

Introduction: Bond Yields Diverge in Emerging East Asia

Bond yields diverge amid global economic uncertainties and disparate monetary policies in emerging East Asia

Between 1 June and 15 August, yields on 2-year and 10-year local currency (LCY) government bonds in emerging East Asia diverged amid economy-specific monetary policies and global economic uncertainties (Table A).² Most major advanced economies experienced falling yields on 10-year LCY government bonds as their yield curves flattened, amid global economic uncertainties resulting from trade conflicts between the United States (US) and its trading partners (Figure A1).

Global economic growth has thus far continued to strengthen, shrugging off rising trade tensions, financial turbulence in some emerging markets, and other risks (Box 1). According to the International Monetary Fund's *World Economic Outlook Update, July 2018*, the global economy is projected to expand 3.9% in both 2018 and 2019, up from 3.2% in 2016 and 3.7% in 2017. The projected growth rates represent the fastest pace of global expansion since 2011. One major driver of global growth has been healthy global trade volumes, which expanded 5.1% in 2017 and are projected to expand 4.8% in 2018 and 4.5% in 2019. Another key driver is robust growth in domestic demand, especially investment, which has

Table A: Changes in Global Financial Conditions

	2-Year Government Bond (bps)	10-Year Government Bond (bps)	5-Year Credit Default Swap Spread (bps)	Equity Index (%)	FX Rate (%)
Major Advanced Economies					
United States	14	(4)	–	3.1	–
United Kingdom	4	(5)	1	(2.6)	(4.9)
Japan	2	5	3	(1.6)	(1.1)
Germany	(2)	(8)	(1)	(4.4)	(2.7)
Emerging East Asia					
China, People's Rep. of	(21)	(5)	8	(11.4)	(7.4)
Hong Kong, China	6	3	–	(10.4)	(0.1)
Indonesia	47	102	4	(2.8)	(4.7)
Korea, Rep. of	(11)	(21)	(0.4)	(7.4)	(5.1)
Malaysia	(12)	(13)	(2)	1.7	(3.0)
Philippines	55	69	(6)	(1.2)	(1.8)
Singapore	(1)	(10)	–	(5.6)	(2.9)
Thailand	3	13	(1)	(2.5)	(3.8)
Viet Nam	143	31	9	(3.2)	(2.2)
Select European Markets					
Greece	(6)	(31)	20	(7.3)	(2.7)
Ireland	(4)	(12)	0.1	(7.9)	(2.7)
Italy	44	49	54	(5.4)	(2.7)
Portugal	(13)	(0.1)	4	(1.8)	(2.7)
Spain	(12)	(3)	10	(2.5)	(2.7)

() = negative, – = not available, bps = basis points, FX = foreign exchange.

Notes:

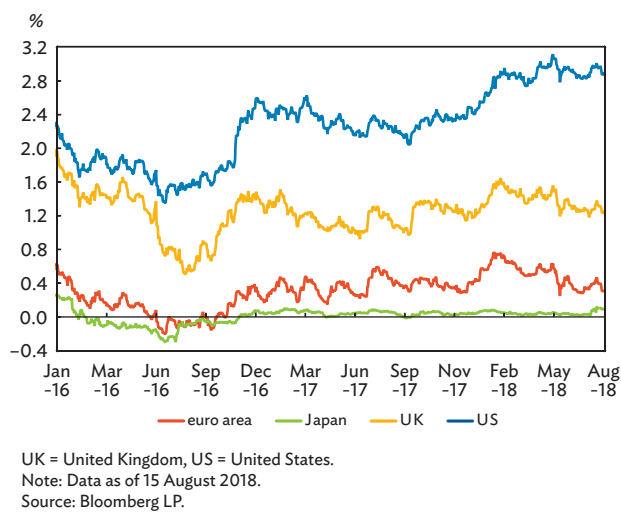
1. Data reflect changes between 1 June 2018 and 15 August 2018.

2. A positive (negative) value for the FX rate indicates the appreciation (depreciation) of the local currency against the United States dollar.

Sources: Bloomberg LP and Institute of International Finance.

² Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; and Viet Nam.

Figure A1: 10-Year Government Bond Yields in Major Advanced Economies (% per annum)



contributed significantly to the upswing in the global business cycle. Advanced economies expanded 2.4% in 2017 and are projected to grow 2.4% in 2018 and 2.2% in 2019. The corresponding figures for emerging markets and developing economies are 4.7%, 4.9%, and 5.1%, respectively. According to the *World Economic Outlook Update, July 2018*, consumer price inflation in advanced economies will pick up from 1.7% in 2017 to 2.2% in both 2018 and 2019. In emerging markets and developing economies, consumer price inflation will increase from 4.0% in 2017 to 4.4% in both 2018 and 2019. Strong demand pressures and higher global oil prices will contribute to slightly higher inflation during 2018–2019.

Among major advanced economies, the US is showing the strongest economic growth momentum. Based on second estimates, US gross domestic product (GDP) grew at an annual rate of 4.2% in the second quarter (Q2) of 2018, the highest growth rate during the past 4 years, up from 2.2% in the first quarter (Q1) of 2018. The US unemployment rate remains low, falling slightly to 3.9% in July from 4.0% in June. Inflation edged up in the first half of 2018, exceeding the US Federal Reserve's target level of 2.0%. Consumer price inflation trended upward from 2.1% year-on-year (y-o-y) in January to 2.9% y-o-y in July, and personal consumption expenditure (PCE) inflation reached 2.2% y-o-y in June. In its June forecast, the Federal Reserve upgraded annual GDP growth for

2018 from 2.7% in its March forecast to 2.8%, lowered the unemployment rate forecast for 2018 from 3.8% to 3.6%, and adjusted the PCE inflation and core PCE inflation forecasts upward for 2018 from 1.9% and 1.9%, respectively, to 2.1% and 2.0%. On the back of strong growth momentum, the Federal Reserve raised its key policy rate on 13–14 June by 25 basis points (bps) to a range of 1.75% to 2.00%. The market expects the probability of another 25-bps rate hike at the 25–26 September Federal Open Market Committee meeting to be more than 90%.³

The euro area and Japan are expected to grow at a slower pace than the US. In the euro area, GDP expanded 2.2% y-o-y in Q2 2018, compared with 2.5% y-o-y in Q1 2018. Both the Q1 and Q2 GDP growth rates were lower than the 2.8% y-o-y growth recorded in Q4 2017. In the European Central Bank's (ECB) June forecast, the GDP growth forecast for full-year 2018 was lowered from 2.4% in the March forecast to 2.1%. Meanwhile, consumer price inflation in the euro area continues to edge up, gaining slightly from 2.0% y-o-y in June to 2.1% y-o-y in July. The ECB announced at its 14 June meeting that its quantitative easing program would end in December 2018. Current monthly asset purchases of EUR30 billion would continue until September 2018, when they would fall to EUR15 billion before ending entirely in December 2018. The ECB also announced that after the end of the quantitative easing program, the key policy rate is expected to remain unchanged until at least the middle of 2019.

Meanwhile, Japan's economy rebounded in Q2 2018, expanding at an annualized rate of 3.0% following a 0.9% contraction in the previous quarter, driven by private consumption and private nonresidential investment. However, in the July outlook report, the Bank of Japan (BOJ) lowered its annual GDP growth forecast for 2018 from the previous forecast of 1.6% in April to 1.5%, due to a cyclical slowdown in business fixed investment. The BOJ also revised downward its inflation forecast for fiscal years 2018 and 2019 from previous forecasts of 1.3% and 1.8%, respectively, to 1.1% and 1.5%, suggesting that reaching the 2.0% inflation target may take longer than expected. In contrast to monetary policy normalization in the US and the euro area, the BOJ is signaling that monetary policy normalization may occur much later than previously expected. In its July monetary policy meeting, the BOJ

³ The probability was 98.4% as of 28 August. <https://www.cmegroup.com/trading/interest-rates/countdown-to-fomc.html>.

Box 1: Effect of Global Trade Tensions on Financial Markets

Global trade tensions are on the rise. Of particular concern for developing Asia is the escalation of tensions between the People's Republic of China (PRC) and the United States (US), the world's two largest economies.^a Both giants are among the region's closest economic partners, with extensive trade, investment, and other linkages. The linkages are strongest for East and Southeast Asian economies, which form a regional production network with the PRC in global value chains. The immediate and direct effects of trade disruptions would be on the trade and economic growth of the PRC and the rest of the region. An important additional potential channel is their impact on financial markets. Declines in business and consumer confidence due to concerns about global trade can adversely affect financial markets, which in turn can further dent economic activity. In this box discussion, we explore the impact of rising global trade tensions on financial markets.

Ongoing Trade Tensions Between the PRC and the US

Trade is an important source of economic growth in developing Asia. The General Agreement on Tariffs and Trade (GATT)–World Trade Organization (WTO) multilateral trade regime—coupled with a plethora of regional and bilateral trade agreements, as well as falling logistics and transport costs—ushered in a golden era of global trade expansion. Developing Asia has stood at the forefront of the global trade boom, leveraging it to become the most dynamic region of the world economy. A development that greatly benefited the region's rapid trade-led growth was the emergence of global value chains that allowed certain production processes to be performed in developing economies (Asian Development Bank 2014).

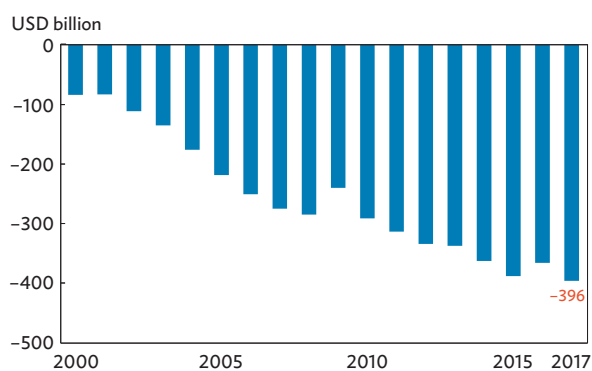
As the most dynamic region in international trade and investment (Pangetsu and Findlay 2018), developing Asia's trade and growth momentum is bound to suffer from the current uncertainty surrounding global trade. The region relies heavily on open markets and the multilateral trade system for its economic security. While the PRC and other developing Asian economies have been rebalancing toward domestic demand since the global financial crisis, external demand still plays a central role in the region's economic performance.

The recent shift of the US toward a more inward-looking trade policy and its renegotiation of trade terms with its trading partners kicked off the current round of uncertainty. While the US policy shift is not limited to the PRC, it was

inevitable that the PRC, which is one of the US' largest trade partners, would become a major target. After a series of bilateral trade disputes and talks, tensions between the two giants eventually led to both sides raising tariffs on a total of USD34 billion worth of imported goods on 6 July. These tensions are rooted in the PRC's large and persistent trade surplus vis-à-vis the US. The surplus increased nearly fivefold between 2000 and 2017 from USD83 billion to USD396 billion (Figure B1.1). The US' trade restrictions are aimed at reducing its large trade deficit with the PRC.

The US fired the opening salvo in the current global trade conflict on 22 January when it imposed safeguard tariffs on washing machines and solar cell imports on all economies. These were followed by punitive tariffs on imported steel and aluminum in March. A tumultuous month ensued in April when the PRC retaliated by levying tariffs on USD3 billion worth of US goods, which prompted the US to propose additional tariffs on USD50 billion worth of high-technology products. The PRC then announced that it would impose anti-dumping tariffs on sorghum imports valued at around USD1 billion. There was briefly some optimism in May, when the two governments held trade talks, but they failed to produce any significant agreement. In July, the conflict escalated tangibly, with the two sides imposing tariffs on a combined USD34 billion worth of goods. On 8 August, the US announced that it would impose tariffs on USD16 billion worth of PRC imports, covering

Figure B1.1: PRC–US Merchandise Trade Balance



PRC = People's Republic of China, US = United States, USD = United States dollar.

Notes: This figure shows the merchandise trade balance between the two economies using the US as the reporter. The PRC-side computations are smaller, with a trade surplus of about USD250 billion recorded in 2017. Source: UNCOMTRADE (accessed 29 July 2018).

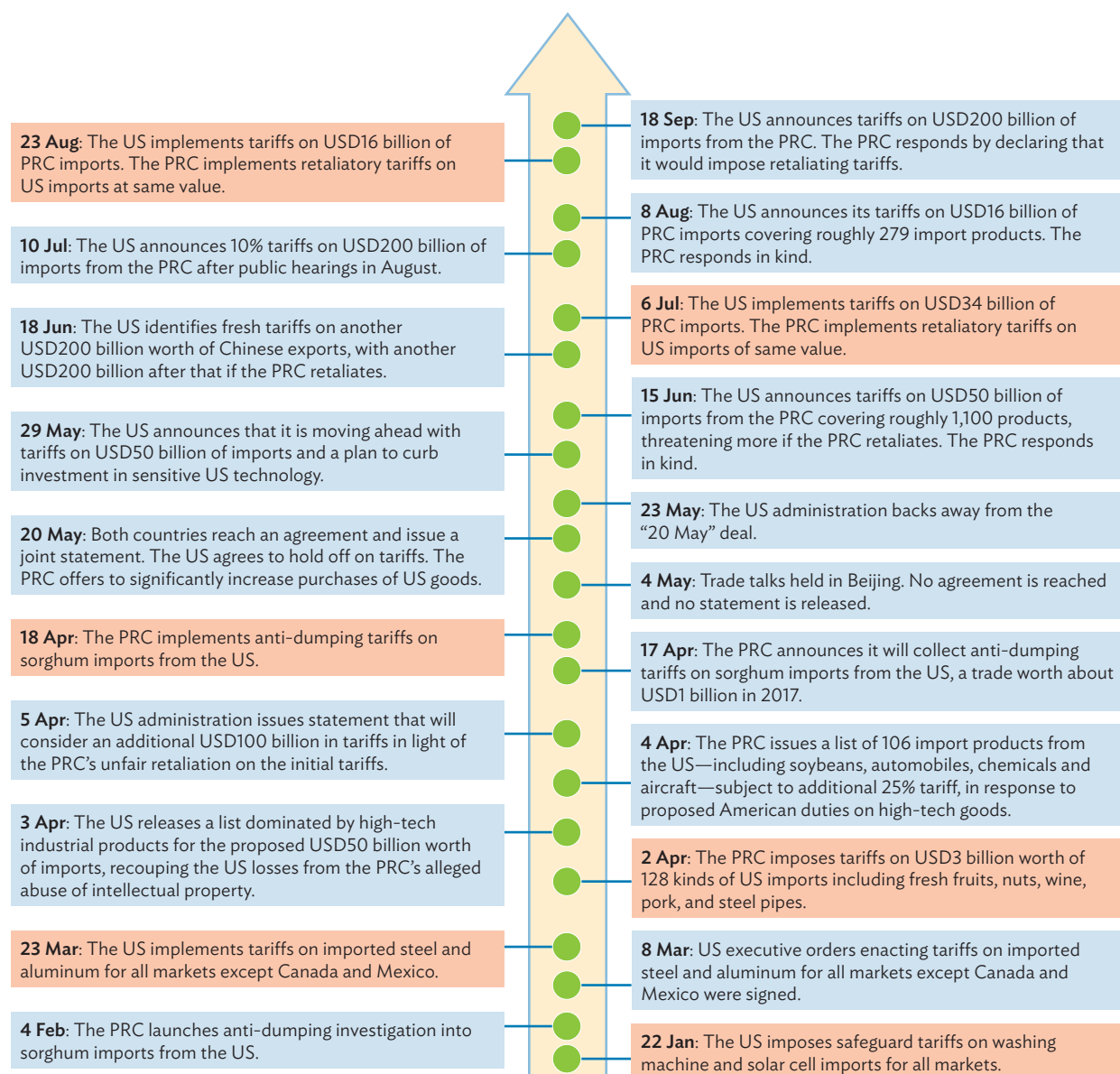
^a Developing Asia comprises the 45 regional developing member economies of the Asian Development Bank.

Box 1: Effect of Global Trade Tensions on Financial Markets *continued*

279 import product lines effective 23 August, as part of the 15 June announcement to tax USD50 billion worth of PRC imports. The PRC also countered in kind and of the same value. On 23 August, the tariffs on both sides took effect. On 18 September, the US announced that it would place tariffs on an additional USD200 billion worth of PRC

imports, effective 24 September. On the same day, the PRC announced that it will impose retaliatory actions soon. Both governments are now hinting at further trade restrictions in terms of products covered and additional increases in tariff rates. **Figure B1.2** shows the timeline of major events related to PRC–US trade tensions.

Figure B1.2: Major Trade Policy Announcements by the PRC and the US in 2018



PRC = People's Republic of China, US = United States.

Note: The blue boxes denote announcement dates, while the orange boxes denote implementation dates.

Source: Authors' compilation based on various online sources.

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Box 1: Effect of Global Trade Tensions on Financial Markets *continued*

The Reaction of Financial Markets to Macroeconomic and Policy News

Financial asset prices react to macroeconomic and policy news. Such news convey market-relevant information about future monetary conditions, equity risk premium levels, firms' earning prospects, consumption and investment decisions, and other variables (Boyd, Hu, and Jagannathan 2005; Kurov and Stan 2018). Empirical evidence shows that stock returns are significantly affected by announcements about key macroeconomic indicators such as gross domestic product growth, inflation, unemployment, and the trade balance, as well as monetary policy announcements on interest rates and money supply growth (see, for example, Flannery and Protopapadakis 2002; Rigobon and Sack 2004; Boyd, Hu, and Jagannathan 2005; Bernanke and Kuttner 2005; Andersen et al. 2007; Hanousek, Kocenda, and Kutan 2009; Birz and Lott 2011; Caporale, Spagnolo, and Spagnolo 2016; Kurov and Stan 2018).

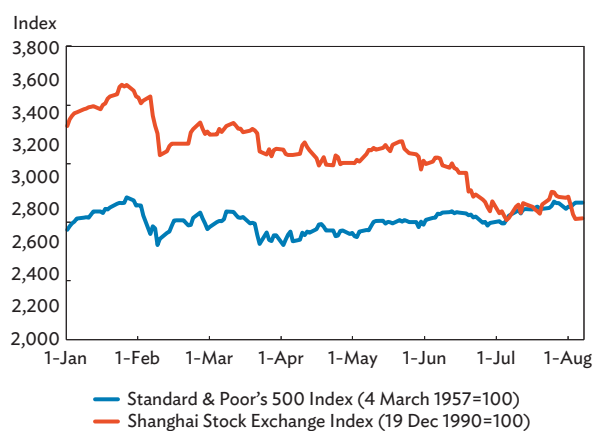
Since the beginning of 2018, the US has sought negotiations with major trading partners such as the PRC to reduce its large trade deficit. Trade tensions between the PRC and the US resulted in the mutual implementation of tariffs on a total of USD34 billion worth of goods on 6 July. Given the close economic linkages between developing Asia and both the PRC and the US, trade tensions between the two giants will have serious repercussions for the region's trade and

growth momentum. The adverse impacts will be especially pronounced for East and Southeast Asia, which form a regional manufacturing production network with the PRC. Of course, the PRC itself will be hit hard too. Furthermore, given the vital role of this production network in global value chains, PRC–US trade tensions could disrupt global value chains.

Such concerns about trade and growth are partly reflected in financial markets. As a result of trade tensions and other factors, including deleveraging measures, the Chinese stock market has lost around 18.7% of its value in the first 7 months of 2018, with the SSE Composite Index declining from 3,369.1 on 3 January to 2,740.4 on 3 August. On the other hand, the Standard & Poor's 500 Index rose more than 6% during the same period (**Figure B1.3a**).

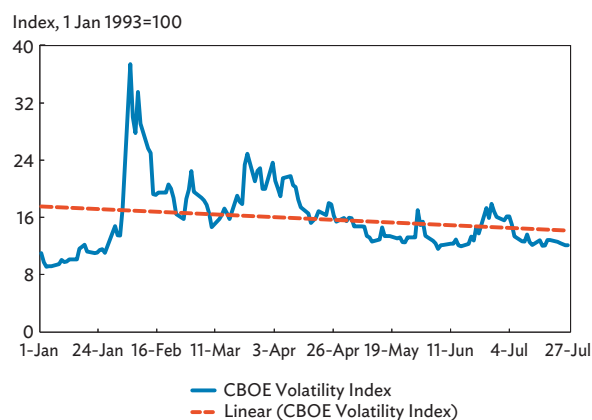
At a broader level, however, financial markets in Asia and elsewhere have remained relatively calm. There have been no sharp losses or market gyrations during the ongoing PRC–US trade conflict. In addition, the Chicago Board Options Exchange Volatility Index has shown an overall decreasing trend in 2018 (**Figure B1.3b**). After hitting a high of 37.3 in February, the index has nearly returned to its pre-trade tension level. The calm reaction so far implies that financial markets have been able to adjust to the uncertainty of global trade tensions as investors remain largely confident about strong macroeconomic fundamentals.

Figure B1.3a: Standard & Poor's 500 and Shanghai Composite Indexes



Source: Bloomberg LP (accessed 6 August 2018).

Figure B1.3b: CBOE Volatility Index



CBOE = Chicago Board Options Exchange.
Source: Bloomberg LP (accessed 27 July 2018).

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Box 1: Effect of Global Trade Tensions on Financial Markets *continued*

Nevertheless, given the likelihood that financial markets will be impacted if global trade tensions escalate further, it is worthwhile to take a closer look at the link between these tensions and market reactions. To do so, we analyze the effect of global trade tensions on developing Asian equity markets since trade directly and indirectly affects the earning prospects of Asian firms. A deeper analysis of how news about the announcement and implementation of trade restrictions affect the day-to-day return dynamics of developing Asian equity markets would help us better understand market reactions to and perceptions of the evolution of trade policies, as well as their effects on trade and growth.

Using econometric analysis, we examine how developing Asian stock markets have reacted to the announcement and implementation of trade measures during the course of the PRC–US trade conflict up to 17 July 2018. Since global financial markets are affected by multiple factors, including the US Federal Reserve’s ongoing monetary policy normalization, this study identifies financial market reactions to trade tensions using the GARCH model that dynamically reflects all available information in the market with time-varying residuals. This allows us to more accurately assess the impacts of trade tensions. GARCH models have been widely recognized in the literature as good representations of return dynamics in financial markets by removing excess kurtosis and describing volatility clustering in return series. The GARCH (1,1) model is recognized as a parsimonious presentation of return dynamics, especially over the short-term. In our empirical analysis, we broadly follow the methodology of Flannery and Protopapadakis (2002) and Shi, Sun, and Zhang (2018), and employ the GARCH-in-mean model to capture stock price changes around the announcement and implementation dates of trade restrictions by the PRC and the US. In particular, the dynamic reactions of individual stock market indexes to trade shocks are estimated using the GARCH (1,1)-in-mean model specification similar to Shi, Sun, and Zhang (2018), where the conditional mean depends on its conditional variance as follows:

$$R_t = \alpha_0 + \alpha_1 R_{t-1} + \alpha_2 AD + \alpha_3 ID + \alpha_4 h_t + \varepsilon_t,$$

$$h_t = \beta_0 + \beta_1 h_{t-1} + \beta_2 \varepsilon_{t-1}^2,$$

where R_t in the conditional mean equation is the daily return on a stock market index, which is defined as the daily percentage change of the closing prices of a stock index. The lagged term of R is included to account for possible first-order time serial correlation. AD and ID are dummy variables

that capture the announcement and implementation dates of trade conflict events, respectively. In our sample, ID are dates when a tariff is imposed and AD are dates when a trade action is announced. These event dummies take the value one if a trade restriction was announced or implemented on the trading date and zero otherwise. All of the event dates are listed in Figure B1.2, with blue and orange boxes denoting announcement and implementation dates, respectively. h_t is the conditional variance of the residual based on the information set as of day $t-1$ and captures time-varying market risk. The conditional variance equation is estimated using an ARMA (1,1) process. ε_t is the residual term. The model is estimated using daily returns on stock indexes in major developing Asian markets from 18 July 2017 to 17 July 2018. The estimated results of GARCH (1,1)-in-mean then capture the reactions of stock returns to the announcement and implementation of trade restrictions.

The estimated results reported in **Table B1** indicate that trade tension news has a statistically significant negative impact on most Asian stock market returns. Specifically, they indicate a decrease in returns by 0.37% for the PRC on trade event

Table B1: Stock Market Reaction to Trade Tension News

	Announcement Date (AD)	Implementation Date (ID)
Developed markets		
United States	-0.08	0.16
European Union	0.11	0.14
Japan	-0.15	-0.43
Selected developing East Asian markets		
People’s Republic of China	-0.41	-0.37
Hong Kong, China	-0.51	-0.23
Indonesia	-0.03	-0.02
Republic of Korea	-0.30	-0.46
Malaysia	-0.49	-0.49
Philippines	-0.58	-0.04
Singapore	-0.34	-0.32
Thailand	-0.13	0.11

Notes: Stock indexes used in these estimates include the Standard & Poor’s 500 Index for the United States, STOXX Europe 600 for Europe, Nikkei 300 Index for Japan, CSI 300 Index for China, KOSPI Index for the Republic of Korea, Jakarta Composite Stock Price Index for Indonesia, FTSE Bursa Malaysia KLCI Index for Malaysia, Philippine Stock Exchange PSE Index for the Philippines, Straits Times Index for Singapore, and Bangkok SET Index for Thailand. Cells highlighted in green, orange, and blue represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Source: Authors’ estimation using Bloomberg LP data.

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Box 1: Effect of Global Trade Tensions on Financial Markets *continued*

implementation dates. Meanwhile, stock indexes in Japan, the Republic of Korea, Malaysia, and Singapore witnessed return declines ranging from 0.32% to 0.49%. These abnormal returns are statistically significant. The market reactions occur mostly around the implementation date when the trade restriction is confirmed, rather than the announcement date when there is still uncertainty around the nature of the eventual implementation of the trade restriction.

Overall, our evidence is consistent with the prevailing view that the effects on global trade and growth have been limited thus far. The reaction of financial markets to the ongoing trade tensions between the PRC and the US has been relatively calm and stable. This may be somewhat surprising given the serious ramifications of the conflict for regional and global trade and growth, as well as the sensitivity of financial markets to those ramifications. However, while the trade restrictions implemented so far by both governments have been substantial, especially the measures taken in July, they fall short of a full-fledged trade war. At the same time, evidence from a more in-depth analysis of equity markets suggests that emerging East Asian stock markets react significantly and negatively to trade tension news. These reactions might grow stronger if the conflict escalates further. In short, given the uncertainty about the eventual magnitude of the PRC–US trade conflict, financial markets seem to be rationally taking a wait-and-see approach before rendering their final judgment.

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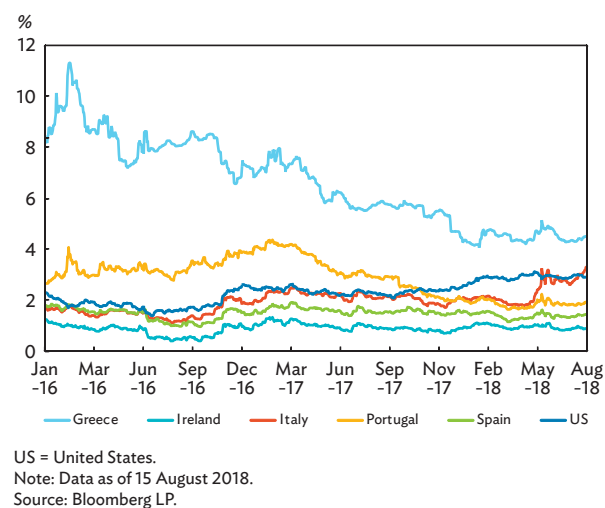
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maintained the -0.1% short-term policy rate and yield curve control program, targeting a yield of zero on 10-year government bonds but with greater yield movement.

In line with the strong global growth momentum, developing Asia sustained its healthy expansion and continues to be the world's fastest-growing region.⁴ According to the Asian Development Bank's *Asian Development Outlook Supplement 2018* released in July, the region's economy grew 6.1% in 2017 and is forecast to expand 6.0% in 2018 and 5.9% in 2019.⁵ The individual economies of emerging East Asia are also expanding at a healthy pace. Despite concerted deleveraging to safeguard financial stability and escalating trade tensions with the US, the economy of the People's Republic of China (PRC) grew 6.9% in 2017 and is forecast to expand 6.6% in 2018 and 6.4% in 2019. Ongoing growth moderation in the PRC since the global financial crisis reflects a structural transition toward a more balanced and sustainable growth paradigm. The 2017, 2018, and 2019 growth figures for the 10 members of the Association of Southeast Asian Nations are 5.2%, 5.2%, and 5.2%, respectively. The high-income economies of the Republic of Korea and Hong Kong, China are projected to grow 3.0% and 4.0%, respectively, in 2018, and around 3.0% each in 2019. The region's healthy growth is broad-based and supported by global trade as well as domestic demand. Inflation is on the rise but remains below levels that would undermine financial or macroeconomic stability. The *Asian Development Outlook Supplement 2018* forecasts the region's consumer price inflation to rise from 2.2% in 2017 to 2.8% in 2018, before edging down slightly to 2.7% in 2019.

Despite solid global economic growth, uncertainties regarding trade tensions as well as rising risk aversion due to the turmoil in Turkey have led to a decline in 10-year government bond yields in most advanced economies. In the US, while the 2-year government bond yield rose by 14 bps amid continuing monetary policy normalization between 1 June and 15 August, the 10-year government bond yield fell by 4 bps in the same period, flattening the yield curve. Similar trends were also observed in the 10-year bond yields of select European markets (**Figure A2**). In contrast, Japan saw gains of 2 bps and 5 bps in its 2-year and 10-year government bond

Figure A2: 10-Year Government Bond Yields in Select European Markets and the United States (% per annum)



yields, respectively, largely driven by market expectations of a step toward monetary policy normalization preceding the July BOJ meeting. Bond yields started to fall after the July meeting but were still higher than those in the beginning of June.

In emerging East Asia, the LCY bond market continues to expand at a moderate pace of 3.2% quarter-on-quarter (q-o-q), reaching a total size of USD12.6 trillion at the end of June. Regional bond issuance recorded USD1.2 trillion in Q2 2018. Asia's green bond issuance is also on the rise with greater awareness among investors of environmental benefits (**Box 2**).

Between 1 June and 15 August, emerging east Asian bond yields diverged, driven both by US monetary policy normalization and individual domestic economic situations. The PRC, the Republic of Korea, Malaysia, and Singapore witnessed a slide in their 2-year and 10-year government bond yields. In the PRC, 2-year and 10-year government bond yields fell 21 bps and 5 bps, respectively, in line with the People's Bank of China's second reserve requirement ratio cut this year, which lowered the reserve requirement ratios for eligible banks by 50 bps on 24 June. The freed bank reserve funds are to be used by larger banks in debt-equity swaps

⁴ Developing Asia comprises the 45 regional developing member economies of the Asian Development Bank.

⁵ Asian Development Bank. 2018. *Asian Development Outlook Supplement 2018*. Manila.

Box 2: Strong Growth in the Asian Green Bond Market Supports Global Push to Reach USD1 Trillion in Annual Issuance by 2020

Asian green bond issuance has been on the rise over the past decade. While Japan ranks 9th and India ranks 11th globally in terms of green bond issuance since 2007, the entry of the People's Republic of China (PRC) into the green bond market in 2016 marked a turning point for Asia. Chinese deals now represent over 70% of green bond issuance volume from the region (**Figure B2.1**).

A more recent phenomenon is the increased green bond issuance activity from members of the Association of Southeast Asia Nations (ASEAN), led by green *sukuk* (Islamic bonds). In 2018, Indonesia became the first Asian sovereign green bond issuer when it raised USD1.25 billion via a green *sukuk* to finance a wide range of climate mitigation, adaptation, and resilience projects. As a result, Indonesia ranked 12th globally in the first half of 2018 in terms of green bond issuance by volume.

The PRC's green bond catalogue and the favorable regulatory framework put in place by the People's Bank of China and other relevant authorities have been instrumental in scaling up green bond issuance. Further, the central bank intends to expand the guaranteed scope of its medium-term lending facility by using suitable collateral, including green bonds and agricultural financial bonds, to ensure the healthy development of its financial system and aid the financing

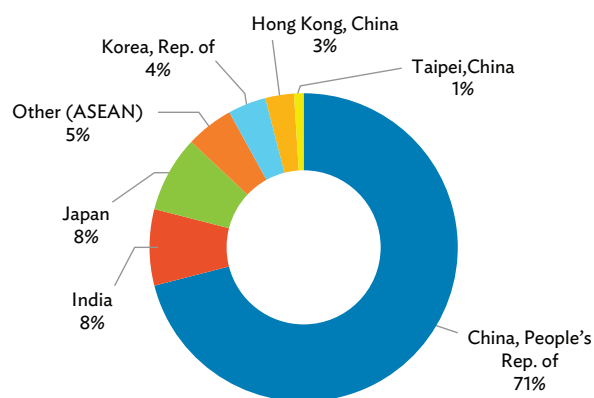
needs of small businesses. Green credit is a component of its macroprudential assessment, which means that the more green assets (green bonds and green lending) a bank has, the higher the score it will receive.

Major policy changes in the ASEAN region have the potential to underpin wider green bond market growth. For example, the ASEAN Green Bond Standards, launched in November 2017, have provided impetus for new issuance.^a The ASEAN+3 Multicurrency Bond Issuance Framework was created by ASEAN, the PRC, Japan, and the Republic of Korea in 2015 to encourage domestic and regional issuers to take advantage of streamlined issuance approval processes. Green bond incentives in Hong Kong, China; Japan; Malaysia; and Singapore have made issuance more accessible to local issuers.

Asian green bond market growth reflects the global trend as 2017 saw yet another annual record, with global issuance exceeding USD162.5 billion, up 87% from USD87.0 billion in 2016.

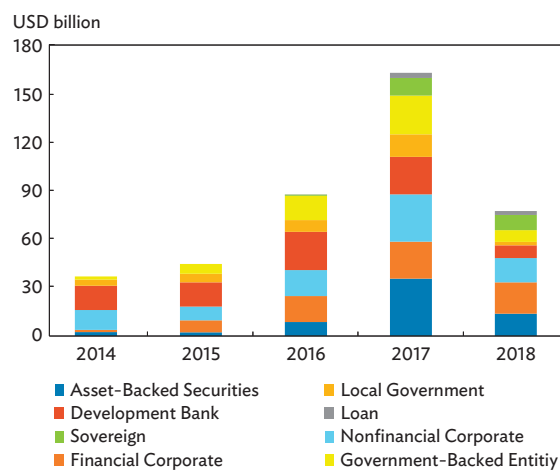
Higher issuance volumes were recorded in almost all sectors from 2014 through the first half of 2018 (**Figure B2.2**). The largest issuer during this period was United States (US) agency Fannie Mae with USD27.5 billion of green

Figure B2.1: Shares of Asian Green Bond Issuance by Economy in the First Half of 2018



ASEAN = Association of Southeast Asian Nations.
Source: Climate Bonds Initiative.

Figure B2.2: The Green Bond Market by Sector



Note: Data for 2018 through first half of the year only.
Source: Climate Bonds Initiative.

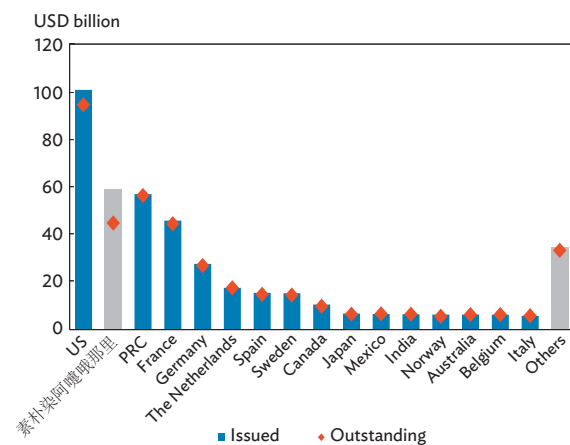
^a For more details, see http://www.theacmf.org/ACMF/upload/ASEAN_Green_Bond_Standards.pdf.

Box 2: Strong Growth in the Asian Green Bond Market Supports Global Push to Reach USD1 Trillion in Annual Issuance by 2020 *continued*

mortgage-backed (multifamily housing) securities issuance. France issued the single-largest green bond in 2017. Its EUR7.0 billion (USD7.4 billion) sovereign Green Obligation Assimilable du Trésor issued in January 2017 has subsequently been tapped four times, adding a further EUR7.8 billion.

The US, the PRC, and France dominate the global green bond market, but emerging market issuance is rising too. Cumulative global green bond issuance from 2007 through the first half of 2018 reached USD430.7 billion (**Figure B2.3**).

Figure B2.3: Cumulative Green Bond Issuance since 2007



PRC = People's Republic of China, US = United States.
 Note: Data for 2018 through first half of the year only. Others is rest of the world.
 Source: Climate Bonds Initiative.

Sovereign Green Bond Issuance Continues to Rise

Market growth is being supported by rising issuance from sovereign and subsovereign issuers. The march of sovereigns has continued since Fiji, France, and Nigeria made headlines with their respective issuances in 2017. Poland, the first to issue a sovereign green bond in late 2016, came to market in 2018 with a repeat issuance of EUR1.0 billion. Indonesia issued its landmark USD1.25 billion green *sukuk*. Belgium's EUR4.5 billion Green Obligations

Linéaires Ordinaires became the second-largest green sovereign bond to date after France's Green Obligation Assimilable du Trésor. And, in May, Lithuania closed the first EUR20 million tranche of a EUR68 million sovereign green bond program that will finance energy efficiency upgrades in 156 apartment buildings.

There is more sovereign appetite. For example, Hong Kong, China's budget for fiscal year 2018/19 includes a proposed green bond program with a ceiling of HKD100 billion (USD12.8 billion).

The rise in sovereign issuance is complemented by continued growth in local government green bond issuance and deals placed by government-backed entities. Large-scale infrastructure investments—such as upgrading rail networks and water supply systems—are fundamental to addressing climate change. Sovereign and subsovereign issuance can unlock financing for these bigger projects.

Green bonds are a key tool for governments to raise capital to implement emissions reduction and new infrastructure plans in line with their Nationally Determined Contributions as set out in the Paris Agreement—the commitment to keep global warming to a maximum of 2°C. They can signal a government's commitment to a low-carbon economic transition. They can also help bring down the cost of capital for green projects by attracting new investors and mobilizing domestic and offshore private capital toward sustainable development.

Green Bonds Finance Increasingly Diversified Assets

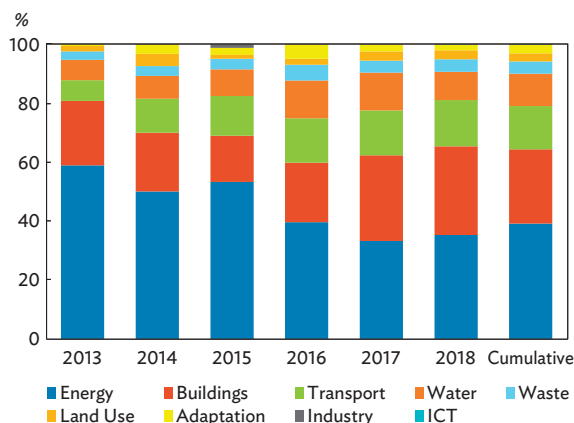
Renewable energy has dominated the use of proceeds allocation since market inception, representing around 40% of cumulative issuance. But sector diversity is increasing. In 2017, allocations to buildings more than doubled from 2016. Issuance in the low-carbon transport sector also grew substantially as issuers raised funding for rail infrastructure and urban public transport.

In the first half of 2018, energy led all sectors in terms of allocation with a share of 35%, buildings were second at 30%, followed by transport at 16% (**Figure B2.4**).

continued on next page

Box 2: Strong Growth in the Asian Green Bond Market Supports Global Push to Reach USD1 Trillion in Annual Issuance by 2020 *continued*

Figure B2.4: Increasing Diversity in Sector Allocation of Green Bond Proceeds



ICT = information and communication technology.

Notes: Data for 2018 through first half of the year only. The Climate Bonds Initiative uses a taxonomy that identifies eight sectors aligned with a low-carbon economy and specifically excludes fossil-fuel power generation. The sectors are clean energy, low-carbon buildings, low-carbon transport, sustainable water management, waste management and pollution control, sustainable land use, ICT and energy efficient processes, and products in industry. In addition, green bond proceeds can be allocated to climate resilience and adaptation projects. For details, see <https://www.climatebonds.net/standards/taxonomy>. Source: Climate Bonds Initiative.

Use of External Reviews Is Becoming Mainstream

Over four-fifths of issued green bonds to date benefit from external reviews, with second-party opinions accounting for 74% of these reviews. CICERO holds the largest market share among second-party opinion providers, with 34% of issuance by volume. Increasingly, issuers are obtaining green bond reviews from global credit rating agencies such as Moody's and S&P Global Ratings, and from local rating agencies such as RAM (Malaysia) and R&I (Japan).

External reviews confirm compliance with the Green Bond Principles (GBP) administered by the International Capital Market Association, or the Green Loan Principles (GLP) promulgated by the Loan Market Association and the Asia-Pacific Loan Market Association and supported by the International Capital Market Association. The GBP and GLP require issuers to clearly define the eligibility criteria and selection process for green bond investments, manage the allocations, and confirm the use of proceeds in post-issuance reporting.

Adherence increases transparency and improves issuer credibility; investors are increasingly asking for compliance with the GBP, and green bond underwriters appear to be supporting greater use of external reviews by their issuer clients.

A green bond is generally defined as a fixed-income security where the proceeds will be allocated to investments that help reduce global greenhouse gas emissions. To demonstrate alignment with the Paris Agreement, issuers are increasingly using Certification under the Climate Bonds Standards. Cumulative issuance of Certified Climate Bonds reached USD76.9 billion in the first half of 2018.

The sector-specific criteria used for Certification under the Climate Bonds Standards and Certification Scheme are developed by subject matter experts, with input from industry stakeholders and investors. Their development is coordinated by the Climate Bonds Initiative (CBI).^b

Certification requires independent verification that confirms not just compliance with the GBP and GLP, but also that the assets financed by the bond are on a trajectory consistent with decarbonization by 2050. Furthermore, this test is reaffirmed annually as part of post-issuance reporting.

As investors are increasingly focused on the green credentials of bonds and issuers, some of the largest banks and corporations in the world are adopting the Certification approach to demonstrate a clear connection with climate outcomes and best practice.

Green Bond Pricing: Is There an Observable "Greenium"?

Many green bond issuers reference preferential pricing from green bonds. This can mean that the new issue premium is smaller than an issuer has paid historically or had expected to pay, or, based on the Climate Bonds Standards definition, that a green bond was priced inside its own yield curve.

The yield curve is a schematic representation of the fair price one would expect of a new bond of a certain duration given the yields of an issuer's outstanding bonds. A bond pricing on its own yield curve is considered a good result for an issuer. If a bond prices outside the curve, it is said to offer a traditional new issue premium.

^b CBI is an international organization working solely to mobilize the largest capital market of all, the USD100 trillion bond market, for climate change solutions. CBI promotes investment in projects and assets necessary for a rapid transition to a low-carbon and climate-resilient economy.

Box 2: Strong Growth in the Asian Green Bond Market Supports Global Push to Reach USD1 Trillion in Annual Issuance by 2020 *continued*

When a green bond prices inside its own curve—that is, when it offers a new issue discount—it offers a “greenium.” In this sense, the CBI’s use of the term greenium is much more specific than a bond simply pricing better than expected or better than a comparable bond. A bond pricing inside the curve, or at a greenium, would imply lower funding costs for issuers and lower yields for investors.

CBI Methodology for Green Bond Pricing Analysis

The CBI has analyzed sets of green bonds issued during 2016 and 2017 (**Figure B2.5**). To address the question of preferential pricing, yield curves were built for 42 green bonds that met CBI methodology criteria.

Bonds denominated in either US dollars or euros were first identified, and those with a bullet structure, fixed coupon, and minimum issue size of USD300 million (or the euro equivalent) were given further consideration. The list was narrowed to those bonds where sufficient data could be obtained to compare with vanilla equivalents. These were compared with bonds that were issued in the same quarter to ensure that economic conditions were comparable.

A total of 123 bonds with sufficient data fit this profile. The EUR-denominated green bonds tend to behave like vanilla equivalents; however, USD-denominated green bonds appear to perform better than vanilla equivalents on

two counts. First, in terms of attracting investor interest, and second, in spread tightening during the book-building process—the period during which the bonds’ bookrunners discussed and firmed up interest and pricing with investors.

To address the question of preferential pricing, yield curves were built for 42 green bonds. Specifically, a bond yield curve was plotted for each issuer based on the vanilla bonds. Then the green bond was added to determine whether it priced outside, on, or inside the curve.

To build these curves, the yield-on-issue date was used, which reflects the price the green bond is offered on the issue date. For comparable bonds, the yield to convention mid was used. The modified duration to mid was used in all bonds, and all data are as of the pricing date of the green bond.

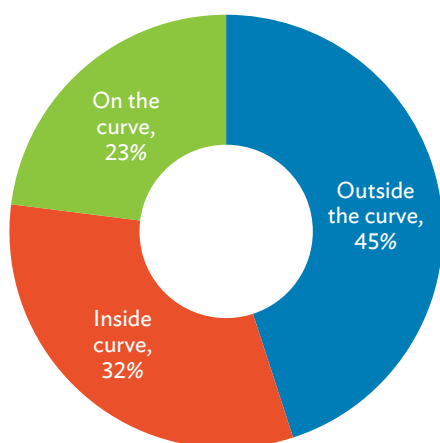
Bonds were included in the sample if there were a minimum of four comparable bonds. Comparable bonds used for this analysis must fit the same specifications as those used for green bond selection—including minimum size, credit rating, and term to maturity—except the use of proceeds is not limited. Bonds must share the same currency, credit rating, and payment rank as the green bond and have been issued after 1 January 2010.

Combining the 23 bonds priced on or inside their curves, the CBI found out that buyers of these green bonds could not automatically expect to receive a traditional new issue premium. Over half the bonds priced on or inside their curves, either of which is a good result for a new bond.

They also found that about half of the green bonds in the sample were allocated to green investors. The rest were bought either by those without a dedicated mandate but deliberately active in green bonds, or by those indifferent to the green label. This suggests that the green bond market receives support from all types of investors, which is crucial for the market to absorb the necessary growth in green bond issuance as entities from the public and private sectors invest in climate mitigation, adaptation, and resilience.

The CBI’s pricing work is ongoing and is being updated to include green bonds issued in the first half of 2018. The results of this analysis will be published at the end of the third quarter of 2018. One of the observations is that demand for floating-rate bonds from US investors was robust in the first half of 2018 as they sought protection from rising interest

Figure B2.5: Sample New Issue Premiums, 2016 and 2017



Source: Climate Bonds Initiative.

Box 2: Strong Growth in the Asian Green Bond Market Supports Global Push to Reach USD1 Trillion in Annual Issuance by 2020 *continued*

rates. As a result, the sample of 29 green bonds issued in the first half of 2018 includes just six denominated in US dollars with fixed coupons.

The Race to the 2020 Target of USD1 Trillion in Annual Green Bond Issuance

2017 was a record year for green bonds, but there is still a long way to go to meet the level of investment required to hold global warming at the agreed target under the Paris Agreement. Growing expectations are being placed on the global financial system, banks, investment managers, and

corporates to increase investment and close the growing climate finance gap.

To contribute significantly to the transition to a low-carbon economy, the CBI supports the Mission 2020 milestone of green bond issuance reaching the target of USD1 trillion per year by 2020. The CBI believes all major financial system stakeholders should collectively commit to achieving this outcome.

Source: M. Filkova and C. Harrison. Strong Growth in the Asian Green Bond Market Supports Global Push to Reach USD1 Trillion in Annual Issuance by 2020. Unpublished. Climate Bonds Initiative.

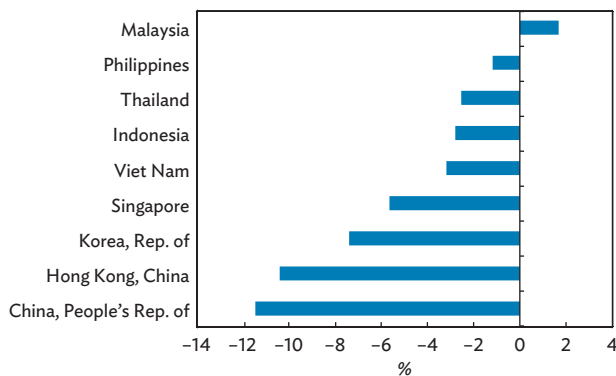
^b Mission 2020 is a shared global campaign to fast-track actions to limit climate change. For details, see <http://www.mission2020.global/>.

and by smaller banks to finance small and medium-sized enterprises. Meanwhile, concerns over rising trade tensions and the impact of past deleveraging measures are putting downward pressure on the PRC's GDP growth, which slowed to 6.7% in Q2 2018 from 6.8% in Q1 2018. In the Republic of Korea, 2-year and 10-year government bond yields fell 11 bps and 21 bps, respectively, between 1 June and 15 August. The market expects no rate hikes by the Bank of Korea in 2018, given the last rate hike in November 2017. Economic growth in the Republic of Korea faces uncertainty amid increasing global trade tensions. At the July policy meeting, the Bank of Korea lowered its GDP growth forecasts for 2018 and 2019. In Singapore, the 2-year government bond yield was barely changed during the review period, while the yield on 10-year government bonds slid, tracking yield movements in the US. In Malaysia, bond yields fell on the expectation that Bank Negara Malaysia would maintain its policy rate amid a benign inflation outlook and stable economic growth. Malaysia also saw strong domestic demand for LCY government bonds.

Bond yields rose between 1 June and 15 August in other emerging East Asian markets where central banks acted to support currencies or tackle rising inflation. The yield on the 10-year government bond in Indonesia posted an increase of 102 bps. Bank Indonesia raised interest rates twice by 50 bps and 25 bps, respectively, on 29 June and 15 August to defend the Indonesian rupiah and in anticipation of upcoming rate hikes by the Federal Reserve. In the Philippines, the 10-year government bond

yield rose 69 bps, following a 50-bps policy rate hike by the Bangko Sentral ng Pilipinas (BSP) on 9 August. The BSP continues to grapple with rising inflation, which picked up to 5.7% y-o-y in July from 5.2% y-o-y in June. During the August monetary meeting, the BSP indicated that there is some risk that inflation in 2019 will exceed the target range of 2.0%–4.0%. In Thailand, bond yields gained modestly, with the 10-year government bond yield rising 13 bps, largely in response to tightening by the Federal Reserve and expectations that the Bank of Thailand would tighten in the future. While the Bank of Thailand has largely held policy rates unchanged, on 8 August, Assistant Governor Jaturong Jantarangs indicated that the need for an accommodative monetary policy stance will lessen over time. In Hong Kong, China, the rise in bond yields was jointly driven by tightening US monetary policy and the intervention of the Hong Kong Monetary Authority (HKMA) in its currency market. In August, the HKMA initiated several currency purchases when the Hong Kong dollar's depreciation hit the weak-side limit, tightening Hong Kong dollar liquidity. Viet Nam's yield curve also rose, with 2-year and 10-year government bond yields increasing 143 bps and 31 bps, respectively. Rising yields partly reflect strong domestic growth expectations, with Viet Nam's GDP expanding 7.1% y-o-y in the first half of 2018. Expectations that the State Bank of Vietnam will tighten liquidity also contributed to rising yields.

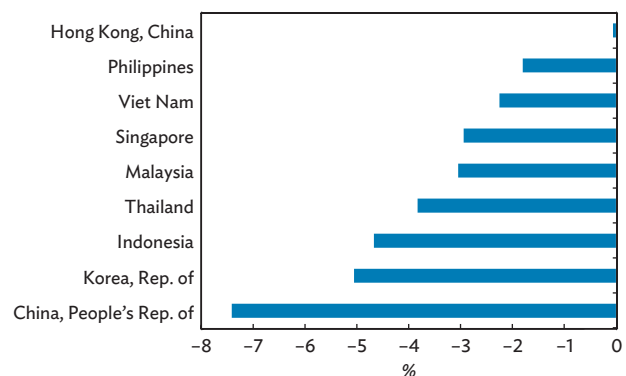
Between 1 June and 15 August, most equity markets in the region fell (**Figure B**) and major emerging east Asian

Figure B: Changes in Equity Indexes in Emerging East Asia

Note: Changes between 1 June 2018 and 15 August 2018.
Source: Bloomberg LP.

currencies depreciated (**Figure C**). Investors pulled out money from the region amid continued strengthening of the US dollar resulting from the Federal Reserve's monetary policy normalization, the trade conflict between the PRC and the US, and risk aversion toward emerging market assets prompted by the recent financial turmoil in Turkey.

During the review period, the PRC's equity market witnessed the largest drop at 11.4% and the Chinese renminbi depreciated the most at 7.4% on concerns of a slowdown in the PRC's economic growth amid a liquidity shortage, driven by government measures to mitigate credit risk, and rising trade tensions between the PRC and the US. The recent corporate bond defaults also contributed. Hong Kong, China's equity market was down during the review period, falling 10.4% on factors mentioned above related to the PRC as well as tightened liquidity as the HKMA took measures to support the domestic currency. The Hong Kong dollar continued to remain near the weak-end of its currency band, with the HKMA intervening to defend the currency again in August following similar steps in May. Meanwhile, the Republic of Korea's stock market fell 7.4% and the Korean won dropped 5.1% between 1 June and 15 August. The Indonesian rupiah continued to depreciate during the review period on persistent capital outflows from domestic financial markets and Bank Indonesia defended the currency by raising interest rates a total of 125 bps between May and August. In July, Bank Indonesia also resumed issuance of conventional Sertifikat Bank Indonesia, which can be bought by

Figure C: Changes in Month-End Spot Exchange Rates vs. the United States Dollar

Notes:

1. Changes between 1 June 2018 and 15 August 2018.

2. A positive (negative) value for the foreign exchange rate indicates the appreciation (depreciation) of the local currency against the United States dollar.

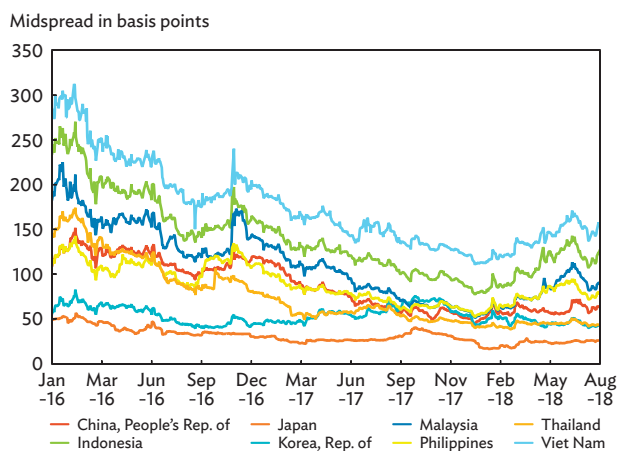
Source: Bloomberg LP.

foreign investors, as another mechanism to help stabilize the rupiah.

Credit default swap (CDS) spreads in emerging East Asia remained high and experienced several swings during the review period (**Figure D**). CDS spreads peaked in June amid rising risk aversion driven by the trade dispute between the PRC and the US, which was followed by declines in July that turned to gains toward the end of the month on expectations that Japan would start monetary policy normalization along with other developed markets. In August, CDS spreads were driven higher by the financial market turbulence in Turkey and fears of risk contagion spreading to other emerging markets. A consistent trend was observed in Emerging Market Bond Index Global spreads and the Volatility Index during the review period (**Figure E**). Spreads in emerging markets rose higher in August, highlighting market perceptions of possible contagion effects in other larger emerging markets from the Turkish financial crisis. The Volatility Index rose more steeply in June than in August, highlighting the magnitude of the impact of trade tensions on the US equity market. The JP Morgan Emerging Markets Bond Index Sovereign Stripped Spreads also showed a similar rising trend beginning in August, but at a level that was much lower compared with that in June (**Figure F**).

Q2 2018 was marked by a strengthening US dollar, which posed sell-off pressures in emerging markets. The turmoil

Figure D: Credit Default Swap Spreads in Select Asian Markets (senior 5-year)



USD = United States dollar.

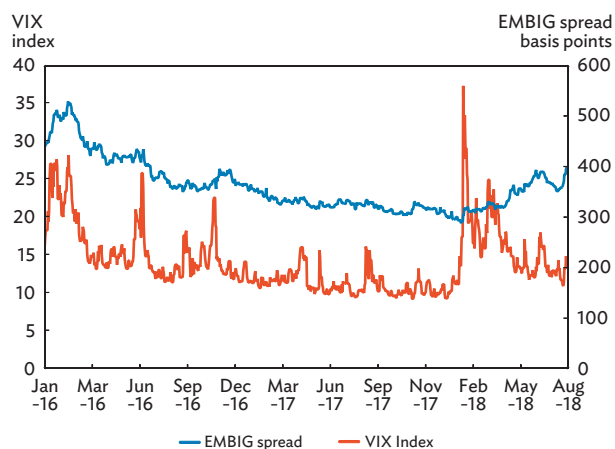
Notes:

1. Based on USD-denominated sovereign bonds.

2. Data as of 15 August 2018.

Source: Bloomberg LP.

Figure E: United States Equity Volatility and Emerging Market Sovereign Bond Spread

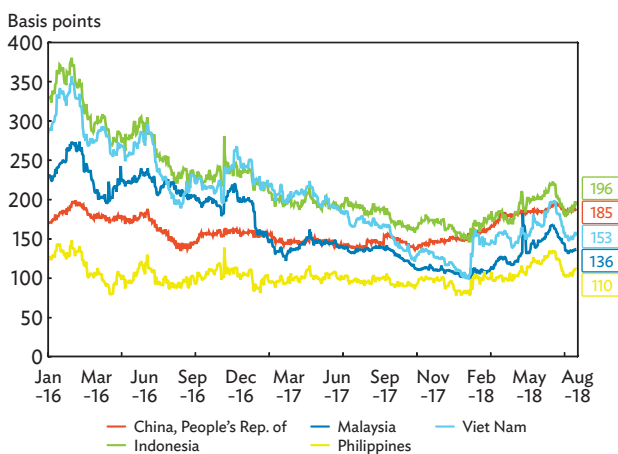


EMBIG = Emerging Markets Bond Index Global, VIX = Chicago Board Options Exchange Volatility Index.

Note: Data as of 15 August 2018.

Source: Bloomberg LP.

Figure F: JP Morgan Emerging Markets Bond Index Sovereign Stripped Spreads



USD = United States dollar.

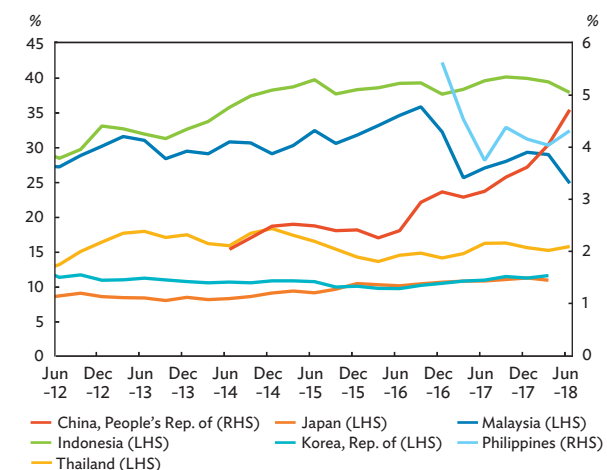
Notes:

1. Based on USD-denominated sovereign bonds.

2. Data as of 15 August 2018.

Source: Bloomberg LP.

Figure G: Foreign Holdings of Local Currency Government Bonds in Select Asian Markets (% of total)



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

Note: Data as of 30 June 2018 except for Japan and the Republic of Korea (31 March 2018).

Source: AsianBondsOnline.

surrounding the Turkish lira further soured investment sentiment. Foreign holdings of LCY government bonds in emerging East Asia showed divergent trends in Q2 2018 (**Figure G**). Foreign holdings in Malaysia fell by 4.1 percentage points during Q2 2018 to 24.8%, driven by uncertainties regarding the policies of the new administration. This trend reversed itself in July and

net inflows resumed amid renewed confidence in the government's policies. Foreign holdings in Indonesia declined marginally in Q2 2018 to 37.8% at the end of June from 39.3% at the end of March. Investor sentiments turned positive after Bank Indonesia tightened its monetary policy. Foreign holdings in Japan and the Republic of Korea were mostly unchanged based on

the most recent data available (March 2018). Foreign holdings in Thailand increased slightly in Q2 2018 to 15.7% at the end of June from 15.2% at the end of March. Foreign holdings in the PRC continued to rise in Q2 2018, reaching 4.7% at the end of June from 4.0% at the end of March, as its bond market further opens to international investors. In the Philippines, foreign holdings also increased but remained low at 4.3% at the end of June, up from 4.0% at the end of March.

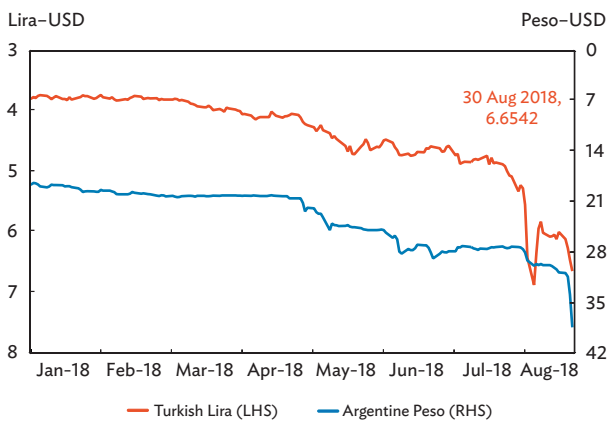
While emerging East Asia enjoys strong economic growth and relative financial stability, a number of downside risks lurk on the horizon. Overall, risks to the region’s economy and financial markets are tilted to the downside. Although there are some upside risks, such as a speedy resolution of global trade conflicts, these are largely related to and overshadowed by more concrete downside risks.

Most worryingly, recent financial turbulence in some emerging markets has raised concerns of spillover effects in developing Asia. Earlier this year, the Argentine peso and Turkish lira came under heavy pressure, triggering anxiety over a broader sell-off of emerging market assets. Both Argentina and Turkey are large emerging markets with sizable financial markets. As such, any major financial distress in either economy can have tangible repercussions for emerging markets as a whole.

The Turkish lira has sharply depreciated further in recent weeks (**Figure H**). The lack of market confidence in the lira is primarily due to a combination of (i) external vulnerabilities such as the foreign-currency-denominated-debt-to-GDP ratio, which exceeds 50.0%; (ii) poor macroeconomic fundamentals such as high and rising inflation, which topped 15.0% in July, and (iii) a weak policy regime as evidenced by the central bank’s failure to raise interest rates to defend the lira. A further major blow to market confidence has been the heated dispute between the US and Turkish governments, which has resulted in the US imposing tariffs on Turkish products. The Argentine peso stabilized after the government took out a USD50 billion loan from the International Monetary Fund in June, but it fell sharply in late August despite the central bank raising interest rates to 60.0%.

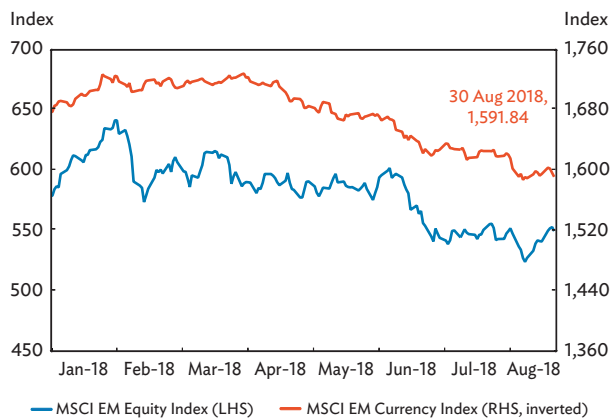
The financial turbulence in Turkey is showing signs of spreading to other emerging markets. The MSCI Emerging Markets Currency Index fell to its lowest level in more than a year on 13 August, and the MSCI Emerging Markets Equity Index has declined more than 3.0% since its January peak (**Figure I**). The South African rand

Figure H: Turkish Lira and Argentine Peso versus the United States Dollar, 1 January–30 August 2018



LHS = left-hand side, RHS = right-hand side, USD = United States dollar. Source: Bloomberg LP.

Figure I: MSCI Emerging Markets Currency and Equity Indexes, 1 January–30 August 2018



EM = emerging markets, LHS = left-hand side, RHS = right-hand side, MSCI = Morgan Stanley Capital International. Notes: The MSCI Emerging Markets Currency Index tracks the performance of 25 emerging market currencies relative to the United States dollar. More than half of the index weight comprises Asian currencies (50.2%). The currency index tracks the United States dollar value of the local currency. The MSCI EM Equity Index captures large and midcap representation across 24 emerging markets. The index shares are as follows: the People’s Republic of China (31.2%); the Republic of Korea (14.0%); Taipei, China (11.8%); India (9.0%); South Africa (6.8%); and others (27.1%). Source: Bloomberg LP.

and Argentine peso have been hit particularly hard. Furthermore, 12 major emerging markets that are tracked daily by the Institute of International Finance experienced portfolio capital outflows of USD1.4 billion between 9 August and 15 August.⁶

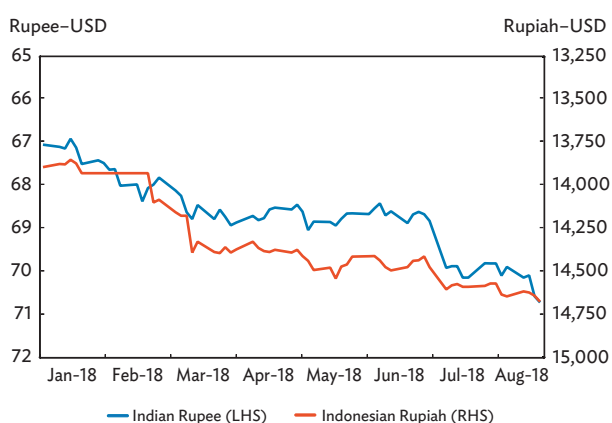
Within Asia, the Indian rupee fell to a record-low against the US dollar in August, while the Indonesian rupiah slid to a 3-year low (**Figure J**). The depreciations were part of the broader weakness of regional currencies vis-à-vis the US dollar in 2018. The rupiah's fall prompted Bank Indonesia to raise its benchmark interest rate on 14 August by 25 bps to 5.5%. It marked the fourth hike in the last 4 months for a cumulative increase of 125 bps over this period. The HKMA also intervened preventively in the foreign exchange market to defend the Hong Kong dollar's peg to the US dollar. In terms of portfolio outflows between 9 August and 15 August, the PRC saw the largest outflows at USD500 million. India, Indonesia, the Republic of Korea, Malaysia, the Philippines, and Viet Nam also experienced moderate outflows.

At a broader level, however, the current risks to developing Asia seem limited as the Turkish lira's decline is predominantly due to economy-specific weaknesses. Furthermore, global investors appear to be discriminating between markets based on fundamentals,

which is good news for the region with its strong fundamentals. Inflation is lower than in Turkey or Argentina (**Figure K**), and the current account positions of the region's individual economies are generally healthier. Finally, Bank Indonesia's latest interest rate hike, which went against market expectations, epitomizes the region's strong commitment to use policy tools to safeguard financial and macroeconomic stability. This should further boost market confidence in the region. Nevertheless, given the febrile state of global financial markets, Asian authorities would do well to monitor developments closely and be prepared to take preventive measures if warranted.

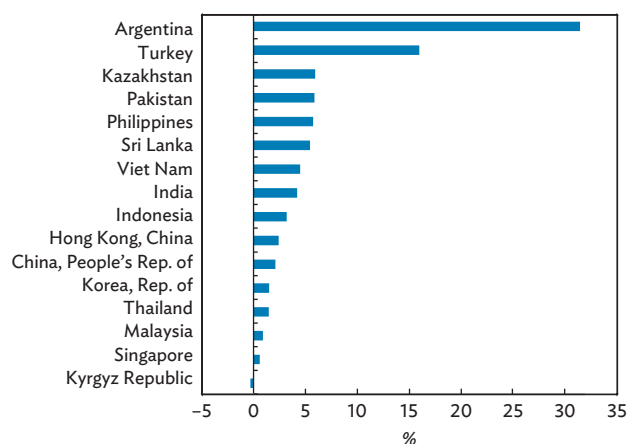
One contributing factor to the Turkish lira crisis has been the normalization of US monetary policy, which brings us to a second major risk linked to the first: faster-than-expected increases in US interest rates. The ongoing increase in US interest rates is strengthening the US dollar and drawing capital out of emerging markets. Both US dollar appreciation and capital outflows can further destabilize financial markets in emerging economies. However, the risk to emerging market financial stability has been limited so far because the rate hikes have been gradual and anticipated by the markets. However, the risk will grow if rate hikes gain speed and exceed market expectations. The likelihood

Figure J: Indian Rupee and Indonesian Rupiah versus the United States Dollar, 1 June–30 August 2018



LHS = left-hand side, RHS = right-hand side, USD = United States dollar.
Source: Bloomberg LP.

Figure K: Inflation in Select Economies, July 2018



Notes: Inflation data as of July 2018 except for the Kyrgyz Republic (December 2017).
Source: Bloomberg LP.

⁶ The 12 markets include Brazil; Hungary; India; Indonesia; Malaysia; the People's Republic of China; the Philippines; the Republic of Korea; South Africa; Taipei, China; Thailand; and Viet Nam.

of such an acceleration will depend on the strength of the US economy. The likelihood has increased in light of the robust short-term US growth momentum, which is buoyed by significant fiscal stimulus and private demand. Current growth is widely seen as being above potential growth, contributing to inflationary pressures that may push the Federal Reserve toward more aggressive monetary tightening.

Finally, escalating global trade tensions linger over the world economy and global financial markets like a dark cloud. Especially worrisome is the increasingly heated trade dispute between the world's two biggest economies, the PRC and the US. Emerging East Asia is closely tied with both economic giants through trade, investment, and other economic links. The rest of the region forms a pivotal regional production network with the PRC in global value chains. Up to now, the negative impacts of their protectionist measures on global growth has been very limited, partly because the implemented and expected measures cover only a small share of global trade and output. For example, the tit-for-tat trade dispute between the PRC and the US directly affects only 0.5% of the PRC's GDP and 0.3% of US GDP. However, the damage to trade and growth is likely to become much more tangible if the tensions significantly escalate. In particular, the trade conflict with the US may further hamper the GDP growth of the PRC, which was already slowing due to deleveraging.

The slowdown will pose an additional risk to the region's economic and financial stability if the deceleration is faster than expected.

While the direct and immediate effects of trade tensions will be on global trade, we can also expect secondary effects on financial markets. Specifically, the prospects of a trade conflict may dent consumer and investor confidence and thus adversely affect financial markets. In line with the effects on trade and growth, global financial markets have not been visibly unsettled by the trade disputes so far. However, just as trade and growth will be more affected if the conflict worsens, financial markets too are likely to be hit much harder.

Besides the risks mentioned above, a number of additional downside risks loom. The region's private debt, which has grown rapidly since the global financial crisis, may become a source of instability, especially since global financial conditions are now tightening. Another risk comes from global oil price volatility due to geopolitical developments such as the US imposition of economic sanctions against Iran and domestic political problems in Venezuela. Yet another potential risk to financial stability is new financial technology such as the distributed ledger technology underlying Bitcoin and other cryptocurrencies (**Box 3**). To sum up, the downside risks to emerging East Asia's financial stability currently outweigh the upside risks.

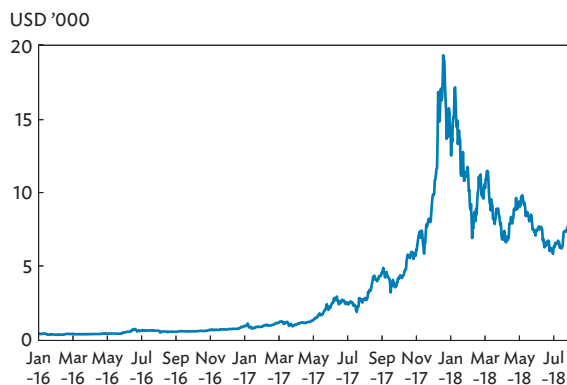
Box 3: Are Cryptocurrencies a Threat to Financial Stability?

The past few years have seen the rapid rise of Bitcoin and other virtual currencies, which are also known as cryptocurrencies. Bitcoin is an electronic currency system in which transactions are validated by a cryptographically protected public ledger, or blockchain, rather than a central authority.

A speculative frenzy caused the price of Bitcoin to triple to nearly USD20,000 from September to December 2017. This was up from less than USD1,000 at the beginning of 2017 and less than USD500 in 2016 (**Figure B3.1**). Prices spiked as well for many other virtual currencies that have emerged recently, such as Ethereum and Ripple, bringing total market capitalization to nearly USD800 billion in early January 2018 before a major selloff erased nearly 70% of that value (**Figure B3.2**). By early February, the price of Bitcoin had fallen to nearly one-third of its peak just a month earlier.

Governments have long been wary of the potential misuse of virtual currencies to evade taxes or finance illicit activities. In view of excessive speculation and rapidly proliferating financial activities involving virtual currencies, some authorities have restricted their use and circulation. Within Asia, the response has been far from uniform. Several economies—including the People’s Republic of China; Hong Kong, China; the Republic of Korea; and Singapore—do not allow firms to raise capital through initial coin offerings. This is a new form of initial public offering from a company issuing and selling virtual currencies that ostensibly removes the offering from the sphere of securities laws and regulations; its use has expanded rapidly (**Figure B3.3**).

Figure B3.1: Bitcoin Price

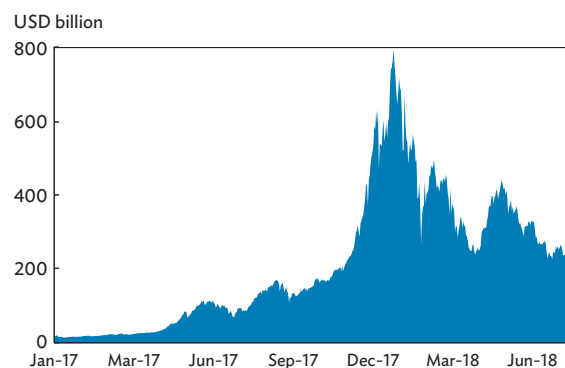


Note: Data as of 25 July 2018.
Source: Cryptocompare.

The People’s Republic of China has clamped down the most on virtual currency, stepping up measures to remove trading platforms and restrict Bitcoin mining, which exploits cheap electricity in parts of its territory. Viet Nam has banned the use of cryptocurrencies for making payments, while India and the Republic of Korea are among those economies that have issued stern warnings but not yet followed through with a full crackdown.

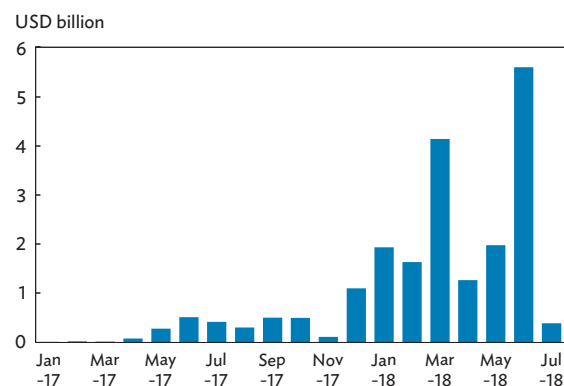
Other governments have embraced virtual currencies, reeling in the slack created by bans elsewhere. Japan recognized Bitcoin as a legal form of payment in 2017, with the currency

Figure B3.2: Market Capitalization of All Cryptocurrencies



Note: Data as of 25 July 2018.
Source: Coin Dance. <https://coin.dance/stats/marketcaphistorical> (accessed 25 July 2018).

Figure B3.3: Initial Coin Offerings



Note: Initial coin offerings are valued using the Bitcoin exchange rate at the time of the offering.
Source: CoinSchedule. <http://coinschedule.com/stats.html> (accessed 25 July 2018).

Box 3: Are Cryptocurrencies a Threat to Financial Stability? *continued*

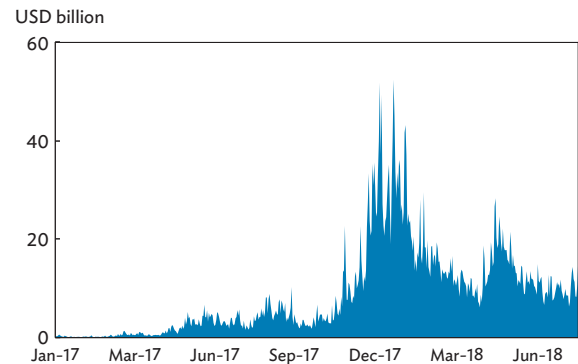
being accepted by a growing number of Japanese retailers. In September 2017, Japan became home to the largest Bitcoin exchange, with a global market share of more than half. Outside the Asia and Pacific region, Switzerland is the most keen to maintain a competitive edge in initial coin offerings and blockchain applications, with the authorities there striving to provide a suitable regulatory environment.

Virtual currencies are too small a phenomenon to pose a threat to domestic or global financial systems, at least so far. Their total market capitalization in March 2018 equaled a mere 0.2% of global equity and bond capitalization, and they are traded and held outside normal financial channels. Many banks still refuse to deal in cryptocurrencies because of concerns over money laundering and terrorism financing. Some even ban customers from buying them with their credit cards. While the risks of contagion are limited, ramps linking the traditional financial system and the cryptocurrency world have proliferated. Most notably, in December 2017, the Chicago Mercantile Exchange and the Chicago Board Options Exchange, two major derivatives exchanges in the United States, created Bitcoin futures contracts. Moreover, many large banks are developing products and services focused on virtual currencies. Daily trading volumes on crypto–fiat currency exchanges (trading between virtual and national currencies) have risen rapidly, albeit with a hiatus earlier this year as prices plunged (**Figure B3.4**).

Regulators are gearing up to ring-fence financial systems against the risks associated with this new asset class. Regulatory responses are being tested at the domestic level, but they are not yet able to deal effectively with a global phenomenon that operates in a widely decentralized manner outside conventional financial channels. International coordination is essential to address these challenges and ensure adherence to domestic rules and regulations. International organizations such as the International Monetary Fund and the Bank for International Settlements are well suited to foster cross-border coordination and legal harmonization, and to help establish international standards and best practices.

The review of cryptocurrencies in this discussion box introduces the broader point that the underlying blockchain technology is viable and ripe for broader application. Indeed, distributed ledger technology (DLT)—the broader

Figure B3.4: Daily Cryptocurrency Trading Volume



Notes:

1. The figure includes the top 20 cryptocurrencies in terms of market capitalization.
 2. Data as of 25 July 2018.
- Source: CoinMarketCap.

but usually interchangeable term—opens opportunities for applications that can revolutionize the financial sector. DLT-based clearing and settlement is beginning to replace inefficient back-office infrastructure, while operations such as exchanging cash for securities will increasingly be accomplished in a matter of seconds, rather than days as is currently the case.

DLT has far-reaching implications for the developing world in multiple areas, including remittances, emergency aid delivery, microcredit, trade finance, smart energy, and individual digital identity. Collaborative efforts joining national governments, international agencies, and technology firms are demonstrating the potential to deliver tangible improvements in development outcomes. The challenges that so far limit DLT applicability to development efforts call for further technical, infrastructural, and regulatory efforts to overcome them.

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