Introduction: Bond Yields Largely Up in Emerging East Asia

Yields on 2-year and 10-year local currency (LCY) government bonds in emerging East Asia were largely up between 1 September and 31 October 2017 on the back of healthy global economic growth and tightening global liquidity (**Table A**).[2] The rise in yields in the region tracked the trend in major advanced economies, which saw higher yields during the review period. Bond yields rose the most in the Republic of Korea, where monetary policy tightening is widely expected, and in Hong Kong, China, where yields closely track the United States (US) yield movements.

Yields rose to varying degrees in five of the six Association of Southeast Asian Nations markets included in our assessment. In Malaysia and Thailand, 10-year yields increased slightly. Monetary policy was the catalyst for yield declines in Viet Nam, the only emerging East Asian market that saw declining yields during the review period. Yields fell for 2-year and 10-year government bonds, partially because the State Bank of Vietnam cut the refinancing rate by 25 basis points to 6.25% in July after economic growth in the first half of the year fell far below the 6.7% annual growth target. In the third quarter (Q3) of 2017, however, economic growth rebounded to 7.5% year-on-year (y-o-y), bringing year-to-date growth up to 6.4%. In the People's Republic of China, bond yields rose on the back of the government's ongoing deleveraging efforts as well as robust economic growth.

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	26	21	–	4.0	–
United Kingdom	28	28	4	0.7	2.6
Japan	1	7	3	9.3	(3.0)
Germany	(2)	(2)	(3)	9.0	(1.8)
Emerging East Asia					
China, People's Rep. of	12	20	(4)	0.8	(1.2)
Hong Kong, China	32	37	–	1.0	0.3
Indonesia	10	10	(6)	2.4	(1.8)
Korea, Rep. of	45	30	12	7.0	0.2
Malaysia	(2)	4	(7)	(1.4)	0.9
Philippines	22	13	3	5.1	(0.8)
Singapore	14	7	–	3.0	(0.4)
Thailand	5	3	(6)	6.4	(0.2)
Viet Nam	(21)	(15)	(7)	6.2	0.1
Select European Markets					
Greece	(54)	(11)	(49)	(7.3)	(1.8)
Ireland	(10)	(10)	(3)	3.9	(1.8)
Italy	(10)	(26)	(21)	4.3	(1.8)
Portugal	(11)	(67)	(49)	5.4	(1.8)
Spain	3	(9)	(2)	1.9	(1.8)

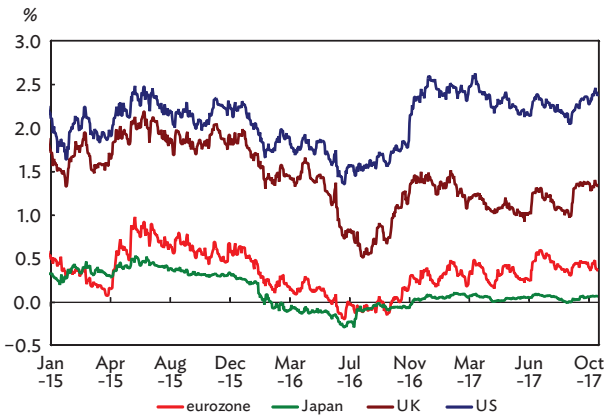
( ) = negative, – = not available, bps = basis points, FX = foreign exchange.
Notes:
1. Data reflect changes between 1 September 2017 and 31 October 2017.
2. A positive (negative) value for the FX rate indicates the appreciation (depreciation) of the local currency against the United States dollar.
Sources: 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.

Between 1 September and 31 October, 2-year and 10-year government bond yields in major advanced economies climbed as the global economy continued to strengthen, increasing the likelihood of more forceful monetary policy normalization (**Figure A1**). Between April and October, the International Monetary Fund (IMF) raised its 2017 and 2018 global gross domestic product (GDP) growth forecasts by 0.1 percentage point each to 3.6% and 3.7%, respectively. For advanced economies, the IMF upgraded its 2017 growth forecast from 2.0% to 2.2%. The growth forecast for emerging markets was also upgraded from 4.5% to 4.6% for 2017 and from 4.8% to 4.9% for 2018. Between April and September, the Asian Development Bank (ADB) raised its GDP growth forecasts for developing Asia from 5.7% to 5.9% for 2017 and from 5.7% to 5.8% for 2018.[3]

While GDP growth forecasts are being revised upward, inflation forecasts are being lowered. Relative to its April forecast, the IMF cut its October forecast for 2017 consumer price inflation by 0.3 percentage points for advanced economies and 0.5 percentage points for emerging markets (excluding Argentina and Venezuela). For developing Asia, ADB cut its forecast for 2017 consumer price inflation from 3.0% in April to 2.4% in September. Slowing inflation is partly due to soft global commodity prices. The robust growth and subdued inflation make for the most benign global macroeconomic outlook in the post-global financial crisis period. Financial conditions underpinned by strong market sentiment and low volatility add to the optimistic mood.

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



UK = United Kingdom, US = United States.
Note: Data as of 31 October 2017.
Source: Bloomberg LP.

One key variable looming over the benign global outlook is the course of the US Federal Reserve's monetary policy normalization. How well the world economy and global financial markets adjust to the normalization will determine whether global growth momentum can be sustained. On 20 September, the Federal Reserve left its key policy rate target unchanged but signaled the start of its balance sheet normalization in October. The Federal Reserve has cited robust economic growth and an improving labor market as the reasons for its confidence in beginning balance sheet normalization. In addition, the minutes of the 21 September Federal Reserve meeting released on 11 October indicate that if the US economy remains on track, there is a high probability of another hike in the Federal Reserve's policy rate later this year. The Federal Reserve also believes that although the impact of hurricanes in the US is likely to be negative in the short-term, the economy will continue its upward trend over the medium-term. Meanwhile, the US labor market, which the Federal Reserve watches closely, continues to strengthen. The unemployment rate fell to 4.1% in October. Nonfarm payrolls rose 261,000 in October.

The European Central Bank (ECB) left its monetary policy unchanged on 26 October. It also announced that, beginning in January 2018, it will taper its monthly asset purchases to EUR30 billion monthly. While the reduced monthly asset purchases are expected to run through September, the ECB may make adjustments to the program beyond September as warranted. The monthly asset purchases currently is at EUR60 billion and will be continued up to December 2017. However, the ECB expects to keep the key policy rate at its current level even after the end of its asset purchase program. The ECB recently upgraded its economic growth forecast in September 2017 from the forecast made in June 2017. The ECB now expects the eurozone's GDP to grow by 2.2% in 2017, up from 1.9% in its previous forecast. The forecasts for 2018 and 2019 were left unchanged. The improved growth outlook led to many European markets

[3] Developing Asia comprises the 45 regional developing member economies of the Asian Development Bank.

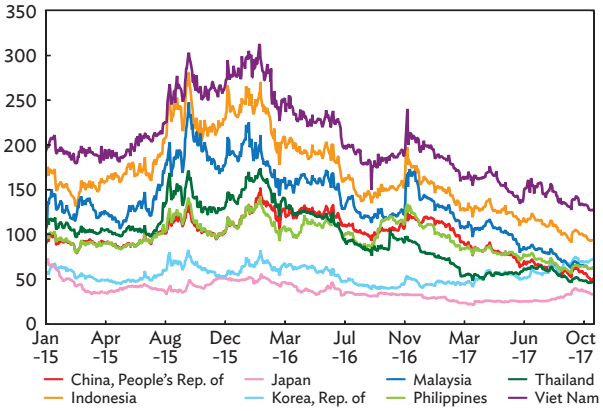
seeing improvements in their sovereign credit ratings, which partially contributed to the fall in bond yields in the eurozone (**Figure A2**). Central banks in other major advanced economies that have started monetary policy normalization by hiking policy rates include the Bank of Canada and Bank of England. The Bank of Japan likewise held its policy rate steady and noted that the economy continues to grow strongly, led by the corporate and household sectors.

While global economic growth continues to meet expectations, inflation has been lagging. In the minutes of the Federal Reserve's 21 September meeting some participants expressed concern that the US might not hit the Federal Reserve's inflation target. While consumer price inflation rose to 2.2% y-o-y in September from 1.9% y-o-y in August, core consumer price inflation was unchanged at 1.7% y-o-y. The ECB also reduced its inflation forecast. While 2017's inflation forecast remained at 1.5%, the 2018 forecast was reduced to 1.2% from 1.3% and the 2019 forecast was reduced to 1.5% from 1.6%. However, the ECB expressed confidence that inflation targets would eventually be met over the medium-term.

Reflecting the benign global macroeconomic outlook and stable global financial conditions, perceptions of financial risk and measures of volatility have largely declined. Credit default swap spreads trended down during the review period in emerging East Asian markets (**Figure B**) and in European markets (**Figure C**). Even in the few markets where credit default swap spreads widened, the changes were marginal. Alternative measures of financial risk and volatility also improved. The VIX equity index for the US and EMBIG spreads

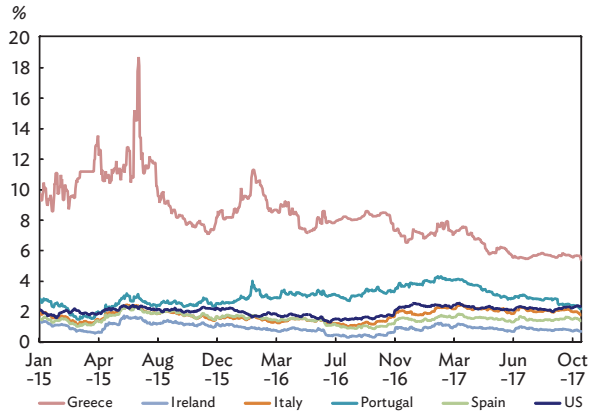
Figure B: Credit Default Swap Spreads for Select Asian Markets (senior 5-year)

Midspread in basis points



Notes:
1. Based on USD-denominated sovereign bonds.
2. Data as of 31 October 2017.
Source: Bloomberg LP.

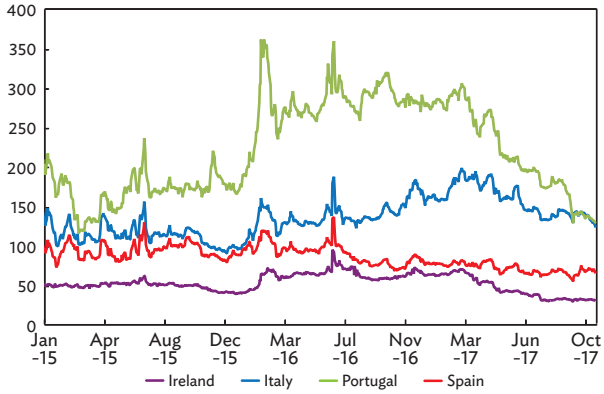
Figure A2: 10-Year Government Bond Yields in Select European Markets and the United States (% per annum)



US = United States.
Note: Data as of 31 October 2017.
Source: Bloomberg LP.

Figure C: Credit Default Swap Spreads for Select European Markets (senior 5-year)

Midspread in basis points



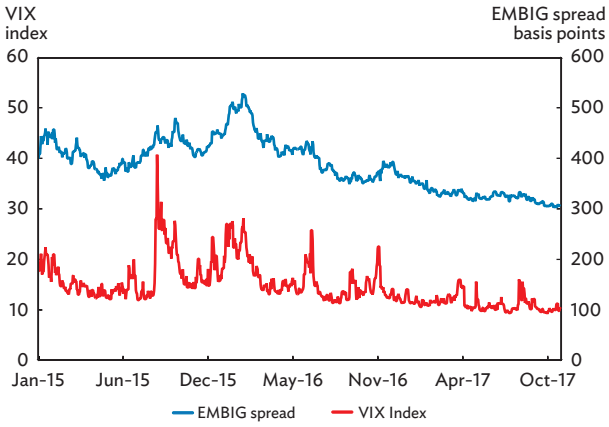
Notes:
1. Based on USD-denominated sovereign bonds.
2. Data as of 31 October 2017.
Source: Bloomberg LP.

for emerging markets declined (**Figure D**), as did the EMBI sovereign stripped spreads for individual emerging East Asian markets (**Figure E**). Most emerging East Asian equity markets rose between 1 September and 31 October, with the Republic of Korea, Thailand, and Viet Nam posting the largest gains (**Figure F**). The only exception to the region's stock market rally was Malaysia, where the market fell by a modest 1.4%.

The region's equity rally, which is part of a global bull market in equities, is fueled by strong macroeconomic fundamentals, low interest rates, and solid corporate earnings (**Box 1**).

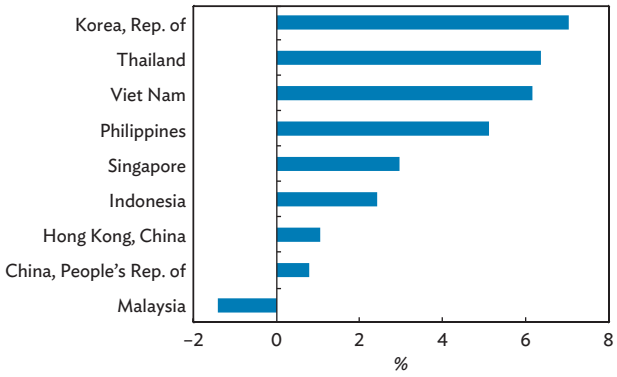
Foreign investors continue to increase their holdings of LCY government bonds in emerging East Asia (**Figure G**). The foreign holdings share in the Indonesian market remained strong at 40.0% at the end of September, buoyed by foreign inflows. Malaysia posted the largest increase in its foreign holdings share, which

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



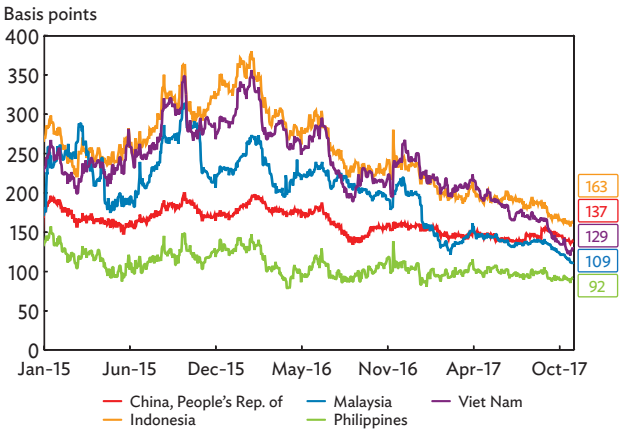
EMBIG = Emerging Markets Bond Index Global, VIX = Chicago Board Options Exchange Volatility Index.
Note: Data as of 31 October 2017.
Source: Bloomberg LP.

Figure F: Changes in Equity Indexes in Emerging East Asia



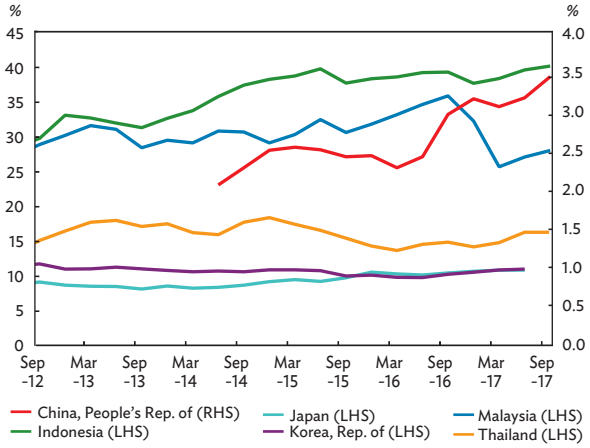
Note: Changes between 1 September 2017 and 31 October 2017.
Source: Bloomberg LP.

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



Notes:
1. Based on the United States dollar-denominated sovereign bonds.
2. Data as of 31 October 2017.
Source: Bloomberg LP.

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



LHS = left-hand side, RHS = right-hand side.
Note: Data as of 30 September 2017 except for Japan and the Republic of Korea (30 June 2017).
Source: *AsianBondsOnline*.

Box 1: The Global Equity Price Surge

Stock markets around the world have enjoyed a forceful, sustained rally since their recovery from the global financial crisis (**Figure B1.1a**). In the last 2 years, equity markets in Asia, the eurozone, and the United States (US) have been on stellar runs. On 11 October, the global bellwether S&P 500 crossed the 2,550-point milestone to reach an all-time high of 2,555. Meanwhile, the Euro Stoxx 50 has been trading at its highest level in the last 2 years and the Nikkei Index is enjoying a 20-year record high.

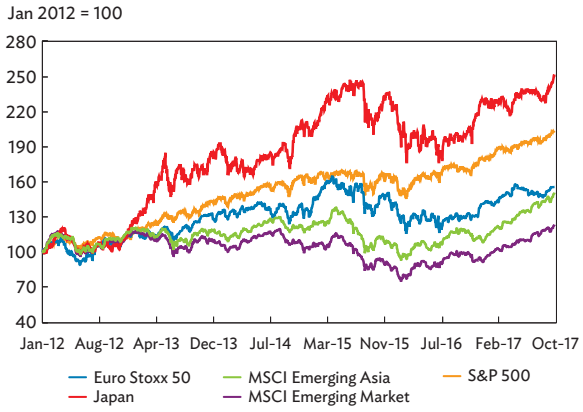
Emerging markets are also participating in the global bull run. The MSCI Emerging Markets Index, which covers 24 emerging economies and accounts for 10% of global market capitalization, continues to post gains.[a] In Asia, the MSCI Emerging Markets Asia Index is climbing to record highs. Through 16 October, the index had risen 36% since the start of the year, reflecting large gains in stock markets across emerging Asia (**Figure B1.1b**).

Furthermore, none of the major advanced-economy stock market indexes have suffered a pullback of 3% or more in 479 days, a feat that has not been seen for quite some time.

Drivers of the recent equity boom

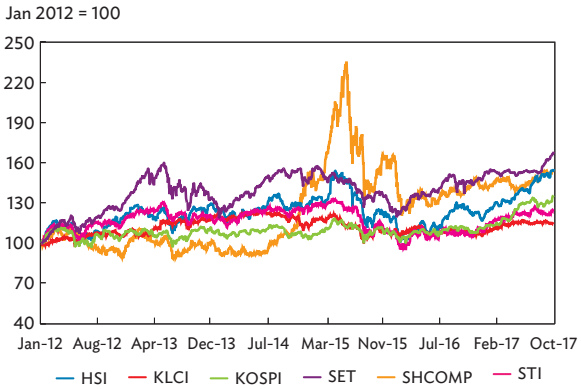
What explains this latest historic run-up in global equity markets? Analysts agree that the markets' exuberance is backed by a combination of solid economic growth and better corporate earnings. Other contributing factors include low oil prices, low inflation, and very low interest rates.

Figure B1.1a: Major Global Stock Market Indexes



MSCI = Morgan Stanley Capital International, S&P 500 = Standard and Poor's 500.
Note: Data as of 16 October 2017.
Source: Bloomberg LP (accessed 17 October 2017).

Figure B1.1b: Selected Stock Market Indexes, Emerging Asia



HSI = Hang Seng Index, KLCI = Kuala Lumpur Composite Index, KOSPI = Korea Composite Stock Price Index, SET = Stock Exchange of Thailand, SHCOMP = Shanghai Stock Exchange Composite Index, STI = Straits Times Index.
Note: Data as of 16 October 2017.
Source: Bloomberg LP (accessed 17 October 2017).

Strong macroeconomic fundamentals. The world economy is finally showing signs of more robust and sustained growth momentum. For the first time since the global financial crisis, the major industrial economies are growing solidly in a synchronized way. The eurozone, Japan, and the US are all exhibiting firmer signs of recovery. As a result, investor confidence in the global economic outlook is rising.

For emerging Asia, strong domestic consumption and investment are boosting growth. While exports continue to be an important driver of growth in the region, domestic demand has assumed a larger role in growth after the external environment deteriorated in the wake of the global financial crisis. Expansionary fiscal and monetary policies have further supported domestic demand and contributed to ample liquidity. Emerging Asia continues to lead the world in economic growth by a wide margin.[b] Furthermore, the region enjoys macroeconomic stability, as evidenced by low inflation; healthy current account balances; and huge amounts of foreign exchange reserves.

[a] For more details on MSCI Emerging Markets, see https://www.msci.com/emerging-markets. Both MSCI Emerging Markets (29.6%) and MSCI Emerging Markets Asia (40.8%) weigh stocks from the People's Republic of China with the single largest share in the respective index.

[b] The Asian Development Bank recently revised its economic growth forecast for developing Asia upward to 5.9% in 2017 and 5.8% in 2018.

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Box 1: The Global Equity Price Surge *continued*

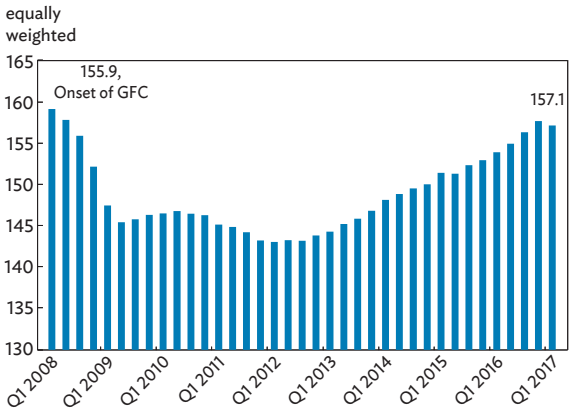
There were concerns that the US Federal Reserve's monetary normalization program would siphon off funds from emerging markets. However, the gradual rise in the US policy rate has been accompanied by clear signaling from the Federal Reserve. As a result, the monetary tightening has been well received by the markets. While this does not necessarily mean that other major economies will immediately follow suit, many central banks have made a first move. The Bank of Canada and Bank of England have hiked policy rates. The European Central Bank will also start tapering security purchases in 2018. Since many advanced economies such as the eurozone and Japan are still in a recovery phase, it is unlikely that these central banks will reverse their balance sheet holdings in the short-term to support growth. The gradual turn of monetary policies in major economies will allow emerging markets more time to prepare for global monetary tightening.[c]

Low interest rates. The unprecedented era of low interest rates, ushered in with the launch of the Federal Reserve's quantitative easing program in 2008, eventually cascaded to the rest of the global economy. Central banks across the world, including those in emerging Asia, lowered policy rates to support the recovery from the global financial crisis. Advanced-economy central banks, led by the Federal Reserve, went beyond conventional monetary policy and added trillions of dollars worth of debt securities to their balance sheets to protect financial stability and support economic growth.

The resulting surge in global liquidity depressed returns on government bond yields, pushing investors toward other assets, such as equities and real estate, in search of higher returns. For example, by the first quarter of 2017, the International Monetary Fund's global house price index had almost returned to its pre-global financial crisis peak (**Figure B1.2**).

The Federal Reserve's ongoing monetary policy normalization may ultimately tighten global liquidity conditions as the central bank raises interest rates and unwinds the massive amounts of debt securities it acquired during three rounds of quantitative easing. However, as mentioned above, the recent tightening of the US monetary policy rate has been gradual, transparent, and clearly communicated to the markets. Thus far the tightening has not destabilized global financial markets and fears of another "Taper Tantrum"—as the volatility visited upon the markets in May 2013 by then-Federal Reserve Chairman Ben Bernanke's hint of tapering security purchases—are receding.

Figure B1.2: International Monetary Fund's Global House Price Index



GFC = global financial crisis, Q1 = first quarter.
Source: International Monetary Fund's Global Housing Watch.

Given the weak performance of inflation, the European Central Bank and the Bank of Japan are unlikely to pursue tightening in the short-term. Furthermore, emerging Asian economies have largely refrained from following the Federal Reserve's lead. Meanwhile, central banks in India, Indonesia, and Viet Nam have even cut interest rates to boost growth against the backdrop of relatively subdued inflation.

Solid corporate earnings. Healthy economic growth buttressed by robust domestic demand has translated into solid revenues for firms across emerging Asia. Subdued global commodity prices have limited the growth of input costs and thus contributed to strong profit margins. Furthermore, low interest rates mean that the cost of servicing debt is still relatively manageable for most Asian firms, although those with high levels of dollar-denominated debt need to guard against the risk of US dollar appreciation resulting from the Federal Reserve's policy tightening. The combination of healthy revenue growth and limited input cost growth is translating into improved corporate earnings.

A strong rally in the information technology sector has been another key contributor to the broader equity surge both globally and regionally. Five technology giants—Facebook, Apple, Amazon, Netflix, and Google Alphabet—have accounted for the bulk of the sector's innovation in recent years. Their stocks have risen by an average of 68% in the last

[c] For more details, see Asian Development Bank. 2016. *Asia Bond Monitor November 2016*. Manila.

continued on next page

Box 1: The Global Equity Price Surge *continued*

2 years. Across the Pacific, the stocks of technology giants in the People's Republic of China, such as Alibaba Group and Tencent, have also been on a bull run, with average growth of 145%. The Republic of Korea's global technology giant Samsung Electronics earned record-high profits in both the second and third quarters of 2017. In the third quarter, the company earned around USD9.7 billion on net profit of USD54.2 billion, while year-on-year sales grew about 29% and operating profits soared about 179%.

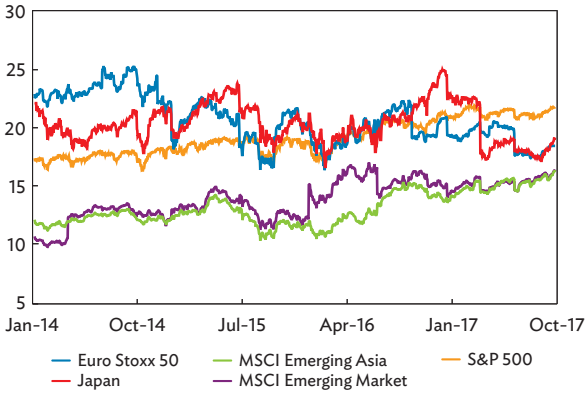
Does the equity boom pose a threat to the region's financial stability?

The surge in emerging Asia's stock and housing markets is fueling concerns over the possibility of an asset price bubble. The anxiety is heightened by the gradual tightening of global liquidity, which raises financing costs and can trigger capital outflows. However, in recent years, the region's authorities have put in place prudential regulations and supervisory policies to better protect financial stability. For example, in housing markets, authorities in many economies are experimenting with macroprudential regulations to prevent excessive leverage and speculation.

The price–earnings ratio (P/E ratio) is a widely used and broad, first-order indicator that gives a general idea about whether equity prices are consistent with the underlying fundamentals. The basic intuition is that a P/E ratio that is too high is indicative of a possible bubble. However, there is no consensus on what is too high or too low, and the most we can do is compare a market's average P/E ratio across time. By this measure, the average market P/E ratio is on the rise in all major industrial economies and in emerging Asian economies (**Figure B1.3a**). We also compared the average market P/E ratio for two periods of an equity price surge: January 2005–August 2008 (Period 1) and January 2014–mid-October 2017 (Period 2) (**Figure B1.3b**). Period 1 refers to the period immediately preceding the global financial crisis while Period 2 refers to the current equity boom. For the eurozone and US, the average P/E ratio is higher in the more recent period, while the P/E ratio in Japan is virtually the same in both periods. Within emerging Asia, the average P/E ratios of the Republic of Korea and most Southeast Asian economies are higher in Period 2 than in Period 1, while the opposite is true in the People's Republic of China; Hong Kong, China; and Viet Nam.

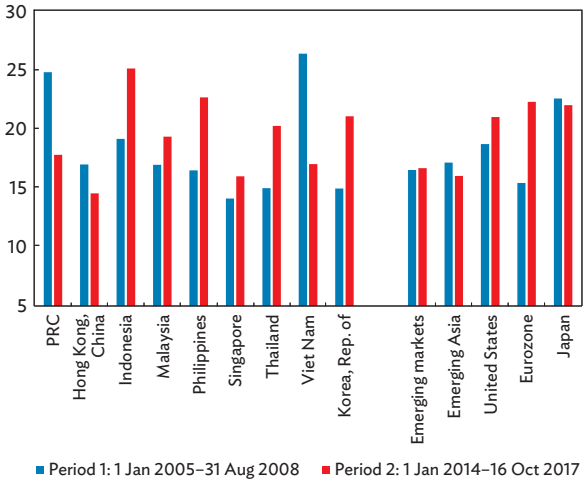
There are also fears of sudden and sharp price corrections that could hurt the region's equity markets. However, a quick look at volatility indicators provides some cause for optimism.

Figure B1.3a: Price-Earnings Ratio for Selected Stock Indexes



MSCI = Morgan Stanley Capital International, S&P 500 = Standard and Poor's 500.
Note: Data as of 16 October 2017.
Source: Bloomberg LP (accessed 17 October 2017).

Figure B1.3b: Average Price-Earnings Ratios by Economy and Region



PRC = People's Republic of China.
Source: Bloomberg LP.

The Chicago Board Options Exchange Volatility Index, known as the VIX Index, is now at an historical low, implying low global equity market volatility (**Figure B1.4a**). The standard deviation of the year-on-year growth of stock market indexes in advanced economies and emerging Asia, another index of volatility, shows lower volatility in the current period than in the pre-global financial crisis period (**Figure B1.4b**).

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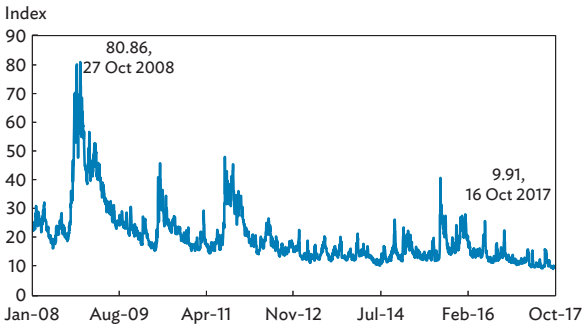
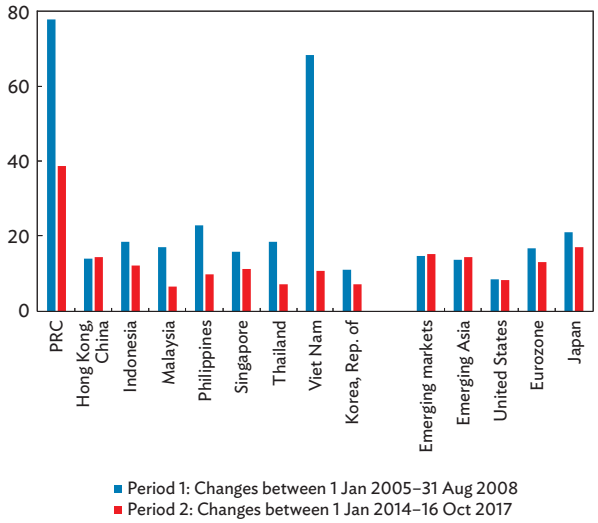
Box 1: The Global Equity Price Surge *continued*

Figure B1.4a: VIX Volatility Index



VIX = Chicago Board Options Exchange Volatility Index.
Note: Data as of 16 October 2017.
Source: Bloomberg LP (accessed 17 October 2017).

Figure B1.4b: Comparison of Volatility by Economy and Region



PRC = People's Republic of China.
Source: Bloomberg LP (accessed 17 October 2017).

Nevertheless, it is possible that some potential risks have not been fully incorporated into the market volatility indicators.

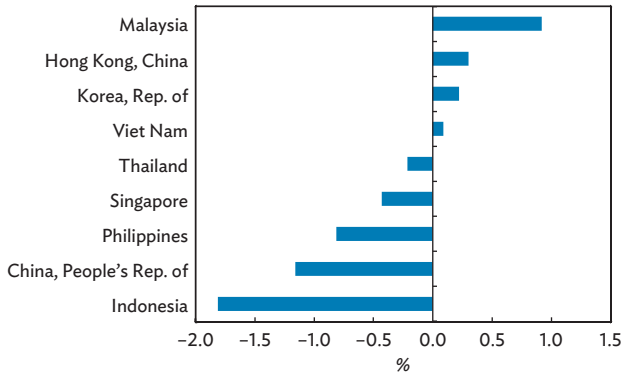
Emerging Asia's economies and firms are presently in good shape. The region's equity rally reflects strong macroeconomic fundamentals and healthy corporate earnings. Given the positive outlook, the bull run in the region's equity markets is likely to continue in the short-term. However, the generally benign scenario is no cause for complacency since some risks loom on the horizon. In particular, the Federal Reserve's ongoing monetary policy normalization could tighten global liquidity conditions, putting downward pressure on asset prices beyond the short-term.

rose by nearly 1 percentage point to reach 27.9% at the end of September on improving investor sentiment.

Most emerging East Asian currencies depreciated between 1 September and 31 October. The magnitude of price changes was modest (**Figure H**). The Malaysian ringgit appreciated the most, driven by positive investor sentiment, but the gain was still limited to 0.9%. Meanwhile, the Indonesian rupiah fell by 1.8% due to interest rate cuts and concerns about the effect of the Federal Reserve's ongoing monetary policy tightening.

Overall, emerging East Asian local currency bond markets face a benign environment characterized by strong economic growth and stable financial conditions. One byproduct of the robust economic fundamentals are the healthy sovereign credit ratings for the region's governments. For example, strong fundamentals in Indonesia supported the recent upgrading of Indonesian

Figure H: Changes in the United States Dollar Value per Unit of Local Currency



Notes:
1. Changes between 1 September 2017 and 31 October 2017.
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.

government bonds to investment grade. Sovereign ratings matter because they tend to act as a benchmark as well as a soft ceiling on the ratings of nonsovereign borrowers. A deterioration of the sovereign rating has been found to have a significant impact on financial markets and nonsovereign borrowers' economic activities by raising their borrowing costs, which constrains investments and business activities (**Box 2**).

Meanwhile, a number of risks to financial stability loom on the horizon. Longevity risk, or the risk that people will live longer than expected, is growing in emerging East Asia. Sustained economic growth has dramatically improved living standards, including better nutrition and access to health care, and significantly raised life expectancy throughout the region. Coping with longevity risk requires huge amounts of capital and hedging instruments, which capital markets can provide. The lack of correlation between longevity and equity and bond returns further strengthens the case for capital market solutions to longevity risk (**Box 3**). In advanced economies with well-developed financial systems, capital markets are already beginning to play a role.

Box 2: Sovereign Ceiling in International Bond Markets

Prior to 1997, rating agencies followed a policy specifying that the highest rating granted to nonsovereign debt issuers in a sovereign would be the sovereign rating, which has come to be known as the sovereign ceiling. This practice arose from the possible risk of capital controls affecting nonsovereign issuers in case of a sovereign default.[a] Since S&P Global's first relaxation of the sovereign ceiling policy in April 1997, when it rated more than 10 Argentinean firms higher than the sovereign, there have been other cases of the bonds of nonsovereign borrowers being traded at a lower spread than the debt of the government in the economy where they domicile (Durbin and Ng 2005).[b]

Despite the lifting of the sovereign ceiling policy, empirical evidence shows that the sovereign rating is still binding on nonsovereign borrower credit ratings. Borensztein, Cowan, and Valenzuela (2013) find that the sovereign ceiling remains a significant constraint on corporation ratings.[c] This evidence is consistent with credit rating agencies' criteria. According to the S&P Global ratings framework revised in 2016, nonsovereign entities may earn a rating higher than their market's sovereign rating by up to two to four notches, depending on the sensitivity of their sectoral exposure to sovereign risks.[d]

Credit ratings matter to issuers. The International Monetary Fund indicates that credit ratings have a significant impact on market prices, especially in the case of a rating downgrade.[e] Almeida et al. show that due to an implicit sovereign ceiling, the credit rating serves as a channel that transfers a sovereign downgrade to real economic activities such as corporate investment decisions, the cost of capital, and capital structures.[f]

Most evidence looks at how the soft practice of a sovereign ceiling may influence bond issuers domiciled in the sovereign. However, the sovereign ceiling also applies to cross-border financing activities. This research aims to extend existing knowledge by examining whether the light version of the sovereign ceiling not only applies to local firms within a sovereign, but also to multinational organizations' cross-border financing in local currency bond markets. This study and future studies try to address the following research questions: Does the sovereign ceiling influence foreign bond issuers in local currency bond markets? If so, to what extent are multinational bond issuers affected? What factors might contribute to the adoption of the sovereign ceiling practice? How does the sovereign ceiling influence the cross-border issuer's economic activities?

In this discussion box, we use six AAA-rated multilateral development banks' bond issuances to illustrate the sovereign ceiling in actual practice in global bond markets.[g] We consider local currency debt securities issued onshore

[a] S&P Global. 1997. Less Credit Risk for Borrowers in Dollarized Economies. *Credit Week*. 30 April.
[b] Durbin, E., and D. Ng. 2005. The Sovereign Ceiling and Emerging Market Corporate Bond Spreads. *Journal of International Money and Finance*. 24 (2005): pp. 631–49.
[c] Borensztein, E., K. Cowan, and P. Valenzuela. 2013. Sovereign Ceilings "Lite"? The Impact of Sovereign Ratings on Corporate Ratings. *Journal of Banking and Finance*. 37 (2011): pp. 4014–24.
[d] S&P Global. 2016. Ratings Above the Sovereign—Corporate and Government Ratings: Methodology and Assumptions. *Ratings Direct*. 26 October.
[e] See chapter 3 of International Monetary Fund. 2010. *Global Financial Stability Report 2010*. https://www.imf.org/external/pubs/ft/gfsr/2010/02/pdf/chap3.pdf
[f] Almeida, H., I. Cunha, M. Ferreira, and F. Restrepo. 2017. The Real Effects of Credit Ratings: The Sovereign Ceiling Channel. *The Journal of Finance*. 72 (2011): pp. 249–90.
[g] Issuers include the African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, and International Bank for Reconstruction and Development.

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Box 2: Sovereign Ceiling in International Bond Markets *continued*

by the six multilateral development banks between 2002 and 2016.[h] To make these debt instruments comparable with local government debt in the same sovereign, only fixed-rate debt securities that do not carry any option features, such as puttable and callable clauses, are used in the sample. The two variables of interest are the coupon rate and yield-to-maturity at issuance. To ensure that these debt instruments are issued and traded onshore, the samples are further limited to the domestic market.[i] This screening leaves a sample of 12 debt issuances (**Table B2.1**).[j]

Table B2.1 shows that in the onshore local currency bond markets of developed economies, after controlling maturity and issuance time, AAA-rated multilateral development banks universally finance at a higher cost than local governments, in the form of a higher coupon rate or yield-to-maturity, regardless of the sovereign rating of the local government. Moreover, among the six securities that were issued in India that were rated BBB–, only three securities issued by the AAA-rated multilateral development banks enjoyed lower financing costs, while the remaining three securities were subject to a higher coupon rate or yield-to-maturity. This evidence supports the existence of the sovereign ceiling practice in onshore local currency markets.

To get a more comprehensive picture of the sovereign ceiling practice in local currency markets, **Table B2.2** produces a similar summary of debt securities issued by multilateral development banks in offshore local currency bond markets at around the same time as a comparison group. The table shows that for developed economies, the sovereign ceiling practice applies even in offshore local currency bond markets; controlling for maturity, AAA-rated multilateral development banks borrow at a higher cost than the local government regardless of their credit rating. Interestingly, in the case of India, multilateral development banks enjoy lower financing costs than the government. While a larger sample is required for a more robust conclusion, Table B2.2 suggests a possible difference between developed and emerging markets in the adoption of the sovereign ceiling in offshore local currency bond markets. Further research would shed more light on this issue.

Table B2.1: Financing Costs of AAA-Rated MDBs in Selected Onshore LCY Bond Markets

Onshore Market	Issuance Currency	Issue Date	Maturity Date	S&P LCY Sovereign Rating	Multinational Development Bank		Market-Middle Yield of Government Bonds	Government New Issuance	
					Coupon	Yield at Issue		Coupon	Yield at Issuance
Australia	AUD	11/24/2006	5/24/2012	AAA	6	6.0125	5.7040[a]	–	–
India	INR	9/30/2014	10/20/2024	BBB–	7.97	7.97	8.514	8.4	8.4625
India	INR	9/24/2014	10/20/2032	BBB–	8.88	8.88	–	8.32	8.6589
India	INR	9/30/2014	10/20/2019	BBB–	8	8	8.556	–	–
India	INR	9/24/2014	10/20/2030	BBB–	8.88	8.88	–	9.2	8.6984
India	INR	9/24/2014	10/20/2028	BBB–	8.88	8.88	8.615	8.6	8.6264
India	INR	9/24/2014	10/20/2027	BBB–	8.88	8.88	8.743	–	–
Japan	JPY	6/7/2010	6/5/2020	AA	1.29	1.29	1.231		
Japan	JPY	7/15/2010	7/15/2020	AA	1.165	1.165	1.09	1.1	1.116
New Zealand	NZD	2/19/2010	2/19/2013	AAA	5	4.965	4.619	–	–
United States	USD	9/29/2016	10/24/2017	AA+	0.748	0.748	0.5701[b]	–	–
United States	USD	3/18/2016	1/22/2019	AA+	1.26	1.26	1.0000[c]	1	–

LCY = local currency, MDB = multinational development bank.
[a] Average of market-middle yields on 5-year and 6-year government bonds.
[b] Market-Middle yield on 1-year government bonds, while the middle yield on 2-year government bonds on the same day is 0.7336.
[c] Market-Middle yield on 3-year government bonds.
Notes: Market-middle yields of government bonds are middle yields on government bonds trading in the secondary markets with the same (or closest) maturity on the issue date. Government new issuance bonds use the coupon and yield at issuance of government bonds with the same maturity issued in the same month of the issue date.
Source: Bloomberg LP.

[h] Data are collected from Bloomberg LP.
[i] Some instruments labeled as domestic but traded in offshore exchanges are excluded. Instruments labeled as the United States domestic, samurai, and Australian (exchanges being in Australia) are included.
[j] This small sample is largely constrained by the availability of bond issuance data and sample selection criteria.

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Box 2: Sovereign Ceiling in International Bond Markets *continued*

Table B2.2: Financing Costs of AAA-Rated MDBs in Selected Offshore LCY Bond Markets

Onshore Market	Issuance Currency	Issue Date	Maturity Date	S&P LCY Sovereign Rating	Multinational Development Bank		Market-Middle Yield of Government Bonds	Government New Issuance	
					Coupon	Yield at Issue		Coupon	Yield at Issuance
Australia	AUD	11/21/2006	5/21/2010	AAA	6.125	6.14	5.9005[a]	–	–
India	INR	9/3/2014	3/3/2016	BBB–	6	6.1	8.4590[b]	–	–
India	INR	9/5/2014	9/5/2017	BBB–	6	5.584	8.461	–	–
Japan	JPY	1/26/2006	1/26/2026	AA–	1.9	1.959	1.514	1.4	1.42
New Zealand	NZD	3/19/2010	3/19/2015	AAA	5.375	5.385	5.11	–	–
United States	USD	9/20/2016	9/20/2019	AA+	1.125	1.161	0.9149	0.875	–
United States	USD	3/18/2016	3/16/2018	AA+	1.06	1.06	0.8353	–	–

LCY = local currency, MDB = multinational development bank.
[a] Average of market-middle yields on 3-year and 4-year government bonds.
[b] Average of market-middle yields on 2-year and 3-year government bonds.
Notes: Market-middle yields of government bonds are middle yields on government bonds trading in the secondary markets with the same (or closest) maturity on the issue date. Government new issuance bonds use the coupon and yield at issuance of government bonds with the same maturity issued in the same month of the issue date.
Source: Bloomberg LP.

Box 3: Coping with Longevity Risk (II)—Developing the Longevity Financial Market

Longevity risk—the risk that people will live longer than expected—is a paramount topic in today's financial markets. Social insurance systems, pension plans, insurance providers, and individuals all have significant longevity exposure. According to an estimate by the World Economic Forum, the total pension savings deficit for the Australia, Canada, the People's Republic of China, India, Japan, the Netherlands, the United Kingdom, and the United States (US) will reach USD400 trillion by 2050.[a] The development of an institutional market for hedging instruments is a key component in managing longevity risk. In line with the conceptual solution developed by Menachem Brenner and Meir Sokoler, this box discusses the rationale of using financial markets as an effective source of risk-taking capacity in dealing with longevity risk.[b]

In most countries, insurers and reinsurers not only face capital costs for longevity exposure, they also need to meet regulatory capital requirements for this risk. Countries such as the Netherlands and the United Kingdom are subject to Solvency II, and analogous transactions have already been executed in the derivatives and reinsurance markets that could have been embedded within debt instruments. In the US, where there is currently no analogous regulatory charge for longevity, the demand from insurers and reinsurers exposed to US longevity risk for economic capital hedges has been slower to develop; however, it will likely develop into a much larger market eventually.[c]

Economic capital hedges are the second level of the value chain (Michaelson and Mulholland 2015), while the first level is where pension plans execute "buy-ins" and "buy-outs" with insurers and reinsurers to transfer obligations to retirees, particularly under corporate pension plans.[d] Thus far, there have been more than USD67 billion of US pension liabilities transferred, although this is a small fraction of the overall obligations under US plans.[e]

Just as with the development of the broader insurance-linked securities market, capital-market capacities have already begun to be sourced to assume significant longevity exposure. Globally, the amount of exposure to longevity risk from pension plans, insurance companies, reinsurers, and social insurance programs dwarfs the amount of capital available

[a] World Economic Forum. 2017. *We'll Live to 100, How Can We Afford It?* http://www3.weforum.org/docs/WEF_White_Paper_We_Will_Live_to_100.pdf
[b] M. Brenner and M. Sokoler. 2017. Coping with Longevity Risk—A Conceptual Solution. *Asian Bond Monitor, September 2017*. Manila: Asian Development Bank.
[c] A committee formed by the National Association of Insurance Commissioners (NAIC) is examining this issue.
[d] A. Michaelson and J. Mulholland. 2015. Strategy for Increasing the Global Capacity for Longevity Risk Transfer: Developing Transactions that Attract Capital Markets Investors. *Journal of Alternative Investments*. 2015 (1). pp. 28–37. Abstract available at http://www.iijournals.com/doi/abs/10.3905/sp.2015.2015.1.028?journalCode=sp&
[e] Prudential Financial. *The Pension Risk Transfer Market at $260 Billion*. http://pensionrisk.prudential.com/insights/prt-market-at-$260-billion.php

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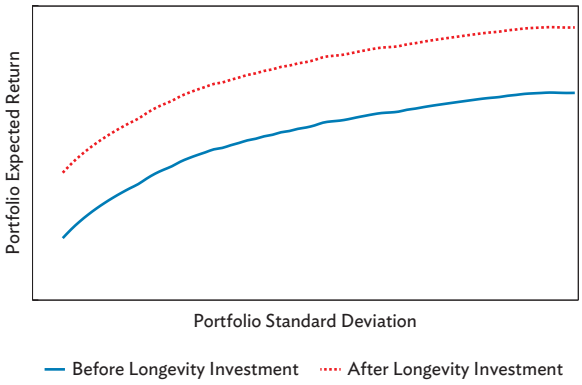
Box 3: Coping with Longevity Risk (II)—Developing the Longevity Financial Market *continued*

to assume these risks in the insurance and reinsurance industries. As a result, capital markets have become a viable source of risk-taking capacity for commoditized longevity risks by taking advantage of the lack of correlation between longevity and other asset class returns such as equities and fixed-income securities.

By assuming uncorrelated longevity risk, institutional investors push out their efficient frontier and increase their expected returns for a defined amount of portfolio risk. Canabarro (1998) exhibits mathematical proof that, even when the risk premia are small, if a small portion of the portfolio (e.g., 10%) is allocated to a lightly correlated asset class, the impact of the second and higher moments of the return of the lightly correlated asset class is substantially muted in terms of the impact on the second and higher moments around the mean of the overall portfolio's returns (**Figure B3.1**).[f]

Figure B3.1: Longevity Investment Shifts the Efficient Frontier



Source: Authors' illustration.

This correlation benefit makes capital markets the most efficient risk taker for commoditized insurance risks. In the broader insurance-linked securities market, capital markets already are the cheapest source of capacity for commoditized-property catastrophe risk (e.g., hurricanes and earthquakes), and they are the primary source of retrocessional capacity for many reinsurers. For well-structured commoditized longevity risks, the capital markets can also serve as the most efficient source of risk-taking capital.

Longevity bonds can help insurers and reinsurers package longevity risk for the broadest applicability for capital market risk takers. The introduction of longevity bonds that embed the derivatives form of execution into a note may be issued by institutions assisting in the development of the longevity market, similar to the manner in which other structured notes are brought to market.

[f] E. Canabarro. 1998. *Analyzing Insurance Linked Securities, Appendix II*. Goldman Sachs Quantitative Research Group. Abstract available at http://www.emeraldinsight.com/doi/abs/10.1108/eb043445

The biggest risk to emerging East Asia continues to be the ongoing normalization of monetary policy by the Federal Reserve. The normalization consists of interest rate hikes and balance sheet normalization, with the latter referring to the unwinding of the massive amount of debt securities that the Federal Reserve added to its balance sheet during three rounds of unconventional monetary policy known as quantitative easing. With respect to the normalization of conventional policy, or interest rate changes, the Federal Reserve has already raised its policy rate four times since December 2015. There is a high probability of another hike before the end of 2017. With respect to unwinding quantitative easing, the Federal Reserve announced on 20 September that it would begin to unwind its debt securities holdings in October. Initially, the unwinding will take the form of reducing the reinvestment of principal payments. In the past, such reinvestment kept the size of the securities portfolio stable.

These two related but different components of US monetary policy normalization are likely to have different impacts. Analysis in ADB's *Asian Development Outlook 2017 Update* finds that the normalization of the Federal Reserve's balance sheet may have a more direct impact on global financial and liquidity conditions than policy rate hikes. The rate hikes, which directly affect the price of money, push up short-term market interest rates. Balance sheet normalization, on the other hand, shrinks the supply of money and, all other things being equal, lowers long-term bond prices, which can affect long-term interest rates. Historical trends suggest that

the yield on the 1-year US Treasury bond closely tracks policy rate adjustments, but this is not necessarily true of the yield on the 10-year US Treasury bond. Moreover, the Federal Reserve's announcement in May 2013 that it would begin tapering its asset purchases—the spark for the so-called "Taper Tantrum"—caused the 10-year Treasury bond yield to surge but did not affect the 1-year Treasury bond yield. These patterns suggest that the Federal Reserve's asset purchasing plans influenced the long-term benchmark interest rate more than the short-term benchmark interest rate, as expected.

The gradual, transparent, and predictable nature of the Federal Reserve's balance sheet normalization seems to explain why its most recent announcement had only limited impact on emerging Asia. However, the signal of a tightening global liquidity stance is getting louder and clearer. Further, economic recovery will spur monetary policy normalization in the eurozone over the long-term. It is therefore necessary for policy makers in emerging Asia to monitor possibly excessive leverage in regional economies and strengthen their financial positions ahead of the long-discussed return of more normal monetary conditions.