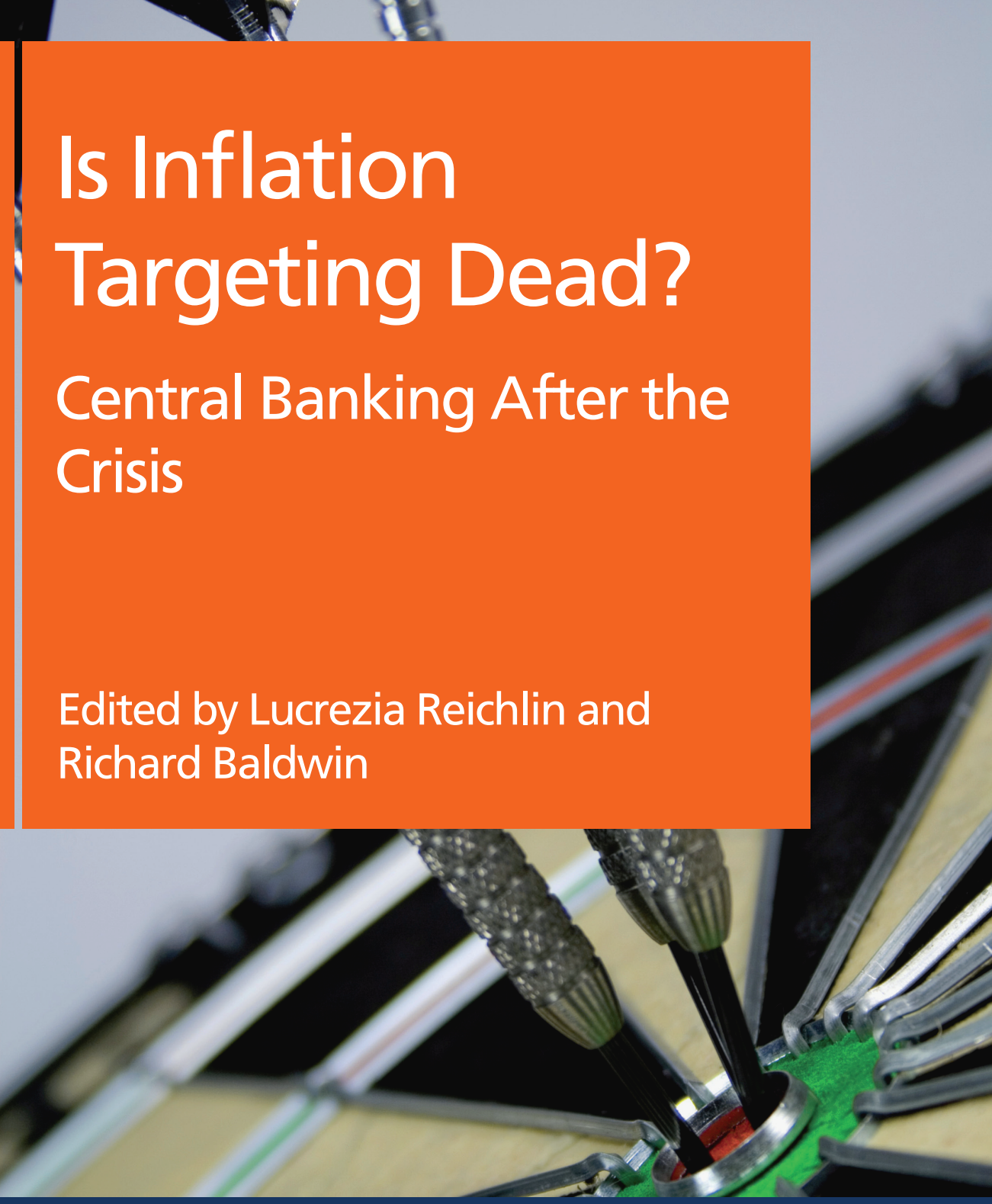
Is Inflation Targeting Dead?

Central Banking After the Crisis

Edited by Lucrezia Reichlin and Richard Baldwin



A VoxEU.org Book

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Foreword

Since the onset of the Global Crisis – heralded by the collapse of Lehman Brothers in 2008 – CEPR's policy portal VoxEU.org, under the editorial guidance of Richard Baldwin, has produced 19 eBooks on Crisis-related issues written by world-leading economists, practitioners and specialists. The books are produced rapidly and designed to shed light on the problems that have emerged as a result of the Crisis and to provide expert advice and guidance for policymakers on potential solutions.

One of the most singularly pressing challenges that has been presented to economists and policymakers during the Crisis is how best to achieve sustainable growth while safeguarding macroeconomic and financial stability. The topic of this book is central to that challenge.

Prior to the Crisis, there was a consensus view that saw flexible inflation targeting as being the most appropriate framework for monetary policy; it was also accepted that monetary policy was distinct and separate from fiscal policy. The Crisis has challenged both those conceptions and, in its wake, precipitated the introduction of a raft of new policy tools and asset-purchasing programmes, variously labelled as quantitative easing, credit easing, monetary easing, liquidity provision, helicopter money, and so on.

But is inflation targeting dead? Or is it alive and compatible with these new policy tools? The purpose of this Vox eBook is to attempt to answer those questions.

Fourteen world-renowned scholars, practitioners and market participants were invited to share their wisdom on central banking after the Crisis. There was no coordination among the authors, yet, as the editors point out in their introduction, a surprising degree of consensus emerged:

- Crisis-linked innovations transformed inflation targeting; in a narrow sense, inflation targeting died with Lehman Brothers.
- Inflation targeting should continue to be refined, not replaced.
- Today's large central-bank asset positions open enormous pitfalls; great care is needed to avoid the slippery slope from monetary policy to fiscal policy – and a loss of central-bank independence.
- Inflation targeting has a key role to play in avoiding the pitfalls. Inflation targets and central-bank independence are the conventional ways of keeping politicians away from the printing presses.

Whilst not all authors ascribed to all of these points, there was enough agreement to conclude that:

- Inflation targeting is alive and well; it has been revised, not rejected.
- It is needed now more than ever to keep expectations anchored while the advanced economies work their way through today's slow growth, rickety banks, and over-indebted public sectors.

We are very grateful to the editors of this eBook, Lucrezia Reichlin and Richard Baldwin, for their energy, commitment and professional expertise in organising, co-ordinating and editing the inputs to this book; we are also grateful to the authors of the chapters for their rapid responses to the invitation to contribute. As ever, we also gratefully acknowledge the vital contribution of CEPR's publications team, Anil Shamdasani and Charlie Anderson, for their characteristic speed and professionalism in producing the book.

Monetary policy is changing around the world, perhaps most notably illustrated by Japan's recent bold move towards achieving a 2% inflation target over the next two years through an aggressive mix of quantitative easing and long-term government-bond purchases – which was described by the Bank of Japan itself as representing a 'massive' policy shift.

The limits of monetary policy, as well the extent of the 'independence' of central banks, are clearly now being challenged more starkly than ever before. It is our hope that this Vox eBook contributes to the ongoing discussion and helps to clarify the way forward.

Viv Davies
Chief Operating Officer, CEPR
11 April 2013

Introduction

Lucrezia Reichlin and Richard Baldwin
London Business School, Graduate Institute and CEPR

What this eBook does

Before the Crisis, inflation targeting had become the de facto standard framework for monetary policy. Many central banks around the world had adopted some form of inflation targeting. Even the ECB and the Federal Reserve, which cannot be defined in a strict sense as inflation targeters, had built their frameworks for monetary policy around the idea of commitment to a quantitative objective for medium-term inflation.

The financial Crisis of 2008 and the recession which ensued challenged this consensus on best practice on monetary policy. Central banks experimented with new tools to deal with a wide range of problems related to the difficulty of stimulating the economy when the policy interest rate is near zero and when the economy is deleveraging as well as problems of financial stability and of liquidity shortage.

As former ECB Executive Board member Lorenzo Bini Smaghi writes in his chapter: "Inflation targeting did not prevent the financial Crisis or provide sufficient stimulus to get the economy out from the Crisis."

But what caused what? Inflation targeting is cast alternatively as perpetrator, innocent bystander, or saviour.

- Perpetrator: Inflation targeting made monetary policy too easy before the Crisis and insufficiently so since.[1] It helped build the Crisis in the 2000s and today hinders the clean-up.
- Bystander: The regime was like a coastal schooner finding itself in the path of Hurricane Sandy. Inflation targeting was developed during 'the Great Moderation'. No one ever claimed it was robust enough to deal with a five-year sequence of once-in-a-lifetime crises.
- Saviour: Things would have been much worse without inflation targeting's anchoring of expectations.[2] "While the shock to the financial system has been more complex than that which led to the Great Depression, the decline in output has been far less marked", as Stefan Gerlach writes in his chapter.

But is the framework of inflation targeting adequate to deal with the Crisis today? Are the policy tools used recently such as quantitative easing, credit easing, and liquidity provision – or even helicopter money – compatible with inflation targeting, or should we scrap it? Should we keep some of its essential elements and put more content into the notion of flexible inflation targeting which many central banks had identified as their approach before the Crisis but many of whose details remained undefined?

The Bank of Japan's recent bold departure is a timely demonstration of how urgent and radical this debate has become. On a more speculative basis, Adair Turner has recently suggested that permanent creation of money (helicopter money) should be considered as one of the options for monetary policy. At a recent CEPR event, Adair Turner and Michael Woodford discussed this view and compared it with other forms of coordinated monetary- and fiscal-policy interventions (QUOTE).

In early 2013, we asked 14 world-renowned scholars, practitioners and market participants to share their wisdom on: "Central banking after the Crisis: Is inflation

1 See for example, Borio and Lowe (2002), and Taylor (2012). This phrasing is due to Huw Pill.
2 See the chapter by Ryan Banerjee, Stephen Cecchetti and Boris Hofmann.

targeting over?'' They all write in a personal capacity; their views do not necessarily represent those of their institutions.

There was no coordination among the authors – and they certainly cover a wide range of views. Nevertheless a surprising degree of consensus emerged:

- Crisis-linked innovations have challenged inflation targeting narrowly defined, but flexible inflation targeting is not to be discarded.
- Large asset positions have been taken by central banks in the course of their Crisis-linked innovations. These open enormous pitfalls. Blurring the distinction between monetary and fiscal policy presents a real risk to central-bank independence.
- Inflation targeting has a key role to play in avoiding these pitfalls. Inflation targeting is a well understood means of keeping the printing presses out of politicians' hands. Further inflation-targeting refinements, however, may be required.

While not all authors would ascribe to all these points, there was enough agreement to think that inflation targeting is far from dead. It has evolved to survive and its discipline and credibility seem to be needed now more than ever.

Pre-Crisis inflation targeting

Before the Global Crisis started in 2008, inflation targeting was monetary policy's gold standard (Bernanke 2003, Frankel 2012). Its post-Crisis performance is the topic of this eBook, but the discussion is best framed with an understanding of its pre-Crisis success.

As described by Karl Whelan in his chapter, the inflation-targeting framework rests on important insights in the academic literature: Friedman's claim that there is no long-run trade-off between output and inflation, and Kydland and Prescott's dynamic inconsistency. After the experience of the high inflation of the 1970s combined with unsatisfactory real economic performance, a consensus developed in advanced economies that, in order to conquer inflation, central banks had to become independent from finance ministries and commit to a quantitative inflation objective. And in turn,

both transparent communication and commitment were key factors in justifying central banks' independence.

"Combined with the unsatisfactory stagflation experience of advanced economies in the 1970s," Karl Whelan explains in his chapter, "this academic literature had a profound influence on central-banking practice." From the late 1980s, independent central banks with inflation targets became the thinking person's solution.

From 1990, the number of central banks formally adopting inflation targeting has risen to a couple of dozen. So compelling are the framework and its successes that analysts routinely ascribe inflation targets to central banks that do not in fact have them – or at least not formally.

Importantly, there is something of a virtuous cycle between inflation targeting and central-bank independence. It starts as independence builds credibility that makes it easier to hit the target. It spirals up as sticking to the target provides the accountability that underpins political support for independence. This, in turn, bolsters credibility. Transparency is an auxiliary feature that helps by amplifying elected officials' conviction that independence remains socially desirable.

One clear benefit of credibility is that it loosens the bonds between current inflation and inflation expectations. Inflation can fluctuate a bit without affecting expectations. Wiggle room opens up, and central banks can do some stabilisation while still being faith to the inflation target.

This raises important questions about how in practice monetary policy is to be pursued in the short-term by inflation-targeting central banks. As Michael Woodford points out in his chapter, for the framework to be effective it is important to define the rules which establish the link between the appropriate nearer term policy and its medium-term goal. To maintain confidence, "the central bank needs to explain how its supposed medium-run objective determines (or at least constrains) its near-term choices, there may be little confidence in this – or it may evaporate in response to an unexpected shock."

Crisis challenges and responses

The Global and Eurozone Crises created enormous challenges. Central bankers were critical in getting past extreme market failures. For example, when global credit markets froze, they immediately extended liquidity on an unthinkable scale. This liquidity operation was only the first in a long string of innovations. Mohamed El-Erian explains in his chapter:

> "Modern central banking is evolving very quickly as Western central bankers find themselves thrust into policy-leadership roles. Obliged to respond by using innovative and untested policy tools, they are creating many new facts on the ground."

The Crisis revealed two specific problems that could not be delayed or ignored:

- Price stability could not be treated in isolation from financial stability.
- Conventional monetary policy loses traction at interest rates' zero lower bound.

Each challenge triggered responses.

Financial stability: New goal and new tools

Before Lehman's collapse, it was widely assumed that the goal of financial stability should be pursued with a set of microprudential tools (e.g., bank supervision and regulation), which would generally leave the central bank free to focus on inflation. The Global Crisis proved this wrong. Central banks cannot disregard financial-market regulation and supervision for three reasons, as Charles Wyplosz points out in his chapter:

- Dysfunctional financial markets distort monetary-policy effectiveness (the transmission-channel problem);

- Financial crises often require lender-of-last-resort interventions that create moral hazard and blur monetary and fiscal policy distinction (important for central-bank independence); and
- Financial crises can be massive economic shocks that make it harder for central bankers to do their job.

Many new policy tools to address financial stability have been developed since the Crisis.

The first set of innovative tools for financial stability is known as macroprudential policies. These are tools designed to deal directly with financial sector imbalances and variations in risk. For example, Switzerland currently has both negative inflation and a housing market approaching bubble territory in some regions. The Swiss central bank's reaction has been to keep policy rates at zero but to tighten regulations on property-linked lending and restrict the use of personal retirement accounts for mortgage down-payments. Here the central bank uses two sets of tools to target two goals – price stability and financial stability. The banking and financial regulation reforms undertaken since the Crisis are also part of the toolkit. Another important tool is countercyclical capital requirements for banks, although depending on institutional structures, the pursuit of such policies may not be the responsibility of the central bank.[3]

Loss of stability traction at the zero lower bound: New tools

Contractions from the Global and Eurozone Crises soon drove policy rates to zero in most mature economies (although not in the Eurozone).[4] As inflation is under control but GDP is still below – or barely back – to pre-Crisis levels in many countries, policymakers sought new, unconventional tools to supplement the simulative power of policy rates. In addition, economies facing high levels of private and/or public debt are

3 For an introduction to macroprudential rules, see Perotti (2012); see Agur and Sharma (2013) for a critique, and the ECB's Macro-prudential Research Network, for on-going work http://www.ecb.int/home/html/researcher_mars.en.html.
4 For empirical evidence on this point, see Giannone, Lenza and Reichlin (2013).

typically insensitive to interest-rate policies since agents are engaged in repairing their balance-sheets through deleveraging.

In contrast to the near universal embrace of macroprudential polices, central banks reacted very differently to the lack of stimulus – there has been much experimentation. Different policies have been tried:

- Balance sheet operations
- Forward guidance, and
- Changing targets.

The first set of policies was quantitative and credit easing. These employed the size and composition central banks' balance sheets in novel ways – pushing investors into riskier assets. Different justifications have been given for these policies: affecting long-term interest rates, 'market making', or providing simulative wealth effects and releasing 'animal spirits'. A frequent target was the level and slope of the yield curve, although the Fed also targeted specific market segments, such as mortgage-linked securities.

Broken transmission mechanism and OMT: New goal and new tools

In the Eurozone, the ECB implemented its version of credit easing by providing unlimited liquidity at a fixed rate to financial institutions. But the Eurozone faces a challenge that is unique among central banks – breakdown of the transmission mechanism within the currency area. In normal times, ECB interest-rate decisions are transmitted uniformly around the Eurozone. An interest-rate cut lowers the cost of capital to all euro users – banks, firms and governments in every EZ nation. An interest-rate rise does the opposite. Since the Eurozone Crisis exploded in May 2010, EZ financial markets have fragmented along national lines. A single policy rate set in Frankfurt translates into different costs of borrowing across the Eurozone. Businesses in Spain and Italy, for instance, pay more to borrow euros than businesses in Germany and Finland do.

This posed a novel problem for the ECB. How can a monetary authority credibly commit to keeping inflation stable when its policy rate is transmitted differently across the currency area? A partial solution was found by inventing a new goal and a new tool.

- New goal: As ECB President Draghi put it: "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro."

The thinking was that breakup risk was an important cause of the fragmentation.

- New tool: 'Outright Monetary Transactions' (OMT).

OMT should be thought of as one of the new balance-sheet tools. Although it has not yet been tried, the idea is that the ECB will promise to buy unlimited amounts of an EZ government's debt to maintain the 'singleness of monetary policy'. To qualify for this treatment, the EZ government must have asked for a bailout package. This ensures that the government cannot use the ECB's action to delay its own necessary reforms.

Other reactions to the loss of stabilisation power involve attempts to manipulate expectations.

Manipulating expectations

One theory for why monetary policy lost its power turns on expectations. Investment – the traditional driver of recoveries – depends upon expectations of real interest rates and future growth. The thinking is that investors might be failing to invest since they fear the central bank will take away the punchbowl just when the economy starts to swing. Manipulating expectations are a way of assuring investors that this won't happen too soon. These new tools are aimed at expectations of: i) future interest-rate policy, ii) future growth, iii) and/or future inflation. For example, in 2012, the Fed stated it "currently anticipates that exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015".

One version is called 'forward guidance'. The intellectual father of forward guidance, Michael Woodford, points out that many interest-rate paths will take an economy from

a low-inflation-low-employment state to a normal state (Eggertson and Woodford 2003). Forward guidance is just being clear about which path the monetary authorities will pursue. By choosing an interest-rate path that triggers self-fulfilling expectations of a recovery, forward guidance could restore money policy's stabilisation power.

For example Woodford has advocated that the central bank should commit to use interest-rate policy (to the extent not constrained by the zero lower bound) to bring nominal GDP to a deterministic target path, higher than the previously expected path. This is a target path that may involve deviations from the inflation target in the short term but needs not to be in contradiction with a medium-term inflation target.

As Woodford himself recognises, if people don't see any immediate change in policy, but only statements about future policy, this strategy may lack credibility. This point is forcefully made by Adam Posen, who helped set rates at the Bank of England. He dismisses forward guidance as "a gimmick" – just one type of rhetoric that is not much different to others.

So-called flexible inflation targeting – as practised by the Bank of England – is not far from this notion. Flexible inflation targeting has always exploited the existence of multiple paths and used that leeway to stabilise economic activity to the extent it was consistent with the inflation target. The real difference lies in the explicitness of the communication strategies. Adam Posen points out that the Bank of England's Monetary Policy Committee does not commit to interest-rate paths as a matter of principle – it approaches each interest-rate decision afresh. The Fed, as we saw, routinely announces a policy-rate path at its meetings.

Altering targets

A third reaction to the loss of monetary-policy 'punch' has been to alter targets. In December 2012, the Fed switched from what most analysts viewed as a flexible inflation target to an explicit dual threshold. It announced that its policy rate would remain low

until unemployment fell to 6.5%, or forecast inflation rose above 2.5% – provided long-term inflation expectations remained anchored.

Another suggestion for boosting monetary policy's effectiveness is to switch the strategic goal from price stability to nominal-GDP stability. This has not yet been tried by any central bank, and it elicited sharp disagreement among our authors.

Some authors viewed it as an important step to restoring growth. As Jeffery Frankel writes in his chapter: "Phasing in nominal-GDP targeting delivers the advantage of some stimulus now, when it is needed, while respecting central bankers' reluctance to abandon their cherished inflation target." Michael Woodford argues that switching to a nominal-GDP target would be a transparent and easily communicated way of combing into a single target central banks' two underlying goals (low inflation and normal growth).

Other authors argue that nominal-GDP targeting differs little from flexible inflation targeting. Central banks have long worried about inflation and growth, so they all have been – de facto – pursuing some form of nominal-GDP growth. These authors use this point to argue against a formal switch.

A third group of authors saw such a switch as doing great harm in the worst case and doing little good in the best case (relative to flexible inflation targeting). Karl Whelan, Adam Posen, Charles Wyplosz, Steve Cecchetti, Charles Goodhart and Lorenzo Bini Smaghi oppose a switch to nominal-GDP targeting. In their chapter, Charles Goodhart and co-authors spotlight two main shortcomings:

- First, private-sector uncertainty about the economy's real growth path gets piled on to uncertainty about price growth.

In this way, nominal-GDP targeting directly undermines the strategy goal of anchoring inflation expectations.

- Second, choosing a nominal growth rate is plagued with difficulties.

Presumably the target for nominal-GDP growth would the medium-run, non-inflationary growth rate plus 2% for inflation.[5] The problems are: i) we don't know the right growth rate, especially in the shadow of a massive financial crisis; ii) central banks have no tools to influence real growth; and iii) GDP data comes out with a lag and is often revised – much more so than price data.

The greatest peril, according to several of our authors, is the simple question: "Since the strategic goal of monetary policy is low and stable inflation, why not just stick to an inflation target in a flexible inflation targeting regime?" Market participants asking this question may conclude that a switch to nominal GDP could end up disguising efforts to create unexpected inflation. In other words, the switch could undermine confidence and thus make the whole exercise counterproductive.

The final contender for a new target is a simple boost in the targeted inflation rate from 2% to 3% or 4%. Karl Whelan opines: "I believe recent experience points to 2% being too low. … We know now that the liquidity trap is not a theoretical curiosity. Economies that operate at a 2% average rate of inflation are one recession away from the difficulties associated with falling into that trap. Set against these dangers, I don't know of a single study that can explain how the social costs of a steady inflation rate of 3% or 4% would offset the reduced risk of deflation due to such a low target rate." See Blanchard et al (2010) for detailed analysis.

The I-theory of monetary policy

A more radical solution to the ineffective monetary policy problem is set forth by Markus Brunnermeier and Yuliy Sannikov. They use their 'I-theory of money' (the I stands for intermediation) to argue that price, financial and fiscal stabilities are intertwined due to financial frictions. In downturns, optimal monetary policy should identify and unblock

5 Some authors discuss the relative merit of price or GDP targets set in levels rather than growth rates, but so far central banks appear unwilling to formally embrace targets defined in levels.

balance-sheet impairments that obstruct the flow of funds to productive parts in the economy. In upturns, diligence is required to avoid imbalances that make the economy vulnerable to liquidity and deflationary spirals.

This perspective holds great promise – and there are indications that central banks are already using aspects of it to guide the balance-sheet leveraging policies. The Fed, for example, has focused on mortgage-backed securities, while the ECB has focused on bank-owned securities. More analysis and evidence is likely to be needed before it makes its way into the toolkit.

This sequence of 'challenge and response' has moved inflation targeting a very long way from what it was before Lehman's fall. Many of our authors worry that this shift may lead to disaster – even though each step seems justified at the time.

Future pitfalls

The exceptional policies which central banks have implemented to deal with the Crises have blurred the distinction between monetary and fiscal policy. This challenges central banks' independence, and thereby the principle of inflation targeting. "We are nearing a critical juncture for modern central banking," as Mohamed EL-Erian put it. Central bankers stepped outside their conventional roles to prevent the first Great Recession from being the second Great Depression. "But with other policymakers essentially missing in action, they have found themselves pushed further and further away from their operational comfort zones, forced into ever more experimentation with increasingly uncertain longer-term outcomes." The threat is twofold.

Game of chicken

The first threat is the 'game of chicken' that governments are playing with central banks. Governments seem to be hoping to shift some of the political costs to central banks by

refusing to address problems such as structural reform, long-term fiscal imbalances, the need for fiscal stimulus, and debt restructuring.

The coordination failure on structural reform may not be deadly for inflation stability. It does, however, raise the economic cost of the Crisis. The slow, grudging reform process may be the politically cheapest road out of the Crisis, but it is turning into a very economically expensive one. And the cost is falling disproportionately on young shoulders in the US and Europe. If anger on the streets boils over into foolhardy domestic political choices, the whole policymaking superstructure could fall apart. Historically, such outcomes have been associated with high and unstable inflation. Populist political leaders tend to make foolhardy monetary choices.

When it comes to paying for debt restructuring, the game of chicken could be lethal for inflation targeting. Governments who lack the political will to tackle unsustainable debts or restructure insolvent banks are hoping to force the central bank into buying them. They hope to keep banks and sovereigns alive for a bit longer. If this gambling-for-redemption goes on long enough, central bank independence disappears as a fact on the ground. Confidence is compromised, and inflation anchorage along with it.

Balance-sheet hostages

The second threat relates to the new balance-sheet tools. Ever-rising central-bank holdings of private and government debt threaten to undermine confidence in inflation targeting. If enough of these credit risks turn into credit losses, central banks may end up printing money to cover the red ink. This may undermine the inflation-targeting regime.

Yet even without such extremes, central banks are becoming hostages to their own assets.

- Interest-rate hikes that dampen rising inflation may also damage central-bank balance sheets.

- Consideration of such losses may lead central bankers to procrastinate in the face of new inflation pressures.

Or more to the point, economic agents – who may suspect the procrastination pressures exist – may start to anticipate higher and less predictable inflation.

A virtuous-cycle links inflation targeting and independence on the way up. A vicious-cycle operates on the way down. As confidence evaporates, inflation expectations get harder to control. Central banks begin to look more arbitrary in their policy choices. Political support wanes for placing such awesome power in the hands of unelected technocrats. And all this could be stoked by governments' temptation to pay debts and redistribute wealth. Mature-economy governments will be strapped for revenue for decades. If perceptions of the benefits of central bank independence erode sufficiently, governments may find the 'inflation tax' irresistible.

Even without an explicit power struggle over the printing presses, inflation fears could still reappear. One common post-Crisis storyline is that today's debt overhangs will be solved in the shadows – via financial repression – to avoid explicit political decisions (Reinhart and Kirkegaard 2012). That is, a subtle combination of low nominal-interest rates, financial prudential regulations to keep capital captive and moderate inflation could clean up banks' and governments' debt positions at the expense of creditors.[6]

Half full or half empty

There are two interpretations of the pitfalls facing inflation targeting.

- Optimistic: Inflation targeting is a durable policy regime well suited to dealing with today's and tomorrow's challenges.

6 This has two parts. First, financial regulation keeps international capital out of emerging economies, and in advanced economies. Second, steady inflation with rock-bottom policy rates cuts debt servicing costs while negative real interest rates erode debt stocks relative to the ability to pay.

Five years of central bankers' inventiveness and courage solidify confidence in the system – confidence that mature economies can get back to the pre-Crisis normal without another Great Depression or violating confidence in price stability.

- Pessimistic: Inflation targeting has sown the seeds of its own destruction.

By loading up their balance sheets, central banks risk blurring monetary and fiscal policy. The consequences for their own independence are potentially disastrous.

Which interpretation is right? The answer, as usual, is – it depends. It depends on how central banks and other policymakers react going forward.

What is to be done? Defending credibility

Inflation targeting without confidence is just an empty promise, and confidence is at risk. Can we still be sure that central banks' have the right incentives to defend price stability at any cost? The challenges may fix themselves. If markets and the economy recover strongly, solvency problems will melt away. The massive purchases of assets will look like wise investments. But we cannot count on this. According to our authors, solutions to the game-of-chicken and balance-sheet problems fall into two bins:

- Changes that require the cooperation of governments; and
- Changes central banks can undertake unilaterally.

Both should be tried.

Broadening the Crisis-fighting team

Mohamed El-Erian and Lorenzo Bini Smaghi make the case for the first approach – central banks need more support from politicians. As Mohamed El-Erian puts it:

"It is critical that the current phase of unusual central-bank activism give way to a more holistic policy response; and one that involves other policymakers with direct tools to

enhance actual growth, increase growth capacity, overcome debt overhangs, improve labour-market functioning, and restore a proper system of housing finance."

Central banks are ill-equipped to deal with debt problems, structural problems and competitiveness problems. Political leaders need to get regulators and fiscal authorities to take responsibility for fixing debt problems and structural problems. According to this view, central banks' are no longer masters of their own fate; the second approach is more sanguine.

Credibility

Woodford argues for the second approach – tactics for fortifying central-bank credibility. Central banks should buttress inflation targeting with a much more detailed, much more transparent monetary policymaking procedure. Central banks should use forecast-targeting procedures as the basis of their monetary policy deliberations. And they should regularly explain how their decisions are consistent with these procedures. This should help convince economic actors that the economy will get through the Crises without runaway inflation.

While this thinking has been heard before, Woodford and Frankel argue that it is especially critical now. Central banks have adopted policies that fit uncomfortably with medium-run inflation targeting – raising doubts about their motives. An explicit commitment to formal decision procedures could banish the doubts.

Thinking about balance-sheet exit strategies

The current level of central-bank activism is not normal – especially not the large asset holdings. Using the ECB as an example, Huw Pill writes in his chapter: "The current situation is marked by an excessive reliance on the ECB and its fiscal resources. … Using the ECB's fiscal capacity more proactively now undermines the credibility of attempts to limit recourse to that capacity in the future."

Charles Wyplosz writes: “The next challenge will occur when the time comes to exit nonstandard policies.” Inflation targeting, he figures, will issue timely signals that ‘exit time’ has come. But no central bank has clarified its exit strategy. The key issues will be the choice of instruments to absorb liquidity, and ways of communicating intentions.

For example, if politically intractable debt problems require central banks to tolerate higher inflation temporarily, attempting to hide this may backfire. A better alternative might be to explicitly recognise the fundamental connection between fiscal and monetary policy, but redefine the target and the communication to preserve the anchor and the independence of the central bank. More coordination between monetary and fiscal policy should be considered but then the institutional framework which has governed the relation between central banks and governments may need to be revised. This may be part of the exit strategy and it is particularly important for the Eurozone where the key challenge will be to avoid letting governments win the game of chicken.

Lorenzo Bini Smaghi’s experience on the ECB Executive Board leads him to sound the alarm on such possibilities. “Such central bank action would ease the pressure on the governments“. He writes: “Politicians would certainly appreciate this, but for society, the advantages are a lot less clear. … Pursuing this approach further could lead to an even greater crisis.” Exit strategies are an important topic for future research, but it should come soon. The longer central-bank activism lasts, the harder it will be to end.

Stop looking to Superman

Central banks have had a ‘good Crisis’, so to speak, especially relative to political leaders. This may have raised expectations to unrealistic levels. The slow recovery is seen by many as a central bank policy failure. Many of our authors viewed this as mistaken.

Central banks are being asked to take on tasks more properly done by governments. The public should recognise that there are limits to monetary policy. For example,

rather than interpreting the slow recovery as a failure of monetary policy, it may simply indicate that the magnitude of the shock has exhausted the capability of monetary policy to stimulate demand. Growth also requires structural reforms in the labour, goods and capital markets as well as bank recapitalisations. These are the responsibility of governments, parliaments and regulators.

Bottom line: Inflation targeting, refined not replaced

We started our introduction by asking whether inflation targeting is dead. In a narrow sense, the answer's obvious – it's been dead since central bankers started innovating in 2008. Central bankers dealt with the Crisis by developing new tools and, at least in some cases, putting more emphasis on growth and financial stability. The emphasis on growth comes to the realisation that inflation stabilisation is not associated with output stabilisation in the short run, and the short run may last for quite a while in economies which are dealing with a debt problem.

Notice however that inflation targeters were never indifferent to growth. Growth and jobs mattered only to the extent that a commitment to a medium-term objective in terms of inflation remains credible. While this is certainly still true in the rhetoric, some – the Fed and Bank of Japan for example – seem to be shifting priorities. They increasingly act as if nothing will work without a healthy economic recovery. This is what Mohamed El-Erian calls the 'reverse Volker moment', referring to Volker's switch in the early 1980s to an inflation-is-all-that-matters approach.

In addition to the medium-run inflation target, central banks have implicitly or explicitly embraced a second goal – financial stability.[7] With a second goal came different tools. Almost all central banks added macroprudential policies to their toolkit. Many also started using their balance sheets in new ways. Not to create money as before, but to undertake 'market making' interventions in key financial-market segments. It remains

7 In most nations, responsibility for the second goal is shared with regulatory authorities.

to be seen whether the monetary-policy objective and the financial-stability objective will not conflict with one another.

Inflation targeting: Fix it, don't scrap it

"Flexible inflation targeting has survived the test of a major financial crisis well," writes Charles Wyplosz summing up a view broadly held by the authors. Karl Whelan dissents. But even he objects on the grounds of tactics, not strategy.

"My concern is that inflation targeting regimes can restrict central banks in their ability to get us out of storms, while their long-run benefits are perhaps smaller than advertised." He argues that central banks should be given a broad mandate that incorporates financial stability and good macroeconomic performance as well as a target for price stability.

Ben Broadbent's conclusion can be read as a rejoinder: "offering multiple alternatives to inflation targeting comes close to offering none at all -- a policy of pure discretion." For decades, the UK tried monetary policy without a real anchor. "One can't say it worked out that well." This brings us to the ultimate defence.

There is no viable alternative

As Jeffery Frankel puts it: "We have learned little from the Crisis that alters our understanding of how monetary policy should be conducted. There is no reason to discard inflation targeting and similar policy strategies, in particular since they have no obvious alternatives."

"If we thought that we had learnt anything from the travails of the 1960s and 1970s," says Charles Goodhart, "it was that monetary expansion in the medium and longer run does not bring faster, sustainable growth. … The long-run Phillips curve is vertical. It was on this analytical basis that the case both for central-bank independence and a specific inflation target was made." That case is as true now as it ever was.

Concluding remarks

Inflation targeting is alive and well. It is needed now more than ever. Inflation expectations will need to be kept anchored while the advanced economies work the debt-laden economic malaise. The debt creates temptations for governments to bail out debtors with unexpected inflation. Inflation targets and central-bank independence are the conventional ways of keeping politicians away from the printing presses. Central banks' balance-sheet expansion and even permanent money creation are all options that can be used and considered but if there is any chance they will succeed, the credibility of the commitment to a medium-run inflation target should not be lost. The questions remain on the effectiveness of such policies and, given their quasi-fiscal nature, on how to deal with the challenge they represent to central bank independence.

In closing we stress that inflation target is a work in progress; this eBook is but one contribution to an on-going discussion. Vox and CEPR look forward to hosting research-based policy commentary and analysis of the challenges and solutions as they arise.

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Who killed the inflation target?

Lorenzo Bini Smaghi
Harvard University

Is inflation targeting working? Should we get rid of it? This column discusses what inflation targeting can achieve, the limitations on central banks in the struggle for reigniting growth, and the pros and cons of abandoning inflation targeting altogether. Despite its problems, the advantages to ending inflation targeting remain, on balance, relatively unclear.

Inflation targeting has not worked. It has not prevented the financial Crisis. It is not providing an efficient monetary-policy strategy to get the economy out from the Crisis. Should we get rid of it?

Much has been written about how inflation targeting should be improved with a view to taking both financial conditions more into account and ensuring greater consistency between price stability and financial stability (preventing the type of asset-price bubble we experienced before the Crisis). Lars Svensson, for instance, has made several proposals on how to make inflation targeting more 'flexible'(e.g. 2011).

I would like to focus here on whether inflation targeting can remain a useful strategy to promote economic recovery and price stability after the bubble has burst, especially in the current post-Crisis environment.

The key policy interest rate and inflation targeting

The main characteristic of inflation targeting is a transparent relationship between the monetary-policy instrument – i.e. the key policy interest rate – and the target – i.e. the

inflation rate. The strategy works if there is a stable and predictable link between the two. Thus, the first question to ask is whether, in the current environment, the traditional monetary-policy instruments have become less effective in achieving price stability. Has the correlation between the key policy rate and inflation broken down?

There seems to be no strong evidence of that. In most advanced economies inflation is close or even above the target. Only in Japan is inflation negative (that is, during the last ten years). This probably shows that the Japanese economic environment does not meet the requirements for adopting an inflation-targeting strategy. In the US and in the Eurozone, inflation has remained relatively close to the 2% ceiling. In the UK inflation has been consistently above target for several years now.

Monetary policy, unemployment and the output gap

The issue which policymakers, academics and commentators are currently concerned with, is not so much the inflation track record – which has been relatively decent – but insufficient economic growth. While advanced economies have somehow been able to achieve price stability, unemployment continues to be too high and the output gap still looks very large.

Can monetary policy do something about it? If so, can it be achieved within an inflation-targeting regime?

The answer to both questions depends on the origin of the problem we are currently facing. If the worsening of the inflation-output trade-off is due to a malfunctioning of the transmission mechanism of monetary policy, central banks can certainly do something about it. The ECB, for instance, has implemented non-standard measures to improve the way in which monetary policy is transmitted to the various parts of the monetary union, especially in countries where the sovereign-debt crisis created short-term instability in the financial system. These measures are temporary by nature, and their impact on the overall monetary stance has been partly sterilised.

However, the main reasons why economic growth has been disappointing are not directly related to monetary policy. They are largely linked to the excessive debt accumulated by economic agents and financial institutions before the Crisis and the structural rigidities persisting in some economies, in particular in the Eurozone. As Reinhart and Rogoff have shown, the recovery from debt overhang is typically painful and slow.

The responsibility of governments and bank supervisors

The main responsibility for addressing these causes is outside central banks. Structural reforms in the labour, goods and capital markets are the responsibility of governments and parliaments. Bank recapitalisation – to improve the functioning of the credit channel – is mainly the responsibility of supervisors and of governments, especially when it requires taxpayers' money. Easing the burden of debt overhang for some sectors of society – in particular with a view to achieve a fairer distribution of adjustment – is also the responsibility of the fiscal authorities.

The problem is that the margins for manoeuvre to implement these actions is currently limited, either by the dire state of public finances or by the reluctance of elected politicians to take unpopular decisions which may jeopardise their chances of being re-elected. Recapitalising the banking system, as needed in several European countries to ease the credit crunch, would further raise the public debt and is generally quite unpopular, given voters' reluctance to use taxpayers' money to bail out banks. Goods and labour market reforms are also politically difficult, being opposed by interest groups, lobbies, and unions. Restructuring the debt borne by some parts of society – such as homeowners or students – can also strain the budget and be politically very controversial, as experienced in the US.

It's not easy to socialise losses in democratic systems. But there may be a way out. Indeed, the job could be delegated to the central bank. Central banks can reduce the burden of the debt by purchasing large amounts of risky assets from banks and institutional investors and hold them to maturity in their balance sheets. Potential losses

would appear on the central bank's balance sheet at a later stage and would then be borne by taxpayers. Monetary policy can also engineer higher inflation, which would reduce the real value of debts, contributing to accelerate the deleveraging. Higher inflation would also reduce the real cost of labour, stimulating the demand for jobs without the need for major reform. Central banks can also keep interest rates low for an extended period of time, artificially supporting the market value of risky assets and encouraging new risk-taking.

Conflicts with an inflation-targeting regime

There is only one problem with central banks acting in such a way. It is not compatible with an inflation targeting regime. Trying to adapt the regime – for instance, to make inflation less predictable – would entail too much trouble and would, in any case, require parliamentary approval, raising all the difficulties mentioned above. So, it's better to kill the inflation-target concept altogether. This would give greater discretion to central banks to do whatever is needed to achieve high growth, as long as it is compatible with a broad concept of price stability. That's what the proposal of a nominal income target is all about. Does it really matter, after all, if nominal GDP grows because of its inflation component or a rise in real income?

Abandoning the inflation regime?

Abandoning the inflation-target regime, in all its variants (including that of the ECB), looks like the obvious choice to make. However, the consequences need to be clearly spelled out. This is the responsibility of economists.

It should be clear, in particular, that by killing the inflation target we wave goodbye to central bank transparency, accountability and independence. For instance, transparency would have to be compromised to achieve higher inflation than expected, which is key to stimulate growth and redistribute income between debtors and creditors. By entering

redistributive policies, central banks would also lose their independence, since they do not have the legitimacy to make welfare choices.

What would be the advantages, on the other hand? Economists should be humble enough to state their ignorance about the possible consequences of a monetary policy aiming at socialising losses. Looking backwards, the current Crisis might actually have been produced precisely by this sort of monetary and financial policy. Pursuing this approach further could lead to an even greater Crisis. The limited effectiveness of the various rounds of quantitative easing has been shown by the need to repeat them, while the danger of a new tendency to underestimate risk is rising again, as recently shown by Stein (2013).

The new central bank course of action would ease the pressure on the political authorities – i.e. governments and parliaments – to take some tough decisions required to improve the performance of advanced economies. Politicians would certainly appreciate it. But for others, the advantages are a lot less clear.

Taking this new course means throwing away more than three decades of economic analysis. Would it really matter, after all?

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Is inflation targeting passé?

Stefan Gerlach
Johann Wolfgang Goethe University of Frankfurt and CEPR

Some claim that inflation targeting is passé. This column argues that the Crisis spotlighted some insufficiencies in inflation targeting, but provide no important lesson on how monetary policy per se should be conducted. The answer is not to abandon inflation targeting for untested alternatives. Central banks should instead focus on ensuring they have effective unconventional monetary-policy tools.

As a consequence of the financial Crisis, it has been argued that inflation targeting and related monetary-policy strategies in which price stability is the primary policy objective have become passé. Two prominent claims have been made:

- First, by focusing excessively on stabilising inflation, central banks disregarded the fact that expansionary monetary policy led to credit-fuelled property-price bubbles in a number of countries;

According to this view, the Crisis was partially a monetary-policy error.

- Second, inflation targeting can prevent central banks from responding vigorously to weak economic growth in the aftermath of a bubble;

In the interest of brevity, here I will focus on the second claim. Let me nevertheless say that I believe that the first charge is largely incorrect. While low interest rates did lead to a 'search for yield' in financial markets, weaknesses in financial firms' risk management and in financial regulation and supervision were much more important than monetary policy in setting the stage for the Crisis. There is now much agreement that macroprudential policy – loosely described as 'non-interest rate policy' – should be used to constrain the financial system when policy-controlled interest rates are low.

Two effects of the Crisis

In thinking about the second claim, it is important to recognise that the financial Crisis had two effects on the economy:

- First, cascading losses in the financial system, elevated credit risks and, in some countries, worries about sovereign-debt sustainability had a large impact on financial systems' ability to intermediate credit and therefore in the demand for goods and services. Falling house prices and collapsing housing investment also triggered sharp falls in aggregate demand and large increases in unemployment in economies that experienced housing bubbles. With prices sticky, the reduction in demand has been felt largely in a much reduced level of real economic activity and not in lower inflation.
- Second, severe stress across financial systems in many countries weakened the monetary transmission mechanism. This latter constraint became particularly apparent once central banks cut interest rates to the (zero) lower bound and traditional interest-rate policy became ineffective. Thus, monetary policymakers have had to contend with a large decline in economic activity at precisely the same moment as monetary policy lost much of its effectiveness.

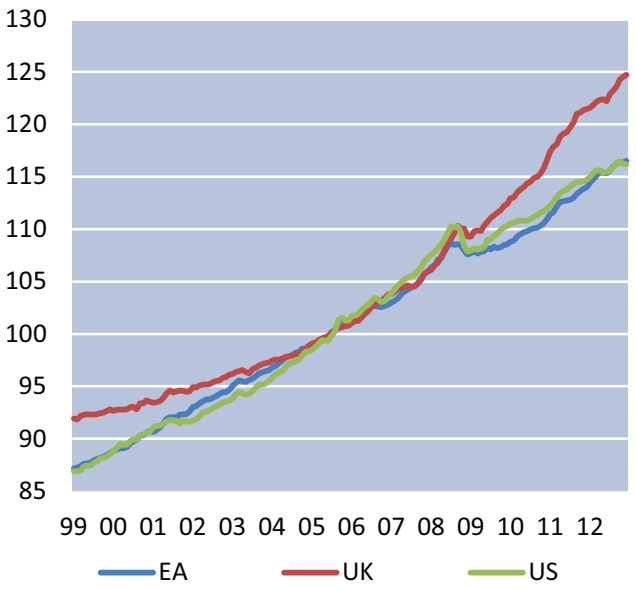
To increase the potency of monetary policy, it would be helpful to raise inflation expectations, which would reduce expected real interest rates since the nominal-interest rate is frozen at (close to) zero in many countries. Unfortunately, under inflation targeting the expected inflation rate is typically constant and equal to the objective. Thus, the difficulty central banks face in stimulating the economy arises because nominal-interest rates are stuck at zero, coupled with the fact that the expected rate of inflation is well anchored at the target.

Raising inflation expectations

One way to raise inflation expectations after an adverse shock is to announce a price level path which rises at a rate corresponding to the inflation target, say, 2% per year. If the bursting of a financial bubble leads to unusually low inflation, the price level will fall below this path. Monetary policy will therefore temporarily aim for inflation above 2% in order to return the price level to the path[1].

While the economics is straightforward, it turns out that even after the massive contractionary shock many economies have experienced in recent years, price levels have not fallen below a 2% growth path (see Figure 1). Therefore price-level targeting would now not call for monetary-policy easing.

Figure 1. Price levels



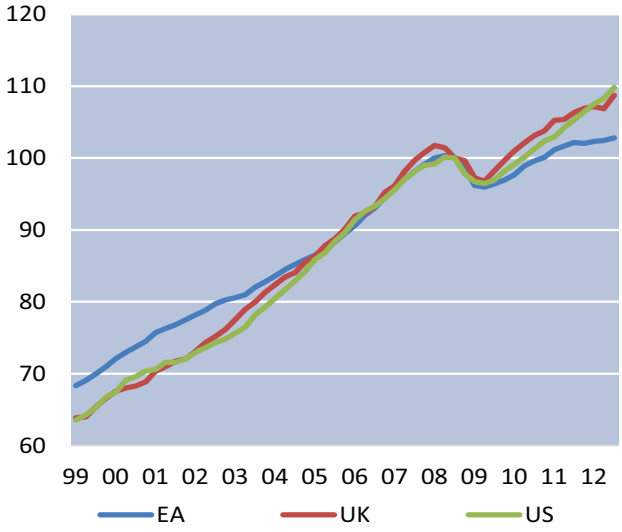
Source: ECB, ONS, Fred.

1 See Eggertsson and Woodford (2003) for a discussion of price targeting at the lower bound.

An alternative approach is to target the level of nominal GDP[2]. However, while monetary policy can impact on nominal GDP, real GDP is not influenced by monetary policy in the long run. If central banks target a nominal-GDP path that is too high given the path of real GDP, inflation will ensue. In order to stabilise inflation, it is therefore essential for the central bank to have a good understanding of what path of real GDP is feasible. That, of course, is not easy to obtain.

Consider the current situation, in which nominal GDP has fallen below trend in several economies (see Figure 2). While it may appear that targeting a nominal-GDP path would require central banks to stimulate the economy, it is of course clear that nominal GDP was boosted above its sustainable growth path by the financial bubble before the Crisis. However, the extent of this effect is unclear. Furthermore, the literature on the growth effects of financial crises suggests that real GDP will grow more slowly after a bubble than it would have done otherwise, although the extent of the reduction is also uncertain.

Figure 2. Nominal-GDP levels



Source: Eurostat.

2 See Frankel (2012) and Goodhart et al. (2013) for discussions on the merits of nominal GDP targeting.

In sum, it is particularly difficult for central banks to determine what a plausible nominal GDP target path would look like in the immediate aftermath of a financial bubble. All that we can say is that it is surely below and probably flatter than the pre-Crisis growth path of nominal GDP. While it seems plausible that many economies are below that path, by how much is anybody's guess. My suspicion is that the distance is smaller than commonly thought. Adopting nominal-GDP targeting now would bring with it an obvious risk of inflation much above the level central banks typically target.

A further drawback with nominal-GDP targeting is that the necessary national accounts data are available only with substantial lags and are frequently revised. It is therefore difficult to determine in real time to what extent the objective of policy is met.

Overall, temporarily switching to a policy of targeting the level of prices or nominal GDP would not seem sensible in the current setting.

Policy and 'rare' events

The recent financial Crisis is a once-in-a-lifetime episode. The world economy has not faced a situation of coincident slowdown of this magnitude and geographical reach since the early 1930s. Given the extreme infrequency of this type of event and the lack of plausible alternative frameworks, should central banks announce that in crisis times they may deviate temporarily from the prescriptions of inflation targeting?

In practice, it would be difficult to spell out in detail under what conditions central banks would do so and when they would exit from any provisional arrangements. The resulting subjectivity is an open invitation for public and political pressure for more expansionary monetary policy whenever a business cycle downturn occurs.

Furthermore, central banks have already responded flexibly and on a massive scale during the current Crisis. The scope and size of unconventional policy measures employed is unprecedented. As noted by Mishkin (2011), while the shock to the

financial system has been more complex than that which led to the Great Depression, the decline in output has been far less marked.

This success has raised expectations of what central banks can achieve. The slow recovery is therefore seen by many as a policy failure that should be addressed by whatever means necessary, even a change in the framework. To my mind, we must recognise that there are limits to monetary policy. Recent work by the Bech et al. (2012) and the IMF suggests that monetary policy is less effective in reducing the duration of recessions and in boosting recovery after a financial crisis, than otherwise. Rather than interpreting the slow recovery as a failure of monetary policy, the magnitude of the shock has exhausted the capability of conventional monetary policy to deal with it.

Conclusions

We have learned little from the Crisis that alters our understanding of how monetary policy should be conducted. There is no reason to discard inflation targeting and similar policy strategies, in particular since they have no obvious alternatives. Central banks are better advised to focus on ensuring that they have effective unconventional monetary-policy tools available than on changing policy frameworks, as argued by Charles Goodhart (2013).

Disclaimer: The views expressed here are those of the author and do not necessarily represent those of the institutions with which he is affiliated.

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Monetary targetry: Might Carney make a difference?

Charles A.E. Goodhart, Melanie Baker and Jonathan Ashworth
London School of Economics; Morgan Stanley; Morgan Stanley

The Bank of England's Governor-elect has argued for a switch to a nominal GDP target. This column points out problems with nominal GDP targets, especially in levels. Among other issues, nominal GDP targeting means that uncertainty surrounding future real growth rates compounds uncertainty on future inflation rates. Thus the switch is likely to raise uncertainty about future inflation and weaken the anchoring of inflation expectations.

The economic recovery from the 2008/9 crisis has been depressingly slow in the UK, as in many other developed countries. Further fiscal expansion is constrained by concerns about the extraordinary (for peace-time) scale of the public sector deficit and rise in the debt/GDP ratio. Hence politicians, and many other commentators, are looking to monetary policy to play an even more aggressive role in getting us out of our present stagnation.

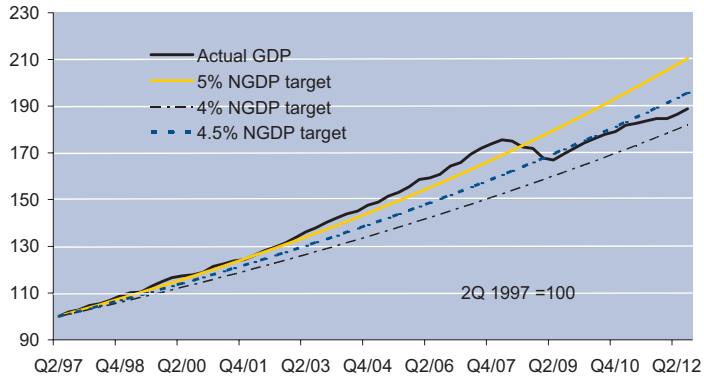
It is in this context that particular attention has been paid by the British press, and, it would seem, the Treasury to a speech given by Mark Carney, the Governor-elect of the Bank of England, in Toronto on December 11, 2012. In this he argued that, if exceptional stimulus needed to be given, the best method could be to adopt a (temporary) target for the level of nominal GDP, whereas most other UK proponents of nominal GDP targetry, such as Sir Samuel Brittan and Lord Skidelsky, have been advocating a target for the *growth* rate of NGDP.

Thus, Carney stated,

> "If yet further stimulus were required, the policy framework itself would likely have to be changed. For example, adopting a nominal GDP (NGDP)-level target could in many respects be more powerful than employing thresholds under flexible inflation targeting. This is because doing so would add "history dependence" to monetary policy. Under NGDP targeting, bygones are not bygones and the central bank is compelled to make up for past misses on the path of nominal GDP …
>
> However, when policy rates are stuck at the zero lower bound, there could be a more favourable case for NGDP targeting. The exceptional nature of the situation, and the magnitude of the gaps involved, could make such a policy more credible and easier to understand.
>
> Of course, the benefits of such a regime change would have to be weighed carefully against the effectiveness of other unconventional monetary policy measures under the proven, flexible inflation-targeting framework."

One of the problems of starting an NGDP target system is that the start date for 'history' to commence is itself entirely arbitrary. By juggling with the start date, and the desired growth path, one could leave the MPC with an immediate requirement that could vary anywhere from a huge expansion to a severe retraction. For example we show below what the implicit current gap is between the desired path for nominal GDP and the actual path for nominal GDP if history were deemed to have started in 1997 Q2, and growth paths of, say, 5% and 4% were also deemed to have been appropriate, as an upper and lower example, respectively. With the 5% path, the MPC would, assuming we aim to hit the target two years ahead, currently have to expand nominal GDP by around 10% p.a. With the 4% path, the MPC would have to keep nominal GDP growth down to around 2.3% p.a. (these estimates are based from the end of Q3 2012 to end 2014).

Figure 1 Nominal GDP under different policy scenarios



Source: ONS, Morgan Stanley Research.

Perhaps for this purpose, history will be deemed to start in July 2013 when under new management? Even if bygones remain bygones until that point, a nominal GDP level target could be much more demanding than a nominal GDP growth target.

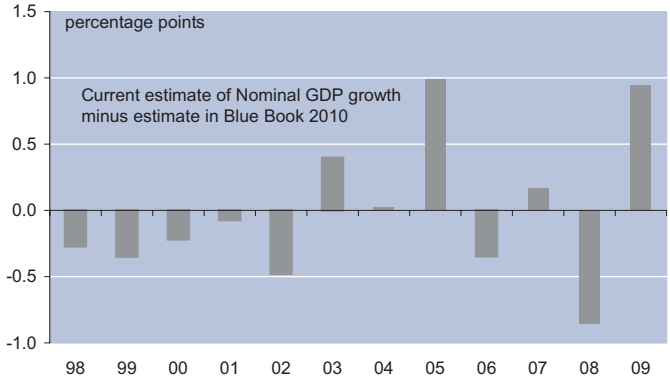
Assume that a 5% GDP level target was set now, but that the current OBR nominal GDP growth forecast was actually achieved over the next two years. Then the shortfall from target would by then be of the order of almost 4%. With a nominal GDP level target, that shortfall has to be clawed back. Assuming that this is to be done over the next two-year horizon, then that implies a nominal GDP growth target of about 7% for each of those two years.

Effectively, any overestimation of the sustainable real rate of growth, and such overestimation is all too likely, could force an MPC, subject to a level nominal GDP target, to soon have to aim for a significantly higher rate of inflation. Is that really what is now wanted? Bring back the stagflation of the 1970s; all is forgiven?

Whether an NGDP target is to be assessed in levels or in growth format, there are two other reasons to be chary of it. First, its use would be operationally problematical. A nominal GDP target has several operational shortcomings in comparison with an inflation target. The data for CPI are available within three weeks of the end of each month. Nominal GDP data are only available quarterly, with a lag of two months from

the end of the quarter. CPI data, once published, do not (normally) get revised. Whereas part of the frequently sizeable revisions to real GDP estimates is usually due to a switch between the real and inflation element of GDP. Nevertheless, nominal GDP figures themselves do become significantly revised, as shown below.

Figure 2 Nominal GDP growth is also significantly revised



Source: Morgan Stanley Research, ONS.

So, under an inflation target the MPC at least has a good idea of from where it is starting. Under a nominal GDP growth target the MPC would be flying through a current fog.

The second problem is that an NGDP target would appear to run counter to the previously accepted tenets of monetary theory. Perhaps the main claim of monetary economics, as persistently argued by Friedman, and the main reason for having an independent Central Bank, is that over the medium and longer term monetary forces influence only monetary variables. Other real (e.g. supply-side) factors determine growth; the long-run Phillips curve is vertical. Do those advocating a nominal GDP target now deny that? Do they really believe that faster inflation now will generate a faster, sustainable, medium- and longer-term growth rate?

If we knew what the future sustainable long-run rate of growth would be, we could set a current nominal GDP growth target that would on average deliver that, plus 2% inflation. But we do not. Moreover, the view is steadily gaining ground that it is more likely, than not, that real growth in the future will be below the average of past decades;

technological innovation may slow and demographic developments will be adverse. So, if we wanted to maintain price level stability, with inflation at 2%, we should be considering a nominal GDP growth target of slightly under 4%. That is not what the advocates of such a target propose.

Given our uncertainty about sustainable growth, an NGDP target also has the obvious disadvantage that future certainty about inflation becomes much less than under an inflation (or price level) target. In order to estimate medium- and longer-term inflation rates, one has first to take some view about the likely sustainable trends in future real output. The latter is very difficult to do at the best of times, and the present is not the best of times. So shifting from an inflation to a nominal GDP growth target is likely to have the effect of raising uncertainty about future inflation and weakening the anchoring effect on expectations of the inflation target.

Conclusion

If we thought that we had learnt anything from the travails of the 1960s and 1970s, it was that monetary expansion in the medium and longer run does not bring faster, sustainable growth. If anything, the opposite is true; faster inflation, at any rate beyond some threshold, deters growth. The long-run Phillips curve is vertical. It was on this analytical basis that the case both for Central Bank independence and a specific inflation target was made.

Authors' note: This article is based on research published for Morgan Stanley Research on January 9, 2013. It is not an offer to buy or sell any security/instruments or to participate in a trading strategy. For important disclosures as of the date of the publication of the research, please refer to the original piece available at Monetary Targetry: Possible Changes under Carney. For important current disclosures that pertain to Morgan Stanley, please refer to the disclosures regarding the issuer(s) that are the subject of this article on Morgan Stanley's disclosure website. https://www.morganstanley.com/researchdisclosures. Charles Goodhart is a senior adviser to Morgan Stanley. In his personal capacity, Mr. Goodhart advises other organizations and firms on economic matters, including among others, the Financial Markets Group of the London School of Economics.

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Is inflation targeting dead?

Ben Broadbent
Bank of England

Inflation targeting is under attack for not being able to handle cost shocks, not being able to underpin financial stability, and not being able to stimulate growth when needed. This column argues that alternatives would not have done systematically better than flexible inflation targeting, especially in the presence of macroprudential instruments. Offering multiple alternatives to inflation targeting comes close to offering a policy of pure discretion. The UK tried this for decades with very poor results.

Inflation targeting was introduced in the UK in 1992, following the country's ignominious exit from the European Exchange Rate Mechanism and after a long period of monetary instability. Over the next 15 years the country enjoyed not only low and steady inflation but the longest period of steady economic growth in its history. This happy conjunction was a feature of many economies, including those with other objectives for monetary policy. But the improvements in the UK were particularly marked and the temptation to attribute them to better policy, including the new monetary arrangements, proved too much for many[1].

After Hubris comes Nemesis

If anyone believed in 2007 that stable inflation is a guarantor of a financial stability they can hardly do so today. Nor, under inflation targeting, has looser monetary policy

1 Governing politicians were probably keenest to make the connection, though some economists did so too. Others were more circumspect: Charlie Bean, then the Bank of England's chief economist, said in 2003 that "price stability is no guarantee that financial instability can be avoided" (Bean 2003).

been enough to restore much growth since the Crisis (the economies of the UK and the Eurozone are still 3% smaller than they were at their pre-Crisis peaks, five years ago). The regime's critics have therefore become more vocal: inflation targeting (it is said) has meant that monetary policy was too easy before the Crisis and insufficiently so since. A few, it seems, are ready to consign it to history.

But in my view this risks the same attribution error that some were tempted to make, more flatteringly, ahead of the Crisis. In what follows I'll briefly address a longer-standing criticism – namely that an inflation target is too inflexible in the face of movements in the terms of trade or other disturbances to costs. I'll then explain why, at least in the UK, I do not think tighter monetary policy (and a lower rate of inflation) ahead of it would have made much difference to the scale or consequences of the financial Crisis, at least as felt in this country. I'll end with a few remarks about where we are today.

Inflation versus nominal-GDP growth: don't exaggerate the differences

Inflation targeting had its critics even at its inception. Unlike, say, an objective to stabilise the growth of nominal GDP, a rigid inflation target compels a central bank to tighten monetary policy in the face of shocks that raise consumer prices, but also either fails to increase domestic output prices and/or has a depressive effect on real activity. These include higher oil prices or other deteriorations in the terms of trade. To a degree that depends on the extent of real-income resistance, a slowdown in total factor productivity growth has the same properties. If these shocks are significant, volatility of output growth will be higher under rigid inflation targeting.

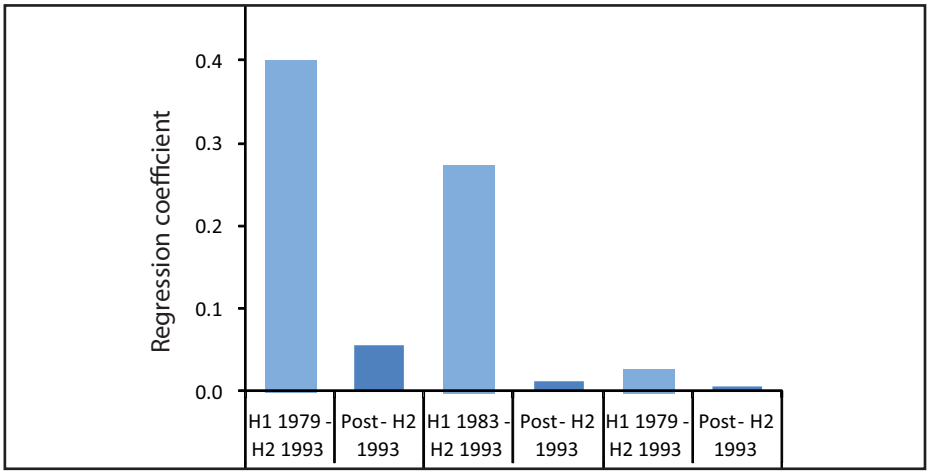
There is an offsetting benefit: under inflation targeting, medium-term inflation expectations are likely to be more stable in the face of such disturbances. But Frankel (2012), for example, argues that inflation targeting involves 'perverse' responses to terms-of-trade and supply shocks, citing as an example the ECB's decision in mid-2008

to raise its official interest rate, just as the economy entered recession, in response to high oil prices (Frankel 2012).

However, this is to attack something of a straw man. In practice, no inflation-targeting regime is rigid in this way (Svensson 2009). The argument that monetary policy should accommodate the 'first-round' impact of oil prices, for example, is no less an orthodoxy in inflation-targeting central banks than others (the ECB's mid-2008 hike is the exception not the rule). In the UK, the Monetary Policy Committee's objective is not to keep inflation at its target at all costs but to aim to get it there "within a reasonable time period without creating undue instability in the economy"; this degree of flexibility is designed precisely to allow policy to accommodate 'cost' shocks of this sort. Far from increasing, the correlation between three-month interest rates and oil prices fell sharply in Sweden and the UK after inflation targeting was introduced. It's possible that the earlier period saw more disturbances to the supply of (rather than the demand for) oil. But the decline is just as marked if, as a crude attempt to allow for demand-type shocks, one uses changes in oil prices relative to those in global equity prices (Figure 1)[2].

2 The idea would be that departures from the price of other risky assets are a better guide to the markets' view of developments in the supply of oil specifically. It may seem odd that, on the face of it, monetary policy has become less sensitive to oil price shocks under inflation targeting. The reason is that, with no nominal anchor to prevent this, changes in oil prices in the pre-inflation targeting era typically led to a re-rating of inflation expectations, all along the yield curve. It is precisely the anchoring of inflation expectations – dependent, of course, on the credibility of the regime – that allows an inflation targeter to be more accommodating.

Figure 1. Short-term interest rates less responsive to oil prices under IT



Source: Thomsons Datastream, Global Financial Database, Riksbank, Bank calculations.

Note: Three-month interest rates on changes in oil prices relative to global equity prices, daily data.

Inflation targeting isn't so flexible as to be indistinguishable from a target for nominal-income growth, still less pure discretion. In the years leading up to the Crisis, when developed-country terms of trade were improving in many developed economies and inflationary pressures seemed low, monetary policy in inflation-targeting countries was probably looser than it otherwise would have been. If it were forecast to continue, the current slowdown in total factor productivity growth – more evident in Europe than the US and far longer-lasting than the supply disturbance in a typical business-cycle model – would clearly warrant differing responses in the two regimes. But in general the real-world differences are smaller than is often supposed.

Loose monetary policy and the financial Crisis

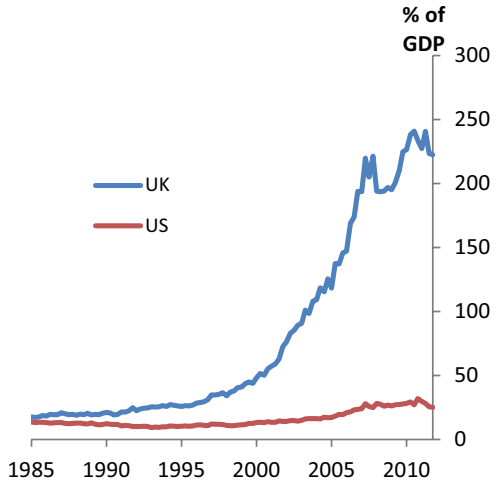
The charge that monetary policy paid too much attention to inflation and too little to financial stability was also heard before the Crisis (Borio and Lowe 2002). It has only grown since (Taylor 2012). There is, of course, no particular advantage to a nominal-GDP target in this respect. It's also worth pointing out that, if doing so can help reduce the variance of future inflation outcomes, even a rigid inflation targeter would want

to 'lean against the wind', tightening policy – and, in expectation, undershooting the target – if asset prices and balance sheets are thought to be rising too quickly[3]. But even if the debate is about orders of magnitude rather than absolutes, it's understandable that the financial Crisis has added to calls for all sorts of policies, including monetary policy, to do more to prevent its recurrence in future.

Large though the benefits of preventing financial crises would undoubtedly be, however, the costs of doing it through monetary policy alone are not negligible either. This is particular the case if – as was true in the UK – domestic banks have large overseas exposures (Figure 2). Simulations by Bean et al. (2010) suggest that, to stabilise real house prices in the UK from 2004 on, interest rates would have to have been several percentage points higher and, by mid-2007, GDP 3.3% lower. But domestic mortgages, the most interest rate-sensitive part of their domestic balance sheets, accounted for less than a quarter of UK banks' assets immediately prior to the Crisis and have contributed only a tiny fraction of their losses since (Figure 3 compares loss rates on UK mortgages with those in the US). Instead, it was losses on overseas assets – including US mortgages – that did most of the damage (Broadbent 2012). So while stabilising domestic house prices would probably have involved material costs in foregone output, it's less clear it would have done much to reduce the likelihood or costs of the financial Crisis.

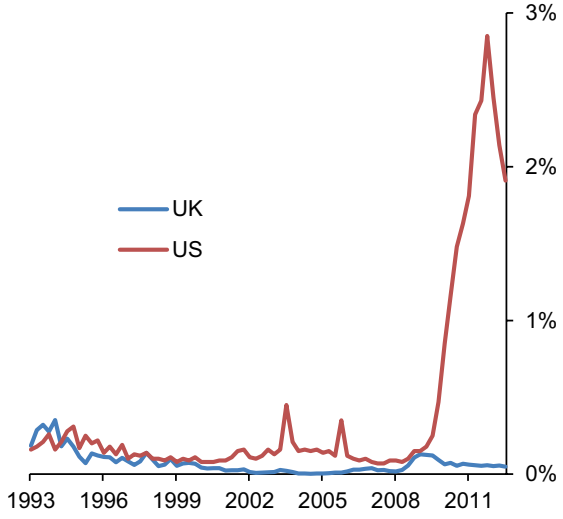
3 Suppose a rigid inflation targeter seeks to minimise only the variance of inflation around its target $V[\pi\text{-}]$. This can be broken down into two parts, the variance of expected inflation around the target and the variance of the control error: $V[\pi-\bar{\pi}\ ]=V[\pi^{\wedge e}-\bar{\pi}\ ]+V[\bar{\pi}\ -\bar{\pi}\ ^{\wedge e}]$. In simple linear economic models the second term depends only on the distribution of exogenous shocks and is unaffected by policy. But if (plausibly) an asset-price bubble increases the dispersion of future inflation outcomes, and if tighter monetary policy makes it harder for them to grow, there would be a case for policy to respond to rapid growth in asset prices – beyond any impact they may have on expected inflation – even with nothing other than inflation in the objective. For more on the reaction to asset prices under inflation targeting see Bean (2003).

Figure 2. Banks' non-domestic assets



Source: BIS

Figure 3. Mortgage write-off rates



Source: Bank of England and Federal Reserve

This calculation clearly differs from one country to another. But the perceived difficulty of relying on monetary policy alone to achieve financial stability explains why many countries, including the UK, have focused on developing 'macroprudential' tools, better suited to dealing with variations in systemic risk in the financial system.

The costs of discretion

The question 'is inflation targeting dead?' should entail a positive answer to the question about what would have done (or would do) better. Too often it does not – or, if there is a proposed alternative, the answer seems to change according to the particular criticism being made. Nominal-income targeting is more forgiving of 'cost' shocks; a policy that paid more attention to asset prices might have reduced the severity of the financial Crisis; a greater focus on unemployment would mean a faster recovery today.

As it happens, I think these points are often exaggerated. Except when there are forecastable changes in supply, or other costs, the difference between stabilising nominal-GDP growth and a flexible inflation target are not that large; at least in the UK, tighter monetary policy would have done little to ward off the financial Crisis or limit its damage; nor am I convinced that the protracted weakness in Europe's economies, since the Crisis, is solely the result of insufficiently easy monetary policy (or, more particularly, insufficiently high inflation).

But a separate point is that, offering multiple alternatives to inflation targeting comes close to offering none at all – a policy of pure discretion. Theory tells us unfettered discretion is usually suboptimal, however beguiling it may be in real time. We also tried it, at length, in the UK: between Bretton Woods and inflation targeting, monetary policy had no real anchor (or none that endured for any time). One can't say it worked out that well.

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Cheap talk is no alternative to inflation targeting

Adam S. Posen
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Macroeconomists' decades-long support for inflation targeting has come under attack. This column argues that talk about alternatives to inflation targeting is a result of frustration, but that this frustration is misdirected. Central banks could have pursued more aggressive monetary policy, achieved better goals and still been consistent with inflation targets. There is no need to incur the risks, dangers, and confusion of switching regimes – especially not to nominal-GDP targeting as this lacks robustness.

The fad for proposing possible alternatives to inflation targeting is based on frustration. Where there have been IT and quantitative easing, many are saying that the effect of additional quantitative easing is diminishing. We have not seen the growth we want to see. People are looking at whether there are other policy monetary instruments or regimes that might have a greater effect. In general, this is driven by the question about whether central banks should be explicitly focusing on GDP (or unemployment) as well as inflation by making statements.

Forward guidance as a gimmick

Obviously there has been significant interest in 'forward guidance' and forms of nominal-income targeting (Woodford (2012). I am a bit of an iconoclast on this.

- I think forward guidance is, for the most part, a gimmick.

I am very sceptical that such pre-commitments make much difference.

Here are just three examples.

First, the Bank of Canada made such announcements and it didn't work well.

At various times, despite the announcement, the market would move in ways suggesting that market participants thought the announcement was being rescinded. This was encouraged by economic data being released in commentary by Bank of Canada officials. In fact, at one point the market moved exactly opposite to what the Bank of Canada was hoping for.

Second, the Swedish Riksbank has been at the forefront of pre-committing to an interest-rate path and being transparent about its choices and thinking, but there is ample evidence that this has not been consistently effective.

Indeed the Riksbank's deputy governor is Lars Svensson – the mind behind many of these pre-commitment arguments. Despite this, the market does not find pre-commitment to be fully credible. Market participants discount it since interest rates fluctuate quite a bit, despite the very explicit forward commitments (Posen 2012).

Third, the Federal Reserve recently embraced a version of pre-commitments when the FOMC announced in November 2012 that they were switching to a 'thresholds model'. Namely, they would not raise rates until unemployment fell unless the inflation threshold was violated.

I think that was the right stance of policy. Then we saw the next month, based on some comments in the minutes from the FOMC meeting, the market sold off.

The bottom line lesson for me is that talk is cheap. People have always believed that about central bankers. It is more important what you do; your reputation for action earns reaction. I do not think that talking, without making purchases or commitments, does much. That's not to say that what you say is irrelevant. You can do some harm if what you say and do contradict each other. This was one of the problems with the Bank of Japan in the 1990s and early 2000s. They would say one thing and do another.

An example on the other side is the Bank of England. The UK Monetary Policy Committee does not pre-commit. It is the explicit ethos of the committee that its each month is new. Despite this lack of pre-commitment, all the econometric evidence is that the impact of quantitative easing was very closely comparable in the UK to that of the US and larger than in some other central-bank situations without the pre-commitment (Joyce, et al 2012).

Nevertheless, Bank of Canada governor Mark Carney made claims in a December speech where he said: "The Bank's conditional commitment succeeded in changing market expectations of the future path of interest rates, providing the desired stimulus and thereby underpinning a rebound in growth and inflation in Canada." (Carney 2012).

I do expect that the Bank's statement initially had impact in the desired direction, just as any statement from the officials of any central bank would have a market impact. It may be because at that time Governor Carney and the Bank of Canada said, "We are doing this for multiple months," or whatever, it was seen as a stronger statement of their preference to go for growth than something else.

But believing that jawboning had some effect is not the same as believing that it is an independent tool of monetary policy with a lasting and credible effect. Rather, it is just another form of rhetoric. It may be a slightly more intense form of rhetoric and, therefore, may have a slightly larger and more lasting impact, but to my mind it is still not an actual policy tool or commitment. It does not have the large effects that Mr Carney and others seem to think is the case.

Another alternative to inflation targeting commonly prosed is nominal-GDP targeting.

Critique of nominal-GDP targeting

My critique of nominal-GDP targeting in general terms is that it is an unnecessary complication – especially if you have a flexible inflation target (Bank of England) or a dual mandate (Federal Reserve). I understand the theoretical advantages. Having a

nominal-GDP target imparts a pre-commitment announcement aspect to the policy. Ideally it forces the central bank to take into account past inflation undershoots and to try to make up for them in future.

- I am sympathetic to this sentiment as a good guide to policy; I am just completely sceptical that nominal-GDP targeting achieves this in any way in practice.

I do not think changing the policy's label is going to somehow makes it a more credible long-term commitment.

Taking history into account and providing a catch-up factor, would be illusory in practice because of two things[1].

First, inflation targets are reasonably well understood and make a good effort of being transparent; a nominal-GDP target inherently is going to be incredibly fragile, non-robust to changes in definition and time period.

For example the size of the catch-up factor:

- Depends at what exact time you decide is the point to start catching up;
- Depends how many revisions there are to the data in the intervening period (and GDP data are repeatedly revised).

Second, nominal GDP is not something you can communicate intuitively.

As such it is going to be arbitrary in terms of trying to get the general public to understand what a nominal-GDP number means. Unlike with an inflation number, people cannot observe nominal GDP when they go to the store. Of course, they don't observe core CPI in the store either, but the prices give them something tangible, something to which they can anchor their expectations.

Then there is the issue of accuracy as in, for example, the 'rivers of blood' in the Bank of England's inflation and real-GDP fan charts. Nominal-GDP targeting would lead to

1 Hellebrandt (2013) gives an opposing positive view of nominal-GDP targeting.

error bands for inflation that are wider and more difficult to interpret. Alternatively, if you think you are going to hit the nominal-GDP target, the error band of how much of it is going to be new growth versus inflation would be extremely wide. The net effect would be to increase the volatility of inflation by a large measure. This does not seem like an improvement when you have been targeting an inflation rate with reasonable accuracy.

The point is simple to illustrate with an example. Say we have very slow growth, as we do now – perhaps because of the Eurozone Crisis, financial factors, and/or fiscal austerity. With a nominal-GDP target of, say, 5%, you end up with an inflation rate of 3% or 4% as an intentional policy. But In this case, the markets will rightly say, "Oh my god, this is a much less credible inflation regime. The government and the central bank are consciously choosing a higher inflation rate than they have been for years."

The likely outcome, in my opinion, is that you will get higher inflation and lose the anchoring effect of inflation targeting that my Bank of England colleagues and I counted on. When inflation shot up to 5%, people expected it would come back down to 2% – as it did, broadly speaking.

The lack of stimulus impact is not the fault of inflation targeting

Inflation targeting was not the reason why quantitative easing failed to achieve the strong recovery we hoped for and though was possible. I do believe quantitative easing was reasonably effective and, for various political reasons, some other forms of quantitative easing that I think could have added to effectiveness were not pursued (Posen 2012).

But the reason they were not pursued had nothing to do with the inflation target. They had to do with governance, organisational decisions and ideological beliefs on the part of central bank committee members. They were never argued against such measures on the basis of: "We can't do that because that will be contrary to target."

Conclusion

Talk about alternatives to inflation targeting is, to me, a result of frustration – the lack of recovery despite massive monetary-policy shifts. But to my mind, the frustration is misdirected. Sifting a central bank's target from inflation to nominal GDP in no way changes the effectiveness of policy instruments. Either quantitative easing works through the channel of promoting confidence, promoting asset prices, promoting aggregate demand and reallocation of the riskier assets, like all monetary policy, or it does not. If it does not do that, then it does not do that for nominal GDP any more than it does for inflation.

The fact is we could have pursued more aggressive monetary policy, achieved better goals and been totally consistent with the current inflation target. There is no need to incur all the risks, dangers, and confusion of switching regimes – especially not to a regime like nominal-GDP targeting, which lacks inflation targeting's robustness.

Forward guidance is no substitute for sufficient policy action.

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The evolution of modern central banking: What happens next?

Mohamed A El-Erian
PIMCO

Central bankers were critical in getting past the extreme market failures created by the global and Eurozone crises. This column argues that they are being forced to experiment beyond their operational comfort zones since other policymakers are 'missing in action'. This must give way to more holistic policy where other policymakers step up and apply tools that directly address growth, unemployment, debt and housing problems. The credibility and effectiveness of central banks is at stake.

Historical context: Crisis management

While there is still significant debate on the role of central banks in the run-up to the 2008 global financial Crisis (see Blinder 2003), most agree that their bold interventions in late 2008 and 2009 were instrumental in avoiding a global depression, which would have caused widespread damage and enormous human misery.

Their first focus was on addressing widespread and cascading market failures. And they did so by deploying a series of innovative measures that both reduced and transferred risk – through a combination of aggressive liquidity, solvency and counterparty interventions. In each of these cases, central bankers essentially stepped up to repair ruptured transactional chains that were part and parcel of the functioning of the global financial system as it was wired on the eve of the global financial Crisis.

Central bankers did more than counter the 'sudden stops' that engulfed the global economy at that time[11]. They also turned around the underlying path dependency dynamics – from a series of increasingly disruptive multiple equilibria to a steadily stabilising cycle.

While the US Federal Reserve evolved to a second analytical phase thereafter (see below) – and helped by a private banking system that was forced to strengthen its capital cushion, deal with bad assets and start to alter system-disrupting internal incentive structures – the ECB was not so fortunate.

An incomplete Eurozone architecture (see Baldwin et al. 2010), together with inadequately capitalised banks and too many politicians in denial, forced the ECB back into extreme crisis management in 2012. Its series of interventions culminated in ECB President Mario Draghi's historic remarks in London on 26 July 2012, assuring the world that "within our mandate, the ECB is ready to do whatever it takes to preserve the euro". And to leave no doubt, he added: "believe me, it will be enough" (Draghi 2012).

Historical context: Targeting macroeconomic outcomes

The second phase of extraordinary central-bank involvement has been less successive; and the legacies are likely to be much more consequential for the functioning of the global economy.

Faced with unusually sluggish growth and persistently high unemployment (what my colleagues and I labeled the 'New Normal' back in May 2009 (El-Erian 2009) and recognising that other policymakers were hampered by a combination of internal inertia and political constraints, central bankers shifted to targeting macroeconomic outcomes.

This transition started with the Fed and the Bank of England. Under immense pressure from a newly elected prime minister, the Bank of Japan joined in early 2013. It did so

1 The term was first used by Guillermo Calvo during the 1980s Latin American debt crisis.

at the same time as an increasing number of emerging economies concluded that they had no choice but to also succumb to this policy approach, and did so after some tried just to absorb the consequences while others experimented with heterodox measures (El-Erian 2013a). It is just a matter of time until the ECB feels compelled to join (El-Erian 2013b).

The policy paradigm relies on a combination of one or more of three basic building blocks:

- Very low nominal policy-interest rates (and negative real rates);
- Unprecedented forward-policy guidance;
- Aggressive use of balance sheets to change market-pricing relations, correlations and, therefore, the behaviour of commercially oriented investors.

The intermediate objective is to combine financial repression (Reinhart and Sbrancia 2011) with the triggering of the 'wealth effect' and 'animal spirits'. The former taxes creditors to subsidise debtors. The latter two engage healthy balance sheets, directly and by sustaining artificially low interest rates on 'safe financial assets' to, using Fed chairman Ben Bernanke's term, 'push' investors to take more risk.

Immediate and longer-term implications

Despite unprecedented central-bank policy activism, macroeconomic outcomes have repeatedly fallen short of both general expectations and those of central bankers themselves. And with other policymakers being inadequately supportive, central banks have felt that they have no choice but to be dragged further into an unfamiliar policy-experimentation mode (El-Erian 2012a).

As an illustration of this repeated phenomenon, witness the seemingly neverending series of new unconventional measures by the Fed. And with the US's special role in the world as the provider of many global public goods, including the reserve currency,

an increasing number of other central bankers feel they have little choice but to follow a similar policy approach.

The immediate implications include (but are not limited) to the following three issues:[22]

- A shift in the operational focus of central banks that places greater (relative and absolute) emphasis on growth and employment objectives as opposed to traditional inflation targets, or what I called the 'Reverse Volcker Moment' (El-Erian 2012c);
- Distorted functioning of financial markets as artificial pricing for certain assets is combined with changes in market liquidity and institutional capacity;
- Public moral hazard, with complacency reigning (and, in the case of Europe, increasing) among politicians and other policymakers, including those with tools that would address more directly the impediments to a durable economic recovery and the related safe deleveraging of over-indebted segments.

I suspect that these three issues feature prominently when central bankers – including Bernanke, Carney, Draghi, King and Shirakawa – refer to the collateral risk and unintended consequences of unconventional monetary policy. And in most instances, an informed judgement may be made whether these are compensated by the expected upside. Based on central bankers' revealed preference, the judgement remains that, again to use a Bernanke formulation, the 'benefits' exceed the 'costs and risks'.

Unfortunately, this may not be the case for longer-term issues. Already, there are reasons to postulate that these may prove much more complex in nature – particularly if politicians and other policymakers continue to remain on the sidelines and, thus, fail to exploit the window afforded to them by central bankers.

The longer Western central banks remain in this mode, the greater the policy dilemmas facing other countries. Indeed, as Felipe Larraín, Chile's minister of finance, warned in

2 For a more complete list, please refer to El-Erian 2012b.

the *Financial Times*, "by seeking relief at the expense of other economies, [quantitative easing] is, in its essence, a globally counterproductive policy" (2013).

If the widening monetary-policy stimulus continues to be undermined by liquidity traps and a highly unbalanced macro/structural policy mix, the global economy will risk not only 'currency wars', but also 'bad inflation', asset bubbles and, ultimately, forced disorderly economic and financial deleveragings. Meanwhile, the perception of central-bank balance-sheet robustness could be undermined by talk of losses and reduced transfers to fiscal agencies.

Should this materialise, the credibility of central banks will be harmed, with a growing number of politicians feeling entitled (if not obligated) to curtail central-bank autonomy and independence. Remember, these are now quasi-fiscal institutions with significant operational autonomy in an increasingly policy-constrained world. As such, damage to their standing would translate into a further hampering of the willingness, ability and effectiveness of policies to respond to major global structural realignments.

Now, fortunately and importantly, none of this is pre-ordained. Indeed, the balance of benefits/costs/risks can still be improved, provided central banks get proper support from other policymakers and politicians.

Comprehensive national policy responses, combined with less political dysfunction and more visionary regional and multilateral policy coordination, would significantly shift the probability distribution of expected outcomes. By doing so, the bold and innovative approaches of central bankers would end up in the history books as having provided the key bridge to a holistic policy response that accelerated the healing of various economic segments, enhanced productivity, strengthened the structural underpinnings, and efficiently engaged healthy balance sheets. And in doing so, the bridge would have enabled durable improvements in living standards, arrested the harmful rise in income and wealth inequalities, and reduced sociopolitical risks.

Concluding remarks

We are nearing a critical juncture for modern central banking. How it evolves is central to our children's generation not ending up worse off than their parents.

Responding to threatening economic and financial conditions, central bankers have played a critical role in overcoming extreme market failures and ensuring the wellbeing of the global economy. But with other policymakers essentially missing in action, they have found themselves pushed further and further away from their operational comfort zones, forced into ever more experimentation with increasingly uncertain longer-term outcomes.

The deeper they are forced to venture into the current experimental policy approach, the greater the likelihood that the expected benefits will be overwhelmed by collateral damage and unintended consequences at the national level. Moreover, what appears necessary domestically is proving more difficult to reconcile at the global level.

It is therefore critical that the current phase of unusual central-bank activism give way to a more holistic policy response; and one that involves other policymakers with direct tools to enhance actual growth, increase growth capacity, overcome debt overhangs, improve labour-market functioning, and restore a proper system of housing finance.

All this leads to a rather discomforting conclusion. The future credibility and effectiveness of central banks are no longer in the hands of these institutions. Instead, they depend on others stepping up to their policy responsibilities. Let us all hope that this indeed materialises.

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Inflation targeting: Fix it, don't scrap it

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Should inflation targeting go? This column claims that the key arguments for inflation targets retain their force. The dramatic, Crisis-linked actions raise doubts about central banks' longer-run intentions and credibility, and strengthen the case for keeping the trusted framework. Abandoning it to start from scratch would amplify rather than mitigate such doubts. Fine-tuning inflation targeting is the answer.

A number of commentators have argued that inflation targeting is an idea whose time has passed, as, they say, it has proven inadequate to the challenge of dealing with the situations faced by many central banks in the aftermath of the global financial Crisis[1]. Recent developments, such as the Federal Reserve's adoption of an explicit quantitative 'threshold' value for the unemployment rate in December 2012, and Bank of England Governor-designate Mark Carney's suggestion that there could be advantages of a nominal GDP target in a speech that same month (Carney 2012), have been widely cited as evidence of a swelling tide of dissent against inflation-targeting orthodoxy, even among noted former proponents and practitioners of inflation targeting[2].

It is indeed true that recent events expose important disadvantages of a particular conception of inflation targeting, one that is reflected in the practical implementation of inflation targeting in many countries. This does not, however, mean that an inflation target as such is undesirable, or that a superior regime could not be described as a form of inflation targeting. Indeed, what is needed is something closer to the ideal version of

1 See, for example, Frankel (2012) and Wren-Lewis (2013).
2 See, for example, El-Erian (2012).

inflation targeting already advocated for some years in theoretical discussions of this approach.

It is important, first of all, to recognise that proponents of inflation targeting do not actually have in mind a commitment by the central bank to base policy decisions purely on their consequences for inflation, and to act so as to keep the inflation rate as close as possible to the target rate at all times. Mervyn King (1997) memorably referred to this as the 'inflation nutter' position, and distinguished the 'flexible' inflation targeting that he advocated from it; Ben Bernanke's advocacy of inflation targeting has similarly always taken pains to insist that it would not require a central bank to disregard the consequences of its policy for the real economy, and so would not be contrary to the Fed's 'dual mandate' (e.g. Bernanke et al. 1999, Bernanke 2004a).

And the theoretical case for inflation targeting has never rested on an assertion that a single-minded focus on inflation stabilisation would achieve the best outcome; while there exist cases in which maintenance of a stable inflation rate at all times would be an optimal outcome, the literature has stressed how special are the assumptions required in order for this to be true. Quantitative investigations of optimal monetary policy in a variety of structural models and under varying assumptions about parameters and shocks have instead found as a much more robust conclusion that optimal monetary policies involve a low long-run average rate of inflation, and fluctuations in the inflation rate that are not too persistent, so that a correct forecast of inflation a few years in the future remains always quite close to the same, constant long-run average inflation rate.

The essential reason for this conclusion is that while there are important real consequences of alternative paths for nominal variables in the short run, the long-run average rate of inflation has little consequence for the long-run average value of real variables – so that there is little cost in terms of alternative stabilisation objectives of adopting a policy that maintains a constant long-run inflation rate despite the occurrence of real disturbances. And indeed, there are important advantages for real stabilisation objectives of maintaining confidence that the medium-run inflation outlook is not

changed much when shocks occur. For example, relative constancy of expected inflation results in a stable short-run Phillips-curve tradeoff as a result of which monetary policy can more successfully stabilise real variables in response to transitory shocks, whereas if changes in the rate of inflation were expected to be highly persistent, it would be much more difficult for monetary policy to have an effect on real variables as opposed to simply affecting inflation.[3]

Hence the literature has argued for the desirability of commitment to an approach to the conduct of policy that will ensure that departures of the inflation rate from a definite (relatively low) value will not last too long, and that can maintain public confidence in this property of inflation dynamics. This is what a commitment to an explicit inflation target is intended to achieve. And in fact, those central banks with explicit inflation targets (including the US, since January 2012) always commit themselves only to seek to keep inflation near the target rate 'over the medium run', or to aim to return the actual inflation rate to the target rate over some horizon two or more years in the future. They do not promise to make policy solely with a view to keeping inflation as close as possible to the target in the short run, and many central banks' official descriptions of their policy targets make explicit reference to additional stabilisation goals that are also to be pursued, subject to the constraint that this be done in a way that is consistent with the medium-run inflation target.

But while inflation-targeting central banks generally make it clear that the inflation target is only to be understood as a medium-run constraint on the conduct of policy, they are often much less clear about what does determine an appropriate nearer-term policy. And this is hardly a minor detail, since as a practical matter, the decision to be made at any given meeting of a monetary-policy committee is only a near-term decision: it is a decision about operating targets for the bank's policy instruments until the next meeting (only a few weeks in the future), with the expectation that a similar decision process

3 On the advantages of stable inflation expectations for general macroeconomic stability, see for example Bernanke (2004b).

will be repeated afresh when the next meeting occurs. Hence even confidence that a central bank's policy should deliver a certain average rate of inflation 'over the medium run' depends on its adopting (and being seen to have adopted) a decision procedure for near-term policy decisions that can be expected, over time, to deliver that average rate. If a central bank does not explain how its supposed medium-run objective determines (or at least constrains) its near-term choices, there may be little confidence in this – or it may evaporate in response to an unexpected shock.

It has sometimes been supposed that simply defining a specific future horizon at which inflation should be projected to equal the target suffices to explain how a medium-run inflation target should determine near-term policy decisions. For example, in Svensson's (1997) classic exposition of the idea of 'inflation-forecast targeting', in each decision cycle the policy committee chooses the unique current operating target for the policy rate (a short-term nominal-interest rate) that results in a forecasted inflation rate two years in the future equal to the inflation target. This exercise has a determinate solution, however, only because the model assumed in the exposition implies that inflation is completely unaffected by monetary-policy decisions more recent than the meeting two years earlier. Thus in focusing on the implications of the current policy decision for projected inflation two years in the future, the policy committee is actually looking at the impact of the decision on inflation at the shortest horizon for which there is an effect. But this is not a realistic depiction of what actual inflation-forecast targeting involves; banks that focus on closing the 'inflation gap' only two or more years in the future do not do so because they believe that inflation outcomes at shorter horizons are genuinely policy-invariant, as is clear when projections under alternative hypothetical policy paths are presented.

Up until 2004, the Bank of England often explained its decision procedure in terms of a 'constant interest-rate forecast' of the future evolution of inflation that was presented in the introductory section of each Inflation Report. According to Vickers (1998) and Goodhart (2001), in each decision cycle, projections of the future evolution of inflation and other variables were produced under the assumption that the policy rate would

be held constant at one level or another; the appropriate current policy-rate decision was taken to be that interest rate with the property that, if the policy rate were to be held at that rate indefinitely, inflation would be projected to precisely equal the target at a horizon exactly eight quarters in the future (the verification of this condition was presented in the Inflation Report by plotting the inflation projection under the assumption of a constant interest rate equal to the current policy rate, together with a horizontal line at the level of the inflation target and a dashed vertical line at the eight-quarter horizon, allowing the satisfaction of the criterion to be judged by eye).

Because only a one-dimensional family of possible policy paths is considered (alternative possible constant interest rates), a criterion involving only the inflation forecast at a single horizon suffices to uniquely determine the appropriate choice. But this apparent solution is logically inconsistent, because a policy committee that chooses a given policy rate through this procedure does not commit itself to actually maintain the policy rate at that level for the next eight quarters; the decision will be reconsidered afresh the following month. This means that it is possible for a constant interest-rate projection that justifies choice of a particular policy rate under this criterion to already imply that if the economy evolves as currently projected, the same procedure will not allow the bank to maintain the policy rate at that same level for more than a few months (this will be the case if under the constant-interest-rate forecast, the inflation rate is projected to pass through the target at exactly eight quarters in the future, but to go on to overshoot the target farther in the future[4].

Such a sequential forecast-targeting procedure can only be internally consistent if the exercise involves the choice of a non-constant path for the policy rate, with the property that the path chosen at one date will in fact be a model-consistent forecast (that is, one that is consistent with the projected evolution of the economy according to the central bank's model) of the path that should also be chosen at any later date, applying the same criterion in the circumstances that are forecasted to exist then. Procedures can be

4 See Woodford (2012a) for further discussion and an illustration.

designed to have this property; but such a procedure must involve contemplation of a flexible class of possible forward paths for policy, as a consequence of which there is no longer a single path consistent with the desired medium-run rate of inflation. Instead, it is necessary to have a criterion for choosing among alternative near-term transitions paths, each of which would converge to the same medium-run state of affairs.

One still might imagine defining the criterion purely in terms of the rate at which inflation is projected to return to the target rate, when it is not already there. But while such a criterion could be internally consistent, it would not be economically desirable. For the reason for not always returning the inflation rate to the target rate as promptly as possible is not simply (or even primarily) that there are distortions created by changes in the rate of inflation (in which case it would indeed make sense to target a fixed rate of convergence, regardless of the reason that inflation has strayed from the target). Instead, the primary reason is that economic disturbances that shift the short-run relationship between inflation and the output gap (or other real variables that are relevant to stabilisation objectives) sometimes make it too costly in terms of destabilisation of these other variables to move inflation quickly to the target (or perhaps even to keep it as close to the target as it currently is). Hence a more sensible criterion for choosing among alternative feasible transition paths must be one that balances the projected degree of continuing departure of the inflation rate from the medium-run target against the projected degree of imbalance in other stabilisation objectives.

As a simple example, for a time the Norges Bank included in each issue of its Inflation Reports a box explaining the criteria used to determine the appropriate forward path for policy at the time of each forecast-targeting exercise. In addition to specifying that the inflation rate should be projected to converge toward the target rate (without specifying a precise horizon for full convergence), the Bank stated that "the inflation gap and the output gap should be in reasonable proportion to each other until they close", and in particular that the two gaps "should normally not be positive or negative at the

same time".[5] In order to allow visual inspection of the extent to which the projections satisfied this criterion, the Bank would present a figure in each Inflation Report in which the projections for its preferred measure of inflation and of the output gap were superimposed, allowing verification of the desired inverse relationship between them, with the two gaps shrinking to zero together[6].

Under such a criterion, it is not necessary to specify separately the rate at which the inflation rate should be projected to approach the target rate; the appropriate rate of convergence is exactly the rate that allows the output gap to remain in the desired proportion to the inflation gap (note that under such a criterion, the inflation gap will be projected to close eventually, as long as it is not possible to have a non-zero permanent output gap at any finite inflation rate. In the case of some types of disturbances, this might mean that much of the convergence would be expected to occur within eight quarters; but under other circumstances, convergence might take substantially longer. Credibility of the central bank's commitment to its medium-run target would be maintained, and confidence that convergence will eventually occur, not on the basis of the rate at which inflation is always observed to be converging toward the target rate, but on the basis of the fact that the current size of the inflation gap (or at any rate, the gap that is projected over the fairly near term under intended policy) is always justified by the current size of the output gap, rather than being allowed to grow disproportionately.

Adoption of an explicit criterion for deciding upon an appropriate forward path for policy becomes especially important in the case that the policy rate reaches its lower bound (or at least a barrier that the central bank is unwilling to breach, whether it would be technically feasible or not), as has been true in both the US and the UK since the end of 2008. In the absence of an ability to provide further stimulus to demand through

5 The criteria are explained more fully in Qvigstad (2006). See Woodford (2012a) for further discussion of the Norges Bank approach.

6 In recent years, the Norges Bank has been less explicit about the nature of the near-term criterion used to determine the appropriate forward path of policy, although it still states in each issue of its report (now called Monetary Policy Report) that "the interest rate path should provide a reasonable balance between the path for inflation and the path for overall capacity utilization in the economy" (Norges Bank 2012, p. 16), and it still always includes the figure superimposing the projected paths for the inflation rate and the output gap under its baseline scenario (Norges Bank 2012, chart 1.18).

further immediate cuts in the policy rate, the possibility of providing stronger incentives for current spending by creating expectations of looser monetary policy in the future than would otherwise have been expected can in principle be an important additional policy tool. But an important limit to the effectiveness of such 'forward guidance' is the fact that people need to be given a reason to believe that policy will in fact be conducted differently in the future, and not simply that the central bank currently wishes them to believe this.[7] I believe that this can most effectively be done by announcing a target criterion that will be used to determine future policy decisions, and then demonstrating that policy deliberations are indeed organised around verification of the announced criterion.

The recent calls for new approaches to the conduct of monetary policy, that some have interpreted as repudiations of inflation targeting, arise in this context. The Fed's introduction of a threshold for unemployment, which should be reached before it will be appropriate to begin raising the federal funds rate from its current near-zero level (assuming that inflationary expectations remain contained), is an attempt to provide assurance that interest rates will remain low for longer than might already have been expected on the basis of past conduct. My own proposal (Woodford 2012b) that the Fed commit to maintain its highly accommodative policy until nominal GDP catches up to a target path had the same intention, and it is in this context that Bank of England Governor-designate Mark Carney has spoken of the possible benefits of a nominal-GDP target as well (Carney 2012). Indeed, Carney's suggestion occurs in the course of a discussion of approaches to the provision of 'guidance' about future policy, as a form of 'unconventional policy' that can deployed when the interest-rate lower bound has been reached.

It is true that Carney refers to this option as one that is not "available to a central bank operating under flexible inflation targeting", and says that if its use were required, "the

7 Woodford (2012b) discusses a case in which an announcement by the Riksbank that its policy rate was projected to remain at its current low level for several quarters seems to have had a contractionary effect, rather than the desired expansionary one, owing to insufficient credibility of the asserted path of future policy.

policy framework itself would likely have to be changed," which in Canada "would require the approval of the political authority." Nonetheless, it is important to recognise that he refers here to a specific conception of 'flexible inflation targeting', that has indeed been institutionalised in a number of countries, but that departs from the ideal advocated by theorists of inflation targeting such as Svensson and Woodford (2005). Carney stresses that the point of a nominal GDP-level target would be to introduce history-dependence into a central bank's policy commitment: the bank would commit itself to subsequently make up for any departure from the nominal-GDP target path owing to a loss of control of aggregate expenditure when the interest-rate lower bound constrains policy, by temporarily targeting a higher than usual nominal growth rate in order to get the economy back on the nominal-GDP trend path that, ideally, it would never have left. This is indeed different from the purely forward-looking approach to inflation targeting that is commonly practiced. The forward-looking approach implies that once it becomes possible to achieve its target with interest rates not constrained by the lower bound, the central bank will simply pursue its normal stabilisation objectives, including keeping the rate of inflation going forward within fairly narrow bounds. But an expectation that nominal growth may be insufficient for an indeterminate length of time (owing to the lower bound constraint), while it will under no circumstances be allowed to exceed its normal rate (when the constraint doesn't bind), can result in an undesirable contractionary bias to expectations about future policy.

Yet while a commitment to a level path for a variable such as nominal GDP would be a departure from current practice, the desirability of such history-dependence has been stressed for some time in theoretical accounts of how flexible inflation targeting ought to be pursued[8]. Woodford (2008) argues for the desirability of history-dependent targeting procedures that incorporate a commitment to error-correction: a central bank that misses its nominal growth target owing to a misjudgment of the required instrument setting should be expected to compensate for this later, once the mistake has become

8 See, for example, Woodford (1999, 2000, 2012) and Svensson and Woodford (2005).

evident. To the extent that such error-correction can be anticipated, the expectation that it will occur should lead people to take actions that reduce the size of the deviation caused by the central bank's misjudgment, thus improving stabilisation outcomes despite the limitations of the real-time information available to the central bank, or other constraints on the accuracy of its instrument choices. For this reason, it has frequently been argued that price-level targeting rules should have superior properties to forward-looking inflation targeting, if people in the economy are themselves forward-looking – even from the standpoint of the kind of loss function typically considered to represent the objectives of a 'flexible inflation-targeting' bank.[9] The particular advantages of a commitment to a nominal-level target when the interest-rate lower bound becomes a binding constraint were stressed by Eggertsson and Woodford (2003) and Svensson (2003), well before the recent Crisis.

Moreover, a commitment to a nominal GDP-level path is completely consistent with a commitment to a medium-term inflation target. One might choose, for example, a target path for nominal GDP with the property that maintenance of nominal GDP near the target path should be expected, with a fairly high degree of confidence, to result in an average inflation rate over the medium run equal to the target rate; indeed, I believe that this should be an important constraint on the selection of a nominal GDP target path, in the case of a country that already has an inflation target. And it is not simply a matter of there being no contradiction between the two commitments. The commitment to the nominal GDP-level path could reasonably be defended as necessary to a more complete description of what the commitment to the inflation target should mean in practice. As argued above, the inflation target itself does not suffice to determine what near-term policy decisions should be; and yet in the absence of a clear near-term criterion that should generate the desired rate of inflation over the medium run, the way in which the central bank's decision procedure is supposed to maintain confidence in a particular medium-run rate of inflation remains obscure. And no inflation-targeting

9 See, for example, Svensson (1999) and Vestin (2006).

central bank would actually maintain that the correct near-term criterion should simply be minimisation of the distance between the actual inflation rate and the target rate, even at short horizons. Hence what is needed is a near-term target criterion, that will not refer simply to inflation, but that can be defended as an intermediate target, the pursuit of which in the near term can be expected to bring about the desired medium-run inflation rate (without an unnecessary degree of volatility of real variables). A nominal GDP-level path is an example of a fairly simple target criterion that satisfies these requirements.[10]

Indeed, despite the view expressed by Governor Carney, I believe that adoption of a nominal GDP-level path as the criterion for near-term policy decision would involve less of a departure from the existing policy commitments of a flexible inflation-targeting central bank than would adoption of a 'threshold' for the unemployment rate of the kind announced in December 2012 by the Fed. The unemployment threshold indicates a numerical objective for a variable other than inflation that cannot be defended as an intermediate target that, if achieved, would necessarily deliver the desired rate of inflation, over the medium run; it is an objective that would not in itself imply any given rate of inflation, and that furthermore could easily conflict with achievement of the desired rate of inflation, even on average over a period of many years, if the unemployment target were consistently pursued over that time, in too single-minded a way. Of course, the Federal Open Market Committee's announcement of an unemployment threshold implies no commitment or intention to treat this value as a target in this way, let alone as their sole or pre-eminent target. Nonetheless, because the adoption of an unemployment target with a specific numerical value would present such a threat to stability of the inflation rate, I believe that even a reference to a numerical threshold for unemployment of the kind that the Federal Open Market Committee

10 At least in simple New Keynesian models, and abstracting from measurement issues, the ideal choice would be a deterministic target path for an "output-gap-adjusted price level," as argued in Eggertsson and Woodford (2003) and Woodford (2008, 2012a). A target path for the level of nominal GDP is a variant that would retain many of the theoretical advantages of such a proposal, while avoiding the need to agree upon the correct value of the model parameters that would determine the ideal relative weight to place on the output gap, or to be able to measure the correct value of the "natural rate of output" in real time.

has made involves risks to the credibility of the Fed's commitment to its medium-run inflation target that would not arise in the case of a commitment to a nominal-GDP target path.

The adoption of thresholds also creates problems for the credibility of the medium-run inflation target owing to the fact that the thresholds (in order for their announcement to accomplish something) must represent both a departure from past policy and an approach to the conduct of policy that is different from what one wants people to anticipate about future policy as well, once the current anomalous circumstances are safely in the past (that is, the thresholds represent neither the criterion that would have determined whether a federal funds rate target near zero was appropriate under the Federal Open Market Committee's past approach, nor the criterion that the Federal Open Market Committee should be expected to use after 'exit' from the current period of unusual policy accommodation.) But the problem with adopting temporary thresholds of this kind is that it makes evident that the central bank's quantitative goals for the variables that define its stabilisation objectives can easily shift from year to year, so that there may be little confidence about whether the goals may shift next. A nominal GDP-level path – chosen so as to represent both a path that the central bank had wanted to keep the economy near, in order to achieve its previous goals, and that, if re-attained and followed in the future, should deliver the medium-run inflation rate that one wants people to continue to expect after the transition from the current situation – need not undermine credibility on either account. It implies that the central bank should be expected to maintain an unusually accommodative stance of policy for the immediate future, and indeed that it should seek to achieve a higher nominal-growth rate than usual over a temporary transition period; but the reason for this temporary departure from policy as usual would be clearly tied to the fact that nominal GDP has gotten off track to an unusual extent, so that explanation of the anomalous policy in these terms should not create doubts about how the bank will behave under more normal circumstances.

I thus believe that it would be possible to avoid the problems with inflation targeting as currently practised, that have been the focus of recent criticism of inflation targeting as such, while retaining the essential features of an inflation targeting regime: not only a public commitment to a fixed numerical target for the medium-run rate of inflation, and a commitment to regularly explain how policy decisions are consistent with that commitment, but the use of a forecast-targeting procedure as the basis both for monetary-policy deliberations and for communication with the public about the bank's decisions and their justification. And I believe that it would be desirable to retain these features of inflation targeting as it has developed over the past two decades. The key arguments made for the desirability of inflation targets prior to the Crisis retain their force. Even if it is now all too evident that the stabilisation of inflation and inflation expectations does not by itself guarantee that macroeconomic instability will never be an issue, there remain excellent reasons to believe that success on this dimension is conducive to macroeconomic stability more broadly. During the recent Crisis, it is likely that the high degree of stability of inflation expectations – owing to the credibility with regard to inflation control achieved by many central banks over the previous 15 years – has reduced the degree of instability resulting from a very substantial collapse of aggregate demand on the one hand and sharp increases in commodity prices on the other.

And the need for explicit, quantitative commitments about policy targets if medium-run inflation expectations are to remain stable is arguably greater now than it was during the decade prior to the Crisis – precisely because the unusual circumstances of the Crisis, and the unprecedented policy measures required to respond to them, make it much more difficult for the public to know what to expect from central-bank policy in the future in the absence of explicit guidance. These dramatic actions, while for the most part defensible as responses to a crisis, raise understandable questions about the extent to which policy remains in steady hands. The answer to those questions, however, is not to declare that the existing policy framework has exhausted its usefulness and start again from scratch. Instead, a deeper consideration of the principles that an inflation-targeting

regime seeks to instantiate should make it possible to fine-tune aspects of the practice of inflation targeting, in a way that addresses the needs of the current situation while making it clear that the fundamental commitments of the regime remain unchanged.

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Nominal-GDP targets, without losing the inflation anchor

Jeffrey Frankel
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Inflation targeting's golden lustre was tarnished by the Global Crisis in many ways, but its anchoring of inflation expectations is not one of them. This column argues for a two-phase switch to nominal-GDP targeting. This would deliver some stimulus now when it is needed, while keeping a cap on inflationary expectations.

Central banks announce rules or targets in terms of some economic variable in order to communicate their intentions to the public, ensure accountability, and anchor expectations. In the past, they have fixed the price of gold (under the gold standard), targeted the money supply (during monetarism's early-1980s heyday), and targeted the exchange rate (which helped emerging markets to overcome very high inflation in the 1980s, and was used by EU members in the 1990s, during the move toward monetary union). Each of these plans eventually floundered, whether on a shortage of gold, shifts in demand for money, or a decade of speculative attacks that dislodged currencies.

Conventional wisdom

The conventional wisdom for the past decade has been that inflation targeting – that is, announcing a growth target for consumer prices – provides the best framework for monetary policy. But the global financial Crisis that began in 2008 revealed some drawbacks to inflation targeting, analogous to the shortcomings of exchange-rate targeting that were exposed by the currency crises of the 1990s.

One problem with a consumer price index target is lack of robustness with respect to supply shocks and terms-of-trade shocks. In July 2008, for example, just as the economy

was going into the worst recession since the 1930s, the ECB responded to a spike in world oil prices by raising interest rates to fight consumer-price inflation. It might have avoided this mistake with a nominal-GDP target. Inflation targeting suffered its biggest setback hit in September 2008, when it became clear that central banks that had been relying on inflation targeting had not paid enough attention to asset bubbles, and that the consequences for the economy were severe.

Targeting nominal GDP

The idea of targeting nominal GDP is not new. It has been around since the 1980s, when many macroeconomists viewed it as a logical solution to the difficulties of targeting the money supply, particularly with respect to velocity shocks. A short list of proponents includes Meade (1978), Tobin (1983), Bean (1983) and Frankel (1995). That was a period when the goal was to establish credible monetary discipline.

The nominal-GDP targeting proposal has been revived recently, under very different circumstances, partly in order to deliver monetary stimulus and higher growth in the US, Japan, and Europe while yet still maintaining a credible nominal anchor. In an economy teetering between recovery and recession, like Europe in 2013, a 4-5% target for nominal-GDP growth in the coming year would have an effect equivalent to that of a 4% inflation target.

Monetary policymakers in some advanced countries face the problem of the 'zero lower bound': short-term nominal interest rates cannot be pushed any lower than they already are. Some economists have recently proposed responding to high unemployment by increasing the target for annual inflation from the traditional 2% to, say, 4%, thereby reducing the real (inflation-adjusted) interest rate. They like to remind Fed Chairman Ben Bernanke that he made similar recommendations to the Japanese authorities ten years ago.

But many central bankers are strongly averse to countenancing inflation-rate targets of 4% – or even 3%. They have no desire to abandon a hard-won target that has succeeded in keeping inflation expectations well anchored for so many years. Even if the increase were explicitly temporary, they worry that it might do permanent damage to the credibility of the long-term anchor.

This is also one reason why the same central bankers are wary of proposals for nominal-GDP targeting. They worry that to set a target for nominal-GDP growth of 5% or more in the coming year would be interpreted as setting an inflation target in excess of 2%, again permanently damaging the credibility of the anchor.

Introducing a nominal-GDP target

But the commitment to the 2% target need not be abandoned. The practical solution is to phase in a nominal-GDP target in two steps. Monetary authorities should start by omitting public projections for near-term real growth and inflation, while keeping longer-run projections and the inflation setting where it is. But they should add a longer-run projection for nominal-GDP growth. This would be around 4-4.5% for the US, implying a long-run real growth rate of 2-2.5%, the same as now. For Japan, lower targets would be needed – perhaps 3% nominal-GDP growth. No one could call such moves inflationary.

Shortly thereafter, projections for nominal GDP growth in the coming three years should be added – higher than 4% for the US, UK, and Eurozone: perhaps 5% in the first year, rising to 5.5% after that, but with the long-run projection unchanged at 4-4.5%. This would trigger much public speculation about how the 5.5% breaks down between real growth and inflation. The truth is that central banks have no control over that; monetary policy determines the total of real growth and inflation, but not the relative magnitude of each.

A nominal-GDP target would ensure either that real growth accelerates or, if not, that the real interest rate declines automatically, working to push up demand. The targets for nominal-GDP growth could be chosen in a way that puts the level of nominal GDP on an accelerated path back to its pre-recession trend. In the long run, when nominal-GDP growth is back on its annual path of 4-4.5%, real growth will return to its potential, say 2-2.5%, with inflation back at 1.5-2%.

Under this plan, the long-term target for inflation remains unchanged. Fans of flexible inflation targeting should thus remain happy (e.g. Svensson 2009). The plan simply substitutes a nominal-GDP target at one- or two-year horizons for the (more complicated) Taylor rule.

Some central bankers fear that under current conditions they cannot reliably deliver any quantitative target at a one- or two- year horizon, whether consumer price index or nominal GDP. A variant of the proposal would use forward guidance, following the recent lead of the Federal Reserve. Central banks could announce a commitment to keep the policy interest rate – or quantitative easing or other available tools – on easy settings so long as the nominal GDP remains below a particular level, chosen to correspond to the estimated path of potential GDP.

Phasing in nominal-GDP targeting delivers the advantage of some stimulus now, when it is needed, while respecting central bankers' reluctance to abandon their cherished inflation target.

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Reviving 'money and banking'

Markus Brunnermeier and Yuliy Sannikov
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Pre-Crisis received wisdom assumed financial stability would follow from price stability; the Crisis proved otherwise. This column uses the I-theory of money which argues that price, financial and fiscal stabilities are intertwined due to financial frictions. In downturns, optimal monetary policy should identify and unblock balance-sheet impairments that obstruct the flow of funds to productive parts in the economy. In upturns, diligence is required to avoid imbalances that make the economy vulnerable to liquidity and deflationary spirals.

If policymakers want to control inflation, it seems natural to target inflation directly. Such a clear focus on inflation certainly has its appeal because accountability is clearly assigned.

But a critical, implicit assumption in this thinking is that price stability can be treated in isolation from two other key 'stabilities':

- Financial stability, and
- Fiscal debt stability (i.e. sustainability).

A central bank that believes this assumption and ignores the links across the three stability concepts, may find itself in a corner – a corner from which it may be very difficult to escape without departing from the inflation target[1].

1 This article focuses on the interlinkages between price and financial stability. The connection to fiscal debt sustainability, diabolic loop and opposing deflationary and inflationary forces are spelled out in more detail in Brunnermeier and Sannikov (VoxEU.org 2013).

Thinking about inflation and money differently

The analysis of inflation targeting is primarily based on the widely used 'New Keynesian' framework; this stresses price and wage rigidity (e.g. Woodford 2003 or Gali 2008). We propose a different framework – 'The I-theory of money', where 'I' stands for intermediation (Brunnermeier and Sannikov 2012). This stresses financial frictions instead of price and wage rigidities. As such, I-theory is better suited for analysing connections among the three stability concepts (price, financial and debt).

In this theory:

- Financial frictions hinder funds from flowing freely from 'cash-rich' to 'cash-strapped' sectors.

Plainly, it matters who has the cash.

- If the financial sector is undercapitalised, it cannot channel funds to the most productive parts of the economy.

In this case:

- The distribution of wealth matters for credit and growth.

An impaired balance sheet or debt overhang in a specific sector will inhibit economic growth.

In this framework, a negative shock – say to productivity or GDP – is amplified by financial frictions. Bank equity declines if the shock produces losses on the asset side of their balance sheets. Banks will then try to sell assets to reduce their risk exposure. The assets, however, can only be sold at a loss since buyers from other sectors value them less. Banks' balance sheets deteriorate further from the fire-sale loss. Liquidity spirals amplify losses on the asset side of the balance sheets.

There is more. With lower asset values, banks also issue fewer liabilities – that is, they create less inside money. The money multiplier between inside money created by the financial sector and outside money (reserves, cash and other high-powered money)

collapses. The overall reduction in the money supply causes deflationary pressure a la Fisher (1933), which increases the real value of the banks' liabilities.

In short, banks are hit on both sides of their balance sheets:

- On the asset side, by the liquidity spiral; and
- On the liability side, by the deflationary spiral.

An initial adverse shock is amplified, leading to potentially large wealth redistribution.

This highlights the close connection between price and financial stability because money is created to a large extent by private financial institutions.

Can monetary policy mitigate these adverse effects?

Monetary policy can work if it redistributes wealth in such a way that dampens the amplification effects. Here monetary policy is unclogging the system and restoring the flow of funds to productive parts in the economy.

For example:

- Cutting the short-term interest rate, can increase the value of long-term bonds, thus stabilising banks' balance sheets.
- Purchasing specific assets held by a sector with impaired balance sheets softens amplification for that sector.

For example, purchases of mortgage-backed securities support real-estate prices, helping households who suffer from debt-overhang problems[2].

2 This measure is not very targeted as well capitalised households benefit from it too.

Wouldn't an inflation target regime also address the Fisher deflation spiral?

Inflation target would work e.g. with liquidity provision. This way the money that had been created by financial-sector lending (inside money) is replaced with central-bank credits (outside money). However, since balance-sheet impairments of specific sectors are not addressed, banks might simply park extra reserves with the central bank instead of passing it to the productive cash-strapped sectors in the economy.

Monetary policy could do a better job of restoring the credit flow by focusing the real problem – the impaired balance sheets. By redistributing wealth, this counteracts the amplification coming from the liquidity and deflationary spiral.

Optimal monetary policy with financial frictions

The first step in identifying the optimal policy is to identify the sectors that suffer from impaired balance sheets and amplification effects. Even if the central bank can only resort to pure interest-rate policy, it will have to think beyond a simple Taylor rule. It has to identify the blockages.

To see this consider an economy whose current interest rate is 2%.

- If the banking sector is undercapitalised and a credit crunch is imminent, then the central bank could cut the short-term interest rate, say to 1%.

This typically widens the term spread between the long-term interest rate and short-term interest rate. Cutting the short-term interest rate therefore provides a 'stealth recapitalisation' for banks and might be useful if their balance sheet needs to be repaired.

- If the end-borrowers suffer from debt-overhang problems, e.g. households with mortgage debt, it is more important to bring down the long-run rate instead of widening the term spread.

This calls for forward guidance, e.g. by announcing that the central bank will not increase the interest rate beyond 2% for the next two years. Such a policy will narrow the term spread, and may hurt the banks, but benefits end-borrowers. More targeted still would be the purchase of mortgage-backed securities, as they directly stabilise the housing market.

But doesn't this ex-post optimal redistributive monetary policy create ex-ante moral-hazard problems?

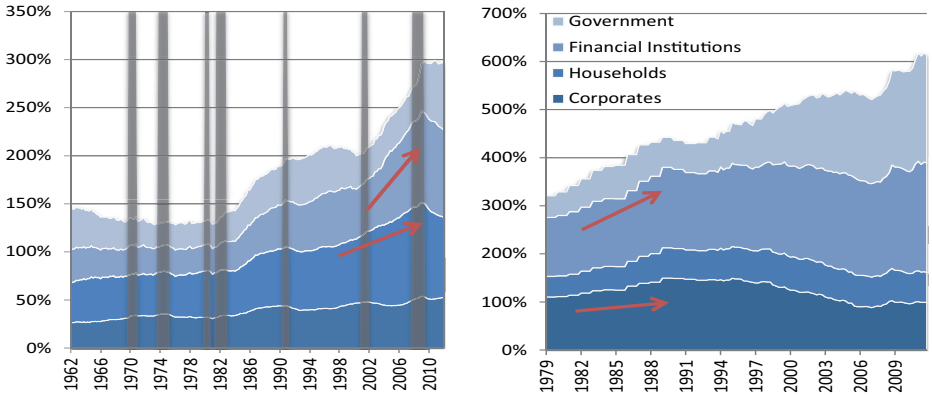
Moral hazard and I-theory monetary policy

Ex-post (tail) insurance through monetary policy can indeed lead to additional risk taking, but the amount depends on the monetary-policy design. Consider two banks that grant mortgages during the housing-bubble phase. In addition to the mortgages, both banks also hold long-term bonds of a government that does not suffer from fiscal debt sustainability issues. Say, the first bank is more aggressive as it holds more mortgages relative to the second bank, which holds more long-term government debt. If it is known that in a downturn the central bank will purchase long-term bonds to push up their price and will not intervene in the mortgage market, then the more conservative bank will benefit more from the redistributive monetary policy. Given such an anticipated monetary policy, it pays banks to be conservative and the competition among the banks might induce a race to the top in prudence. In this case, monetary policy mitigates risk taking. In contrast, if it is known that the central bank will increase the price of mortgage-backed securities in case of a downturn, banks will lend more aggressively in the run-up and the moral-hazard problems are aggravated. While the purchase of mortgage backed securities is more targeted and hence more ex-post efficient, it creates larger ex-ante moral-hazard problems.

This way of thinking about monetary economics has also important ex-ante implications. Central banks should be concerned that they may be pushed into a corner, in which their actions are dictated by financial-stability considerations. To avoid a 'financial

dominance' central banks have to watch the buildup of credit and monetary aggregates, leverage, liquidity mismatch and exposure to certain asset classes. Importantly, central banks have to monitor sector-specific credit growth. Note that, while in the run-up of the Japanese in the 1980s occurred in the corporate sector, in the US in the 2000s it was the household sector that got overleveraged. In both cases the financial sector also ran up its debt level – see Figure 1.

Figure 1. Debt-to-GDP ratios for several sectors over time in the US (Panel A) and Japan (Panel B)



Note: NBER recessions are represented as shaded columns.

Such a run-up in credit exposes the economy to vulnerabilities and the risk of amplification in the form of liquidity spirals and deflationary spirals.

Conclusion

The framework of the I-theory suggests a new way of thinking (gives a new perspective) about optimal monetary policy that goes strictly beyond inflation targeting:

- In downturns: ex-post crisis management is like 'bottleneck monetary policy'. Central banks have to figure out which sectors suffer from impaired balance sheets. The key question is: where is the bottleneck in the economy? Monetary policy has to work against liquidity and deflationary spirals that redistribute wealth away from

productive balance sheet-impaired sectors – especially if fiscal-policy measures cannot be implemented in a timely manner. Second, monetary-policy tools should be employed in such a way as to reduce negative moral-hazard implications in the long run.

- In upturns: ex-ante crisis prevention is essential in order to avoid being cornered later, and to be forced to conduct ex-post redistributive monetary policy. Central banks have to be aware of the interactions between the three stability concepts (price, financial, fiscal). They also should have a close eye on aggregate and sector-specific credit growth and other monetary aggregates. Simply following current interest rates is misleading, quantity aggregates have to be closely watched and acted upon because the economy becomes vulnerable when imbalances are building up. In a worst case, we might enter a regime of 'financial dominance', in which the financial industry corners the central banks to conduct certain policies that restrict their freedom to fight inflation.

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A broader mandate: Why inflation targeting is inadequate

Karl Whelan
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The Crisis has ruined inflation targeting's 'wonder drug' reputation. This column argues that central banks should have a broad mandate that incorporates financial stability, good macroeconomic performance, and a target for price stability that is consistent – as far as possible – with their other goals. The elegant theories that show fixed rules to be best are intellectually attractive, but not particularly good guides to real-world policymaking.

Recent years have severely tested central bankers. In response to severe recessions and financial crises, they have adopted policies that have fitted uneasily with inflation targeting, the dominant policy framework for the last 20 years. This raises the question: Is the current period of central bank practice an anomaly, soon to be followed by a return to normal service, or does the Crisis point towards the need to consider wholesale changes to how central banks conduct their business?

In this essay, I discuss the future of central banking by addressing questions related to financial stability, macroeconomic stability and price stability. Overall, I argue that the events of recent years combine with economic theory to make a case against pure inflation-targeting regimes.

The foundations of inflation targeting

Inflation-targeting regimes were built upon two key intellectual foundations.

- The first was Friedman's (1968) insight that there is no long-run trade-off between inflation and output.

While a short-run trade-off may exist in which higher output can be obtained at the expense of higher inflation, in the long run the level of output that will prevail should be independent of inflation. Since inflation is unpopular and output is beyond their control over the long run, this insight implied that central banks should focus on what they can control – a low rate of inflation.

- The second is the literature on dynamic inconsistency pioneered by Kydland and Prescott (1977), and further explored in relation to monetary policy by Barro and Gordon (1983) and Rogoff (1985).

This research pointed out that, because a short-term trade-off exists between output and inflation, the public may expect a central bank to occasionally 'cheat' an inflation target to produce higher output. It argued for institutional structures that encouraged central banks to commit to a low inflation outcome in a way that will be accepted by the public. If this outcome is obtained, a central bank will not only achieve its long-run inflation target, but will also face a friendlier short-run trade-off as inflationary expectations tend to stay 'anchored' in response to shocks.

Combined with the unsatisfactory stagflation experience of advanced economies in the 1970s, this academic literature had a profound influence on central-banking practice. From the late 1980s onwards, there was a significant trend towards making central banks more independent, giving them explicit inflation targets and setting price stability as their primary legal goal. Central bankers themselves increasingly conformed to Rogoff's recommendation, taking turns to see who could come across as more hawkish on inflation and inflicting long, boring speeches about the endless benefits of price stability on many a captive audience.

When reviewing the intellectual rationale for inflation targeting regimes, it is worth considering the limited nature of the underlying theoretical framework.

- It takes no account of the role played in the economy by the financial sector.
- It provides no explicit guidance as to which definition of price stability to commit to.
- It emphasises gains that relate to a long run of uncertain timing.

Taken together, these problems have hampered the ability of inflation-targeting central banks to perform effectively in recent years.

Financial stability

Inflation targeting regimes saw the completion of a long transition for central banks in which they moved away from their original roles as lenders of last resort to the banking system. The recent Crisis has seen a complete reversal of this long transition. Central banks around the world have provided huge quantities of emergency liquidity to the financial sector. The period of emergency provision has now ended in the US, but the European banking sector has not yet recovered. The ECB is still providing large amounts of financing to prevent a collapse.

The enormous disruption caused by the global financial Crisis – and the fact that central banks were the only organisations that could step in to prevent an even deeper catastrophe – argues strongly in favour of restoring financial stability goals to an even footing with macroeconomic goals such as price stability.

We now know enough to be sure that the widespread presumption that low inflation is, in and of itself, conducive to financial stability has been shown to be complacent. Elevating financial stability to be among a central bank's primary goals will help to ensure that future expansions don't see policymakers taking a hands-off approach to credit booms simply because inflation is low and seems likely to stay so. It will also make it easier for central bankers to act in a crisis by taking the necessary steps to avert

disaster, while accepting that one consequence of such actions may be an increase in inflation over the medium term.

Macroeconomic stability

During the inflation targeting era, it was common to hear central bankers with single, price-stability oriented mandates scolding the Federal Reserve for its dual mandate that also obliges it to focus on the real economy.

I am not sure that the evidence for gains from inflation-targeting mandates were ever that strong. Ball and Sheridan (2004) concluded there was little difference in the macroeconomic performance of inflation targeters relative to those that did not adopt explicit targets. Others, such Gurkaynak et al (2007), have focused on the more apparent anchoring of long-term inflation expectations in countries that have adopted inflation targeting.

Still, inflation expectations in the US have generally remained at low levels despite the absence of the various pieces of inflation targeting apparatus. And a comparison of the Fed and the ECB's current responses suggests the absence of an output-related mandate can have a serious impact on the conduct of policy.

As I write, the US economy is growing and unemployment is falling. The Eurozone is in recession and unemployment is rising to record levels. Despite this, the Fed is holding short-term interest rates at zero while the ECB's policy rate is 75 basis points. The Fed is promising to keep rates low for some time; the ECB is generally understood to want to raise rates if they observe any sign of an increase in inflation. This is what they have done twice during Europe's current economic crisis (in 2008 just before the Lehman's bankruptcy, and summer 2011, right before the most serious intensification of the Eurozone Crisis).

Similarly, in contrast the Fed's ongoing programme of large-scale bond purchases, the ECB's bond purchase programmes have been of a limited stop-start nature, with the

not-yet-operational Outright Monetary Transaction (OMT) programme brought into being only when the very existence of the euro itself was under threat.

Overall, I think the Crisis has weakened the case for central banks to be given a single, price-stability mandate and broadened the case for them to be given a wider set of primary goals that would include macroeconomic stability.

Is the 2% inflation target too low?

These arguments are not to deny the importance of central banks having a transparent and clear medium-term objective for price stability. But it is not at all clear why this goal has to be phrased as an inflation target, and it's even less clear why that inflation target should equal the almost universally accepted standard of 2%.

Personally, I believe recent experience points to 2% being too low. In the period since the 2% standard became widely accepted in the 1990s:

- The global economy has had two periods of recession; in both, deflation became either a reality or a threat across a number of advanced economies.
- We know now that the liquidity trap is not a theoretical curiosity.

Economies that operate at a 2% average rate of inflation are one recession away from the difficulties associated with falling into that trap.

Set against these dangers, I don't know of a single study that can explain how the social costs of a steady inflation rate of 3% or 4% would offset the reduced risk of deflation due to such a low target rate.

Should the targeting be price changes or price levels?

It is also worth noting that even the leading pre-Crisis theoretical approach that was widely used to analyse inflation-targeting regimes does not propose inflation targeting

as an optimal regime.[1] Rather, the optimal policy under commitment in this model takes a form of price-*level* targeting, with past shocks to inflation still influencing today's policy.

A price-level targeting approach would leave all the major central banks with more wiggle room for adjustment than they are currently allowing themselves. However, there is little sign of this approach taking hold in the major central banks.

Even Ben Bernanke, who recommended price-level targeting to the Bank of Japan in his early days as Fed Governor (Bernanke, 2003), now rejects it on the grounds that it would undermine anti-inflationary credibility.[2] It is true that the communication task of a central bank is made somewhat more complex by the adoption of a price level target, but overall I believe its advantages outweigh this disadvantage.

Long-run gains: "… too easy, too useless a task … "

Without doubt, the advocates of inflation targeting believe they are doing the right thing. They believe being vigilant in focusing primarily on enforcing a low rate of inflation and the long-run benefits of anchored inflation expectations will offset any short-term gains stemming from increased flexibility.

Here, Keynes's aphorism about the long run comes to mind. But well known as the phrase is, what is less well known is its context. It appears in Keynes's 1924 *Tract on Monetary Reform* as part of a discussion of the quantity theory of money. The full quote is: "The long run is a misleading guide to current affairs. In the long run we are all

1 This is the New-Keynesian model popularised by Michael Woodford (2003) and others.

2 From Bernanke's April 2012 press conference: "I guess the question is, does it make sense to actively seek a higher inflation rate in order to achieve a slightly increased reduction—a slightly increased pace of reduction in the unemployment rate? The view of the Committee is that that would be very reckless. We have—we, the Federal Reserve, have spent 30 years building up credibility for low and stable inflation, which has proved extremely valuable in that we've been be able to take strong accommodative actions in the last four or five years to support the economy without leading to an unanchoring of inflation expectations or a destabilization of inflation. To risk that asset for what I think would be quite tentative and perhaps doubtful gains on the real side would be, I think, an unwise thing to do."

dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is past the ocean is flat again."

My concern is that inflation-targeting regimes can restrict central banks in their ability to get us out of storms, while their long-run benefits are perhaps smaller than advertised.

Goals and instruments

I have argued that rather than inflation targeting regimes being an optimal framework, central banks should be given a broad mandate that incorporates financial stability and good macroeconomic performance, as well as a target for price stability that is consistent, as far as possible, with their other goals.

One obvious response to this position is that it suffers from the 'Tinbergen problem' – too many goals and not enough instruments. On this, I would make two comments.

- First, the Crisis has shown that central banks have more tools than the short-term interest rate, and some of these newer tools need to remain part of the armoury.

Central banks need to focus on many different areas and to be ready to use different tools to deal with different problems.

- Second, who ever said macroeconomic policymaking is easy? Simple theoretical models that suggest fixed rules are best may be superficially attractive, but they are rarely good guides to reality.

Macroeconomic outcomes are the result of millions of people interacting in a complex, ever-changing world. The history of the gold standard and the Great Depression – as documented by Eichengreen (1996) and others – serves as a useful lesson on the dangers of persevering with a rigid policy framework that corresponded to a prevailing orthodoxy.

Concluding remarks

Good macroeconomic policymaking will always involve accepting complex trade-offs rather than living in the best of all possible worlds. Probably the best we can hope for is that those implementing policy can learn from the mistakes of the past. They have many recent mistakes to learn from.

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Flexible inflation targeting: Performance and challenges

Ryan Banerjee, Stephen Cecchetti and Boris Hofmann
Bank for International Settlements

Inflation targeting was a huge success, but the Crisis showed it to be insufficient. This column argues that the Crisis' lesson is that inflation targeting should be refined, not replaced. Price stability should remain monetary policy's primary objective of a inflation-targeting system that is more flexible and more complex. The wide array of monetary policy and prudential instruments in use since 2007 should become part of central bankers' tool kit in the new post-Crisis landscape.

Introduction

Low, stable inflation is the foundation for strong, balanced and sustainable growth. It is for this reason that a large number of advanced and emerging-market economy central banks have adopted frameworks that explicitly or implicitly set low inflation as the primary goal for monetary policy.

But the global financial Crisis and the Great Recession in the advanced economies have led many people to ask what needs to be done about inflation-targeting frameworks. Our answer is that they need to be refined, not replaced. They must be integrated into a broader framework aimed at delivering macroeconomic and financial stability. Low, stable inflation is the first step in achieving this broader goal.

The performance of inflation-targeting regimes

The global trend towards lower and more stable inflation since the 1980s has been accompanied by the growing popularity of inflation targeting frameworks. Over the past quarter century, about two dozen advanced- and emerging-market central banks have explicitly adopted a formal inflation target. Others have implemented frameworks that embody key elements of inflation targeting.

When measured by common indicators of macroeconomic performance, inflation-targeting regimes compare favourably with others, especially in the case of emerging-market economies. Table 1 shows that, since 2000 and in particular during the period including the global financial Crisis beginning in 2007, inflation, real-GDP growth and short-term inflation expectations have all been considerably less volatile in emerging-market economies with explicit inflation targeting than in those without[1].

Table 1. Macroeconomic performance: explicit inflation targeters (IT) vs other regimes[1]

	Actual inflation				Short-term inflation expectations				Output growth			
	2000–06		2007–12		2000–06		2007–12		2000–06		2007–12	
	Mean	Stdev	Mean	Stdev	Mean	Stdev	Mean	Stdev	Mean	Stdev	Mean	Stdev
Advanced: IT	2.20	1.38	2.30	1.60	2.12	0.24	2.25	0.51	2.99	1.63	1.26	2.53
Adv: other	1.47	0.70	1.41	1.59	1.44	0.24	1.28	0.55	1.97	1.66	0.40	3.38
EMEs: IT	4.14	1.19	4.50	1.76	4.29	0.73	4.19	0.54	4.51	1.80	3.65	3.85
EMEs: other	7.29	3.01	5.25	2.72	7.33	2.69	4.65	1.20	7.13	4.50	4.13	5.53

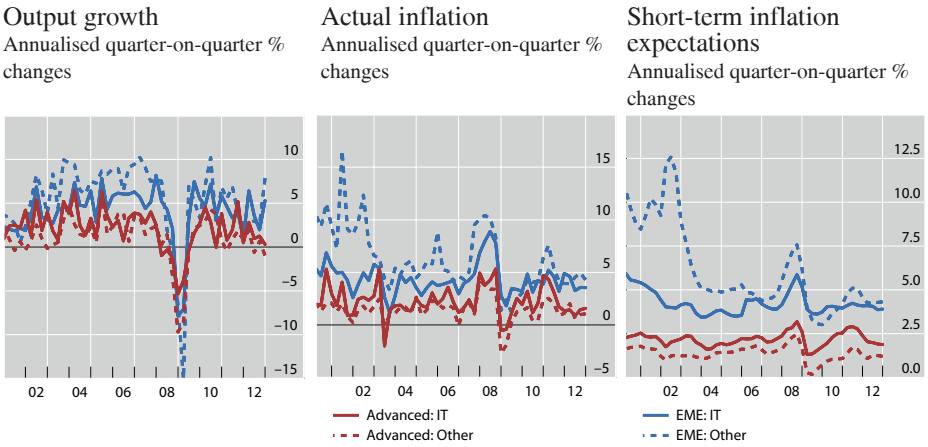
Notes: Simple average of economies in the country groups. Advanced inflation targeters: Australia, Canada, New Zealand, Norway, Sweden and the UK. Other advanced: Denmark, the Eurozone, Japan, Switzerland and the US. EME inflation targeters: Brazil, Chile, Colombia, the Czech Republic, Hungary, Indonesia, Israel, Korea, Mexico, Peru, the Philippines, Poland, Romania, South Africa, Thailand and Turkey (but Indonesia, Romania and Turkey are not considered inflation targeters before 2006). Other EMEs: Argentina, Bulgaria, China, Croatia, Hong Kong SAR, India, Latvia, Lithuania, Malaysia, Russia and Singapore.

1 Average inflation and output growth calculations are based on annualised quarter-on-quarter percentage changes of seasonally adjusted consumer prices (wholesale prices for India) and real GDP. Short-term inflation expectations are calculated based on moving weighted average of Consensus forecasts current and following year annual inflation forecasts.

Sources: © Consensus Economics; Datastream; national data; BIS calculations.

1 The division between those that target inflation and those that do not is based on self-identification.

Figure 1. Real growth, inflation and inflation expectations: Explicit inflation targeters vs others[1]



Notes: Simple average of economies in the country groups. Advanced inflation targeters: Australia, Canada, New Zealand, Norway, Sweden and the UK. Other advanced: Denmark, the Eurozone, Japan, Switzerland and the US. EME inflation targeters: Brazil, Chile, Colombia, the Czech Republic, Hungary, Indonesia, Israel, Korea, Mexico, Peru, the Philippines, Poland, Romania, South Africa, Thailand and Turkey (but Indonesia, Romania and Turkey are not considered inflation targeters before 2006). Other EMEs: Argentina, Bulgaria, China, Croatia, Hong Kong SAR, India, Latvia, Lithuania, Malaysia, Russia and Singapore.

1 Average inflation and output growth calculations are based on annualised quarter-on-quarter percentage changes of seasonally adjusted consumer prices (wholesale prices for India) and real GDP. Short-term inflation expectations are calculated based on moving weighted average of Consensus forecasts current and following year annual inflation forecasts.

Sources: © Consensus Economics; Datastream; national data; BIS calculations.

In advanced economies, the difference between explicit inflation targeters and others is negligible. In our view, this reflects the fact that the monetary-policy regimes implemented by most advanced-economy central banks have implied behaviour close to that of explicit inflation targeters (e.g. the ECB and Federal Reserve).

Despite the large collapse of output, inflation-targeting frameworks with well anchored inflation expectations have softened the negative deflationary impact of the financial Crisis. We can see this experience in Figure 1. Among the advanced economies (the red lines), inflation expectations remained relatively stable, even as growth and inflation fell in both inflation-targeting and non-inflation-targeting countries. Nevertheless, inflation-targeting regimes did not prevent the global financial Crisis and the ensuing Great Recession.

Refining inflation-targeting frameworks

Price stability was clearly not enough to deliver financial stability. This raises two separate challenges for inflation-targeting regimes. First, it is essential that we integrate financial-stability considerations into inflation-targeting frameworks. The build-up of financial imbalances before the financial Crisis occurred during a period of low and stable inflation (see centre panel of Figure 1). There are two ways to interpret this observation. One is that inflation targeting in its prevailing form, with a point inflation target to be met over a specified time horizon of a year or two, prevented central banks from leaning more aggressively against these imbalances. With broader and more flexible mandates, ones that went beyond narrowly defined inflation targets, central banks would have maintained a tighter monetary-policy stance to curb the build-up of leverage and the underpricing of risk. An alternative view is that central banks simply lacked the tools they needed to mitigate financial-stability risks at a time when policymakers were pursuing price stability. Interest-rate increases high enough to effectively mitigate pre-Crisis debt-fuelled property booms would also have caused a major economic contraction. Some other tools, ones more appropriate to moderating the financial cycle – such as countercyclical capital requirements on lenders or maximum loan-to-value ratios applied to borrowers – are needed for times like this.

Inflation-targeting regimes face a second challenge: a mechanism capable of providing monetary stimulus even when the nominal interest rate hits zero. The severity of the financial Crisis and the recession that followed quickly drove policy rates to zero. The desire to provide further monetary stimulus has led to a number of innovations in the form of what are now commonly referred to as 'unconventional' policies. However, some have questioned the effectiveness of these tools in the light of the observation that output in many economies remains well below the level implied by an extrapolation of the pre-Crisis trend. Because central banks are expected to tighten once inflation moves above the target, inflation targeting is seen as standing in the way of a credible

commitment to monetary stimulus that would return these Crisis-ravaged economies to lower levels of unemployment.

More flexible inflation-targeting frameworks

Can these challenges be addressed within the inflation-targeting paradigm? We believe that, by enhancing the flexibility of inflation-targeting frameworks along two dimensions, they can.

- First, policymakers need more short-term flexibility in the pursuit of inflation targets.

There is a need to lengthen the policy horizon beyond the conventional two years or so that is typical of many inflation-targeting frameworks. And, we recommend specifying inflation targets in terms of a range rather than setting a fixed value. These changes would enhance central banks' ability to lean against the wind of asset-price bubbles and to provide post-Crisis monetary stimulus while preserving the main benefits of inflation targeting (in particular, the anchoring of long-term inflation expectations).

- Second, central banks need to continue developing and refining new policy instruments.

The pre-Crisis consensus was that monetary policy should be both framed and implemented by manipulating short-term interest rates. The thinking was that, by targeting and stabilising short-term interest rates instead of other intermediate financial variables, policy would insulate the real economy from financial-sector shocks. However, the financial Crisis showed that the financial sector is connected to the real economy through a variety of channels, many of which are only loosely tied to the level of short-term interest rates. Moreover, shocks from the financial sector could be so large that policy rates reach their lower bound, preventing their further use in stabilising aggregate demand. In response, policymakers have resorted to new types of instrument, as a supplement to policy rates. The size and composition of central-bank balance sheets have been used to target both the level and slope of the term structure of interest rates.

Additionally, prudential tools with a more precise focus are being developed with the aim of increasing the financial system's resilience and dampening the transmission of financial shocks to the real economy. We believe that these new instruments will play an important role in the future. As a consequence, central banks' operational frameworks will become both more flexible and more complex than before the Crisis.

Conclusions: Inflation targeting as a foundation

The lessons from the financial Crisis cannot and should not lead us away from price stability as the primary objective of monetary policy. Inflation targeting is the foundation upon which we must now build a broader framework capable of delivering maximum sustainable growth, high employment and a stable financial system. Interest rates are not enough. To meet the challenges posed by the realisation that low, stable inflation is necessary but not sufficient for financial stability, central banks must now employ a wider array of monetary policy and prudential instruments. Since 2007, these tools have proved essential in crisis management. They will now contribute to defining the new post-Crisis landscape.

The views expressed here are those of the authors and do not necessarily represent those of the institutions with which they are affiliated.

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Will central banking change?

Charles Wyplosz
Graduate Institute, Geneva, and CEPR

Who says we should quit inflation targeting? This column argues that flexible inflation targeting has survived the test of a major financial crisis well. Indeed, the Crisis is arguably a failure of supervision, not of monetary policy. As for any rule, there are times when inflation targeting is inconvenient and possibly counter-productive. But it remains that the alternatives – monetary targeting, nominal-GDP targeting, no explicit strategy at all – would probably not have done a better job.

After the Great Crisis, there is no lack of potential culprits: the banks, the hedge funds, the supervisors, global imbalances and, of course, central banks. Taylor (2010) blames them for having kept interest rates too low for too long. Goodhart and Hofmann (2008) see monetary policy as responsible for housing-price bubbles. Then, during the Crisis, once interest rates have been driven to the lower bound, central banks multiplied the size of their balance sheets by a factor of three, four or more. Looking at these and other events, Frankel (2012) writes: "it is with regret that we announce the death of inflation targeting." We shouldn't be so sure. As any strategy, inflation targeting is meant to be applied year in, year out; as any rule, there are times when it is inconvenient and possibly counter-productive. Yet that is no proof that the strategy is flawed.

Macroeconomic vs microeconomic concerns

The charge that inflation targeting is responsible for the financial Crisis is not particularly convincing. To start with, in the US – where it all began – the Federal Reserve was not an inflation targeter. In other countries where housing bubbles were

allowed to grow unchecked, some central banks (the UK) practised inflation targeting but others (Ireland and Spain) did not. The charge may be extended to the abandonment of monetary targeting, if it was ever practised, or more generally to the discarding of monetary aggregates as lamented by Issing (2011). Indeed, one lesson of the Crisis is that credit booms and busts can be lethal, which means that credit growth needs to be carefully monitored. The implication, however, is not that when credit grows too fast interest rates ought to be raised as high as needed to break the trend. Rather it is that credit-growth sustainability is an additional microeconomic objective. Excessively rapid credit growth reflects market imperfections, including exploitation of information asymmetries by unscrupulous lenders, possibly driven by unrealistic expectations, otherwise known as irrational exuberance. Dealing with credit-market imperfections is a task for the supervision authorities, not for central banks because it calls for the use of a specific instrument or instruments. The Crisis is arguably a failure of supervision, not of monetary policy.

Yet, central banks cannot disregard financial-market regulation and supervision for three main reasons:

- First, because when dysfunctional financial markets alter the effectiveness of monetary policy, the so-called transmission channel.
- Second because financial crises often require that central banks intervene as lender of last resort, involving serious moral hazard and undermining the distinction between monetary and fiscal policy that lies at the heard of central-bank independence.
- Third, financial crises are among the worst shocks that can hit an economy and central banks have a vital interest in acting as whistleblowers and are therefore usually less conflicted than supervisory agencies.

Crisis management

Then comes the question of whether inflation targeting has had a negative impact on the management of the Crisis. To start with, the empirical evidence is the inflation targeting central banks outperformed the others (De Carvalho 2011). They acted faster, inflationary expectations remained better anchored around the target or pre-Crisis levels and did not face serious risk of deflation. This is not surprising once we recognise that inflation targeting, as practised, is flexible in the sense of Svensson (2009). The strategy recognises the shorter-run need to stabilise the output gap, while keeping inflation close to target in the longer run. Indeed, Taylor rules – which imperfectly capture the inflation-targeting strategy but can be seen as a rough approximation – suggested negative interest rates.

The challenge starts once the zero lower bound is reached. At that stage, standard monetary policy that relies on the interest-rate instrument becomes powerless. This is not a challenge to inflation targeting per se. The switch to nonstandard policies has occurred in many countries, irrespective of the strategy. As previously noted, inflation-targeting central banks achieved a better record as far anchoring inflationary expectations is concerned. Nor is this episode arguing for a return to monetary targeting. Central-bank money expansion has not translated into increases in the wider aggregates that are the instruments used in monetary targeting. In effect, standard monetary policy is suspended due to extraordinary circumstances, which bears no implication for the strategy used in normal times.

Exit

The next challenge will occur when the time comes to exit nonstandard policies. This may turn out to be a complex task, but it is hard to see why inflation targeting could be at a disadvantage. Inflation targeting will issue timely signals that 'exit time' has come, one of the difficulties that lie ahead; and it should be of help in anchoring expectations. The Fed's 'forward guidance' can be seen as a reminder that the expected output (or

unemployment) gap is part and parcel of flexible inflation targeting. Indeed, it is if anything less precise than the publication of expected future policy rates as is done by some inflation-targeting central banks. The challenges are likely to concentrate on financial market conditions and on the choice of instruments to absorb liquidity, issues that are orthogonal to the monetary-policy strategy. Recent suggestions (e.g. Woodford 2012) that nominal GDP-level targeting might usefully replace inflation targeting while the interest rate is at the zero lower bound aim at avoiding the currently valid concern that undershooting inflation (or nominal GDP) in one year is carried out into the next one. This is a feature of level targeting and could be applied to the price level.[1] More importantly, it is presented as a temporary departure from inflation – or price-level – targeting. Temporary suspensions of any rule, however, carries the risk of undermining the rule's credibility. At this stage, when standard monetary policy is ineffective, the benefit from switching strategy does not obviously outweigh the risk to the strategy's integrity.

Conclusion

Flexible inflation targeting has survived the test of a major financial crisis well. There is every reason to believe that the alternatives – monetary targeting, nominal-GDP targeting, no explicit strategy at all – would not have done a better job. The budding exit-strategy debate may point to interesting alternative temporary approaches but credibility is at risk. This does not mean that monetary policy has reached a level of perfection such that future changes are ruled out. In particular, central banks differ in many details of the strategy, especially regarding the nature of the mandate and communication and transparency.

The changes that have already occurred do not concern the strategy. They include the recognition that central banks are and will always be lenders in last resort and

1 Combining output and real GDP, however, introduces the very serious risk of imprecisely estimating current and future potential GDP.

that they cannot disregard financial stability. The latter calls for instruments such as independent micro-financial supervision and adequate resolution procedures, as well as macro-financial supervision. The role of central banks in these areas remains to be fully thought through and experimented with.

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Central banking after the Crisis: Challenges for the ECB

Huw Pill
Goldman Sachs

The global and Eurozone crises differ. This column discusses how these differences throw up particular challenges for the ECB. Faced with dysfunctional financial markets and lacking a fiscal counterparty, the ECB has been progressively drawn into using its fiscal capacity proactively. However, each use undermines the credibility of attempts to limit recourse to that capacity in the future. Returning to the conventional allocation of liquidity problems to central banks and solvency problems to governments will be difficult.

Financial and sovereign crises in Europe have left the ECB facing three inter-related challenges (Shambaugh 2012):[1]

- A large and stubborn shortfall in aggregate demand.
- Segmented euro financial markets that impair the transmission of monetary policy to the periphery.
- Limited scope for further conventional monetary easing due to the zero lower bound on interest rates.

Many of these challenges are familiar in other parts of the world; a number are specific to Europe. Two idiosyncratic elements stand out.

1 See Pill and Smets (2013) for more detailed analysis.

Financial-market dysfunctionality and institutional lacunae

First, due to successive sovereign-debt crises starting with Greece in 2010, financial market dysfunctionality was both more profound and more prolonged in the Eurozone than elsewhere. Since late 2009, financial markets have been reasonably functional in the US and the UK, but they have been dysfunctional in the Eurozone since early 2010.

The reasons for the financial-market dysfunctionality are known:

- With concerns about fiscal sustainability and euro breakup growing, capital fled the periphery.
- Banks, as well as sovereigns, were unable to obtain funding as euro markets segmented along national lines.
- Credit creation in bank-centric peripheral financial systems ceased, and the financial sector seized up.

Second, the Eurozone suffered from institutional lacunae on the fiscal side. While the Federal Reserve and Bank of England faced cooperative and functional national treasuries, the ECB had no natural fiscal or regulatory counterpart.

- At the national level, fiscal capacity in the most severely affected peripheral countries was exhausted.

The poor – in some cases, catastrophic – state of public finances implied that governments lacked the resources to solve or contain difficulties arising in the financial sector.

- At the EZ-wide level, the ECB faced a disparate and ill-coordinated set of national finance ministries and bank regulators.

Many were unwilling and/or unable to adopt a Eurozone approach that internalised the significant cross-border externalities created by spillovers and contagion.

Due to these asymmetries, Eurozone authorities faced challenges that their Anglo-Saxon colleagues did not:

- They had to re-establish market functioning rather than simply engineer monetary policy easing to sustain demand.
- The burden of meeting this challenge fell to the ECB to a greater extent than it did to central banks in other advanced economies.

The ECB was the only functioning Eurozone institution with the autonomy, flexibility and financial resources to act effectively.

The grey area between liquidity and solvency: Conventional wisdom

There is always a grey area between liquidity and solvency problems, but conventional wisdom drew a sharp distinction in allocation of these problems.

- Central banks should be in charge of liquidly problems.

Central banks can create unlimited liquidity, so they are uniquely placed to deal with liquidity crises.

- Fiscal authorities should be in charge of solvency problems.

Restructuring insolvent banks and/or sovereigns is essentially an exercise in distributing unavoidable (and potentially very large) losses. Independent and unelected central bankers are ill-suited to taking fiscal decisions with such significant distributional consequences; they have no mandate to do so.

The conventional wisdom is continuously pushed by a well-known incentive problem. Central banks have access to fiscal resources (seignorage) that might be used to deal with solvency issues. The resources are limited, however. A central bank that exceeds its fiscal capacity runs the risk of undermining its price stability mandate.[2] To manage these incentive problems, normal central-bank practice has been to refrain from directing seignorage on a discretionary basis in this way. In the Eurozone, these norms

2 See Durré and Pill 2010, Pill 2011.

took an institutionalised form in the Lisbon Treaty's prohibition of monetary financing (Article 123).

Crisis-testing the conventional wisdom

Experience during the financial Crisis has tested this established thinking. Looking forward, two questions arise:

- Can central banks re-establish the pre-Crisis conventional-wisdom regime?
- Is a new doctrine required to govern the quasi-fiscal activities of central banks?

The Crisis has created a rationale for a more activist central-bank response to financial crises.[3] Here several points must be kept in mind.

First, distinguishing liquidity and solvency problems is difficult in real time, but markets allow no time for procrastination. Second, in the context of multiple equilibria and self-fulfilling prophecies, liquidity problems can morph into a solvency problem (and vice versa). As a consequence, central-bank action can work by selecting among equilibria. For example, sufficiently generous liquidity provision can delete an equilibrium where rollover risk triggers a solvency problem. Central-bank action can determine whether it faces a liquidity or a solvency problem.

Finally, other actors respond to central bank actions, so the central bank's efforts to select equilibrium may not be definitive. For example, governments or banks with liquidity guarantees may act in ways that ultimately amplify solvency problems. The risk therefore is that central banks' activism can exacerbate the underlying problems and/or create new ones, especially over longer horizons, by accommodating unsustainable bank and government behaviour.

3 For a discussion of ECB behaviour since the crisis, see Giannone et al 2012, and Lenza et al 2010.

EZ-Crisis challenges facing the ECB

The ECB's response to the Eurozone Crisis has been less effective than its response to the fall of Lehman's. A number of reasons account for this.

- Solvency concerns have been more important in the EZ Crisis than the Lehman's crisis.

With credit risk a larger concern, the grey area between liquidity and solvency is more difficult to navigate.

- Governments, not just banks, have been at the root of the tensions.

This throws up extra challenges, since managing moral hazard in the sovereign sector is more difficult. There is no supervisory system to close down a misbehaving government. Political mechanisms to establish conditionality have generally proved inadequate.

- Measures to address the EZ Crisis have, by their nature, important cross-border dimensions.

Dysfunctional Eurozone financial markets mean that support to banks takes on a more national hue than was the case with the immediate post-Lehman support.[4] Given the political structure of the Eurozone – as single currency for 17 distinct countries, each with their own electorates and tax bases – this cross-border element weakens the political support for central-bank action.

Where we stand and what is to be done

The current situation is marked by an excessive reliance on the ECB and its fiscal resources. Adding to this was the ECB's announcement of its Outright Monetary Transactions programme. This has helped to stabilise sovereign markets. But it does so by, in essence, casting sovereign-debt market tensions as a liquidity problem to be

4 Concerns expressed regarding the emergence of TARGET 2 balances over the post-2010 period testify to this.

solved with potentially unlimited support subject – subject, of course, to conditionality. Nevertheless, this has failed to reactivate and reintegrate private credit markets, hindering transmission of the very easy monetary-policy stance established by the ECB to the periphery where the stimulus stemming from that stance is most needed.

Efforts are underway to address the problems underlying this impasse. The important elements of this process are:

- Establishing a banking union.
- Deepening risk sharing; and
- Improving economic governance at the Eurozone level.

These long-term efforts are consistent with the view that a better functioning Eurozone will be able to avoid the excessive reliance on the ECB. And in turn, this will facilitate the re-establishment of a more limited role for the central bank, more in line with that envisaged in the Maastricht framework for the monetary union.

But what should be done in the meantime, when Europe faces growing macroeconomic difficulties in the periphery and a slow pace of deeper institutional reform?

One solution is for the ECB to pursue credit-easing schemes that amount to employing the central bank's fiscal resources to subsidise credit creation, as other central banks have done in different institutional settings. Arguably, the need for this is greater in the Eurozone, given the lack of fiscal resources in the countries that most improved credit supply and the absence of alternative EZ-wide mechanisms to finance that support.

This is no panacea. Using the ECB's fiscal capacity more proactively now undermines the credibility of attempts to limit recourse to that capacity in the future. As we have seen in the past, resolving such time-consistency problems lies at the heart of a central banker's job.

Author's note: The views expressed here are those of the author and do not necessarily represent those of the institutions with which he is affiliated.

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Challenges to inflation targeting after the Crisis

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The financial Crisis and the exceptional policies that central banks have used present inflation targeting with several challenges. This column discusses these challenges, arguing that by blurring the distinction between monetary and fiscal policy, central banks' independence, and thereby the principle of inflation targeting, has been compromised. By losing independence, central banks may lose credibility and therefore their anchor. There is thus a case for either redefining inflation targeting or changing the framework entirely.

The key idea of inflation targeting is public commitment to a fixed numerical target for inflation in the medium term. Commitment to such a target is consistent with many different paths of real and nominal variables and is consistent with policies which, in the short run, aim at stabilising output exploiting the inflation/output trade-off. In its broad definition, inflation targeting leaves room for much flexibility but, whatever the actual implementation and interpretation, the framework is intimately linked to the principle of central-bank independence. It is because they have to protect their independence that unelected central bankers need to act according to a clear mandate and follow a quantifiable and publicly announced target. This makes them accountable. Without accountability and transparent communication, independence would be hard to justify and would most likely be challenged.

Another characteristic of inflation targeting is separation between monetary policy and fiscal- and financial-stability objectives. However, while the separation from fiscal policy is an essential ingredient of independence and is therefore essential to the framework, it is less clear that the separation from financial stability is essential, as it

relates to the technical issue of the need for different instruments to deal with different objectives. An inflation-targeting central bank, provided that it acts independently, can use instruments other than the short-term interest rate to pursue financial-stability objectives that are not in contradiction with the inflation-target mandate.

In my view, the question of whether the Crisis has led to a challenge to inflation targeting is not the technical question of whether central banks can/should successfully pursue financial-stability goals as well as monetary-policy objectives if given additional tools than interest-rate setting. Rather, it is whether the types of policies which need to be pursued in prolonged periods of financial distress in order to stabilise economic activity produce 'collateral damage' which, essentially, puts at risk the principle of central-bank independence.

A challenge to central-bank independence

The financial Crisis and the exceptional policies which central banks have implemented to deal with it, by blurring the distinction between monetary and fiscal policy, have indeed challenged central banks' independence, and thereby the principle of inflation targeting. This is the most complex issue we face today when rethinking monetary policy. By losing independence, the central bank may lose credibility and therefore its anchor. In such a situation there is a case for either redefining inflation targeting or changing the framework.

This problem is perhaps more obvious in the case of the Eurozone. As a response to the banking crisis following Lehman, the ECB introduced the Long Term Refinancing Operations through which liquidity was provided to banks at satiation at a fixed rate and for up to one year. In 2012, the horizon of the Long Term Refinancing Operations was extended to up to three years. In a way this policy can be understood as the textbook reaction to a liquidity crisis: facing a drying up of liquidity, the central bank steps in by providing it in unlimited quantity against collateral. Aggressive action by the ECB to facilitate banks' funding is likely to have had a decisive role in preventing a meltdown

of the financial system, but, by acting through that channel on market rates, it also had macroeconomic effects. Indeed, empirical research shows that it did have small but significant effects on the real economy -- at least in the phase preceding the sovereign crisis (see Lenza, Pill and Reichlin 2010; and Giannone, Lenza, Pill and Reichlin 2012).

Although it is possible that the existence of a credible commitment to a medium term inflation target has made things easier in difficult times (albeit, something difficult to establish), the challenges of the day have demanded the use of new tools which have focused on 'market making' interventions in key segments of the financial market. This has been the case even when, as in the Eurozone, the lower bound was not binding (see Giannone, Lenza and Reichlin 2013 for evidence on this point). It suggests that the main problem has not been the fact that the policy interest rate had reached zero, but that its relation to key market rates had been broken thereby impairing the transmission mechanism in a situation where liquidity and solvency problems have been difficult to disentangle. The use of new tools is not in conflict with inflation targeting but had some consequences which have challenged the framework.

These policies have been effective, but have carried risks. These risks were already clear in 2009-2010 but they became obvious when the debt crisis exploded in 2011. Liquidity injection acted, in some cases, as a temporary relief for institutions which in fact were facing solvency problems. It is very hard to draw a line between liquidity and solvency problems in practice. But when a central bank becomes involved in dealing with solvency problems the line between monetary and fiscal policy becomes unclear. In the Eurozone, it became increasingly evident that the market was segmented, that some banks were not solvent and were being artificially kept alive. As the Eurozone Crisis deepened and cross border financial flows dried up, the interdependence between bank risk and sovereign risk became apparent and the ECB's provision of unlimited liquidity to banks located in the Eurozone periphery became similar to financing governments. The more recent phase of ECB policy, leading up to the so-called Outright Monetary Transactions is an even a clearer case of a policy which is hard to label. In this case the ECB announced that it will act as lender of last resort to achieve an objective which

it defines in terms of monetary policy but which has implications beyond that. The rationale for Outright Monetary Transactions, in ECB communication, is the presence of a wedge between the policy rate and market rates in the countries of the periphery where sovereign risk had affected the cost of funding for banks. In a monetary union part of that risk is associated with the possibility of that country exiting the euro, the so-called 'redenomination risk'. This has been the justification for ECB action and its communication to the effect that it is prepared to act to preserve the integrity of the euro. Obviously here also the distinction between monetary and fiscal interventions is hard to draw. In fact this difficulty can be seen in the controversial debate which preceded the announcement of Outright Monetary Transactions, in the ECB's reluctance to use this instrument, and in the introduction of conditions for the intervention in terms of budgetary policy and economic reform.

Perhaps the ECB would not have been led there if governments had done their part in dealing with solvency issues, as these are essentially fiscal. However, this may not be a helpful comment, as central banks will often find themselves in this situation when an economy is struggling to deal with a debt overhang. The debt overhang is indeed the key issue facing both monetary and fiscal policy after the Crisis: not only in the Eurozone but also in the UK, the US and Japan. In none of these jurisdictions has non-standard monetary policy acted explicitly to finance governments or failing banks but in all of them non-standard monetary policies have been conceived as tools designed to keep the economy alive in presence of a debt overhang.

Why is this a challenge for inflation targeting? There are two reasons.

- The first is the game of 'chicken' between central banks and governments;

Unable to deal with the fundamental causes of debt, government asks the central bank to keep both banks and sovereign alive in order to buy time. Independence is gone and the incentive structure is wrong.

- The second reason is the accumulation of credit risk in the central bank's balance sheet;

In the case of the Eurozone, where the debt problem of the periphery is likely to last, this credit risk on the ECB's balance sheet may eventually require printing money and generating inflation. With or without inflation the situation is one in which the central bank does not act independently and may lose that credibility, which is its fundamental anchor.

In such cases, a better alternative would be to explicitly recognise the fundamental connection between fiscal and monetary policy which is deliberately obscured in normal times but which surfaces when the economy faces a debt problem. This requires either tolerating higher inflation temporarily by redefining the notion of medium term in a very flexible interpretation of inflation targeting, or redefining the target and the communication associated with the policy designed to achieve it as recently done by the Federal Reserve (a version of this policy would be nominal GDP targeting). The essential goal is to preserve the anchor and the independence of the central bank to act even in recognition of the fiscal implications of its policies, not to preserve inflation targeting as we have known it in normal times. However, a key challenge in such situations is not to kill the incentives for governments to act on solvency issues.

References

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Fourteen world-renowned scholars, practitioners and market participants share their wisdom on central banking after the Crisis in this VoxEU.org eBook.

There was no coordination among authors, yet a surprising degree of consensus emerged:

- Crisis-linked innovations transformed inflation targeting; in a narrow sense, inflation targeting died with Lehman Brothers.
- Inflation targeting should continue to be refined, not replaced.
- Today's large central-bank asset positions open enormous pitfalls; great care is needed to avoid the slippery slope from monetary policy to fiscal policy – and a loss of central-bank independence.
- Inflation targeting has a key role to play in avoiding the pitfalls. Inflation targets and central bank independence are the conventional ways of keeping politicians away from the printing presses.

While not all authors would subscribe to all these points, there was enough agreement to think:

- Inflation targeting is alive and well; it has been revised, not rejected.
- It is needed now more than ever to keep expectations anchored while the advanced economies work their way through today's slow growth, rickety banks, and over-indebted public sectors.

With contributions from:

Jonathan Ashworth, Melanie Baker, Ryan Banerjee, Lorenzo Bini Smaghi, Ben Broadbent, Markus Brunnermeier, Stephen Cecchetti, Mohamed El-Erian, Jeffrey Frankel, Stefan Gerlach, Charles Goodhart, Boris Hofmann, Huw Pill, Adam Posen, Lucrezia Reichlin, Yuliy Sannikov, Michael Woodford, and Charles Wyplosz.

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