



How to transition out of a “Goldilocks economy” without creating a new “Minsky moment”?

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On the occasion of the National Bank of the Republic of Macedonia/Reinventing Bretton Woods Committee Joint conference on “Monetary policy and asset management”

Skopje, 16 February 2018

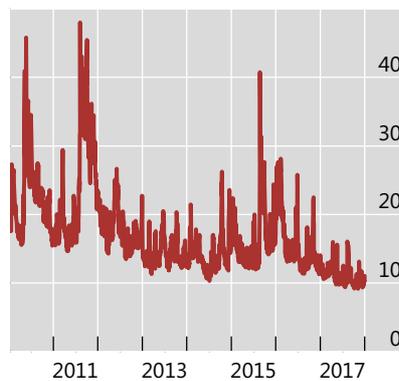
Volatility is back

A long episode of very calm markets appears to have come to an end. During the first eight days of February 2018, concerns about the joint impact on inflation of rising wage pressures against the backdrop of the US fiscal expansion and dollar depreciation challenged investors’ complacency about inflation risks. Yield curves shifted up, apparently driven mostly by higher inflation expectations. The S&P 500 fell by 10%, the first sharp decline since January 2016 when market participants reacted with alarm to events in China. The VIX, a measure of expected stock market volatility, reached levels unseen since August 2015 (Graph 1). For a moment, the risk appeared to emerge that the Goldilocks economy, with robust growth, low unemployment, and low inflation, could come to an abrupt end, giving rise to a “Minsky moment” in which speculative positions are unwound quickly, asset prices fall and the economy plunges into recession.

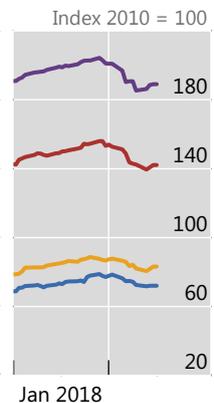
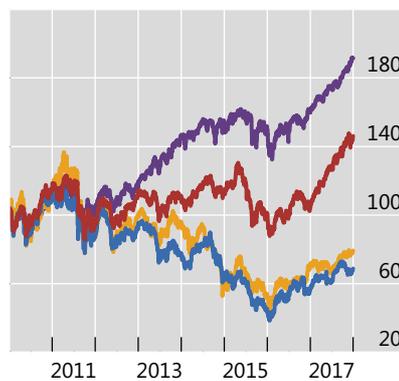
Volatility is back

Graph 1

Volatility index (VIX)¹



Equity market indices (USD)¹



— EM Asia² — EM Latin America³
— EM CEE⁴ — G7

¹ Data as of 13 February 2018. ² CN, IN, TW, ID, KR, MY, PH, TH. ³ PE, BR, MX, CL, CO. ⁴ RU, CZ, HU, PL.

Sources: Bloomberg; Datastream; BIS calculations.

Equity markets have since showed signs of stabilising. The jump in the VIX may have largely reflected technical dynamics – investors in short-volatility funds caught wrong-footed – rather than a more prolonged increase in

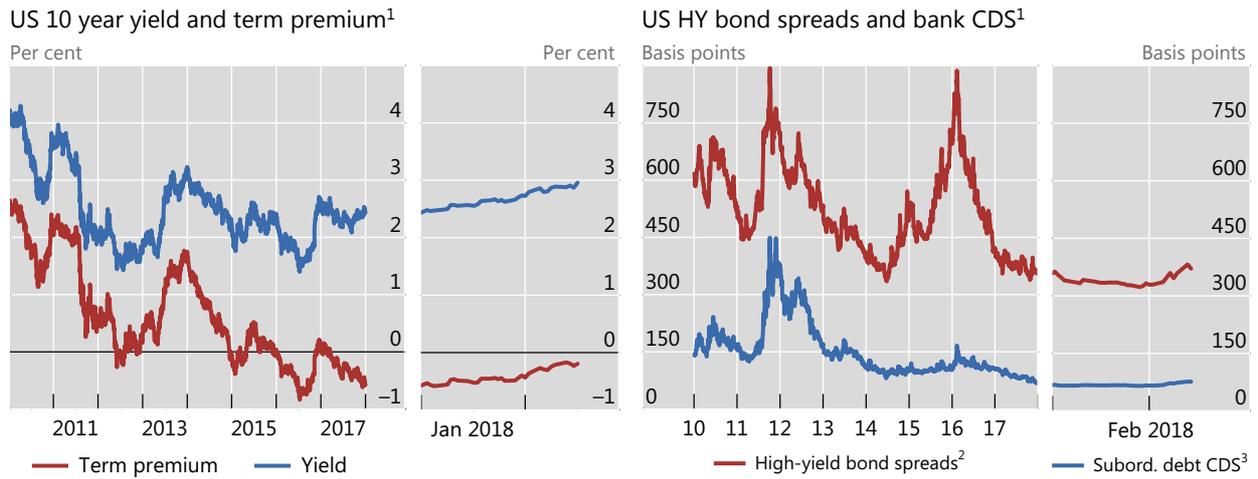
¹ Deputy General Manager and Senior Economist respectively, Bank for International Settlements (BIS). We would like to acknowledge comments by Agustín Carstens and Robert McCauley. However, the views expressed here are our own and do not necessarily reflect those of the BIS.



risk aversion. The fact that high-yield bond spreads and bank CDS have remained close to their historical lows points in the same direction (Graph 2). In addition, spillovers of higher US interest rates to emerging markets (EMs) have been muted. Even as investors priced in additional increases in the federal funds target, the surprisingly soft US dollar and the persistent hunt for yield have continued to support fund flows into EMs through January, with a limited retrenchment in February (Graph 3).

Treasury yields have increased but the rise in bond spreads and bank CDS is modest

Graph 2

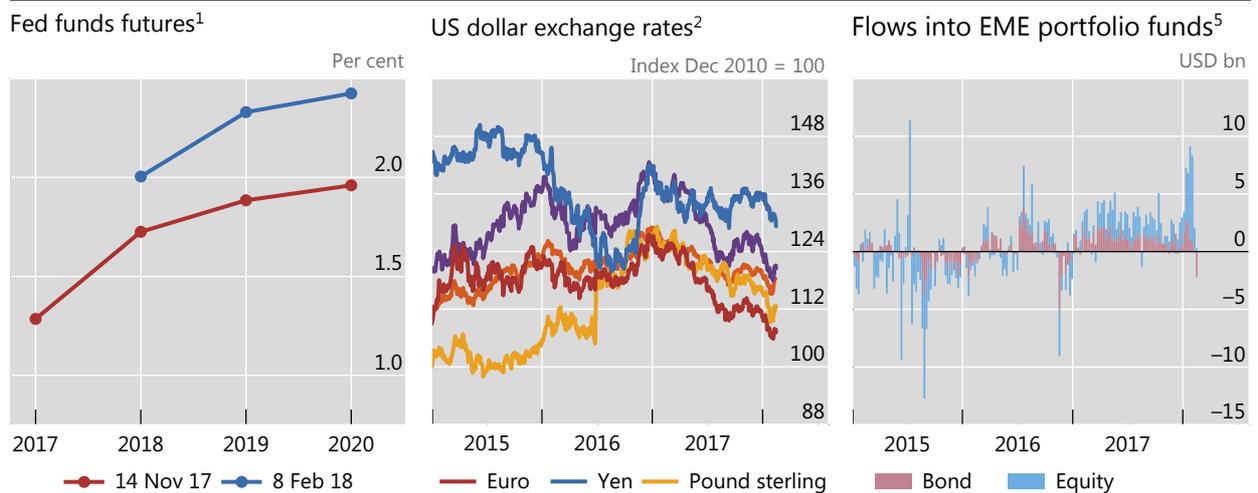


¹ Data as of 14 February 2018 ² Option-adjusted spreads over government bonds. ³ Bank CDS premia, five-year; simple average of six major banks in the country.

Sources: Federal Reserve of New York; Bloomberg; Datastream; Markit; BIS calculations.

More Fed hikes were priced but the dollar weakened and EMEs attracted funds

Graph 3



¹ For market expectations, fed funds 30-day futures implied rate; for 2017, December 2017 contract; for 2018, December 2018 contract; for 2019, December 2019 contract; for 2020, August 2020 contract. ² Data as of 13 February 2018. ³ Median of the countries. ⁴ Trade-weighted broad US dollar index. ⁵ Data cover net portfolio flows (adjusted for exchange rate changes) to dedicated funds for individual EMEs and to EME funds with country/regional decomposition. Data as of 15 February 2018.

Sources: Datastream; EPFR; national data; BIS calculations.



On that basis, one might conclude that the correction in equity prices was largely technical, following a long bull market, instead of a sign that investors have woken up to the risks that our economies face, including those posed to financial stability.

Two scenarios for 2018: healthy correction vs snapback

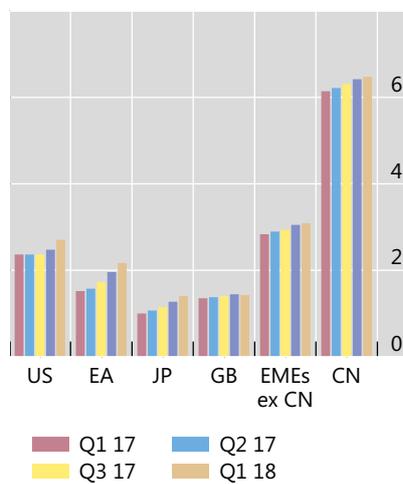
After long bull markets, declines in equity prices are nothing unusual. Spikes in volatility can serve as a useful reminder to investors of the risks they are taking, helping to end, or at least lessen, complacency. However, if such declines steepen, the risk emerges that they could trigger amplification mechanisms that lead to financial stress. This could put policymakers, especially central banks into a difficult position: should they intervene, by signalling their willingness to support markets or by supporting them outright? This might interrupt amplification loops but might condone complacency by offering a put option to investors. Conversely, should they let markets run their course, hoping that buyers will come in before markets go into a tailspin? This is the delicate art of policy-making but for sure running such a risk by standing on the sidelines of a significant market correction is larger when economic growth looks fragile and the financial sector is highly leveraged, illiquid and poorly capitalised. In addition, amplification can be greater when monetary, fiscal, and macroprudential policy has little space to counteract any lasting real effects of financial stress. So where are we in early 2018? Are we well-positioned to deal with repeated episodes of market turbulence? We have been supposedly living a “Goldilocks economy”; can we exit it without entering a “Minsky moment”?

The macroeconomic backdrop is supportive

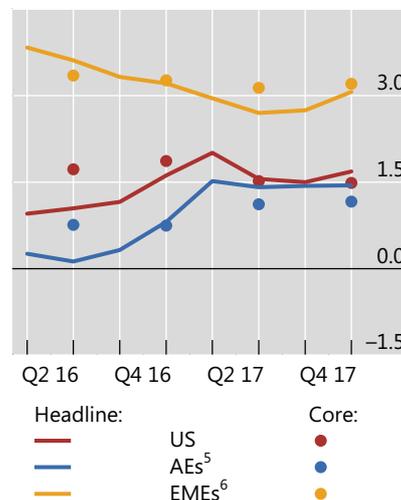
In per cent

Graph 4

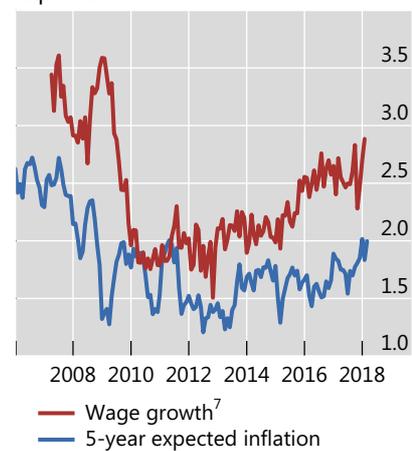
GDP growth forecast for 2018^{1,2}



Consumer price inflation^{3,4}



US wage growth and inflation expectations



¹ Quarterly averages of monthly Consensus forecasts of annual average growth in 2018; Q1 2018 data based on forecasts up to January 2018. EMEs excluding China comprise Emerging Asia, Latin America and other EMEs. ² Regional aggregates are weighted averages based on rolling GDP and PPP exchange rates. ³ Based on CPI indices; for US, based on personal consumption expenditure. ⁴ Regional aggregates are weighted averages based on rolling GDP and PPP exchange rates. ⁵ AU, CA, DK, euro area, JP, NO, SE, CH, GB. ⁶ BR, CL, CN, CO, CZ, HK, HU, IN, ID, IL, KR, MY, MX, PE, PH, PL, RU, SG, ZA, TW, TH and TR. ⁷ Annual changes in average hourly earnings of all private employees.

Sources: Consensus Economics; Federal Reserve Bank of Cleveland; Federal Reserve Bank of St Louis; US Bureau of Labor Statistics; national data; BIS calculations.

There is a fair case that we could withstand several episodes of further “technical corrections”. The macroeconomic background is strong (Graph 4), perhaps even justifying the still high valuations of risky assets. Inflation has remained contained and inflation expectations have generally remained well anchored. In addition,



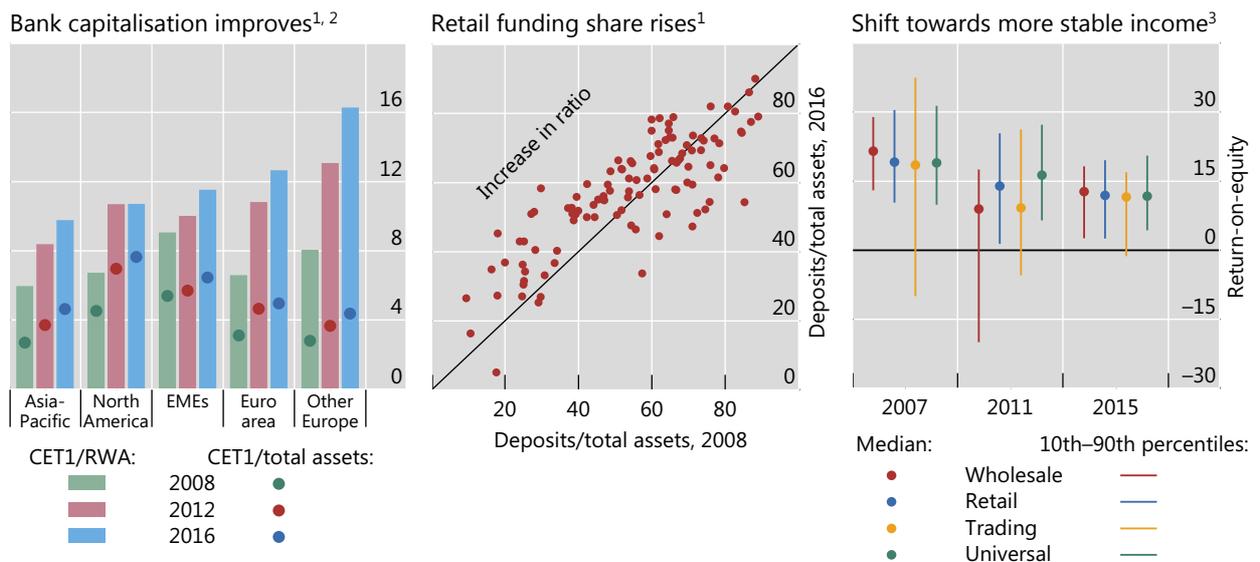
the Great Financial Crisis (GFC) may have had a profound impact on structural macroeconomic parameters that determine the response of inflation to rising employment and consumption, and on the interest rate at which saving and investment balance without stimulating nor dampening economic activity. In particular, the sensitivity of inflation to real activity appears to have weakened in many countries, and the neutral interest rate appears to have fallen. Against this background, monetary policy in key advanced countries could be less expansionary than suggested by the low level of policy rates and central banks' extensive asset purchases. Accordingly, monetary policy normalisation would only be gradual and end at a policy rate lower than in previous tightening episodes. This is the scenario that markets appeared to have put their money on until the end of January. In their public interventions, central banks emphasised the gradualism and predictability of their likely future actions, as illustrated by the Federal Reserve's design and communication of the unwinding of its asset purchase programme last year.

Another element to support this view is the greater robustness of the banking sector.² Global banks have raised capitalisation levels and cut leverage (Graph 5, left-hand panel).³ They have also increased their reliance on more stable retail funding, such as customer deposits. This has formed part of a broader shift towards more retail-oriented business models, with relatively stable income sources (Graph 5, centre and right-hand panels).

Banks have strengthened balance sheets and stabilised revenues

In per cent

Graph 5



CET1 = Common Equity Tier 1; RWA = risk-weighted assets.

¹ Sample of more than 100 banks with at least \$100 billion of total assets in 2014. ² Median ratios; values for 2008 may overstate actual capitalisation levels due to imperfect adjustment to new capital/RWA definitions. ³ Based on a classification of bank/year observations into four business models.

Sources: R Roengpitya, N Tarashev, K Tsatsaronis and A Villegas, "Bank business models: popularity and performance", *BIS Working Papers* No 682, 2017; SNL; BIS calculations.

² See eg Financial Stability Board, *Implementation and effects of the G20 financial regulatory reforms: third Annual Report, 2017*; BIS, *87th Annual Report, 2017*, Chapter V, "The financial sector – preparing for the future".

³ For details, see BIS, *ibid*, from where Graph 5 is reproduced.



However, the “healthy correction” scenario might become less likely if additional repeated episodes of turbulence occur as yield curves are repriced abruptly in response to higher inflation expectations. Then, as some of us at the BIS have hypothesised, financial conditions might tighten more abruptly.⁴ Doubts arise because there is substantial uncertainty regarding inflation dynamics. The classical link between closing output gaps and higher inflation, a workhorse of economic forecasting, has not manifested itself over the past few years to the same extent as previously. There are many hypotheses explaining the “flatter Phillips curve” (eg increasing competition induced by better comparability of prices; international forces; inflation responding with a greater delay; or measurement errors).⁵ The quantitative relevance of these factors vis-à-vis weak aggregate demand to account for low CPI readings so far in the current cycle remains under debate.⁶ This uncertainty matters for assessing where we are because inflation processes are also influenced by expectations of future inflation (see Graph 4), giving rise to multiple equilibria. More recently, wages are rising in major advanced economies (AEs). Announcements such as the January 2018 growth of hourly compensation in the United States have coincided with increases in the slope of the US yield curve, indicating that inflation expectations may have risen.

Another factor that might affect inflation expectations is further US dollar depreciation, even though the immediate pass-through to US inflation may be low because imports are largely invoiced in US dollars.⁷ The dollar’s current weakness is a puzzle as it occurs against the backdrop of a widening gap between US interest rates and those in the euro area and Japan.

While rising inflation expectations might be one reason for an abrupt steepening of the yield curve, another might be that term premia are snapping back. A trigger could be market participants re-assessing the evidence as suggested above and then pricing inflation risk more dearly. Another factor could be uncertainty regarding the strategy the US Treasury will adopt for issuing shorter vs longer bonds to fund what is now foreseen as a widening fiscal deficit.⁸ On top of these economic and financial risk factors, many countries and regions face elevated internal and external political risks. For example, new protectionist stances can translate into higher import tariffs and impact inflation.

Therefore, the risks remain that financial conditions tighten more abruptly and a bond yield snapback occurs. We would be then in a scenario where we should expect much greater volatility in several markets including foreign exchange. As during most episodes of financial tightening, the dollar could appreciate, depending on how pronounced is a flight to safety and how market participants assess the ECB’s and the Bank of Japan’s asset purchases programmes and at some point their possible intention to join the Federal Reserve in letting their portfolios run off. On previous occasions, a stronger US dollar has been associated with tighter

⁴ See eg L A Pereira da Silva and E Takáts, “The risk of complacency and self-delusion”, article written for the Eurofi High-Level Seminar 2017, Malta, 5–7 April 2017; J Caruana, “Low global bond yields: low growth, monetary policy, market dynamics”, speech at the Crédit Agricole CIB Asset Managers Summit, London, 14 November 2016.

⁵ See eg, R Auer, C Borio and A Filardo, “The globalisation of inflation: the growing importance of global value chains”, *BIS Working Papers*, no 602, 2017; European Central Bank, “Effects of e-commerce on inflation”, *ECB Economic Bulletin*, no 2/2015, Box 6.

⁶ See eg M Carney, “[De]Globalisation and inflation”, speech given at the 2017 IMF Michel Camdessus Central Banking Lecture, 18 September 2017; J Yellen, “Inflation, uncertainty, and monetary policy”, speech given at the 59th Annual Meeting of the National Association for Business Economics, 26 September 2017; M Draghi, “Accompanying the economic recovery”, speech given at the ECB Forum on Central Banking, Sintra, 27 June 2017.

⁷ See M Jašová, R Moessner and E Takáts, “Exchange rate pass-through: What has changed since the crisis?”, *BIS Working Papers*, no 583, 2016.

⁸ See eg J Normand, “All the President’s deficits”, *JP Morgan Cross-Asset Strategy Note*, 12 February 2018, who projects the US fiscal deficit to reach 5.4% of GDP in 2019 and points out that this would be a level reached only previously during the Great Financial Crisis.



financial conditions, particularly in emerging markets.⁹ Therefore, portfolio outflows and stress on EMs should be expected.

Under this scenario, leverage would likely amplify corrections in all markets. In early February, levered bets on low volatility appeared to have intensified the decline in equity prices. However, there is arguably scope for much larger feedback loops. First, stock indices (Graph 1) have risen dramatically and, as many market commentators have warned, asset prices look overvalued. Second, leverage has increased more broadly in the financial system and the real economy.

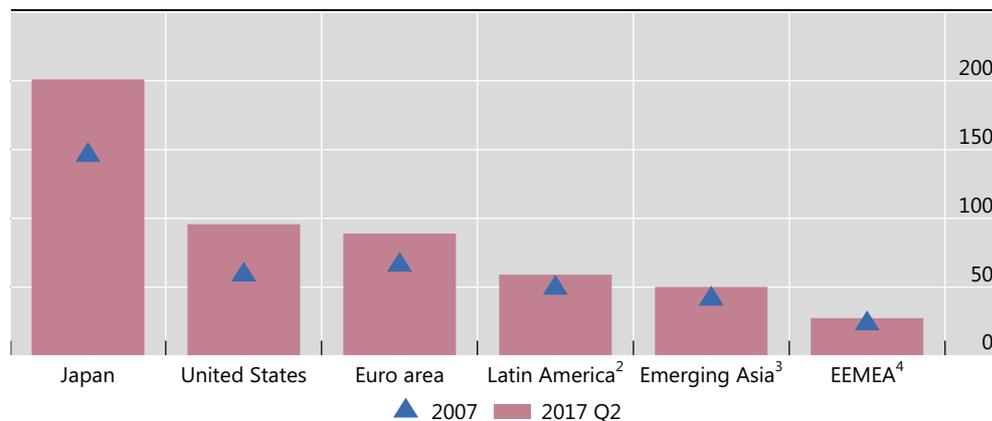
So under this scenario is it possible to avoid negative amplification loops that could pose a threat to financial stability? The jury is still out, as fiscal and monetary policy space appears quite limited to deal with any lasting real effects of financial instability, as we will now argue.

Fiscal policy space

Fiscal policy space has declined in most advanced economies over the past decade (Graph 6). Public debt/GDP ratios have increased since the 2007/09 crisis (median: +30 percentage points). This indicator has also increased in many EMs (median: +10 percentage points), in particular for commodity exporters since the decline in commodity prices in 2015. In emerging markets, debt/GDP ratios remain below the levels seen in AEs but sustainability thresholds might be lower as well.

General government debt-to-GDP ratio¹

Graph 6



¹ Regional aggregates are weighted averages based on rolling GDP and PPP exchange rates. ² AR, BR, CO, MX. ³ CN, HK, IN, ID, KR, MY, SG, TH. ⁴ CZ, HU, PL, RU, TR, SA, ZA.

Sources: National data; BIS.

In addition, debt-to-GDP ratios, even when adjusted for the business cycles, can substantially overestimate fiscal space. First, they do not take into account the sensitivity of debt limits to macroeconomic and financial conditions.¹⁰ Second, they ignore contingent liabilities (eg to banks, public-private partnerships,

⁹ See eg C Borio, "More pluralism, more stability?", speech at the seventh high-level SNB-IMF conference on the international monetary system, Zurich, 10 May 2016, and S Avdjiev, V Bruno, C Koch and H S Shin, "The dollar exchange rate as a global risk factor: evidence from investment", *BIS Working Papers*, no 695, 2018.

¹⁰ G Ganiko, K Melgarejo and C Montoro, "How much is too much? The fiscal space in emerging market economies", Central Bank of Peru, *Working Paper Series*, no 2016-014.



student loans). Third, they disregard future pressure on budgets arising, for example, from population ageing. Ageing is likely to lower potential growth while creating deficits in underfunded social security systems. Climate change, with its potential to wreak havoc on production capacity and infrastructure, may pose a competing claim on fiscal space.

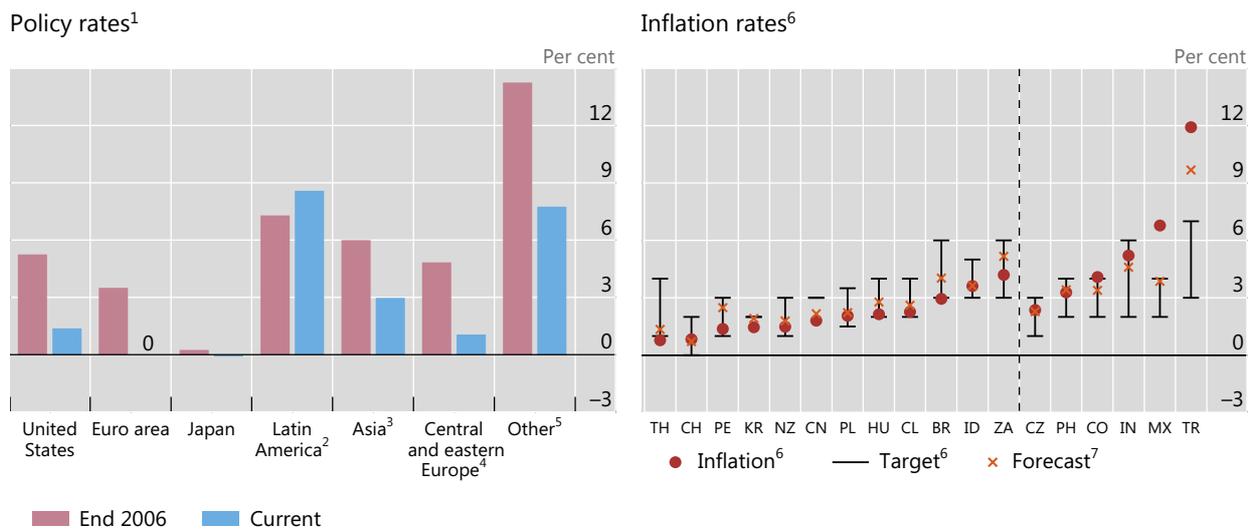
A lack of fiscal space not only limits the ability to use fiscal policy as a countercyclical tool. It can also destabilise financial markets and amplify financial crises, as the European sovereign debt crisis illustrated.¹¹ One reason is the well known "doom loop" between the decreasing solvency of banks and sovereigns. Another reason is that estimates of fiscal space are very uncertain, creating the potential for sovereign debt crises to be at least partially self-fulfilling.

Monetary policy space

In the face of inflation surprising on the upside, further policy tightening in the United States would be expected. Indeed, this is what markets have begun repricing over the past weeks. More information is coming as we speak and if markets overreact to that, leading to a sharp tightening of financial conditions, the current strategy of gradual monetary policy normalisation might have to be revisited.

Monetary policy space

Graph 7



¹ Simple averages of the countries for the regional aggregates. ² Argentina, Brazil, Chile, Colombia, Mexico and Peru. ³ China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. ⁴ Czech Republic, Hungary and Poland. ⁵ Russia and Turkey. ⁶ Consumer prices, year-on-year changes. ⁷ As of December 2017. ⁸ Consensus Economics forecast as of Dec 2017 for 2018.

Sources: Datastream; national data; BIS calculations.

Obviously, depending on when this reassessment takes place, in key economies, the monetary space will depend on how close policy rates will be vis-a-vis their lower bound (Graph 7, left-hand panel). If central banks then decide to reverse course and revisit the management of their asset purchase programmes, they will face a communication challenge.¹² In particular, to avoid excessive volatility in their yield curve, a possibility

¹¹ See eg BIS, *86th Annual Report*, 2016, Chapter 5, "Towards a financial stability-oriented fiscal policy", for a discussion of the links between fiscal policy and financial stability.

¹² In addition, there is also evidence that asset purchases have lost some of their effectiveness since the GFC. See eg A Filardo and J Nakajima, "Effectiveness of unconventional monetary policies in a low interest rate environment", *BIS Working Papers*, no 691, 2018.



might be to attempt to temporarily accept an overshooting of their inflation target. The success of this policy stance will naturally depend on its credibility and sustainability over the medium term.

Many EMs in Asia and central and eastern Europe, where policy rates are low, could find themselves in a similar situation. In EMs in which policy rates are higher, the scope for easing monetary policy appears larger, at least to the extent to which inflation expectations are well anchored. The fact that inflation is within target in most inflation targeting EMs (Graph 7, right-hand panel), and the adoption of inflation targeting by India and Russia could help anchor inflation expectations. However, where there is a risk of a substantial de-anchoring, central banks may need to raise policy rates (as illustrated by the responses of some Latin American central banks to the taper tantrum). Finally, an abrupt episode of tightening in AEs has consequences for EMs' exchange rates and hence for inflation, given that pass-through is usually larger than in AEs.

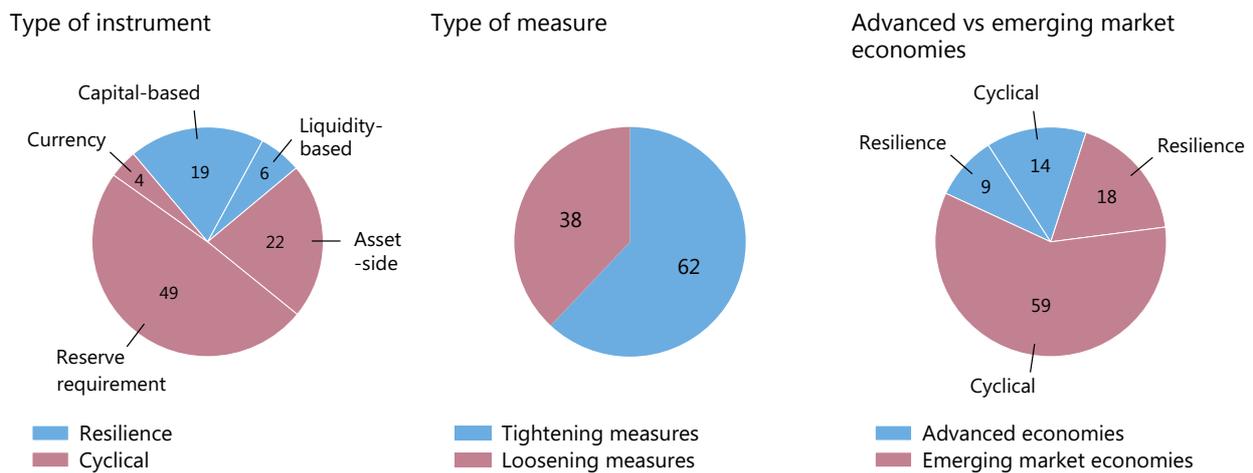
Macroprudential policy space

In contrast to limited monetary and fiscal policy space, macroprudential policy space has somewhat increased over the past years. More macroprudential instruments are now available in the toolkit of policymakers. In particular, Basel III has introduced a broad-based tool directly targeted at mitigating cyclical variations in credit supply: the countercyclical capital buffer (CCyB). So far, however, only a few countries require banks to have a positive CCyB. This partly reflects that the framework for the CCyB is very recent (eg EU countries elaborated their framework as recently as 2014–16). Separately, many AEs and some EMEs required banks to build additional capital buffers that are not explicitly designed for countercyclical use but do improve resilience. Some countries also phased in such buffers more quickly than originally envisaged. Arguably, simultaneously adding the requirement to build a CCyB might have had too negative an impact on credit supply.

Use of macroprudential instruments¹

In per cent

Graph 8



¹ The sample covers the period 1990–2014. Macroprudential tools for resilience include (a) capital-based instruments (countercyclical capital requirements, leverage restrictions, general or dynamic provisioning) and (b) liquidity requirements. Cyclical macroprudential tools include (c) asset-side instruments (credit growth limits, maximum debt service-to-income ratio, limits on banks' exposures to the housing sector as a maximum loan-to-value ratio); (d) changes in reserve requirements; and (e) currency instruments (variations in limits on foreign currency exchange mismatches and net open positions).

Source: C Boar, L Gambacorta, G Lombardo, L Pereira da Silva (2017), "What are the effects of macroprudential policies on macroeconomic performance?", *BIS Quarterly Review*, September, pages 71-88.

That said, many countries have gained substantial experience with using prudential measures other than the CCyB for countercyclical purposes. For example, many have taken borrower-side measures to address

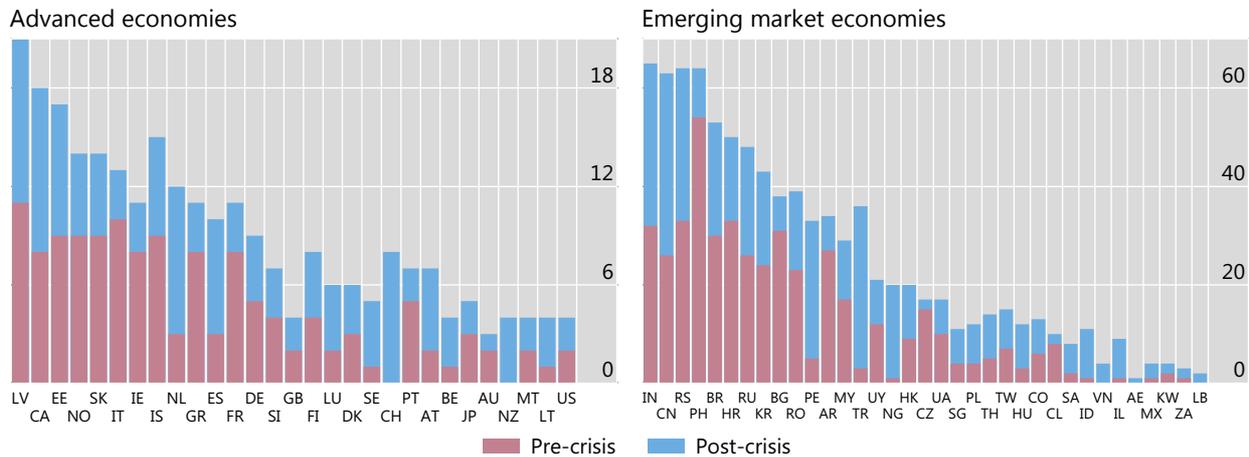


emerging risks in housing markets. Graph 8 summarises the different types of instrument used. Broadly speaking, EMs have used these instruments more actively than AEs (Graph 9). The GFC sparked additional interest in these tools.

Policy activism varies between countries

Number of policy actions

Graph 9



The sample covers 1,149 macroprudential policy actions adopted in 64 countries (29 AEs and 35 EMEs). The database is constructed using information in Cerutti, E, R Correa, E Fiorentino and E Segalla (2017b), “Changes in prudential policy instruments – a new cross-country database”, *International Journal of Central Banking*, vol 13, no 1, pp 477–503; Kuttner, K and I Shim (2016): “Can non-interest rate policies stabilise housing markets? Evidence from a panel of 57 economies”, *Journal of Financial Stability*, vol 26, pp 31–44; Lim, C-H, A Costa, F Columba, P Kongsamut, A Otani, M Saiyid, T Wezel and X Wu (2011), “Macroprudential policy: what instruments and how to use them? Lessons from country experiences”, *IMF Working Papers*, no 11/238, November, pp 1–85; and Lim, C-H, I Krznar, F Lipinsky, A Otani and X Wu (2013), “The macroprudential framework: policy responsiveness and institutional arrangements”, *IMF Working Papers*, no 13/166, July. Data for the pre-crisis period cover the 1990–2007 period, while the post-crisis period refers to 2008–14.

Source: C Boar, L Gambacorta, G Lombardo, L Pereira da Silva (2017), “What are the effects of macroprudential policies on macroeconomic performance?”, *BIS Quarterly Review*, September, pages 71-88.

Challenges for policy: walking a thin line to exit a “Goldilocks economy” without creating a new “Minsky moment”

Where does this leave policymakers? Central banks find themselves in a difficult position. On the one hand, if inflation indeed surges, high levels of debt could bring to AEs the shadow of fiscal dominance, familiar in EMEs, making it more difficult to tighten policy sufficiently aggressively. High leverage among households and firms in many countries gives rise to the possibility that financial turbulence will inflict sustained real effects. And as we have argued above, the policy space to respond to these real effects appears rather small, certainly much smaller than before the GFC.

On the other hand, leaving inflation to run above target out of concern about the financial stability risks might de-anchor inflation expectations. This is costly, and not only because of the well known distributional effects of high inflation. Lower real interest rates would also likely put downwards pressure on a country’s exchange rate and could give rise to currency tensions. In addition, meeting the inflation target in the longer run would likely require policy to be tightened even more aggressively in the future, thereby increasing the costs of stabilising the economy.

As they start to normalise policy, central banks face a challenging task: they are building the conditions for exiting this “Goldilocks economy” but need to do so without allowing markets to create a new “Minsky moment”. That means meeting both their price and financial stability mandates without excessively using or



signalling a too aggressive usage of their respective policy instruments. Obviously that needs to be communicated and done skilfully and without losing credibility.

How then should this be communicated? Central banks need to prepare market participants for policy actions without sedating them. Their communication needs to make clear that bursts of volatility are normal when valuations are corrected. These bursts should not deter central banks from continuing to normalise policy. This is difficult, even for experienced communicators. However, there is a successful example: the Federal Reserve's communication of its plans for unwinding asset purchases. Federal Open Market Committee members had discussed the policy options at length. After months of careful communication, primary dealers' estimates of the caps for reinvestments were close to the amounts chosen, and the effect of the policy's implementation in October 2017 was hard to discern in financial market prices.

Given these challenges, we need to remain alert: the GFC showed that disturbances in a relatively small market can create havoc in the financial system via its unappreciated links to other markets and institutions. The financial system is marked by local vulnerabilities, and the timing and severity of their manifestation are hard to predict. These features are "unknown unknowns", like the subprime exposure prior to the GFC. Where do risk surveillance and regulators need to look now, post-GFC, in early 2018? Cryptocurrencies? ETFs? Shadow banking? What we should focus on is to identify structures that might amplify initial shocks. We already know that leverage plays a key role in amplification. However, other structures are less well understood. For example, do algorithmic trading and passive investment strategies lead to more herding in financial markets? Might asset managers respond to investor redemptions not by drawing on cash holdings but by increasing them?¹³ Could funds offering instant liquidity on the basis of illiquid assets prove fragile?¹⁴

While one hopes for the best, one should be prepared for the worst. Policymakers cannot discard a scenario of an abrupt tightening of financial conditions. Therefore, we should use the as-yet favourable environment to strengthen policy buffers as much as possible. While central banks arguably can do (and have done) a lot, monetary policy cannot be the only game in town. The time has come to rebuild buffers and policy space on the fiscal and prudential fronts.

Last but not least, one should "never miss the opportunity of a crisis" to engage on structural reforms. We did poorly on that front during the GFC. There is still time to envisage structural reforms that can reduce the cost of adjusting to shocks. More importantly, reforms should address the daunting challenges that our societies face. To list a few of them, think of inequality, rapid new technological change and its foreseeable impact on the quality and quantity of jobs, the ageing of society, and climate change. It is hard to see how central banks could deal with the fallout if these important areas of reform for the common good of individual countries and the global community are not addressed. And these areas are certainly much more complex to fix than the above mentioned macroeconomic and financial stability issues.

¹³ See S Morris, I Shim and H S Shin, "Redemption risk and cash hoarding by asset managers", *Journal of Monetary Economics*, vol 89, 2017, pp 71–87.

¹⁴ For a discussion of the risks arising from liquidity transformation, see eg Financial Stability Board, *Policy recommendations to address structural vulnerabilities from asset management activities*, January 2017.