



Scope for policy stimulus when a global recession hits

- In February, we canvassed our economics team globally for their estimates of the impacts on growth of a substantial worsening of the crosscurrents that had begun to buffet the global economy, including trade conflicts, the possibility of a no deal Brexit, and a sharp slowdown in China (see ["If the crosscurrents strengthen, how far could global growth fall?"](#)). The responses generally pointed to at least mild economic downturns. The most frequent follow-up questions from our client base have been about how policymakers would deal with these outcomes and how effective those responses might be in moderating the downturns. This report addresses these questions.
- This topic takes on added urgency as an emerging consensus in official and academic analysis has waxed more pessimistic on the scope for stimulative policy action. It is generally recognized that the room for monetary policy stimulus has been diminished by substantial declines in the level of equilibrium interest rates. Indeed, recent analysis by Fed staff suggests that the probability that US monetary policy will be constrained by the effective lower bound on interest rates is as high as 50% over the next decade. At the same time, the effectiveness of central bank balance sheet policy is increasingly being questioned. The scope for stimulative fiscal policy action may be more constrained as well, as public debt has risen to worrisome levels in many countries, and government deficits are already too high to reduce or stabilize this debt.
- Our survey indicates that the scope for stimulative policy action varies significantly across the major regions considered. In general, the US and China have a good deal more room to act if needed than either the euro area or Japan. Moreover, across all regions, there is more room for fiscal than monetary stimulus. And, with monetary policy likely to be holding rates at very low levels, fiscal multipliers would be magnified by the absence of the crowding out of private spending due to increases in interest rates normally induced by fiscal stimulus.

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Introduction

In February, we canvassed our economics team globally for their estimates of the impacts on growth of a substantial worsening of the crosscurrents that had begun to buffet the global economy, including trade conflicts, the possibility of a no deal Brexit, and a sharp slowdown in China (see "[If the crosscurrents strengthen, how far could global growth fall?](#)"). The responses generally pointed to at least mild economic downturns. The most frequent follow-up questions from our client base have been about how policymakers would deal with these outcomes and how effective those responses might be in moderating the downturns. This is a topic that was dealt with only very cursorily in our simulation analyses in that piece.

The various crosscurrents we considered may have diminished a bit: a US-China trade deal may be starting to take shape, although US-EU trade frictions are heating up a bit; no-deal Brexit possibilities seem to be fading; and China's macro policies have become more supportive. Even so, risks remain. And the recent flatness of the US yield curve has kept elevated recession probabilities very much in the minds of many market participants. If downside risks intensify in the months or quarters ahead and the global economy does move into recession, how much policy stimulus ammunition will be there to deal with this negative shock?

This question takes on added urgency as an emerging consensus in official and academic analysis has waxed more pessimistic on the scope for stimulative policy action. It is generally recognized that the room for monetary policy stimulus has been diminished by substantial declines in the level of equilibrium interest rates. Recent analysis by Fed staff suggests that the probability that US monetary policy will be constrained by the effective lower bound on interest rates is as high as 25% by end-2022 and 50% over the next decade.¹ At the same time, the effectiveness of central bank balance sheet policy is increasingly being questioned as well.² And, as the IMF noted earlier this year, the scope for stimulative fiscal policy action has become more constrained too.³ Public debt has risen to worrisome levels in many countries, and government deficits are already too high to reduce or stabilize this debt.

With these questions and constraints in mind, we have returned to our economic research teams in the US, EA, and Asia and asked them to lay out just what they see in the way of potential monetary and fiscal policy stimulus that could be brought to bear in each of their regions in the event of an economic downturn. In particular, what specific stimulative tools would policymakers have at their disposal, what is the likelihood these tools could/would be employed and how effective would they be in slowing or reversing a downturn? As we will see, the answers to these questions are somewhat less pessimistic than we had feared. In what follows, we first present the responses of our economists in the US, EA, China, and Japan. We then offer a global synthesis of these responses in a concluding section.

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- 1 See Chung, Hess et al., "Monetary policy options at the effective lower bound: Assessing the Federal Reserve's current policy toolkit." Finance and Economic Discussion Series, 2019-003. (<https://www.federalreserve.gov/econres/feds/files/2019003pap.pdf>). See also, Rosengren, "Monetary, Fiscal, and Financial Stability Policy Tools: Are We Equipped for the Next Recession," (March 2018) <https://www.bostonfed.org/news-and-events/speeches/2018/monetary-fiscal-and-financial-stability-policy-tools.aspx>
 - 2 See, Greenlaw, D., J. Hamilton, E. Harris, and K. West (February 2018), "A skeptical view of the impact of the Fed's balance sheet." 2018 US Monetary Policy Forum <https://research.chicagobooth.edu/-/media/research/igfm/docs/2018-usmpf-report.pdf?la=en&hash=D8BE7A0F78D72A6762918282D5A56A2E76349AED> and Summers, <https://www.brookings.edu/research/why-the-fed-needs-a-new-monetary-policy-framework/>



US Policy options in the event of a recession

Historically, US policymakers have responded to economic downturns by easing monetary policy through interest rate cuts and fiscal policy through automatic stabilizers – for example, the automatic increase in unemployment benefits as the labor market slows – and active measures such as increased government spending and tax cuts. As noted above, it is possible that both of these tools may be more constrained than in the past. But we also see potential for significant stimulus on both fronts.

Options for US monetary policy

To preview the results of our analysis on the options for US monetary policy to respond to the next downturn, the following points are the key takeaways.

- The scope for rate cuts has clearly been diminished relative to previous cycles.
- While the quantitative effectiveness of QE remains in question, it is likely to remain the first option for easing when the fed funds rate gets back to the zero bound. It is possible QE takes the form of yield curve control, which could increase the bang for the buck spent.
- Negative rates remain an unlikely policy tool for the Fed.
- Given the uncertain nature of unconventional tools, measures that can reduce the odds of getting to the zero bound are attractive. Within these options a change to the Fed's inflation objective, for example to average inflation targeting, remains the most likely. Countercyclical macroprudential tools (e.g., the CCyB) are also possible but less likely.

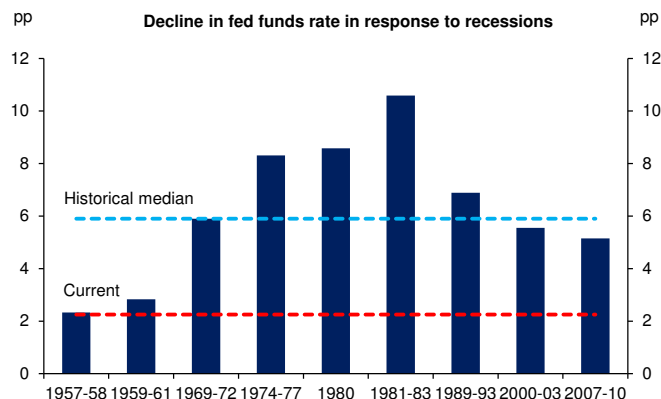
Rate cuts: Beware the zero lower bound

In easing cycles since the late 1950s the Fed has cut rates by about 6 percentage points on average (Figure 1). With our expectations that the Fed's tightening cycle is now over with the fed funds rate currently sitting at 2.4%, it is clear that the Fed will have less scope to ease policy through the traditional measure of rate cuts as long as near-zero rates remain a binding constraint. With the neutral fed funds rate expected to remain near historically low levels, constraints on monetary policy from the zero lower bound will remain a persistent concern into the foreseeable future (Figure 2).

3 <https://blogs.imf.org/2019/01/17/building-defenses-against-the-next-economic-downturn/>

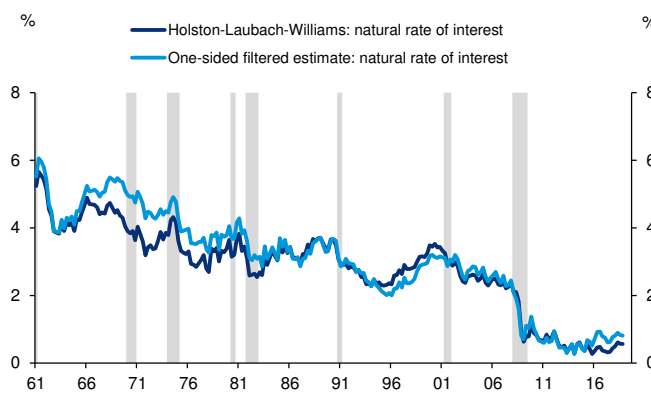


Figure 1: The Fed will have significantly less scope to cut rates in response to the next downturn



Source: FRB, Haver Analytics, Deutsche Bank

Figure 2: R-star likely to remain stuck near historically low levels



Source: FRB New York, Haver Analytics, Deutsche Bank

QE: A now conventional unconventional tool

Most assessments indicate that QE and forward guidance were able to effectively compensate for some of the lost policy stimulus due to the fed funds rate being stuck at the zero lower bound since the crisis. A summary of research from the NY Fed indicated that QE policies lowered the 10-year yield at a rate of about 3-6bp per \$100bn of asset purchases, resulting in a total compression of the 10-year term premium of about 100bp.⁴ According to similar estimates, a \$600bn LSAP which lowered the 10-year Treasury yield by about 20bp would lift real GDP by 0.3 to 0.6% over a two year time horizon. As a rough approximation, the above estimates would suggest that the \$3.4tn expansion of the Fed’s balance sheet helped to lift real GDP by more than 2.5 percentage points and lower the unemployment rate by about half that amount.

As the minutes to the August FOMC meeting indicate, however, Fed officials are very aware about the uncertainties surrounding these estimates. In particular, the minutes noted that, “participants acknowledged that there may be limits to the effectiveness of these [unconventional] tools in addressing an ELB [effective lower bound] episode. They also emphasized that there was considerable uncertainty about the economic effects of these tools. A number of participants indicated that there might be significant costs associated with the use of unconventional policies, and that these costs might limit, in particular, the extent to which the Committee should engage in large-scale asset purchases.”⁵

Therefore, while unconventional tools were successful in easing financial conditions in recent years, the effectiveness of these tools remains in question. Moreover, while an already-elevated balance sheet will not preclude the use of QE during the next downturn, it may make its implementation more politically contentious. At best, QE and forward guidance remain imperfect substitutes for rate cuts. But with few tested alternatives, we expect QE and forward guidance to be used regularly in the future in response to these episodes.

4 See the New York Fed staff presentation at the May 2012 Economic Advisory Panel meeting. See also Bonis, B., J. Ihrig, and M. Wei (September 22, 2017), “Projected evolution of the SOMA portfolio and the 10-year Treasury term premium effect.” FEDS Notes.
5 Research supporting this uncertainty includes Chung et al. (2018), and Greenlaw et al. (2018)

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Yield curve control (YCC): more bang for the buck, with some risk

As an alternative to QE the Fed could pursue yield curve control in which the central bank specifies the level of yields they wish to achieve and allows the market to determine how much QE must be executed to hit that target, as the Bank of Japan has done in recent years. Such an approach would not be completely foreign to the Fed. Vice Chair Clarida recently noted that, although the Fed reviewed YCC in response to the financial crisis, they “ultimately found this tool and some others deployed by foreign central banks wanting relative to the alternatives it did pursue.”

In support of YCC, then New York Fed President Dudley previously noted that it could be a more efficient way to conduct balance sheet expansions, as it is more cost-effective to set the price and allow the market to determine the size of the Fed’s balance sheet rather than rely on imprecise and uncertain estimates about how QE effects the yield curve to calibrate the size of the asset purchase programs needed to achieve the desired outcome. Moreover, while a smooth transition out of YCC might have been a concern given the untested nature of the policy, the BoJ’s graceful management of the policy thus far should provide the Fed with some confidence on that front. Arguing against YCC, however, is the Fed’s revealed preference for alternative policies in response to the financial crisis and the potential for YCC to reduce liquidity in the US Treasury market if the Fed is forced to become an even larger holder of Treasury securities.

Negative rates: Still unlikely

A natural alternative to balance sheet policies aimed at mitigating the effects of the zero lower bound is to ignore this constraint by cutting rates below zero. One benefit of being able to cut rates below zero would be the immediacy of the transmission to other financial conditions which could more closely replicate the prescribed rate from traditional policy rules.

The Fed considered negative rates in response to the financial crisis but ultimately decided against this tool. As detailed in a technical staff note in 2010, The Fed’s concerns with negative rates at the time were varied.⁶ First, global central banks had very limited experience with the tool at that time. Second, it was unclear if the Fed had the legal authority to implement negative rates. Third, there were practical complications, such as “the Federal Reserve computer systems used to calculate and manage interest on reserves do not currently allow for the possibility of a negative IOER rate, although these systems could be modified over time.” The Treasury’s systems also did not, at least at that time, accept negative interest rates at auctions.

More fundamentally, deeply negative rates, which they considered to be -35bp or lower, could incentivize banks to significantly reduce reserves in favor of currency, which would in turn present challenges for ramping up currency production, given that the demand would exceed the Fed’s inventory by a significant amount. Relatedly, knowledge that the Fed was dramatically ramping up currency production could have unpredictable implications for various macro variables, including inflation and inflation expectations. Finally, the possibility that even near-zero rates could induce “nearly complete revenue losses for Treasury-focused [money market

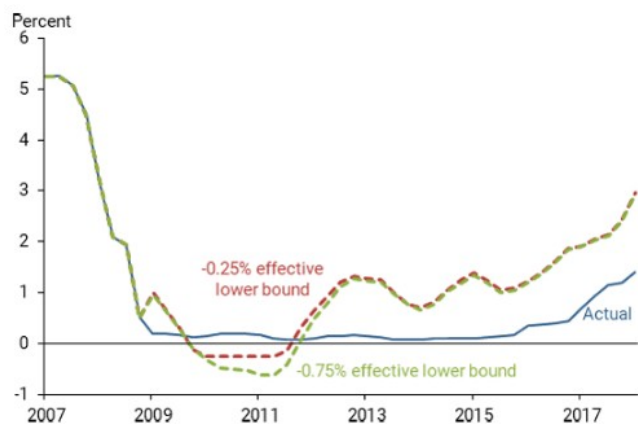
⁶ See Burke, C., S. Hilton, R. Judson, K. Lewis, and David Skeie (August 5, 2010), “Reducing the IOER rate: An analysis of options.” Released on January 29, 2016.



funds]” would risk the “widespread closure of these funds.”

Putting aside these considerations for the moment, what effect could negative rates have on the economy? Recent research from the San Francisco Fed suggests that cutting the fed funds rate to only -25bp would have achieved most of the necessary easing to get the economy back on track at an earlier stage and that cutting rates to “-0.75% would have reduced economic slack by as much as one-half at the trough of the recession and sped up the ensuing recovery” while “inflation would have been higher throughout the recovery by about half a percentage point on average.”⁷ These estimates strike us as being overly optimistic about the ability of slightly negative rates to provide ample accommodation to the economy.

Figure 3: SF Fed simulations with negative rates



Source : SF Fed, Deutsche Bank

Figure 4: Negative rates could have lifted inflation meaningfully



Source : SF Fed, Deutsche Bank

While negative rates may once again come under consideration in response to the next downturn, the experience of other major economies that have enacted this policy since the crisis does not exactly present a compelling case for the Fed to take that route. Indeed, a recent paper that is set to be featured at the Fed symposium in early June argues in favor QE over negative rates.⁸ As such, we would view negative rates as an unlikely first or even second or third option for the Fed the next time rates approach zero.

Redefining the Fed's inflation objective

As an alternative to the reactionary tools just detailed, the Fed could also look to reduce the odds of hitting the zero lower bound by redefining their inflation objective such that inflation and inflation expectations are at higher levels late in the cycle. Higher inflation expectations will in turn give the Fed more room to cut rates in response to the crisis, helping to mitigate the effects of zero rates.

7 See Curdia, Vasco (February 4, 2019), “How much could negative rates have helped the recovery?” FRBSF Economic Letter.
8 See Sims, Eric R. and J.C. Wu (March 5, 2019), “Evaluating central banks’ tool kit: Past, present, and future.”

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This type of strategy has gained considerable attention since NY Fed President Williams and his co-author discussed the benefits of average inflation and price level targeting in a paper in early January.⁹ Chair Powell and Vice Chair Clarida, along with a few regional Fed presidents including San Francisco's Daly, have also recently noted the apparent benefits of such strategies, at least when implemented in model simulations. The Fed is also in the midst of an official review of their policy framework, of which a re-consideration of how to define their 2% inflation objective is a focal point. It is possible that when the Fed announces the results of their review in the first half of 2020, they pivot to a definition that "makes up" for past inflation misses in some way.

How much additional scope could this new framework give for the Fed to cut rates? In a speech in February, Williams noted that a variety of measures of inflation expectations have fallen by about 40-50bp since their averages between 2005-07, which could be interpreted as a period when these expectations were more firmly anchored at levels consistent with 2% inflation. As such, a shift in framework that lifted inflation expectations back to those levels could conceivably give the Fed scope to cut real rates by an additional 25 to 50bp in response to the next recession if the transition is successful.

Macprudential tools: Countercyclical capital buffer (CCyB)

A second option to both reduce the odds of hitting the zero lower bound and provide additional support to the economy once at zero rates is to utilize countercyclical regulatory policies, such as the CCyB. This tool allows the Fed, in concert with other regulatory agencies, to increase the required capital ratio for large banks during periods when financial stability vulnerabilities are meaningfully above normal. This policy should reduce the odds of getting to zero rates by making the financial system more resilient to shocks and can provide scope for additional easing by allowing banks to reduce capital during the downturn as the CCyB is lowered.

An increase in the CCyB has gained traction from many Fed officials. Recently, Governor Brainard voted unsuccessfully to raise the buffer. In addition, a number of regional Fed presidents have expressed a desire to increase the CCyB given their perceptions that financial vulnerabilities are elevated. However, given that the CCyB is a Board decision, the fact that other Governors have shown little desire to raise the CCyB suggests that it is unlikely to be used as a countercyclical policy in the near-term, though it could become operative in the future.

If enacted, the ability to cut the CCyB during a downturn could provide some modest additional support to the economy if the Fed gets back to zero rates. In previous work, we concluded that a reduction of the CCyB from its maximum of 2.5% to zero would have an impact close to a 25bp rate cut. For more details about the CCyB see: [Countercyclical capital buffer gaining traction](#).

Options for US fiscal policy

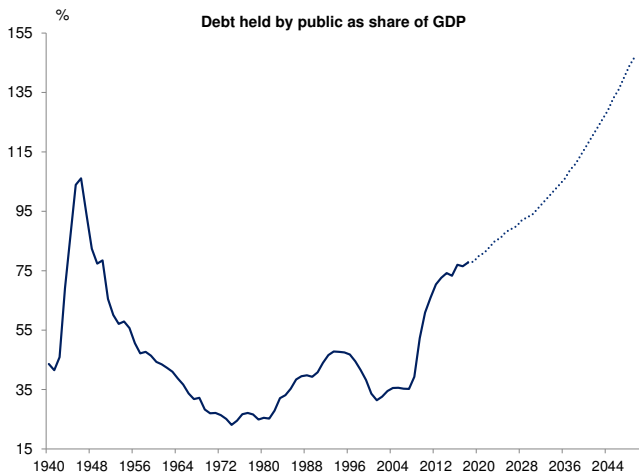
As we noted up front, the scope for fiscal actions is viewed as significantly constrained by initial conditions; but is it really? By almost any traditional definition the projected US debt trajectory is unsustainable. The Congressional Budget Office (CBO) projects that US government debt-to-GDP will rise inexorably to levels

9 Mertens, Thomas M. and John C. Williams (January 2019), "Monetary policy frameworks and the effective lower bound on interest rates." Federal Reserve Bank of New York Staff Reports, No. 877.



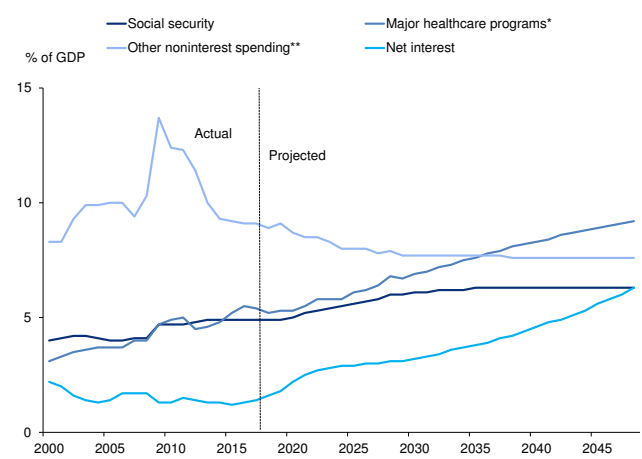
exceeding 100% by the end of the decade and about 150% by 2050 (Figure 5). Beyond overall debt levels, fiscal spending will continue to skew towards mandatory spending programs, such as health care and social security, and interest costs and less towards discretionary spending, possibly limiting the scope for countercyclical measures (Figure 6).

Figure 5: Debt projected to soar from already high levels



Source : CBO, Deutsche Bank

Figure 6: Health care and interest driving spending higher



Source : CBO, Deutsche Bank

All that said, what does unsustainable mean? It should mean that the holders of government debt securities no longer want to hold or purchase additional debt without receiving significantly greater compensation to offset higher inflation or default risks. By this definition, there is no evidence that US debt is anywhere near being on an unsustainable footing. Indeed, term (or risk) premia on Treasuries across all durations remain stuck near record low levels (Figure 7). In other words, rather than the market pushing the US government to get its fiscal house in order, it is incentivizing indebtedness through lower borrowing costs once we adjust for the future path of short-term interest rates.

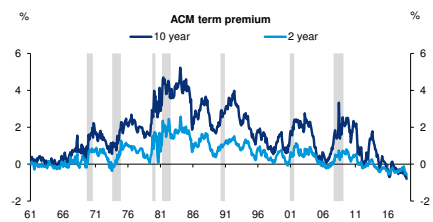
In this way, we do not think that fiscal policy should be constrained by economic forces in its response to the next downturn. Instead, any constraints on countercyclical fiscal policy are likely to be political. In what follows, we consider the fiscal measures the US government could pursue and what their likely size and impact would be.

At the ready: Automatic stabilizers

The first line of fiscal defense against a recession are automatic stabilizers. These are forms of fiscal easing that occur automatically as economic conditions change and do not require an active change to policy. Increases in unemployment payments and other lower-income supplements as jobless rates rise and lower tax payments as incomes decline are examples.

Historically, in response to recessions dating back to the 1970s, these automatic stabilizers have added a reasonably consistent stimulus to the economy. On average, automatic stabilizers have risen by about 1.75% of GDP in response to recessions.

Figure 7: No evidence of an elevated borrowing risk premium due to high debt loads

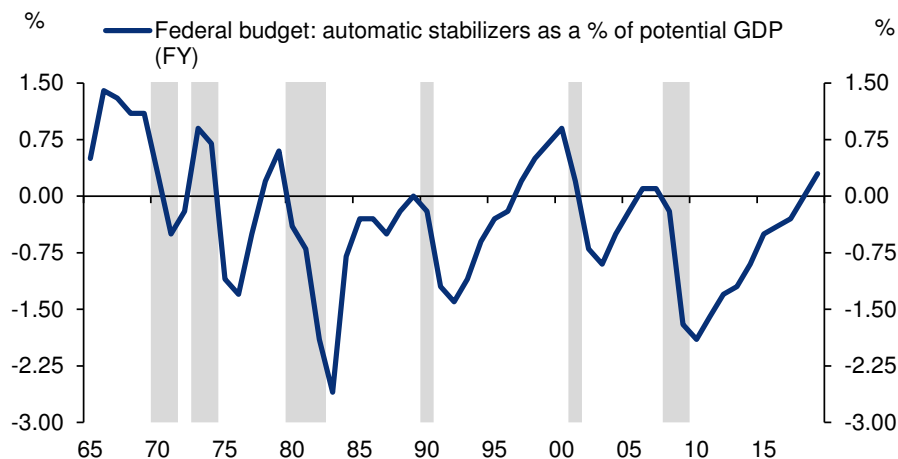


Source : FRB New York, Haver Analytics, Deutsche Bank



sions with a standard deviation of 0.4%, with the magnitude depending importantly on the size of the downturn (Figure 8). The historical experience therefore suggests that automatic stabilizers around 1.5% and 2% of GDP would seem reasonable in response to a modest or severe downturn.

Figure 8: Automatic stabilizers provide meaningful accommodation in response to recessions



Source : CBO, Haver Analytics, Deutsche Bank

Active countercyclical policies

Outside of automatic stabilizers, the federal government has numerous options for providing additional stimulus to the economy in the event of a downturn. As past CBO analysis suggests, these alternatives also have disparate multipliers attached to them that will determine their relative effectiveness in terms of stimulating the economy. At the top of the list are spending programs, either direct purchases of goods and services by the federal government or transfer payments to state and local governments (Figure 9). For example, the range of estimated multipliers for direct purchases of goods and services by the federal government is 0.5 to 2.5. On the lower end of the range of multipliers are tax cuts for higher-income households or corporates, where the CBO’s range of estimated multipliers is 0.1-0.6 and 0.0-0.4, respectively. Typically fiscal stimulus has higher multipliers when there is slack in the economy and monetary policy is not actively offsetting the effects, as would be the case in response to a recession.

Figure 9: Summary of CBO estimates of fiscal multipliers

Type of Activity	Estimated Multipliers	
	Low Estimate	High Estimate
Purchases of Goods and Services by the Federal Government	0.5	2.5
Transfer payments to State and Local Governments for Infrastructure	0.4	2.2
Transfer payments to State and Local Governments for Other Purposes	0.4	1.8
Transfer Payments to Individuals	0.4	2.1
One-Time Payments to Retirees	0.2	1.0
Two-Year Tax Cuts for Lower-and Middle-Income People	0.3	1.5
One-Year Tax Cut for Higher-Income People	0.1	0.6
Extension of First-Time Homebuyer Credit	0.2	0.8
Corporate Tax Provisions Primarily Affecting Cash Flow	0	0.4

Source : CBO, Deutsche Bank



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So what form could a fiscal stimulus package take? It is difficult to speculate without knowing the exact source of the downturn, its timing, or the government make-up at the time. In the past, we have argued that, if a recession were to occur, it would likely be relatively mild, given the lack of imbalances in the economy and a few other factors (see [How the Powell Fed can make history](#)). And what is most important, in our view, is that, at least in the near-term, there are no clear economic or market impediments to increasing the deficit further to provide stimulus.

Nonetheless, we can consider a few options. One possibility that received bi-partisan support during the lead-up to the 2016 presidential election was a large infrastructure package. Certainly, the state of US infrastructure is a fundamental reason to consider this avenue. Republicans and Democrats have both considered plans for a \$1 trillion infrastructure package in the past spread out over as much as a decade, though they have disagreed on how to finance this spending, with the former calling for public-private partnerships (typically with the government funding about one-fifth of the bill) and the latter arguing in favor of a larger government footprint in the funding. This disconnect could remain an impediment to a bill even in response to a recession, and the delays between passage and the funds actually hitting the economy could also help to limit the near-term impact. As such, over the course of the first year, we'd anticipate an infrastructure bill would add less than 0.5% to GDP.

Outside of infrastructure, we expect the government to respond to the next downturn similar to how it has reacted to past recessions with a combination of tax cuts and spending increases. In terms of size, it would seem reasonable to use the early 1990s recession as a gauge. During that episode, real GDP fell about 1.4% from peak-to-trough, which was one-third the decline in real GDP in response to the financial crisis. The CBO estimates that the American Recovery and Reinvestment Act of 2009 (ARRA) added about \$725bn to the deficit from 2009 to 2011, or about 1.6% of average GDP over that period.¹⁰ As such, a recession about a third of that size could be expected to induce a fiscal impact of around 0.5% of GDP. This response would likely take the form of increased government spending, such as increased Medicaid and unemployment insurance benefits as well as transfers to state and local government for construction projects, as well as tax cuts, which would most likely be focused towards providing additional income for the lower and middle portions of the income distribution.

Eurozone policy options in the event of recession

For Europe, a major external shock would test policymakers' ability and willingness to act. While there are differences among the shocks – for instance, we expect a trade conflict to be more damaging than 'no deal' Brexit – we see similar key consequences. First, given the soft state of the cycle, the euro area will be pushed into moderate recession. Second, a recession would likely lead to an Italy crisis.

Options for EA monetary policy

How the ECB reacts will be a function of the degree to which macro expectations are downgraded. We would expect the ECB policy response to accumulate through the following three response buckets depending on the degree of downgrade.

¹⁰ See Congressional Budget Office (February 2015), "Estimated impact of the American Recovery and Reinvestment Act on employment and economic output in 2014."

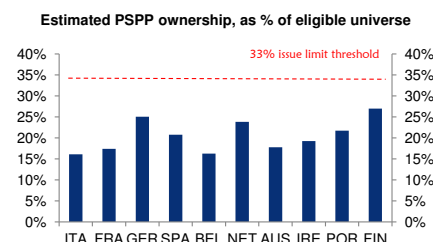


- **Mild downgrade.** In this case, the ECB would rely on its state-contingent forward guidance to provide an automatic adjustment in financial conditions by delaying the date of lift-off. The downgrades the ECB announced in March 2019 was already beyond the ability of forward guidance to accommodate alone.
- **Moderate downgrade.** In case of a moderate but persistent slowdown, an enhanced credit easing strategy is the most likely response. The idea would be to preserve the already easy monetary policy stance and ensure slower growth does not cause an impairment of the transmission mechanism through the banking system. This credit easing strategy could include a TLTRO, measures to mitigate the costs of ultra-low rates for banks (e.g. depo tiering)¹¹, adjusted forward guidance and possibly complemented by the restarting of private asset purchasing. The ECB is already operating within this response bucket having announced TLTRO3 in March. We expect tiering to be announced in June¹².
- **Severe downgrade.** The ECB says that "all policy instruments" – not just those covered in the first two response buckets – will be considered if necessary. This message goes in two directions, we believe. First, the ECB is not ruling out further deposit rate cuts¹³. Second, a return to large-scale asset purchasing is possible. These measures would need to be tailored to ensure credibility. For example, further deposit rate cuts may not be possible without reserve tiering to reduce the direct costs on the banking system, while large-scale asset purchasing may need more relaxed parameters such as a higher issue limit than 33% and/or new asset classes to be added to the eligible asset list.

There is scope for further asset purchases by the ECB. By [our estimates](#), the ECB owns around 25% of eligible German sovereign debt (see Figure 10). Using the original net QE purchase pace of EUR 60bn a month as a benchmark, and assuming the ratio of public QE in line with existing purchases, we estimate that the ECB would reach the 33% limit in Bunds in c. 12 months¹⁴. However, in all likelihood it would reach the 33% limit in other sovereign bonds in the PSPP (Public Sector Purchase Programme) before then. As the market is unlikely to see net asset purchases that cannot extend beyond 12 months as credible in the event of a severe shock, reviewing the 33% limit may become inevitable unless there are other ways to extend the purchasing period.

There are ways for the ECB to allow PSPP to persist for longer without raising the 33% limit. Let's assume a monthly purchasing target of EUR 60bn, echoing the starting volume of the original Asset Purchase Programme. The ECB could argue that with EUR 15-20bn of monthly APP reinvestments, net purchases could afford to be lower (EUR 40-45bn). Given bond scarcity and already low sovereign yields, the ECB could also look to increase the share of private QE. This averaged EUR 12bn a month at the peak of QE in 2016-17. If the ECB expanded the eligible asset universe (e.g. buying equities) and raised net private QE purchases to EUR 15-20bn, it

Figure 10: Under PSSP, the ECB has already bought 25% of 'core' countries' debt



Source: ECB, Bloomberg Finance LP, Deutsche Bank

11 For details, see 21 January [ECB Preview](#) and 16 November 2018 note [ECB policy and the 'what if' options](#).
 12 We expect TLTRO3 to be priced at a discount to the MRO (refi) rate. For more details, see "TLTRO3: How generous will its terms be", DB Focus Europe, 9 April 2019, <https://research.db.com/Research/Article?rid=9191a9ac-5465-11e9-8b92-b5675633dc1d-604&kid=RP0001&documentType=R>.
 13 See "ECB: Dovish intent", DB Focus Europe, 10 April 2019, <https://research.db.com/Research/Article?rid=05cfcab4-0b90-40f7-aa1b-9c33f5440c18-604&kid=RP0001&documentType=R>.
 14 The 33% constraint would likely be binding sooner in Finland and Portugal (the latter due to earlier SMP purchases), but given their smaller size, there is more potential for reallocation of purchases.



could roughly double the time before the 33% limit becomes binding for Bunds while carrying out EUR 60bn a month of *gross* QE purchases.

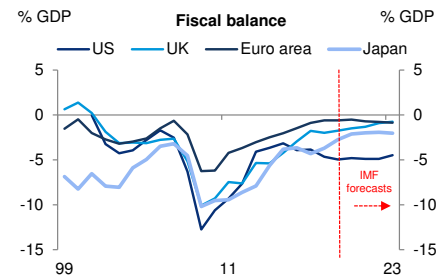
Options for EA Fiscal policy

Monetary policy can react quickly. Fiscal policy may be slower to respond but can be expected to react to recession, too. We estimate that in 2018, the euro area fiscal deficit was 0.8% of GDP, the third lowest in its history and in line with 2007. The fiscal deficit and public debt are now both lower than in other G4 economies (Figure 11). In aggregate, there is room for a fiscal response.

Following a shock, European fiscal rules would first allow for automatic stabilisers to be used¹⁵. However, in the event of a euro area recession we would expect the European Commission to also support structural easing. In response to the Great Recession, euro area countries eased their fiscal stance by 2.4pp of GDP in aggregate. The 2009 easing specifically (1.6% of GDP) was slightly larger than the 1.2% proposed by the EC¹⁶. The Great Recession was a particularly severe shock, with the output gap widening by over 6pp of GDP. By contrast, under our shock scenarios the resulting recession would drag GDP by 2-3pp versus potential over 2 years, so a proportionate fiscal stimulus would amount to around 1% of GDP.

Combined with the automatic stabilisers, this would likely increase the euro area fiscal deficit by 2-2.5pp to just over 3% of GDP, not an excessive deterioration. The challenge is that the available fiscal room varies widely across countries. While many of the 'core' countries could experience such an increase in deficit without endangering already low public debt trajectories (Figure 12), others have limited room, especially Italy, which is already walking the line on debt sustainability¹⁷.

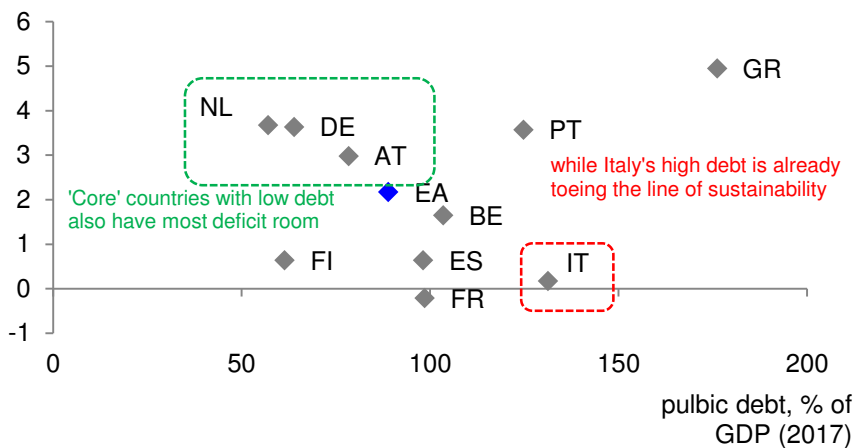
Figure 11: Euro area has lower fiscal deficit than other G4 (also lower public debt)



Source : IMF, Haver Analytics, Deutsche Bank

Figure 12: 'Core' low debt countries also have most room on deficit spending

Debt stabilising primary balance gap (+ve = falling debt ratio) (2018)



Source : European Commission, Haver Analytics, Deutsche Bank

15 See pp. 12-15 of 19 September 2018 [Focus Europe](#) for details on the EU fiscal rules.
 16 See the European Economic Recovery Plan proposed in late 2008 http://ec.europa.eu/economy_finance/publications/pages/publication13504_en.pdf.
 17 See pp. 11-16 of 7 February [Focus Europe](#).

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The German Grand Coalition government is sticking resolutely to its "black zero" ¹⁸ fiscal objective despite the current slowdown. We agree that taking measures to stimulate the economy would not make sense given where Germany is within its economic cycle. For example, given the high utilisation of production capacities in the construction sector, any additional boost to public investment (e.g. in transport infrastructure) would – in part, at least – simply drive up prices" ¹⁹. Notwithstanding the "black zero", Germany will still have one of the most stimulative fiscal stances of all euro member states in 2019 at about 0.5% of GDP.

We believe the German federal government would implement a sizeable fiscal stimulus package if GDP were to shrink considerably. In this case, such a package would likely consist of a bundle of measures. This is at least what experience from the fiscal reaction in 2009/10 to the great financial and economic crisis tells. At that time, the government reacted only hesitantly to the crisis but ultimately counteracted the downturn with a large fiscal package. Overall, a fiscal stimulus package of a total EUR 85 bn (or 3.3% of 2010 GDP) distributed over two years was successful in preventing an even deeper recession, according to the German Council of Economic Experts.

Magnitude of stimulus depends on policy coordination

The potential to boost demand through monetary policy alone may be limited. Our estimate of the shadow rate, a measure of the policy stance derived from the yield curve that captures the effects of unconventional policy²⁰, has fallen materially since its local high in autumn 2018. It is now only moderately above the level during the peak of QE in 2016-17. Typical models suggest that a 100bps rate cut may boost GDP by slightly under 1pp over two years. Using this as a guide, unless the ECB is able to achieve more policy easing than it did in 2016, the potential stimulus would be limited to a few tenths of GDP. Hence the importance of credit easing policies such as tiering to ensure that persistent low and negative rates are able to transmit through the banking system without impairing the transmission mechanism.

It would thus appear that fiscal policy has more room to stimulate growth. While the size of the fiscal multiplier depends on many factors²¹ – the composition of easing, the phase of the cycle and the functioning of monetary transmission – we see a multiplier in the 0.5-1 range as likely. That is, above the low elasticities assumed before the crisis but likely below some of the high estimates seen at its peak. A 1pp of GDP growth stimulus described above could thus boost GDP by several tenths, on top of the effects of automatic stabilisers.

However, the magnitude of the stimulus will depend on policy coordination. With yields and spreads (except Italy) already low, the ECB's ability to ease financial conditions via interest rates is limited. At the same time, broad fiscal easing by itself is unlikely to be credible in the market's view. The ability to achieve the desired stimulus will require policy coordination to maximise the benefits. Effective ECB policy would need to stimulate funding flows to the economy, especially in the event of impairment to the bank-based transmission channel. Tight fiscal policy could

¹⁸ Meaning there will be no net borrowing.

¹⁹ See "Public finances: no stimulus package", pages 17-21, DB Focus Germany, 5 April 2019, <https://research.db.com/Research/Article?rid=1f21cd38-5457-11e9-8b92-b5675633dc1d-604&kid=RP0001&documentType=R>.

²⁰ See "Shadow Rates: Judging the policy stance in an unconventional world", *Focus Europe*, 25 February 2009.

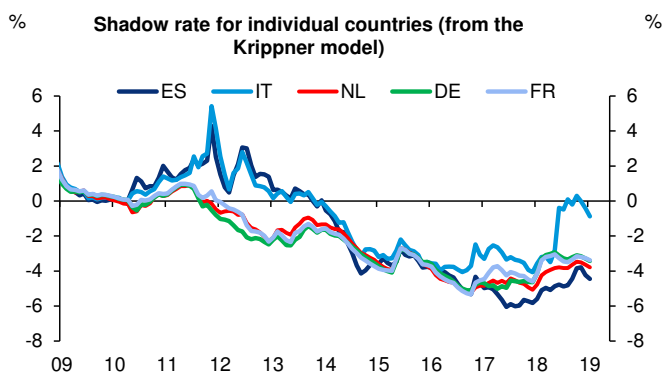
²¹ See, for example, Warmedinger et al., ECB Occasional Paper "Fiscal multipliers and beyond", June 2015.



instead restrict these. Conversely, policies such as private QE can also be complementary to fiscal easing in stimulating funding to the real economy.

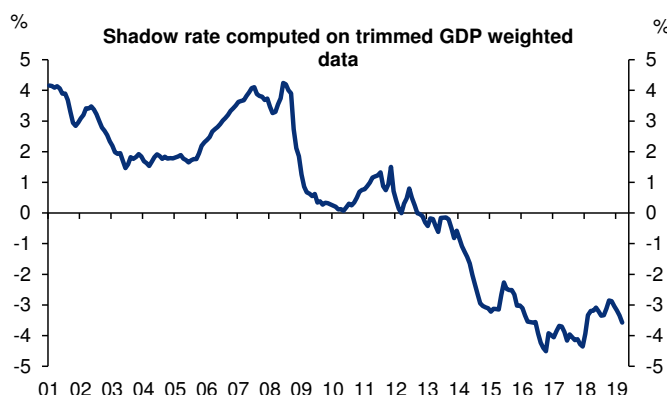
Looser fiscal policy in 'core' countries would reduce the bond scarcity problem for QE. A higher portion of public sector asset purchases funneled into EU supranational debt could also be a means of facilitating increased public investment. There are legal and political limits, most notably due to prohibition of monetary financing (Article 123). It is not clear where the legal red line lies, but, in any case, we would expect political pragmatism to prevail in the event of a severe shock.

Figure 13: Shadow rates – Italy has faced a tighter effective monetary stance



Source : ECB, Bloomberg Finance LP, Haver Analytics, Deutsche Bank

Figure 14: Monetary policy stance not far above peak easing in 2016-17



Source : ECB, Bloomberg Finance LP, Haver Analytics, Deutsche Bank

Responding to Italy crisis

Dealing with the Italian crisis will require managing two risks – first, backstopping Italy and limiting its domestic fiscal crisis; second, credibly ring-fencing other euro area countries from contagion.

An Italian crisis that threatens its sovereign funding ability would quickly raise questions over the size of the European backstops – the ESM's EUR 410bn of unused lending capacity is limited in the context of Italy's c. EUR250bn annual gross funding needs. However, the size of ESM is probably less important than its accessibility. Access to the ESM would make Italian debt eligible for ECB purchases via OMT – launched in 2012 but never used, this allows for discretionary secondary market purchases of short maturity bonds by the ECB. OMT access would increase the credibility of assistance and reduce redenomination risk. It is also important for Italy to avoid an Excessive Deficit Procedure (EDP), which would make it ineligible for the ESM's precautionary facilities and increase the political costs of seeking assistance as a full programme comes with stricter MoU conditionality.

While we do not see an Italian crisis as unmanageable technically, taking the necessary steps for ESM and OMT access would require material political compromise by both Rome and Brussels. On the Italian side, politicians would have to accept that structural reforms are the only way to achieve sustainable economic growth. On the European side, authorities would need to recognise that Italy is in an austerity trap and that further fiscal tightening is the wrong remedy. Measures should focus on promoting growth and investment as well as regaining market confidence and reducing interest rates. The latter would create fiscal room and improve funding costs for the real economy, which has suffered from a tighter effective monetary

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stance than other countries (Figure 13). Neither side appears close to making these concessions yet. This implies a crisis, higher yields and some contagion may be necessary first²².

A credible ESM/OMT backstop will also be crucial for reducing contagion to the rest of the euro area. This includes the ESM's as yet unused precautionary facilities²³. A key recent development was the December proposal to relax the MoU requirement for PCCL eligibility, which could reduce the political costs associated with seeking assistance.

Sustainability requires political progress on integration

Fiscal and monetary policy alone will not be enough to keep the euro project sustainable in the long-term. Risk absorption across the euro area is much lower than in fully federal systems²⁴. Monetary policy is too blunt a tool to facilitate this, while fiscal coordination is not developed enough. In the event of a serious shock, further integration and greater risk sharing would be needed to ensure euro stability.

First, this requires a more complete Banking Union and progress towards Capital Market Union, which would help reduce overreliance on banks. A key obstacle towards BU remains the creation of a fully-fledged European Deposit Insurance Scheme (EDIS), which likely first requires consensus on legacy risk reduction²⁵.

Second, instruments for fiscal risk sharing need to be developed. Full fiscal union is not politically feasible but Macron's vision for a euro area stability budget represents a viable blueprint for improved coordination. Its efficacy will crucially depend on details – whether it goes beyond repurposing existing funds and whether it can create additional funding capacity like the ESM. In addition to greater risk sharing, it could help tackle underinvestment, a systemic issue for most euro area countries.

Steps towards greater integration require political consensus. The less effective the integration policies, the greater the pressure on the ECB to absorb risk, the less room the ECB has and the greater the political cost of the ECB's actions. The euro area's sustainability and success depends on political will to fix the euro area's structural flaws, not on the ECB's largesse alone. The market may view this as less credible if the stronger showing of populist parties continues, including at the European Parliament election in May²⁶.

Japan's policy options in the event of recession

Options for monetary policy

The BoJ's monetary policy normalization process is lagging other major economies due to Japan's lower inflation rate. Consequently, few remaining options for an additional easing are available to the BoJ. We see little chance of any further easing action by the bank barring a full-scale economic recession (and resulting drop in the BoJ-defined output gap into negative territory) or a dramatic upswing in the yen to

22 "Europe must cut a grand bargain with Italy", DB Thematic Research, 12 November 2018, <https://research.db.com/Research/Article?rid=GDPBD00000325939&kid=RP0001&documentType=R>.

23 These are the Precautionary Conditioned Credit Line (PCCL) and Enhanced Conditions Credit Line (ECCL). The latter has easier eligibility criteria but stricter conditionality.

24 See Figure 6 in 22 January 2019 [Focus Europe](#)

25 See also 13 March thematic report [How to fix European banking... and why it matters](#).

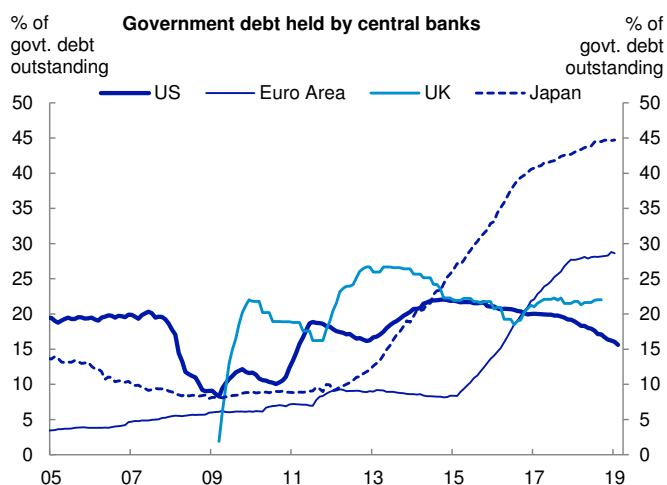
26 For our latest thoughts on the EP elections, see "EU elections countdown #3: meet the EU(ro)sceptics", DB Focus Europe, 4 April 2019, <https://research.db.com/Research/Article?rid=458e3ba2-56da-11e9-9766-2c43b48a5661-604&kid=RP0001&documentType=R>.



well below ¥100/dollar.

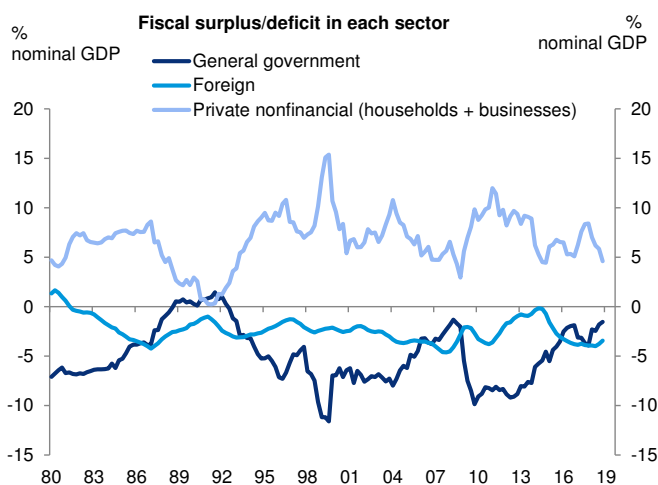
In principle, easing options would include a reduction in short-term policy rates, a reduction in the 10y JGB yield target, an increase in its ETF purchasing volume, an increase in its JGB purchasing volume, purchases of other assets (such as mortgage loans or municipal government bonds) or a strengthening of forward guidance. However, the growth impact of a cut in short- or long-term rates could be offset at least in part by the adverse impact on financial institutions' earnings and reduced appetite to extend credit. Higher JGB purchases would likely be a temporary measure given that the Bank already owns 46% of outstanding JGBs (see Figure 15). Purchases of other assets are constrained as well. The volume of such assets is not particularly large, and financial institutions would not have great incentive to sell given the strength of their relationship with their borrowers. The measures that would appear most sustainable with the least side effects would be higher ETF purchases and stronger forward guidance, but the impact on the real economy would be minimal in our view. Lastly, it would be difficult for the BoJ to make any obvious move to undermine the yen in advance of the looming US-Japanese trade talks.

Figure 15: BoJ already owns about 45% of outstanding JGBs



Source : Haver Analytics, Deutsche Bank

Figure 16: Private nonfinancial sector has large surplus



Source : Bank of Japan, Cabinet Office, Deutsche Bank

A Japanese version of targeted longer-term refinancing operations (TLTRO) has been suggested as a possible easing option by some market participants, but whether that would lead to faster credit growth is uncertain given the vast size of the financial surplus in Japan's private non-financial sector (Figure 16). To the contrary, we believe the move would put further downward pressure on lending rates at private financial institutions, doing added harm to bank earnings.

Options for fiscal policy

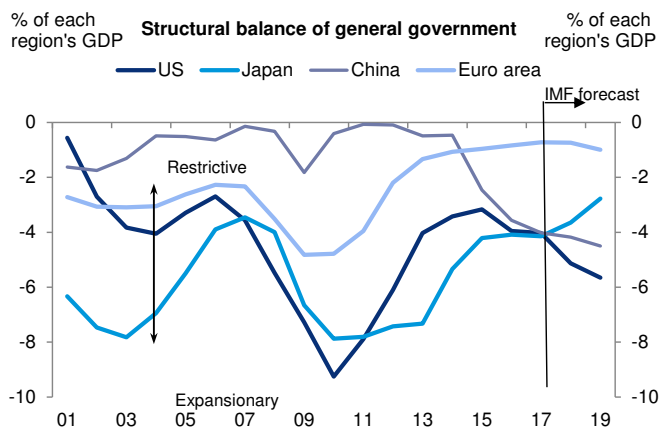
A bold fiscal policy represents the second of Abenomics' three arrows, but the government has in fact pursued a contractionary fiscal policy since the launch of Abenomics in 2012. IMF estimates indicate that Japan's structural fiscal balance continues to improve (Figure 17). In other words, room still exists for fiscal action. Japan's general government debt is over 200% of GDP (Figure 18), but this has sta-



bilized thanks to the improvement in debt dynamics with the BoJ's yield curve control (YCC).

We believe the most effective fiscal stimulus move would be a postponement of the consumption tax hike scheduled this October. However, the FY2019 initial budget has already been approved by the Lower House, and companies are already investing in systems on the assumption of the special lower tax rate for food and point reward system set to come in with the higher consumption tax. Any change at this point would be very difficult and seems unlikely. Other possibilities would include increased infrastructure spending²⁷ in a supplementary budget and tax relief or increased subsidies for childrearing households. In addition, greater coordination ahead in fiscal and monetary policy would be possible. The minutes of the BoJ's January monetary policy meeting quote several policy board members as stressing the need to work more closely with the government²⁸. A switch by the government to a more active fiscal policy stance and increase in new JGB issuance would put upward pressure on yields, but we believe the actual rise would be suppressed by the BoJ's YCC. Consequently, we suspect that the BoJ would hasten the pace of its JGB purchasing operations and strengthen its quantitative easing in order to hold down yields.

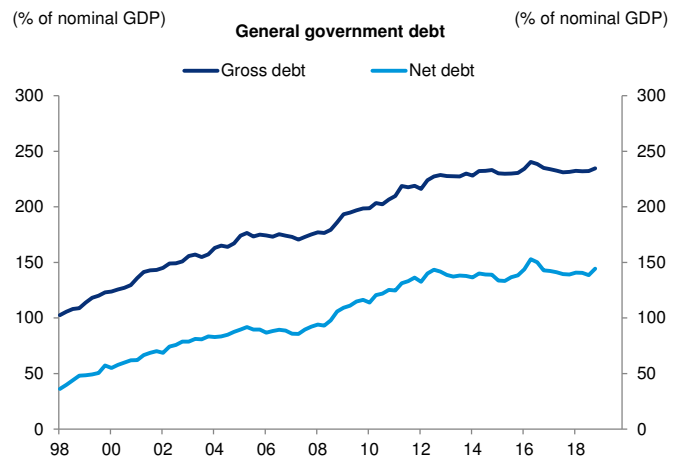
Figure 17: Japan's structural government deficit has improved



Note: Data for 2018 onward are IMF forecast

Source : IMF, Deutsche Bank

Figure 18: Debt-to-GDP is elevated but has stabilized



Source : BoJ, Deutsche Bank

China's policy response to an external shock

Chinese policymakers have already eased both monetary and fiscal policies. On the former, monetary policy is now more obviously biased towards relaxation even if policy rates have not yet been adjusted. (The introduction of a new Targeted Medium Term Lending Facility at a 15bps discount to the ordinary MLF is an exception.)

27 Public works spending in the FY2019 budget was boosted by ¥1trn (0.2% of GDP). This is the first increase since 2014.

28 https://www.boj.or.jp/en/mopo/mpmsche_minu/minu_2019/g190123.pdf



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Credit growth – whether measured by bank loans or the broader social financing – has increased since the beginning of the year. New credit to the corporate sector is up an estimated 58% year-over-year and total social financing growth was up 11.5% year-over-year in March, versus 10.3% in December. That’s a notable change after two years of steadily slowing credit growth. And with consumer and producer price inflation falling in Q1, the rise in real credit growth has been even greater. We expect two cuts in the benchmark lending rate beginning in Q2, which should help stimulate slightly higher credit growth in the second half of the year as it lowers borrowing costs for households, local governments and SOEs.

On the fiscal front, the government has in recent months announced tax cuts and social security payment reductions totaling about CNY2tn, or about 2% of GDP. And in recent weeks property investment regulations have been relaxed in a number of cities and the government announced a major change in its urbanization policy, promising to relax hukou restrictions on migration and reversing the prior commitment to preventing the country’s largest cities from growing. These should help reinvigorate property investment.

These policy adjustments have been a response to the cyclical weakness in the economy and downside risks emanating from the trade conflict with the US and from weaker US and European growth. Should the external environment deteriorate sharply, we think Chinese policymakers still have considerable room for more action.

Monetary policy has greatest scope to be eased further. Headline inflation faces upward pressure due to rising food (especially pork) prices, but this is likely to be temporary and non-food inflation has fallen below 2% in recent months. Producer prices are likely to remain subdued for the rest of the year as well. So inflation is unlikely to pose much of a barrier to rate cuts in the event of a recessionary external environment. This is perhaps more true for lending rates than for deposit rates, which are already negative in real terms. Recall that in late 2008 the government cut benchmark lending rates by 216bps as the GFC unfolded. So if the Fed were to cut rates in response to sharply slower growth, the Chinese government would likely do the same to its benchmark rates. Lower rates, with guidance from the central bank and regulators that banks should accommodate higher demand for credit, would be effective, we think, in stimulating the economy. We still think a credit cycle as great as in 2009, 2012 or 2015 is unlikely, but the greater the external shock the greater would likely be the domestic credit stimulus.

In addition, the PBOC has used its balance sheet as a policy instrument in recent years. At the peak, combined pledged supplementary lending (PSL) and medium-term lending facilities (MLF) had grown by nearly 5% of GDP over the two years to last September. In the last couple of months, the PBOC has actually shrunk the stock of these lending programs. This could easily, in our view, be reversed. The PSL in particular has been an important support to the property market via its underwriting of shanty town redevelopment.

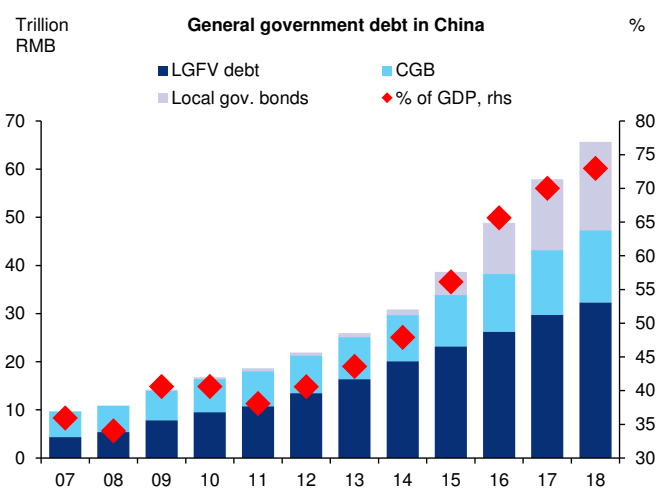


Figure 19: Still significant scope to cut rates in China



Source : CEIC, Deutsche Bank

Figure 20: Local governments account for most of government debt



Source : WIND, DB Research

Conventional fiscal policy in China is a rather inflexible tool since there’s no tradition of supplementary budgets or mid-year policy adjustments. As was noted above, the central government has already implemented a significant fiscal stimulus package. We estimate this takes the general government deficit up to 5.5% of GDP this year from 4.6% last year and 3.6% in 2017. Given the institutional constraints on central government policy, a fiscal policy response to a strongly negative external shock is likely to resemble the previous stimulus episodes in that it would rely on local government spending more than central government spending. Local governments already account for most of the general government spending and most of the government debt. This is a policy instrument that, as we saw in past cycles can be turned on quickly – albeit at the expense of perhaps reigniting concerns about financial stability.

Note that by using local governments as the main vehicle for delivering policy stimulus, the central government has kept central government debt relatively modest at about 16% of GDP while local government debt has risen to 57% of GDP by our estimates. Government debt is financed almost entirely onshore – foreign investors hold only about 2% of the total – so the government is unlikely to perceive much of a constraint to raising this during a renewed crisis.

Summary and conclusions

Our survey indicates that the scope for stimulative policy action varies significantly across the major regions considered. In general, the US and China have a good deal more room to act if needed than either the euro area or Japan. Moreover, across all regions, there is more room for fiscal stimulus than monetary stimulus. And, with monetary policy likely to be holding rates at very low levels, fiscal multipliers would be magnified by the absence of the crowding out of private spending due to increases in interest rates normally induced by fiscal stimulus.

With respect to the potential for monetary policy expansion, in both the euro area and Japan, policy rates are already at or close to effective lower bounds and central bank balance sheets are already substantially expanded. The ECB stresses its will-



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ingness to use "all instruments" if necessary and does not preclude further policy rate cuts if there is a net benefit (that is, if the direct costs to banking can be mitigated); the quantum is arguably limited. The ECB could resume asset purchases, but would either have to raise mandated limits on its holdings of official securities or forge ahead into buying more private securities. But either way, the scope for stimulus through this channel probably amounts to no more than several tenths percent of EA GDP. In Japan, the scope through this channel is even more limited because the Bank of Japan already holds a substantially greater share of its very large stock of government securities than the ECB does.

Prospects for monetary stimulus are a good deal more upbeat in the US and China. The Fed has already gone a long way toward normalizing policy: it has moved the fed funds rate back about to neutral and its balance sheet back close to its new normal level. Both of these policy levers could be reversed. In the event of a mild recession, we could expect to see the fed funds target cut by nearly 250 bps (back to its effective lower bound) and the balance sheet expanded. It is possible that the effectiveness of balance sheet action could be enhanced by adopting BoJ style yield curve targeting. The cuts to interest rates alone would likely add more than 1 percentage point to US GDP over the first year. In China, rates could be cut significantly as well, especially if the Fed were also cutting rates. And, balance sheet policies, including various lending facilities, could be expanded by at least several percent of GDP. These measures would have the potential to give a significant boost to the expansion of credit and GDP in China as they have in the past.

The scope for fiscal action globally, if needed, is somewhat more promising. Initial conditions may be less favorable in the US and Japan because current levels of government deficits and/or debt are substantially higher than in the EA (on average) and China. However, risk premiums on both US and Japanese government debt remain near historic lows, suggesting that market constraints on further expansion, if needed, would be minimal for now. In the event of a mild recession or substantial slowdown, automatic fiscal stabilizers would kick in, effectively softening the blow to GDP. If more stimulus were needed after monetary actions had been taken, we anticipate that the US government would pursue traditional measures of tax cuts and spending increases, possibly including an infrastructure bill, that could amount to at least 0.5% of GDP. China could act more quickly to boost GDP by a greater amount via cutting taxes, boosting local government spending, and easing regulations to stimulate private investment in a variety of ways. Japan could take significant fiscal action by shifting its baseline policies to a less restrictive stance: namely by postponing (or even reversing) scheduled consumption tax increases. Other possibilities for Japan include increasing infrastructure spending and various subsidies to households. Given the declines in the EA deficit and debt levels, a mild recession could be expected to be met with some combination of spending increases and tax cuts amounting to a percentage point of GDP, led by the member states with the stronger sovereign balance sheets.

But in the event of a recession, Europe would likely also have to deal with an Italian debt crisis. Doing so successfully would require a careful mix of (1) Italian concessions in the direction of structural reforms that will make that country's continued membership in the EA (indeed the longer-term existence of the EA) sustainable, and (2) core EA concessions in the direction of greater risk sharing via completion of the banking union and acceleration of the capital markets union.

In conclusion, reductions in equilibrium interest rates and increases in government debt levels over the past decade mean that governments have less policy ammu-

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tion to deal with the next global downturn than they did with the last one. It is possible that these constraints may be less of a problem than commonly feared because the next global downturn, if it occurs in the foreseeable future, seems likely to be significantly less severe than the last one. Much has been done to shore up financial sectors — especially banking systems — since the GFC. And signs of the kind of overinvestment that magnifies downturns are generally much less evident today. It appears that there is more than enough monetary and fiscal stimulus available if needed to substantially soften the blow of a mild global recession if it occurs in the next several years. This is more the case in the US and China than Europe and Japan. But if the US and China do their part, they will also ease the pain elsewhere.

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Appendix 1

Important Disclosures

*Other information available upon request

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Macroeconomic fluctuations often account for most of the risks associated with exposures to instruments that promise to pay fixed or variable interest rates. For an investor who is long fixed-rate instruments (thus receiving these cash flows), increases in interest rates naturally lift the discount factors applied to the expected cash flows and thus cause a loss. The longer the maturity of a certain cash flow and the higher the move in the discount factor, the higher will be the loss. Upside surprises in inflation, fiscal funding needs, and FX depreciation rates are among the most common adverse macroeconomic shocks to receivers. But counterparty exposure, issuer creditworthiness, client segmentation, regulation (including changes in assets holding limits for different types of investors), changes in tax policies, currency convertibility (which may constrain currency conversion, repatriation of profits and/or liquidation of positions), and settlement issues related to local clearing houses are also important risk factors. The sensitivity of fixed-income instruments to macroeconomic shocks may be mitigated by indexing the contracted cash flows to inflation, to FX depreciation, or to specified interest rates – these are common in emerging markets. The index fixings may – by construction – lag or mis-measure the actual move in the underlying variables they are intended to track. The choice of the proper fixing (or metric) is particularly important in swaps markets, where floating coupon rates (i.e., coupons indexed to a typically short-dated interest rate reference index) are exchanged for fixed coupons. Funding in a currency that differs from the currency in which coupons are denominated carries FX risk. Options on swaps (swaptions) the risks typical to options in addition to the risks related to rates movements.

Derivative transactions involve numerous risks including market, counterparty default and illiquidity risk. The appropriateness

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