

Preventing deflation: the role of policy research

Remarks by Athanasios Orphanides, Governor of the Central Bank of Cyprus, at the International Research Forum on Monetary Policy conference, Federal Reserve Board

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Policy research at central banks - judiciously employed to distil the implications of theoretical knowledge, historical experience and empirical evidence for policy challenges - is a crucial component of good policy practice. By providing a solid analytical foundation for reaching and explaining policy decisions, policy research can be helpful even in ordinary times. Policy research proves particularly invaluable when it anticipates issues before they become too pressing, providing for better informed decisions when time for reflection may become short. And the payoff can be huge during crisis management episodes - better policy research means better odds against major policy mistakes.

Over the past two to three years, the global economy has experienced an episode as intense and as demanding for policy as any in the history of central banking. What appeared at first, in August 2007, to be a manageable turbulence in money and financial markets, evolved over a number of months into a global financial crisis reaching its climax in September 2008. By the end of 2008, the financial headwinds, coupled with a collapse in confidence, culminated in a dramatic drop in aggregate demand and world trade. The threat of a protracted deflationary slump loomed large, evoking comparisons with the Great Depression of the 1930s. Prompt and decisive policy action, including by the Federal Reserve (Fed) and the European Central Bank (ECB), was instrumental in averting the worst outcome. Although uncertainty remains, the world economy today seems to be on its way to recovery.

The conventional monetary policy response to a fall in aggregate demand is a reduction in nominal and real interest rates. But zero is effectively a lower bound on policy rates. Does this present a constraint on the conduct of monetary policy? Prior to the present episode, practical experience with near-zero policy rates had been quite limited in the central banking world and debates about the "liquidity trap" seemed too old-fashioned to occupy centre stage in modern-day academic research.

And yet, in the course of a few months following the climax of the crisis in September 2008, most major central banks around the world had driven overnight rates to near zero. Overnight rates remain at historic lows for a number of currencies, including the dollar and the euro. A key policy challenge during this episode has been the conduct of monetary policy when short-term interest rates are driven very close to zero. Fortunately, on this occasion, pertinent policy research conducted at policy institutions well in advance of this episode, provided a foundation that proved crucial in guiding monetary policy towards preventing a protracted deflationary slump.

I would like to take this opportunity to address the International Research Forum on Monetary Policy to revisit some of the pertinent work on the zero lower bound and relate it to the monetary policy response to the recent crisis. I will focus my attention on policy research and the policy environment at the Fed and the ECB, the two central banks that co-sponsor the Forum, as well as central banks about which I believe I have a comparative familiarity advantage. Before proceeding, I would like to note that the views I express are my own and do not necessarily reflect the views of my colleagues on the Governing Council of the European Central Bank.

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Paradoxically, characterising very low interest rates as a challenge is also a reflection of the very success that central banks around the industrialised world have had in achieving and maintaining an environment of price stability. Preserving price stability is the best contribution monetary policy can make to enhancing welfare. During the last few decades of the twentieth century, inflation was a constant challenge for many central banks around the world. The inflationary disease was gradually overcome by the end of the century. In the United States, CPI inflation fell from 5.6 percent per year in the 1980s to 3 percent in the 1990s, and to just 2.6 percent in the 2000s. Similarly in the euro area, HICP inflation fell from 5.3 percent in the 1980s to 2.6 percent in the 1990s and just 2.1 percent in the 2000s.

In an environment of price stability, with inflation being very low and, correspondingly, interest rates being low as well, reducing policy rates as a response to a slowdown in aggregate demand may bring them close to zero. This situation may lead to two logical mistakes, either one of which could potentially induce a policy error.

The first potential error can occur if an observer erroneously associates the level of nominal interest rates with the degree of policy ease. Certainly, in an economy with a steady and unchanging rate of inflation, higher nominal interest rates ought to reflect tighter monetary conditions, and lower ones easier conditions. Furthermore, in an environment where policy rates are usually considerably above zero, bringing short-term interest rates close to zero may be deemed extremely expansionary. And this could well be the case if the economy did not experience a deflationary impetus. But, of course, the degree of monetary policy ease should be associated with the level of real interest rates, not nominal interest rates. Near-zero policy rates that may be considerably expansionary in an economy with high inflation could be contractionary when inflation is too close to zero, or worse, when deflation has set in. In a deflationary economy, even zero rates can be contractionary. The error is one of misdiagnosis of the need for further policy easing.

The second potential error can occur if an observer erroneously associates the level of short-term interest rates alone with the degree of monetary policy ease. This error can occur, for example, if an overnight interest rate, such as the federal funds rate in the United States, or the eonia in the euro area, is viewed as a sufficient indicator of the monetary policy stance. When overnight rates approach zero it may appear that a central bank has "run out of ammunition": that is, it may appear that the central bank is powerless to stimulate the economy further with additional monetary policy easing. This error is one of misdiagnosis of the power for further policy ease.

An observer who mistakenly views overnight rates as sufficient indicators of monetary policy, and is therefore convinced that the central bank may "run out of ammunition" if it reduces overnight rates to zero in response to an adverse shock in aggregate demand, may suggest that policymakers should not reduce policy rates as much as needed when rates are already low in order not to exhaust their ammunition. This advice to policymakers, to "keep their powder dry", would only compound the error. Insufficient policy easing under the circumstances would risk a further deterioration in aggregate demand, and thus increase the risk of deflation.

But of course, overnight rates are not sufficient indicators of monetary policy. Monetary policy is also about the supply of money and the assets a central bank purchases when it injects high-powered money into the economy. Quantities do matter. Monetary policy decisions that change the size or composition of the central bank's balance sheet can

potentially influence various asset prices and the yield curve of government and private paper, even when the overnight interest rate does not move. This quantitative easing is the essence of unconventional monetary policy action central banks need to resort to, when short-term nominal interest rates approach zero. Thus, even if the zero bound on nominal interest rates short-circuits the conventional mechanism for inducing a monetary policy ease, it does not imply that monetary policy is ineffective when overnight rates reach zero and cannot be reduced further. Indeed, unconventional measures could be effectively introduced even while keeping overnight rates somewhat above zero. Monetary policy has the power to influence various asset prices and other interest rates even in an environment when the overnight interest rate remains unchanged.

However, typical models employed for the study of monetary policy, including many models commonly used by central banks, rely on such a stylised abstraction of the financial sector of the economy that one short-term interest suffices to determine all other interest rates and asset prices in the model economy, independent of other monetary policy actions. Even when longer-term interest rates appear in such models, they are determined from the expectations of short-term rates without any role for monetary quantitative easing to influence term or risk premia. In these models, absolute and relative quantities of money, reserves and central bank assets are, by assumption, irrelevant for determining the stance of monetary policy. To be sure, under ordinary circumstances, when interest rates are not close to zero, this abstraction may be sensible. The independent role of quantitative policy effects - beyond their influence on the policy rate - may be inconsequential when short rates are not close to zero and allowed to adjust with policy changes. Furthermore, in estimated policy models, it may be very difficult to separately identify the role of conventional and unconventional monetary policies, especially if the sample over which a model is estimated does not contain a sufficiently informative period near the zero bound. Under these circumstances, Occam's razor would guide the modeller to focus on conventional monetary policy. No wonder that central bank modellers often feel uneasy about assessing the quantitative impact of unconventional policies in their models!

The logical error of ruling out the power for further policy easing by unconventional means, stems either from the need for analytical oversimplification (in theoretical models) or the need for empirical oversimplification (in estimated models). Either way, once the limits of these simplifications are recognised, this logical error can be avoided. Crucially, the

considerable uncertainty regarding the precise degree of policy effectiveness associated with unconventional measures should not be misinterpreted as ineffectiveness.

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The Federal Reserve reached the zero bound on 16 December 2008, when it reduced its policy rate establishing a target range for the federal funds rate of 0 to 1/4 percent. According to the minutes of the Federal Open Market Committee (FOMC), a part of that meeting's discussion related to the zero lower bound on nominal interest rates. This was not the first time such a discussion took place, however. Indeed, according to the FOMC's records, related discussions took place at its June 2003 meeting, before that at its January 2002 meeting, and even earlier at its June/July 1998 meeting.

On each occasion, the discussion benefited from briefings on the topic drawing on prior policy research. Indeed, work on this topic at the Federal Reserve started as early as 1993 with a pair of working papers: A quantitative exercise by Jeff Fuhrer and Brian Madigan (1994) that illustrated how constraining the zero bound could prove to be for conventional policy easing during a recession and a paper by David Lebow (1993) examining the unconventional policies that the Fed could pursue once the policy rate were driven to zero⁽¹⁾. A large number of research projects followed. Some focused on quantitative investigations, based on estimated models of the US economy, assessing the deterioration in economic performance corresponding to different steady state rates of inflation associated with the zero bound, and the effectiveness of alternative interest rate policy strategies when only conventional monetary policy was considered. Other studies examined how unconventional policies could be employed and the role of uncertainty associated with the effectiveness of unconventional policies. The range of unconventional policies available to the Fed when considering the legal and institutional framework in place was also studied. This range was very broad, varying from the use of derivative instruments to topics of research involving pertinent historical experience on policies, including that of the United States during the 1930s and Japan during the 1990s. Yet another topic was the potential implications of very low rates on specific financial markets and instruments⁽²⁾.

On 30 June 1998, when the initial FOMC discussion took place, the zero bound was not a pressing issue. The federal funds target rate was 5 1/2 percent. There were two motivating factors. The first was the desire to focus attention on how low inflation should be for the FOMC to consider that it had reached price stability. The second was the realisation that monetary policy in Japan during the 1990s appeared to have been influenced, perhaps adversely, by the zero bound. Together with the adverse outcomes experienced in the United States during the 1930s - when the Fed had faced near zero rates - it appeared pertinent to study the issue. This was an occasion of policy research anticipating an issue before it became too pressing.

Don Kohn, who at the time was the Director of the Monetary Affairs Division at the Board, briefed the Committee. After explaining the difficulty with conventional monetary policy easing at the zero bound, he summarised the role of unconventional policies: "Unorthodox monetary policy may work, but it obviously would have to be through channels other than reducing short-term interest rates since they are already at zero. Those channels might include reducing expected short-term rates by tilting down long-term rates, or reducing term or risk premiums in long-term rates. The latter also would tend to reduce long-term rates and exchange rates as well" (Federal Reserve Board, 1998, p.90). Finally, he drew lessons from the historical experience on how the problem might likely arise: "I think one of the lessons from the United States in the 1930s and Japan in the 1990s is that problems have tended to follow sharp breaks in asset prices coupled with sluggish monetary responses because the authorities were concerned about re-igniting asset price increases or inflation and with destabilizing fiscal policy because the fiscal authorities were focused on budget balance or long-term surplus" (pp. 90-91).

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The euro had yet to be introduced in 1998, when the first FOMC discussion on the zero lower bound took place. But the implications of the zero bound were contemplated when in one of its first meetings, on 13 October 1998, the Governing Council discussed how it should interpret price stability, the primary mandate of the ECB. On the one hand, the Governing Council wished to delineate the limit of increases in the measured level of prices deemed consistent with price stability. On the other, it wished to protect against the risk of deflation.

The Governing Council adopted the following definition: "Price stability shall be defined as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%" (European Central Bank, 1998). As Otmar Issing explained shortly after: "In this way, the definition takes into account the threats posed by ongoing deflation in combination with nominal rigidities in the real economy. While periodic and transitory falls in the price level may be quite normal, and should not give rise to major concerns, a prolonged deflation is clearly inconsistent with any meaningful definition of price stability. Moreover, since nominal interest rates cannot fall below zero, the private expectation of a sustained fall in the price level may render the interest rate policy of the central bank rather ineffective. All that remains is outright purchases of assets - both foreign and domestic" (Issing, 1998).

Issues pertaining to the zero bound on nominal interest rates were subsequently discussed at the "First ECB Central Banking Conference in November 2000 (see in particular the paper by Jose Vinals, 2000, and the related discussion). And a number of research projects were completed and published in the ECB's working paper series, including quantitative investigations based estimated models of the euro area⁽³⁾.

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The pertinent policy research was influential during the thorough evaluation of the ECB's monetary policy strategy in 2003. With regard to price stability, the Governing Council decided to clarify its definition. While it confirmed its definition of price stability as year-on-year increases in the HICP for the euro area of below 2 percent, it noted that: "in the pursuit of price stability it will aim to maintain inflation rates close to 2% over the medium term." The Governing Council proceeded to explain: "This clarification underlines the ECB's commitment to provide a sufficient safety margin to guard against the risks of deflation" (European Central Bank, 2003).

In a press seminar on the evaluation of the ECB's monetary policy strategy that followed the announcement, Otmar Issing explained that without this safety margin, the zero lower bound on nominal interest rates posed greater deflation risks (Issing, 2003a). Later, he explained: "The major concern is the fact that monetary policy may become less effective, if interest rate management by the central bank is constrained by a liquidity trap or a 'zero bound' problem" (Issing, 2003b). The ECB's clarification was important in robustifying the

protection against deflation for two reasons. First, it clarified the size of the safety margin sought for HICP inflation, close to 2 percent. This was an important preventive measure. Prior to this clarification, lower margins, for example ½ percent or 1 percent, could not be ruled out as they were not inconsistent with the definition of price stability without the clarification offered in 2003. Second, the clarification presented a more precise focal point for anchoring inflation expectations by households and businesses. This was a measure that enhanced the effectiveness of the response of monetary policy, should a deflationary shock to aggregate demand materialise. The layer of protection against deflation offered by the clarification of the definition of price stability became evident during the recent crisis. Medium-to-long-term inflation expectations remained remarkably well-anchored during the episode.

The value of a clear focal point for the formation of inflation expectations was also appreciated by the Fed, leading to FOMC discussions regarding the establishment of an explicit numerical objective for inflation. The FOMC discussed the pertinent issues during a conference call on 16 January 2009. The minutes note that: "Some indicated that the establishment of a numerical inflation objective could be particularly helpful under present circumstances in forestalling an unwelcome decline in longer-run inflation expectations and hence in contributing to economic recovery while also assuring the public that actions taken to counter economic weakness will not lead to high inflation over the longer-run" (Federal Reserve Board, 2009, p.16).

While the FOMC decided against establishing such an explicit numerical objective, it proceeded to supplement its members' projections, including on inflation, with projections for the "longer term," thereby providing a helpful indication of members' interpretations of price stability. The central tendency of the responses was just below or equal to 2 percent.

Overall, the policy research on the zero bound at the Fed and the ECB reached similar conclusions. This reflected, in part, the close cooperation between researchers from the two institutions. First, focusing on conventional monetary policy, the research confirmed that the zero bound could raise the odds of adverse deflationary slumps, if central banks aimed to achieve average inflation rates that were too low. Aiming to achieve a measured inflation rate close to 2 percent would yield better macroeconomic stability overall. Second, unconventional policy could be employed to engineer additional monetary policy ease, when this was necessary. Third, policy communication acquired an elevated role during turbulent

times. In the face of a deflationary shock, explaining the central bank's commitment to price stability could influence policy expectations in a stabilising manner. Communication became more important when short-term interest rates could no longer adequately reflect additional policy easing. Fourth, the research reaffirmed the stabilising role of well-anchored inflation expectations. Fifth, to better mitigate deflationary risks, aggressive conventional policy easing in advance of zero was advisable. Arguments for "keeping your powder dry" or for "saving your ammunition," were not supported by the research.

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The decisive policy easing by the Fed and the ECB during the crisis and the adoption of unconventional measures by the two central banks were crucial in countering the threat of deflation in the current episode. Differences in the institutional structure of the two central banks as well as differences in the relative role of banks and non-banking institutions in the US and euro area, has meant that the unconventional policy measures adopted differed. Nonetheless, the end result was appropriate and effective policy easing on both sides of the Atlantic.

A pertinent question is how this response compares to the handling of earlier episodes when policymakers faced a similar challenge. Such a comparison is not available for the euro area, since this was the first such episode in its history. A historical comparison could be attempted for the Fed that also faced the zero bound during the 1930s, and research results have already emerged. (See, for example, Bordo and James, 2009, Reinhart and Reinhart, 2009, and Wheelock, 2010).

A comparative analysis of the Federal Reserve's policy responses to the current episode relative to that following the October 1929 stock market crash, reveals striking differences. With respect to conventional easing, the Fed reduced interest rates more slowly and in a rather erratic manner following the 1929 crash, which in the face of declining prices, implied significant increases in real interest rates. Most striking, however, is the difference in the Fed's policy response in the use of unconventional monetary measures. In the current episode, the Fed promptly expanded the monetary base and the size the Fed's balance sheet. By contrast, in the early 1930s quantitative easing was not pursued.

Indeed, the record suggests that a lack of understanding regarding the power of quantitative easing misled the Fed into inaction. Perceptions that the economy was in a "liquidity trap" that made monetary policy ineffective were, unfortunately, not uncommon. However, the evidence could not support the view that the economy was in a liquidity trap (Brunner and Meltzer, 1968). A spectrum of longer-term interest rates remained well above zero throughout the 1930s and Federal Reserve actions did eventually bring these longer rates down, when quantitative easing began. The real problem was not that Fed policy didn't work, but rather that the Fed was unwilling to use the tools that it had to conduct expansionary monetary policy because it feared a resurgence of asset market speculation and inflation.

The Federal Reserve in the early 1930s misdiagnosed both the need for additional policy easing as well as the power of the Fed to engineer it. These mistakes were not repeated. In the current episode, aggressive unconventional policies, including the provision of massive lending to distressed financial institutions, allowed for a rapid expansion in the monetary base. This unprecedented expansion was reflected in a large increase in the Fed's balance sheet. The size of the Fed's balance sheet more than doubled. By contrast, the Fed's balance sheet contracted in the crucial period following the stock market crash in October 1929. Indeed, it took around three years for the absolute level of the Fed balance sheet to return to its October 1929 level.

Milton Friedman and Anna Schwartz (1963) had already recounted the Fed's errors during the Great Depression, greatly influencing a generation of subsequent research. At a conference honouring Milton Friedman's ninetieth birthday, on 8 November 2002, then Governor Ben Bernanke remarked "I would like to say to Milton and Anna: Regarding the Great Depression. You're right we did it. We're sorry. But thanks to you, we won't do it again". With the benefit of pertinent policy research, the Fed kept this promise.

I would like to conclude by recalling Otmar Issing's (2004) editorial introduction of the first ECB *Research Bulletin*. Issing highlighted the value of policy research in providing a sound conceptual and empirical basis for policy-making, particularly for ensuring the central banks' ability to deliver price stability. He argued that trust, confidence and credibility in a central bank can never be taken for granted and that they must be continuously defended by sound

analysis and communication of the rationale of the central bank's actions. The recent experience affirms, I believe, how valuable policy research can be towards fulfilling this task, especially during challenging times.

ENDNOTES:

- (1) When available, I cite the earliest versions of papers that appeared in a working paper series.
- (2) Most but not all of this work eventually appeared in one of the Fed's working paper series. These include: Ahearne et al (2002), Bernanke, Reinhart and Sack (2004), Clouse et al (2000), Johnson, Small and Tryon (1999), Kimura and Small (2004), Orphanides and Wieland (1998,1999) Orphanides (2004), Reifschneider and Williams (1999), Small and Clouse (2004) and Tinsley (1999). Studies that did not appear as working papers include: Chaurushiya and Kuttner (2003), Clouse, Hilton and Kuttner (2003) and Hanes (2006). In 1999, the Federal Reserve System also organised a conference on the theme of monetary policy in a low-inflation environment that brought together academics and central bank researchers. The conference proceedings were published in a journal coedited by Jeff Fuhrer and Mark Sniderman (2000).
- (3) These include Adam and Billi (2004a,b), Coenen (2003), Coenen and Wieland (2003,2004), Klaefferling and Perez (2003) and Yates (2002).

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