

# Seventeenth IMF Public Debt Management Forum

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## Keynote Address

Tobias Adrian

### I. INTRODUCTION

Good morning, ladies and gentlemen. It's a great pleasure to welcome all of you here today for this important conference.

The IMF Public Debt Management Forum aims to bring together public debt managers, other government and international agencies, and private sector executives to exchange views on current challenges and opportunities in the sovereign debt capital markets.

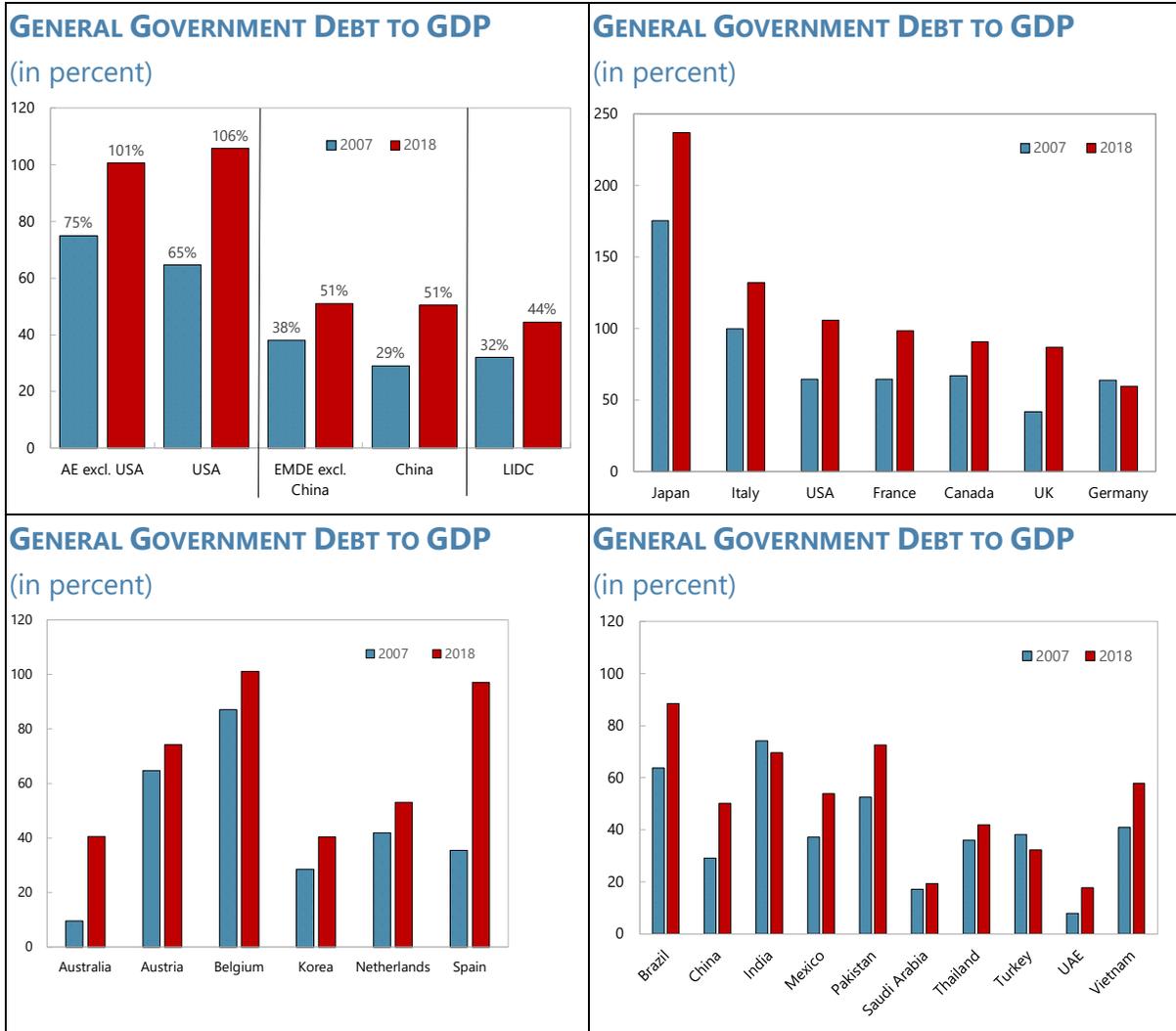
For this, the 17<sup>th</sup> such forum, we are pleased and honored to be co-hosting the event with the Japanese Ministry of Finance. We are most grateful for their hospitality, and for their efficiency and drive in organizing the event. Our experience is that having such an event co-hosted helps ensure that participants gain insights from a variety of perspectives, on issues of relevance to many countries.

This forum is an occasion for us to reflect on how we can anticipate possible strains in debt markets, and how we can adapt to longer-term trends. Our aim, as always, is ensuring the smooth funding of governments; maintaining the availability of attractive savings vehicles; and promoting the efficient functioning of financial markets. We will discuss elements of the economic and market outlook that are relevant to debt markets and debt management; look at some of the more structural changes that are occurring, in such areas as regulation and technology; and explore how the public and private sectors can foster beneficial innovation. The individual sessions will go into issues in some depth. In particular the first session is focused on near term and conjunctural conditions. Here I'd like to offer some thoughts on longer term and structural issues.

## II. DEBT BURDENS

Sound debt management and the efficient functioning of sovereign debt capital markets is as important as ever, not least because debt levels are high and are likely to remain high.

Debt outstanding is very large in many Advanced Economies (AEs) and some Emerging Markets (EMs). The global financial crisis led to a sharp increase in government debt as the public sector took over private debt and fiscal policy was switched to an expansive mode. Some countries have managed to reverse the increase, but — as these charts illustrate — the upward shift is found across much of the OECD and major emerging market countries. The ratio of general government debt to GDP has gone up markedly even in countries such as China, Australia and Vietnam which have elevated growth records. So there is plenty for debt managers to do.

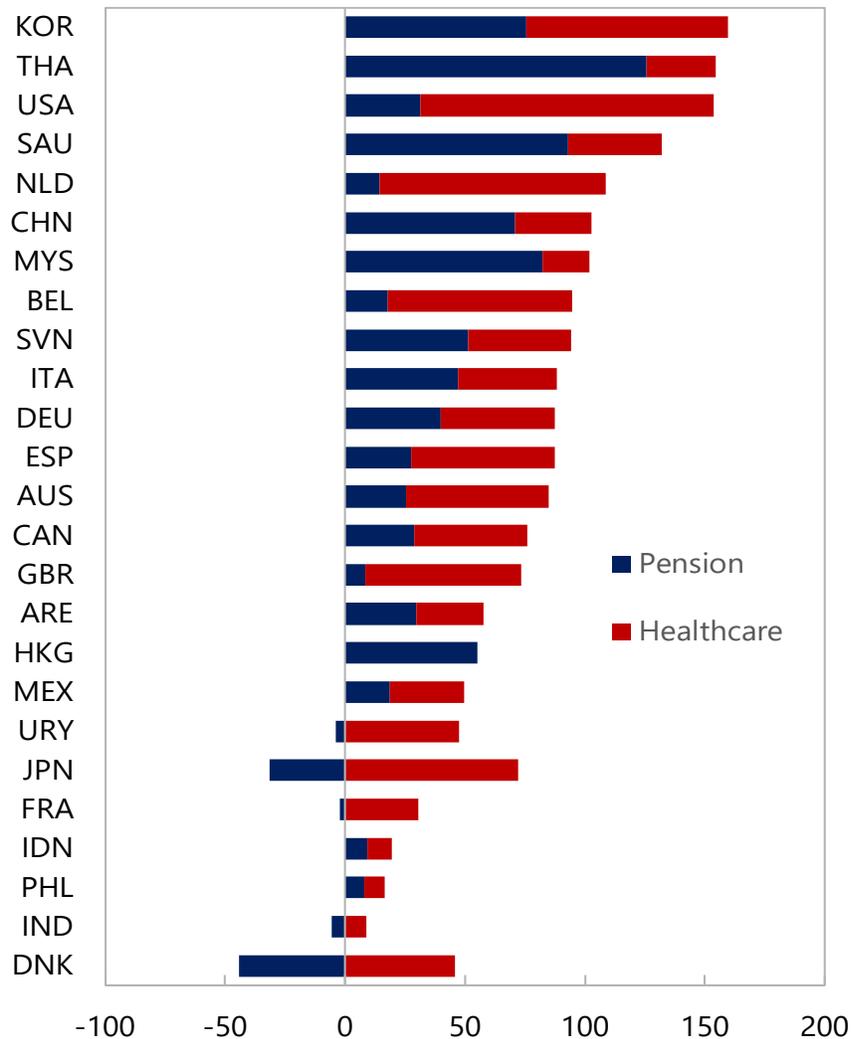


Source: IFS, and staff estimates.

Total public sector liabilities are even higher due to contingent liabilities associated with three sectors.

- First, banks, which in case of a truly systemic crises may necessitate some government support, leaving aside government-owned banks;
- Second, pension and healthcare commitments. Commitments for future pension benefits and the provision of healthcare are large in many countries, notably in Asia. Some countries have succeeded in putting their public pension schemes on a sustainable footing—but even there rising healthcare costs imply a very substantial obligation for government.

**Implicit Liabilities**  
**of Pension and Healthcare Spending, 2015-50**  
 (Percent of GDP in present value terms)

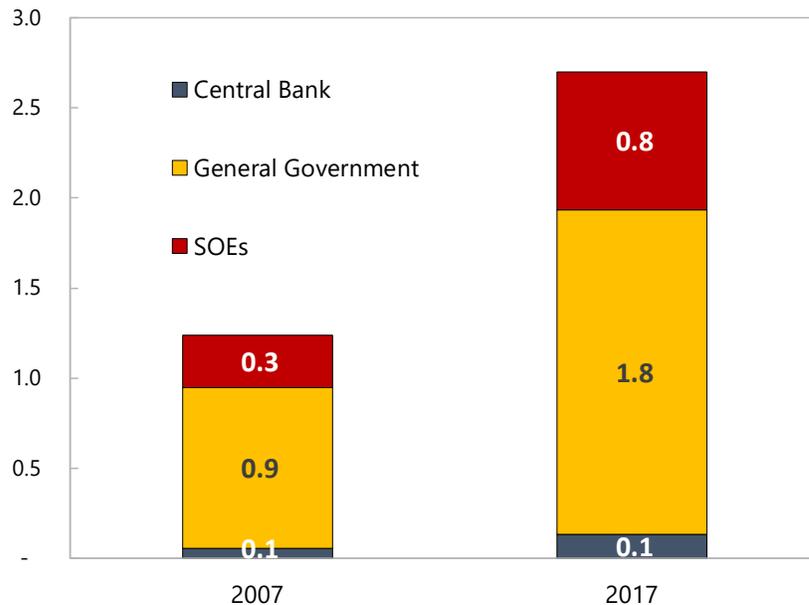


Source: IMF Fiscal Monitor.

- Third, state-owned enterprises (SOEs). Others International borrowing by SOEs has been rising (Chart). Pemex (in Mexico) and Eskom (in South Africa) are recent examples of SOEs whose borrowing needs are of macro-financial importance for the countries concerned. In many instances, governments have provided more or less explicit guarantees to key SoEs that otherwise were unable to obtain finance from the private market at reasonable terms. Among AEs and EMs, governments often bear sizeable yet ill-recorded contingent liabilities towards SOEs that are too

important to fail. Many Ministries of Finance have even been forced to recapitalize SoEs.

**Selected Emerging Market and Developing Countries:  
Public and Publicly Guaranteed External Debt 1/  
(US\$ trillions)**



Source: International Debt Statistics.  
1/ Sample of 58 countries.

You may have noticed that, in making these observations, I have been careful to speak about general government and the public sector, rather than the narrow budgetary government. The distinction is important—for example in China, where debts of infrastructure firms have been shifted onto local government balance sheets using special purpose vehicles.<sup>1</sup>

On a flow basis, deficits are likely to be difficult to reduce. One factor relates to adverse demographic trends: as I've mentioned, more people will be receiving pensions and

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<sup>1</sup> In China, "around 2,000 local government financing vehicles (LGFVs) have offered a total of 7 trillion yuan (\$1 trillion) of guarantees to loans, bonds and shadow financing for domestic companies, said Lv Pin, an analyst at CITIC Securities Co. That surpasses the tally of LGFVs' own outstanding local bonds, Bloomberg-compiled data show. These guarantees help private companies get financing as banks prefer to lend to state-owned ones." (Ref: *Bloomberg News November 28, 2018: China's Local Government Vehicles Guarantee \$1 Trillion in Debt*)

needing medical support, and at the same time proportionately fewer people will be of working age. A second factor relates to the widespread need to finance upgrades to infrastructure in order to support growth and bring about a transition to a sustainable economy and cope with climate change. The International Finance Corporation estimates that “climate smart” investment needs in 21 major EMs amount to at least US\$23 trillion during 2016-2030. Not all of that sum will come directly from the public sector, but at a minimum there will be strong competition among those seeking funding.<sup>2 3</sup> Thus, from the perspective of sovereign asset-liability management, the sovereign may have to finance valuable assets, which however have much longer duration than that of typical market financing. Moreover, the move to a low carbon economy will leave “stranded assets,” some of which are currently major sources of government revenue or enjoy government guarantees on their borrowing. Markets may pay more attention such short-term strains than long term prospects.

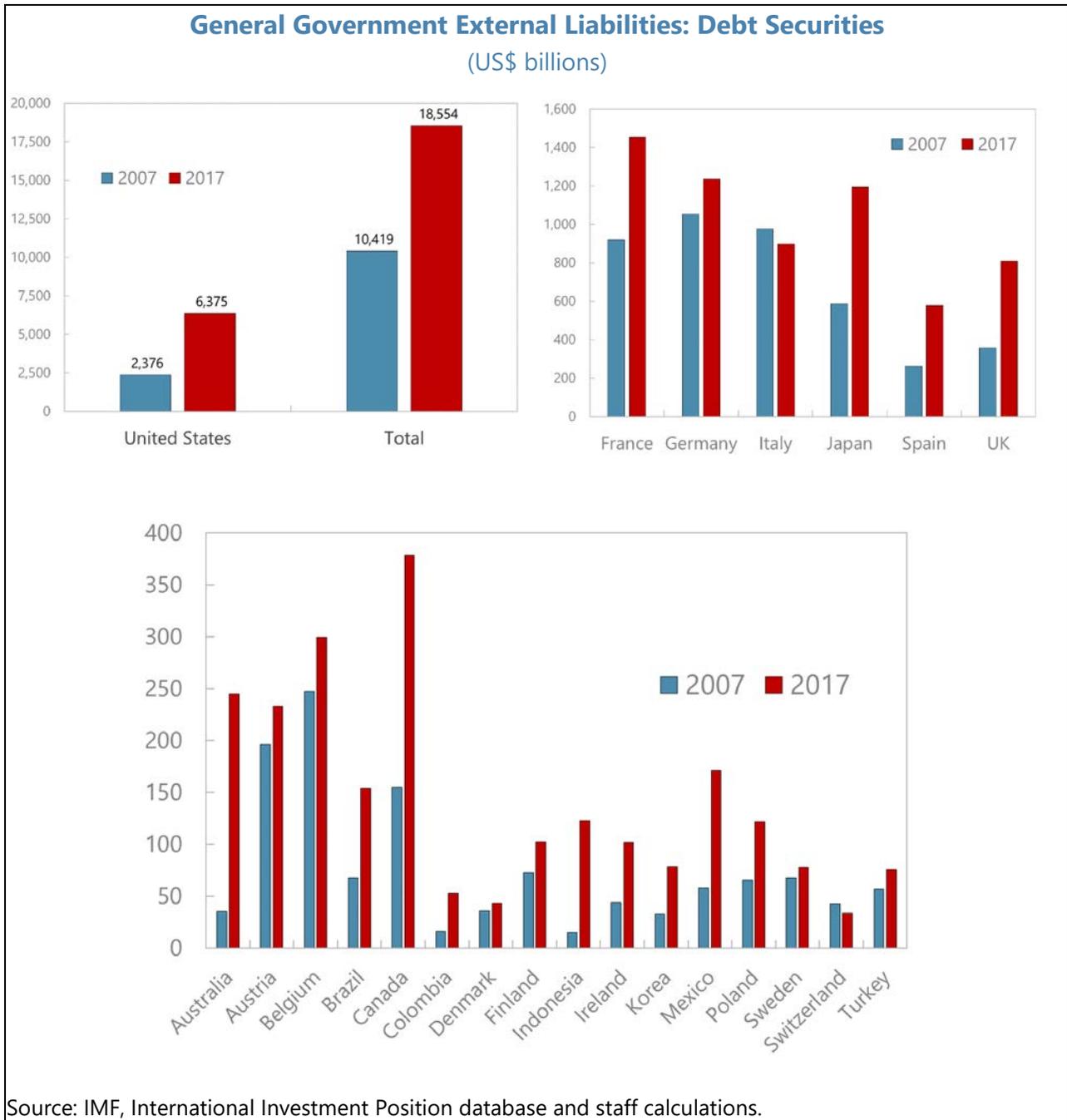
### III. NEW INVESTORS AND NEW INSTRUMENTS

Part of the reason why high sovereign debt levels have been bearable is that debt markets have become more international. They also involve new players investing and new instruments. It is difficult to know the location of the securities’ ultimate holders, especially for securities that are issued by the major countries, but there are indications of internationalization that debt management offices (DMOs) will need to take into account. The Funds’ International Investor Position survey provides some indication that traditional home bias in the holding of government securities has indeed been attenuated. In absolute and in relative terms, more government securities are held abroad (Charts). The shift seems to be especially pronounced for low-risk issuers, such as Canada.

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<sup>2</sup> IFC (2016), *Climate Investment Opportunities in Emerging Markets*.

<sup>3</sup> The Global Commission on the Economy and Climate estimated (in the 2014 report on its “The New Climate Economy” project) the amount needed global infrastructure investment at about US\$6 trillion per year, or US\$90 trillion over 15 years; the marginal cost of more sustainable, low-carbon investment—if it were done well—would be about US\$300 billion per year.

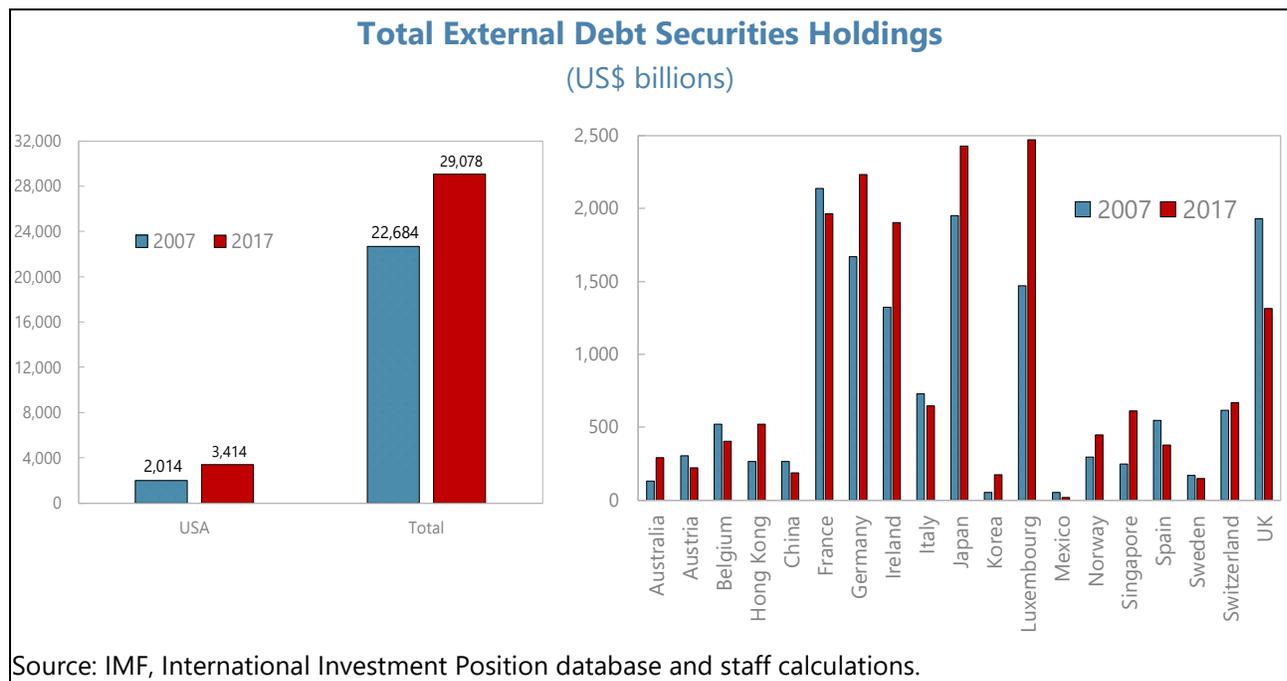


The shift towards international holdings reflects in large part a gradual increase in familiarity with diverse sovereign issuers. It also reflects the fact that investors are becoming less attached to the securities issued by their respective sovereign and less constrained in how far they can diversify internationally. That is probably no bad thing overall, if only because international diversification can be very good for savers. But it does mean that debt managers cannot count on so much stable local demand, and that global

conditions will have a stronger effect on the pricing of bonds from both AE and EM countries.

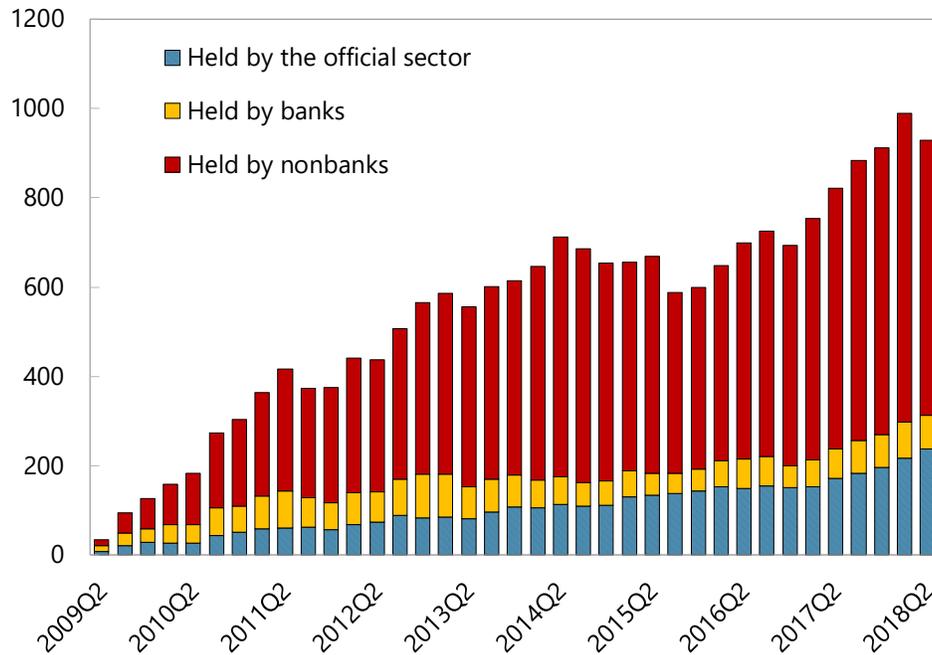
Part of the debt stock is being held by new sorts of investors or investors who were previously underrepresented. The evolution in the types of institutions and investors in the market is the topic that will be addressed in Session 3.

To illustrate the shift, we show (here is the chart) holdings of external debt securities (including but not exclusively government securities) from the perspective of non-banks and non-governments. Again, these data from the International Investment Position Survey are patchy, but we can see the growth of investment in international bonds especially in certain financial centers such as Luxembourg, Ireland and Singapore, which are presumably conduits for global investors. For the debt manager—even in large advanced countries—much more attention has to be paid to the international investor base, made up to a large extent of such asset managers in financial centers.



Looking at the changing composition of the investor base in more detail, there has been a steady increase in EM sovereign debt bought by nonbanks. Their purchases bounced back after a hiatus during the GFC. By contrast, the net amount bought by banks over the past five years or so has been negligible.

## Cumulative Purchases of EM Sovereign Debt by Non-Residents (US\$ billions)



Source: Global Financial Stability Report, April 2019.

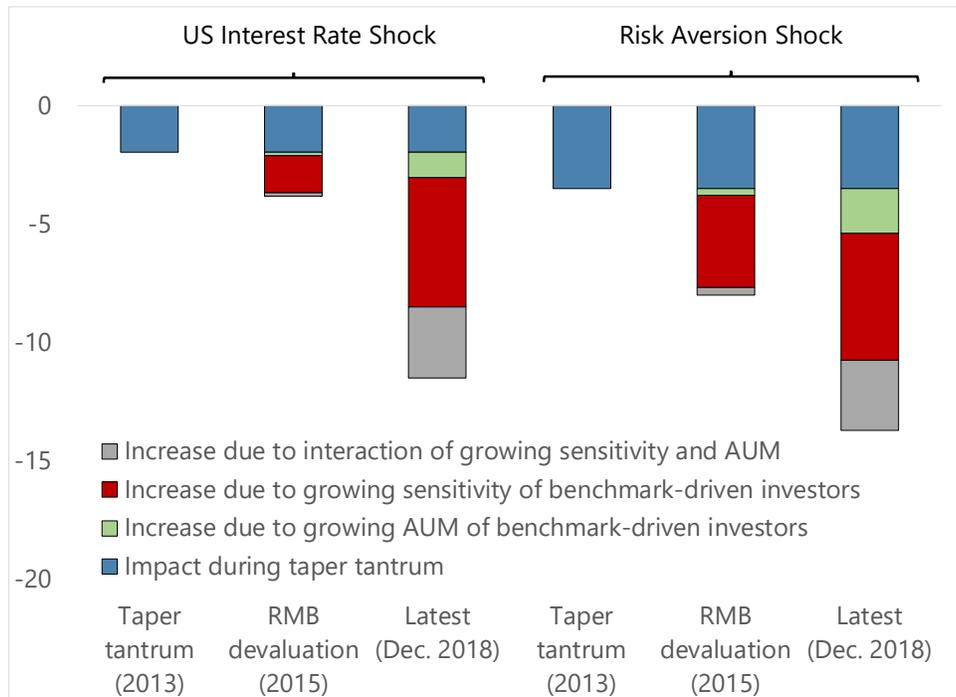
A substantial share of these new investors, or perhaps converted investors, base their investment strategies on indices and benchmarks.<sup>4 5</sup> It is premature to pass judgment on this trend, but certain implications must be acknowledged. For example, with this change, an adverse external shock could result in much larger outflows today than a few years ago. A large portion of investors may react in the same way to changes in benchmarks, possibly with discontinuities: a small change may typically have an insignificant effect, but a large effect can be induced when some threshold is crossed. In the IMF's most recent Global Financial Stability Report we present estimates suggesting that the reactions to a given shock have become markedly more pronounced since the so-called taper tantrum of 2013. The assets under management are greater, and the sensitivity is greater:

<sup>4</sup> One sub-sector of interest is composed of fixed-income Exchange Traded Funds (ETFs). Assets under management of ETFs investing in government and EM bonds went from under US\$60 billion in 2009 to almost US\$300 billion in 2018 (source: ETFGI).

<sup>5</sup> The April 2019 GFSR estimates that the inclusion of China in the US\$2 – 2.5 trillion track the Bloomberg Barclays Global Aggregate Bond Index. The inclusion of China in the index could induce inflows of US\$150 billion. Inclusion in all relevant indices could induce inflows of US\$300 billion.

## Estimated Outflows from Benchmark-Driven Investors in Response to a 1 Standard Deviation Shock

(US\$ billions)



Source: Global Financial Stability Report, April 2019.

Under the rather calm and benign conditions that currently prevail, this sensitivity is not very apparent, or it is manifest in surges in capital towards EMs and higher risk assets. The concern is that, when conditions turn less favorable, or when a country's policies put it at odds with a benchmark, flows might become much more volatile. Investor appetite might diminish sharply just when financing is most needed. As will be discussed in Session 2, elevated refinancing needs and challenges to market access can come together and test the resolve, patience and ingenuity of debt managers, other policy-makers, and perhaps market participants.

But there are also movements in the other direction. The investor base has in effect been widened by the introduction of new instruments such as green bonds and sukuk: the new instruments may not always offer cheap funding, but they mobilize savers who might not otherwise invest in government securities, and possibly with a fairly long-term, through-the-cycle perspective. A case in point is green bonds, which have been issued by many

advanced and emerging market governments, and more are coming. From a standing start, sovereign issues of green bonds exceeded US\$ 26 billion in 2018 (Table).

### Sovereign Green bond issuance

Country	Debut	Total issued (USD millions)
Belgium	Mar-18	5,500
Fiji	Apr-18	49
France	May-18	16,700
Indonesia 1/	Jun-18	2,000
Ireland	Jul-18	3,500
Lithuania	Aug-18	24
Nigeria	Sep-18	30
Poland	Oct-18	2,000
Seychelles	Nov-18	15

Source: Climate Bonds Initiative, "Green Bonds: The State of the Market 2018."

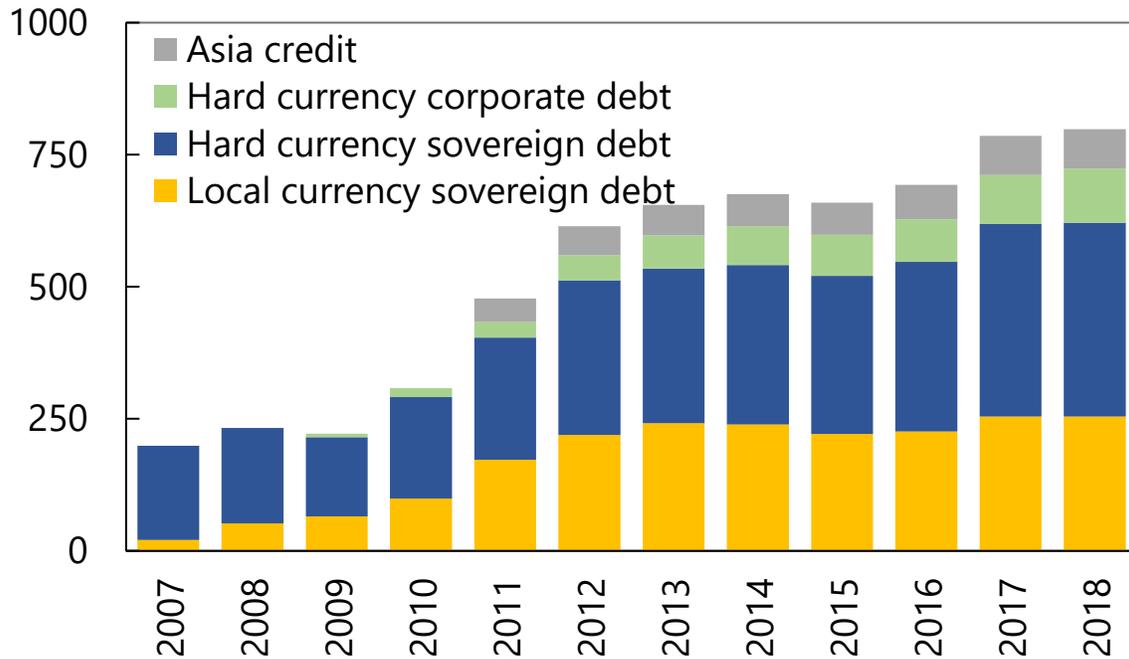
1/ Green Sukuk.

These data cover only issues by sovereigns. Quasi-sovereigns are very active in this space: many green bonds are issued by the likes of the US' Fannie Mae, Germany's KfW, the EIB, France's Société du Grand Paris, Malaysia's Permodalan Nasional Berhad, etc. Thus, broader public sector debt may be turning green faster than government debt. And these quasi-sovereigns are mostly investing in long term projects, and so are looking for long-term funding, some of which is going to have to come from non-traditional investors.

It may often be easier for a quasi-sovereign than for a sovereign to innovate because the quasi-sovereign's mandate is not so tightly circumscribed: the debt manager first and foremost has to ensure the availability of government financing at the lowest average cost and at modest risk. As will be discussed further in Session 6, debt managers cannot easily compromise in fulfilling that mandate in order to achieve other objectives, no matter how laudable.

Looking at the types of instruments offered by EMs, we see a great deal more cross-border interest in all issuance, and especially in local currency and local jurisdiction bonds (chart). This topic will be the center of discussions in Session 5 tomorrow.

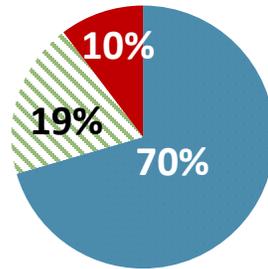
### Assets Benchmarked against JPMorgan Emerging Market Indices (US\$ Billions)



Source: Global Financial Stability Report, April 2019.

Perhaps surprisingly, despite these shifts, the international flows and internationally-traded securities remain denominated largely in USD, which is one reason why US conditions and the US policy stance retain an outsized influence. Sovereign Eurobonds continue to be issued mostly in US dollars, with a modest and stable share issued in other currencies such as Yen and Euros, where Euro-denominated supply comes largely from countries with a strong connection to that currency.

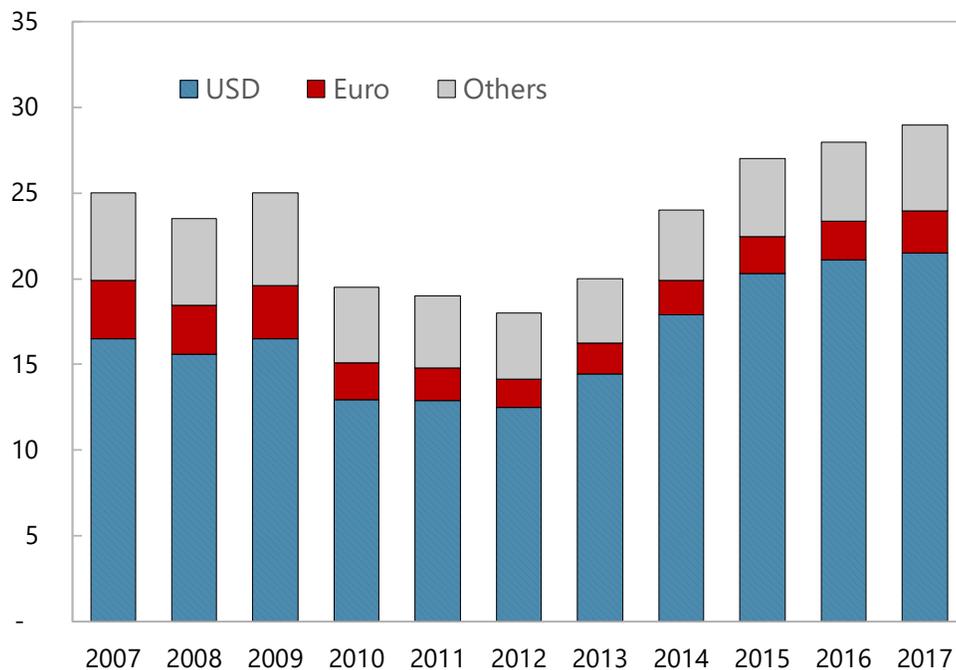
### International Sovereign Bond issuance by Currency, 2018



■ USD ■ Euro ■ Others

### LIC External Debt by Currency

(In percent of GDP)



Source: International Debt Statistics, Dealogic, and staff estimates.

The recent round trips of capital flows to EMs have been volatile following the Federal Reserve's statements, once again demonstrating that Fed policy is the dominant force behind the capital flows to EMs. Both EM foreign exchange and bond markets were heavily affected.

#### IV. REAL INTEREST RATES

So far, the large debt burdens have not resulted in high real interest rates and thus “crowding out.” At least for highly rated borrowers and those enjoying “safe haven” status, rates are low.

It seems that low (safe) rates in AEs are not just a conjunctural phenomenon. Rather, the persistently low real interest rates on very low-risk assets reflect ample supply of savings and eagerness to hold investment grade government paper. Since the 1980s, evidence points to a secular downward trend in what are termed “equilibrium” real interest rates, even at longer maturities. The well-known estimates of Laubach and Williams (2003 and subsequently) of declining short-term equilibrium real rates ( i.e.,  $r^*$ ) are broadly corroborated by others.<sup>6 7</sup> Across major currencies, the decline has been very consistent over several decades.

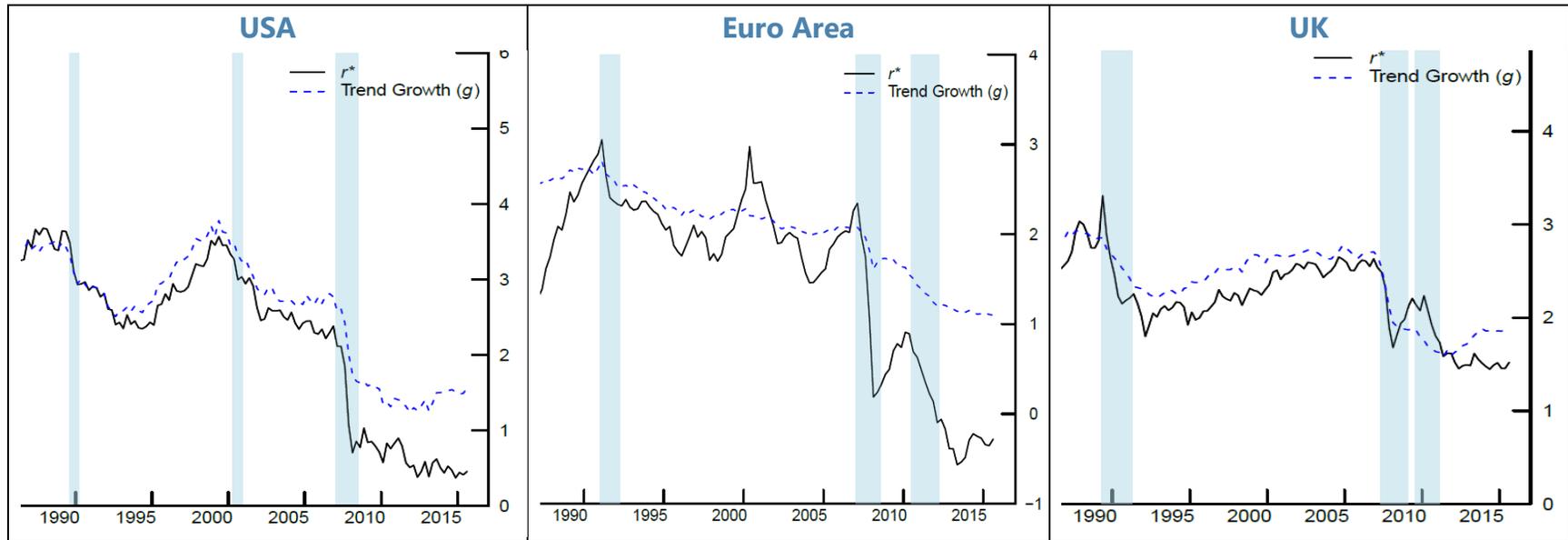
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<sup>6</sup> Charts are from Holston Kathryn, Thomas Laubach, and John Williams, 2016 “Measuring the Natural Rate of Interest: International Trends and Determinants,” Federal Reserve Bank of San Francisco Working Paper No. 2016-11 (San Francisco: Federal Reserve Bank).

<sup>7</sup> For example, Pescatori Turunen 2015, Del Negro et al 2017, Christensen Rudebusch 2017, Hartzmark 2014.

## Estimated Equilibrium Real Interest Rate and Trend Growth

(Percent)



Source: Holston, Laubach, and Williams, 2016.

The underlying determinants—such as demographic factors and slower productivity growth—are slow moving, so a return to substantially positive real rates does not seem likely in the near term. As demographic shift in many AEs and EMs occur, due to birthrates falling and life expectancy continuing to climb, the share of the population in retirement is growing steadily. In anticipation, savings surge. Eventually the demographic adjustment run its course, but the process will take many years. Slower productivity growth and the prospect of slower growth in GDP per head has a similar effect. Households will save more in the current stage of their lifecycle if they do not see their income rising so fast in future years.

Issuers of high-quality securities may in addition be enjoying a surge in demand for their instruments driven by regulatory and technological changes in financial markets.<sup>8</sup> Many actors need high quality liquid assets (HQLA) to serve as collateral backing other deals, and they want this collateral to carry low capital charges and to be recognized in regulations as highly liquid. The effects of these structural changes will persist even if growth reaccelerates.

Low real interest rates in major currencies are a mixed blessing. For debt managers, it is relatively easy and cheap to obtain longer term funding, or to innovate with infrastructure bonds, green bonds, sukuk, linkers, ultra-long term bonds, etc. There has been a surge in EM borrowing, including by new frontier market entrants (as we will discuss in Sessions 3 and 5). However, low rates are a reflection of factors that are likely to increase fiscal obligations, reduce returns on investment, and limit to the scope to “grow your way out of trouble.”

The low cost of borrowing reflects in part intentional central bank policy aimed at keeping conditions loose to support growth. The policy is affected by low policy rates and Quantitative Easing (QE).

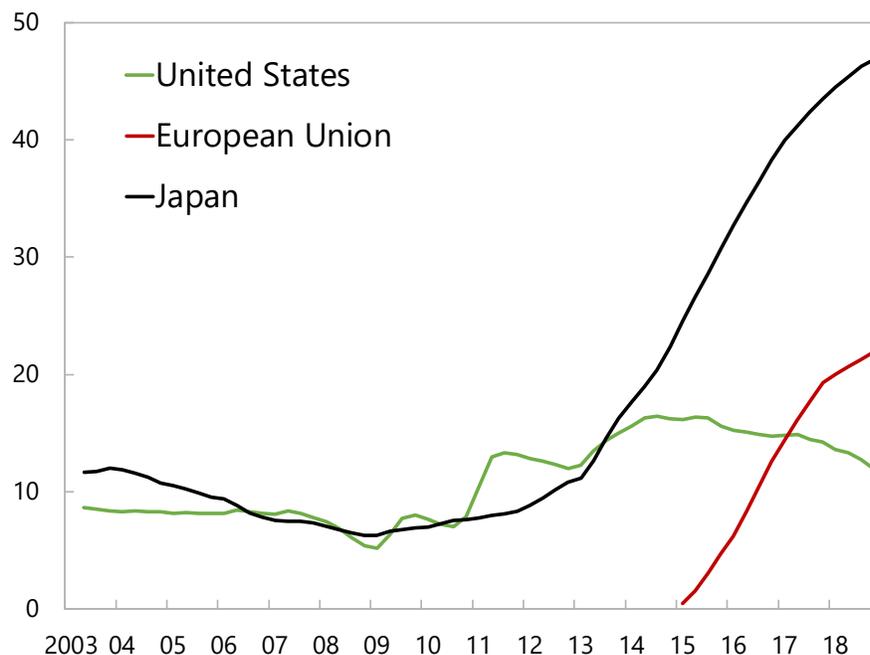
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<sup>8</sup> See Caballero, Ricardo, and Emmanuel Farhi, 2018, “The Safety Trap,” *Review of Economic Studies*, Vol. 85, Issue 1, pp. 223–74. Caballero, Ricardo, 2016, “Safe Asset Scarcity and Aggregate Demand,” *American Economic Review, Papers and Proceedings*, Vol. 106 (May) and He, Zhiguo, Arvind Krishnamurthy, and Konstantin Millbradt, 2015, “A Model of the Reserve Asset,” Stanford Working Paper.

Under QE the net sovereign issuance has been negative for certain periods and certain countries. Even if the net purchases under QE have now slowed or stopped, the stock is large by any measure. Especially for countries with small fiscal deficits, just the roll-over of central bank holdings is an important component of demand. And a source of policy uncertainty is the timing and pace of any unwinding or resumption of purchases.

### Central bank holdings of government bonds as a share of the stock outstanding

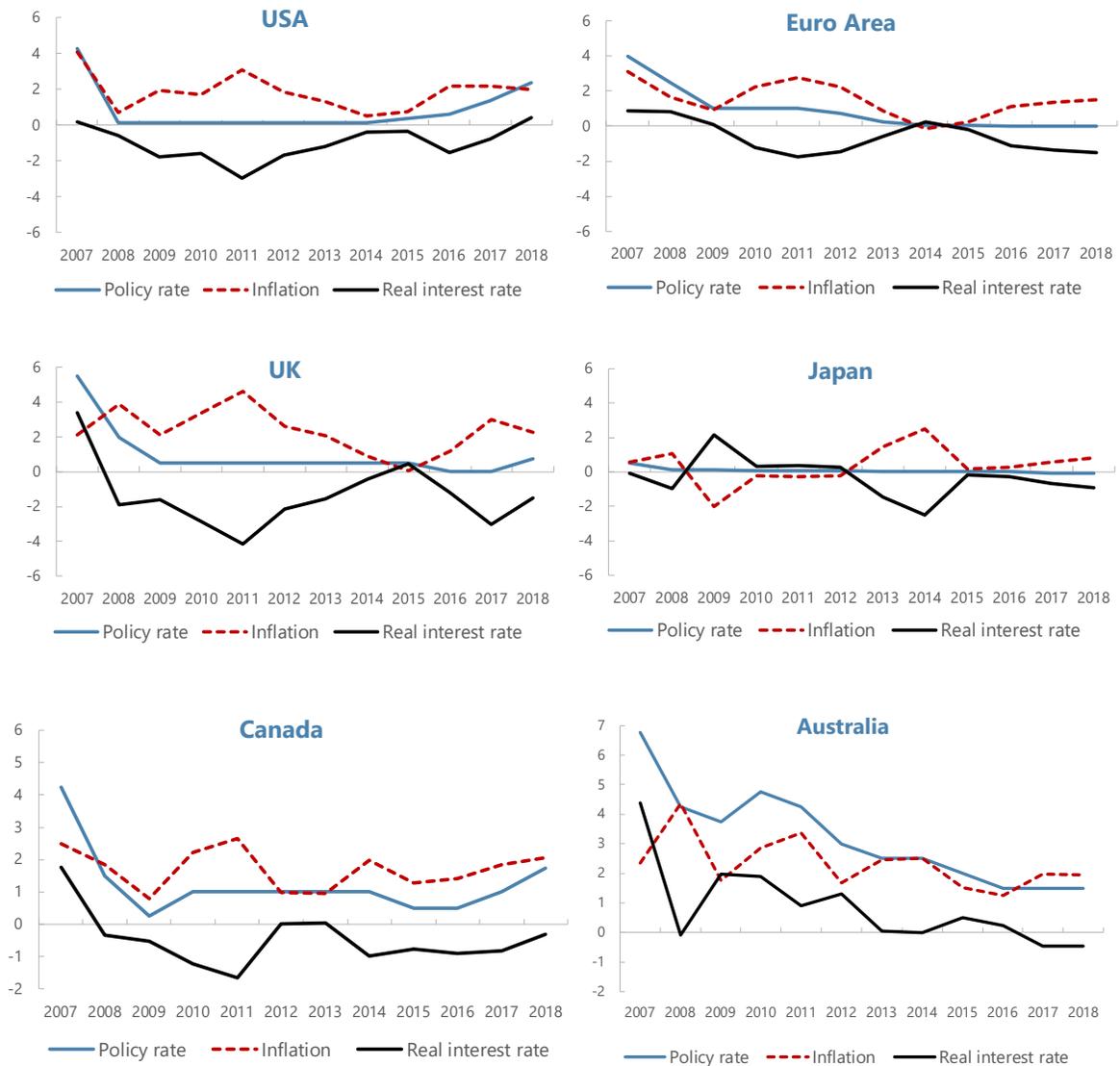
(Percent)



Source: IFS, central banks, and staff estimates.

Besides the quantity effects, policy rates have been kept low in nominal and real terms. Some central banks in AEs have deliberately maintained interest rates below the “equilibrium” rate to underpin demand during the drawn-out recovery from a ‘balance sheet recession’ following the GFC. The accompanying charts show how persistent and widespread have been real policy rates at or below zero. In this connection, it is worth recalling that for many countries the realized real rates would have been even lower if inflation targets had been achieved.

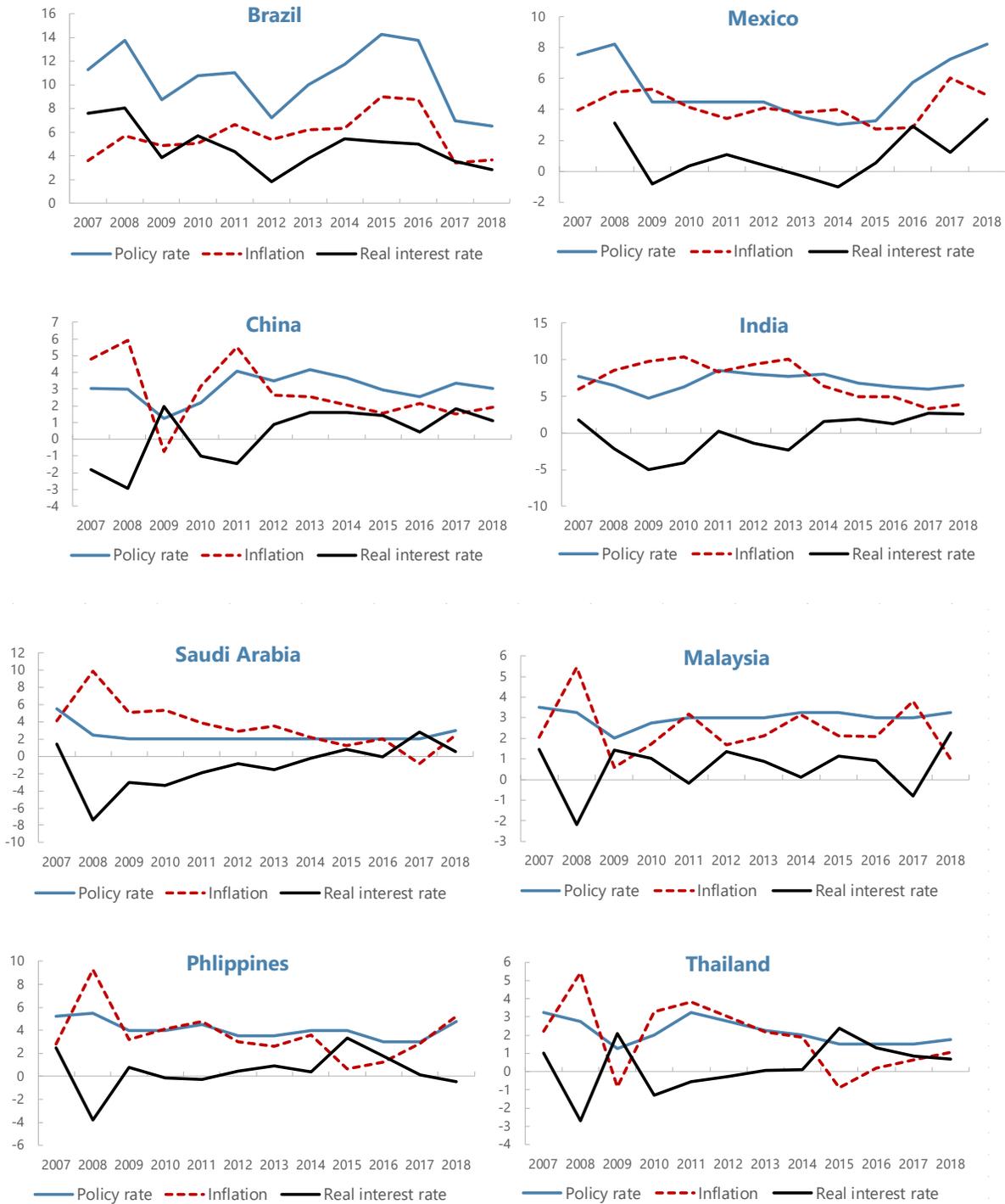
## Ex post real policy rates (Percent)



Source: IFS, and staff estimates.

The situation is rather different in the major emerging market economies. Their policy rates are typically positive in real terms—except where the currency is tightly pegged to a major currency, as is the case for the Gulf Cooperation Council countries. Moreover, we see considerable variation across time and country. Even so, in some of the largest EMs, such as China, real rates are currently quite low by historical standards or relative to the growth rate.

### Ex post real policy rates (Percent)



Source: IFS, and staff estimates.

## V. RISK PREMIA

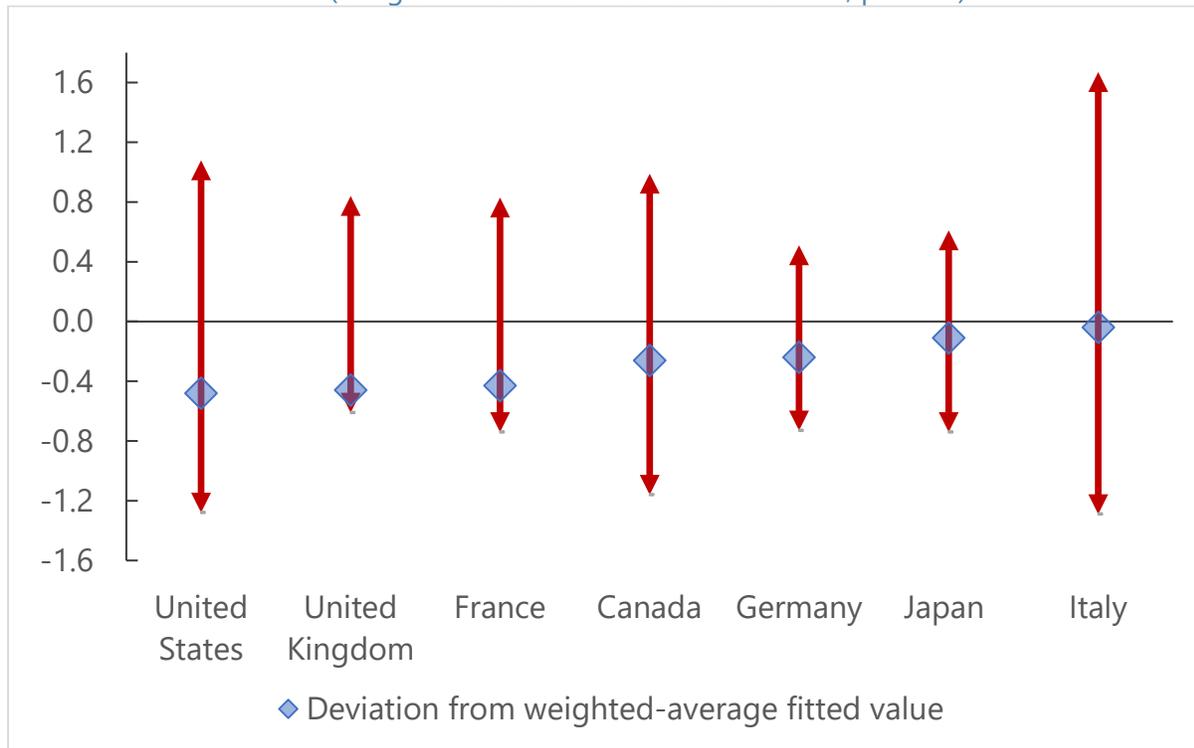
Low “safe” interest rates have been accompanied by a compression of many but not all risk premia. Term premia have come down as expectations of low inflation and low real interest rates have become entrenched. QE in major advanced economies has explicitly aimed at lowering term premia. Default risk premia have also come down from the highs seen during the GFC as economies have recovered, risk appetite has returned, and countries have implemented policy measures.

Turning first to term premia, which reflect interest rate risk, some research suggests that they are compressed by historical standards in a wide range of countries. The following chart shows the 10-year term premium relative to the value implied by fundamentals, for a number of countries.<sup>9</sup> In many cases the premium is on the order of 40 to 50 basis points (bps) below a “typical” level. The difference largely represents low survey-based uncertainty about near-term inflation, subdued volatility of government bond returns, and a persistently lower correlation between government bond and risky asset returns. It should be added that the conjunctural signal conveyed by the low term premiums may be more muted due to unconventional monetary policies.

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<sup>9</sup> The estimates use the based on the Adrian, Crump, and Moench (2013) approach. A summary of the approach is presented in Box 1.2 of the April 2018 GFSR.

**Estimated 10-Year Term Premium**  
(Range since 1998 and current deviation; percent)



Source: Global Financial Stability Report.

Default risk premia for many sovereigns (as measured by yield spreads of Credit Default Swaps (CDS) rates) remain higher than before pre-GFC, which is probably no bad thing. Nonetheless, some countries that were in the “eye of the storm” so to speak during the GFC and the European sovereign crisis now enjoy very low premia (Charts).<sup>10 11</sup>

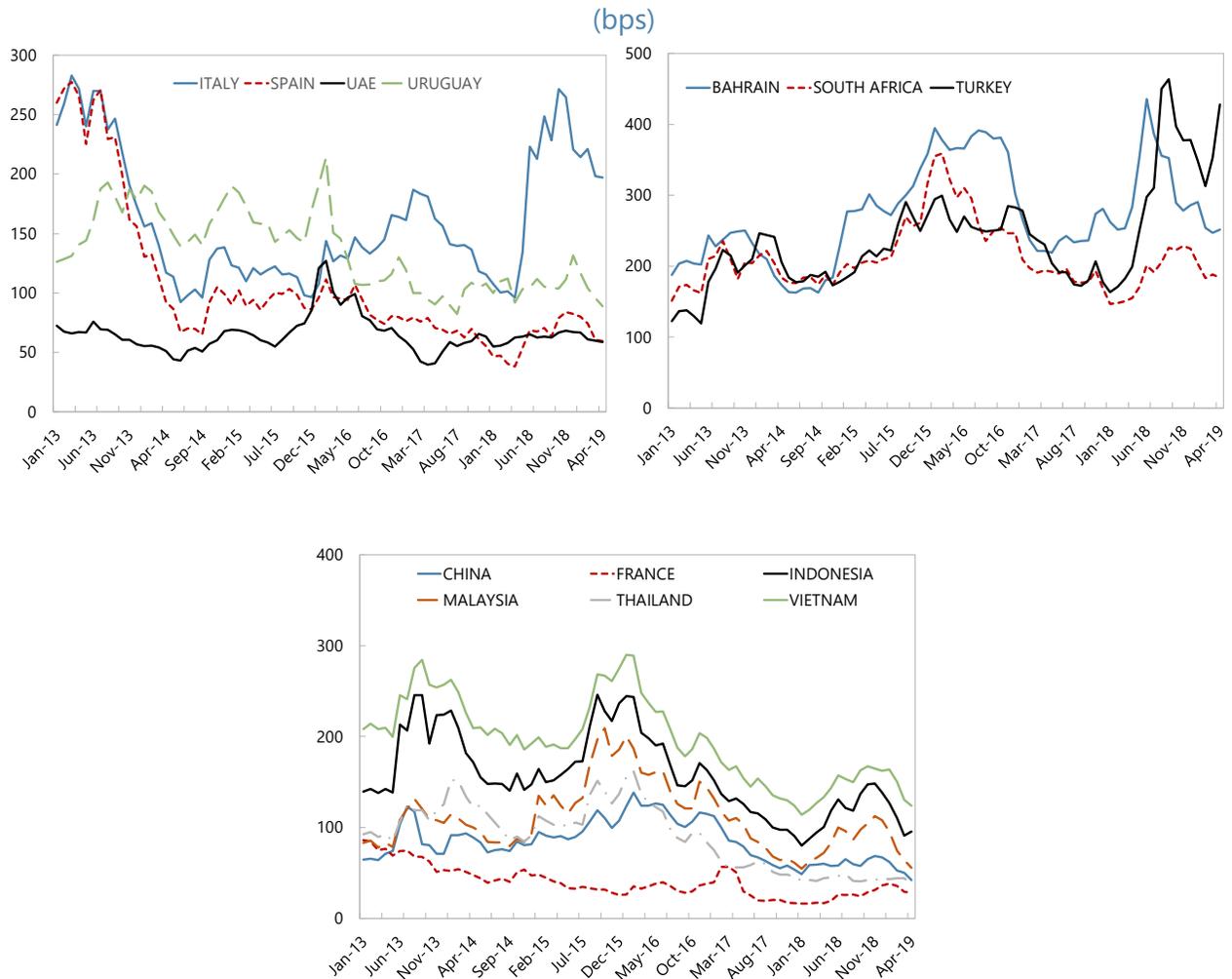
During the most recent period, the sovereign credit rating downgrades and upticks in risk premia that have occurred seem to have been driven mainly by domestic or idiosyncratic factors, such as high and sustained fiscal deficit and slow growth. And we have witnessed periods of unusual tranquility in markets, even when there seems to be a good deal of adverse “news”. Financial conditions measured by equity market volatility and credit

<sup>10</sup> Spreads over benchmark issue such as US Treasury bonds and German Bunds may reflect the liquidity advantage of the latter rather than credit risk concerns.

<sup>11</sup> Viewed from a wider perspective, the recent trend is for “reach for yield” to weaken the market discipline that should check the growth of indebtedness. The recent GFSR, for example, noted the rapid growth in lower-rated investment grade and speculative grade corporate bonds.

spreads remain accommodative globally, yielding limited reaction of bond prices and exchange rates to adverse news such as the recent Brexit process.

### Sovereign risk premium: 5-year CDS rate



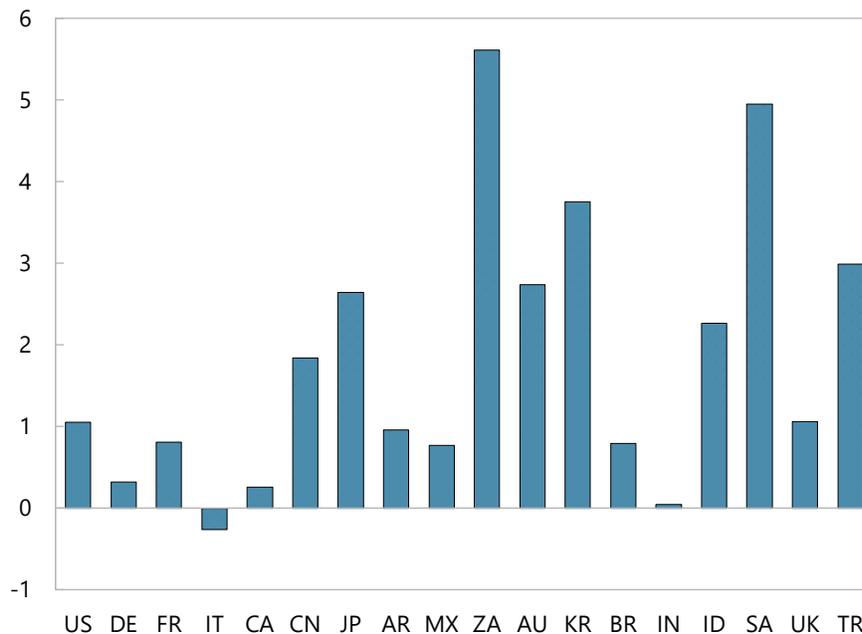
Yet we know from experience that market access can abruptly become more difficult, and that too is something that debt managers and investors need to prepare for. Markets can swing from loose to tight conditions over short periods. During "risk off" periods (such as in 2013 and 2015–2016), some borrowers are subject to sharply tighter market pricing. We hope that Session 2 will yield some lessons from experience on how to prepare for such eventualities.

Lower rates and, for some countries, intentional lengthening of maturities has increased the duration of government debt portfolios. This move may be quite rational in an

environment of low yields, low term premia, and low sovereign risk spreads, but is not without potential risks for issuers and for investors. Longer maturities imply reduced rollover risk and slower repricing, so they can be advantageous from a budgetary perspective, especially when the term premia are small or negative. But extending maturities implies a loss of flexibility, and possibly also a reduction in the liquidity of primary and secondary markets. Especially for a smaller issuer competing in international markets, a sporadic presence in those markets may weaken investor relations and the ability of react to contingencies. “Regular and predictable” issuance is a paradigm for debt managers that can be undermined by lengthening maturity structures.

### Maturity extension of public debt

(in years, 2009-2019)



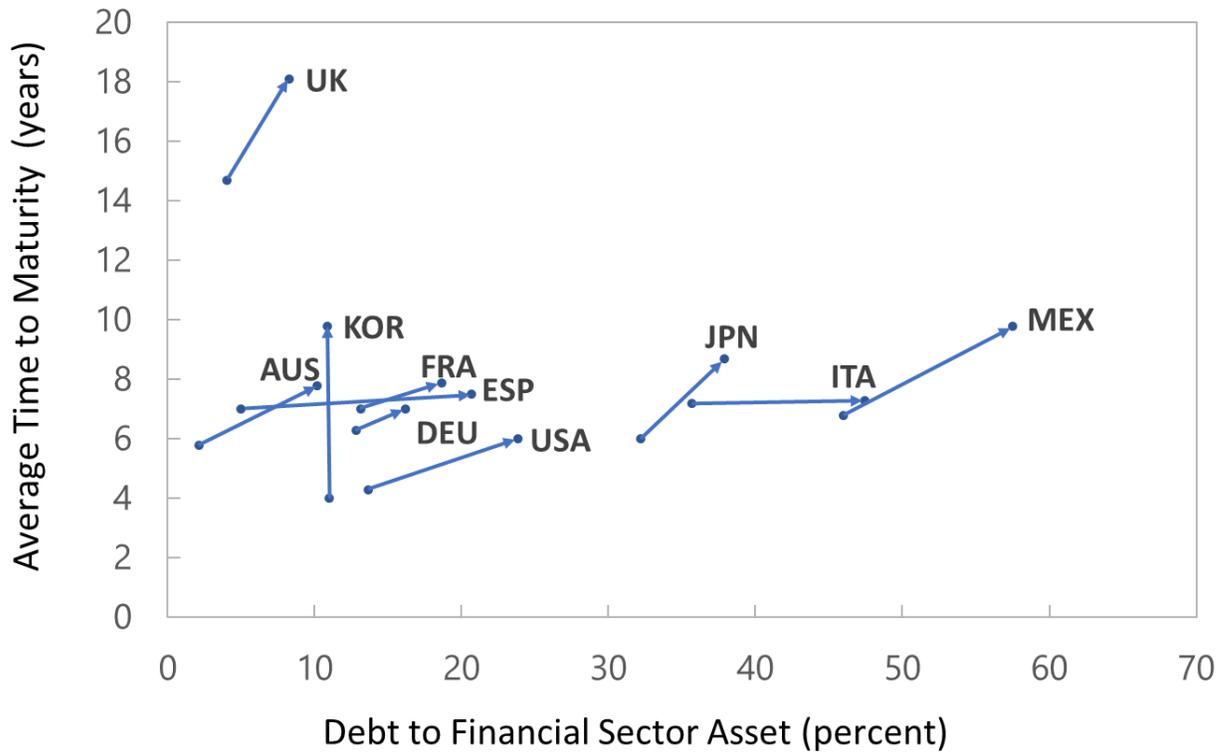
Source: International Debt Statistics, Bloomberg, and staff estimates.

Longer duration is combined with higher indebtedness for many countries. Here we show, for selected countries the evolution since 2007 of the average time to maturity of sovereign debt (measured on the vertical axis) and the stock of sovereign debt relative to total financial sector assets (measured on the horizontal axis). A movement away from the origin implies more sensitivity of the market value of the portfolio to movements in interest rates, and especially longer-term rates. For most countries, what we see is a movement away from the origin. Some like Korea have mainly lengthened maturities, and others have seen a substantial increase in sovereign debt as a share of total assets, even if

maturities are unchanged.<sup>12</sup> The second, horizontal movement in part reflects de-leveraging in other sectors, but that still means that sovereign debt has gained in importance as keystone of the financial system.

### Average Time to Maturity and Debt to Financial Sector Assets

(Selected countries; 2007-2017)



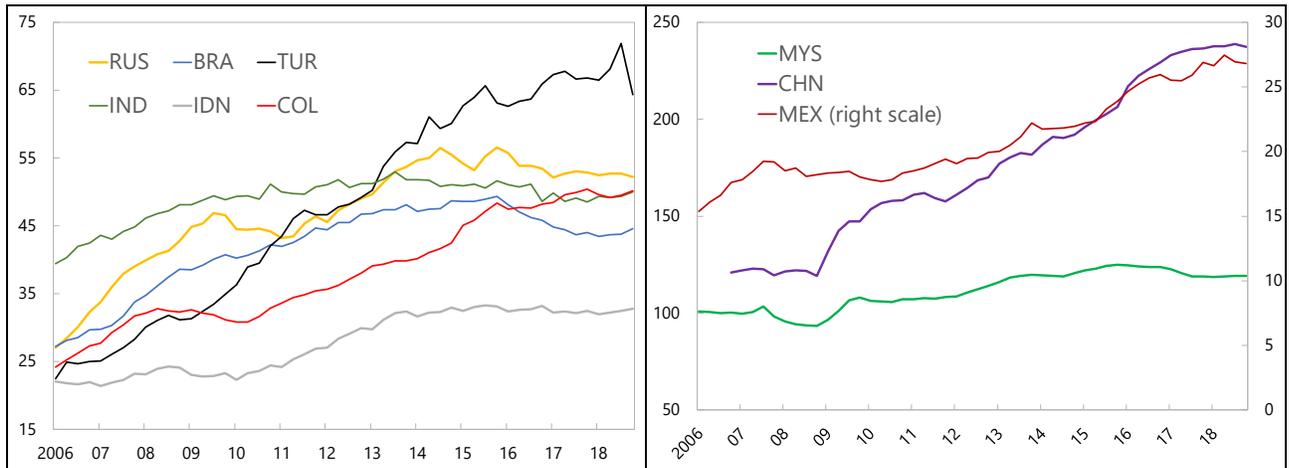
Sources: FSB, Global shadow banking monitor, OECD and IMF staff calculations.

The combination of longer duration and higher leverage is found in certain other sectors. The tendency is not uniform, and some sectors such as households in many countries have de-levered since the GFC. But elsewhere we see a resurgence in debt financing, notably in the corporate sectors, for example, in China, the US, and France.<sup>13</sup> Overall credit to GDP ratios have increased over the last five years in many EMs, albeit with recent signs of plateauing, which is in part attributable to policy actions.

<sup>12</sup> For Germany, the outward movement largely reflects deleveraging. Canada (not shown) moved inward.

<sup>13</sup> Corporate debt-to-GDP ratio at end-2018 were China: 155 percent; U.S : 74 percent; France: 143 percent.

## Credit to GDP Ratio (Percent)



Source: International Financial Statistics, and staff estimates.

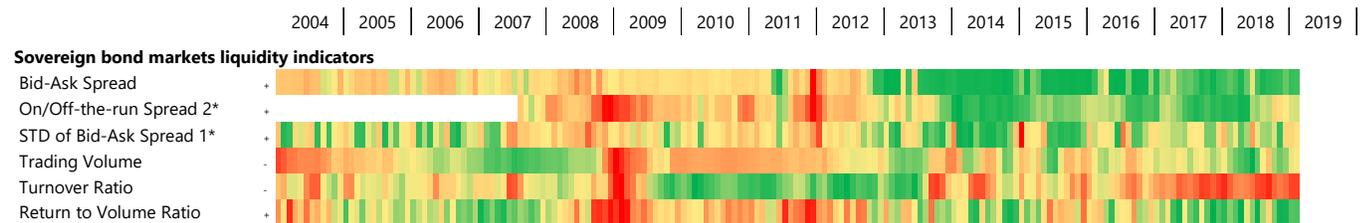
This combination is one reason why quite small absolute changes in rates can have a significant impact, or at least generate a great deal of noise and comment. Another factor contributing to this phenomenon is the increased importance of forward guidance by central banks in the low yield environment. A given change in short rates may be accompanied by more or less strong guidance as to a shift in the longer-term direction of policy. A move of 25bps in the Fed funds rate can be run-of-the-mill, or it can generate a bout of volatility if it is seen as a precursor to a series of adjustments and a shift in the policy stance. Both debt managers and investors need to anticipate that, when such shifts are signaled, market volatility will spike.

## VI. MARKET LIQUIDITY

There was, and there still is much discussion in the years following the GFC of whether mature debt capital markets have become less liquid. The current consensus is that AE markets are adequately liquid most of the time, in part because debt managers have taken action to make them so—for example, by supporting primary dealers, adjusting issuance patterns, and making more use of syndication. Some debt managers are actively trying to maintain the liquidity of secondary and futures markets. Market participants, and especially dealers, appear to be very appreciative of the availability of securities lending schemes. Even though many securities are accumulated on the books of the central bank, they are available when needed to meet temporary settlement needs.

Conventional measures of market liquidity have recovered or improved, at least during normal times. However:

- Bouts of illiquidity occur from time to time also in AE markets; conditions may be more fragile than they appear during calm periods. The following chart shows the time pattern of various indicators of market liquidity in AE sovereign bond markets.<sup>14</sup> Bid-ask spreads remain tight, but traditional dealers may have reduced volumes, and episodes of poor liquidity occur from time to time—at quarter-ends but not only at quarter ends:



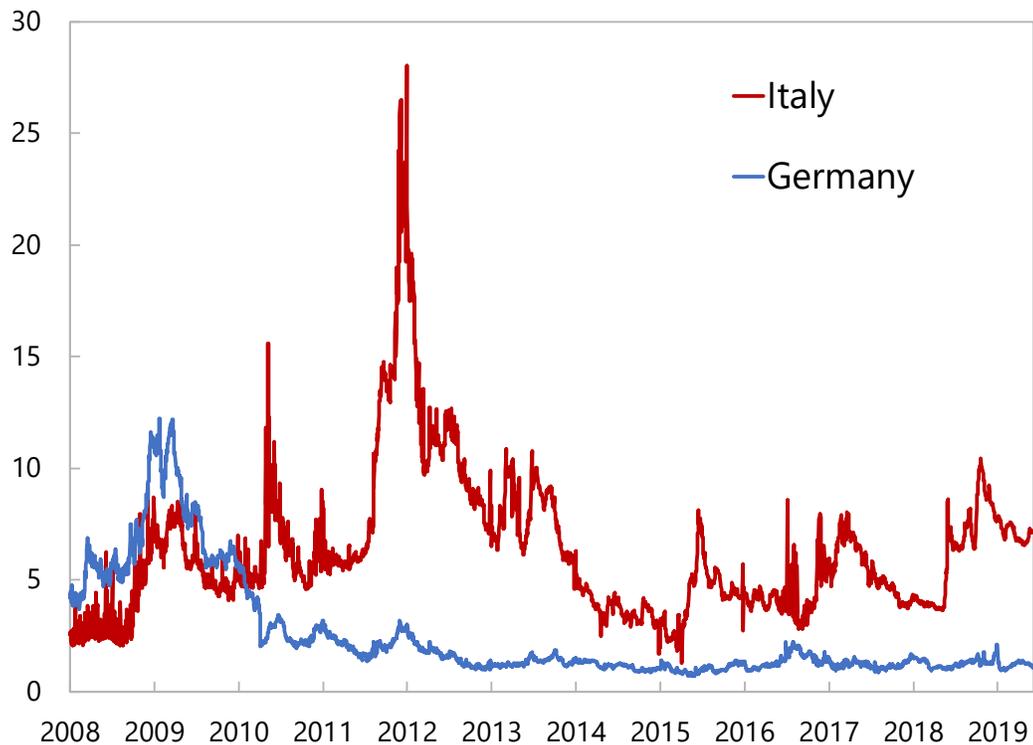
Source: Global Financial Stability Report.

Moreover, divergence between highly liquid and relatively illiquid markets appears to have increased. The divergence may have arisen because participation of traditional market makers, which provide liquidity across all markets, has declined in relative terms. The divergence is shown by the persistent difference since around 2010 between measures of liquidity of the German and Italian bond markets:<sup>15</sup>

<sup>14</sup> The sample countries are Germany, Italy, Japan, UK, US. Futures market data are used for trading volume, turnover ratio, and return to volume.

<sup>15</sup> Shown is the Bloomberg liquidity index.

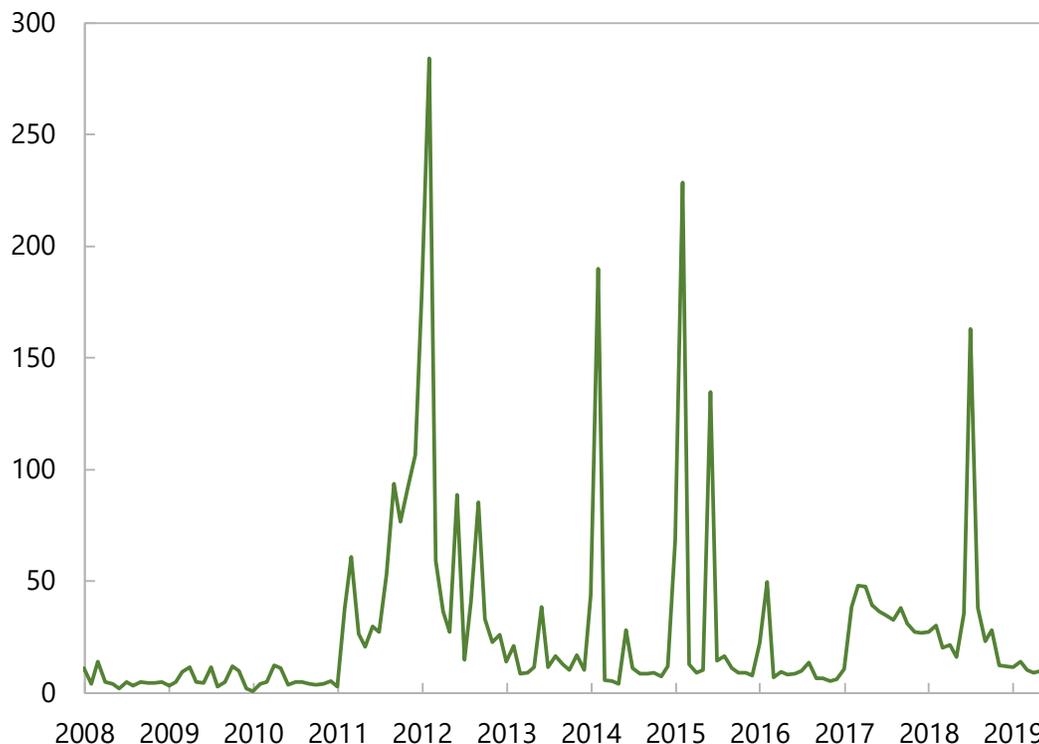
### Bloomberg liquidity index



Source: Bloomberg, and staff estimates.

It's not so much that the Italian market is distinctly illiquid. Rather, Bunds, like US Treasury bills, have a special status as preferred HQLA, ensuring that there is always a ready supply and demand. Moreover, spreads in the Italian bond market are not always very tight, but they widen sharply from time to time before contracting again. In this way "risk off" periods may be accompanied by wider bid-ask spreads and other manifestations of reduced liquidity.

### One-Month Standard Deviation of Bid-Ask Spreads in Italy Sovereign Benchmark Bonds (Basis points)



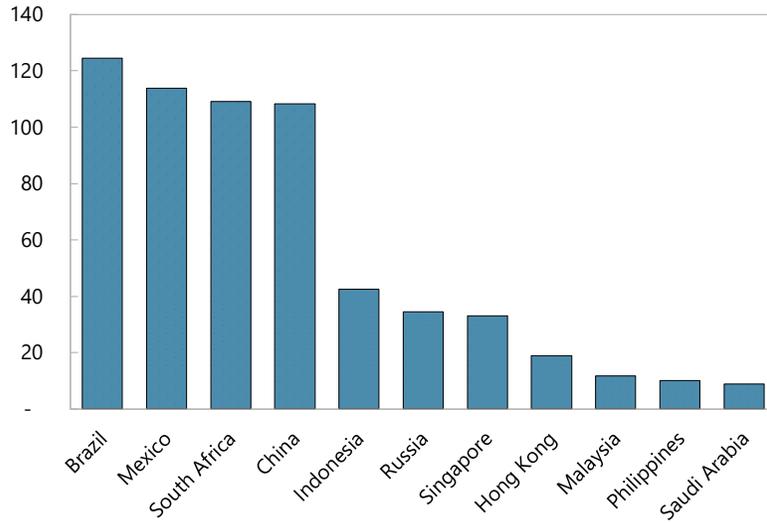
Source: Bloomberg, and staff estimates.

Many of these tendencies may be connected to changes in the market microstructure, and in particular the effects of digitalization, such as the rise in high frequency and algorithmic trading, and the use of Digital Ledger Technology. The end-point of this evolution cannot be discerned at this point. We hope to shed more light on these topics in Session 4.

- Many EM local currency bond markets are now substantial in terms of amounts outstanding, but in some cases, they are rather illiquid. Turnover is low. The quality of price discovery may be questionable. It is plausible that pricing will then react disproportionately to external shocks—particularly to increases in the market price of risk. A sustained period of high volatility could cause rollover risks for EM sovereigns, and debt may have to be rolled over at high cost. In Session 5 we will talk about how some countries have made progress in achieving genuine depth in their local bond market.

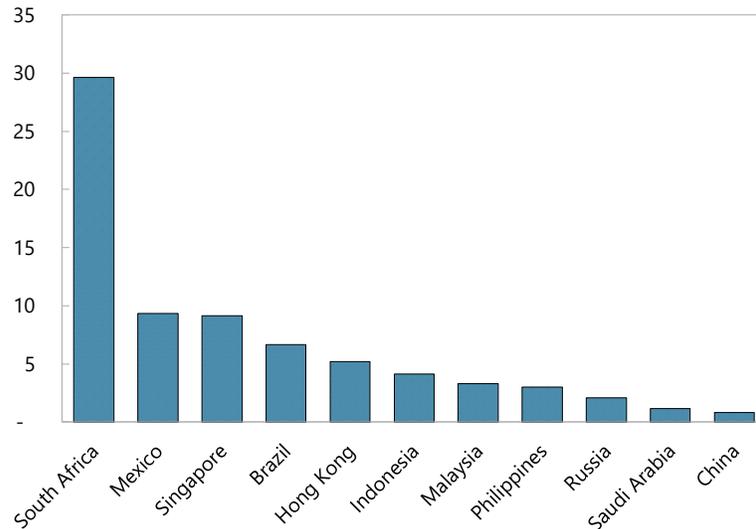
### Sovereign Bond Trading Volume

(As of 2017Q3; quarterly in USD billions)



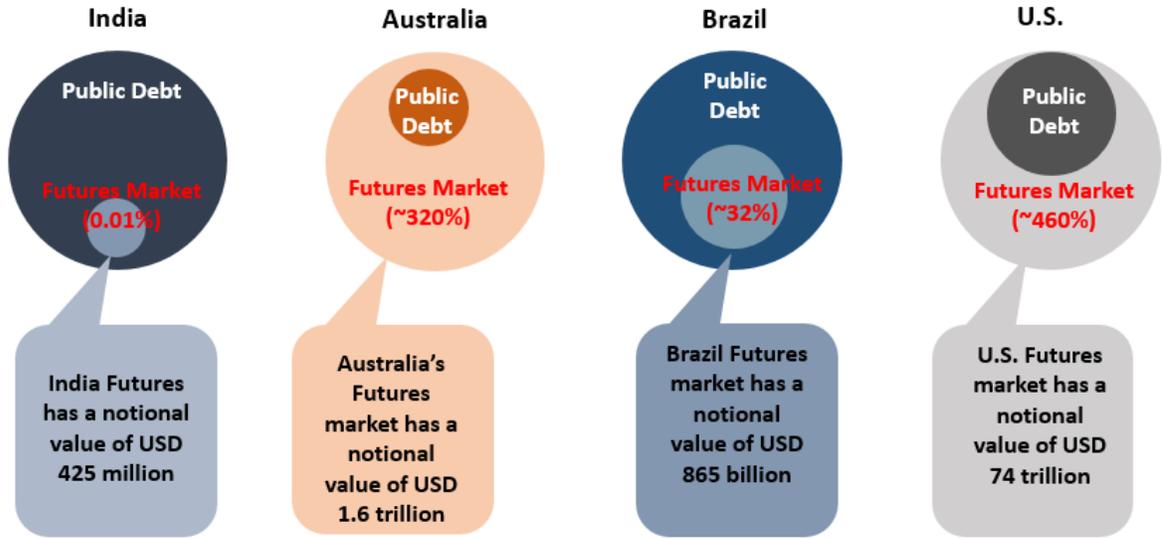
### Sovereign Bond Trading Volume

(As of 2017Q3; quarterly in percent of GDP)



Source: International Debt Statistics, Bloomberg, and staff estimates.

Part of the reason lies in the relatively underdeveloped state of the futures market in these countries. Market participants must operate in the rather cumbersome spot market, where the free float may be limited, and transaction costs may be higher. In Australia and the US, for example, much of the price discovery occurs in the futures market.



Source: Bloomberg, national sources, and staff estimates.

One should not think of this as the tail wagging the dog, but perhaps as the tail wagging or drooping revealing the mood of the dog.

## VII. CONCLUSION

The wide range of developments and trends will present opportunities and challenges for all market participants. Debt managers, central bankers, regulators, and their private sector counterparts will need to keep a close watch on these longer-term shifts. Eventually the regime of “low for long” will end—but, before and afterwards, many countries will face large net and gross financing needs. There will continue to be new instruments and new investors, and there will be corresponding new strategies and techniques. Sometimes patience and strong nerves will be needed, together with financial buffers, to ride out periods of turbulence.

I would like to conclude with two remarks.

First, sovereign debt capital markets are large relative to most other financial markets and to the overall economy, and therefore debt management policies can be macro-critical. What happens in sovereign debt capital markets can affect macroeconomic performance and financial stability, and in particular can generate a great deal of downside risk. Hence, debt managers must take into account macroeconomic conditions and risks in setting their

strategy, and they must also anticipate the effects of their actions elsewhere in the economy. The government is so large that what economists would call a general equilibrium approach to debt management is ultimately needed. That general equilibrium approach, looking also at the whole distribution of possible outcomes, tends to add extra weight to the need for diversification of funding, the mobilization of domestic savings, and building buffers, even if those actions incur additional short-term costs.

Second, good debt management, like good asset management, needs clarity about objectives and constraints, and thus transparency. This transparency is needed first of all towards oneself. One must know all relevant aspects of the situation that one faces, and the scope of responsibilities, to make good decisions. Transparency is required also towards the people and bodies for whom one operates, that is, there should be governance arrangements in place so that the principals can set goals and hold their agents to account. Thus, for example, parliament has a right to know about the costs of government financing and the range of risks that are being incurred. The macro importance of debt management, which I stressed in my last points, implies that debt market and financing issues need to be conveyed clearly to the political level. Finally, transparency must be extended to counterparties, such as those investing in government securities or those providing official financing. Otherwise they will be wary of engaging and a cooperative approach will be impossible. In recognition of these principles, the international community and specifically the IMF have placed emphasis on debt transparency. Debt transparency has many aspects, from the mechanics of record keeping to the alchemy of investor relations. Investors too have a duty to contribute to enhanced transparency, and therefore the Fund has supported recent initiatives in this area. We recognize the short-term incentives for keeping activities confidential, but believe that a high degree of government debt transparency is in the enlightened self interest of borrowers and investors alike.

I feel sure that the wide array of sessions here at the forum will include lively discussions and the exchange of experiences and insights on all these themes. Those discussions will be of great value to participants from both the official and the private sectors. Moreover, I am confident that, with the guidance of our Japanese hosts and in the second month of Japan's Reiwa era, the forum will be characterized by "beautiful harmony."

Thank you very much.