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## **Inflation targets reconsidered: comments on Paul Krugman**

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*Paul Krugman has written a very timely paper. It discusses an old issue that has become very relevant again. My comments address two questions. First, should inflation targeting be reconsidered? Here my answer is a clear and resounding yes. Inflation targeting has performed very well in the fight against inflation and in stabilising inflation expectations. But now, even leaving issues of financial stability aside, monetary policy is faced with different challenges. Second, which features of the inflation targeting framework should be changed? Here I argue that other aspects of the framework are more important than the numerical value of the target. In addressing these questions, I review Paul Krugman's arguments, agreeing with many but not all of them.*

## **1 The economics and politics of a low inflation trap**

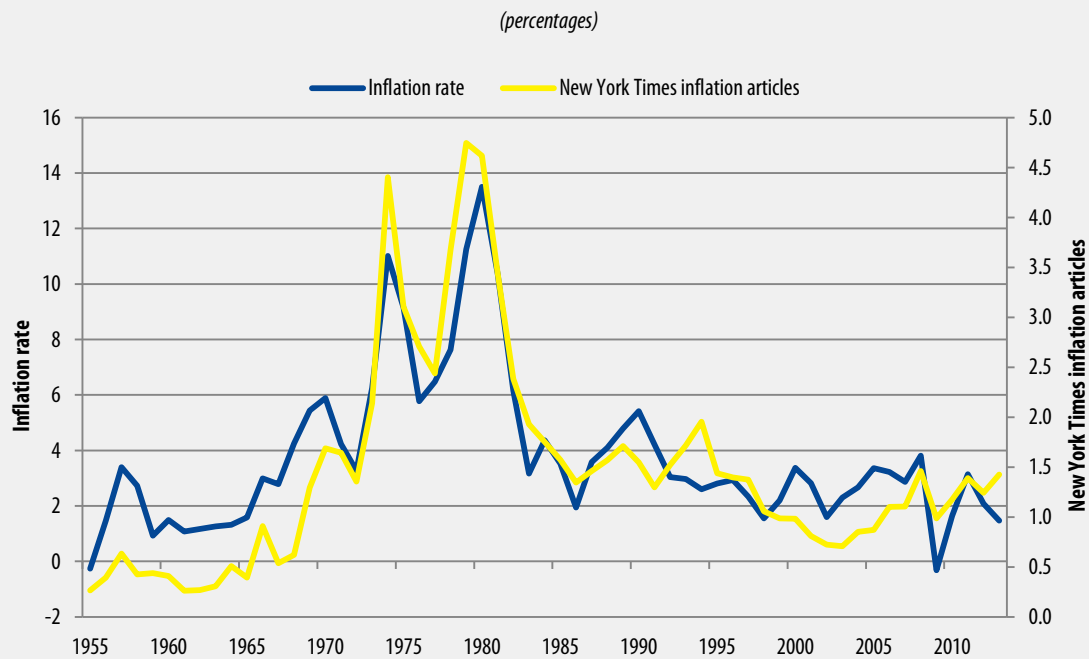
Krugman's last argument for revisiting inflation targets is what he calls the "low inflation trap". This argument is very important and convincing. There are two aspects to consider. One is the economics of the low inflation trap. It is not a novel point (see Krugman, 1998), but it deserves to be stressed and repeated because sometimes it is not well understood. We are used to thinking that the traditional credibility problem in monetary policy arises because expected inflation is too high and the central bank lacks the credibility to bring it down. In this traditional setting, higher expected inflation shifts the aggregate supply curve upwards and to the left, inducing lower output and higher actual inflation.

As explained for instance by Eggertsson and Giannoni (2013), however, when the nominal interest rate is at the zero lower bound, output is typically demand-determined and expected inflation is too low rather than too high. Raising future expected inflation here helps, because it shifts aggregate demand to the right, leading to higher output and possibly higher inflation. Aggregate supply may shift up as well with expected inflation, but this does not eliminate the positive output effect of a higher aggregate demand, because output is demand-determined.

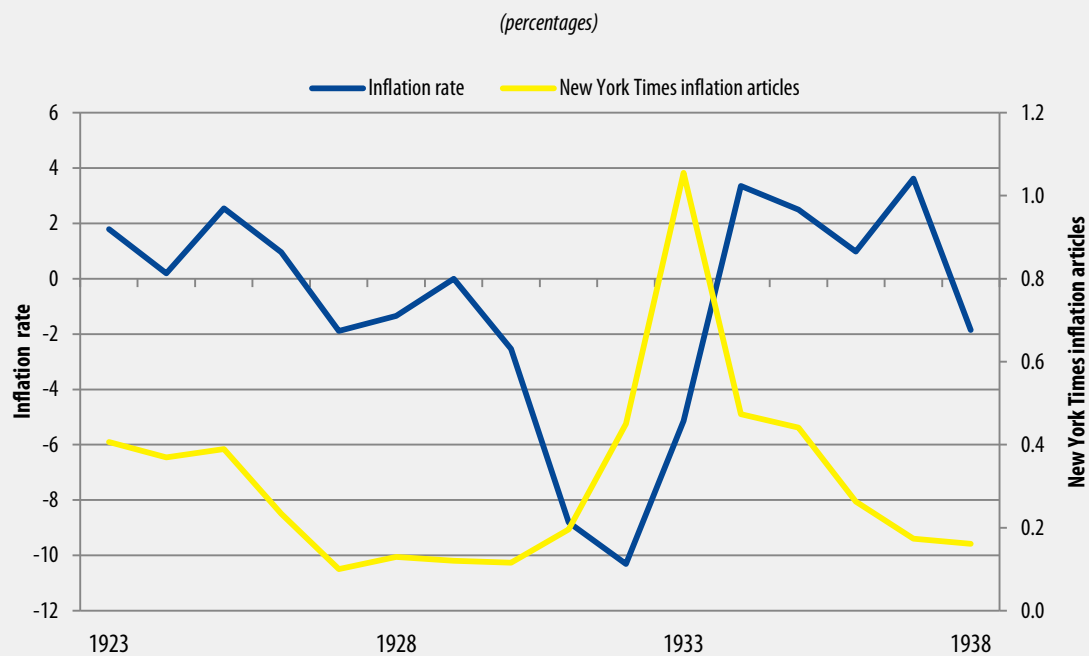
The surge in future expected inflation is ex post suboptimal, however, because once the zero lower bound is no longer a binding constraint, the central bank would prefer inflation to remain low. Hence here too we have a credibility problem, operating in reverse: the economy needs a higher future expected inflation, but the central bank does not have the credibility to deliver it. Simulations of the traditional new Keynesian model suggest that this credibility problem can be quantitatively relevant. If monetary policy operates under commitment, the most severe implications of the zero lower bound on the nominal interest rate can be escaped quite easily. But under discretion, the threat of a liquidity trap is more worrisome – see for instance Coibion et al. (2012).

There is also a political side to the low inflation trap. As Krugman has stressed, the costs of excessively low inflation are mainly indirect. They operate through general equilibrium effects and by constraining what monetary policy can do to stimulate aggregate demand. It is plausible that public opinion is not fully aware of these costs, resulting in complacency by policy-makers. To substantiate this point, Figure 1 depicts the US inflation rate, together with the percentage of New York Times articles that contain the word inflation, in the post-war and in the inter-war periods. When inflation reaches 5%-6%, it clearly becomes an issue in the press. But an inflation rate around zero, or as low as -2% or -3%, does not seem to attract the attention of the media, despite its possibly very high costs on the economy through a highly constrained monetary policy.

**Figure 1a – Inflation and the press in the post-war period (1955-2013)**



**Figure 1b – Inflation and the press in the inter-war period (1923-1938)**



Sources: BLS and New York Times Archive.

Notes: The blue line shows the variation in annual CPI for All Urban Consumers. The yellow line records the number of New York Times articles containing the word "inflation" over the total number of New York Times articles in a given year.

In the euro area, there is an additional problem that makes the politics of the low inflation trap even more relevant. Because of the large heterogeneity in the macroeconomic situation of different euro area

countries, conflicting national interests reverberate inside the ECB Governing Council. Since often monetary policy decisions are taken by consensus or by large majorities, this creates a dangerous status quo bias in monetary policy.

## 2 Secular stagnation?

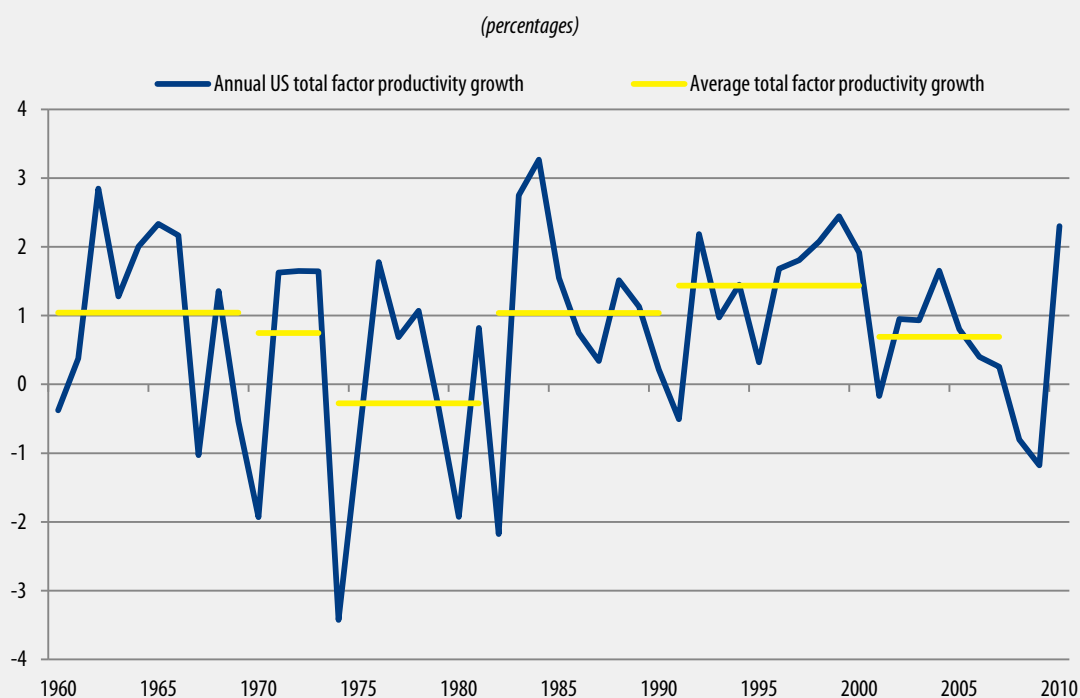
Next, consider the idea that there is a threat of secular stagnation, and it was already apparent before the Great Recession. This is an important issue, because secular stagnation implies a lower natural real rate of interest (i.e. the interest rate at which the economy operates close to full employment, given existing microeconomic distortions). If so, the zero lower bound is likely to remain an important threat for future monetary policy.

Secular stagnation is an interesting conjecture that certainly deserves attention. But I think it is too early for this to provide a sound basis for redesigning our monetary institutions. Consider first the argument that there is secular stagnation in the US economy. In standard new Keynesian models, the equilibrium real natural rate of interest is an increasing function of the rate of growth of total factor productivity (TFP). Hence, if indeed there were signs of secular stagnation already before the financial crisis, we should have observed a pronounced slowdown in TFP growth. But this is not the case. Figure 2 depicts the growth of TFP in the United States; the horizontal lines correspond to the business cycle averages (measured from the first year in recession to the last year before the following recession).<sup>1</sup> There is a slight deceleration of TFP growth between 2001 and 2007, but this is mainly because TFP growth was unusually high in the previous decade, and TFP growth before the recent financial crisis is not out of line with the post-war experience.

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<sup>1</sup> A year is considered in recession if it has more than six months spent in recession, or if it starts in recession and the previous year had some (but less than six) months in recession.

**Figure 2 – Annual US total factor productivity growth and business cycles**



Sources: FRED, NBER Recession Indicators and Groningen database.

Notes: TFP at constant national prices for the United States. Horizontal lines are business cycle averages. Business cycles run from the first year in a recession to the last year before the following recession. A year is considered in recession if it has more than six months spent in recession, or if it starts in recession and the previous year had some (but less than six) months in recession; monthly recession data from NBER Recession Indicators for the United States, as reported in FRED.

Given world integration, perhaps secular stagnation is a global phenomenon. Indeed, in an integrated world the equilibrium real interest rate is determined by global forces, and there is evidence that real interest rates have declined throughout the world (see IMF, 2014). This is unlikely to be due to a slowdown in investment, however. The IMF points out that, since the beginning of the new millennium, the slowdown in investment in advanced economies has been more than offset by the acceleration of investment in emerging markets, so that global investment has actually increased as a fraction of world GDP. Moreover, up to the recent financial crisis, the rate of return on capital in advanced economies remained high by historical standards (cf. IMF, 2014).<sup>2</sup> Hence, if equilibrium real interest rates have declined, this must be because of an increase in global savings even larger than the increase in global investments. This is the celebrated global savings glut hypothesis, on which much has been written.

The question is how lasting this increase in global savings is likely to be. I am sceptical that it is likely to be very long lasting. Part of the increase in savings by emerging countries reflects their reaction to the Asian financial crisis of the 1990s, which increased the demand of their monetary authorities for foreign reserves. But this increase in foreign reserves cannot go on forever. Moreover, the surge in savings by emerging economies is also explained by an acceleration in their growth rate. If growth were to slow down, this is likely to be associated with a lower savings rate. China in particular has very low consumption relative to GDP, and sooner or later the Chinese savings rate will drop.

<sup>2</sup> The rate of return on capital is measured alternatively by the growth rate of profits or by profit relative to the capital stock. Profits are measured as corporate gross operational surplus.

Finally, it is not obvious that population aging in advanced economies is about to induce a decline in the natural rate of interest. This might be a steady state effect, but we are still not in steady state. Current demographic trends largely reflect an increase in life expectancy: we are living much longer than in the past. But it is not at all obvious that this change was fully anticipated decades ago. Moreover, retirement age has not fully adapted to the higher life expectancy. Hence, at least during a possibly long transition phase, population aging is associated with dissavings by a larger population of retirees not fully compensated by the higher savings of younger cohorts. Indeed, attempts to estimate how demographic trends have an impact on asset prices in advanced economies do not suggest an imminent decline in equilibrium interest rate as a result of demography (cf. Favero et al., 2013).

Thus, I doubt that the conjecture of secular stagnation has strong implications for future monetary policy. Nevertheless, there are several other reasons to believe that the zero bound on nominal interest rates will remain a very relevant concern.

First, recent estimates suggest that the natural real rate of interest in the US economy was below -4% in the last three recessions, and not just in the latest one. The main difference between the latest Great Recession and the previous two business cycle troughs is not by how much the natural interest rate fell, but rather that in the latest episode the natural interest rate remained so low for so long (cf. Cúrdia et al., 2014; Barsky et al., 2014). But with expected inflation at 2%, a negative real rate of -4% is not attainable.

Second, the debt overhang associated with banking and financial crises typically implies a very slow recovery. Reinhart and Rogoff (2014) point out that, in a sample of over 100 episodes of financial crisis, on average it takes more than eight years to return to the pre-recovery peak of GDP per capita (and obviously it would take much longer to return to the pre-crisis upward sloping trend). Given the constraints on aggregate demand management, it is already clear that economic recovery in southern Europe will take much longer than eight years.

Third, and perhaps most important of all, a major lesson of the Great Recession is that modern economies are highly vulnerable to sudden stops and financial crises. To avoid the devastating effects of these crises, monetary policy should have adequate room to reduce interest rates.

For all these reasons, and even discarding the hypothesis of secular stagnation, I agree with Paul Krugman's main conclusion. The zero lower bound on interest rates will remain a major concern in the conduct of future monetary policy, much more so than previously realised. It would be surprising if this concern did not have relevant implications for the design of monetary institutions. This is the issue to which I turn next.

### **3 Inflation targeting reconsidered**

Inflation targeting is practiced in different ways in different countries. But almost all inflation targeting frameworks have a combination of the following four features.

First, the nominal anchor is the rate of inflation (rather than the price level path, or the path of nominal income).

Second, whenever there is a trade-off between different goals, inflation often receives a disproportionate weight compared to output stabilisation. This is Rogoff's (1985) "conservative" central banker idea to

overcome time inconsistency and gain credibility. In the euro area, price stability is the almost exclusive goal of the ECB.

Third, the central bank loss function implicitly assigns a greater penalty for upwards deviations of inflation from its target than for downwards deviations. This is the idea of a linear tax on inflation implied by the optimal contract literature applied to central banking (cf. Walsh, 1995; Persson and Tabellini, 1993), and it is consistent with the communication of many inflation-targeting central banks at least before the Great Recession.

Fourth, as stressed by Paul Krugman, the numerical goal for inflation is generally 2%.

I now discuss each of these features.

### 3.1 Price level vs inflation targeting

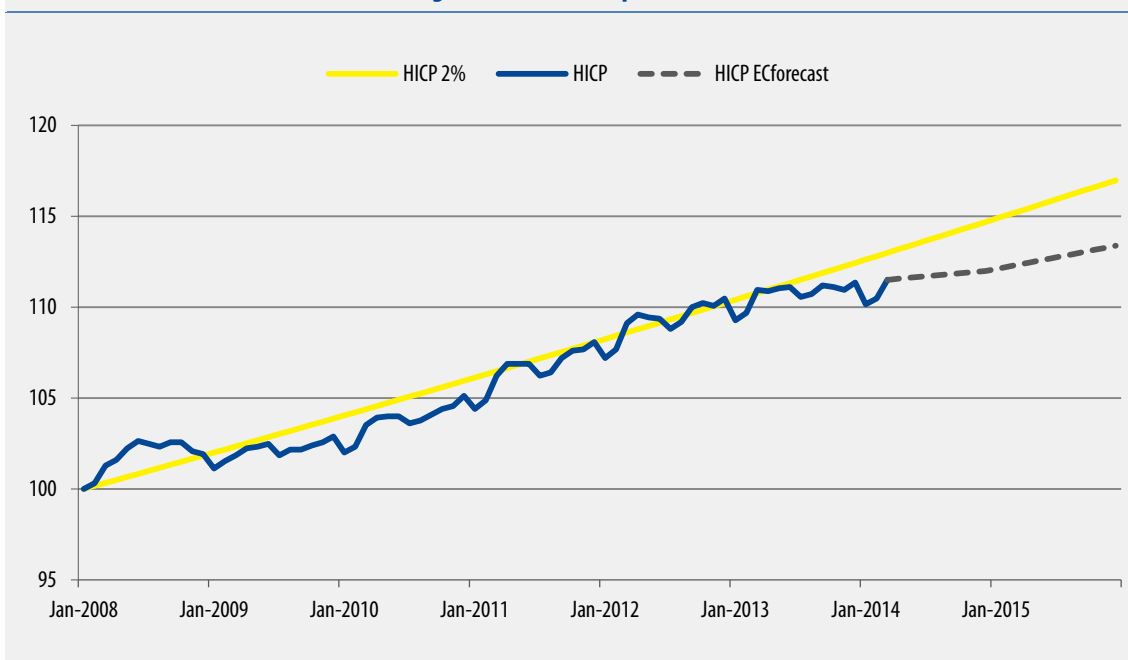
Consider first the choice of a nominal anchor, and in particular the issue of inflation vs price level targeting. It is not a novel issue, but it has become relevant again. As explained above, one way to relax the zero bound on nominal interest rates is to raise expected inflation. This is done automatically if the central bank targets a path for the price level rather than the rate of inflation (cf. Svensson, 2001; Eggertson and Woodford; 2003). Hence, under the threat of the zero lower bound, a price level path is a much better nominal anchor than inflation.

The relevance of this simple point for the euro area is illustrated in Figure 3. From the onset of the crisis in 2008 until late 2012, euro area inflation tracked the 2% goal remarkably well, and the price level remained very close to the 2% growth path corresponding to the straight line in Figure 3. By the end of 2012 and onwards, however, inflation began to undershoot the 2% goal. As a result, according to the ECB's own forecasts illustrated as the dotted line in Figure 3, by the end of 2015 the euro area price level will be about 3% below the price level path corresponding to 2% inflation.<sup>3</sup> If the ECB continues to target inflation at 2%, this gap will not be filled, and the price level will eventually resume its growth around a 2% path that will remain forever below the original one. With a price level target, instead, the ECB would want the price level to return towards the original 2% path. Of course, this would imply a temporarily higher inflation rate, and this is precisely what is needed now to relax the zero lower bound.

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<sup>3</sup> The ECB forecasts a yearly inflation rate, rather than monthly variations. In drawing Figure 3, I assumed a uniform monthly rate of inflation corresponding to the ECB yearly forecasts during the relevant forecast period.

Figure 3 – Euro area price index



Sources: Eurostat and the ECB's Monthly Bulletin from June 2014.

Notes: Monthly Harmonised Index of Consumer Prices (HICP) for all items in the euro area (considering countries using the euro in any given year) from Eurostat. HICP 2% shows the theoretical path of inflation growing at an average annual rate of 2%. HICP forecast is the hypothetical future path of inflation growing at the annual rate forecasted by the ECB for the euro area for the years 2014-2015, as formulated in the Monthly Bulletin of June 2014.

Note that a target expressed as a price level path is equivalent to a corresponding inflation target over an infinite horizon (except that it can be monitored in continuous time). The ECB often stresses that its 2% inflation target is a medium-run goal. Hence the logic of a price level target is consistent with the ECB's own interpretation of its price stability mandate. In the current circumstances, targeting medium-run inflation calls for a rate of inflation above 2% in the future. The overshoot of future inflation above 2% should be larger and longer the more current and past inflation undershoots 2%, and the closer we are to full price level targeting (i.e. the longer the medium run in the ECB's own definition of price stability is). Announcing that monetary policy aims for a future inflation above 2% would be stabilising in the current circumstances, indirectly through a lower real interest rate, and directly through a likely exchange rate devaluation. By refraining from this kind of communication, the ECB is making its own task harder than necessary.

A common objection to price level targeting is that it forces a more aggressive monetary policy response to supply shocks, because upwards deviations in prices have to be fully offset, and this may increase output volatility. There are several responses to this objection. First, supply shocks are relatively infrequent in advanced and diversified economies – cf. the evidence in Justiniano et al. (2013) on the United States. Second, by targeting core prices (as many central banks already do with regard to inflation), many supply-side shocks can be incorporated as contingencies that do not require a direct monetary policy response. Third, to avoid excessive output volatility, the central bank could target a path for nominal income, rather than for prices alone.



### 3.2 A distorted loss function?

Next, consider the idea that the central bank loss function should be distorted relative to that of society, to enhance its credibility in fighting inflation. This idea presumes that the central bank has a systematic incentive to raise inflation above the social optimum. But as Krugman has convincingly argued, optimal monetary policy is time inconsistent also at the zero lower bound, in the opposite direction. Moreover inflation close to or below zero can be very costly, particularly in a high debt environment, although public opinion may be unaware of these costs. This suggests that a distorted loss function for the central bank is unjustified, both with regard to the relative weight on price vs output stability, and with reference to upwards vs downwards implicit penalties for missing the nominal target.

In the euro area there is an additional reason to abandon the pursuit of distorted objectives. As explained by Krugman, at the zero lower bound for nominal wage growth, any relative wage adjustment requires a costly internal devaluation in southern Europe. Because of the asymmetric nominal wage rigidity, the output loss in southern Europe is not fully compensated by higher output growth in northern Europe. In other words, at the zero lower bound on wage growth, relative wage adjustment is associated with an output loss for the euro area as a whole. A larger weight on output (vs price) stability would make monetary policy more tolerant of the higher inflation rate that is needed to smoothly achieve the relative weight adjustment.

### 3.3 Raising the numerical inflation target above 2%?

As forcefully argued by Krugman, raising the inflation target above 2% is a simple and direct way to raise expected inflation and strengthen the central bank incentives to avoid the low inflation trap. I agree with this conclusion. There is no compelling reason other than convention for setting the target precisely at 2%, and a higher numerical target, say 3%, would be a step in the right direction. Nevertheless, there are several normative and positive reasons for being cautious and avoiding a much higher inflation target.<sup>4</sup>

The first and most compelling reason is that higher actual and expected inflation is helpful only at the zero lower bounds (on the interest rate and on nominal wage growth), whereas the costs of higher inflation are borne all the time. These unnecessary costs of high inflation can be quantitatively important. Coibion et al. (2012) calibrate a standard new Keynesian model with microfoundations where monetary policy can be constrained by the zero lower bound on the nominal interest rate. Optimal steady state inflation obviously depends on the frequency with which this constraint binds. The main conclusion of this study is that it is very difficult to raise optimal inflation much above 2%. If the zero lower bound is met every 20 years, and then it lasts for two years, when trend inflation is 2%, then the optimal inflation rate is below 2%. In the standard version of the model, a 3% trend inflation becomes optimal only if the zero lower bound is met once every seven or eight years, a frequency that probably even Paul Krugman would find implausible. Changing other features of the model, such as the details of how prices are set, implies a higher optimal inflation rate. But not much higher.

A second concern is that, both in the data and in standard new Keynesian theoretical models, there is a positive association between the level of inflation and its volatility. And of course inflation volatility is costly, arguably more so than the level of inflation itself.

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<sup>4</sup> These issues are discussed at length in the useful survey by Ascari and Sbordone (2014)

Moreover, if inflation increases by much, the private sector reacts through the indexation of wages and other contracts. And this in turn would reduce some of the benefits of high inflation – for example on relative wage adjustments.

Last but not least, although we are very ignorant of what the optimal steady state inflation is, we know from past experience that it is very costly to bring high inflation down, once it gets entrenched in expectations and economic behaviour. This is a very important argument for being careful not to abandon the current environment of low and stable inflation expectations.

Besides these normative arguments for being cautious in raising the inflation target much above 2%, there is also a simple positive argument suggesting that it would be politically difficult to do so in the euro area. The benefits of higher inflation accrue mainly to southern Europe, while its costs would mainly be felt in northern Europe which has de facto veto power. This point is best illustrated with the simple example on relative wage adjustment in Krugman's paper (cf. his Table 1). Consider his same numerical exercise, but suppose that, rather than two groups of countries (southern Europe and core Europe), there are three groups of equal size: southern Europe, core Europe (i.e. France, Belgium and a few other small countries), and northern Europe (mainly Germany). Suppose further that core Europe wage and inflation performance coincides with the euro area average. Then wage growth and inflation in northern Europe would have to be higher than in Krugman's example in order to achieve the same relative wage adjustment with the southern countries. How much higher? Inflation in northern Europe would have to reach 7% for more than three years just to achieve 3% average inflation in the euro area. I doubt that this would be politically feasible in Germany.

Of course this is just an overly simplistic numerical exercise. But the point is general. Given the heterogeneity of the euro area and the size of the cumulated misalignments, it would be politically very difficult to compress the necessary adjustments in a short amount of time, either through higher inflation in the north or through higher deflation in the south. Whether we like it or not, the adjustment will be very protracted in time, and the slump in southern Europe will probably last more than a decade.

#### **4 Concluding remarks**

Despite a few reservations, I agree with the main conclusions of the paper. The current monetary policy framework needs to be reconsidered. This is particularly true in the euro area, where the case for higher inflation is overwhelming, and where the need to reduce the debt overhang is an even more compelling reason than relative wage adjustment. More generally, the low inflation trap is a real danger, for economic and political reasons. Our monetary institutions should recognise this fact, and strengthen the incentives of the central bank to avoid excessively low inflation.

An inflation target somewhat higher than 2% is a simple and direct way to address these concerns, and would have few disadvantages. But an even more important consideration is that other features of the inflation targeting framework should be reconsidered. In particular, there is no valid reason why the central bank should pursue a distorted loss function. Monetary policy can and should stabilise output fluctuations, and this should be fully reflected in their mandate. Moreover, the price level path, or the path of nominal income, would provide better nominal anchors than the rate of inflation.

## References

- Ascari, G. and Sbordone, A.M. (2014), "The macroeconomics of trend inflation", *The Journal of Economic Literature*, forthcoming.
- Barsky, R., Justiniano, A. and Melosi, L. (2014), "The natural rate of interest and its usefulness for monetary policy", *American Economic Review*, Vol. 104, No 5, pp. 37-43, May.
- Coibion, O., Gorodnichenko, Y. and Wieland, J. (2012), "The optimal inflation rate in new Keynesian models: should central banks raise their inflation targets in light of the zero lower bound?", *Review of Economic Studies*, Vol. 79, No 4, pp. 1371-1406, October.
- Curdia, V., Ferrero, A., Ng, G.C. and Tambalotti, A. (2014), "Interest rate rules in DSGE models: tracking the efficient real interest rate", *Journal of Monetary Economics*, forthcoming.
- Eggertsson, G. and Giannoni, M.P. (2013), "The inflation-output trade-off revisited", *Federal Reserve Bank of New York Staff Reports*, No 608, March.
- Eggertsson, G. and Woodford, M. (2003), "The zero bound on interest rates and optimal monetary policy", *Brookings Papers on Economic Activity*, The Brookings Institution, Vol. 34, No 1, pp. 139-235, June.
- Favero, C.A., Gozluklu, A.E. and Yang, H. (2013), "Demographics and the behavior of interest rates", *Warwick Business School Working Papers*, No 13-10, October.
- International Monetary Fund (2014), *World Economic Outlook – Recovery Strengthens, Remains Uneven*, Washington, DC, April.
- Justiniano, A., Primiceri, G.E. and Tambalotti, A. (2013), "The effects of the saving and banking glut on the U.S. economy", *Federal Reserve Bank of Chicago Working Papers*, No 2013-17, November.
- Krugman, P. (1998), "It's baaack: Japan's slump and the return of the liquidity trap", *Brookings Papers on Economic Activity*, The Brookings Institution, Vol. 29, No 2, pp. 137-206.
- Persson, T. and Tabellini, G. (1993), "Designing institutions for monetary stability", *Carnegie-Rochester Conference Series on Public Policy*, Vol. 39, No 1, pp. 53-84, December.
- Reinhart, C.M. and Rogoff, K.S. (2014), "Recovery from financial crises: evidence from 100 episodes", *American Economic Review*, Vol. 104, No 5, pp. 50-55, May.
- Rogoff, K.S. (1985), "The optimal degree of commitment to an intermediate target", *Quarterly Journal of Economics*, Vol. 100, No 4, pp. 1169-1189, November.
- Svensson, L.E.O (2001), "The zero bound in an open economy: a foolproof way of escaping from a liquidity trap", *Monetary and Economic Studies*, Institute for Monetary and Economic Studies, Bank of Japan, Vol. 19, Tokyo, pp. 277-312, February.
- Walsh, C.E. (1995), "Optimal contracts for central bankers", *American Economic Review*, Vol. 85, No 1, pp. 150-167, March.