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The ECB must change course

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Executive summary

Over the past century central banks have become the guardians of our economic and financial security. The Bundesbank and Federal Reserve are respected for achieving monetary stability, often in the face of political opposition. But central bankers can also lose the plot, usually by following the economic dogma of the day. When they do, their mistakes can be catastrophic.

Today the behaviour of the European Central Bank suggests that it too has gone awry. After seven years of ever-looser monetary policy there is increasing evidence that following the current dogma, broad-based quantitative easing and negative interest rates, risks the long-term stability of the eurozone.

Already it is clear that lower and lower interest rates and ever larger purchases are confronting the law of decreasing returns. What is more, the ECB has lost credibility within markets and more worryingly among the public.

But the ECB's response is to push policy to further extremes. This causes mis-allocations in the real economy that become increasingly hard to reverse without even greater pain. Savers lose, while stock and apartment owners rejoice.

Worse, by appointing itself the eurozone's "whatever it takes" saviour of last resort, the ECB has allowed politicians to sit on their hands with regard to growth-enhancing reforms and necessary fiscal consolidation.

Thereby ECB policy is threatening the European project as a whole for the sake of short-term financial stability. The longer policy prevents the necessary catharsis, the more it contributes to the growth of populist or extremist politics.

Our models suggest that in its fight against the spectres of deflation and unanchored inflation expectations the ECB's monetary policy has already become too loose.

Hence, we believe the ECB should start to prepare a reversal of its policy stance. The expected increase in headline inflation to above one per cent in the first quarter of 2017 should provide the opportunity for signalling a change.

A returning to market-based pricing of sovereign risk will incentivise governments to begin growth-friendly reforms and to tackle fiscal stability. Flagging the move should dampen adverse reactions in financial markets.

We believe that normalising rates would be seen as a positive signal by consumers and corporate investors. The longer the ECB persists with unconventional monetary policy, the greater the damage to the European project will be.

Central bankers make big mistakes too

In the 1920s the Reichsbank thought it could have 2,000 printing presses running day and night to finance government spending without creating inflation. Around the same time the Federal Reserve allowed more than a third of US deposits to be destroyed via bank failures, in the belief that banking crises where self-correcting. The Great Depression followed.

That was a hundred years ago but mistakes keep happening despite all the supposed improvements to central banking, from independence to better data and more sophisticated theoretical and econometric models. The so-called Jackson Hole consensus before the latest financial crisis tolerated credit growth moving out of sync with the real economy in many areas of the world. The prevailing dogma at the time was that traditional measures of inflation were low and those bubbles in asset markets shouldn't really exist. [1]

The popular dogma shared among central bankers today is that a lack of demand is the source of all evil causing sub-par inflation. Once such a conclusion has been reached, evidence becomes abundant. This is a phenomenon known as confirmation bias in behavioural economics. Other explanations for low inflation today are brushed aside.

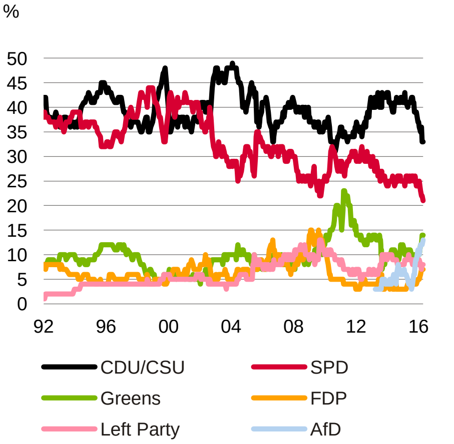
People who are convinced they possess the only correct analytical approach to a problem are labelled hedgehogs in the book Superforecasting[1] by Philip Tetlock. Hedgehogs perceive all incoming information through their one seemingly correct lens, making them blind to alternative interpretations.

In the case of the world's central bankers, strongly held views are then reinforced by group-think. It is no surprise therefore that ECB president Mario Draghi defends his policy by saying that all other major central banks are doing the same – which by the way does not hold for negative rates. And of course, if a problem persists – such as inflation undershooting yet again – this can only be due to further demand shortcomings rather than other factors such as an oil price shock.

A united front, not to mention unparalleled access to data, means central bankers are hugely respected, or at least rarely accused. But criticisms of current policy is growing, particularly in Germany. Finance Minister Wolfgang Schäuble allegedly blames it for half the AfD's success in recent elections (figure 1). Two months ago parliamentary groups attacked the ECB for its zero/negative rate policy and suggested Berlin intervenes – in effect questioning the ECB's independence.

Such a chorus shows that monetary policy lurching to extremes has consequences far beyond the realm of financial markets and the real economy. It is dangerous for central banks not to consider these wider consequences, especially since it might be argued that they lack the mandate to wield such influence on societies and individual citizens.

Voting intentions shifted strongly in favour of AfD 1



Source: Forschungsgruppe Wahlen: Politikbarometer (13.05.2016)

Balance of trade-offs now against ECB policy

Nothing is simple in economics. Monetary policy, like other choices, is a balance of trade-offs and the consequences of these choices are highly uncertain. Loosening may have once been the right thing to do, but negatives have begun to outweigh the positives as ECB policy has become increasingly desperate (figure 2). Even the OECD, a long-time advocate of looser monetary policy, is now warning that additional monetary policy easing might become counterproductive.[2]

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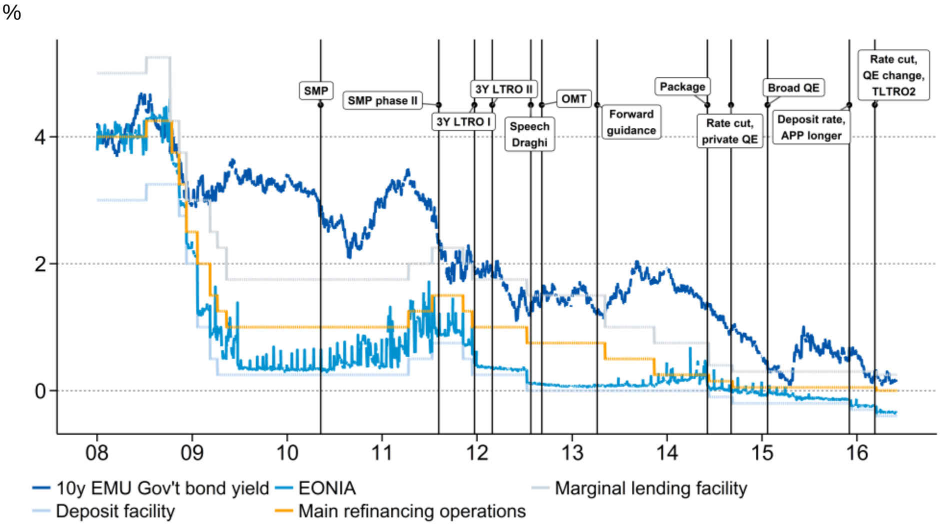
[1] Superforecasting - The Art & Science Of Prediction. Philip Tetlock, Dan Grander.
[2] Global economy stuck in a low-growth trap. OECD. June 2016

Massive monetary policy support from the ECB 2



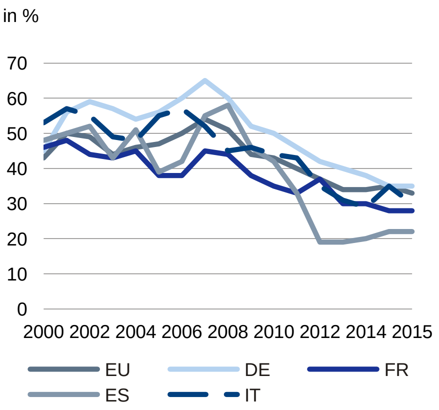
Sources: ECB, Deutsche Bank Research, Global Insight

When reducing interest rates to levels not seen in twenty generations failed to stimulate growth and inflation, the ECB embarked on a massive programme of purchasing eurozone member debt – quantitative easing. But the sellers of sovereign debt to ECB did not spend or invest their proceeds, the money just ended back at the central bank.

So the ECB went to the logical extreme: it imposed negative interest rates on deposits. Currently almost half of eurozone sovereign debt is trading with a negative yield. At the same time the ECB underwrites the solvency of its members as purchaser of last resort of sovereign debt – the so-called OMT programme.

All of which has – in our view – tilted the balance of trade-offs towards changing direction as soon as possible. The benefits from ever-looser policy are diminishing while the litany of distortions, perversions and disincentives grows by the day. Savers are punished and speculators rewarded. Bad companies survive while good companies are too scared to invest.

Trust in the ECB 3



Source: Eurobarometer

Moreover, governments no longer fear that failure to reform their economies or reduce debt will raise the cost of borrowing. In fact, total indebtedness in the eurozone has been rising, with the reformed and re-interpreted Stability and Growth Pact[3] as toothless as ever. Risk-spreads have all but disappeared from government bond markets. Badly needed labour, banking, political, educational and governance reforms have been slowed or abandoned.

Another problem is that games of largess and moral hazard are hard to quit. The ECB has become the henchman of ever more demanding markets, with investors already braying for another extension of quantitative easing by September. There is also evidence that current policy reduces the pressure on banks to increase capital and to clean up non-performing loans (NPLs) and thereby keeping unprofitable companies in business.

Of course the ECB is keen to play up the positive effects of its policy via the various transmission channels through which monetary policy works (appendix 3). But there is increasing evidence that the confidence channel is becoming more important and has actually gone into reverse. Only a third of European citizens trusted the ECB last November, an all-time low. In Spain it was a

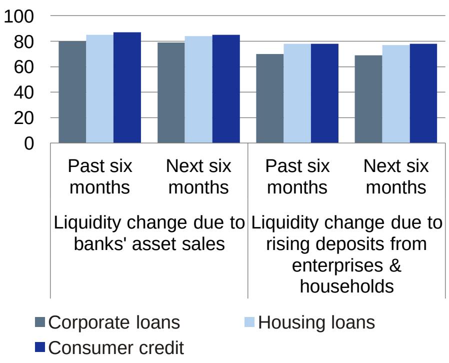
[3] Making the best use of the flexibility within the existing rules of the Stability and Growth Pact. EU Commission. January 13, 2015.

meagre 22 per cent. Even Germans, who until 2007 were among the biggest believers in the ECB, have lost faith. Quite a change compared with Jacques Delor's observation back in 1992, stating that not all Germans believe in God but that they all believe in the Bundesbank.

Likewise, the inflation outlook and the risk of an un-anchoring of inflation expectations are no longer positive arguments in the trade-off. For a long time the ECB has used them to justify an expansion of quantitative easing and a further dive into negative interest rates. While measuring expectations is not straight-forward there is limited evidence that an un-anchoring of is a serious threat (appendix 1). In a recent study the Bundesbank did not find any hints that there is a high or increasing risk of second-round-effects in Germany , although one may have expected that traditionally low-inflation economies might be the most exposed to such risks.

Basically no impact from QE-liquidity on bank lending 4

%, share of banks for which increased liquidity due to QE had "basically no" impact on lending



Source: ECB Bank Lending Survey Apr 2016

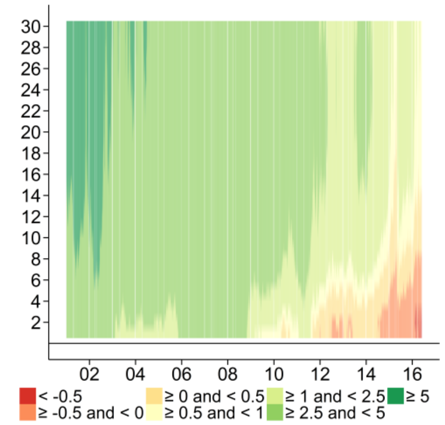
In fact, using a broader range of inflation measures than just HICP headline numbers – which are currently affected by the slump in oil prices – we calculate that the ECB's monetary policy is already too loose for the eurozone as whole (appendix 2). Thus, policy needs to tighten as soon as possible. Applying the ECB's own forecasts, a strong increase in headline inflation towards the end of this year – although mainly due to oil-price related base-effects – provides a face-saving opportunity to signal such a change.

A normalisation in rates should bring investment spending out of hibernation, while a jolt to long-term income expectations should give consumers some confidence. Crucially, this may be the last chance for the ECB to re-establish its reputation – and not only with respect to sceptical Germans. The Bank for International Settlements' sober warning that key market participants' "confidence in central banks' healing power has – probably for the first time – been faltering", should also make the ECB reconsider its extreme stance.[4]

The negative effects of current policy

German sovereign yield curve 5

%, y-axis: duration



Sources: Deutsche Bundesbank, Deutsche Bank Research

While the ECB is right in saying that it is not running out of ammunition[5] – in purely technical terms the recent debate about "helicopter money" suggests as much – it is on shakier ground arguing that policy has worked as intended.

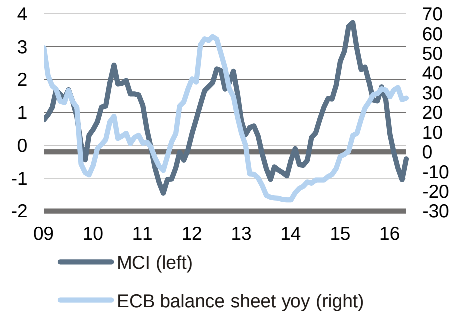
Nothing is certain of course because there is always the problem of counterfactuals. Quantitative analysis does not answer the question: what would have been the path of certain variables without the ECB's polices? Historic simulations have to rely on coefficients derived from a completely different environment compared with the one today.

We cannot know, for example, how much deleveraging would have taken place regardless. Nor can we know how discretionary decisions regarding fiscal policies or reforms would have looked like. What we can say, however, is that given that we are in the seventh year of monetary easing alternative scenarios would have developed differently. The wide range of estimates of the effects of the US quantitative easing programme on ten-year Treasury yields, where the link should be more direct, show how all analysis should be cautiously interpreted.[6]

[4] BIS Quarterly Review March 2016 – media briefing. Bank For International Settlements.
[5] Introductory statement to the press conference. ECB. March 10, 2016.
[6] An overview presented by Chen et al shows effects between 13bp and 107bp. Chen, Han, Vasco Cúrdia and Andrea Ferrero. 2012. "The Macroeconomic Effects of Large-Scale Asset Purchase Programs". The Economic Journal, Vol. 122, No. 546, p. 289-315. See also "Panel discussion on Central Banking with Large Balance Sheets". Victor Constancio. February 27, 2015.

ECB balance sheet expansion: decreasing growth effects 6

left y-axis: Index
right y-axis: yoy in %

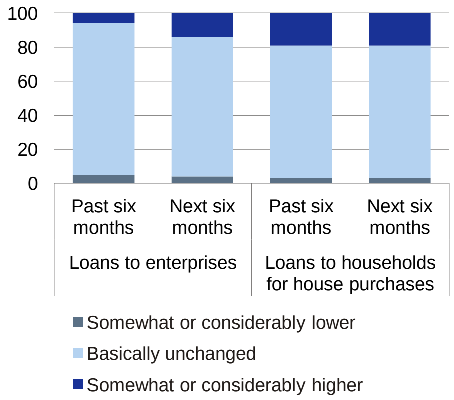


MCI: shows the effect of interest rate and exchange rate changes on growth (MCI > 0 signifies expansionary effect)

Sources: ECB, Deutsche Bank Research

Negative deposit rate: Vast majority of banks sees no impact on lending 7

Direct & indirect contribution of negative deposit rate on lending volume, % of banks



Source: ECB Bank Lending Survey Apr 2016

Bearing all this in mind, what evidence do we have? For starters, the ECB has recently added to its bank lending surveys ad-hoc questions about the impact and usage of its unorthodox measures. The ECB reckons the answers show its policies are working. But results from the first quarter survey were sobering[7]. It looks like additional liquidity via the ECB's expanded asset purchase programme was hardly used for granting loans (figure 4). While the negative deposit rate resulted in lower lending rates the impact on lending volumes was small.

We can also assess the effects of monetary policy by following a monetary conditions index. This admittedly rather crude instrument splits the impact of monetary policy between changes in three month rates, ten year government bond yields and the trade-weighted exchange rate (the relative weights employed are 3:6:2). Between 2009 and 2014 the monetary conditions index follows the year on year changes in the ECB's balance sheet quite closely.

But the index peaked in April last year when the negative rate frenzy caused the average ten year government bond yield to decline to 0.78 per cent and the trade-weighted euro to hit a 13 year low. Since then the correlation between ECB balance sheet expansion and the monetary conditions index has broken down[8] (figure 6). This suggests the efficacy of quantitative easing may follow the law of decreasing economies of scale, something highlighted by Bundesbank President Weidmann.[9] However, financial conditions indices using a wider set of variables show a less clear reversal.[10]

While it is harder to prove the positives are less positive (although it seems they are) the negative side effects of ECB policy are more visible. For example, ultra-cheap loans are providing life support for companies which would not be viable under more normal conditions. This has lead to over-capacity – not to mention disinflation – across many industries in Europe, with revenues falling compared with assets. Last year 40 per cent of companies had no top-line growth. It is ironic therefore that many think productivity can be kick-started via even lower rates.

Another clear negative is that savers have no income certainty over the longer-term, given that it has become virtually impossible to achieve real returns on interest bearing assets. Moreover, survey evidence suggests that consumer thinking has been seriously shocked by negative rates. Rather than rejoicing at free money, most see the move as a sign of distress rates – soggy spending data would support this view. Germans, meanwhile, think the central bank is encouraging indebtedness and profligacy instead of thrift and stability.

Indeed, more institutions are beginning to voice their concerns. At its annual press conference, Bafin, Germany's financial watchdog, warned that low interest rates were a "seeping poison" for financial institutions dependent on interest rates and is concerned some pensions funds might fail to provide guaranteed benefits[11]. BaFin reckons about half of Germany's banks have a heightened exposure to interest changes and may therefore have to hold more capital. Bundesbank board member Andreas Dombret warned that banks may have to increase charges to their clients [12].

Yet another place to look if you question ECB policy is Japan. Its central bank introduced negative interest rates in January and they have been poorly

[7] The euro area bank lending survey – First quarter of 2016. ECB.
[8] This is in part due to the usage of yoy-changes.
[9] „Wie können wir den wirtschaftlichen Herausforderungen des Euro-Raums begegnen?". Jens Weidmann. Rede auf dem 25. Europäischen Bankenkongress. November 20, 2015.
[10] ECB preview: Signalling and independence. Deutsche Bank. Focus Europe. April 15, 2016.
[11] BaFin President: low interest rates put strain on financial sector. BaFin. May 10, 2016.
[12] Bundesbank warnt vor höheren Kosten für Bank-Kunden. FAZ. March 31, 2015.

received by financial institutions as well as households and corporations[13]. This has been attributed to the surplus in Japan's private sector and the preference among households for deposits, bonds and principal-guaranteed products. An increase in projected benefit obligations (PBO) due to the decline in the discount rate also hasn't helped.

The negative impact on Japanese financial institutions is clearer still, in the form of higher holding costs on their central bank current account deposits, narrower lending margins and constraints on credit creation. Ominously for Europe, these repercussions are the result of the simultaneous implementation of quantitative easing and negative rates. And this concurrent policy is also damaging to the Bank of Japan's own finances.

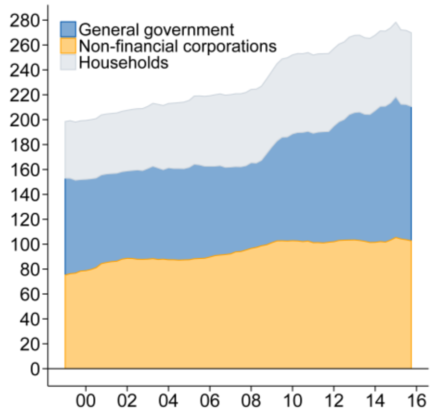
For financial institutions in Europe, there is also evidence that the extremely supportive policy in recent years has allowed banks, in particular in the periphery, to distribute a major part of their earnings to shareholders instead of retaining them in order to improve their capital.[14] This behaviour undermines the ECB's intention to boost the credit-multiplier and is unhelpful from the ECB's financial stability perspective (figure 7).

Longer-term the negative consequence of ultra-low rates and sovereign bond backstops comes from a lack of economic reform. It was not meant to be this way. Immediately after the crisis the implicit deal was that politicians would reduce public debt levels and implement the necessary reforms while the ECB provided them with the necessary time and monetary tailwind.

Some ex-central bankers argue that early on a pattern evolved where governments did not deliver on their tasks so that the ECB, as the life-saver of last resort, was forced to step in ever more aggressively[15]. But it is equally plausible, although impossible to prove, that politicians delayed making hard choices knowing that the ECB would "do whatever it takes", as it eventually said explicitly.

Debt by sector 8

Euro area, % GDP



Source: Eurostat

With the risks associated with failure to reform their economies or reduce debt removed, courtesy of the self-appointed purchaser-of-last-resort of sovereign debt, elected politicians have not needed any encouragement to cater to national interests. In fact, six years after the onset of the European crisis total indebtedness in the eurozone keeps rising.

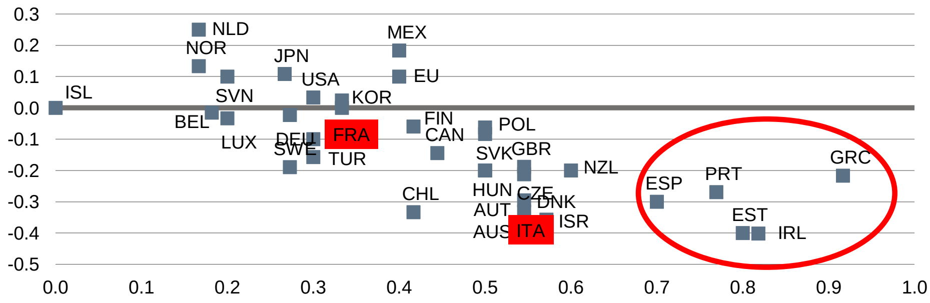
The OECD's reform responsiveness measure in its Going for Growth assessment shows that reform momentum has clearly slowed – and most prominently in countries which had been helped the most while participating in the Troika bailout programme[16]. But even in countries that had escaped these programmes, such as Italy, the reform responsiveness that had picked up in 2011 began slowing as soon as 2013 (figure 9).

To be fair some reform progress was evident again in Italy last year – and this should be monitored closely. The exception is France where reform momentum never actually picked up in the first place.

[13] Deutsche Bank Japan Economics Weekly. Poor evaluation of NIRP: discontinuity and combination of NIRP and QE. March 13, 2016.
[14] Bank capital and monetary transmission. Hyun Song Shin (BIS). April 7, 2106.
[15] The Politics of the Euro Area Crisis and ECB Monetary Policy. Athanasios Orphanides in Central Banking: Where are we heading. IMFS Interdisciplinary studies 2/2103.
[16] Economic Policy Reforms Going for Growth. OECD. 2015.

Reform responsivness slowed down strongly especially in programme countries 9

x-axis: Responsiveness rate between 2011-12
y-axis: Change in responsiveness rate between 2013-14 and 2011-12



Source: OECD

Final word

The ECB has – probably with very good intentions – manoeuvred itself into a position where market expectations are having an increasing influence on its policy. This is in part the result of the central bank's tendency to raise market expectations ahead of policy decisions, thereby putting pressure on council members to deliver.

With its "whatever it takes" stance the ECB has removed incentives for governments to reform and has distorted the market-based pricing of government bond yields. Politicians are also stuck because unpopular reforms would probably see them replaced by more national and euro-sceptic politicians, which poses an even bigger risk for the eurozone.

ECB president Mario Draghi has repeatedly said he cannot make the fulfilment of his job description dependent on whether other agents (that is, politicians) fulfil theirs. But real world is what it is – ignoring the wider consequences of monetary policy led to last crisis.

The German Council of Economic Experts argues that a comprehensive evaluation of all consequences of monetary decisions is a prerequisite for a competent monetary policy[17]. Today the balance of consequences points to a reversal in ECB policy.

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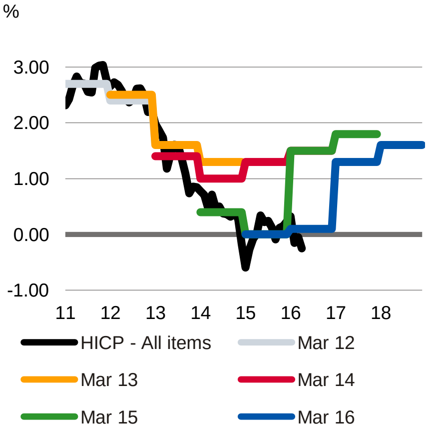
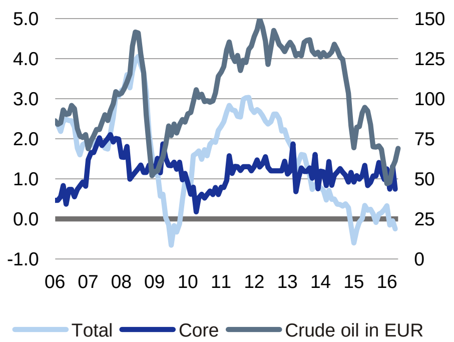
[17] Zukunftsfähigkeit in den Mittelpunkt. Jahresgutachten 2015. Sachverständigenrat.

ECB staff projections:
HICP Headline inflation 10



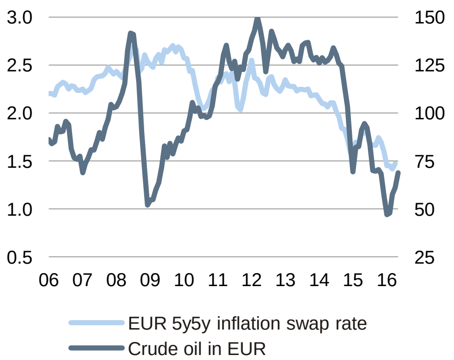
Sources: ECB, Eurostat, Deutsche Bank Research

Inflation vs crude oil 11



Sources: Federal Statistical Office, HWWI, Deutsche Bank Research

5Y5Y Inflation swap rate vs crude oil 12



Sources: Federal Statistical Office, Bloomberg Finance LP, Deutsche Bank Research

Appendix 1: ECB's concern about an un-anchoring of inflation expectations is exaggerated

Headline inflation has slowed sharply from 2.7 per cent in 2011 to zero last year. However, this can hardly be attributed to idiosyncrasies of the eurozone. During the same period US inflation, for example, also slowed from about three per cent to nothing. The common factors were of course the slump in commodity prices, particularly for oil, and the sluggish global economy. Likewise, core inflation has dropped as well. It declined from 1.4 per cent in 2011 to a low of 0.8 per cent in 2014 but has since stabilised at around one per cent.

Headline inflation has clearly undershot. Mostly due to repeated falls in oil prices the ECB has repeatedly been forced to adjust its inflation forecast lower. These revisions were partly the result of base effects but also due to changes in market expectations regarding the future course of oil prices and the exchange rate[18]. Although these variables are quite volatile and far from being good predictors of the actual outcome, the ECB has regularly eased policy whenever its forecasts were revised lower (figure 10).

Even greater caution should be exercised when interpreting market-based inflation expectations. The relevance of this measure at the ECB skyrocketed – at least in the public perception – ever since Mario Draghi hinted as much when he spoke off script in Jackson Hole in 2014. Back then, the dramatic downgrading of inflation expectations probably convinced the remaining sceptics in the Governing Council of the necessity of a quantitative easing programme. However, doubts are growing about the usefulness of indicators such as the five year-five year swap and inflation-protected ten year bonds.

But the ECB has subsequently noted the high correlation between these long-term instruments and short-term fluctuations in the price of oil (figures 11 & 12). Likewise, a study conducted by economists at the regional Federal Reserve Bank in San Francisco concluded that these indicators deliver by far the worst inflation forecast for the United States, and significantly underperform a "naive 'no change' forecast"[19]. Further research at the Federal Reserve Bank of Atlanta has found that US inflation expectations have remained stable and anchored over time, with recent volatility largely the result of a significant liquidity premium[20]. These findings are likely to apply to the eurozone too, especially since US and European five year-five year swaps are strongly correlated.

Such contracts probably do not reflect impossible-to-know long-term market inflation forecasts, but instead work on the principle of a beauty contest, as described by John Maynard Keynes. This theory says that rational participants do not bet on who they think is the prettiest entrant, rather the one who would probably be chosen by the majority as having the prettiest face. Clearly such an approach induces herd-like behaviour.

Another reason to be sceptical stems from 1970s economics Nobel Prize winner Robert Lucas. He said economic relationships no longer function if policymakers attempt to exploit them for their own purposes. Instruments whose price is determined by the capital markets harbour the risk that participants may tactically attempt to reverse the direction of the causal link.

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[18] The ECB uses market-implied forecasts of oil prices and the exchange rate as technical assumption in its staff projections.
[19] Can we rely on market-base inflation forecasts? Michael D. Bauer and Erin McCarthy. FSBSF Economic Letter. September 21, 2015.
[20] A Note on Extracting Inflation Expectations from Market Prices of TIPS and Inflation Derivatives. Nikolay Gospodinov and Bin Wei. November 2015.

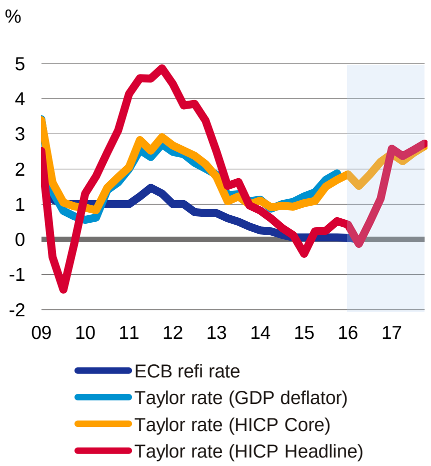
Indeed, the long-term forecasts for Germany expect inflation to average 1.8 per cent between 2017 and 2021 and 1.7 per cent between 2022 and 2026[21]. This is in sharp contrast to forecasts derived from financial market instruments while provides no evidence for the un-anchoring of inflation expectations that the ECB is worried about.

One could therefore ask whether in the face of these uncertainties it makes sense for the ECB to react almost mechanically to revisions in its medium-term inflation forecast with rate cuts and ever bigger asset purchases. The ECB's first chief economist, Otmar Issing, argued recently that the ECB should rather follow a medium-term interpretation of its inflation target[22].

Appendix 2: Rates are already too low – the ECB should start indicating a change of direction

Applying a simple rule for ECB interest rate changes – developed by Messrs Orphanides and Wieland – the German Council of Economic Experts found that by the end of last year the ECB had already pushed its refi rate below levels suggested by a policy response function that had tracked the refi rate quite well since 2009. The undershoot is even more striking when comparing the rule using ECB forecasts for inflation and growth as inputs, with that implied by the money market forward curve. This can be interpreted as evidence that the ECB is indeed trying to prevent an un-anchoring of inflation expectations by being even more aggressive than it knows it should be[23].

Taylor rates & ECB refi rate 13



Sources: Eurostat, AMECO, Deutsche Bank Research

Likewise, our own estimates of Taylor-rule interest rates for the eurozone – using core inflation or the output deflator to derive the inflation-gap and the EU Commission's estimate of the output-gap – show that monetary policy is too loose (figure 13). Plugging in our own projections, which are not much different from consensus or the ECB's forecast, gives an increasing gap over time when compared with the implied forward rates (the latter being themselves influenced by ECB forward guidance).

Using our headline estimates for the acceleration in inflation this year and next (0.1 per cent and 1.3 per cent) and a modest narrowing of the output gap, our Taylor-rule models indicate that interest rates need to be raised substantially.

We are not suggesting the ECB yanks rates higher immediately. The Federal Reserve's cautious approach after its first rate hike last December shows how delicate central banks need to be. Still, with collateral damage from its current policies increasingly evident, the ECB should start preparing markets for its first rate hike.

When should that be? Forecast acceleration in headline inflation to above one per cent in the first quarter of next year should allow the ECB to sell a change of direction to markets and the public. It has to be expected that the move will cause disruptions in some government bond markets. But giving lots of notice would provide countries at risk the chance to tackle debt levels and begin reforms in order to regain some credibility in markets.

At the moment the German government seems particularly aware that the onus is on politicians to get on with reforms. Chancellor Merkel recently endorsed the debate about the negative consequences of low interest rates. She pointed out

21 Consensus Economics. April 2016.
22 Selbstmord aus Angst vor dem Tod. Otmar Issing. Handelsblatt. February 23, 2016.
23 The rule is similar to the Taylor rule approach but refers to forecast changes for inflation and GDP, thereby avoiding uncertainties caused by the assessment of the output gap. Focus on Future Viability. Annual Economic Report 2015/16. German Council of Economic Experts.

that it is the responsibility of European governments to implement reforms to help generate stronger growth as well as taking care of weak banks, thereby allowing the ECB to reduce its extreme policy stance.[24]

Appendix 3: Reasons why the ECB believes its current policies are working

The ECB's chief economist Peter Praet recently presented some internal estimates of the quantitative effects of monetary policy on financial and macroeconomic conditions[25].

Based on a variety of different econometric techniques the ECB concludes that compared with introducing no additional policy measures since June 2014 (when the ECB introduced the series of TLTROs and cut the deposit rate to negative ten basis points) its actions have had the following effects:

– Contributed to about 90 per cent of the decline in long-term government bond yields. Since June 2014, ten-year government bond yields have fallen by around 110 basis points in Germany and France and by some 120 basis points in Italy (Spain 100 basis points, Portugal 30 basis points). However, they also dropped by 80 basis points in the US and 60 basis points in Japan over the same period.

– Pushed bank lending rates some 40 to 60 basis points lower than otherwise and contributed to notably higher stock prices.

– Following the deposit rate going negative, banks in less vulnerable countries have provided more loans to the real economy as they would have without negative rates.

– Banks with large holdings of excess liquidity have increased their purchases of non-domestic eurozone government bonds.

– Inflation in 2015 would have been negative instead of zero. In 2016 and 2017 inflation would be half a percentage point lower each year (this simulation does not include the measures from March 2016).

– Over the period 2015 to 2018 monetary policy measures should raise output by around 1.5 per cent – that is, between 0.3 to 0.4 percentage points each year.

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[24] "Wir müssen die Bedingungen für höhere Zinsen schaffen". FAZ. April 27, 2016.
[25] The ECB's monetary policy response to this inflationary pressures. Speech by Peter Praet at the ECB Watchers Conference. April 7, 2016.

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