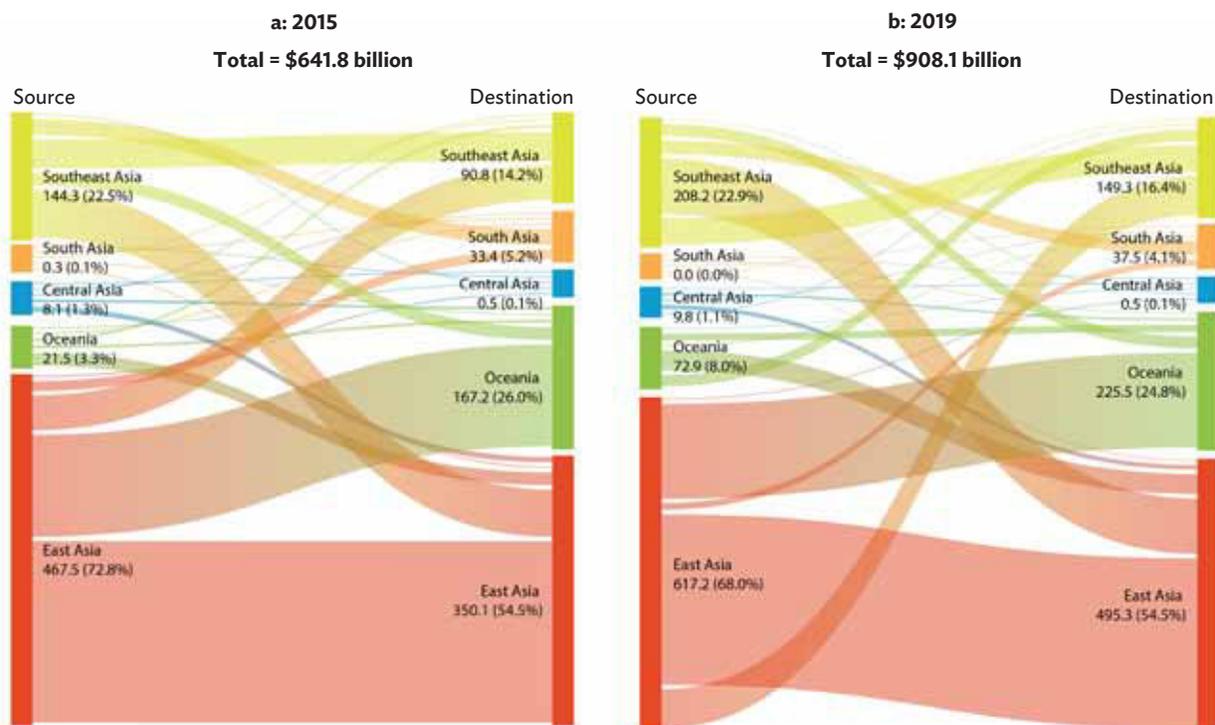
East Asia continued to be the main driver of intraregional portfolio debt and equity investments.

As a source, the share of East Asia's portfolio debt holdings decreased from 73% in 2015 to 68% in 2019

(Annex Figure 4a.5). As a destination, East Asia's portfolio debt liabilities share remained at 55% in 2019. While East Asia still accounts for half of intraregional portfolio debt investments, Southeast Asia had been an increasingly attractive debt destination as its portfolio debt liabilities share increased to 16% in 2019 from 14% in 2015.

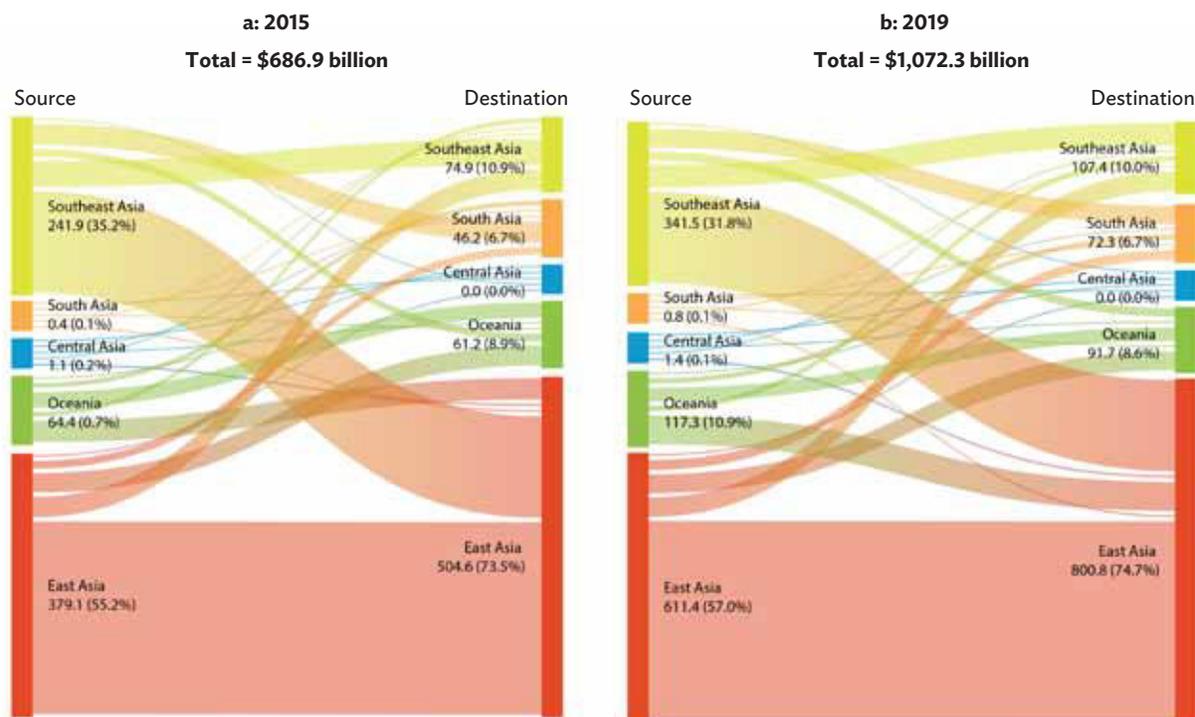
As a source, the share of East Asia's portfolio equity investment increased to 55% from 57%, with Japan, the PRC, and the Republic of Korea continuing to be the most prominent investors in the region (Annex Figure 4a.6). Southeast Asia also remained the second top investor, with a share of 32% in 2019, as Singapore continues to play a dominant role as a regional financial hub. As a destination, East Asia continued to attract almost three-fourths of the region's investment, followed by Southeast Asia.

Annex Figure 4a.5: Intraregional Portfolio Debt Investment—Asia, by Subregion



Notes: Asia includes Central Asia, East Asia, Oceania, South Asia, and Southeast Asia. Central Asia includes Kazakhstan. East Asia includes Hong Kong, China; Japan; Mongolia; the People's Republic of China; and the Republic of Korea. Oceania includes Australia and New Zealand. South Asia includes Bangladesh, India, and Pakistan. Southeast Asia includes Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Source: ADB calculations using data from the International Monetary Fund. Coordinated Portfolio Investment Survey. <http://data.imf.org/CPIS> (accessed September 2020).

Annex Figure 4a.6: Intra-regional Portfolio Equity Investment—Asia, by Subregion

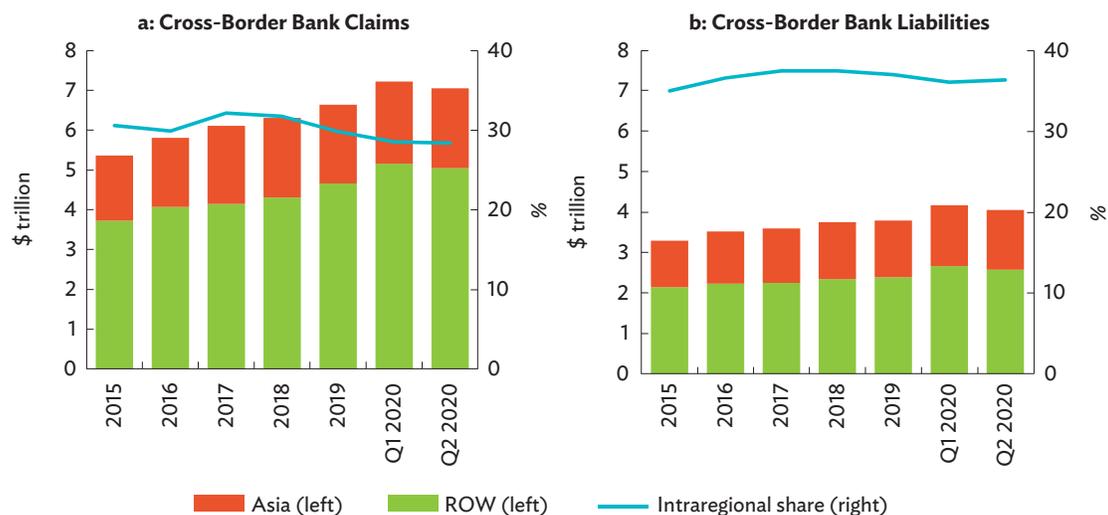
Notes: Asia includes Central Asia, East Asia, Oceania, South Asia, and Southeast Asia. Central Asia includes Kazakhstan. East Asia includes Hong Kong, China; Japan; Mongolia; the People's Republic of China; and the Republic of Korea. Oceania includes Australia and New Zealand. South Asia includes Bangladesh, India, and Pakistan. Southeast Asia includes Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Source: ADB calculations using data from the International Monetary Fund. Coordinated Portfolio Investment Survey. <http://data.imf.org/CPIS> (accessed September 2020).

Asia's cross-border banking activities continued to rise in 2019, as foreign bank claims reached \$6.6 trillion and foreign bank liabilities hit \$3.8 trillion, highlighting the Asian banks' role as net lender globally.

Asia's cross-border total bank claims continued to rise in 2019 to \$6.6 trillion from \$6.3 trillion in 2018, while Asian banks' cross-border liabilities slightly increased in 2019 to \$3.8 trillion from \$3.7 trillion in 2018 (Annex Figure 4a.7). Intra-regional shares fell slightly for cross-border claims (from 32% in 2018 to 30% in 2019) and liabilities (from 38% in 2018 to 37% in 2019). The slightly downward trending intra-regional shares over the past few years may suggest that Asian banks are becoming increasingly integrated with the global banking network.

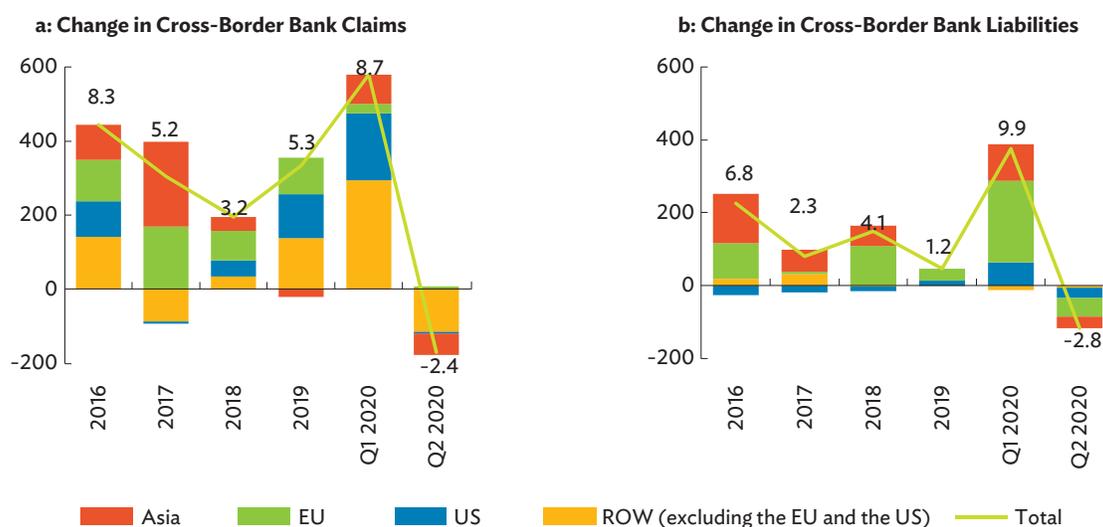
The value of the region's bank claims on the US increased by \$137 billion in 2019, while those on EU counterparts grew by \$119 billion (Annex Figure 4a.8a). These gains offset the slight decline of \$21 billion in the value of intra-regional bank claims recorded in 2019. Japanese banks' cross-border claims were driving these trends, as the values of their bank claims on the EU, the US, and ROW (excluding the EU and the US) registered considerable increases of about \$76 billion, \$105 billion, and \$80 billion, respectively, while the value of their intra-regional bank claims declined by \$29 billion. As of the first quarter (Q1) of 2020, the value of Asia's cross-border bank claims on the US and the EU surged by \$293 billion and \$181 billion, respectively. In Q2 2020, the region's cross-border bank claims lost value as economies went into lockdown to contain the spread of COVID-19, investor sentiment deteriorated, and liquidity conditions tightened.

Annex Figure 4a.7: Cross-Border Bank Holdings—Asia


ROW = rest of the world.

Note: Asia includes ADB regional members for which data are available.

Source: ADB calculations using data from the Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed October 2020).

Annex Figure 4a.8: Change in Cross-Border Bank Holdings—Asia (\$ billion)


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

Notes: Asia includes ADB regional members for which data are available. Labels refer to year-on-year percentage change.

Source: ADB calculations using data from the Bank for International Settlements. Locational Banking Statistics. <https://www.bis.org/statistics/bankstats.htm> (accessed October 2020).

In 2019, the value of Asia's cross-border bank liabilities to the US and the EU grew by \$14 billion and \$33 billion, respectively (Annex Figure 4a.8b), while intraregional bank liabilities lost value by \$0.1 billion. In Q1 2020, the

amount of Asia's cross-border bank liabilities rose as the amount of bank liabilities to the EU grew by \$223 billion, while that for the region increased by \$100 billion. Asia's cross-border bank liabilities lost value in the Q2 2020.