EUROPEAN CENTRAL BANK

EUROSYSTEM

Research Bulletin 23

Winter 2016

Inflation and unemployment in Europe – insights from the ECB's 2015 Sintra Forum 1

The euro area needs a blend of demand stimulus and structural reforms in order to master the challenges of high unemployment and low inflation. This broad conclusion can be drawn from the ECB's 2015 Sintra Forum on Central Banking. The Research Bulletin's lead article summarises some main takeaways from the Forum proceedings that were published recently. It includes the main arguments made in a candid debate between those Forum participants that favour more aggressive monetary policy responses to real economy developments and those that would like to see a deepening, and faster pace, of structural reforms.

The heterogeneous interpretation of forward guidance 9

Agents interpreted differently the stance attached to the forward guidance policy of the Federal Reserve System. The heterogeneity of beliefs matters for the efficiency of this policy. Forward guidance is efficient only if private agents predominantly view it as an accommodative deviation from the normal times reaction function of the central bank. It can be detrimental if it is predominantly interpreted as a normal times reaction to a very bad shock.

Shall we trust governments' fiscal plans? 15

Should rational agents take into consideration government policy announcements? A skilled agent could set up a model to combine the following two pieces of information in order to anticipate the future course of fiscal policy in real time: (i) the ex ante path of policy as published/announced by the government; and (ii) incoming, observed data on the actual degree of implementation of ongoing plans. We formulate and estimate empirical models for a number of EU countries to show that government targets convey useful information about ex post policy developments when policy changes significantly (even if past credibility is low) and when there is limited information about the implementation of plans (e.g. at the beginning of a fiscal year).

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Inflation and unemployment in Europe – insights from the ECB's 2015 Sintra Forum

By Vítor Constâncio, Philipp Hartmann and Oreste Tristani

Many participants in the 2015 Sintra Forum on Central Banking agreed that policy should take hysteresis effects of recessions into account. Some argued that monetary policy should react more aggressively to economic developments because of changes in the slope of the Phillips curve, whereas others thought that the exchange rate and expectations channels still preserve the effectiveness of monetary policy. Research funding, infrastructure investments, and product and labour market reforms should support European innovation and productivity and facilitate the reallocation of employment from manufacturing to services. The discussion on whether structural policies could be designed in a countercyclical way proved controversial.[1]

Shortly after its establishment in the historical setting of Sintra, near Lisbon, the ECB's Forum on Central Banking has become a treasured retreat for policy-makers, academics and market economists, where they can contemplate a topic of common concern in a deep and encompassing way, looking beyond day-to-day pressures.[2] In this article we use the occasion of the recent publication of the 2015 conference proceedings (ECB, 2015)[3] to summarise five of the main themes that were hotly debated in Sintra this year: the relevance of hysteresis for European growth and employment; the implications of the shape of the Phillips curve for policy; the need for innovation and productivity for economic prosperity; the conjunctural implications of structural reforms; and communication of central banks about policies outside their formal mandates. Looking ahead, the 2016 Sintra Forum will be held on the theme "The Future of the International Monetary and Financial Architecture".[4]

Hysteresis redux

The Sintra papers by Olivier Blanchard et al. and Jordi Galí brought renewed attention to the hysteresis hypothesis. Blanchard, Cerutti and Summers (2015) provide empirical evidence that post-WWII recessions in many advanced countries are followed by lower trend growth than before the recession. This finding and its implications for the fact that high cyclical unemployment increases the equilibrium

1 This article is an extension of a recent Vox-EU column (Constâncio, Hartmann and Tristani, 2015).

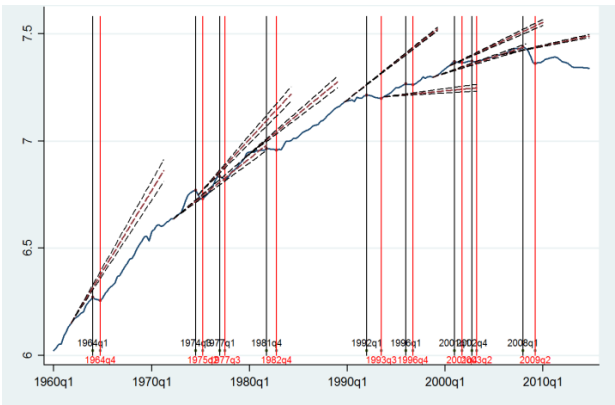
2 The ECB held the first Sintra Forum in 2014 on "Monetary policy in a changing financial landscape" (https://2014.ecbforum.eu/en/content/programme-overview/programme.html).

3 The e-book with all papers, discussions and speeches can be downloaded using this link: https://www.ecbforum.eu/up/artigos-bin_file_pdf_0679922001445857430-631.pdf. Video recordings of the sessions are available here: https://www.ecbforum.eu/en/content/programme/overview/programme-temp.html.

4 See https://www.ecbforum.eu

Chart 1

Evolution of log real GDP and extrapolated trends for Italy



Source: Reproduced from Blanchard et al. (2015), online appendix, Figure 3A.
Notes: Vertical bars denote recession dates. Dashed lines denote the estimated trends, plus one-standard deviation bands associated with uncertainty about the value of the estimated trend coefficient.

unemployment rate have already been emphasised in the literature of the 1980s (first in Blanchard and Summers, 1986). The authors therefore confirm that these findings also apply to the 2000s. Chart 1 illustrates the case of Italy, which is representative of a number of European countries. The authors conclude that, in the presence of hysteresis, deviations of output from its optimal level are much longer-lasting and thus more costly than usually assumed.

Galí (2015) explains evidence of a stochastic trend in euro area unemployment since the 1970s (in contrast to mean-reverting US unemployment) by embedding the insider-outsider phenomenon in labour markets in a New Keynesian macroeconomic model. Wages are set such that insiders remain employed without consideration of the fate of the unemployed (outsiders). A key implication of this theory is that there is no "natural" level to which the unemployment rate tends to gravitate over long periods of time. It can also account for the stability of wage inflation over the last two decades.

Many conference participants concurred that hysteresis effects play a role in Europe.

Many conference participants concurred that hysteresis effects play a role in Europe and should be taken into account by public policy. Some Sintra participants argued that such effects justify aggressive monetary policy actions to avoid recessionary episodes, which would have long or permanent effects under the hysteresis hypothesis (e.g. Ball, 2015 or Summers, 2015). It was also mentioned that hysteresis implies that monetary policy could produce effects on medium-term growth, not just dampen cyclical fluctuations.

Willem Buiter (2015) pointed out that the euro area suffers both from deficient aggregate demand and from fundamental supply side problems. Whilst the insider-outsider problem does not necessarily call for demand policies, he argued that to close the output gap the euro area needs an effective combination of monetary and fiscal policy, including the use of "helicopter money". Demand policies could also somewhat help in reducing insider-outsider problems by increasing the number of insiders. But addressing this specific problem at source would require labour market policies, notably constraints on collective bargaining arrangements. Bob Gordon (2015) questioned whether the evidence for a stochastic trend in euro area unemployment is robust after the 1980s. As of the 1990s unemployment seems mean-reverting, albeit to a higher mean, and the attention should rather turn to the average level difference compared with the United States.

Slope of the Phillips curve and its implications

In line with the title of the 2015 Sintra Forum, a lot of attention was also devoted to the Phillips curve, in particular the strength of the relationship between unemployment and inflation that it implies. The evidence presented by Olivier

Blanchard et al. (2015), Larry Ball (2015), Jordi Galí (2015) and Bob Gordon (2015) suggests that the slope of the Phillips curve flattened between the mid-1970s and the early 1990s. Since then it has remained roughly stable. A very flat Phillips curve can obviously rationalise the "missing disinflation" during the Great Recession, i.e. the relatively stable inflation rates recorded in many industrial countries in spite of the large increase in unemployment rates. The structural causes of the flattening are, however, less well understood. Dennis Snower (2015) reviewed a wide range of theoretical results indicating that the curve can be highly nonlinear and thus have different slopes in different segments. Moreover, Mario Draghi (2015) and Marco Buti for the euro area and Haruhiko Kuroda for Japan reported on estimations that the Phillips curve may have steepened again in recent years. Draghi (2015) related this to the increased responsiveness of inflation to cyclical conditions in countries that had reformed their product and labour markets.

Most of the discussion focused on the policy implications of an extremely flat Phillips curve. A number of speakers drew the inference that, in order to steer inflation towards levels consistent with price stability, monetary policy should react more aggressively to real economic conditions. Others countered that monetary policy can continue affecting prices via other channels, including the exchange rate and its impact on expectations.

Innovation and productivity

…various…speakers documented how the euro area, in particular southern European countries, had fallen behind the United States… in terms of productivity growth, or stopped catching up with it…

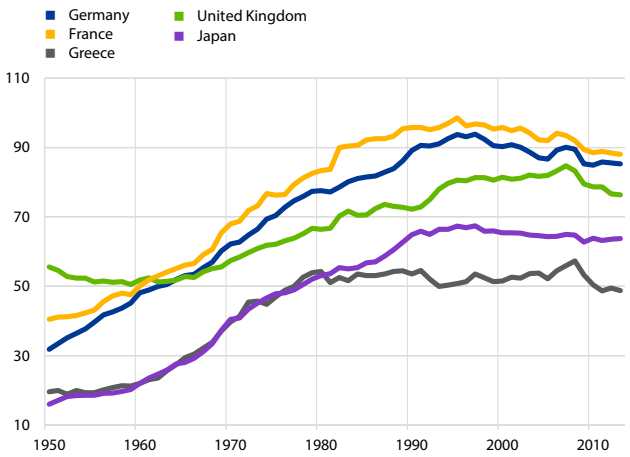
Chris Pissarides (2015) shifted the attention towards long-term growth. He started from the observation that the only sustained way to improve living standards is through continual innovation-enhancing productivity. He and various other speakers documented how the euro area, in particular southern European countries, had fallen behind the United States – as the "world centre of innovation" – in terms of productivity growth, or stopped catching up with it (Draghi, 2015, Fernald, 2015). Chart 2, which is taken from Fernald's discussion, shows this for a measure of labour productivity. Catherine Mann (2015) showed evidence for OECD countries that a lack of diffusion of productive innovations from frontier firms to non-frontier firms is part of the problem.

John Fernald (2015) argued that the widely debated productivity slowdown in the United States after the dot-com bubble does not look like a sign of secular stagnation, but rather like a return to trend after the large increases during the 1990s. He contrasted this experience with the case of Europe, where productivity declined in recent years without increasing significantly in the 1990s. An important element of the US productivity acceleration in the 1990s and early 2000s was, first, production in Information and Communication Technology (ICT) and, subsequently, ICT use in other industries. As for example Chart 3 – taken from Mario Draghi's (2015) introductory Sintra speech – shows, still today the euro area is far behind the United States in ICT adoption.

Chart 2

GDP per hour relative to the United States

(US=100)

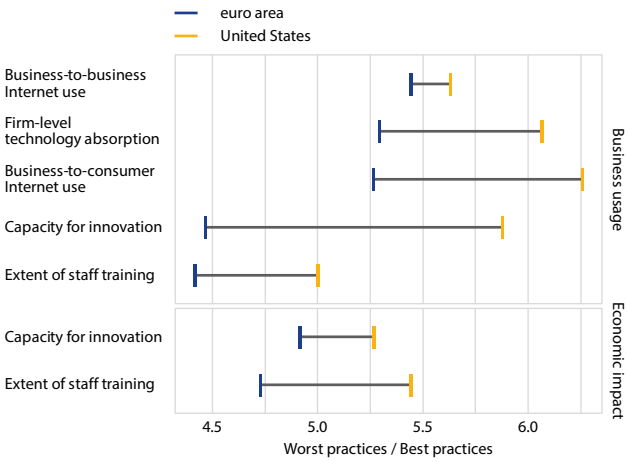


Source: Conference Board. Reproduced from Fernald (2015), Chart 1
Note: Country comparison in US dollars using purchasing-power-parity exchange rates.

Chart 3

ICT adoption

(index 1-7 (best); euro area is unweighted average)



Source: World Economic Forum Networked Readiness Index 2015. Reproduced from Draghi (2015), Chart 8.

Pissarides (2015) went on to highlight the benefits of the US model for creating a good environment for innovators, characterised by ample university budgets and high industry research and development (R&D) spending. He then compared the US model with the situation in Europe, which suffers from lower university budgets and cuts in infrastructure spending, notably in countries under fiscal stress. As a result, in terms of domestic expenditure on R&D, the EU28 average is not only lagging behind both the United States and Japan, but also losing ground to emerging countries like China, India or Korea (Fernald, 2015).

Productivity growth tends to lead to net employment losses in the innovative sectors, but then new jobs tend to be created in other sectors, like services. For this job reallocation mechanism to work, however, a high degree of flexibility in product and labour markets is needed. Low growth of the services sector in Europe could be related to the high regulation of this sector in many European countries, including in Germany.

Structural reforms and their conjunctural implications

…structural reforms…could unleash the untapped potential of euro area countries…

The discussion of structural problems in Europe sparked a lively debate about the nature, timing and sequencing of structural reforms relative to cyclical policy measures. Mario Draghi (2015) set the tone in the opening speech in which he highlighted the value of structural reforms in increasing the flexibility of the economy in response to shocks, reducing hysteresis effects and enhancing its long-run growth potential. Structural reforms could unleash the "untapped potential" of euro area countries and help in making the ongoing cyclical recovery a stronger, structural recovery. The benefits of flexibility are particularly high in a monetary union, where large structural divergences across countries can become "explosive" and endanger the integrity of the union. Now is an advantageous time for accelerating structural reforms in the euro area, because monetary policy meaningfully bolsters demand

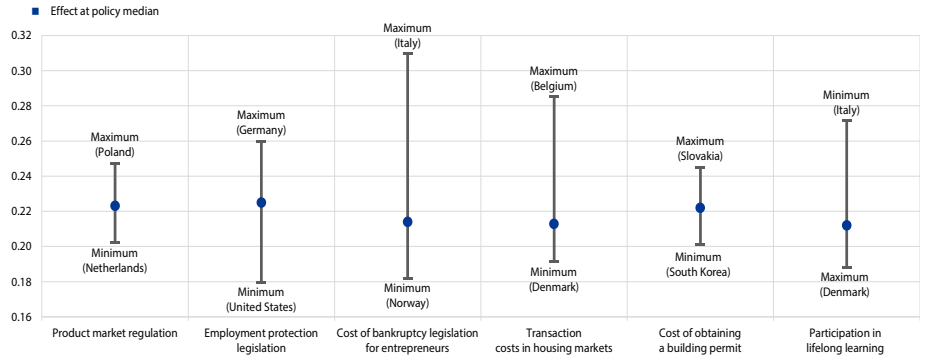
and fiscal policy is broadly neutral. Many Sintra participants supported the view that labour and product market reforms are needed for reducing European unemployment and for better preparing European countries for the structural change that productivity-enhancing innovation requires (including the contributions by Fernald, 2015, Mann, 2015 or Pissarides, 2015).

Tito Boeri and Juan-Francisco Jimeno (2015), however, took a more critical view of the ongoing European structural policies and adjustment programmes. They argued that reducing firing costs and the generosity and coverage of unemployment insurance is exceedingly costly during recessions. Better would be rule-based countercyclical unemployment benefits. Gilles Saint-Paul (2015; also supported by Marco Buti), however, pointed out that for political economy reasons reforms are rarely implemented in good times and cuts in unemployment benefits would also be hard to enforce in such times. Moreover, even if reforms are implemented in bad times, they are still beneficial as long as their discounted benefits are positive.

Boeri and Jimeno (2015) also proposed a number of labour market reforms at the European level, including a European employment contract with individual accounts (e.g. for severance pay) transferable across countries, European unemployment insurance and cross-border transferability of pension rights. Christoph Schmidt (2015), Olivier Blanchard and other participants, however, were of the opinion that the large majority of reforms should be carried out at the national level. Insider-outsider problems and skill mismatches received particular attention. Chart 4 – taken from Catherine Mann's (2015) panel intervention – highlights the problems that could be addressed by structural reforms and is suggestive of the type of reforms that would have promise in improving the matching of skills in labour markets.

Chart 4

Framework policies and the probability of skill mismatch in labour markets



Source: McGowan, M. and Andrews, D. (2015), "Labour market mismatch and labour productivity: evidence from PIAAC data", OECD Economics Department Working Paper, No 1209, Paris. Reproduced from Mann (2015), Chart 7.
Notes: The blue dot is the average probability of skill mismatch, evaluated at the median level of the policy and individual characteristics. The distance between the Minimum/Maximum of the relevant policy indicator and the median is the change in the probability of skill mismatch with the respective policy change.

In our view the 2015 Sintra discussions suggest that solving Europe's problems with unemployment and low inflation requires a dual approach, involving both demand-side policies and structural reforms.

Communication of central banks about policies outside their formal mandates

The rich discussion on structural reforms led to a debate on whether central banks should participate in the public debate about economic policies more broadly. Willem Buiter (2015) pointed out that they often do, both in the United States and in the euro area. In his view, however, central bankers should focus public communication on monetary policy and price stability, i.e. topics within their mandate as appointed public officials. They should not discuss fiscal policy and structural reforms. Mark Carney tended to agree and took up the idea of the central bank acting as a Stackelberg follower to other government policies. Stanley Fischer reported that the US Board of Governors had agreed to largely abstain from such commentary. At the same time, there can be specific circumstances under which central banks' reflections on fiscal or structural policies serve the general good.

…there can be specific circumstances under which central banks' reflections on fiscal or structural policies serve the general good…

Mario Draghi and other participants pointed out that the combination of a single monetary policy with largely national fiscal and structural policies made the euro area special. First, large cross-country differences – for example in natural unemployment rates resulting from structural rigidities, as mentioned by Gilles Saint-Paul – can emerge in such a setting, which may endanger the stability of the euro. Second, fiscal and structural problems affect the monetary transmission mechanism. Third, structural problems are more pronounced in the euro area than in the United Kingdom or the United States, for example. Jean Pisani-Ferry (2015) further elaborated on how a monetary union has deep implications for the relationship between structural reforms and monetary policy. For example, if the exit of a country from the union imposes damage on the remaining countries, then – in the absence of a sovereign debt restructuring mechanism – the ECB is necessarily part of an overall conversation about national supply-side reforms and their cross-country coordination.

Young economists' poster prize

The ECB Forum also includes a young economists' poster session in which a selected group of PhD students show key findings of their research. Submissions are especially welcome from students working in the areas of monetary policy, macro-prudential policy, the topic of the Sintra Forum in a given year or, more generally, research with a focus on important European policy issues. The best poster is awarded a prize by the ECB President at the end of the conference.

This year the prize went to Yasser Boualam (2015) for his paper on "Bank lending and relationship capital".[5] His research is very original in incorporating a dynamic financial contracting problem in a model with search frictions. He uses this framework to study how the severance of existing lending relationships, and the ensuing slow process of creating new ones, can slow down the economic recovery after a financial crisis.

[5] The paper can be downloaded here: https://www.dropbox.com/s/km1gj4hdw7t4nhy/Yasser%20Boualam%20-%20JMP%20-%20Nov2014.pdf?dl=0.

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The heterogeneous interpretation of forward guidance[6]

By Philippe Andrade

In August 2011 the Federal Reserve System announced that it expected to keep the federal funds rate close to zero "at least through mid-2013". We provide evidence that such a policy led to historically low levels of disagreement on future short-term interest rates among professional forecasters. However, at the same time, forecasters still disagreed about variables driving future monetary policy decisions, i.e. future growth, consumption and inflation rates. As we argue, agreement about the path of future short-term interest rates can coincide with disagreement about macroeconomic fundamentals when agents have different views on the stance attached to future policy. Indeed, the same path of very low interest rates can be interpreted either positively, as a signal that monetary policy will be more accommodative in the future, or negatively, as a signal that the economy will stay at the zero lower bound for a long time. This possibility of heterogeneous interpretations has important consequences for the conduct of monetary policies involving future actions such as forward guidance. These policies are effective only to the extent that private agents predominantly interpret them as good news. By contrast, it can be detrimental when a pessimistic interpretation prevails.

When facing a zero lower bound on its nominal policy rate, a central bank can still ease its policy stance by promising to keep interest rates at zero in the future. In the aftermath of the Great Recession, several central banks implemented such forward guidance policies. Their success was mixed: while they succeeded in lowering expected future interest rates[7], the resulting impact on the macro-economy seems to have been limited.[8] One possible reason is that a policy that promises to keep interest rates at zero is ambiguous: it is consistent with anticipations both of an expansionary monetary policy and of bad economic fundamentals. In this paper, we investigate how the heterogeneous interpretation of the same policy affects the effectiveness and the design of forward guidance policies.

1 Forward guidance coordinated opinions on future policy, not on future fundamentals

Forward guidance has had a striking impact on the cross-section of the private sector's expectations in the United States. Figure 1 shows how disagreement among

[6] This article is based on the work co-authored with G. Gaballo (Banque de France), E. Mengus (HEC Paris) and B. Mojon (Banque de France): Andrade, Gaballo, Mengus and Mojon (2015).

[7] See, for example, Swanson and Williams (2015).

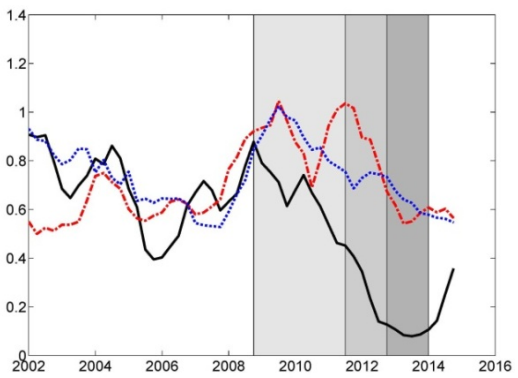
[8] See, for example, Del Negro, Giannoni and Patterson (2013).

professional forecasters about one-year and two-year ahead US short-term interest rates, inflation and consumption growth has developed over the last 15 years.[9]

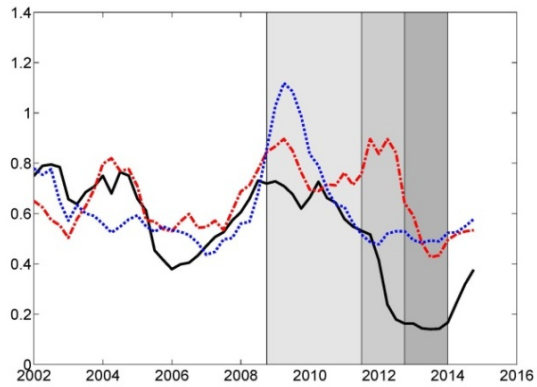
Figure 1

Disagreement about future US short-term interest rates, inflation and consumption growth

(a) one year ahead



(b) two years ahead



The figure displays the interquartile range in the distribution of individual forecasts in the US Survey of Professional Forecasters for three-month interest rates on US T-Bills (black solid line), CPI inflation (red dot-dashed line) and private consumption growth (blue dotted line). The shaded areas correspond to the periods of (i) the zero lower bound, starting in the fourth quarter of 2008, (ii) the Federal Reserve System's fixed-date forward guidance, starting in the third quarter of 2011, and (iii) the Federal Reserve System's state-contingent forward guidance, starting in the fourth quarter of 2012.)

The chart reveals that the announcement of August 2011 by the Federal Open Market Committee initiated a marked downward trend in the heterogeneity of opinions about future US short-term interest rates up to two years ahead. Importantly, the convergence in opinions about future short-term interest rates one year and two years ahead only started in summer 2011, when the Federal Reserve System embarked on fixed-date forward guidance. In particular, it did not happen when the US economy hit the zero lower bound at the end of 2008. So this coordination of opinions on future interest rates was not a mechanical result of the zero lower bound. This level of coordination lasted until the end of 2013. Going back in time reveals that this episode was unprecedented in recent US history. However, over the same period, as Figure 1 also shows, disagreement about other future macroeconomic aggregates, such as consumption growth and inflation, did not reach levels that were below historical averages.

Such evidence is puzzling for standard macroeconomic analysis. Indeed, in normal times, future inflation and demand should determine future interest rates through the policy reaction function of the central bank (e.g. a classical Taylor rule).[10] How can it

[9] The analysis relies on the US quarterly Survey of Professional Forecasters. The focus is on one-quarter, one-year and two-year ahead forecasts for three macroeconomic variables: the short-term interest rate (three-month T-Bills), the inflation rate (headline consumer price inflation) and the (private) consumption growth rate. We look at developments in disagreement about future economic outcomes. Disagreement is measured as the interquantile range in the distribution of individual forecasts, i.e. the difference between the 75th quantile and the 25th quantile in the cross-section distribution of individual forecasts for a given quarter. Such a usual measure of disagreement has a strong positive correlation with alternative measures of the cross-section dispersion of individual forecasts, for example the standard deviation across forecasters.

[10] Andrade, Crump, Eusepi and Moench (2013) provide evidence that forecasters usually forecast future interest rates according to a Taylor rule.

be that, exactly at the time of explicit forward guidance, agents start to disconnect the two, so that they agree on future short-term interest rates but disagree on future macroeconomic outcomes?

2 How can agents understand differently the same forward guidance policy?

We show that this can occur when agents have different views on the *policy stance* implied by the same expected path for future short-term interest rates.

More precisely, we include heterogeneous beliefs on the policy stance in an otherwise standard New Keynesian model of the zero lower bound developed by Eggertsson and Woodford (2003). In this set-up, households face a common discount factor shock pushing the economy towards the zero lower bound. Private agents observe the current discount rate shock and the resulting current allocation, but they do not know the number of periods the shock will last for. Moreover, they cannot observe the commitment ability of the central bank. This information is not available until the economy reaches the actual end of the trap.

We show that, in equilibrium, agents can agree on the path of nominal interest rates, without agreeing on the length of the trap. Indeed, there are two macroeconomic scenarios that are consistent with a policy promising to keep the interest rate at zero for an extended period of time. Either agents believe the central bank is able to commit to and will conduct an accommodative stance of monetary policy after the trap has ended. They view the interest rate path as consistent with a more accommodative monetary policy stance and therefore have relatively optimistic forecasts of future macroeconomic conditions. Or agents believe the central bank cannot commit to keep the interest rate at zero for a number of extra periods after the end of the trap. They view the interest rate path as consistent with a monetary policy constrained to be at the zero lower bound for a long period of time and therefore have bleak forecasts of future macroeconomic conditions.[11]

Since future fundamentals are, by definition, not observed, private agents have no clear way to discriminate today between these two macroeconomic scenarios. Neither can they infer the length of the trap from the policy of the central bank because they do not know its type. So, heterogeneous beliefs about the end of the trap can be sustained at the equilibrium.

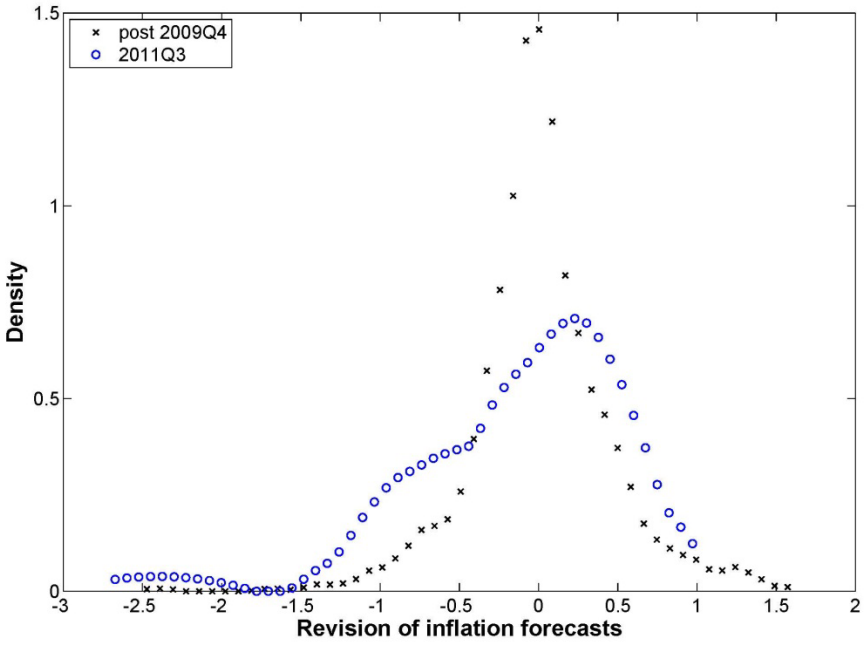
In short, the model generates outcomes that are similar to the stylised facts mentioned above, where we observe both disagreement about future consumption and inflation and consensus about future interest rates. Strikingly, Figure 2 reveals that, in line with the model, forecasters could be broadly classified into two groups at the time when the Federal Reserve System moved to date-based forward guidance: some revised their expectations of inflation positively, while others revised their

[11] The possibility that policy announcements are interpreted differently has been stressed by Campbell, Evans, Fisher and Justiniano (2012). They make the distinction between Odyssean (commitment) and Delphic (non-commitment) forward guidance.

expectations negatively. By contrast, the distribution of individual revisions in inflation forecasts observed for each quarter of the 2010-14 period is unimodal, with a mode equal to zero.

Figure 2

Cross-section distribution of revisions in inflation forecasts



The figure plots the density of individual revisions of two-year ahead inflation forecasts observed in the US Survey of Professional Forecasters for two periods: (i) the first quarter of 2010 to the fourth quarter of 2014 and (ii) the third quarter of 2011 (i.e. the survey data collected just after the Federal Reserve System moved to an explicit date-based forward guidance policy). Densities are obtained through a non-parametric kernel estimation method with an Epanechnikov kernel.

3 What are the consequences of such different interpretations of forward guidance?

The potential ambiguity of the stance attached to an extended period of low interest rates provides an explanation of why forward guidance has not been as effective as standard models predict. Indeed, the different interpretations relating to such a future path imply different consumption choices that are offsetting. Optimistic agents consume more in anticipation of future higher inflation, hence lower real interest rates. Pessimistic agents consume less in anticipation of future lower inflation, hence higher real interest rates. As a consequence, aggregate consumption and thus aggregate inflation react less in comparison with a situation where every agent interprets the policy as a commitment to a more accommodative stance leading to higher future inflation.

This heterogeneity of perception has also important consequences for the optimality of forward guidance. The effectiveness of this policy crucially depends on whether the private sector predominantly views it as good or bad news. Forward guidance can stimulate consumption and raise inflation expectations if a high enough

proportion of agents believe in the optimistic scenario. By contrast, when a high enough proportion of agents are pessimistic, the implementation of an extended period of low interest rates may be inefficient. This is because the pessimistic agents drag aggregate consumption down. In particular, there is a risk that such a policy gives rise to agents being more pessimistic about the future macroeconomic outlook than before it was implemented, in which case forward guidance can be even detrimental and so the status quo becomes optimal.[12] One important consequence is that, in contrast to previous results in the literature,[13] it is not always optimal to counterbalance the private sector's doubts on the commitment ability of central banks by increasing the number of periods of extra accommodation.

4 Concluding remarks

We think several policy implications can be drawn from our analysis.

First, monitoring the reaction of future interest rates and the yield curve is not enough to gauge whether forward guidance is effectively interpreted as an accommodative monetary policy by the private sector. It is important to look at other indicators, in particular expected inflation.

Second, and related to the first, announcing a path for future interest rates is not enough to coordinate opinions on the stance the central bank aims to adopt. This should be clarified through additional communication, making clear that the policy is intended to be more accommodative when the trap ends.[14] More generally, central banks should find ways to convince agents of their commitment ability. One way is to take interest rate risks onto their balance sheet through quantitative easing or the provision of liquidity at fixed interest rates (e.g. by means of a targeted longer-term refinancing operation).[15]

Third, and finally, we think our analysis points to potential lessons for the implementation of other policies – such as the asset purchase programme (APP) – that involve a sequence of future policy actions. As with forward guidance, the APP can be associated with different future monetary policy stances, hence different views on future inflation and growth.

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[12] We introduce intra-household transfers that induce wealth-sharing at the end of the trap. This allows a study of the consequences of the mere heterogeneity of beliefs in the New-Keynesian set-up.

[13] See Bodenstein, Hebden and Nunes (2012).

[14] Strictly speaking, our model features a fixed share of pessimists and does not consider the quality of communication. Yet, our results imply that announcing a path for future interest rates has to be complemented by other instruments.

[15] See Bhattarai, Eggertsson and Gafarov (2014).

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Shall we trust governments' fiscal plans?

By Joan Paredes

One of the main tasks of governments is to define tax and public spending policies. Governments prepare at least once per year fiscal plans within the annual budget for the next year. Certainly governments can deviate from announced policies, and we know from the literature that indeed they do deviate. Is there a way to reduce uncertainty about the future course of fiscal policies?

Given the amount of noise that typically accompanies fiscal data, models can be instrumental to unveiling the current course of government policy in real time.

Even if plans turn out to be (purposely) misleading ex post, they convey useful information, in particular when policy changes significantly, and when there is limited information about policy implementation.

Ex post policy changes are typically related to strategic political behaviour, for example when facing elections.[16] But uncertainty about future (fiscal) policies is damaging for economic performance given that it affects the ability of individual agents to ground decisions about future consumption, investment and saving plans. Is there a way to reduce uncertainty about the future course of fiscal policies? In a recent paper[17] we show that, indeed, there is. For that, the analyst (econometrician) has to learn about fiscal plans from three pieces of information:

- what the government says it will do: the fiscal policy plan (target) itself;
- what the government is actually doing today: through the observation of incoming data on the actual degree of implementation of those plans;
- what the government said in the past it would do and what it actually did: this is a way of assessing credibility on the basis of past (mis)behaviour.

Policy plans should convey information about the future course of policies, but may be subject to political discretion and could turn out like letters to Santa Claus. If planned policies were not useful for predicting policies observed ex post, then the probability assigned today to the commitment of the government to current fiscal plans should be low. At the same time, learning from short-term fiscal data poses a signal extraction problem, in particular bearing in mind that future policies convey, by definition, forward-looking information, while data refer to backward-looking information.

[16] See references and quotes therein for a thorough discussion on reasons for fiscal ex post policy deviations.

[17] See Paredes, Pérez and Pérez-Quirós (2015).

To solve this dilemma we formulate and estimate empirical models (mixed-frequency, state-space models estimated with the Kalman Filter) for a number of EU countries, focusing on government consumption plans. In our models the analyst learns about the sources of information mentioned above: backward-looking and forward-looking. The weights assigned in each moment of time to each type are determined empirically by the model.

Key findings

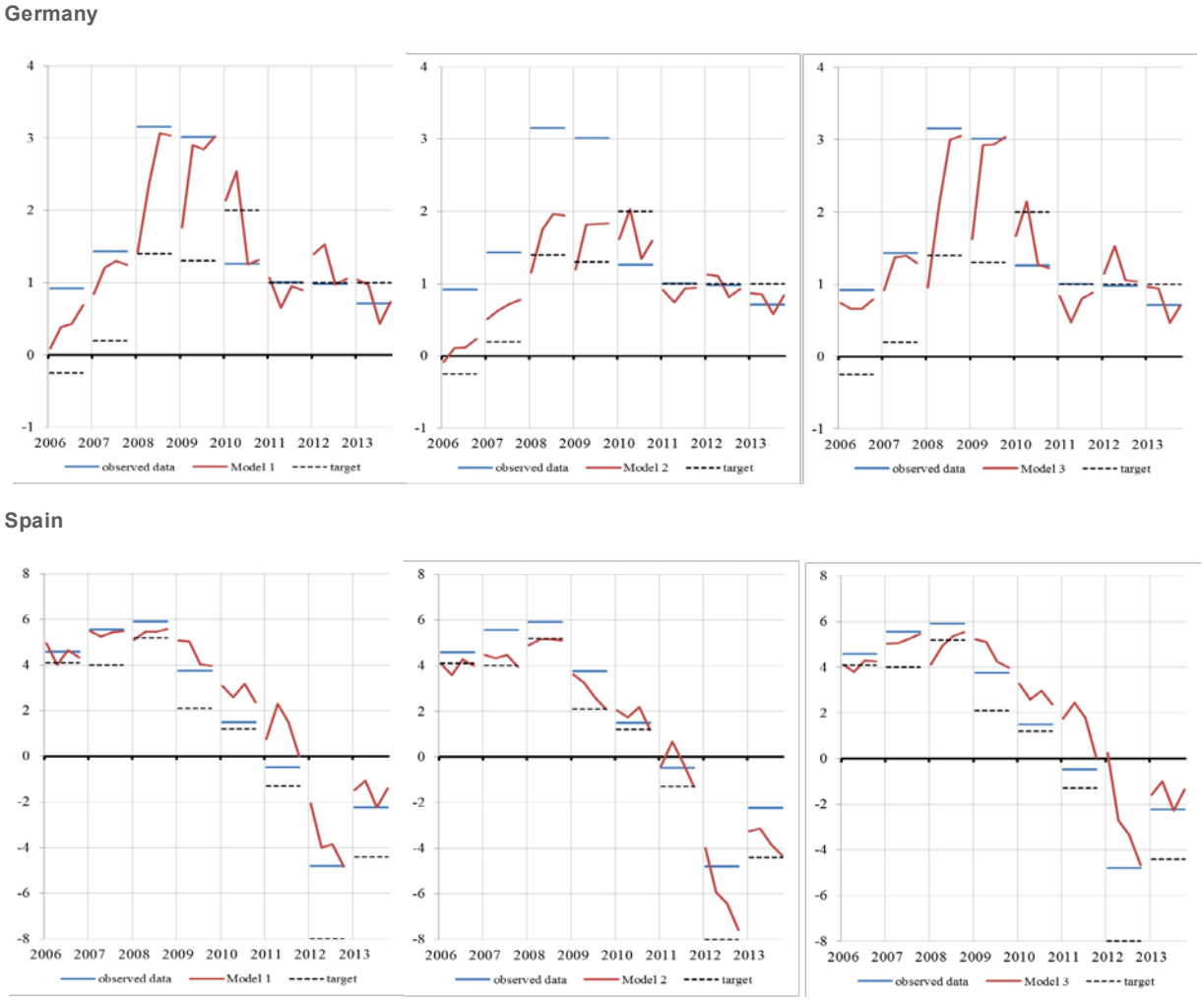
We make two relevant findings. First, our models are instrumental to unveiling the current course of policy in real time. This is not a trivial task, given the amount of noise that typically accompanies fiscal data. Second, and most importantly, we show that government consumption targets (plans) convey useful information about ex post policy developments, in particular when policy changes significantly (and even if past credibility is low) and when there is limited information about the implementation of plans (e.g. at the beginning of a fiscal year).

Without entering into technicalities, let us show how the learning method works. Chart 1 plots iterative forecasts from three models for two EU countries (Spain and Germany), under different assumptions. It shows how the three models learn and adapt throughout the year to new incoming information. The figure shows the observed annual rate of growth of ex post real government consumption (solid line), the annual targeted rate of growth (fiscal plan; dotted line) and the sequence of forecasts for the whole year (annual growth rate) produced with alternative models taking as forecast origin each quarter of the year.

The "imperfect past credibility" model (Model 1) is one in which all the sources of information mentioned above are incorporated. The model "perfect past credibility" (Model 2) assumes that the track record of government targets was perfect: i.e. it does not penalise past misbehaviour. This corresponds to the situation in which a fresh new government enters office and asks citizens/analysts for a clean slate. Finally, the "no targets" model (Model 3) is a model in which the analyst does not trust the government at all, i.e. it completely disregards fiscal plans: it only processes incoming data. Turning now to our illustration, the forecasts using Models 1 and 3 tend to approach the final outcome in a uniform way, more quickly for Model 1 as the target conveys useful information on the direction of change of the variable of interest. On the other hand, as regards the case with "perfect past credibility" (Model 2), the learning process is even faster at the beginning of years in which the target is informative, but then as the quarters go by it ends up inheriting the "policy bias" of the target, and as a consequence the track record is the worst of the three considered models. These effects are general, but more visible in the case of Spain in the second part of the sample, as drastic policy changes took place.

Chart 1

The evolution of the iterative real government consumption forecasts (% growth rates) during the year ("learning") for two selected EU countries: Germany and Spain.



Conclusion

So, shall we trust governments' fiscal plans? Our answer is: sometimes. This diverges from the "no" that could be derived from the usual reading of the well-established branch of the literature that finds politically-motivated biases in policy targets. Our point is that even if plans turn out to be (purposely) misleading ex post, they do have some information content and might not be completely useless. It is just a matter of using the appropriate learning device whereby government promises (what the government says it will do) are confronted every quarter with reality (what the government is actually doing), just like in many other areas of our lives.

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Panel on non-standard monetary policies at the EEA Annual Congress

As part of the 30th Annual Congress of the European Economic Association (EEA), held in the beautiful Baroque Palace in Mannheim, the ECB organised a plenary panel session on the "Effects of non-standard monetary policy measures: evidence and challenges". Four distinguished policy-makers and academics presented their insights on issues such as the transmission channels of non-standard monetary policy measures, their effectiveness in sustaining financial intermediation and supporting the economic recovery in the aftermath of the crisis, and their potential costs or trade-offs in terms of monetary and financial stability.

In the panel all four speakers focused on asset purchase programmes. They agreed that the simultaneity of a variety of economic and political high-impact events in recent months, including the launch of the ECB's asset purchase programmes, rendered the isolation of their individual effect difficult. Accordingly, all statements contained a word of caution against generalising the current experience to the future, when the economic context might be different.

Charles Bean, Professor of Economics at the London School of Economics and Political Science and former Deputy Governor for Monetary Policy at the Bank of England (BoE), reported on the experience of the BoE with its two waves of asset purchases. The primary transmission channel was an increase in asset prices due to portfolio rebalancing, whereas the bank liquidity channel was weak. The BoE estimates that at their peak the programmes raised UK GDP by about 2.5% and inflation by 1 percentage point. Looking forward, Sir Bean warned against routine purchases of government debt, because this would weaken governments' incentive for fiscal prudence. Considering that holding the assets until maturity would take until the year 2060, he speculated that an exit strategy for the BoE would include active sales in a preannounced programme of regular auctions.

ECB Vice-President Vítor Constâncio placed the launch of the new phase of the ECB's non-standard measures in June 2014 (including the targeted provision of liquidity to banks and the launch of its private and public sector asset purchase programmes) in the context of the protracted decline in inflation since the second half of 2013, emphasising that inflation in the euro area had been declining already before the subsequent drop in oil prices. He noted that key metrics such as inflation expectations and credit conditions point towards a success of the measures, in particular when considered against the developments in recent months. Nevertheless, as of today outright purchases constitute only a small fraction of the ECB's total assets or of GDP compared with other central banks with similar programmes. At the same time, Mr Constâncio conceded that "any policy has trade-offs – nothing is for free". However, he considered the risks of the non-standard policy measures in place as manageable and outweighed by the benefits. Whereas medium-term inflation risk is to be addressed with the existing toolset of monetary

The contributions to this conference can be downloaded from the ECB's website at:
https://www.ecb.europa.eu/pub/conferences/html/150625_methis.en.html

2nd international conference on sovereign bond markets

On 10 and 11 March 2015, the ECB hosted the second of three in the series of International Conferences on Sovereign Bond Markets.[20] A key motivation for the three conferences is to bring together academics, practitioners and policy-makers to discuss the effects of central banks' recent non-standard policy measures, such as government bond purchases and large liquidity injections, on sovereign risk and sovereign bond markets, especially given that these measures ultimately have to be unwound. The first conference was held in Tokyo in June 2014 and focused on the functioning of the sovereign bond market, particularly from the liquidity standpoint and in the light of the substantial central bank interventions that have taken place.[21] The third conference will take place next year in New York on 15-16 April. It will focus on the real and financial externalities through which large-scale asset purchases affect the economy at large.

Mr Praet welcomed the participants of the Frankfurt conference and introduced the keynote speaker, Raghuram Rajan, Governor of the Reserve Bank of India. Mr Rajan discussed the determinants of sovereign debt sustainability.[22] He put forward the idea that myopic governments (that is governments who care only about a short time horizon) do not default when debt is low because they would lose access to debt markets and be forced to reduce spending in the very short run. They also do not default as debt builds up and net new borrowing becomes difficult, because of the adverse consequences from default to the domestic financial sector. The problem is that even though more myopic governments default less often, they tax in a more distortionary way and increase the vulnerability of the domestic financial sector to future government debt default. From this perspective, constitutional laws which limit the ability of government spending could be valuable and improve overall welfare.

The conference was organised in five sessions and a concluding policy panel. A common theme of many papers presented in this conference was the evidence that many arbitrage relationships which hold in normal times have suddenly broken down during the crisis years.

The first session touched on the importance of government bonds as collateral in repo transactions. François Derrien (HEC Paris) presented empirical evidence that the Centralized-Counterparty Clearinghouse (CCP) behind European sovereign repos suffered from systemic risk during the European sovereign debt crisis in 2008-

[20] The papers presented at the conference can be downloaded from the ECB's website: http://www.ecb.europa.eu/events/conferences/html/150310_sbm.en.html. This series of conferences started from an initiative of Goethe University (Frankfurt), Waseda University (Tokyo) and New York University, in cooperation with the Bank of Japan, the Federal Reserve Bank of New York and the European Central Bank. The conferences are also organised under the auspices of the Society for Financial Econometrics (SoFiE), CREDIT Network (Venice, Italy) and SYRTO project.

[21] The website of the conferences is http://www.greta.it/sovereign/conferences.htm

[22] The presentation was based on Acharya, V.V. and Rajan, R. (2013), "Sovereign Debt, Government Myopia, and the Financial Sector", *Review of Financial Studies*, 26(6), pp. 1526-1560.

11. The paper documents that in 2011 the repo market behaved as if the probability of CCP default was very large and did not react to increases in haircuts. Only the ECB's three-year long-term refinancing operation in December 2011 was able to disconnect the CCP from the sovereign crisis. The discussant, Philipp Hartmann (ECB), raised the important point that the CCP can become systemic not only in the event of default but also when haircuts are increased in a pro-cyclical fashion in crisis periods. Stefano Corradin (ECB) presented an analysis of specialness for government bonds, a measure of the scarcity premium of procuring a specific bond in repo transactions. He showed that specialness is higher for bonds in high demand and for bonds with a lower available supply. These effects have been amplified by past ECB purchases in the context of the Securities Markets Programme. The analysis gives valuable insights into the implementation and monitoring of the recently launched asset purchase programme.

The second session dealt with the drivers of euro area sovereign bond spreads. Roberto De Santis (ECB) proposed a time-varying, country-specific market estimate of intra-euro area redenomination risk, based on the comparison of differences in credit default swaps (CDS) of the same government bond in euro and dollars. Focusing on Italy, Spain and France, and using Germany as a benchmark, he shows that redenomination risk was a main driver of sovereign yield spreads, which was brought to a halt only by the ECB's announcement on Outright Monetary Transactions. Alessandro Fontana (European Commission) analysed the so-called "basis" between euro area sovereign CDS and the corresponding bonds issued by the same sovereign. He finds that the basis repeatedly deviated from the no-arbitrage condition due to short-selling and funding frictions. Moreover, the "flight-to-quality" phenomenon in bond markets is a key driver of the large positive basis of more creditworthy countries.

The third session focused on the impact of non-standard measures on sovereign bond markets. Vivian Yue (Emory University and Federal Reserve Bank of Atlanta) compared the effects of conventional US monetary policy on several foreign government bond yields with those of the unconventional measures employed after the target federal funds rate hit the zero lower bound in late 2008. She finds that an expansionary US monetary policy steepens the foreign yield curve during conventional periods and flattens it during unconventional periods. Jens H. E. Christensen (Federal Reserve Bank of San Francisco) analysed the impact of the Federal Reserve's second programme of large-scale asset purchases on Treasury inflation-protected securities (TIPS) and found that it lowered the liquidity premium by an average of 12-14 basis points, a reduction of about 50%.

The fourth session addressed the issue of price and liquidity discovery in high-frequency quote-driven markets. Davide Tomio (Copenhagen Business School) analysed the process of liquidity discovery between assets via arbitrage relationships, using data from the cash and futures markets for the Italian sovereign bond market, at the millisecond level. He finds that the liquidity in the cash market, but not in the futures market, has a significant impact on the arbitrage mechanism and that the interventions of the ECB, during the euro area crisis, helped restore proper market functioning. Filip Zikes (Bank of England) used proprietary

transactional data to study the determinants of liquidity in the UK government bond (gilt) market between 2008 and 2011. He provided evidence that gilt market liquidity also deteriorated significantly during the crisis and that this was associated with increased funding costs and aggregate market uncertainty. The reduction in market liquidity was associated with higher frictions in the inter-dealer market – as proxied by the ratio of inter-dealer to total volume.

The fifth (and last) session was about improvements in modelling yield curve dynamics. Emanuel Mönch (Deutsche Bundesbank) presented an affine term structure model for the joint pricing of real and nominal bond yields that accounts for illiquidity. Adjusting break-even inflation (that is the difference between fixed-rate and inflation-linked bonds) for inflation and liquidity risk substantially improves forecasts of long-term inflation expectations. He provided evidence that the Federal Reserve's large-scale asset purchases lowered Treasury yields primarily by reducing real term premia, supporting the view that quantitative easing has an impact via the portfolio rebalancing channel. The last paper of the conference, presented by Bernd Schwaab (ECB), was a novel econometric methodology to model the yield curve and its interactions with non-standard monetary policy measures. The econometric novelty is a flexible estimation model which accounts for time-varying volatility and provides robust and stable estimates when applied to euro area sovereign bond yields during the turbulent crisis years. He finds evidence that bond market interventions under the Securities Markets Programme had a direct but temporary effect on the yield curve lasting up to ten weeks.

The conference concluded with a policy discussion chaired by Marti Subrahmanyam (Stern/New York University) followed by concluding remarks by Jan Pieter Krahnen (SAFE/Goethe University). The panellists touched on many issues, including the challenges arising from implementing large-scale asset purchase programmes. Ulrich Bindseil (ECB) argued that, in principle, central banks have the tools to fight deflationary pressures, as they have practically unlimited purchasing power. The challenge is how to choose the proper mix from the tools available. Carlos Egea (Chief Trading Desk Strategist, Morgan Stanley) highlighted the risk that the current low interest rate environment and limited revenue opportunities could squeeze bank profitability and eventually lead to financial stability issues. Klaus Wiener (Chief Economist and Head of Tactical Asset Allocation, Generali Group) also expressed concerns about the extremely low interest rates for the asset/liability mismatch of insurance companies. He referred to the incentives to diversify away from the sovereign bond market into corporate bonds. Kazuo Momma (Assistant Governor, Bank of Japan) reported that, even though the balance sheet of the Bank of Japan has reached almost 60% of Japan's GDP, they have not yet encountered significant difficulties in sourcing the necessary assets. He also expressed the view that, in the implementation of the purchase programme, the Bank of Japan is trying to minimise any distortive effect of the functioning of the market mechanism. A similar concept of market neutrality was put forth by Benoît Coeuré in his dinner speech at the end of the first day of the conference.[23] In his speech, Mr Coeuré discussed the principles guiding the implementation of the public sector purchase programme and dispelled

[23] http://www.ecb.europa.eu/press/key/date/2015/html/sp150310_1.en.html

some doubts about the ability of the ECB to meet its monthly quantitative purchase targets.

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ISSN 1977-12x (online)
EU catalogue No QB-AB-15-023-EN-N