Introduction: Bond Yields Rise in Emerging East Asia

Bond yields rise in emerging East Asia amid United States monetary policy tightening and risk aversion toward emerging markets.

Between 31 August and 15 October, yields on 2-year and 10-year local currency (LCY) government bonds rose in most emerging East Asian economies as global liquidity conditions tightened and investors showed risk aversion toward emerging markets (**Table A**).[1] At the same time, most major advanced economies saw yields on 10-year government bonds rise as their central banks tightened monetary policy (**Figure A**). Risk aversion toward emerging markets also contributed to higher yields on advanced economy bond yields.

Global economic growth remains solid and the global upturn that began in 2016 looks set to continue in the short-term. According to the International Monetary Fund's (IMF) *World Economic Outlook October 2018*, the world economy is projected to grow 3.7% in both 2018 and 2019, the same pace as in 2017. However, in light of growing uncertainty in the global economic environment and rising downside risks, the IMF downgraded its global growth forecast by 0.2 percentage points for both 2018 and 2019 relative to its April forecast of 3.9% for both years. In tandem with the moderation of economic growth, the growth of total global trade volume is projected to decline from 5.2% in 2017 to 4.2% in 2018 and 4.0% in 2019.

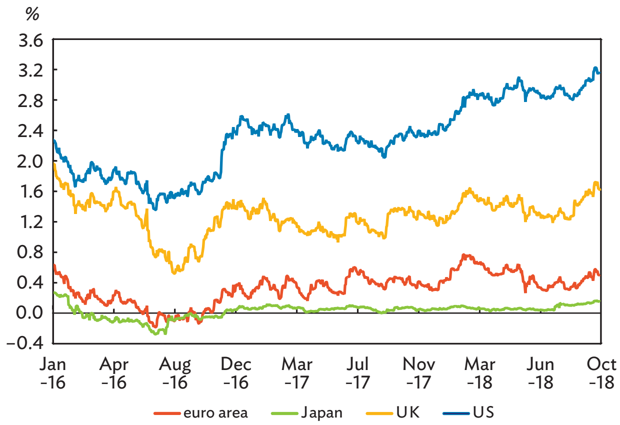
Table A: Changes in Global Financial Conditions

	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	23	30	–	(5.2)	–
United Kingdom	9	18	0.2	(5.4)	1.5
Japan	(0.3)	4	(1)	(2.7)	(0.7)
Germany	4	18	1	(6.1)	(0.2)
Emerging East Asia					
China, People's Rep. of	(2)	(2)	6	(5.8)	(1.2)
Hong Kong, China	16	30	–	(8.8)	0.2
Indonesia	44	68	19	(4.8)	(3.4)
Korea, Rep. of	18	7	(2)	(7.7)	(1.9)
Malaysia	7	9	10	(5.0)	(1.1)
Philippines	218	168	9	(11.8)	(1.0)
Singapore	12	18	–	(5.2)	(0.3)
Thailand	12	9	1	(1.5)	0.3
Viet Nam	(23)	(15)	11	(3.8)	(0.2)
Select European Markets					
Greece	11	15	(1)	(13.0)	(0.2)
Ireland	6	22	4	(9.7)	(0.2)
Italy	18	16	6	(4.8)	(0.2)
Portugal	6	9	(4)	(7.9)	(0.2)
Spain	16	24	12	(5.1)	(0.2)

( ) = negative, – = not available, bps = basis points, FX = foreign exchange.
Notes:
1. Data reflect changes between 31 August 2018 and 15 October 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.

[1] 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 A: 10-Year Government Bond Yields in Major Advanced Economies (% per annum)



UK = United Kingdom, US = United States.
Note: Data as of 15 October 2018.
Source: Bloomberg LP.

Advanced economies expanded 2.3% in 2017 and are projected to grow 2.4% in 2018 and 2.1% in 2019. The corresponding figures for emerging markets and developing economies are 4.7%, 4.7%, and 4.7%, respectively. The *World Economic Outlook October 2018* forecasts consumer price inflation in advanced economies to pick up marginally from 1.7% in 2017 to 2.0% in 2018 and 1.9% in 2019. In emerging markets and developing economies, consumer price inflation is projected to rise from 4.3% in 2017 to 5.0% in 2018 and 5.2% in 2019. The continued closing of the output gap and rising global oil prices will push up inflation in 2018–2019.

The United States (US) economy remains the most dynamic advanced economy and a major contributor to global growth momentum. Robust growth is supported by fiscal stimulus as well as high consumer and business confidence. The US economy remains on its current growth trajectory. Following a 4.2% annual growth rate in the second quarter (Q2) of 2018, growth slowed to 3.5% in the third quarter (Q3). US labor market indicators also remain strong. In August, nonfarm payrolls added 280,000 jobs, up from an increase of 165,000 in July. However, September nonfarm payrolls additions fell to 118,000, reflecting the impact of Hurricane Florence. Nonfarm payrolls additions rose to 250,000 in October. The US unemployment rate continues to improve, falling to 3.7% in September from 3.9% in August. The Federal Open Market Committee upgraded its 2018 gross domestic product (GDP) growth forecast to 3.1% in September from 2.8% in June. The GDP growth forecast for 2019 was also upgraded slightly to 2.5% from 2.4%.

Such robust economic conditions allowed the Federal Reserve to raise its policy rate target on 26 September by 25 basis points (bps) to a range of 2.00% to 2.25%. The Federal Reserve indicated that continuing gains in both the labor market and the economy allowed for the rate hike. The minutes of the September meeting of the Federal Open Market Committee reveal that committee members noted that the economy continues to strengthen. More interestingly, some members suggested that the interest rate path may need to be even tighter to prevent inflation from overshooting. Given the continued strength of the US economy, this suggests that additional tightening is on the way. The Federal Reserve also noted that inflation continues to hover near its 2.0% target range. The US consumer price inflation rate fell from 2.7% y-o-y in August to 2.3% y-o-y in September. Core consumer price inflation remained unchanged at 2.2% y-o-y in the same period. The Federal Reserve's preferred inflation metric—the Personal Consumption Expenditure Index—fell 2.0% y-o-y in September from 2.2% y-o-y in August.

In the euro area, economic growth suffered some minor hiccups, but the European Central Bank (ECB) is sticking to its previously stated monetary policy direction. The euro area's GDP growth fell slightly from an annual rate of 2.2% in Q2 2018 to 1.7% in Q3 2018. In September, the ECB slightly downgraded its GDP growth forecast for both 2018 and 2019, relative to its June forecast, from 2.1% to 2.0% and from 1.9% to 1.8%, respectively. As a result, at its 25 October monetary policy meeting, the ECB left its policy rate unchanged but affirmed its reduced asset purchase program of EUR15 billion per month between October and December 2018, as growth momentum had slowed, with the program ceasing thereafter. The ECB noted that the end of its asset purchase program would still be conditional on incoming economic data.

In the United Kingdom, improved economic growth and the Bank of England's 25-bps rate hike on 1 August pushed up bond yields. However, the Bank of England left rates unchanged on 13 September. GDP growth rose in June–August by 0.7% on a rolling 3-month basis, the same pace during the May–June period and higher than the 0.4% growth recorded in Q2 2018.

The United Kingdom's consumer price inflation rate rose from 2.5% y-o-y in July to 2.7% y-o-y in August before falling to 2.4% y-o-y in September.

Bond yields in Japan, particularly for tenors of 10 years and above, continued to trend upward in September and October. Yields rose primarily on continued speculation about the timing of the Bank of Japan's (BOJ) gradual exit from its monetary policy easing measures. An uptick in yields was observed on 21 September after the BOJ reduced the amount of its monthly bond purchases. Yields rose further following the sharp rise in US Treasury yields on 3 October. However, the BOJ did not intervene to bring down yields. This may be in line with recent changes to its monetary policy, announced in its 31 July meeting, when it indicated it would allow more movement in bond yield targets, particularly for 10-year bonds.

The BOJ governor announced during the IMF annual meeting on 13 October that a change in the 10-year bond yield would signal an exit from an accommodative monetary policy more so than reduced bond purchases. This added further uncertainty about exactly when the BOJ would normalize its monetary policy operations. Japan's economy grew an annualized rate of 3.0% in Q2 2018, reversing a 0.9% contraction in Q1 2018, driven by private consumption and private nonresidential investment.

Overall, yields in advanced economies rose between 31 August and 15 October, particularly yields for 10-year bonds. The strength of the US economy and the Federal Reserve's ongoing interest rate hikes have put pressure on the currencies of some emerging markets. The currencies of Argentina and Turkey have been the hardest hit. Investor uncertainty surrounding these two emerging markets led to a flight to quality in the euro area, notably to Germany. However, there has been a rise in credit default swap (CDS) spreads in some select European markets, largely due to political and fiscal uncertainties in Italy.

Despite the heightened global uncertainty and rising downside risks, developing Asia is poised to sustain healthy growth, remain the world's fastest-growing region, and contribute to global growth momentum.[2] According to the Asian Development Bank's *Asian Development Outlook 2018 Update* released in September, the region's economy expanded 6.1% in 2017 and is projected to expand 6.0% in 2018 and 5.8% in 2019. The latter forecast is a marginal downgrade from a July forecast of 5.9%. Inflation is rising but remains at relatively moderate levels. According to the *Asian Development Outlook 2018 Update*, the region's consumer price inflation is projected to rise from 2.2% in 2017 to 2.8% in 2018 and 2019.

The economies of emerging East Asia have so far prevailed over external challenges to continue their solid growth momentum. Despite mounting trade tensions with the US, the People's Republic of China's (PRC) GDP expanded 6.9% in 2017 and is forecast to expand 6.6% in 2018 and 6.3% in 2019. Nevertheless, the trade conflict's effects are expected to be felt more tangibly in 2019, with the growth forecast downgraded by 0.1 percentage point from the July forecast of 6.4%. The 2017, 2018, and 2019 GDP growth figures for the 10 members of the Association of Southeast Asian Nations are 5.2%, 5.1%, and 5.2%, respectively. The Republic of Korea's economy is projected to grow 2.9% in 2018 and 2.8% in 2019. The corresponding figures for another high-income economy in the region, Hong Kong, China, are 3.7% in 2018 and 3.0% in 2019. The region's healthy growth is driven primarily by robust domestic demand, which explains why the adverse effect of global trade tensions on growth has been limited so far.

Yields rose in most emerging East Asian economies during the review period due to the risk aversion toward emerging markets triggered by financial turbulence in Argentina and Turkey in September, the Federal Reserve's interest rate hike in September, and the sharp rise in US Treasury yields in October following the release of upbeat US economic data that supported the likelihood of another rate hike in December. In addition, a number of central banks in emerging East Asia have also been tightening monetary policy to stem the risk of capital outflows and sharp currency depreciation, while some central bank haves hinted at gradual tightening going forward.

The major exception was the PRC, with its central bank being the only one in the region to ease monetary conditions during the review period by reducing the reserve requirement ratio. However, yields for both

[2] Developing Asia comprises the 45 regional developing member economies of the Asian Development Bank. See https://www.adb.org/sites/default/files/publication/452971/ado2018-update.pdf.

the 2-year and 10-year tenor fell only 2 bps during the review period because of a temporary decline in liquidity in September in anticipation of the long holiday in the first week of October, as well as due to corporate tax payments by corporates. After the holiday, interest rates in the PRC began declining again, notably due to the reserve requirement ratio cut of 100 bps on 7 October. The monetary easing is, in effect, stimulus aimed at supporting growth in the face of rising trade tensions with the US. Other than the PRC, Viet Nam was the only other economy to show a decline in yields during the review period, with the 2-year and 10-year yields falling 23 bps and 15 bps, respectively.

The largest increase in yields came from the Philippines, where the 2-year and 10-year yields rose 218 bps and 168 bps, respectively. The steep increase in yields in the Philippines was largely due to larger-than-expected interest rate hikes by the Bangko Sentral ng Pilipinas (BSP) in order to curb rising inflation. The BSP raised policy rates by 50 bps on 9 August and followed with another 50-bps increase on 27 September. In the past, the BSP usually raised rates by 25 bps each time. Indonesia posted the second-largest rise in yields during the review period, driven by the continued depreciation of the rupiah, which breached the IDR15,000–USD1 level in October. Bank Indonesia raised its policy rate another 25 basis points on 27 September, the fifth such increase in 2018, bringing the cumulative hike for the year to 150 bps. Yields continued to rise in October following the uptick in US Treasury yields.

Yields rose in the Republic of Korea, reversing the downward trend in yields since May, on expectations of a policy rate hike by the Bank of Korea before the year ends. Statements by the Prime Minister on 12 September and the Bank of Korea governor on 4 October further supported the likelihood of an upcoming rate hike. The Bank of Korea governor stated that a policy rate hike would help address financial imbalances in the market. The spike in US Treasury yields in early October further contributed to the upward trend. However, the Bank of Korea maintained its policy rate at its 18 October meeting. Yields rose slightly in Malaysia mainly due to external developments (particularly emerging market financial volatility), trade tensions between the US and the PRC, and the sharp rise in US yields. An interesting recent development in Malaysia has been the emergence of a housing bond market (**Box 1**).

Yields rose in Thailand on the back of strong economic growth and rising inflation. At its monetary policy meeting on 19 September, the Bank of Thailand noted that the domestic economy continues to grow and inflation is expected to rise. While policy rates were left unchanged, some members voted to raise rates, prompting market speculation that the Bank of Thailand may raise policy rates in the future. Yields also rose in Hong Kong, China and Singapore, which tend to track movements in US Treasury yields.

All equity markets in the region fell during the review period in line with the sell-off in US equity markets in October (**Figure B**). The sharp rise in US Treasuries in early October prompted the sell-off in equities in the US and across emerging East Asia. Equity markets fell further a week later after the IMF cut its growth forecasts for the US and the PRC, partly due to the trade conflict. The Philippine stock market fell 11.8%, the most in the region, and has trended downward since the start of the year. High inflation fueled by rising oil prices, rising interest rates, and the peso's depreciation drove the sell-off by investors who saw their returns decline. Hong Kong, China, and the Republic of Korea were among the worst-performing equity markets in the region between 31 August and 15 October, with declines of 8.8% and 7.7%, respectively. Both economies are likely to be hit hard by the trade dispute between the PRC and the US. The PRC's equity market fell following the week-long holiday in October on continued concerns of a slowdown in economic growth brought about by the government's deleveraging efforts and trade tensions with the US.

Most emerging East Asian currencies depreciated during the review period (**Figure C**). The exceptions were the Hong Kong dollar and Thai baht, which were relatively stable. A stronger US dollar, fueled by strong economic growth and rising interest rates in the US, continued to weigh on regional currencies. In addition, the recent slump in equity markets in October further weakened local currencies as foreign investors pulled out from the region. The Indonesian rupiah was the region's worst-performing currency, falling 3.4% during the review period and breaching the IDR15,000–USD1 level in early October despite continued intervention by Bank Indonesia. The central bank raised its policy rate another 25 basis points on 27 September.

Box 1: The Cagamas Model

Cagamas, the National Mortgage Corporation of Malaysia, was established by the central bank, Bank Negara Malaysia (BNM), in 1986 under a national plan to promote homeownership through a liquid funding system that would help financial institutions overcome the maturity mismatch in their financial position when using short-term deposits to finance long-term housing loans. In 1986, the Malaysian economy was beginning to emerge from a recession and incentives were accorded to the construction sector, including housing, to stimulate economic growth. Given the legal constraints in effecting a true transfer of property rights under Malaysia's real estate laws, Cagamas adopted the simpler form of purchasing housing loans from their originators with full recourse and issuing unsecured bearer bonds backed by pools of housing loans.

This mechanism was not considered true securitization but, in the Malaysian context, it was a feasible interim step toward the development of a secondary mortgage market for the following reasons: (i) at the time there was a lack of statistics and a track record of loan performance to fulfill rating agency requirements in assessing the credit risks inherent in "pass through" securitization; (ii) for primary lenders, which were commercial banks, finance companies, and the Government Housing Loan Division, liquidity was an issue, not capital adequacy; (iii) for loan originators selling their fixed- and floating-rate housing loans to Cagamas, with options for periodic review, enabled them to eliminate both their liquidity and interest risks; and (iv) the longer-term Cagamas bonds (mainly 3-year and 5-year maturities) as well as the shorter-term Cagamas notes (maturities of less than 1 year) helped to fill a void in the market for institutional investors that included financial institutions, insurance companies, and pension funds.

Due to the good track record and high credit standing established by Cagamas, all long- and short-term debt securities it has issued have consistently been rated AAA by two Malaysian rating agencies (RAM Rating Services Berhad and Malaysian Rating Corporation Berhad). Cagamas is also well regarded internationally and has been assigned local and foreign currency long-term issuer ratings of A3 by Moody's Investors Service Inc., which are in line with Malaysia's sovereign ratings. This has enabled Cagamas to raise funds at a low cost for on-lending to homebuyers.

Over the last 30 years, Cagamas has contributed to the building of a sustainable housing finance system in Malaysia by continuously innovating its business model to meet the liquidity and capital needs of financial institutions. It now has a wide product base that offers Purchase with Recourse as a liquidity model and Purchase without Recourse as a securitization model for both conventional housing loans and Islamic housing finance. In addition, Cagamas has introduced a mortgage guarantee program as a risk management tool for financial institutions (**Figure B1.1**).

The World Bank has acknowledged the success of Cagamas in providing liquidity to financial institutions to fund home ownership at reasonable cost. From an initial purchase of conventional mortgages of MYR110 million (USD27.1 million) in 1987, Cagamas had cumulatively refinanced mortgages in the secondary market equivalent to MYR142 billion (USD35.0 billion) and covering 1.9 million homes by the end of 2017.[a] The size of the Malaysian mortgage market within the banking system has grown exponentially from MYR11 billion in 1989 to MYR520 billion at the end of 2017, comprising 33% of the total loans in the banking system and the equivalent of 44% of Malaysia's gross domestic product (**Figure B1.2**).

Cagamas has also been a regular issuer of private debt securities (PDS) and contributed to the rapid development of the corporate bond market in Malaysia. Cagamas has established itself as the leading issuer of PDS in Malaysia. Since its inception, Cagamas has introduced a wide range of new and award-winning capital market instruments. At the end of December 2017, the Cagamas Group had issued a cumulative total of MYR312.1 billion of PDS, including the issuances of MYR10.2 billion in residential mortgage-backed securities by Cagamas MBS Berhad, a sister company of Cagamas. Cagamas' outstanding issuances of MYR30.8 billion comprise 7% of Malaysia's outstanding PDS, which amount to MYR431.4 billion, placing Malaysia among the top 5 issuers of corporate bonds in the Asia-ex Japan region (**Figure B1.3**).

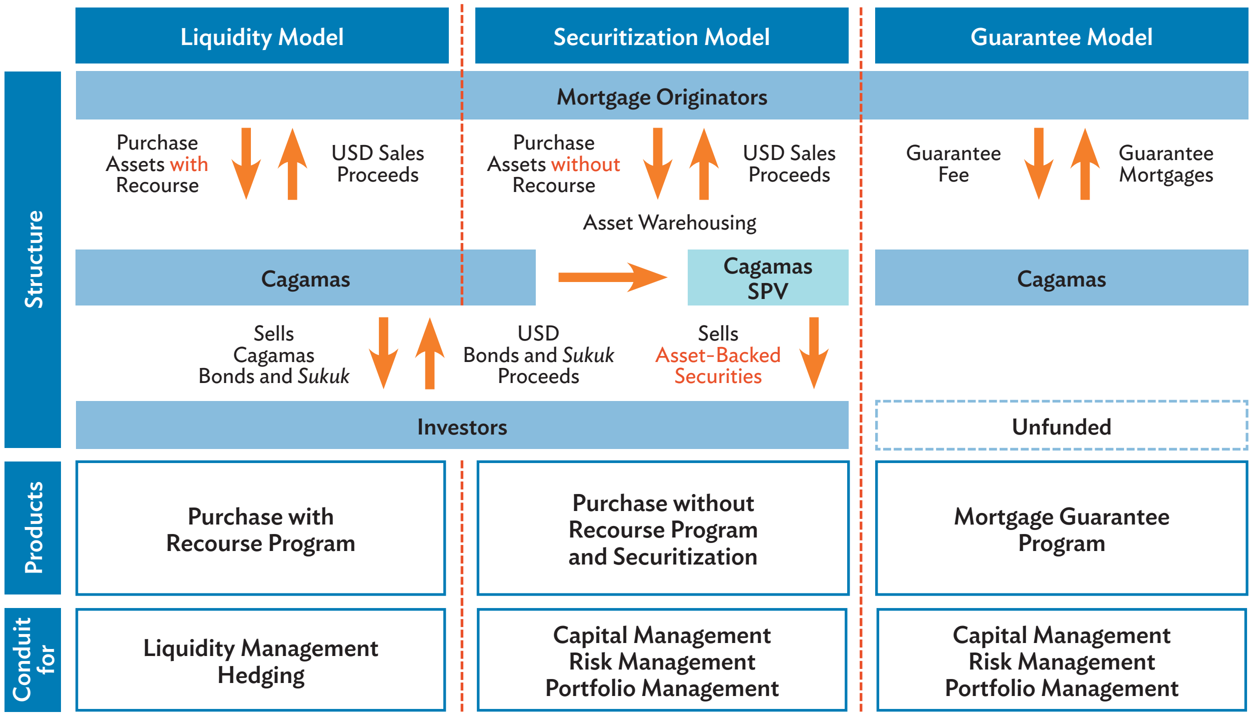
Since its first such issuance in 2004, Cagamas has evolved into a major issuer of *sukuk* (Islamic bonds) (**Figure B1.4**). It began by securitizing a significant portion of Sharia-compliant home financing for government employees.

[a] Based on an exchange rate of MYR4.06 per USD1 (30 July 2018).

continued on next page

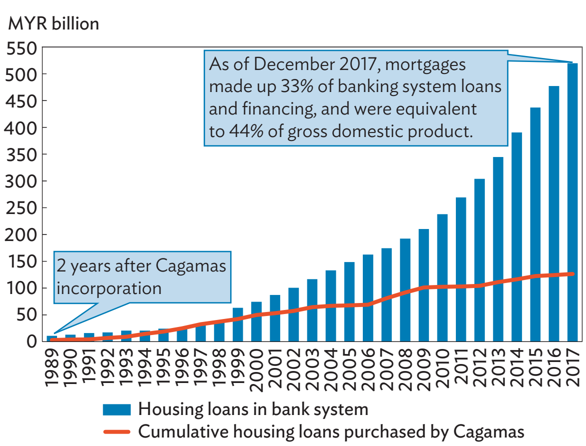
Box 1: The Cagamas Model *continued*

Figure B1.1: The Three Business Models of Cagamas



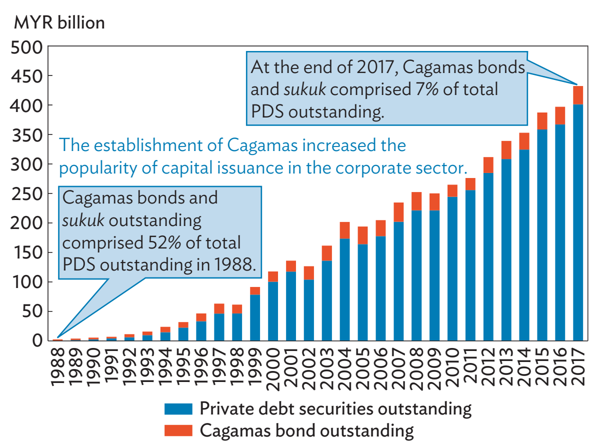
SPV = special purpose vehicle, USD = United States dollar.
Source: Cagamas.

Figure B1.2: Supply of Housing Loans in Malaysia



Note: Housing credit outstanding (cumulative).
Source: Cagamas.

Figure B1.3: Cagamas' Share of the Private Debt Securities Market

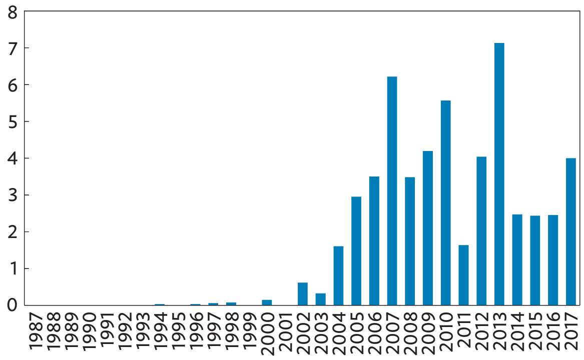


PDS = private debt securities.
Note: *Sukuk* are bonds issued in accordance with Islamic principles.
Source: Cagamas.

continued on next page

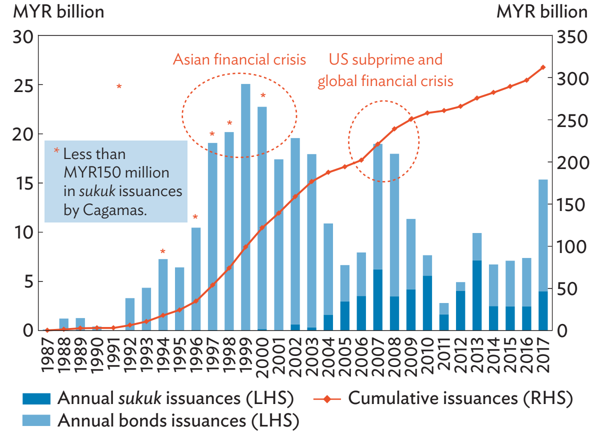
Box 1: The Cagamas Model *continued*

Figure B1.4: Cagamas' *Sukuk* Issuances



Source: Cagamas.

Figure B1.5: Cagamas—Crucial Provider of Liquidity to the Housing Market



LHS = left-hand side, RHS = right-hand side, US = United States.
Source: Cagamas.

The issuance of MYR2.1 billion of residential mortgage-backed *sukuk musyarakah* (rated residential mortgage-backed securities issued under Islamic principles) in 2005 was the first of its kind in the world and attracted MYR13.5 billion in book size, primarily from domestic institutions and some foreign investors from Hong Kong, China and Singapore. Cagamas' *sukuk* currently make up 13% of domestic AAA-rated *sukuk*, a fast-growing segment of the PDS market, and comprise a majority share of 53% of the domestic AAA-rated Islamic asset-backed securities market. The promotion of *sukuk* issuance also supports the objectives of Malaysia's International Islamic Financial Centre initiative.[b]

Cagamas' role as a liquidity provider is significant in times of financial crisis and tight liquidity (**Figure B1.5**). By standing ready to purchase mortgages from financial institutions that are seeking alternative sources of funding short of turning to Bank Negara Malaysia as a lender of last resort, Cagamas injects stability into the financial system.

Beyond the provision of liquidity, Cagamas has also evolved to become a provider of risk, capital, and management solutions for other asset classes as well. This includes Cagamas' promotion of products such as a mortgage guarantee program and its involvement in synthetic securitization for small and medium-sized enterprises. Cagamas is also a credible partner of the government in a home ownership initiative to address the issue of affordability among young adults seeking to own their first home (My First Home Scheme and Youth Housing Scheme).

In 2017, Cagamas recorded an after-tax profit of MYR242 million based on total assets of MYR41 billion. Its shareholder funds amounted to MYR3.4 billion and its risk-weighted capital ratio stood at a healthy 22.2%. In comparison, the average risk-weighted capital ratio of the banking sector in the corresponding period stood at approximately 17%.

Lessons Learned from Cagamas

The Cagamas model offers important lessons for other developing economies that are considering the establishment of a secondary mortgage market:

- Ownership of Cagamas was split 20:80, with the BNM owning 20% and the banking system owning the balance. The BNM nominates the chairman of the board of directors; the remaining board members are representatives of the member banks.
- From the beginning, Cagamas was supported by a well-developed system for land purchases and regulation, clear rights of property ownership and transferability,

[b] Malaysia International Islamic Financial Centre. http://www.mifc.com/index.php?ch=ch_header_contact_us&pg=pg_header_aboutus.

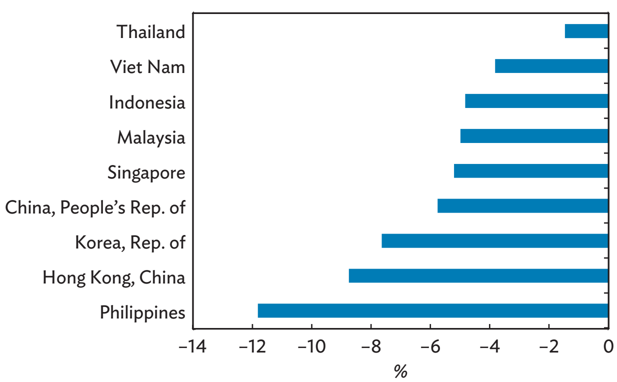
continued on next page

Box 1: The Cagamas Model

a well-developed financial infrastructure and liberalized financial system, and proactive urban and housing policies.

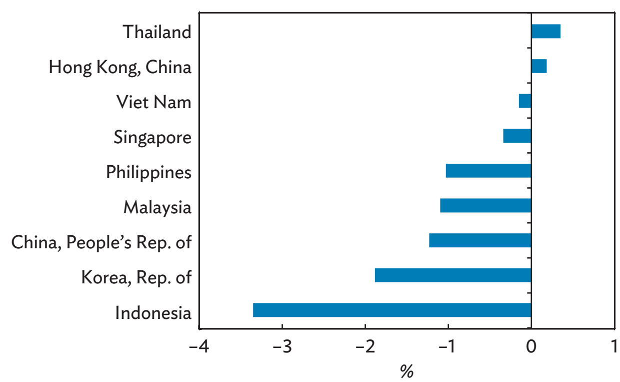
- In the early stages of Cagamas' development, the Government of Malaysia was involved in the secondary mortgage corporation through share ownership, which was necessary to alleviate the default risk concerns of investors. The following support from the government and BNM helped reduce the cost of funding for Cagamas: (i) exemption from stamp duties for housing loan transactions; (ii) exemption from the requirement to issue a prospectus for any issuance of debt securities; (iii) exemption from having to obtain prior approval of the Securities Commission to issue bonds; (iv) exemption of the proceeds of sales of housing loans obtained by financial institutions from statutory reserve and liquidity requirements; and (v) the classification of Cagamas bonds as Tier 1 liquid assets for the purpose of compliance with statutory liquidity requirements.
- Adoption of the Purchase with Recourse scheme helped to overcome moral hazard in the early stage of development of a secondary mortgage market. It gave Cagamas time to build its credibility as a safe and regular issuer of debt securities before it introduced the Purchase without Recourse product.
- Within the secondary mortgage framework, Cagamas has had the flexibility to develop new asset classes in the purchase of small and medium-sized enterprise loans and bonds and *sukuk* for institutional investors such as insurance companies and pension funds, while not losing sight of its social role in promoting home ownership.

Figure B: Changes in Equity Indexes in Emerging East Asia



Note: Changes between 31 August 2018 and 15 October 2018.
Source: Bloomberg LP.

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



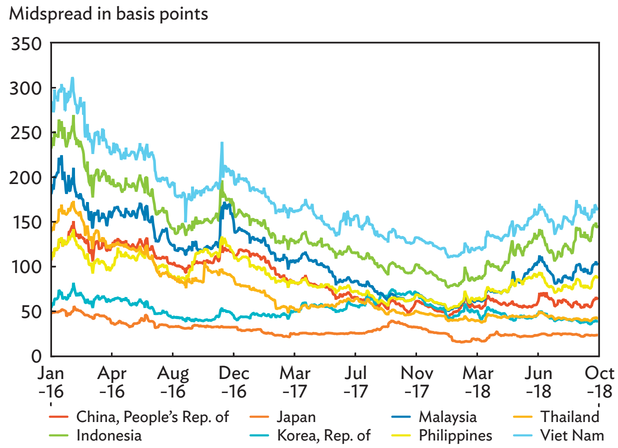
Notes:
1. Changes between 31 August 2018 and 15 October 2018.
2. A positive (negative) value for the foreign exchange rate indicates the appreciation (depreciation) of the local currency against the United States dollar.

Source: Bloomberg LP.

The Korean won was the region's second-worst-performing currency, depreciating 1.9% against the US dollar. A sharp weakening was observed in early October when the stock market experienced a sell-off. The Chinese renminbi weakened 1.2% over concerns about slowing economic growth, the ongoing trade dispute with the US, and the People's Bank of China lowering the reserve requirement ratio on 7 October. The Malaysian ringgit continued to weaken, primarily due to external developments and negative sentiment toward emerging market currencies. The Philippine peso continued to weaken, breaching the PHP54–USD1 level due to high inflation and rising yields. The BSP raised its policy rates another 50 basis points on 27 September, bringing the cumulative benchmark rate hike for the year to 150 bps. The Thai baht also fell in early October along with other currencies in the region, but has since recovered.

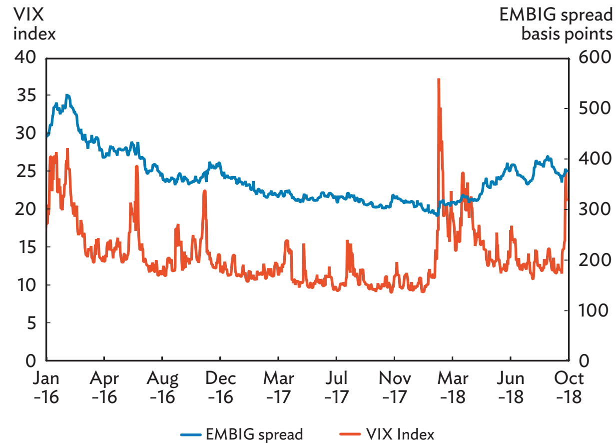
CDS spreads in emerging East Asia remained relatively stable in September as financial volatility in Argentina and Turkey receded somewhat. However, in most markets in the region, the sharp rise in US Treasury yields in early October resulted in an uptick in CDS spreads which have since remained elevated (**Figure D**). Indonesia's CDS spreads rose the most in the region, due to the

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 October 2018.
Source: Bloomberg LP.

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



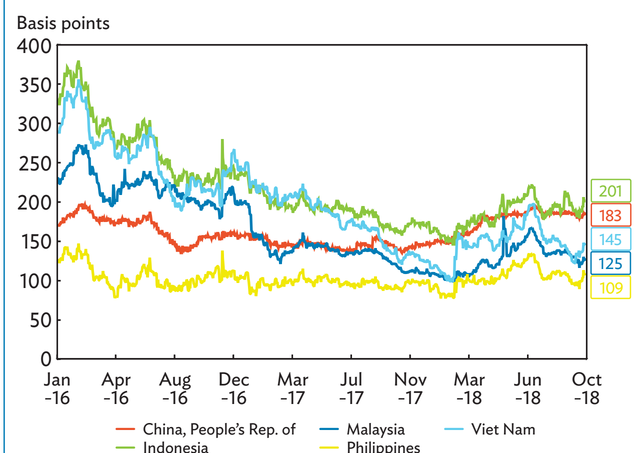
EMBIG = Emerging Markets Bond Index Global, VIX = Chicago Board Options Exchange Volatility Index.
Note: Data as of 15 October 2018.
Source: Bloomberg LP.

depreciation of the rupiah and rising interest rates. CDS spreads in the Republic of Korea and Thailand also rose in October, but not as sharply as in other markets in the region given their stable macroeconomic fundamentals. In the Republic of Korea, easing geopolitical tensions also contributed to lower CDS spreads.

The CBOE Volatility Index rose sharply in October due to the slump in US equity markets (**Figure E**). Meanwhile, the EMBIG spread trended downward in September as financial volatility in Argentina and Turkey receded. However, spreads rose again in October following the sharp rise in US Treasury yields (**Figure F**).

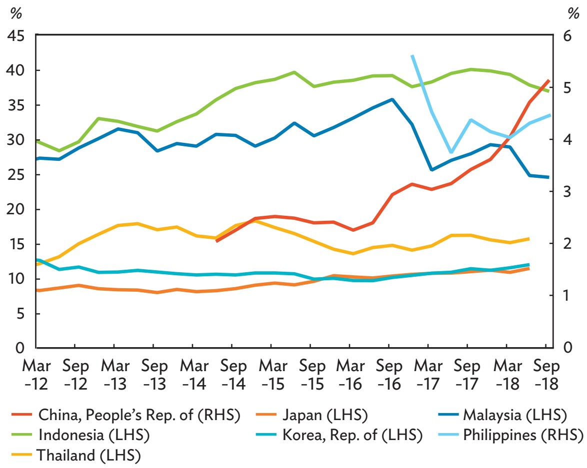
Foreign holdings as a share of total LCY government bonds fell slightly in Q3 2018 across emerging East Asia, except in the PRC where they continued to rise (**Figure G**). In Indonesia, the foreign holdings share fell from 37.8% at the end of June to 36.9% at the end of September. Aggregate net foreign investment flows to Indonesia's LCY government bond market turned positive in Q3 2018, particularly in July and August. The two policy rate hikes by Bank Indonesia during the quarter improved investor sentiment. However, the outstanding amount of LCY government bonds rose at a faster pace, resulting in a slightly lower foreign holdings share. Foreign holdings in Malaysia slightly fell from 24.8% of the total LCY government bond market at the end of June to 24.6% at the end of September amid capital outflows in August and September that were partly due to maturities and adverse external factors. Foreign holdings of LCY government bonds in the PRC remained small as a share of the total, but continued to rise from 4.7% at the end of June to 5.1% at the end

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 October 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 end-September 2018 except for Japan, the Republic of Korea, and Thailand (end-June 2018).
Source: *AsianBondsOnline*.

of September. The steady pick-up has been a result of the opening up of the PRC's bond market to foreign investors. In addition, the PRC announced regulations providing tax breaks to foreign investors for a period of 3 years. The foreign holdings shares in Japan, the Republic of Korea, and Thailand were also up slightly in Q2 2018, the quarter for which the latest data are available.

Despite current signs of vulnerability in emerging markets, emerging East Asia continues to grow at a healthy pace and enjoy relatively benign financial conditions. Nevertheless, downside risks outweigh upside risks, and they appear to be increasing. There are mounting concerns that downside risks may seriously jeopardize the good run of strong growth and financial stability that the region and the world have enjoyed during the last few years. At the same time, significant new technological developments can contribute to stronger and more efficient financial systems. One major new technology with promising potential applications in the financial industry, especially in less-developed economies, is distributed ledger technology (**Box 2**).

The most immediate threat to emerging East Asia's financial stability comes from a generalized risk aversion among global investors toward emerging markets. Some emerging market currencies, most notably the Argentine peso and Turkish lira, came under severe stress in Q3 2018 due to economy-specific factors. In the case of Argentina, the direct catalyst of the sharp depreciation was a request by the government for an earlier-than-scheduled disbursement of its IMF loan. The unexpected request combined with an excessively gradual and cautious approach to necessary reforms, such as reducing the fiscal deficit that ballooned under the previous government, spooked the market and sent the peso tumbling. Like Argentina, Turkey suffers from weak fundamentals and macroeconomic instability, including large current account and fiscal deficits, and high inflation. The Turkish lira's plunge was triggered by the authorities' failure to adopt orthodox policies to safeguard stability, most notably the central bank's failure to raise interest rates in the face of rising inflation. A diplomatic dispute with the US centered on Turkey's detention of a US pastor led to a doubling of US tariffs on Turkish exports and further damaged investor sentiment.

The intense pressures against the Argentine peso and the Turkish lira seem to have moderated somewhat in recent weeks due to new developments in both economies. On 26 September, the IMF expanded the amount of its loan package to Argentina in exchange for the country's commitment to stick to a flexible exchange rate regime. In addition to expanding the loan package from USD50.0 billion, which was already the IMF's biggest ever, by more than 14% to USD57.1 billion, the IMF agreed to accelerate the speed of its loan disbursement. The Government of Argentina signaled that it would move faster and more concretely to reduce the fiscal deficit and implement other necessary reforms. On 13 September, the Turkish central bank raised its benchmark interest rate from 17.5% to 24.0% in a drastic bid to curtail inflation and calm investor sentiment. In August, inflation had soared to a 15-year high of almost 18% while the lira slid to a new low, down more than 40% since the beginning of the year. The market's immediate reaction to the interest rate hike was positive, with the lira gaining around 3%. Market sentiment received a further boost on 12 October when the Turkish government release a US pastor who had been detained for more than 2 years on espionage charges. His release was widely expected to improve the severely strained relations between Turkey and the US, which had been a significant factor in the deterioration of investor confidence.

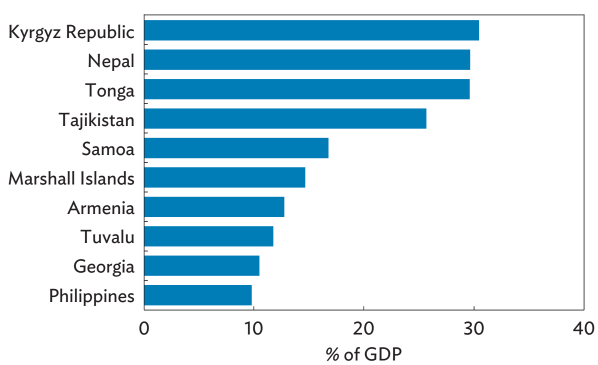
Box 2: The Promise of Distributed Ledger Technology for Financial Development

Distributed ledger technology (DLT), alternatively known as blockchain technology, opens opportunities for applications that can revolutionize the financial sector. DLT-based clearing and settlement is beginning to replace inefficient back-office infrastructure. 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: remittances, emergency aid delivery, microcredit, and trade finance. Collaborative efforts joining governments, international agencies, and technology firms are demonstrating the potential to deliver tangible improvements in development outcomes. The challenges that so far have limited DLT's applicability to development efforts call for further technical, infrastructural, and regulatory efforts to overcome them. Some applications and their issues are discussed below based on Ferrarini, Maupin, and Hinojales (2017).

Remittances and emergency aid delivery. Remittances are a stabilizing source of foreign exchange for many economies in Asia and the Pacific, accounting in 2016 for 30.5% of gross domestic product in the Kyrgyz Republic, the highest percentage in the region, and for 9.8% in the relatively large Philippine economy (**Figure B2.1**). However, sending money to relatives from abroad is slow and costly. Transfers can take several days and banks and money transfer companies typically charge 7% of the amount transacted, and sometimes much more (World Bank 2015). To avoid these costs, remitters often transfer funds through informal channels, such as by asking visiting friends or relatives to carry cash.

Figure B2.1: Top 10 Remittance-Recipient Economies in Developing Asia, 2016



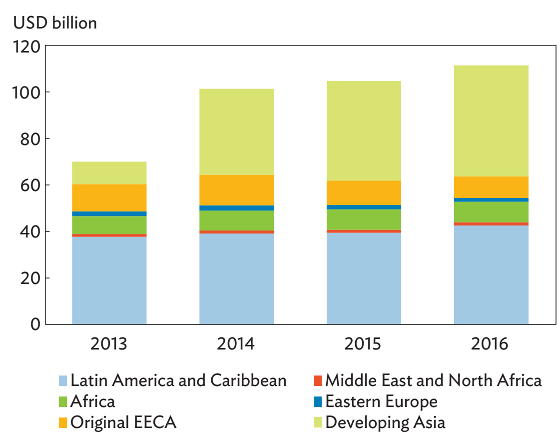
GDP = gross domestic product.
Source: Asian Development Bank.

Several companies now offer DLT-based remittance services in a few Asian economies. Compared with traditional channels, which require a centralized entity to perform the actual remittance, DLT services save time and transaction costs by removing intermediating banks from the settlement process. The widespread use of internet-enabled mobile phones among the poor extends DLT-based remittances to the unbanked far beyond the reach of the traditional financial channels (Dong et al. 2016).

Similarly, DLT-based remittance platforms offer viable solutions for the delivery of emergency aid, either to targeted population segments or in response to a crisis. For example, a DLT company used biometric data to create unique digital IDs for 500 Syrian refugees at a camp in Lebanon. The refugees then received digital vouchers tied to their IDs and redeemed them for goods at a local supermarket. Similar methods have been used to deliver social welfare entitlements, such as food parcels and cash, to thousands of recipients in Indonesia and Jordan. The same model is amenable to targeting any specific recipient group or area, such as the distribution of aid in the aftermath of disasters.

Microcredit. Catering to the financially excluded, microcredit continues to expand, especially in developing Asia and Latin America (**Figure B2.2**). It typically operates at the village level, leveraging the capacity of poor communities and economically disenfranchised groups, in particular women, to assume joint liability and monitor peer compliance. While lenders seek to lower the high transaction costs of

Figure B2.2: Loans from Microfinance Institutions



EECA = Eastern Europe and Central Asia, USD = United States dollar.
Source: Asian Development Bank calculations using the MIX Market database.

continued on next page

Box 2: The Promise of Distributed Ledger Technology for Financial Development *continued*

small-scale lending, they often incur substantial costs in dispatching loan officers to periodic community meetings. As a peer-to-peer communications system that distributes trust among members of a shared network by ensuring decision by consensus, DLT is particularly well suited to microcredit and to microfinance more broadly. It functions as an open accounting system, placing borrowers' transaction histories on a shared ledger, which eliminates the need for outside audits or the documentation of loan applicants' credit and income histories.

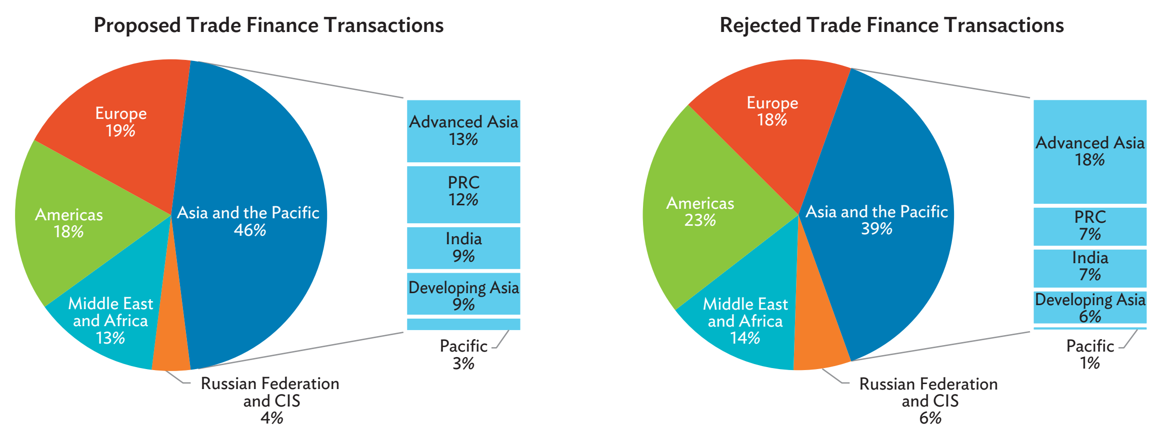
DLT enables unbanked individuals to build a personal credit history and thus a bankable reputation gradually and organically. It enables lenders to monitor and assess the capital loaned, the areas of operation, and any development opportunities. Pilot applications suggest that, compared with traditional centralized microfinance operations, DLT incurs significantly lower overhead expenses and achieves faster transaction times. For example, Japanese companies in 2016 successfully operated DLT microcredit transactions in Myanmar. The evidence gathered during these trials suggests that the DLT platform will, assuming full-fledged commercial implementation by 2019, reduce costs to one-tenth of those incurred by traditional microcredit operations in Myanmar (Redaktion 2016, Del Castillo 2016).

Trade finance. The global trade finance gap was estimated at USD1.5 trillion in 2016 (Asian Development Bank 2017). Shortfalls were particularly severe in Asia, which accounted for the largest share of proposals—firms' requests to banks for trade finance support—and rejections (**Figure B2.3**). Access to trade finance is particularly difficult for small and medium-sized enterprises (SMEs) because they often lack collateral, a documented history of past commercial and financial transactions, or sufficient knowledge of the finance industry and instruments on offer. While domestic and regional initiatives help bridge this gap, including some led by multilateral development banks, the expectation is mounting that technology can make a difference.

Some innovation is coming from the leading companies in global e-commerce. They have established their own lending arms, catering mostly to SMEs, and have provided training and advice targeted to smaller companies. However, except in the People's Republic of China, these services have yet to penetrate developing Asia, where the supply gap for SME financing remains particularly acute (The Banker 2017). In these economies, DLT could be a real game changer by lowering costs and doing away with the paperwork and bureaucratic hurdles that preclude access for SMEs.

Pilot projects demonstrate that DLT can take the form of broadly accessible and scalable smart contracts that execute automatic money transfers and other operations as merchandise crosses international borders or as predefined commercial and financial triggers are activated. For example,

Figure B2.3: Proposed and Rejected Trade Finance Transactions by Region



Advanced Asia = Hong Kong, China; Japan; Republic of Korea; and Singapore; CIS = Commonwealth of Independent States; Developing Asia = Developing Asia excluding the PRC and India; PRC = People's Republic of China.
Source: ADB (2017b).

continued on next page

Box 2: The Promise of Distributed Ledger Technology for Financial Development *continued*

an Indian bank reportedly used a private permissioned ledger based on the Ethereum protocol to reduce to a few hours the time required to issue a letter of credit, which under industry norms takes up to a month, while improving the transparency of the entire operation (Deloitte 2017). Broader efforts are also under way in the region. The Hong Kong Monetary Authority, for example, aims to launch a DLT-driven trade finance platform by the end of 2018. In collaboration with the Monetary Authority of Singapore, it is establishing the Global Trade Connectivity Network, which will connect DLT-based trade finance programs in the two economies, with plans to expand across the region and globally.

References

Asian Development Bank. 2017. Trade Finance Gaps, Growth, and Jobs Survey. *ADB Briefs*. No. 83. http://dx.doi.org/10.22617/BRF178995-2.

The Banker. 2017. *Small Firms Go Global*. October. Vol. 168. Issue 1101. pp. 22–27.

M. Del Castillo. 2016. Myanmar Microfinance Firm Trials Blockchain. *Coindesk*. 7 July. https://www.coindesk.com/myanmars-largest-microfinace-company-conducts-blockchain-experiment/.

Deloitte. 2017. *Trade Financing Redefined Using Blockchain Technology: A Case Study*. https://www2.deloitte.com/in/en/pages/strategy/articles/trade-financing-redefined-using-blockchain-technology.html.

H. Dong, K. Habermeier, R. Leckow, V. Haksar, Y. Almeida, M. Kashima, N. Kyriakos-Saad, H. Oura, T. Saadi Sedik, N. Stetsenko, and C. Verdugo-Yepes. 2016. Virtual Currencies and Beyond: Initial Considerations. *IMF Staff Discussion Note*. SDN/16/03. https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf.

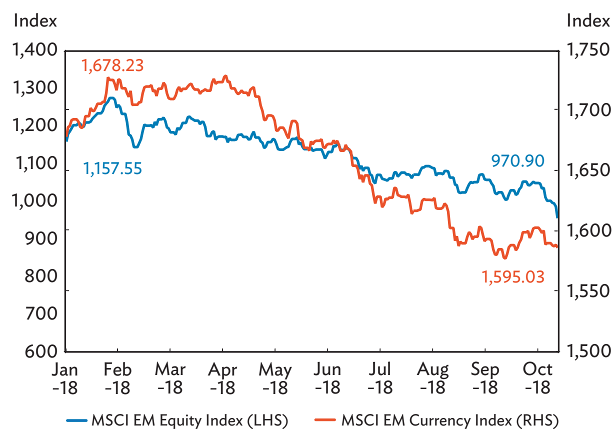
A. Ferrarini, J. Maupin, and M. Hinojales. 2017. Distributed Ledger Technologies for Developing Asia. *ADB Economics Working Paper Series*. No. 533. Manila: Asian Development Bank.

Redaktion. 2016. *The First Blockchain Microfinance Service is Implemented by Japanese Tech Firms*. https://www.bitcoinnews.ch/4237/microfinance/.

World Bank. 2015. *Remittance Prices Worldwide*. https://remittanceprices.worldbank.org/en.

Despite the fact that Argentina and Turkey appear to have averted crisis, at least for the time being, global investor sentiment has turned against emerging markets as a whole. The MSCI Emerging Markets Currency Index fell to its lowest level in more than a year on 11 September although it has recovered a little since then. Similarly, the MSCI Emerging Markets Equity Index has declined by more than 17% since the beginning of the year (**Figure H**). The overall trend of emerging market equity and currency markets is clearly downward. The broad risk aversion toward emerging markets is due to a combination of factors. The ongoing normalization of US monetary policy and the consequent increase in US interest rates is making emerging market financial assets less attractive. The tightening of global liquidity conditions is encouraging investors to take a closer look at emerging markets with large external debt, large current account deficits, and other imbalances that could affect their ability to service external debt as interest rates rise. The generalized strength of the US dollar and the corresponding depreciation of emerging market currencies will also adversely affect debt-servicing capacity. Yet another major source of

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



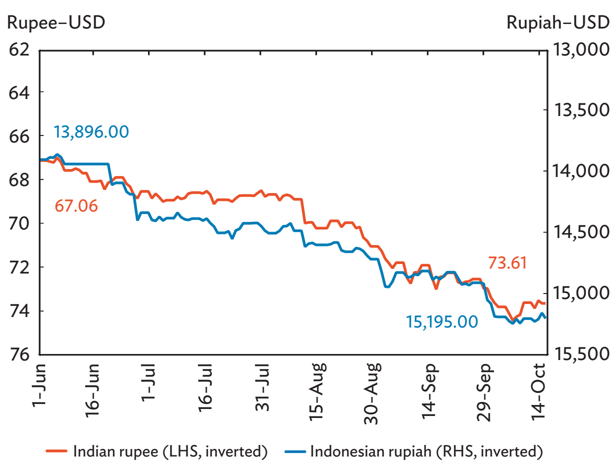
EM = emerging markets, LHS = left-hand side, MSCI = Morgan Stanley Capital International, PRC = People's Republic of China, RHS = right-hand side, US = United States.
Notes: The MSCI Emerging Markets (EM) Currency Index tracks the performance of 25 emerging-market currencies relative to the US dollar. More than half of the index weight are Asian currencies (50.2%). The currency index is on the dollar value of the local currency. The MSCI Emerging Markets Equity Index captures large and midcap representation across 24 emerging markets. Shares are as follows: the PRC (31.2%); Rep. of Korea (14.01%); Taipei,China (11.84%); India (8.99%); South Africa (6.77%); and other (27.13%).
Source: Bloomberg LP.

investor concern is a broad slowdown of economic growth in emerging markets. Although some regions, most notably developing Asia, seem to be more resilient than others, emerging markets as a whole are losing growth momentum. Finally, heightened uncertainty in the global economic environment, most notably the escalation of global trade tensions, is casting a long shadow over the financial stability and growth prospects of emerging markets.

While developing Asia continues to grow at a robust pace and enjoy relatively stable financial conditions, the region has not been entirely immune from the closer scrutiny of global investors. Although no economy in the region has suffered anything like the stress levels of Argentina and Turkey, some are experiencing minor signs of instability. In particular, the Indian rupee and the Indonesian rupiah have come under significant pressures that show no signs of abating (**Figure I**). The two economies were the hardest hit in Asia during the "Taper Tantrums" of 2013. Then, as now, the common denominator seems to be a sizable current account deficit, even if both economies have relatively sound fundamentals overall. Bank Indonesia raised its benchmark interest rate five times between mid-May and late September, from 4.25% to 5.75%. The repeated rate hikes have signaled the Indonesian central bank's strong commitment to financial and macroeconomic stability.

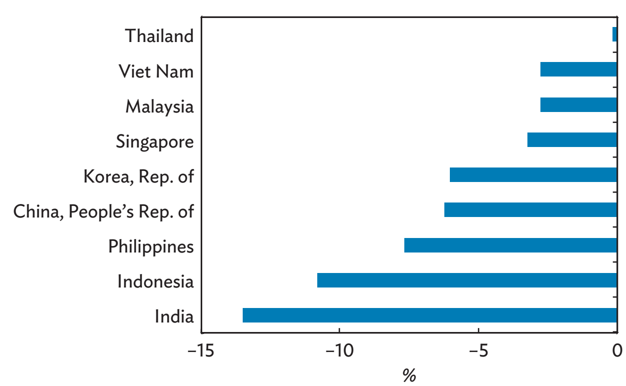
The weakness of Asian currencies relative to the US dollar in 2018 is by no means limited to the Indian rupee and Indonesian rupiah (**Figure J**). In fact, the US dollar has appreciated against nearly all currencies in developing Asia, although it has appreciated more against some currencies than others. The ongoing interest rate hikes by the Federal Reserve and the enduring robust growth momentum of the US economy help to explain the remarkable strength of the dollar. Of particular interest among regional currencies is the depreciation of the Chinese renminbi, which is sliding toward the psychologically significant exchange rate of CNY7–USD1. The renminbi has been among Asia's worst-performing currencies in 2018. On 18 October, the renminbi fell to a 21-month low. A widening interest rate differential with the US, the reversal of the current account balance from surplus to deficit (albeit a small one) in the first quarter of the year, trade tensions with the US, and a sharp slowing of capital inflows into the PRC's equity and bond markets have all contributed to the renminbi's weakness. However, the risks of more serious financial instability in the PRC and the rest of developing Asia seem limited at this point. Investors seem to increasingly discriminate between emerging markets with strong fundamentals versus those with weak fundamentals, even as they show a broader risk aversion toward emerging markets as a whole. By and large, more-discerning investors is good news for Asian markets.

Figure I: Indian Rupee and Indonesian Rupiah against the United States Dollar, 1 June–18 October 2018



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

Figure J: Depreciation of Local Currency against the United States Dollar, 1 January–18 October 2018



Note: Data reflect changes between 1 January 2018 and 18 October 2018. These are changes in dollar value of per unit of local currency.
Source: Bloomberg LP.

Another major risk to Asia's financial and economic stability—the faster-than-expected normalization of US monetary policy and thus the unexpectedly rapid increase of US interest rates—will further exacerbate the generalized risk aversion toward emerging markets. Financial stability in emerging markets will suffer from currency depreciation vis-à-vis the US dollar as well as capital outflows, both of which will gain further momentum if the Federal Reserve raises the benchmark rate by more and at a faster pace than expected. The federal funds rate has been raised eight times since December 2015 when the Federal Reserve began to normalize monetary policy. When it announced the latest rate hike to a range of 2.00%–2.25% on 26 September, the Federal Reserve indicated that its outlook for the US economy was very positive. Therefore, surprisingly fast rate hikes cannot be ruled out. In Asia's case, in addition to the potentially adverse impact on the financial stability of emerging markets, the rate hikes pose a substantial additional risk stemming from the region's accumulation of private debt since the global financial crisis (**Box 3**). Tightening global conditions triggered by monetary policy normalization in the US are likely to increase the debt servicing burdens of companies and households that borrowed heavily during the recent era of exceptionally low global interest rates.

A number of downside risks hover over the world economy and global financial system. Foremost among these is escalating global trade tensions. Of particular concern is the heated trade conflict between the world's two biggest economies, the PRC and the US. At the time of writing, there were no signs of de-escalation or even any tangible signs that the two governments would try to negotiate a solution to a conflict that is ultimately detrimental for both economies and the world economy at large. To the contrary, on 24 September the US imposed tariffs on USD200 billion worth of Chinese goods and the PRC retaliated with tariffs on USD60 billion worth of American goods. The effects of the PRC–US trade conflict will not be limited to its damage to trade. It will also harm business confidence and disrupt business plans, and thus harm investment. Financial markets, especially equity markets, may also be impacted. Another current risk is global oil price volatility driven by geopolitical developments in a number of different parts of the world. Amid the current global environment of heightened uncertainty, downside risks clearly outweigh upside risks.

Box 3: Financial Business Cycles versus Normal Business Cycles—An Empirical Comparison

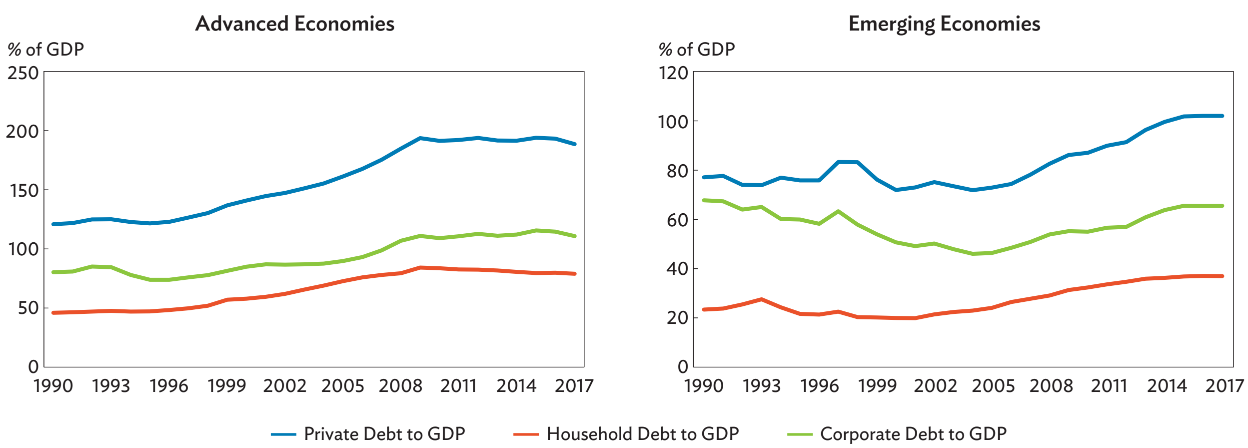
The current tightening of global liquidity conditions triggered by the United States Federal Reserve's monetary policy normalization brings to the fore the relationship between financial cycles and real-economy business cycles. In this connection, a number of studies find that financial upturns and downturns tend to inflict more damage on the real economy than normal business cycle recessions. Park, Shin, and Tian (forthcoming) empirically revisit this issue and analyze whether there are differences between the real-economy effects of financial recessions associated with household debt and corporate debt.

The first step of their empirical analysis identifies business cycles for the sample period 1970–2014. The Hodrick–Prescott filter is applied to per capita log real gross domestic product data to detect business cycle expansions and disruptions in 21 advanced economies and 17 emerging market economies. The procedure generates a total of 195 peaks in advanced economies and 140 peaks in emerging market economies.

The second step is to differentiate financial peaks from normal peaks using two definitions. The first definition follows Jordà, Schularick, and Taylor (2011) where financial crisis peaks are peaks that immediately precede financial crises. The second definition is based solely on the buildup speed of private debt, where a financial peak occurs if the annual change in private debt is higher than the sample median in the preceding boom. For economies with complete and disaggregated private debt data, financial crisis peaks (or financial peaks) were classified further into household debt- and corporate debt-driven peaks. If the growth in household debt is greater than corporate debt, this is classified as a household debt-driven financial crisis peak (or financial peak) and otherwise as a corporate debt-driven financial crisis peak (or financial peak). **Figure B3.1** shows the dynamics of private debt in advanced economies and emerging market economies in recent years. While the ratio of private debt to gross domestic product has leveled off in advanced economies since the global financial crisis, it grew rapidly in emerging market economies

Applying the two alternative definitions of financial peak, the authors identify (i) 26 financial crisis peaks (10 household financial crisis peaks and 12 corporate financial crisis peaks) under the Jordà, Schularick, and Taylor (2011) definition; and (ii) 65 financial peaks (20 household financial peaks and 24 corporate financial peaks) under the debt buildup speed definition. The number of household and corporate financial crisis peaks (financial peaks) do not add up to the total number of financial crisis peaks (financial peaks) since not all identified financial crisis

Figure B3.1: The Dynamics of Private Debt, Household Debt, and Corporate Debt



GDP = gross domestic product.
Notes: Debt is measured as a share of GDP. The advanced economies are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States. The emerging economies are Argentina; Brazil; Colombia; the Czech Republic; Hong Kong, China; Hungary; Indonesia; Israel; Malaysia; Mexico; Poland; the Republic of Korea; the Russian Federation; Saudi Arabia; Singapore; Thailand; and Turkey.
Source: Park, Shin, and Tian (forthcoming).

continued on next page

Box 3: Financial Business Cycles versus Normal Business Cycles—An Empirical Comparison

continued

peaks (financial peaks) can be disaggregated into either a household or corporate financial crisis peak due to data limitations. The business cycle identification process shows that financial crises are more associated with a rapid increase in corporate debt than in household debt. This differs sharply from recent studies that recessions are largely attributed to household debt buildups.

The behavior of three key real-economy variables—output, consumption, and investment—were examined during financial crisis peaks in advanced economies and in the full sample, which includes emerging market economies. In advanced economies, the average growth rates of real-economy variables are higher during expansions before normal peaks than before financial crisis peaks and much lower after financial crisis peaks than after normal peaks. The average output growth rate during corporate financial crisis peaks is slightly lower than in household financial crisis peaks during expansions and substantially lower during recessions. This suggests that corporate debt buildups can be as damaging as household debt buildups. A similar pattern can be observed when financial peaks are used instead of financial crisis peaks.

Significantly, the buildup speed of private debt—both household and corporate—does not slow down after normal peaks, financial crisis peaks, or household and corporate financial crisis peaks. This implies that debt deleveraging during recessions is a difficult process. Furthermore, there is strong evidence that price increases in housing and equities decline substantially after financial crisis peaks and financial peaks, but not after normal peaks, regardless of whether the financial crisis peaks and financial peaks are driven by household or corporate debt.

In emerging market economies, the growth rates of output, consumption, and investment are comparable during expansions across normal peaks and financial crisis peaks, but the growth rates are much lower for financial crisis peaks during recessions. There is no clear evidence of debt deleveraging during recessions. There are more financial crisis peaks where corporate debt increased more rapidly than household debt. Output growth related to corporate financial crisis peaks is slightly lower both during expansions and recessions. The growth rates of consumption and investment are also lower during financial crisis peak recessions induced by corporate debt rather than household debt. These findings indicate that corporate debt buildups and household debt buildups are equally damaging in emerging market economies.

Let us now compare normal peak recessions versus financial peak recessions, rather than financial crisis peak recessions. The estimations follow the Jordà, Schularick, and Taylor (2011) approach, which estimates the cumulative response of output, consumption, and investment over a time horizon of 1–5 years. The results show that in advanced economies, the cumulative changes in output are significantly lower after financial peaks than after normal peaks. Cumulative changes in consumption and investment are also lower in financial recessions, albeit by a very small margin. In the full sample that includes emerging market economies, the pattern of output changes in normal and financial recessions is broadly consistent with the pattern for advanced economies. The key difference is that the effect of financial recessions is even more pronounced for investment than for output, which implies that financial recessions adversely affect investment in emerging market economies.

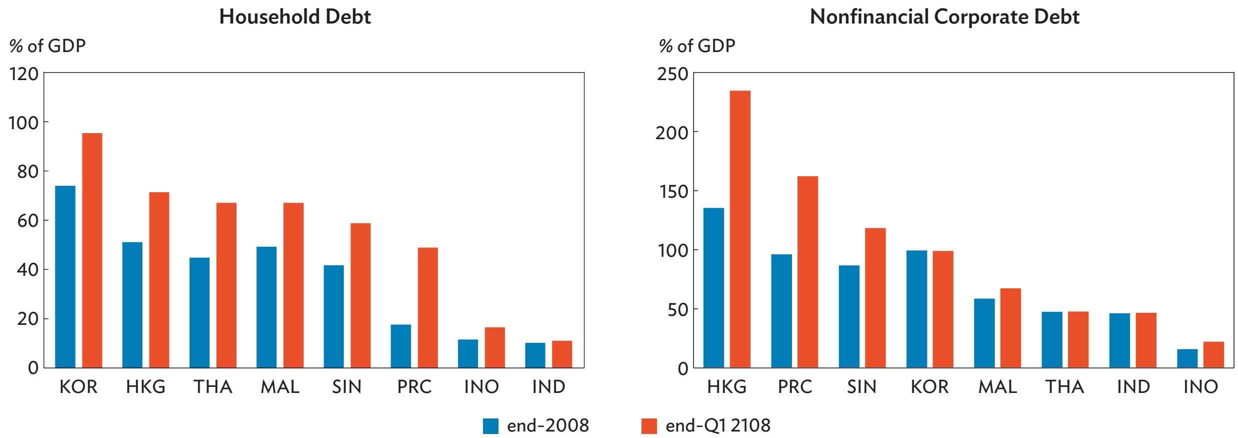
Further analysis was done to analyze the effects of household versus corporate financial peaks. In advanced economies, the cumulative changes in output are substantially lower in both household and corporate financial recessions than in normal recessions, and there is no significant difference between household and corporate financial recessions. This reconfirms that the output impact of corporate financial recessions is as damaging as that of household financial recessions. For cumulative changes in consumption, the results suggest that neither household nor corporate financial recessions are different from normal recessions. Only cumulative investment changes related to household financial recessions are different from those related to normal recessions. If we extend the sample to include emerging market economies, the number of corporate financial peaks increases more than household financial peaks. The results for the full sample are broadly similar to those for advanced economies, except that cumulative investment changes related to corporate financial recessions are now statistically different from normal recessions.

Overall, the empirical findings of Park, Shin, and Tian (forthcoming) are consistent with those of earlier studies that find recessions associated with financial cycles tend to inflict more damage that normal business cycle recessions. Their results also indicate that corporate financial recessions and household financial recessions are equally detrimental

continued on next page

Box 3: Financial Business Cycles versus Normal Business Cycles—An Empirical Comparison
continued

Figure B3.2: Ratio of Debt to GDP in Selected Economies in Developing Asia



GDP = gross domestic product; HKG = Hong Kong, China; IND = India; INO = Indonesia; MAL = Malaysia; PRC = People's Republic of China; Q1 = first quarter, ROK = Republic of Korea, SIN = Singapore; THA = Thailand.
Note: End-Q1 2018 is an estimate.
Source: Institute of International Finance. 2016. *EM Debt Monitor March 2016*. Washington, DC.

to the real economy. While there are concerns over the rapid growth of corporate debt in some Asian economies and over household debt in other Asian economies (**Figure B3.2**), the Park, Shin, and Tian (forthcoming) analysis points to a need for policymakers in the region to closely monitor the growth of both types of private debt.

References

O. Jordà, M. Schularick, and A. M. Taylor. 2011. Financial Crises, Credit Booms, and External Imbalances: 140 Years of Lessons. *IMF Economic Review* 59 (2). pp. 340–78.

D. Park, K. Shin, and S. Tian. Household Debt, Corporate Debt, and Real Economy: Some Empirical Evidence. Forthcoming.