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Beyond inflation targeting: Reconsidering tools, targets and theories

Inflation targeting worked well to lower inflation but it now struggles to lift inflation back to the 2% target. Thus, zero or negative policy rates and QE could become the norm. Changing existing targets seems of limited practical help, while more radical proposals such as debt monetization come with large risks.

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Monetary policy makers are under pressure. Inflation targeting, the common policy framework that had worked so well since the early 1990s to rein in price gains, is struggling to lift inflation toward (a 2%) target. Still, the most commonly discussed alternatives seem to promise only limited help, while more radical proposals come with much larger risk. Hence, for investors the future monetary policy could be a future with fatter tails.

Our key findings

- **Inflation-targeting central banks today regularly face the restriction of an effective lower bound (ELB) in setting their policy rate.** Secular factors, including demographic change, globalisation and technological progress, have contributed to lower trend inflation and lower neutral interest rates.
- **Central banks' reactions have evolved since the Global Financial Crisis, and what were initially deemed extraordinary measures are now part of the standard policy toolkit.** These include an array of new tools: quantitative easing (QE), negative interest rates policy (NIRP), yield curve control (YCC) and forward guidance (FG).
- **As inflation dynamics remain weak, the discussion is turning from tools to *targets*.** Suggested alternatives for the 2% inflation target range from merely fine-tuning (eg, point target versus band), to increasing the target, to targeting price levels or average inflation, to targeting different variables altogether (eg, nominal GDP).
- **However, none of the alternative targets seems evidently superior in theory, and when considering real-world implementation, their costs may outweigh potential gains.** Most likely, central banks may rather accept inflation lingering below official 2% targets for longer (BoJ, ECB), while also tolerating above-target inflation following longer periods of undershooting (Fed).
- **A step further could be more radical conceptual changes that challenge the conventional distinctions between fiscal and monetary policy.** In this view, debt issuance and money creation are variations of the state's power to tax and to create money, where monetary policy, under certain circumstances, would accommodate or even outright finance fiscal deficit spending as the way to create sufficient demand.
- **Such concepts could gain more traction in the event of a serious economic downturn, but they would also come with large risks.** The issue with these concepts is not that they are theoretically flawed in the way they might boost demand and prices, but rather that politicians used to printing press-facilitated spending may be unwilling to rein in their largesse once the deflationary threat is overcome.
- **For investors, particularly those buying debt, this could mean fatter tails:** Constrained monetary policy implies a higher risk of deflationary scenarios with ever-increasing nominal debt burdens. But experiments that blur the boundaries of fiscal and monetary policy could result in sudden adjustments in expectations, with related swings in risk premia and exchange rates.

The authoring research analysts would like to thank Akash Utsav for his assistance in connection with the preparation of this report.

How inflation targeting came under pressure

A success story from the 1990s

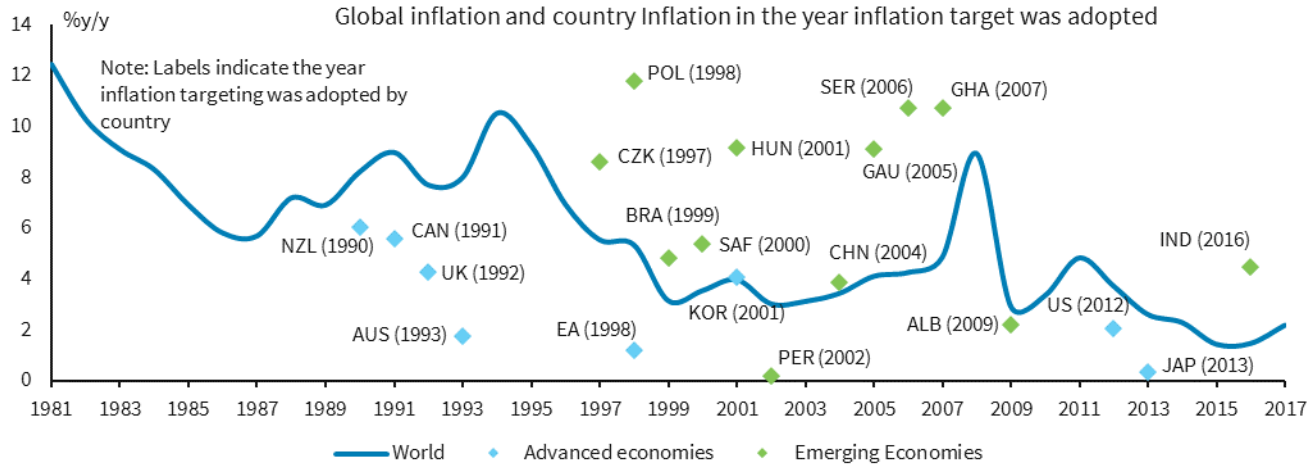
Monetary-policy regimes have changed over time. Inflation targeting (IT), which was 'born' in 1990, will soon have reached a life-span associated with other historical monetary-policy regimes: the Gold Standard (1870s-1914) and the Bretton Woods system (1948-1973), as well as the periods between wars (1919-1939) and between Bretton Woods and IT (1973-1990s)[1], when no single policy framework dominated. Although age in itself is certainly no reason to abandon a monetary-policy strategy, questions surrounding IT as a framework have been increasing at least since the GFC, with some having already declared "the death of inflation targeting."[2]

Inflation targeting offered a new framework following a period monetary policy experiments with mixed success

However, before delving into IT's challenges, it is important to understand its success. For a start, it arrived at the right time. IT offered a new conceptual framework after a number of false starts that followed the collapse of the Bretton Woods system, with attempts to actively manage perceived inflation-unemployment trade-offs, target money supply aggregates and run various forms of fixed exchange-rate regimes all tested and rejected. Almost all these experiments resulted in currency crises and/or high and volatile inflation; importantly, none had succeeded in anchoring public expectations. When New Zealand adopted IT in 1990, different types of exchange-rate pegs accounted for about two-thirds of monetary policy regimes in industrial countries. Accordingly, the 1992 ERM crisis motivated the adoption of IT in Europe. By the late 1990s, IT was also increasingly adopted in developing economies, amid CEE countries' transition to market economies and in the aftermath of the 1997-98 Asian financial crisis.

FIGURE 1

Inflation targeting spread across DM and EM economies since 1990, helping bring down and stabilize inflation globally



[1] For the purpose for this paper we define 'inflation targeting' loosely as a monetary framework that aims at achieving a certain rate of inflation (whether a point or within a band or a range; symmetric or not) by adjusting the short-term policy interest rate, under a flexible exchange rate regime. In this board definition, we consider all major central banks in advanced economies – including the Fed, ECB and BoJ – to be 'inflation targeters.'

[2] For example, see J. Frankel, May 16, 2012, "*The Death of Inflation Targeting*", Project Syndicate,

In contrast to the earlier policy experiments around 'indirectly' managing inflation through monetary aggregates or exchange rates, IT was grounded in more rigorous research-based findings. These pointed to central banks' inability to consistently achieve multiple goals with only one basic instrument (the policy interest rate) and to control real variables such as growth and employment (rather than just nominal ones) over a longer period. Moreover, research highlighted how high inflation harmed growth and the equitable distribution of income, and, perhaps most decisively, that expectations and credibility were crucial for the effectiveness of monetary policy.

Price stability mandate, institutional independence, transparency and accountability were IT's core elements

These insights pointed towards a framework in which monetary policy would be assigned one clear and credible objective: that of achieving and maintaining low inflation. In addition, policy credibility would be enhanced by strengthening the operational autonomy of the central bank, while at the same time ensuring a high degree of policy transparency and accountability. Thus, IT frameworks generally included a number of basic elements: (i) Central banks' explicit mandate to pursue price stability as the primary policy objective, combined with accountability for achieving this objective; (ii) a high degree of transparency of monetary policy strategy and implementation; (iii) explicit quantitative targets for inflation; and (iv) policy actions based on a forward-looking assessment of inflation pressures, taking into account a wide array of information.[3]

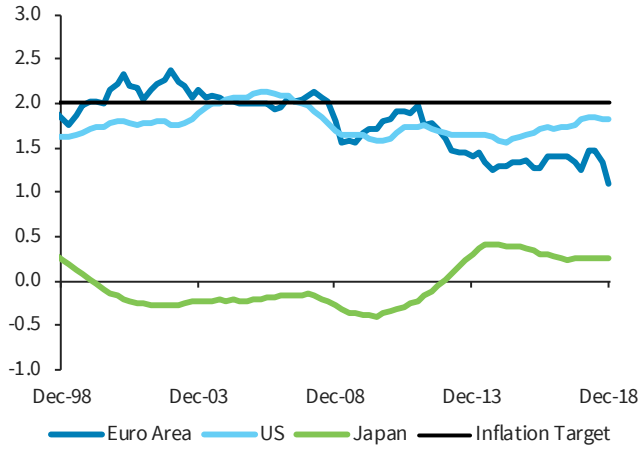
This framework helped boost central-bank credibility, which was crucial to anchoring inflation expectations and, in turn, stabilizing inflation outcomes. In addition to the institutional arrangements (central bank independence), credibility was achieved by emphasising rule–based policy making (eg, the Taylor rule) over discretion, clear mandates (ie, price stability/low inflation), and a strong aversion to monetary financing of fiscal deficits.

Credibility became crucial for anchoring expectations

The literature on the success of IT across economies is long. From 1990 to the GFC of 2008/9, the implementation of IT regimes was associated with low and stable inflation around official targets — 2% in most advanced economies — as inflation expectations settled around target. The rule-based monetary-policy approach of independent central banks was widely considered instrumental to the 'great moderation' that characterized the 2000s (until the GFC).

FIGURE 2

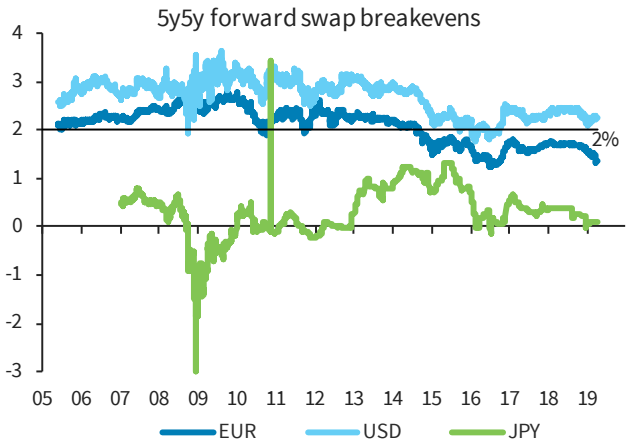
Trend inflation remains weak, especially in Europe and Japan



Source: OECD, Haver Analytics, Barclays Research

FIGURE 3

… and markets have come to expect soft inflation outcomes



Source: Barclays Research

[3] One notable exception to assigning the central bank with a sole objective to pursue price stability is the Federal Reserve of the United States, whose mandate is interpreted as having dual objectives of price stability and full employment.

First doubts: Inflation Targeting's role in the Global Financial Crisis

Unsurprisingly, the GFC triggered many questions about the role that monetary policy had played in it. First, some questioned whether IT contributed to the build-up of financial imbalances. Did the fixation on consumer price inflation (CPI) — which indeed remained low and stable in the decade up to the GFC — prevent central bankers from paying attention to financial risks (ie, asset bubbles) that were accumulating in the background?

Second, IT was criticized for contributing to sub-optimal policy responses in the aftermath of the crisis. Did the fixation on consumer-price targets prevent central banks from the aggressive easing that was required in this situation? The ECB's rate hikes in 2008 and 2011 can be seen as examples of a central bank tightening policies in the face of adverse supply and terms-of-trade shocks (eg, higher oil prices), because it was fixated on the impact on consumer prices rather than on output and employment.

Overly narrow focus on CPI can become a potential weak spot

These arguments are not easily dismissed. However, missing financial vulnerabilities (Fed) or misjudging the true state of the economy (ECB), may be more adequately characterised as "policy mistakes" than inherent flaws of IT in principle. IT frameworks certainly provide for the flexibility to look through transitory above-target headline inflation, and they also do not prevent central banks from monitoring financial stability risks and enacting prudential measures to address them.

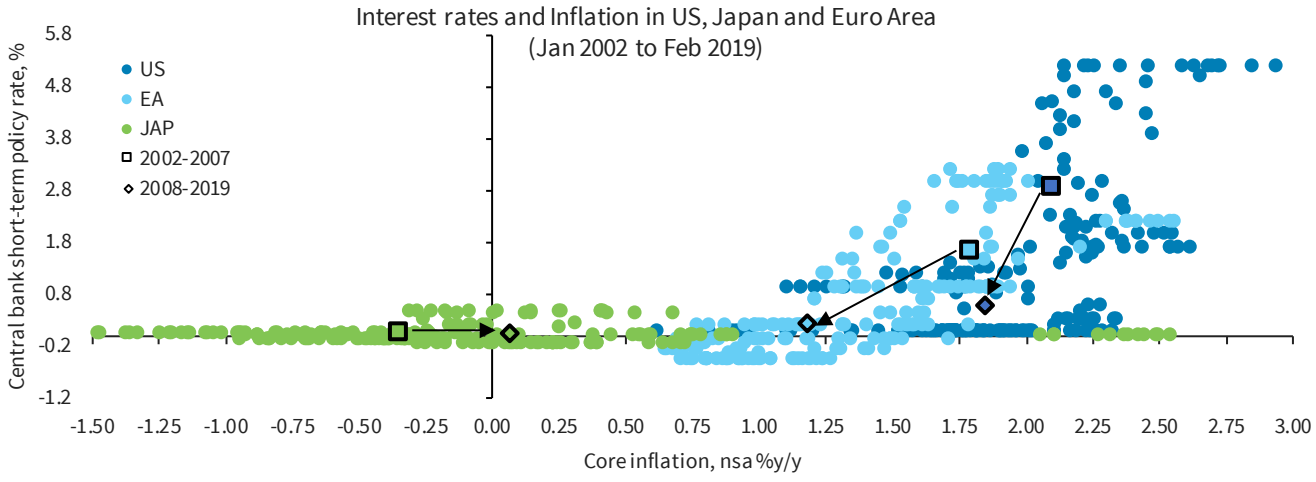
The new challenge: bringing back inflation in a low interest rate world

The challenge has shifted from above- to below-target inflation

IT's biggest challenge so far has turned out to be one that goes to its very core: inflation itself. But in contrast to the time of IT's birth, it is not that central banks wish to bring down inflation that is too high, but to spur inflation that is too low. A decade after the GFC, inflation has remained below official targets in most advanced economies, and at times has come perilously close to deflation even with sustained monetary-policy accommodation and strong labour-market recoveries. Certainly, differences remain across economies, with Japan's inflation remaining still closest to zero, the US having about reached 2% and the euro area somewhere in the middle. Even in the US, 2% has proven difficult to sustain despite full employment, a massive pro-cyclical fiscal boost, and still-accommodative monetary conditions. Hence, it seems as though there has been a fundamental change in economic relationships and, consequently, the effectiveness of monetary policy.

FIGURE 4

Closer to the 'trap': Europe and, less so the US, have moved closer to Japan's bad equilibrium of low rates and low inflation



Note: Inspired in part by Bullard, J. (2010), "*Seven Faces of `The Peril'* ", Bank of St. Louis Review, September/October 2010, 92(5), pp. 339-52, Source: OECD, BoJ, ECB, Eurostat, FRB, BLS, Haver Analytics, Barclays Research

Policy is implemented by the setting of the policy rate relative to the neutral level

Inflation targeting is implemented by adjusting short-term borrowing rates around what is considered an economy's equilibrium interest rate, the rate consistent with stable macroeconomic performance. This equilibrium or neutral rate, so-called r* (conceptually a real rate), is not observable but is nevertheless central for the models guiding policy in inflation-targeting regimes. When the interest rate is set above this equilibrium rate, the economy and inflation slow, and vice versa when policy rates are set below r*.

Within a modest positive range, the effectiveness of policy should be symmetric, with cuts as effective as hikes. Should inflation break out on the high side, and even if expectations become unanchored, the solution remains relatively straight forward: the central bank needs to tighten more aggressively (eg, the Fed under Paul Volcker, or some EM central banks that successfully achieved disinflation from high inflation environments). In principle, the policy interest rate just needs to be set sufficiently high for long enough that inflation outcomes decline and expectations move down again, even if at the expense of a slowing economy.

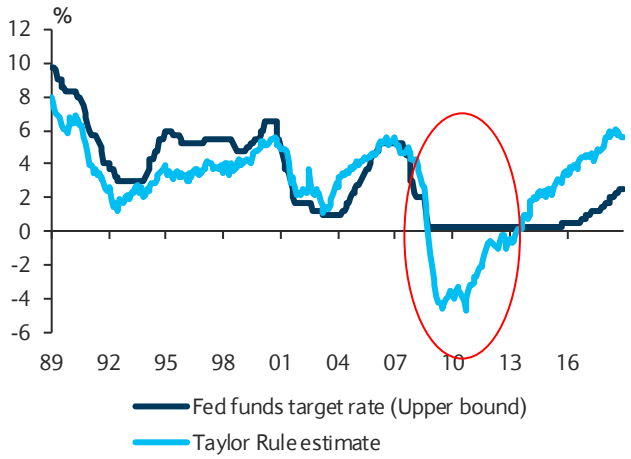
With low neutral rates, it is more likely that policy rates will be constrained by the lower bound

The same is not true in a world where inflation and r* are both very low. Given limitations on how low the nominal interest rate can be set, the policy rate is limited by the so-called effective lower bound (ELB), whereas the real interest rate can move well into negative territory. Thus, if expectations are for very low inflation or even deflation, even a policy rate at zero may not be low enough to push the real rate sufficiently below r* to re-stimulate growth and inflation. For example, in the wake of the GFC, Taylor Rule estimates of the appropriate nominal Fed funds rate were as low as -4.6%, yet the Fed stopped at zero (Figure 5).

Estimates of the neutral rate have fallen, forcing central banks to consider new tools

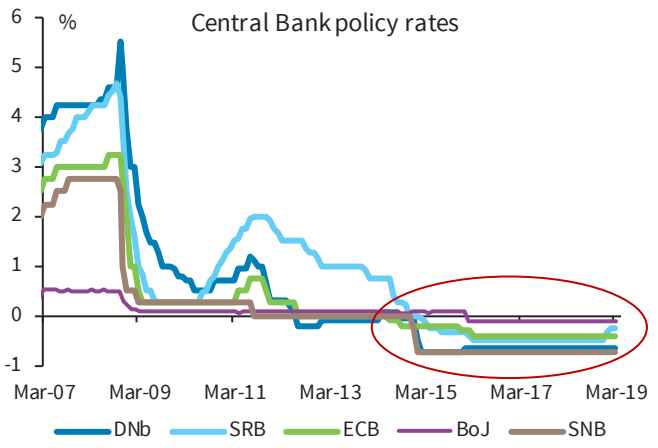
Today, policy makers face a world of very low estimates for r*, combined with low inflation expectations. Thus, even by lowering the nominal policy rate to zero, real interest rates may not go low enough to push inflation back to target. This fundamental challenge to the orthodox IT framework has forced central banks to consider what tools they could employ beyond the traditional policy interest rate.

FIGURE 5
The Fed stopped at zero, but r* estimates were much lower



Source: FRB, Haver Analytics, Barclays Research

FIGURE 6
European central banks followed the ECB into NIRP



Source: DNb, SRB, ECB, BoJ, SNB, Haver Analytics, Barclays Research

Box 1: Why are neutral interest rates so low?

Global decline in r* driven by lower growth, demographics and technology

The question of which interest rate is consistent with a stable macroeconomic performance is a crucial one in modern, developed economies. Even though such neutral or equilibrium real interest rates (r*) are unobservable, an understanding of them is fundamental to setting appropriate monetary policy. A policy rate above r* should tend to suppress activity and thus inflationary pressure, while a rate below r* would have the opposite effect.

Over the past four decades, long-term (real) interest rates have declined across economies and asset classes. This suggests neutral real rates have fallen. Model-generated estimates of r* show declines as well — often even suggesting a negative r* in the wake of the GFC. Given the close conceptual link between r* and trend growth, the deceleration in trend across developed economies has likely played a key role in pushing r* down. In turn, this deceleration is mainly explained by demographic factors and slowing productivity growth. Population growth in advanced economies has fallen in the past decades from 1.4% p.a. in the 1970s to less than 0.4% today, while measures of both labour and total factor productivity (TFP) have largely declined in parallel.[4]

Alongside lower trend growth, global shifts in desired saving and investment are also related to the long-term decline of r*. Again, demographics play a crucial role, as population growth, ageing, and choices about length of retirement affect the prevailing balance of saving and investment, and hence equilibrium interest rates. This imbalance has likely been exacerbated by a glut of precautionary saving by emerging markets and by the drag on spending from widening income inequality, which driven overall savings higher. Meanwhile, slower technological progress and lower public investment have put downward pressures on global investment.

Estimations by the BoE for the global r* suggest a total 450bp decline over the past 40 years, of which 400bp are explained by the combination of lower trend growth (100bp) and shifts in the balance of desired savings and investment (300bp), with an additional savings element driven by demographics (90bp). Although these estimates come with large uncertainties and depend on a number of assumptions, they do provide a good impression of the different factors and orders of magnitude at play. Importantly, most of these forces are expected to persist or intensify (such as population ageing).

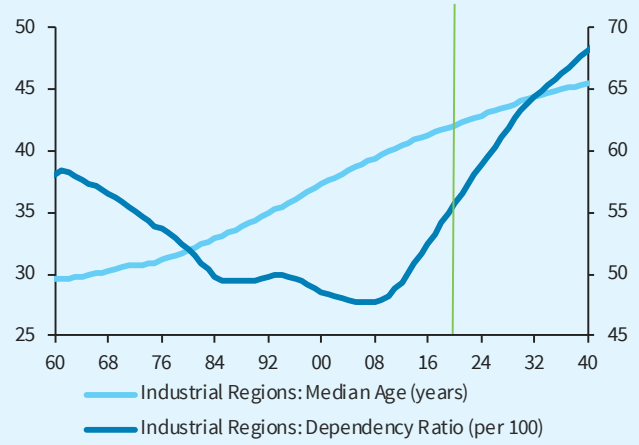
Diminishing Inflation Expectations

Nominal rates along the curve are also being pushed down by low expectations for inflation. With inflation having trended down for several decades and falling further in the aftermath of the GFC, inflation expectations — which IT regimes had earlier managed to anchor around their targets — have started to shift down as well. Both inflation-linked assets and broad consumer surveys show evidence of this: as priced by the market, 5y5y breakeven inflation rates from US TIPS and nominal US Treasuries and 5y5y US CPI swaps have both been 60-80bp lower, on average, in 2015-19 than in 2010-H1 14. 5y5y HICPx swaps indicate that market-based inflation expectations have dropped in Europe as well. The measure of 5-10y inflation expectations from the University of Michigan Survey and the 3y ahead inflation expectation measure from the NY Fed's Survey also confirm that consumer inflation expectations have fallen over the past several years.

[4] L. Rachel and T.D. Smith (2015): *Secular drivers of the global real interest rate*; Bank of England; L. Rachel and L.H. Summers (2019) On falling neutral rate, fiscal policy, and the risk of secular stagnation; Brooking Papers; *Equity Guilt Study, Chapter 2, (2016): When absolute zero isn't low enough*; Barclays Research

FIGURE 7

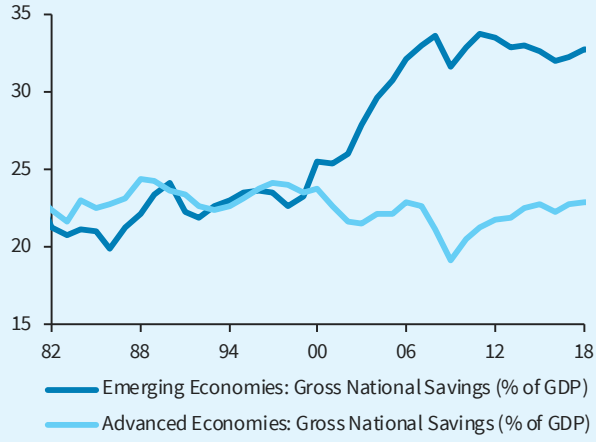
Demographic shifts due to lower birth rates and longevity…



Source: UN, Haver Analytics, Barclays Research

FIGURE 8

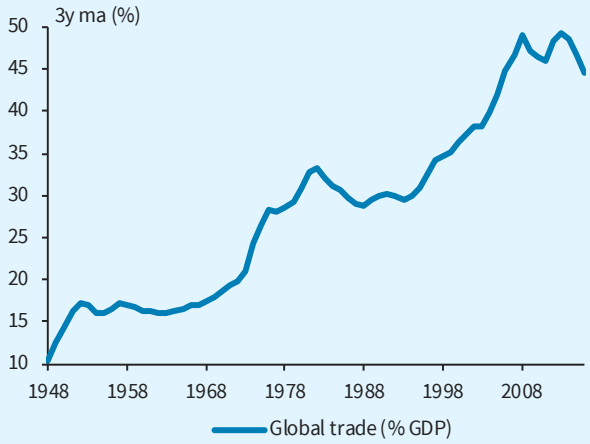
…increases in EM economies' savings ratios…



Source: IMF, Haver Analytics, Barclays Research

FIGURE 9

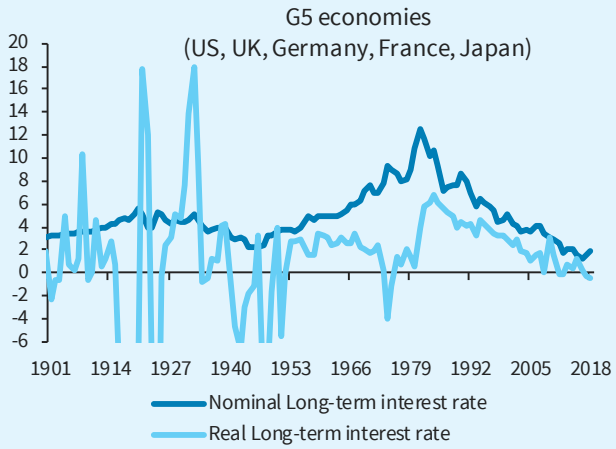
…and globalisation of commerce and labor markets …



Source: IMF, Barclays Research

FIGURE 10

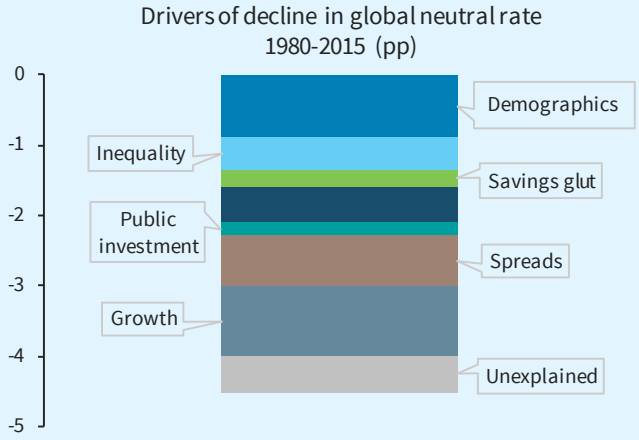
… all contributed to lower nominal and real interest rates



Source: Jordà-Schularick-Taylor Macrohistory Database, Haver Analytics, Barclays Research

FIGURE 11

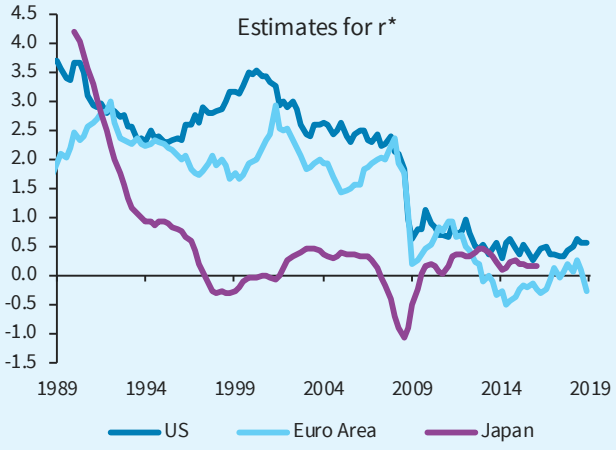
The global neutral rate is estimated to have declined by over 400bp since 1980, mainly due to demographics and growth



Source: Bank of England, L Rachel and T.D. Smith (2015)

FIGURE 12

Estimated neutral rates (r*) hover around zero for the euro area and Japan and only slightly higher for US



Source: Federal Reserve Bank of New York, *Measuring the Natural Rate of Interest*, BoJ, Barclays Research

Initial crisis response: bringing out new tools

Quantitative Easing (QE)

Quantitative easing is a tool by which a central bank expands the monetary base by buying assets in the secondary market. There are generally a few channels through which QE is thought to affect activity: increasing bank credit extension, lowering longer-term borrowing rates in the capital market, supporting asset prices (also known as the portfolio-rebalance channel as investors are pushed out the risk spectrum) and as a signalling mechanism. While there is a fine line between QE and debt monetisation, the distinction is that central banks could reverse QE by secondary market sales.

Central banks expanded the monetary base by buying assets in the secondary market

Long before the GFC, the Bank of Japan was deploying QE from 2001 as it increased the monetary base after a zero-interest-rate policy (ZIRP) introduced in 1999 failed to eliminate deflation. Initially focused on buying JGBs, it expanded the program to equity purchases in autumn 2002. The Fed followed in December 2008 with it its own long-term asset purchase program, later known as QE1, which focused on mortgage purchases. It would go on to QE2, which focused on US Treasury purchases, then Operation Twist (which technically was not QE because it sterilized purchases with sales of shorter-maturity Treasuries), and QE3, which included both Treasury and mortgage purchases. The BoE began its program in March 2009 with a concentration in UK gilts. The ECB launched its own version in late 2014, when they bought asset-backed securities and covered bonds and later expanded the program significantly in early 2015 to include bonds issued by euro-area governments, agencies and European institutions.

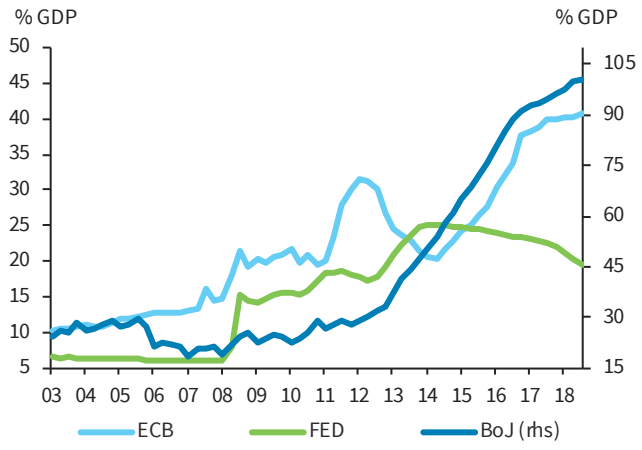
Forward Guidance (FG)

Forward guidance seeks to commit the central bank to future policy actions

Another tool central banks have used to stimulate growth is pre-committing to easy policy through FG. It can be an effective tool when clearly communicated, provided that the central bank has credibility. The implementation of FG can be put into three broad categories: qualitative, time contingent and threshold-based.

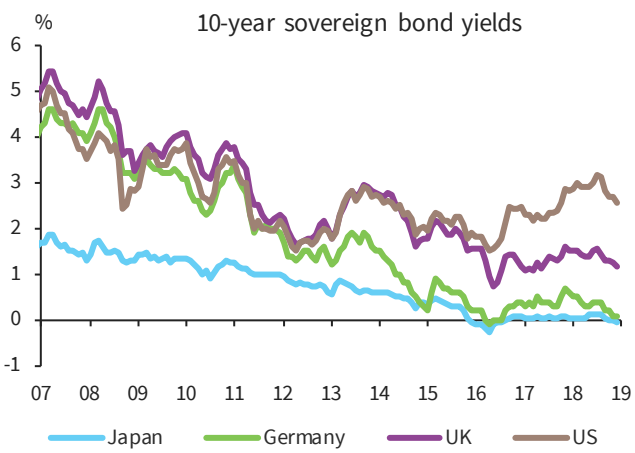
The BoJ was also a pioneer in providing the market with some certainty through FG. When it introduced the ZIRP in 1999, the Bank explicitly committed to continuing it "until deflationary concern is dispelled." The Bank of Canada, the Fed and the Riksbank all implemented FG shortly after the onset of the recession, with the BoC and Riksbank both providing time-contingent guidance in April 2009. The ECB and BoE joined others in mid-2013, with the BoE basing its low-rate policy in part on the unemployment rate. At its

FIGURE 13
Central banks' QE expanded their balance sheets…



Source: FRB, ECB, BoJ, Haver Analytics, Barclays Research

FIGURE 14
…bringing down longer-term interest rates



Source: US Treasury, MoFJ, Bbk, BoE, Haver Analytics, Barclays Research

March 2019 meeting, the ECB updated its FG by stating that it expects its key interest rates to "remain at their present levels at least through the end of 2019."

Negative interest rates (NIRP)

The effective lower bound on the policy rate can be negative because it is costly to store cash

While the low neutral-rate problem facing policy makers in a downturn is often attributed to a zero-lower bound on nominal rates, several central banks have shown that nominal policy rates can be pushed into negative territory and held there to provide further stimulus. Most have found that there is a limit to how low negative rates can be set; after all, one would only pay to park money when the risk-adjusted cost is lower than an alternative storage facility. The primary concern with NIRP has been the potential effect on bank profitability, which can weigh on the bank credit channel of monetary policy.

Switzerland used NIRP in the 1970s in an attempt to deter a flood of foreign investment and control the currency. Following the financial crisis, first Sweden (2009), then the Dankse Bank (2012), ECB (2014), Swiss National Bank (SNB, 2015) and BoJ (2016) all pushed some policy rates below zero. Many have implemented NIRP with a tiered or partial approach. For example, the SNB only applies negative interest rates to the portion of deposits that exceeds a given exemption threshold. Similarly, when the BoJ adopted NIRP, it implemented a three-tier system where a 0.1% rate was applied for a member bank's "basic balance," a 0% rate for a "macro add-on balance," and a -0.1% rate for holdings in excess of these two balances. While the Fed has not ruled out using NIRP in the next downturn, there remains considerable debate as to whether it would work in the US.

Yield Curve Control (YCC)

While traditional short-term interest-rate focused monetary policy attempts to influence longer rates through the expectations channel and QE works, in part, through its influence on term premia, yield-curve control takes it one step further by setting targets for both short and longer interest rates. It is essentially QE where instead of announcing a fixed notional amount of assets to be purchased, the central bank commits to purchase whatever amount is needed to cap rates at some portion of the yield curve. This approach leads to more control over the term structure of interest rates – so long as that commitment can be fulfilled. This is subject to some risks, as it is possible that the central bank is unable to purchase enough bonds to fulfil its commitment or that central bank buying becomes so dominant that the market ceases to function effectively.

Currently only used by the BoJ, yield curve control could become an option for other banks as well

YCC was first implemented by the Fed during WWII in the early 1940s, with an implicit commitment to cap long rates at 2.5%, mainly to help the Treasury finance the war, though it was rarely binding. In September 2016, after QE and NIRP failed to push up inflation to a desired level, the BoJ committed to purchasing longer bonds in a flexible manner such that 10y JGB yields "will remain around zero percent." While other central banks have not followed the BoJ, the Fed's Richard Clarida recently noted that the Fed "can send some solid long-term signals with this (yield curve control) and that would help in a future downturn." Thus, it appears that it might be a regular tool in central banks' toolkits.

Non-standard tools have become standard…

One broad conclusion regarding the new tools central banks have employed since the GFC seems increasingly accepted: the non-standard has become the standard. What were initially regarded as extraordinary emergency measures have been incorporated into the regular policy toolbox. There is no indication that central banks' balance sheets will decline back to their pre-GFC crisis levels and, in case of significant deteriorations of the current macro environment, QE would likely be reactivated, with YCC being an additional variation. Similarly, now that some central banks have shown that it is possible to set negative policy rates, to a certain degree, it seems likely that this option will be considered more widely. Indeed, ongoing efforts to reduce some of NIRP's negative side-effects on banks (eg, tiering of reserves) suggest that the option of negative policy rates is here to stay.

…but even that seems insufficient to credibly attain inflation targets

That said, these new tools have still not allowed central banks to deliver satisfactorily on their inflation targets. Even in the US, where the Fed's preferred core PCE inflation measure has reached around 2%, it has occurred only late in the cycle and with a very low unemployment rate that usually would be associated with stronger inflationary pressures. Hence, while in Japan and Europe the 2% target remains out of reach, the risk of not sustainably delivering 2% also remains high in the US. This could damage the credibility of these target, raising risks that inflation expectations become anchored at rates below 2%. Moreover, with QE programs implemented to date having already pushed down term premiums, future programs could plausibly have less traction on longer-term borrowing rates. Thus, with the logic of the 2% target being questioned, it is not surprising that central banks have started to consider potential changes to the IT framework itself. The Fed's ongoing strategy review, which is expected to be complete by mid-2020, is an important example.

Beyond the crisis: different *targets* for a new normal?

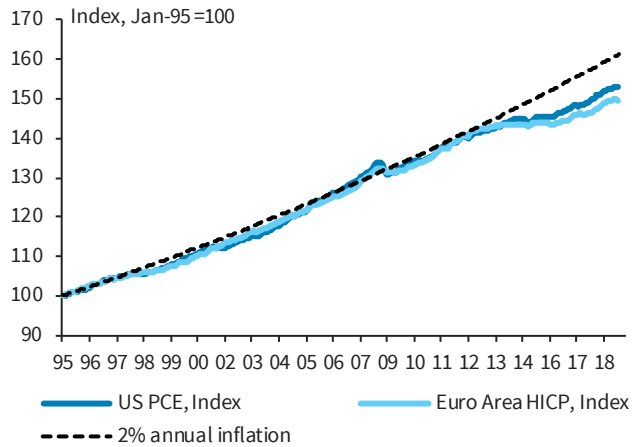
Some considerations for evaluating the options

Having conceded that additional policy tools such as QE, FG, YCC are imperfect substitutes for the conventional policy rate instrument, discussion around modifying or replacing IT is typically motivated by the increased likelihood that policy rates could regularly hit the ELB in a low neutral rate environment. In theory, many of the proposals being discussed – such as targeting a higher level of inflation, price *levels*, or *nominal GDP* – could bolster FG in ways that help address this issue. But this narrow focus will not suffice, as policymakers will need to weigh the costs (both temporary and permanent) and other practical shortcomings of these proposals.

Any new target needs to be credible to shape expectations

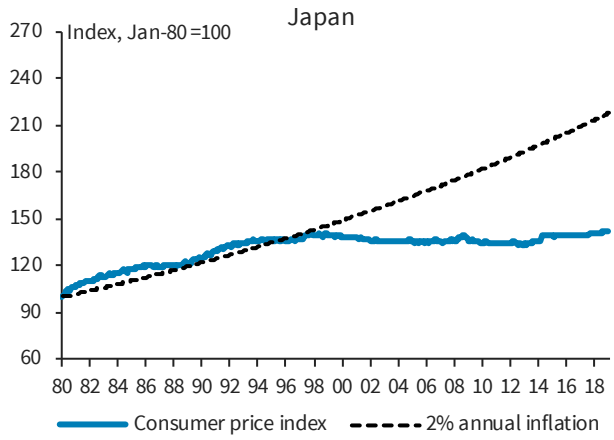
One crucial issue when weighing these alternatives is the formation and management of expectations by market participants. Although an idea may sound promising in theory, its effectiveness in practice will depend on whether policy can influence market *expectations* in the intended way. In other words, will the proposed 'target' be a credible commitment device for guiding expectations? This is not assured, because today's commitments may not be *time consistent* (in economics jargon), meaning that even well-intentioned policymakers will have strong incentives that will prevent them from following through on a commitment. In particular, a commitment to eventually allow inflation to run above or below some long-run desired level may prove exceedingly costly in the event, and therefore may not influence expectations as intended.

FIGURE 15
Price level targeting could require…



Source: Eurostat, BEA, Haver Analytics, Barclays Research

FIGURE 16
…significant catch-up, in particular for Japan



Source: MIC, Haver Analytics, Barclays Research

Alternative targets come with costs

There are other meaningful costs to consider, some of which are transitory, and others more lasting. For instance, many of the new frameworks discussed below aim to meaningfully increase inflationary expectations. To the extent that such efforts are successful, the outcome would clearly benefit some market participants (such as borrowers) at the expense of others (lenders), implying substantial re-distributional consequences during the transition. Even after the transition, higher inflation would likely prove costlier for some groups (including those who are inadequately hedged for inflation) than others. While re-distributional consequences are unavoidable for any policy change, there may be considerable reluctance to shift away from a framework that for two decades, by and large, has delivered notable improvements relative to previous approaches.

Setting a higher inflation target

A higher inflation target would create more space for rate cuts

Perhaps the simplest alternative under discussion is to permanently raise the inflation target (such as from 2% to 4%). By essentially maintaining the IT framework, this approach would inherit many benefits, including the flexibility for policymakers to let bygones be bygones when supply shocks occur. To the extent that the higher target is credible, the added benefit would be higher inflation expectations and nominal interest rates. With greater scope to reduce the policy rate in a downturn, central banks would be less likely to hit the ELB. Higher inflation expectations would also bolster stimulus once the ELB has been reached, since anticipated real rates of interest would be lower. With less time seemingly spent at the ELB, recessions would be less costly and average economic activity would be higher.

Can a 4% target be credible when even 2% has not been achieved?

But, as with all alternatives, these benefits come with costs. The most obvious is that economic participants would have to live with higher expected and realized inflation rates. This is meaningful because inflation is not costless: a choice to hold cash would come with a greater sacrifice of purchasing power, and actions to avoid these costs – such as economizing on cash holdings and inflation hedging – involve deadweight losses for the economy. Arguably, these costs would fall disproportionately on those who lack access to cash substitutes, such as lower-income households. At the same time, these same households may benefit disproportionately from spending less time at the ELB.

Higher inflation means losses for some

Boosting inflation targets would also involve substantial transition costs. As mentioned earlier, higher inflation expectations tend to transfer wealth from existing lenders to existing borrowers. To provide a ballpark sense of the magnitudes at play, the US Federal Government has sold to the public about $8.2 trillion of longer-term nominal debt securities.[5] Given the average duration of these securities (6.2 years), a credible commitment to permanently raise the inflation target by 1 percentage point would raise yields by about the same amount, thereby transferring about $500 billion of wealth from bondholders to the US Federal government.[6] Of course, this is only a fraction of nominal debt contracts outstanding, so the overall wealth transfer would be much larger.[7]

[5] The $8.2 trillion total excludes treasury bills, inflation-indexed bonds, and bonds held by the Federal Reserve.
[6] This magnitude is calculated as the change in the aggregate market value of these debt holdings, approximated using the formula: Change in value of securities = duration x value of securities x change in yields.
[7] The political reality of these redistributions is perhaps part of the reason that Federal Reserve Chair Jay Powell has stated during Congressional testimony that the FOMC has ruled out this alternative. See Powell, J.H.,, February 27, 2018, "*Semimanual Monetary Policy Report to the Congress*", Before the Committee on Financial Services, U.S. House of Representatives, Washington, D.C.,

FIGURE 17
The costs and benefits of alternative frameworks differ

Alternative		Lower probability of ELB?	Enhance policy at ELB?	Accommodate supply shocks?	Main drawbacks
Higher inflation target		Yes	Yes	Yes	may lack credibility wealth redistribution
Price level target	temporary	Possibly	Yes	Yes/No	may lack credibility
	permanent	Yes	Yes	No	may lack credibility potentially destabilizing with supply shocks challenging to calibrate, ex ante
Average inflation target		Yes	Yes	Yes	may lack credibility challenging to calibrate, ex ante heightened risk of political interference
Nominal GDP target	growth rate	Possibly	No	Yes	somewhat counterproductive at ELB misleading supply signals may constrain policy unstable inflation expectations
	level	Yes	Yes	No	may lack credibility misleading supply signals may constrain policy challenging to calibrate, ex ante

Source: Barclays Research

Price level targeting

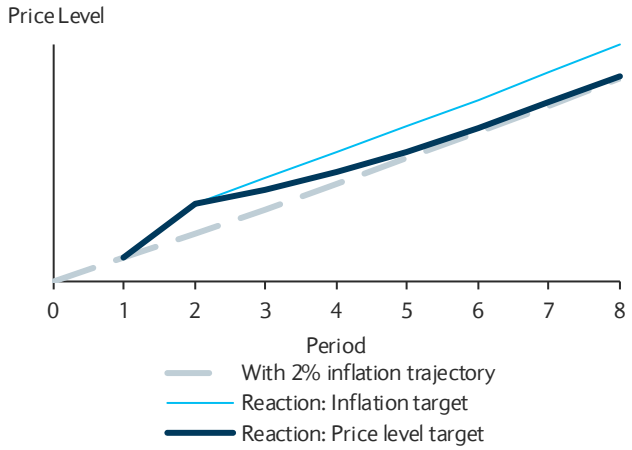
Price level targeting (PLT) has been advocated since the late 1990s, when it was proposed by a number of prominent economists to help Japan emerge from its ongoing liquidity trap.[8] With this approach, central banks target a trajectory of the price level, commonly one in which prices rise at a pre-specified rate – which, for illustration, we assume is 2% y/y.

Making up for the years of below-target inflation with years of above target inflation

The main benefit of PLT relative to IT is to bolster the credibility of FG at the ELB. In such a scenario, inflation would generally be running well below 2%, and, to eliminate the shortfall, the central bank would eventually need to let the economy run hot so that inflation exceeds 2% for a time. If financial markets view this as credible, they would factor in expectations of lower policy rates when the economy emerges from the ELB, which would stimulate activity immediately by forcing down longer-term borrowing rates. In turn, this would provide central banks with more ammunition to avoid reaching the ELB: with the economy expected to spend less time at the bound when it is reached, markets would presumably boost inflation expectations to around 2%, thereby raising nominal interest rates. Of course, these benefits depend critically on the credibility of the commitment to keep rates lower for longer after emerging from a liquidity trap.

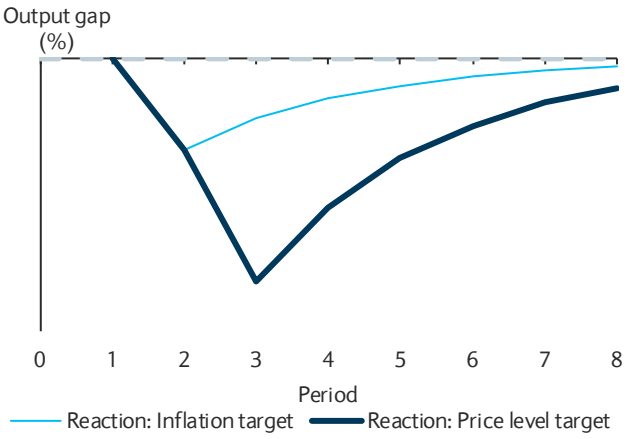
[8] For instance, see "*Price Level Targeting vs. Inflation Targeting: A Free Lunch*," by Lars Svensson, *Journal of Money, Credit and Banking*, Vol 31, 1999 and *NBER Working Paper No. 5719.*

FIGURE 18
A price-level target would require the central bank to reverse supply shocks…



Source: Barclays Research

FIGURE 19
…which would tend to destabilise activity



Source: Barclays Research

However, credibility issues with PLT are more acute than demonstrating a willingness to tolerate inflation after reaching the ELB: meaningful tensions will also arise in the event of adverse supply shocks (or "price level shocks"), when the virtues of PLT can rapidly become a vice. This is illustrated in Figures 18 and 19, which compare the response of prices (left panel) and the output gap (right panel) to a persistent adverse supply shock – such as an increase in the price of oil. With both a forward-looking IT regime (the light blue lines) and a PLT regime (the dark blue lines), the shock initially raises consumer prices and leads to a slight contraction in real activity. With IT, the central bank lets bygones be bygones, allowing the shock to temporarily raise inflation in the short run and the output gap to gradually close. However, with PLT, the central bank seemingly does not have the luxury of prioritising economic stability ahead of defending the target. Policy would need to be tightened in order to undo the inflationary impulse from the shock, leading to a costly period of foregone activity. Since shocks are quite common, policy may need to engineer many such reversals to secure the credibility needed to reap the benefits of PLT at the ELB.

But should central bank really suppress inflation below target after a period of overshoot?

PLT also raises subtle, but important, issues with implementation. For example, once a target has been established, adverse demand shocks may well occur after a period when the economy has been running above potential, with prices pushed above the target. Figure 21 depicts such a situation, using the experience of the US in the run-up to the GFC as an example. The lines in the figure show accumulated gaps between PCE prices and core PCE prices and a plausibly calibrated target.[9] With this calibration, both prices had ascended well above their targets (in part due to an ill-timed energy price shock) so that the FOMC would have entered the crisis with an intention to keep its policy stance *tighter* than otherwise to unwind these overruns. Even if the Fed had fully anticipated the magnitude of the impending crisis at the time, its commitment to the target would have seemingly undermined its ability to respond.

Although targets can surely be recalibrated to support FG in cases where levels are clearly misaligned with the public interest, the possibility of doing so speaks to its credibility as a commitment device. If a central bank can opportunistically boost its target when the economy is operating below full employment, it can just as easily reduce it when the time comes to reflate the economy following a bout at the ELB.

[9] We assume each target rises at 2% y/y, and normalise each so that the initial gap is zero in Q2 2005 – the last quarter prior to the GFC when the US unemployment rate gap was closed.

These various shortcomings are part of the reason that former Federal Reserve Chairman Ben Bernanke has proposed a *temporary* PLT approach.[10] In this alternative framework, the central bank would only commit to the PLT when the policy rate is at or near the ELB, with an eye to boosting the credibility of FG to keep rates lower for longer. Although this alternative seemingly helps address some of the shortcomings of a permanent PLT discussed above, it may still lack credibility, as policymakers can always renege on the commitment when the time comes to follow through with high inflation.

Average inflation targeting

John Williams, the current head of the New York Federal Reserve branch and vice-chair of the FOMC, has proposed the idea of average inflation targeting (AIT).[11] With this approach the central bank would vary its inflation target over time, committing to intentionally set to targets somewhat above 2% – such as 2.25% – in periods when the economy is running in the vicinity of full employment and a somewhat lower target – such as 2.0% – otherwise.

Targeting an average inflation rate over time may be a workable alternative

AIT can be thought of as a hybrid that seeks to extract the most useful features of IT and PLT. The main idea is to bolster inflation expectations to levels closer to 2%, acknowledging the strong likelihood that inflation will tend to run well below the target for extended periods when the policy rate is trapped at the ELB. On paper, the commitment to adjust the target at a later date, as necessary, to balance out low-inflation outcomes would work much like PLT, reinforcing FG at the ELB by assuring markets that the policy rates will be kept lower for longer when the ELB no longer binds. As with PLT, this could also help provide more ammunition for central banks to avoid ELB outcomes, by raising expected inflation and neutral interest rates when the economy's output is closer to potential.

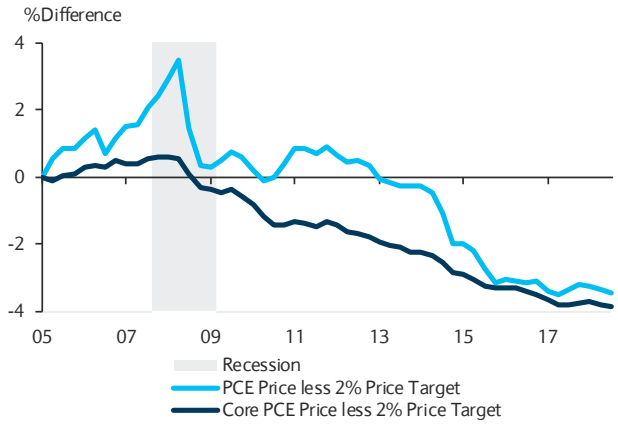
FIGURE 20

The Fed's full employment mandate clearly called for an accommodative policy stance in the GFC…

Note: Target is normalized to Q2 2005, when the unemployment rate gap is closed according to the CBO. Source: Congressional Budget Office, Bureau of Economic Analysis, Barclays Research.

FIGURE 21

… but a price level target may have undermined its ability to respond



Note: Target is normalized to Q2 2005, when the unemployment rate gap was closed according to the CBO. Source: Congressional Budget Office, Bureau of Economic Analysis, Barclays Research

[10] "*Monetary Policy in a New Era*" by Ben S. Bernanke, paper prepared for conference on Rethinking Monetary Policy, Peterson Institute, Washington DC, October 2, 2017.

[11] Williams has outlined this approach in a number of speeches, including recently with "*Monetary Policy Strategies in a Low-Neutral-Interest-Rate World*", presented at the Plenary Meeting of the Group of Thirty, Federal Reserve Bank of New York, November 30, 2018.

However, AIT resembles IT in the sense that it provides scope to temporarily prioritise economic stability above defending the target when the economy is hit by supply shocks. This is because the target within each regime can be treated much as in a flexible IT framework, with a forward-looking view that de-emphasizes the need to reverse supply shocks. With this shift in emphasis, it would be considerably easier for the central bank to demonstrate the credibility of its commitment to an AIT framework. Another potential benefit is that AIT may be more intuitive to the public than PLT, which could also help reinforce credibility.

Enhanced flexibility could come at the expense of lower credibility

But this enhanced flexibility potentially comes at the cost of undermining credibility, and may also expose central banks to heightened political pressures. By construction, an adjustable target may lack credibility because it is subject to future adjustment. As with PLT, markets will also be aware that policymakers will eventually need to grapple with the costs imposed by a commitment to let the economy run hot, and may not view this commitment to be credible. Policymakers also would not know the duration of an upcoming expansion, which would leave open to debate the appropriate adjustment to the target. Among other things, this would provide scope for political interference, as a given political administration, once in power, will have incentives to pressure the central bank to set the higher target – thereby reaping the benefits of a strong economy while leaving the central bank to sort through any hangover effects on inflation and financial stability.

Nominal GDP targeting

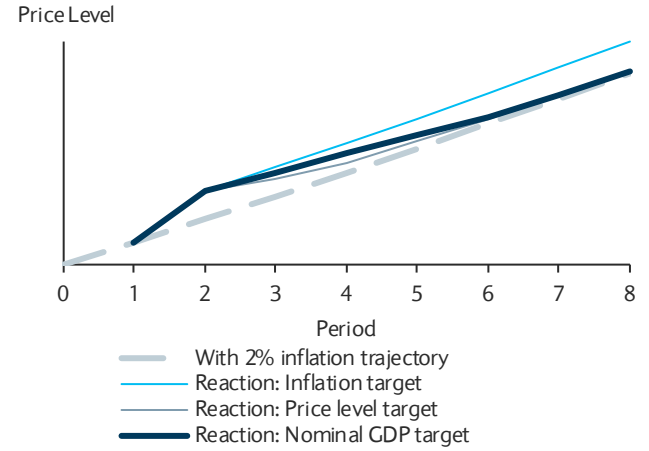
A key theme of the forgoing discussion is that frameworks based solely on a price stability objective, such as IT or PLT, can sometimes be at odds with full employment. Nominal GDP targeting (NGT) is a framework that attempts to achieve a more consistent balance between these two considerations, using a single target that weights both goals.

Targeting nominal GDP is an elegant solution in theory …

NGT has two main variants. In the first, the central bank would target a specific *growth rate* – such as 4.5% q/q saar – at some horizon, much as it targets consumer inflation with IT. Since nominal GDP growth is (approximately) the sum of GDP price inflation and real GDP growth, the target would place equal weight on the gaps between (a) the growth rates of output and potential, and (b) GDP price inflation and an inflation target (set implicitly, as the nominal GDP target less potential GDP growth). As with IT, policymakers would receive an unambiguous signal to make policy rates more accommodative if both gaps are expected to run negative, and the converse if both gaps will run positive. Hence, the framework would direct policymakers to lean against demand shocks as with IT, automatically steering the economy

FIGURE 22

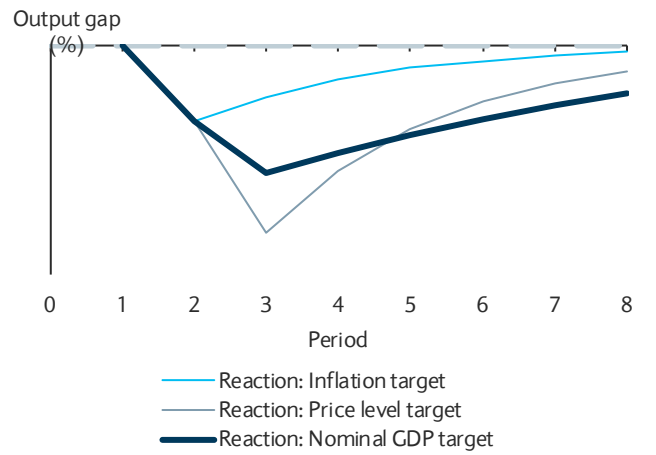
With a nominal GDP target, the central bank would be react more gradually to supply shocks than with a price target…



Source: Barclays Research

FIGURE 23

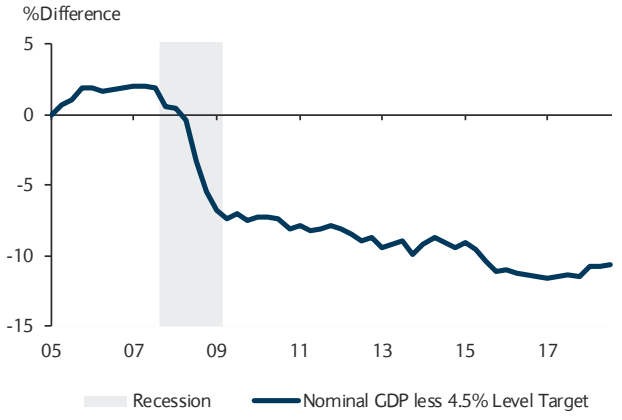
…which would be less destabilizing for activity



Source: Barclays Research

FIGURE 24

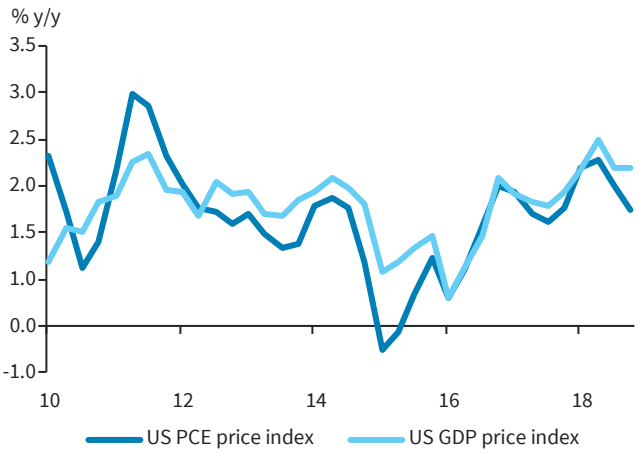
At the onset of the GFC, a nominal GDP level target may have slowed the Fed's policy response



Note: Target is normalized to Q2 2005, when the unemployment rate gap is closed according to the CBO. Source: Congressional Budget Office, Bureau of Economic Analysis, Barclays Research

FIGURE 25

Nominal GDP targeting ignores the distinction between GDP and PCE prices



Source: BEA, Haver Analytics, Barclays Research

toward full employment. [12] When supply disturbances hit, the two gaps would send mixed signals, and any dilemma about which gap to prioritise would be resolved by weighting them equally. This would tend to split the burden of adjustment between activity and prices in the short run.

A key shortcoming of NGT is that it may not effectively reinforce FG when policy rates are constrained by the ELB. As discussed, a pledge to keep rates lower for longer will only be effective if policymakers can credibly commit to future outcomes where the economy is allowed to run "hot" to generate expectations of higher inflation. But such outcomes almost surely require a sustained period of rapid nominal GDP growth, which would violate the NGT when the time comes to follow through on the pledge.

…especially when targeting a nominal GDP level rather than growth rates…

The second variant helps address this shortcoming by having the central bank adopt a *level* nominal GDP target (NGLT) that grows each year at a specified growth rate. Much like a PLT, this approach would counsel policymakers to take an accommodative stance when nominal GDP is persistently falling short of its target, and a restrictive stance when the opposite is the case. Among other virtuous aspects, this would reinforce forward policy guidance at the ELB, by committing policymakers to run the economy hot until the NGLT is reached. Indeed, this commitment may be more credible with PLT or AIT, because the nominal GDP benchmark automatically directs policymakers to make trade-offs between inflation and unemployment that might otherwise lack credibility. With more effective FG, ELB episodes would tend to be shorter in duration, which would typically raise inflation expectations and interest rates on balance, once again providing the central bank with more ammunition to avoid ELB outcomes. A NGLT would also not be as much of a straightjacket as PLT when the economy is hit with adverse supply shocks, with the burden of adjustment split between activity and prices.

Another key benefit of NGLT is that it seemingly de-emphasizes the need to assess unobserved supply variables. With central banks calibrating policy to a readily observed nominal GDP benchmark, policymakers need not go to such pains to assess economic slack. This might help make policy more transparent and predictable, as decisions need not

[12] Indeed, some proponents of nominal GDP targeting propose that the central banks calibrate its monetary policy stance using a futures market for the level of nominal GDP. Specifically, policymakers would loosen policy if the futures market pointed to nominal GDP growth below the target, and would tighten policy if the futures market pointed to growth above the target.

be tied to judgmental assessments of unobserved variables and the weights placed on inflation and unemployment.

But these virtues would be accompanied by meaningful disadvantages. The first is that a NGLT does not let bygones be bygones. As with PLT, this would be most apparent when the economy is hit by a supply shock when it is operating near full employment. As shown in Figures 22 and 23, the framework would tend to direct policymakers to reverse adverse supply shocks; otherwise the level of nominal GDP would exceed the target when output returns to potential. The balanced priorities of NGLT merely provides flexibility for policymakers to smooth costs in terms of foregone activity, likely implying a more prolonged adjustment than with a price level target.

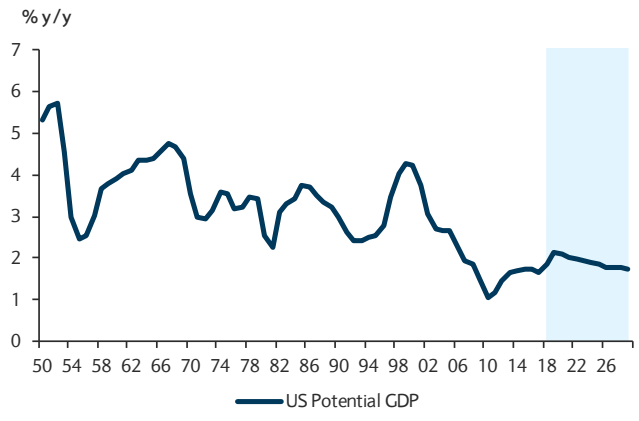
A second disadvantage is that policymakers would sacrifice some nimbleness. As with a PLT, policymakers in each period inherit some accumulated gap between GDP and the target. Given the cyclical tendencies of the economy, downturns will tend to hit at times when cyclical forces have been pushing nominal GDP above its target. With policymakers generally adopting a restrictive stance in such cases, it is reasonable to think that they will be more reluctant to respond to signs of an economic downturn than they would be with a target that lets bygones be bygones. As shown in Figure 24, this may well have been the case in the United States in the early stages of the GFC, when nominal GDP had generally been growing at rates exceeding plausible nominal GDP targets.[13]

But nominal GDP targeting comes with a number of conceptual as well as practical challenges

Beyond these disadvantages, NGT and NGLT are subject to a number of meaningful conceptual issues. First, NGLT may not do enough to stabilize prices that matter for consumers. Conceptually, the price index reflected in nominal GDP captures prices of domestically produced goods that may not be important to consumers, and is not the same as consumer price benchmarks that measure changes in households' living costs. Indeed, the rate of inflation in GDP prices can often differ substantially from rates based on PCE prices (see Figure 25), especially in countries with a high import content. Second, policymakers would need to grapple with how changes in potential GDP growth will interact with inflationary outcomes. In most developed countries, potential GDP has been gradually decelerating for decades due to population demographics and other influences

FIGURE 26

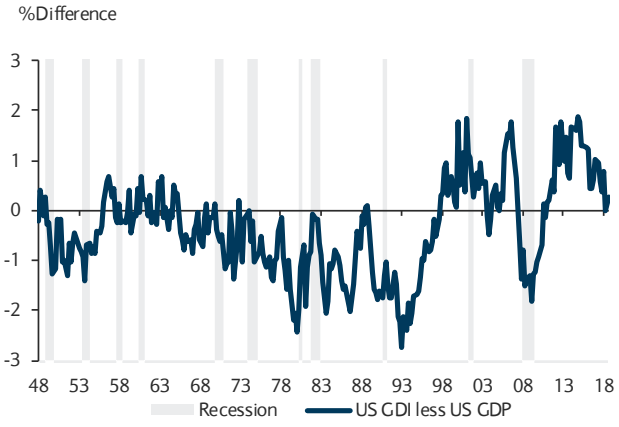
The ongoing deceleration of potential GDP poses problems for nominal GDP targeting



Source: Congressional Budget Office, Barclays Research

FIGURE 27

Nominal GDP is subject to substantial measurement errors



Source: Haver Analytics

[13] One reasonable target, given the rate of potential GDP growth (about 2.5% y/y, according to current estimates from the US Congressional Budget Office) that prevailed in the mid-2000s and the Fed's preference of inflation around 2%, would have been 4.5% y/y.

(Figure 26) – and this trend is expected to continue. The consequence of this deceleration, with a fixed NGT, would be gradual upward creep in inflation.[14] Lastly, nominal GDP is subject to numerous measurement difficulties that would complicate monetary policy. This is apparent from Figure 27, which shows discrepancies in the US between nominal GDP and GDI (which are conceptually equivalent but are measured using different approaches). Reflecting these measurement difficulties, real-time measures of nominal GDP growth are prone to substantial revisions over time as statistical agencies periodically revisit their estimates to incorporate better source data and alter measurement conventions.[15] With such revisions often occurring within months of initial estimates, policymakers would often receive misleading signals about the appropriate stance of policy, which would pose issues for communication and implementation.

More radical conceptual changes

As part of the Fed's strategy review, the above alternatives to the current IT framework are transitioning from the pure academic sphere to that of policy practitioners. The future of monetary policy frameworks has entered the discussion in other central banks as well, even if merely for debate.[16] In academia, more radical concepts are being discussed, many of which seek a break from long-standing policy and social conventions. They may be far from being seriously considered today, but if the past decade has shown anything, it is how quickly the unorthodox can become orthodoxy.

Abolishing cash

Without cash holdings as an alternative, negative interest rates would be fully effective

One proposal is for central banks to fully eliminate (cash) currency, as to overcome the ELB.[17] By removing the arbitrage opportunity of escaping negative interest rates through substituting deposits for cash, the asymmetry of interest rate policy can be overcome: policy rates can, in principle, be moved both above and below zero without boundaries. Freed from the ELB, monetary policy would have regained interest rates as its core instrument with ample room for counter cyclical downturns. In addition, proponents argue that the full digitization of money would create savings by reducing the costs associated with the physical storage and transport of cash, while also hampering some illegal activities and promoting transparency.

A cashless society would bring more transparency at the cost of diminished anonymity…

There are a number of drawbacks, however. Transacting and storing value in cash has survived throughout the centuries. For example, ECB surveys find that 80% of transactions in the euro area at the point of sale are still in cash. Furthermore, while full digitization might reduce illegal cash transactions, it may also open the door for new type of criminal activities. Indeed, even law-abiding citizens may have a preference for cash and could perceive its abolition as an assault on their freedom and their right of anonymity. Likewise, savers may view the abolition of cash, coupled with a negative nominal interest rate on deposits, as a form of unfair wealth tax. That said, such attitudes can change and some societies outside the euro area are becoming increasingly cashless (eg, China and Sweden).

… breaking with long-standing social convention

In sum, the proposal to abolish cash is radical as it would break with long-standing social convention, depriving economic agents of the ability to hold and deal with cash. Its economic logic, in contrast, follows conventional reasoning regarding the limitations of

[14] To be sure, this upward creep may offer some advantages, such as helping to offset the effect of slowing potential on the nominal neutral rate of interest.
[15] For instance, the US BEA expanded the scope of GDP in 2013, when it added a number of categories of intangibles – such as R&D expenditures – to its estimates of business fixed investment. These changes affected the entire history of GDP estimates back to 1929, with the various definitional changes boosting the level of nominal GDP in 2012 by more than $0.5 trillion (3.4%).
[16] See, for example, Constâncio, V., 25 May 2017, "*The future of monetary policy frameworks*", Instituto superior de Economia e Gestao, Lisbon,
[17] See Buiter, W.H. (2009), "*Negative Nominal Interest Rates: Three ways to overcome the Zero lower Bound*", NBER Working Paper 15118; Rogoff, K.S. and Reinhart, C.M (2014), "*Recovery from Financial Crises: Evidence from 100 Episodes*", NBER Working Paper No. 19823; Goodfriend, M. (2016), "*The case for Unencumbering Interest Rate policy at the Zero Bound*", Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming.

interest rate policy due to the ELB. From this perspective, it would be a radical new tool, rather than a new conceptual approach to monetary policy. Given this radical nature, , an important final concern about eliminating cash would be financial stability. Many argue that interest rates close to zero have significantly driven up prices for real assets, raising concerns about asset price bubbles and excessive leverage. The ability to maintain very negative interest rates for extended periods would only deepen these concerns.

Accepting low inflation — reassessing the threat of deflation

Whether proposing new tools, adjustment in targets or even abolishing cash, all these attempts aim ultimately at reviving inflation. Having inflation rates back at around 2% is part of a superior economic outcome, as it helps to achieve employment mandates and reduces the threat of deflation. It assumes that the negative side effects of the measures taken to reach the 2% level again can be contained through prudential policies.

Aggressively pursuing an unattainable 2% target could fuel financial bubbles…

However, this assumption that these side effects can be contained is open to challenge. Concerns about the potential influence of persistently accommodative monetary policy on financial cycles and stability are behind a fundamentally different school of thought which advocates that central banks accept the reality of low inflation.

Underlying inflation appears to be gradually trending lower over recent decades – arguably reflecting many of the same structural influences that are weighing on neutral interest rates: demographics, globalisation and technology. These structural influences are largely beyond the influence of monetary policy. If trend inflation rate is, in fact, below 2%, persistent attempts to reach 2% inflation targets may require monetary policy to continuously adopt an accommodative stance to stimulate demand. Such accommodation could fuel financial cycles, driving unsustainable increases in credit and asset prices. Although prudential regulations can lean against these pressures, they may be unable to prevent them. If and when asset price bubbles burst, the deflationary impact could be significant, likely stronger than the disinflation that would occur during periods of slow growth and/or supply-driven price reductions.[18]

… and bursting asset bubbles could create worse deflation scenarios…

In other words, stubbornly aiming at an unattainable inflation target could ultimately result in what the policy is aiming to avoid: deflation. Deflation is feared because of its adverse effect on economic activity, even though this link may vary over time, depending on circumstances. In principle, deflation undermines the economy's ability to adjust to adverse demand disturbances because of various *nominal rigidities*: the key ones are the ELB, nominal wage rigidities, and the possibility of debt deflation. When these rigidities are present, inflation can help ease adjustments to adverse economic shocks. For example, if nominal wages cannot be reduced, letting inflation erode wages' real value can hasten the process of labor market adjustment, while unexpected inflation can reduce the real burden of debt servicing. The presence of such rigidities poses an asymmetric risk to economic stability. In an extreme case, an economy could become stuck in a 'deflationary trap', where the ELB prevents real interest rates from falling enough to push the economy back to full employment, and the deflationary impetus from nominally denominated debt and other nominal distortions becomes self-reinforcing.

[18] See "*Monetary policy in the grip of a pincer movement*", Claudio Borio *et al*., BIS Working Papers, No. 706, March 2018.

Box 2: Lessons from Japan's experience

Bursting asset bubble ends in deflation

In a number of ways Japan lends itself as a reference to the broader situation across advanced economies today. Following a boom period from 1986-1991, during which real estate and stock market prices soared massively, Japan's asset price bubble burst in 1992 and the country entered into what many dubbed the 'Lost Decade' of economic stagnation. Non-performing assets accumulated, productivity growth slowed, and, notably, consumer price inflation started to steadily decline. Japan's potential growth rate is estimated to have declined from around 4 percent in the early 1990s to around 1 percent in the late 1990s. the CPI finally slid into deflation in the late 1990s, where, with brief exceptions, it stayed for 15 years. The BoJ's response to this deflation dynamic has been an issue of debate. Critics argue that the BoJ's hesitance to ease monetary conditions more decisively, and its premature exit from such measures after it finally acted, contributed to the dynamic, largely by allowing for inflation expectations to permanently shift downward.

Central bank commitments must be credible to shape expectations

With core inflation dropping into negative territory, in 1999, the BoJ introduced the zero interest rate policy (ZIRP), in which the uncollateralized overnight call rate was guided to virtually 0 percent. In 2001, QE was introduced, increasing the monetary base. While these steps no longer appear extraordinary in today's context, they were path-breaking policy steps at the time. Importantly, the BoJ took them isolation rather than in the wake of a global phenomenon like the GFC, where central banks pretty much all moved together into 'unorthodoxy.' Indeed, the idiosyncratic nature of these actions may also have caused the BoJ to act too hesitantly, failing to convey the strong commitment needed to give its policies necessary credibility. Paul Krugman opined in 1999 "while the Bank of Japan has actually been engaging in some quite unconventional monetary operations…, it is doing so in a surreptitious, almost shamefaced manner, and therefore not creating the sort of 'credible promise to be irresponsible' that I argued was necessary."

Indeed, after entering ZIRP in February 1999 the BoJ withdrew from the policy in August 2000, when inflation was still negative. At the time, the BoJ stated that, "the downward pressure on prices stemming from weak demand has markedly receded". Instead of considering whether the exit was premature, BoJ communication almost apologetically tried to explain why it had maintained ZIRPs for so long. Sure enough, deflationary pressures soon returned and just six months later the BoJ reversed course and returned to ZIRP in Q1 2001. This was also the first instance the BoJ embarked on a course of QE, with the official objective to "continue until the consumer price index… registers stably a zero percent or an increase year on year." The initial asset-purchase program was later expanded and the BoJ also engaged in unsterilized FX intervention. However, in March 2006, when inflation had recorded just four consecutive months of non-negative readings QE was ended. Soon after, in July 2006, the BoJ raised the policy rate above zero. Subsequently, inflation did climb to over 2% in Q4 08, but by Q2 09 it had slumped back into negative territory.

The withdrawal from QE in 2006 may be more difficult to qualify as a 'policy mistake', given that the BoJ was certainly not alone in not foreseeing the events of 2008/9, which also drove Japan back into deflation. However, the story of Japan's monetary policy response reiterates how crucial it is for any commitment to be credible, which requires persistent policy actions. Indeed, the ECB seemingly committed similar mistakes in 2008 and 2011, when it prematurely hiked rates, which it corrected subsequently through forceful policy measures and communication. Another lesson from Japan is how difficult it is to significantly raise inflation expectations once economic agents have experienced deflation for a prolonged period.

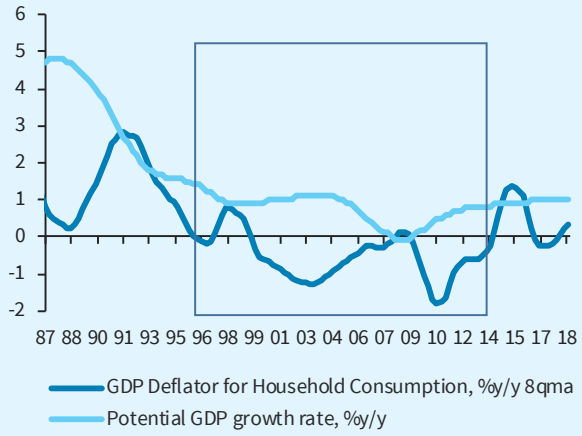
Demography matters and no inflation does not have to mean no growth

That said, it would also be misleading to explain Japan's experience as pure consequence of a monetary policy mistake. Important other factors played a role, notably Japan's demographic situation. Japan's population decline and aging is progressing at a faster pace than in other major economies. The effect of such demographic shifts on macroeconomic variables such as in potential growth, r*, and inflation has been well documented in research, and it should therefore be no surprise that Japan has been particularly affected.

However, Japan may still also serve as a lesson that periods of low inflation and/or mild deflation may not necessarily result in economic misery. In spite of continued below-target inflation over the past ten years, Japan's economy is experiencing its longest post-war expansion, unemployment has dropped to record lows, and, importantly, per capital GDP growth has been stronger than in the US, the euro area, UK and Canada. Looking back over the last 30 years, Japan's average per capita GDP

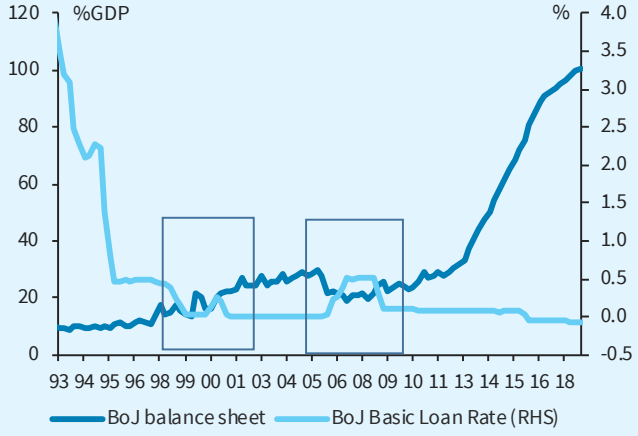
growth rate was in line with that of the other advanced economies: it was much higher than others in its pre-deflationary period (ie, pre-1997), much below others during the period when deflation took hold (ie, post-1997), but has again outperformed others since the GFC. This could lend support to the argument that highly advanced but rapidly ageing economies may be just fine with below 2% inflation, as long as conditions do not descend into a deflationary trap.

FIGURE 28
After the crisis, growth slowed and deflation followed



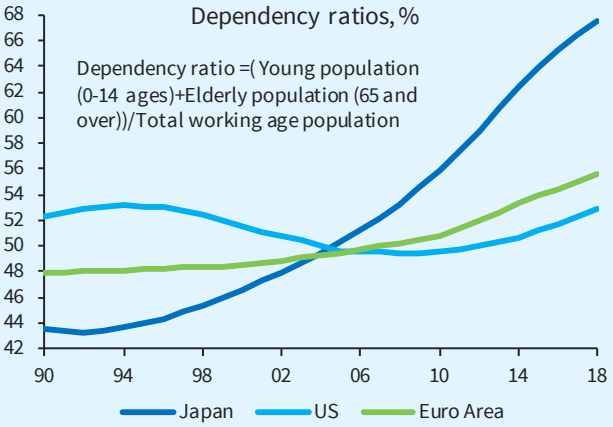
Source: CAO, Haver Analytics, Barclays Research

FIGURE 29
The BoJ acted, but at times hesitated and exited prematurely



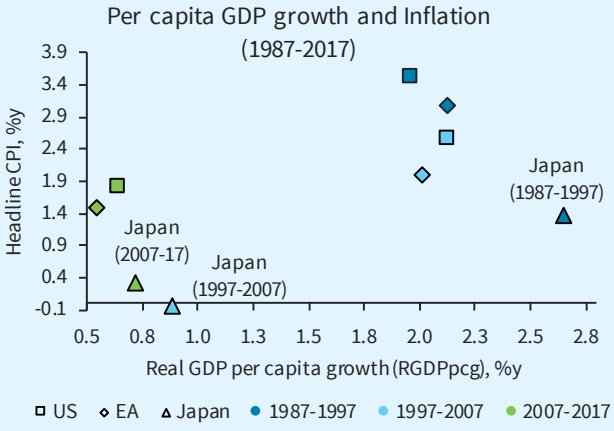
Source: BoJ, Haver Analytics, Barclays Research

FIGURE 30
Japan's demographic transition is extremer than elsewhere



Source: UN, Haver Analytics, Barclays Research

FIGURE 31
Japan's per capita growth has not underperformed



Source: World Bank, BLS, EABCN, MIC, OECD, Haver Analytics, Barclays Research

… than a mild deflation during a downturn in a low-growth environment

While this is a well-established argument, some of its assumptions may hold less weight today. For example, labour markets seem to have become more flexible, with wage-price Phillips curves not only flatter but also allowing nominal wage growth to fall below zero. Moreover, there is a case to be made that deflation is less disruptive if driven by positive supply side shocks (eg, productivity improvements) in an environment of constrained demand, rather than by adverse demand shocks. Indeed, empirical work on inflationary periods during history and across countries suggests that many deflationary episodes have been rather benign, with temporary and relatively mild price declines.[19] In fact, one could

[19] See "*Back to the future? Assessing the deflation record*", Claudio Borio and Andrew J. Filardo, BIS Working Papers, No. 152, March 2004.

point out that Japan — despite being commonly cited as an example of dysfunctional monetary policy, with CPI inflation having persistently run at (often negative) rates well below those of the US since the mid-1990s — has still managed to achieve the same per capita real GDP growth as the US over the past 30 years.

In sum, these arguments challenge the increased 'policy activism' of other proposals, advocating that central banks simply accept lower inflation rather than fight against it. In practical terms, this could imply tolerating a wider band of inflation outcomes (eg, between 1-3%) or simply a de facto negligence of the 2% target. Even though this would likely imply hitting the ELB with greater frequency, this would be gauged against the threat of potentially more destructive scenarios from pursuing an unattainably high inflation target, such as financial instability and self-reinforcing deflationary spirals.

Debt monetization — 'Modern Monetary Theory' and 'helicopter money'

While conventional theory suggests fiscal policy should complement monetary policy…

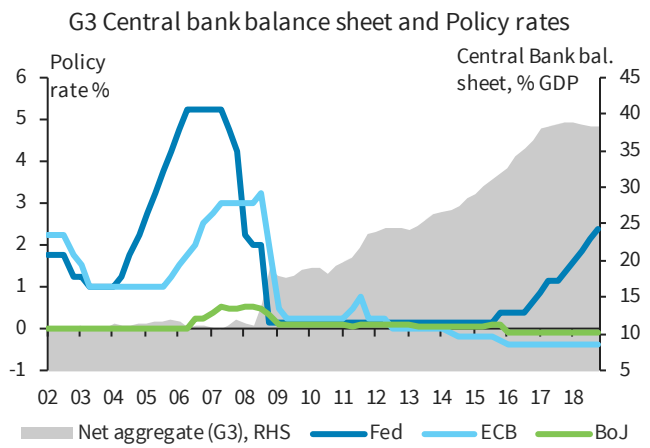
Other concepts agree with the limited effectiveness of monetary policy, but are less concerned over financial stability concerns. Instead, they point to the need for more active fiscal policy in combination with monetary easing. At first sight, this does not seem new, as monetary policymakers have long argued for fiscal policy to share more of the burden of stabilizing the economy. In particular, when policy rates are pinned at the lower bound, theory suggests that fiscal expansion should be especially effective at boosting growth and employment.[20] Demanding a policy mix with active counter-cyclical fiscal policy seems therefore uncontroversial. However, the approach advocated by Modern Monetary Theory (MMT) is more radical, arguing that central banks should defer economic stabilisation fully to fiscal policy, eschewing other objectives apart from funding the government.

…monetization of debt has historically led to out-of-control inflation

More specifically, MMT essentially argues that governments should take an active role in manipulating fiscal policy to keep macroeconomic activity near potential levels. This fiscal policy would exploit a wide range of policy levers that influence overall demand, including spending, taxation, credit policy, and regulations. The unorthodox twist is that the government would actively use *debt monetization* as its primary funding source, thereby delegating taxation to a secondary role. One way to envision how this would work is to think of a case where the central bank monetises government debt beyond the point where financial markets are in a liquidity trap, with nominal interest rates pinned near zero.

FIGURE 32

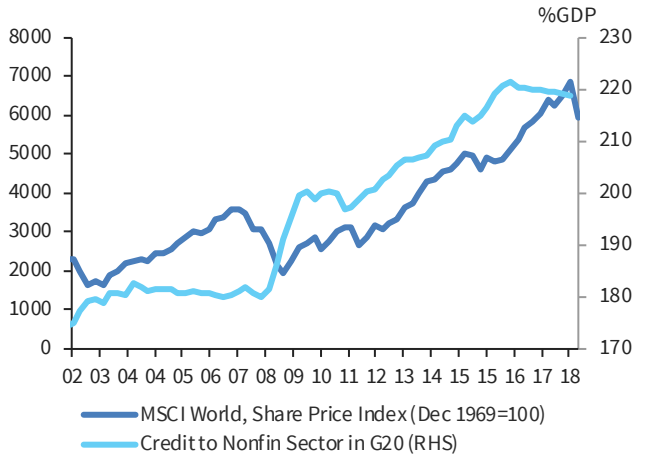
Aggressive monetary easing in core economies…



Source: BoJ, FRB, ECB, Haver Analytics, Barclays Research

FIGURE 33

… boosts credit growth and asset prices globally



Source: MSCI, BIS, Haver Analytics, Barclays Research

[20] For example, see "The Economic Recovery and Economic Policy", Speech by Chairman Ben Bernanke at the Economic Club of New York, New York, NY, November 20, 2012.

Could central banks just print money to finance governments, while fiscal policy manages demand?

In one aspect, this mechanism is already exploited though QE, where the central bank purchases government securities to expand its balance sheet, and, while it holds these bonds, returns profits to the government. The difference is, however, that the QE debt on the bank's balance sheet is not rolled over but has to be repaid by the government when it matures. Hence, the debt is only temporarily 'monetized'. In contrast, MMT represents permanent monetization, with the central bank effectively rolling over its bond holdings in perpetuity. From this perspective, 'helicopter money' could be seen as a special case of MMT. Different from mere QE, the government debt would actually be monetized, but the monetization by helicopter would be a one-off measure to escape a liquidity trap.

The pivotal question is whether monetizing debt in this way would be inflationary. Under ordinary conditions, this would not be controversial. Following the standard chain of macroeconomic logic, expanding the balance sheet would tend to boost the money supply, which, under normal conditions, would reduce real interest rates below neutral levels, thereby contributing to an overshoot of aggregate demand relative to potential output that feeds through to higher inflation. Indeed, history is replete with episodes that seemingly establish the inflationary nature of debt monetization, including Germany's experience of hyperinflation in the aftermath of WWI, the experience of Zimbabwe in the late 1990s, and Venezuela's recent experience with runaway inflation.

Helicopter money could work…

In the case of 'helicopter money', proponents would argue that such inflationary risks are limited due to the one-off nature of the measure, as the helicopter would 'land' and the printing press stop as soon as the liquidity trap is overcome. In contrast, MMT aims to sever the link between debt monetization and inflation through a very active fiscal policy, which would keep activity at a maximum, non-inflationary level. When private demand is weak, stabilizers would kick in automatically: eg, MMT proponents suggest a government commitment to temporarily hire unemployed workers (at a low reservation wage) to provide public goods. Equally, when output is set to run above potential, the government would have to withdraw demand though countercyclical discretionary measures, such as raising taxes and reducing spending.

… but would the helicopter land again in time?

Although perhaps possible in theory, MMT's implementation raises a host of doubts: first, governments simply do not seem well equipped to enact timely countercyclical measures that would be needed to forestall inflationary pressures. They would not only need to have extremely good forward looking models of the economy, but also extremely efficient administrative processes, to implement the appropriate countercyclical fiscal measures in time. Even proponents would concede that governments have a poor track record in fine-tuning demand in this way.

Political economy concerns paramount

Importantly, the *political economy* dimension of countercyclical fiscal policy also raises concerns over *time inconsistency*: With the burden of funding constraints seemingly lifted, governments would likely find it politically difficult to enact countercyclical policies when the economy is booming. Such concerns weigh very heavily against MMT, as the theory rests on the government's ability and willingness to effectively carry out not only fiscal loosening but also tightening when the private economy is running hot. If it fails in the latter, the ongoing debt monetization could radically unmoor inflation, leading to large and abrupt jumps in expectations. In the case of 'helicopter money' proposals, the concerns may be reduced somewhat by its intended one-off nature, but the political economy concerns would still apply.

Expectations could adjust very abruptly and drastically

One could see MMT and the special case of 'helicopter money' as opportunistic responses to the various conditions that have proved so challenging to monetary policy: (1) the very shallow Phillips curve, with relatively well-anchored inflation expectations; (2) low neutral interest rates; and (3) the elevated probability of ELB outcomes. All of these conditions seemingly challenge the chain of logic linking debt monetization with inflation. Even though

central banks have dramatically expanded their balance sheets since the GFC, effects on standard measures of the money supply (such as M1 or M2) have not been proportionate. This is because private banks have substantially increased reserve holdings for a variety of reasons, including new regulations that encourage liquid reserves, the shift to paying interest on excess reserves, and the close substitutability between currency and interest-bearing assets at the ELB. Even though the increased money supply has helped to push down interest rates at various horizons, this has often proven insufficient to generate inflationary conditions given weakness in demand from other structural influences. Finally, in the few cases when aggregate demand has been boosted to levels in excess of potential — as in the US — the inflationary response has been subdued.

In sum, if disinflationary pressures persist in spite of the dramatic bank balance expansion of the past, fears that various forms of debt monetization will rekindle inflation could start to fade. Radical conceptual changes as proposed by MMT still seem very unlikely to be seriously considered. However, more limited proposals such 'helicopter money', as one-off policy measures to overcome a liquidity trap episode, may no longer be as remote as they would have seemed in the past.

Conclusion: Not the 'end of history'

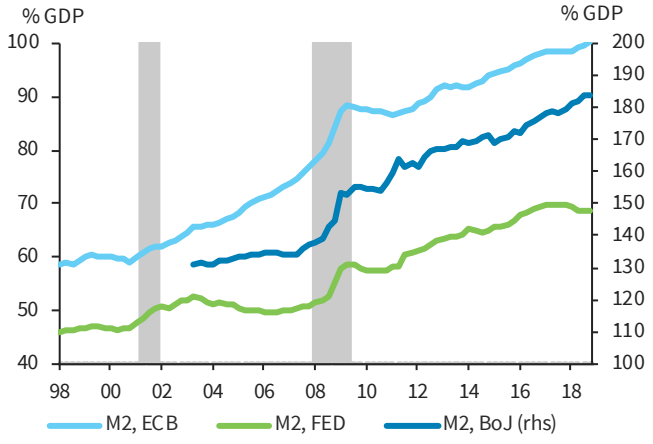
IT has reached the life-span of previous dominant regimes …

Monetary policy has undergone many changes in history. Even if IT's sophistication and great initial success created the sense of an "end of history" moment for monetary policy, the framework is coming increasingly under pressure as it approaches its 30th birthday. Coincidentally, this has been roughly the life-span of previous monetary regimes that dominated a certain period: the Gold Standard (1870s-1914) and the Bretton Woods fixed exchange rate system (1948-1973). In between such periods, monetary policy typically became more experimental and more diverse. Once again, we may have entered such a new phase in monetary policy.

… which were typically followed by more experimental and volatile periods

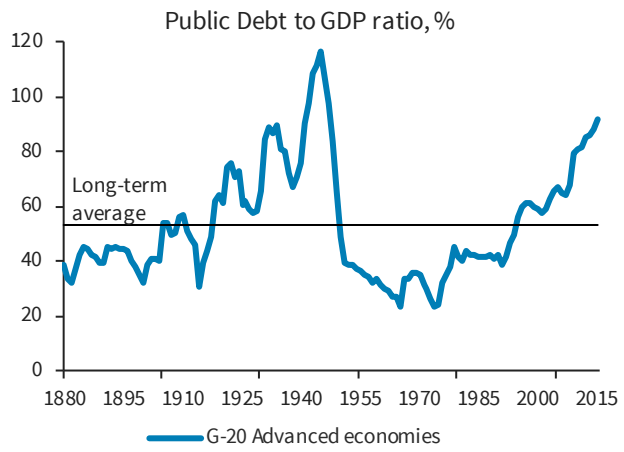
The challenge for monetary policy has turned from the need to reduce high inflation to preventing inflation from becoming too low in the face of secular trends that are weighing on inflation and neutral interest rates. The unorthodox policy tools with their many acronyms — QE, NIRP, FG, YCC — introduced in response to the GFC are well on their way to becoming orthodox. But as IT regimes struggle to meet inflation targets, alternative goals — higher inflation, price levels or average inflation, nominal GDP — have started to be discussed. None seems necessarily superior when weighing their pros and cons, especially when considering the additional obstacles of their implementation in practice. It seems

FIGURE 34
QE's effect on the money supply has been muted



Source: FRB, ECB, BoJ, Haver Analytics, Barclays Research

FIGURE 35
High public debt raise concerns about more fiscal expansion



Source: FRB, ECB, BoJ, Haver Analytics, Barclays Research

likely that rather than formally moving away from IT strategies, central banks will either become more tolerant of inflation that stays below target (BoJ, ECB) or adopt frameworks along the lines of average inflation targeting, seeking to achieve more symmetric outcomes. Hence, policymakers would at least aim for inflation somewhat above 2% (Fed) after long periods of undershooting.

'Unorthodox' policy tools must now be considered standard

However, when the next economic downturn inevitably arrives, simply re-engaging existing non-traditional tools (such as QE) could no longer be enough, and fiscal stimulus may well have to play a larger role. Concerns about public-debt sustainability, combined with the fact that past QE has generally been unable to lift inflation rates back to targets, could increase demands to consider monetising fiscal expansions.

Move towards average inflation targets could be next

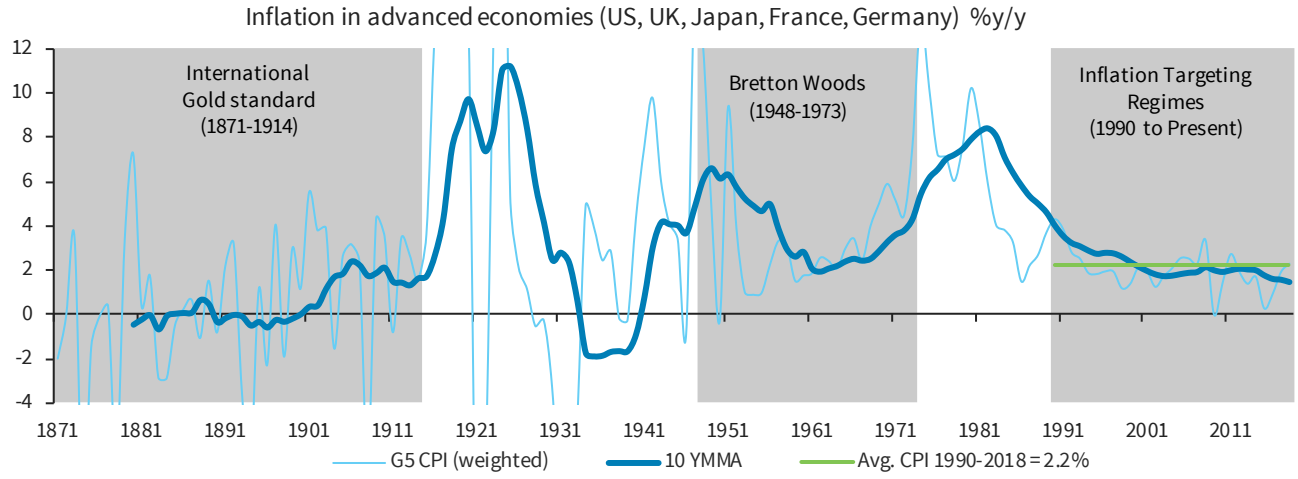
While the radical ideas of Modern Monetary Theory seem very unrealistic, some forms of helicopter money could eventually be considered. The true challenge to these concepts are not theoretical flaws in the effectiveness of their mechanisms but rather human nature: once initiated, it is not hard to imagine how such seemingly "free" spending power could become addictive to political decision takers. Thus there are risks that when "liquidity traps" are eventually overcome and the link between monetary expansion and inflation re-established, expectations could become unanchored.

But a more pronounced downturn could bring more radical concepts to the fore

For investors, in particular those buying debt, this creates a future with fatter tails. While inactive monetary policy creates the risk of deflationary scenarios with ever increasing nominal debt burdens, aggressive experiments that blur the boundaries of fiscal and monetary policy could eventually result in sudden and sharp upward adjustments in inflationary expectations, with related swings in risk premia, and exchange rates.

FIGURE 36

Inflation targeting is unlikely the end of monetary history. Notably, periods of dominant policy regimes were typically followed by periods when monetary policy became more diverse and experimental—and typically also higher inflation.



Source: Jordà-Schularick-Taylor Macrohistory Database, Haver Analytics, Barclays Research

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