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# **Inflation and unemployment in Europe**

Conference proceedings

21-23 May 2015 · Sintra, Portugal

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# Programme

Thursday, 21 May 2015

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6.30 p.m. **Opening reception and dinner**

**Welcome address**

Mario Draghi, President, European Central Bank

Dinner hosted by the Executive Board of the European Central Bank

**Dinner speech – Past, present and future challenges for the euro area**

Stanley Fischer, Vice Chair, Board of Governors of the Federal Reserve System

Friday, 22 May 2015

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9 a.m. **Introductory speech – Structural reforms, inflation and monetary policy**

Mario Draghi, President, European Central Bank

9.30 a.m. **Session 1**

**Current perspectives on inflation and unemployment in the euro area and advanced economies**

**Chair:** Peter Praet, Member of the Executive Board, European Central Bank

**Inflation and activity – two explorations and their monetary policy implications**

Olivier Blanchard, Economic Counsellor and Director of the Research Department, International Monetary Fund (with Eugenio Cerutti, Senior Economist, International Monetary Fund and Lawrence H. Summers, Professor, Harvard University)

**Discussant:** Laurence Ball, Professor, Johns Hopkins University

**Hysteresis and the European unemployment problem revisited**

Jordi Galí, Professor, Pompeu Fabra University, CREI

**Discussant:** Robert J. Gordon, Professor, Northwestern University

11.30 a.m. Coffee break

12 p.m. **Panel: Current perspectives on inflation and unemployment in the euro area and advanced economies**

Willem Buiter, Chief Economist, Citi

Mark Carney, Governor, Bank of England

Dennis Snower, President, Kiel Institute for the World Economy  
Lawrence H. Summers, Professor, Harvard University

- 1.30 p.m. Lunch
- 7.30 p.m. Reception and dinner

## Saturday, 23 May 2015

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- 9 a.m. **Session 2**  
**Structural perspectives on European employment, productivity and growth in a global context**
- Chair:** Vítor Constâncio, Vice-President, European Central Bank
- Unemployment in Europe: what does it take to bring it down?**  
Tito Boeri, Professor, Bocconi University  
(with Juan-Francisco Jimeno, Head of Research Division, Banco de España)
- Discussant:** Gilles Saint-Paul, Professor, Paris School of Economics
- Innovation and growth**  
Sir Christopher Pissarides, Professor, London School of Economics
- Discussant:** John Fernald, Senior Research Advisor, Federal Reserve Bank of San Francisco
- 11 a.m. Coffee break
- 11.30 a.m. **Panel: Structural perspectives on European employment, productivity and growth in a global context**  
Patrick Honohan, Governor, Central Bank of Ireland  
Catherine Mann, Chief Economist, Organisation for Economic Co-operation and Development  
Jean Pisani-Ferry, Commissioner General, France Stratégie  
Christoph M. Schmidt, Chairman, German Council of Economic Experts
- 1 p.m. Lunch
- 2.30 p.m. **Policy panel**  
Mario Draghi, President, European Central Bank  
Stanley Fischer, Vice Chair, Board of Governors of the Federal Reserve System  
Haruhiko Kuroda, Governor, Bank of Japan
- Moderator:** Zanny Minton Beddoes, Editor-in-Chief, The Economist
- 4 p.m. **Award ceremony – young economists' posters**  
Closing remarks

Family photo

7 p.m. Dinner hosted by the Banco de Portugal

Young economists' poster session - posters by young economists about their research work will be on display until 1.30 p.m. on Saturday, 23 May 2015.

# Past, present and future challenges for the euro area

Dinner speech by Stanley Fischer  
Vice Chairman of the Board of Governors of the Federal Reserve System

It is an honour and a pleasure to participate in the ECB Forum on Central Banking, and I thank you, President Draghi, and other members of the ECB Executive Board, for inviting me to take part.<sup>1</sup> Although the topic of the conference is inflation and unemployment, I will take another perspective by discussing some of the past, present, and future challenges for the ECB and the euro area.

My theme is taken from Jean Monnet, who in 1976 wrote: “Europe will be forged in crises, and will be the sum of the solutions adopted for those crises.”<sup>2</sup> This quote is discussed in the interesting recent paper by Luigi Guiso, Paola Sapienza and Luigi Zingales, whose view of Monnet’s contention can be deduced from the title of their paper: “Monnet’s Error?”<sup>3</sup> There are similar quotes from others, among them Jacques Chirac in 2003 and the former Chief Economist of the ECB, Ottmar Issing, in 2010.<sup>4</sup> I first heard a statement to this effect from Jean-Claude Trichet at the 2011 Jackson Hole conference.<sup>5</sup>

An extended 2015 version of the Monnet contention would take the form: “The first step on the road to European union was the creation of the Coal and Steel Community in 1951. At the start, we did not have a road map, but we had the goal of ensuring that the countries of Europe would never again go to war, and to that end, we had to build an institutional structure that would make another European war impossible. From time to time we encountered obstacles in that process. These obstacles often led to crises, but the crises were overcome, and from each crisis, the prospects for a united, prosperous and peaceful Europe emerged stronger. And that is what will happen this time too.”

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<sup>1</sup> I am grateful to Brian Doyle, Jane Haltmaier, Stacey Tevlin and Paul Wood of the Federal Reserve Board for their assistance. The views expressed are my own and not necessarily those of others at the Board, on the Federal Open Market Committee, or in the Federal Reserve System.

<sup>2</sup> See Jean Monnet (1976), *Memoires* (Paris: Fayard).

<sup>3</sup> See Luigi Guiso, Paola Sapienza and Luigi Zingales (2015), “Monnet’s Error?”, *NBER Working Paper Series*, No 21121 (Cambridge, Massachusetts: National Bureau of Economic Research, April).

<sup>4</sup> In a 2003 TV interview, Chirac said: “And whenever there’s been a crisis, we’ve emerged from it with a stronger Europe.” See TF1 and France2 (2003), “[Excerpts of TV Interview by President Chirac to TF1 and France2](#),” March 10. In November 2010 Professor Issing (then Chief Economist and member of the Executive Board of the ECB) gave an address at the Faculty of Economics of the University of Pavia for the honoris causa degree in international economic integration. He said: “After all, ‘Europe’, to use this term, has been through many crises and all in all has emerged stronger from each one.” See Otmar Issing (2010), “[Professor Otmar Issing Address](#),” in “[Otmar Issing: An Economist and Architect of Supranational Institutions \(PDF\)](#),” introduction by Guido Montani, *Il Politico* (University of Pavia, Italy), No 1, p. 22.

<sup>5</sup> A year later, at the 2012 Jackson Hole conference, I quoted Jean-Claude Trichet as having said, “[T]he European project is a project in process. It was not set up with this particular aim of getting to a monetary union. We’ve had crisis after crisis since we started. At every stage of the process, we have heard the same story from Americans: ‘You Europeans don’t know how to make decisions. You’re always slow. What phone number should I call if I want to speak to Europe? This dream is bound to collapse.’ We have heard that every time, and we have been slow. But in the end we have emerged stronger from every crisis.” I spoke to Jean-Claude Trichet recently to check that this is what he said in 2011. He replied that he had, but that he doubted that he had said “we have been slow”, since he generally states “we have been bold.”

This leaves us with three questions: Has modern Europe developed primarily through crises? Will it be stronger when this crisis is over? And what challenges or crises is Europe likely to have to deal with in future? Despite the fact that political and economic aspects of the structure of the European economy have inherently been closely intertwined throughout history – and saying this, one thinks of the Romans and later of Charlemagne – I will focus on the economic aspects of the European project, and primarily on its monetary and financial aspects.<sup>6</sup>

Intra-European monetary and exchange rate problems have for centuries bedevilled European countries and intra-European trade, and led to the desire for greater exchange rate stability – perhaps through some form of treaty or agreement, or even through a monetary union. Of course, the desire for greater exchange rate stability is true also of almost the entire world, and is reflected in the original Articles of Agreement of the International Monetary Fund.

The first modern international attempt to regularise monetary relations among independent European states was that of the Latin Monetary Union (LMU), which came into force in 1866. The original members were France, Belgium, Switzerland and Italy. The Papal States joined later in the same year, and Greece and Rumania signed up in 1867.<sup>7</sup> The members agreed to fix exchange rates among them by setting the amounts of silver and gold (weights and fineness) in the national coinage, with a specified exchange rate (15.5) between silver and gold. In addition, a limit of six francs per inhabitant was set on the value of smaller coins issued by each country, “because of their substantial seigniorage.”<sup>8</sup>

The LMU fixed exchange rates within a bimetallic international system. Kindleberger notes that in setting up the LMU, the Swiss, Belgians and Italians were in favour of moving to the gold standard, but that “French resistance dominated” (p. 68). “Then came a series of blows to silver” (p. 68), the most important occurring after the establishment of the Reichsbank, when Germany in 1873 shifted from bimetallism to the gold standard, and the Reichsbank started selling its silver. In practice this moved the LMU to a gold standard, a change that was formally recognised in 1878 – the year of the International Monetary Conference called by the United States to maintain bimetallism, an effort which failed.

The exchange rates established by the LMU became ineffective during and after the First World War, and the Union was formally ended in 1927.<sup>9</sup> Kindleberger writes consolingly that “from 1865 to 1867, ... the Latin Monetary Union worked reasonably well, and its success suggested the desirability of expanding it to arrive at a ‘universal money’” (p. 69).

Now to post-Second World War Europe, and the question of whether Europe has emerged stronger through crises. The Treaty of Rome, establishing the European Economic

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<sup>6</sup> See Kindleberger, C.P. (1993), *A Financial History of Western Europe*, 2nd ed. (New York: Oxford University Press). The book presents four chronologies in its Chapter 1: “I: Wars”; “II: Monetary Events”; “III: Banking Landmarks”; and “IV: Financial Events.” The earliest entry is in “Banking Landmarks,” 12th and 13th Centuries.: Fairs of Champagne.

<sup>7</sup> Later many other countries accepted the coinage standards set by the LMU, but did not formally join the Union.

<sup>8</sup> See Kindleberger, C.P., *op. cit.*, p. 68.

<sup>9</sup> Greece was suspended from the LMU in 1908 for debasing its gold coinage, and readmitted in 1910.



Community (EEC), was signed in 1957 by the six original members: Belgium, France, Italy, Luxembourg, the Netherlands and West Germany, the same group that had set up the Coal and Steel Community. The aim was economic integration among the six members, including a common market and a customs union. At that time, the Bretton Woods agreement and capital controls were still producing reasonable stability in exchange rates.

However, as Bretton Woods began to unravel in the 1960s, exchange rates became more unstable, and appreciations and depreciations against the dollar led to sizable shifts in bilateral rates among European currencies. Yet the EEC continued to work within the Bretton Woods framework, even as the Bretton Woods approach began to be modified at the end of the decade and the beginning of the 1970s. Of particular difficulty to members of the EEC was the fact that, under some circumstances, the exchange rate bands specified in the Smithsonian agreement permitted movements of up to 9% between any pair of currencies.

In response to these pressures, members of the EEC agreed in 1972 to the “snake” – or “the snake in the tunnel” – that attempted to limit exchange rate fluctuations of each currency relative to the dollar.<sup>10</sup> However, this system was soon put to the test, notably by the oil crises of the 1970s, as both the effects of the oil price increases themselves and the policies adopted in response differed across countries. Denmark and the United Kingdom exited the snake soon after entering, Italy dropped out in 1973, and France participated intermittently during the mid-1970s, first dropping out in 1974.

The snake was a failure, a failure that created problems, although clearly not a crisis. If exchange rates among members of the EEC were to be stabilised in the new world of floating rates, the Community had to invent a substitute. In 1978 the members of the EEC created the European Monetary System, which started with an Exchange Rate Mechanism (ERM I) that limited currency fluctuations relative to a basket of national currencies.<sup>11</sup> All members except the United Kingdom participated in ERM I. The arrangement also committed central banks to intervene to support the resulting bilateral rates as they approached the limits of the permissible bands. Countries in the ERM also adopted policies that lowered inflation, bringing interest rates into closer alignment. The initial success of the ERM encouraged European leaders to lift capital controls and built momentum towards monetary union, which was reflected in the Maastricht Treaty (the Treaty on European Union), which was agreed to in 1991 and signed in 1992.

However, strains also emerged under the ERM, in an environment in which the Deutsche Bundesbank emerged as the dominant central bank in Europe, and the Deutschmark as the dominant European currency. This led other countries in the ERM to follow German monetary policy. Partly as a consequence of German reunification, the pressures generated by diverging fiscal policies and tightening German monetary policy contributed to the ERM crisis of 1992. Moreover, the earlier lifting of capital controls and the promises to intervene in support of rates that were ultimately not credible put tremendous pressure on the pegged rates – and on relations among some members of

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<sup>10</sup> The snake agreement was made among the six original countries of the EEC plus another three that were about to join, namely Denmark, Ireland and the United Kingdom.

<sup>11</sup> By 1978 the original six members of the EEC had been joined by Denmark, Ireland and the United Kingdom.

the EEC. The crisis forced the United Kingdom and Italy out of the ERM and caused others (Portugal and Spain) to devalue their currencies.

The ERM crisis was an apt illustration of the difficulties of trying to manage exchange rates among countries operating under markedly different economic conditions. However, rather than dissuading policy-makers from trying to limit exchange rate fluctuations within a system that would nonetheless preserve the possibility of some exchange rate flexibility, the experience seemed to encourage them to continue with the plan of the Maastricht Treaty to introduce a single currency and a common monetary policy at the beginning of 1999. Here, indeed, was an example of a crisis leading to a strengthening of the European system – though the process to create EMU – the Economic and Monetary Union, *not* the European Monetary Union – began well before the ERM crisis.

The exchange rate and central banking provisions of the Maastricht Treaty were introduced on the schedule set out in 1991, with the ECB coming into existence in 1999. Until about 2009 the monetary aspects of the plans for the development of the European Union (EU) seemed to be a major success, but not a sufficient success to persuade all members of the EU to become members of the ECB and adopt the euro, with the most notable standout being the United Kingdom.

The ERM crisis also drove home the need for greater coordination of fiscal policies in the run-up to monetary union. Members of the EU agreed to the Stability and Growth Pact in 1996. Although, as we all know, the conditions of the pact have not always been observed, nor enforced by Brussels, the acknowledgment of the need for a coordinated fiscal policy to complement monetary union was still a step forward – one which may be drawn on in future.

What lessons can we draw from this history of the region's economic and monetary responses to earlier crises? Do the results bear out the spirit of the statements by Monnet and others about each crisis leading to greater strength? Certainly, each setback and each crisis spurred policy-makers to take steps that they might not otherwise have taken at that time, and the end result of those steps has been a more unified European monetary union. Successive crises have not deterred policy-makers from the goal of economic integration, but rather seemed to strengthen their belief in the need for it – and that integration is stronger today than it ever was in the past.

Looking back, the progress in this project from its earliest days after the Second World War until today has been impressive. Trade integration has led to the free flow of goods within the EU, and this has brought economic gains. Greater trade integration has, in turn, generated a continued desire for greater monetary integration, which was put in place in 1999, and until recently seemed to be a major success. That success, in turn, made crystal clear the need for more fiscal integration – a challenge for the future, to which we will return.

What about the present crisis of the euro area? Two or three years ago, there was widespread scepticism on the western shores of the Atlantic and the English Channel about the viability of the monetary union, and there was much discussion of what would happen after the break-up of the present euro area – whether there would be one or two

euro areas, one for the stronger countries, one for the weaker, and if so, how well each of the two blocs would fare.

With one sentence – the sentence that included the words “whatever it takes” – that scepticism was largely, though not totally, erased. With the decision to implement QE, it became clear that the ECB has the capacity both to decide to implement monetary policy at the zero lower bound – indeed below the zero lower bound – and to succeed in implementing that policy. There can be no one whose Bayesian priors have not moved in favour of the survival of essentially the present euro area, even though we still await the outcome of the Greek crisis, and even though we know that the present crisis is not yet over.

Is this an example of the success of the Monnet approach? Absolutely: European monetary policy in the earlier part of the Great Financial Crisis was innovative, particularly in the invention of full-allotment outright monetary transactions. That policy was inspired by crisis, as were the innovative policies undertaken by the Federal Reserve System in the United States. More importantly, it is hard to believe that a European banking union would have been put in place by 2014 if it had not been for the crisis. It is no less difficult to believe that a Single Supervisory Mechanism would have been set up without the crisis. Of course, one may say that the ability to make these difficult decisions depended on the skills of the leadership of the ECB – and that is true, and will always be true. But the fact is that, when needed, Europe produced the monetary policy leadership it needed.

What of the future? What crises, what extremely difficult decisions, await the EU? Some are already visible. The decision to use the single currency to drive the European project forward was a risky one, and at some stage or probably in several stages, it will be necessary to put the missing fiscal framework into place. And that, if it happens, will be another example of a crisis – the present crisis, one hopes – whose solution will have strengthened the European enterprise. For success in this area must be one of the most difficult economic challenges facing the EU after the present crisis is over.

Also awaiting the EU are the possibilities of major difficulties associated with the current Greek crisis and, later, with a potential British exit. One can of course imagine many different types of future crises, including crises that could develop out of the worsening geopolitical situation in which the Western world finds itself. And one could go on.

Experience tells us that the best way to deal with future crises is to strengthen the economic framework in which they will be confronted. That will require a great deal of thought about how to deal with future crises that could most easily be solved by an exchange rate adjustment, and it will also require developing a better mechanism to ensure that Member States run responsible financial and budgetary policies. It means also seeking solutions to the difficult demographics now confronting many European countries.

It also means the continuation of a courageous and effective monetary policy, and courageous and effective regulation and supervision of the financial system – albeit a monetary policy that could do even better if accompanied by an expansionary fiscal policy.

All that has been done so far makes it very likely that EMU – the Economic and Monetary Union – will survive this crisis. However, in the longer run, EMU will not survive unless it also brings prosperity to its members. That means that the most important challenge of the future will require an increase in productivity growth in Europe – and that is a challenge that faces the entire developed world.

Let me conclude by congratulating you, the management and staff of the ECB, on what you have achieved in your short history, and especially in the last few years. Best wishes for future success in continuing to do your share in contributing to the building of Europe – preferably without having to face too many future crises, useful as Monnet’s approach suggests such crises could be.

# Structural reforms, inflation and monetary policy

Introductory speech by Mario Draghi  
President of the European Central Bank

Structural and cyclical policies – including monetary policy – are heavily interdependent. Structural reforms increase both potential output and the resilience of the economy to shocks. This makes structural reforms relevant for any central bank, but they are especially relevant in a monetary union.

For members of a monetary union, resilience is crucial to avoid shocks leading to consistently higher unemployment and, over time, permanent economic divergence. It therefore has direct implications for price stability, and is no less relevant for the integrity of the euro area. This is why the ECB has frequently called for stronger common governance of structural reforms that would make resilience part of our shared DNA.

Structural reforms are equally important in terms of their effect on growth. Potential growth is today estimated to be below 1% in the euro area and is projected to remain well below pre-crisis growth rates. This would mean that a significant share of the economic losses in the crisis would become permanent, with structural unemployment staying above 10% and youth unemployment elevated. It would also make it harder to work through the debt overhang still present in some countries. Finally, low potential growth can have a direct impact on the available monetary policy tools, as it increases the likelihood that the central bank runs into the lower bound and has to resort recurrently to unconventional policies to meet its mandate.

However, the euro area's weak long-term performance also provides an opportunity. Since many economies are distant from the frontier of best practice, the gains from structural reforms are easier to achieve and the potential magnitude of those gains is greater. There is a large untapped potential in the euro area for substantially higher output, employment and welfare. And the fact that monetary policy is today at the lower bound, and the recovery still fragile, is not, as some argue, a reason for reforms to be delayed.

This is because the short-term costs and benefits of reforms depend critically on how they are implemented. If structural reforms are credible, their positive effects can be felt quickly even in a weak demand environment. The same is true if care is taken in choosing which types of reform to implement. Also, our accommodative monetary policy means that the benefits of reforms will materialise faster, creating the ideal conditions for them to succeed. It is the combination of these demand and supply policies that will deliver lasting stability and prosperity.

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In every press conference since I became ECB President, I have ended the introductory statement with a call to accelerate structural reforms in Europe. The same message was also conveyed repeatedly by my predecessors, in three quarters of all press conferences since the introduction of the euro. The term "structural reforms" is actually mentioned in

approximately one third of all speeches by various members of the ECB Executive Board. By comparison, it features in only about 2% of speeches by governors of the Federal Reserve System.

Our strong focus on structural reforms is not because they have been ignored in recent years. On the contrary, a great deal has been achieved, and we have praised progress where it has taken place, including here in Portugal. Rather, if we talk often about structural reforms, it is because we know that our ability to bring about a lasting return of stability and prosperity relies not only on cyclical policies – including monetary policy – but also on structural policies. The two are heavily interdependent.

So, what I would like to do today in opening our annual discussions in Sintra is: first, to explain what we mean by structural reforms and why the central bank has a pressing and legitimate interest in their implementation; and, second, to underline why being in the early phases of a cyclical recovery is not a reason to postpone structural reforms; it is in fact an opportunity to accelerate them.

## 1 The importance of structural reform

Structural reforms are, in my view, best defined as policies that permanently and positively alter the supply-side of the economy. This means that they have two key effects.

First, they lift the path of potential output, either by raising the inputs to production – the supply and quality of labour and the amount of capital per worker – or by ensuring that those inputs are used more efficiently, i.e. by raising total factor productivity (TFP). Second, they make economies more resilient to economic shocks by facilitating price and wage flexibility and the swift reallocation of resources within and across sectors.

These two effects are complementary. An economy that rebounds faster after a shock is an economy that grows more over time, as it suffers from lower hysteresis effects. The same structural reforms will often also increase both short-term flexibility and long-term growth.

For example, reforms aimed at encouraging reallocation will not only support faster adjustment, but also higher productivity through raising allocative efficiency.<sup>12</sup> Reforms aimed at strengthening competition will encourage not just greater price flexibility, but also higher investment as young firms are able to enter new markets and expand more quickly.<sup>13</sup>

A comprehensive package of structural reforms will therefore tend to increase both resilience and growth. These are clearly issues in which any central bank has a keen interest. This is especially true for the central bank of a monetary union – and even more so in the conditions we face today. Let me explain why.

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<sup>12</sup> Bartelsman, E., Haltiwanger, J. and Scarpetta, S. (2013), "Cross-Country Differences in Productivity: The Role of Allocation and Selection", *American Economic Review*, Vol. 103(1), pp. 305-34.

<sup>13</sup> Haltiwanger, J. (2012), "Job Creation and Firm Dynamics in the United States", *Innovation Policy and the Economy*, Vol. 12, April 2012.

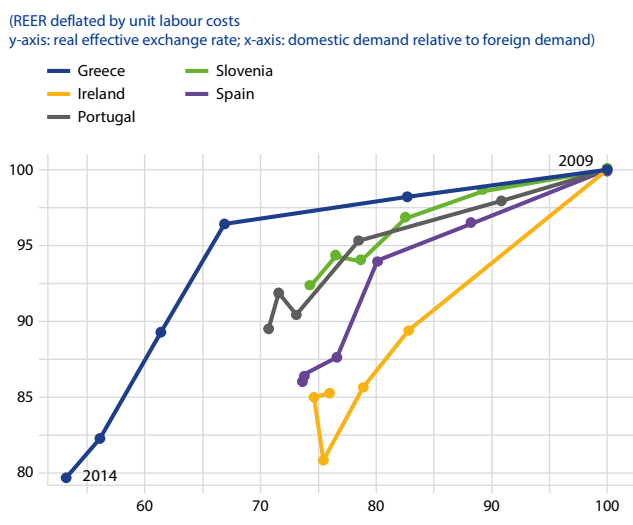
## 2 Increasing resilience to shocks

In terms of resilience, the ability of each economy in a monetary union to adjust quickly to shocks is essential for price stability and, over time, for the long-term viability of the union.

This is because, faced with a negative demand shock, a more flexible economy will tend to react by immediately lowering prices, but agents will then expect inflation to rise again as the shock fades, ensuring a firm anchoring of inflation expectations. By contrast, an inflexible economy is more likely to adjust through higher unemployment, which exerts a more prolonged downward pressure on inflation and is therefore more likely to weigh on inflation expectations. This, in turn, can lead to higher real interest rates and compound the effect of the shock.

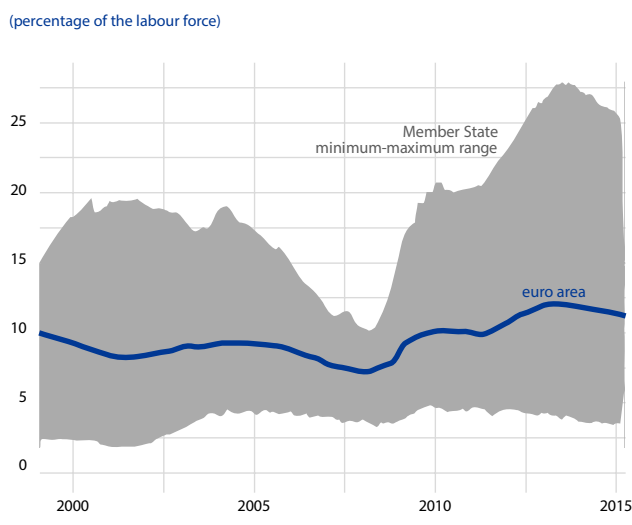
Whereas in a single-country setting, the central bank could respond directly to such a contractionary effect, in a monetary union, monetary policy cannot be tailored to developments in particular countries. There are also no large-scale fiscal transfers across countries in the euro area to play a compensating role in supporting demand. This implies that economies with insufficient flexibility risk more prolonged disinflation, consistently higher unemployment and, over time, permanent economic divergence.

**Chart 1**  
REER and relative demand



Sources: ECB and European Commission.

**Chart 2**  
Unemployment rate



Source: Eurostat.

The way different euro area economies have reacted to the crisis bears this point out. Labour and product market rigidities contributed to a more painful adjustment process in the stressed economies, which was initially driven more by compression of demand than by a reduction of costs relative to other economies, albeit with differences across countries based on their initial degree of flexibility (Chart 1).<sup>14</sup> As a result, we now face a situation of significant divergence in unemployment across the euro area (Chart 2).

<sup>14</sup> Bartelsman, E., di Mauro, F. and Dorrucci, E. (2015), "Eurozone rebalancing: Are we on the right track for growth? Insights from the CompNet micro-based data", available at [www.voxeu.org](http://www.voxeu.org)

This has direct implications for price stability: slow adjustment has contributed to the protracted disinflation we have witnessed since 2011 and to making inflation expectations more fragile. It is also directly relevant for the ECB through its effect on the integrity of the currency. Like any political union, the cohesion of the euro area depends on the fact that each country is permanently better off within the union than without. Convergence is therefore essential to bind the union together, while permanent divergence caused by structural heterogeneity has the opposite effect.

For this reason, that every national economy is sufficiently flexible should be accepted as a part of our common DNA. It has to be a permanent economic feature that comes with participation in the euro area, in the same way that the Copenhagen Criteria are permanent political features of membership of the EU.

This is why, as I have said many times, I believe there is a strong case for governance of structural reforms to be exercised jointly at the euro area level: to help each country to achieve the necessary level of resilience; and to ensure that they maintain that resilience permanently<sup>15</sup>. Since structural reforms in any euro area country are a legitimate interest of the whole union, there needs to be stronger ownership of reforms not just at the national level, but at the European level as well.

Several countries have, however, made significant progress with structural reforms during the crisis, and we can already see how this has altered the relationship between inflation and unemployment. Various estimates of the euro area Phillips curve show that, while the slope has varied over time, it has steepened in recent years. In particular, there is evidence that inflation has become increasingly responsive to cyclical conditions in countries that have reformed their product and labour markets, such as Spain<sup>16</sup> and Italy<sup>17</sup>.

### 3 Raising potential growth

Besides this issue of resilience, as the central bank of the euro area we also have another, equally direct interest in structural reforms. This is related to their effect on growth – or more specifically, the challenges posed by a period of low potential growth.

International institutions currently estimate potential growth to be below 1% in the euro area, compared with above 2% in the United States (Chart 3).<sup>18</sup> This is in part a result of the effects of the crisis on investment and, via hysteresis, structural unemployment. However, it also reflects weak underlying trends in productivity growth and labour supply. Consequently, while some of the effects of the crisis on investment and employment are

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<sup>15</sup> Draghi, M. (2014), “Stability and Prosperity in Monetary Union”, speech at the University of Helsinki, 27 November; see also Draghi, M. (2013), keynote address at the *Süddeutsche Zeitung Führungstreffen Wirtschaft*, November.

<sup>16</sup> Banco de España (2013), “Variation in the cyclical sensitivity of Spanish inflation: an initial approximation”, *Economic Bulletin*, July-August.

<sup>17</sup> Riggi, M. and Venditti, F. (2014), “Surprise! Euro area inflation has fallen”, *Banca d'Italia Occasional Papers*, No 237, September.

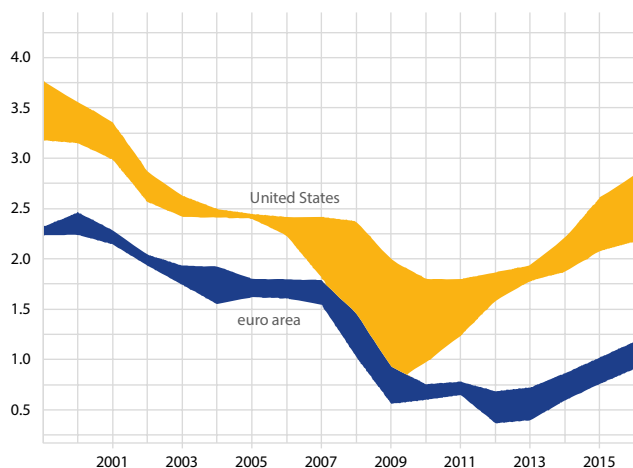
<sup>18</sup> European Commission, Winter 2015 projections; International Monetary Fund (2015), “World Economic Outlook”, April; Organisation for Economic Co-operation and Development (2014), *Economic Outlook*, November.



expected to unwind, potential growth is projected to remain well below pre-crisis growth rates.

**Chart 3**  
Potential output growth

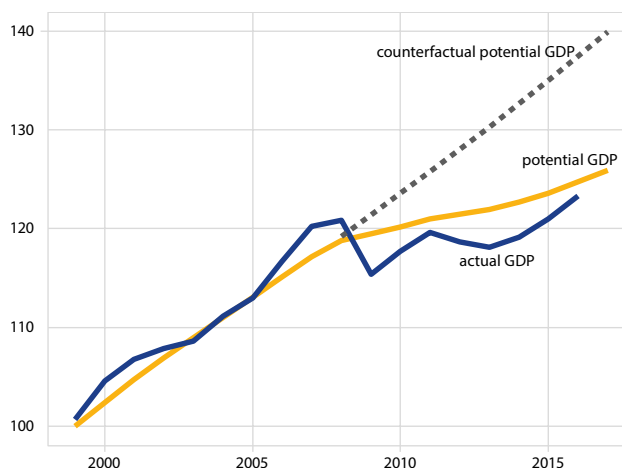
(range of estimates; percentages)



Sources: IMF, OECD and European Commission.

**Chart 4**  
Potential output reduction owing to crisis

(index: potential GDP in 1999 = 100)



Sources: European Commission Spring 2015 Economic Forecast and Output Gap Working Group.

This is problematic for at least three reasons.

First, it would mean that the output gap would close at a notably lower level of output, at which point monetary policy would have to return to a more neutral stance (Chart 4). A significant share of the economic losses suffered across countries would therefore become permanent. Structural unemployment would stay around 10%. Youth unemployment would also remain elevated, with devastating effects for individuals in terms of labour market “scarring”.<sup>19</sup> And this would ultimately affect society as a whole as, given our demographics, realising the potential of the young and their capacity for innovation is essential for long-term sustainability.

Second, a situation of persistently low potential growth would make it even harder to work through the debt overhang that still exists in parts of the euro area. For firms that took on debt based on pre-crisis growth expectations, low potential growth acts as a major barrier to new investment, as any profits generated will likely be absorbed by servicing existing debt. We are seeing signs that this effect has been operative in euro area: there is a clear negative correlation between corporate debt-to-GDP levels in different countries at the beginning of the crisis and the evolution of business investment since.

Third, low potential growth can have a direct impact on the tools available to monetary policy to deliver its mandate. The reason is that low potential growth implies a lower equilibrium real interest rate, which in turn means that, faced with a negative output gap, nominal policy rates need to go lower still to steer output back to potential. This materially

<sup>19</sup> Arulampalam, W., Gregg, P. and Gregory, M. (2001), “Unemployment Scarring”, *The Economic Journal*, Vol. 111, November.

increases the likelihood that central bank policy runs into the constraint set by the effective lower bound for interest rates, which is not far below zero. It therefore also increases the likelihood that we have to resort recurrently to unconventional policies to meet our mandate.

When in 2003 we clarified our objective to keep inflation below, but close to, 2%, we assumed an equilibrium real interest rate of 2% on average.<sup>20</sup> The probability of hitting the effective lower bound under this assumption was very low. Today, imperfect indicators of the equilibrium real rate, such as real forward rates at long horizons, suggest that it may have fallen to much lower levels. In this context, higher potential growth would facilitate the stabilisation task of monetary policy by allowing the equilibrium real rate to rise.

## 4 The untapped potential of the euro area

For all these reasons, structural reforms that reverse the downward drift in potential growth are now vital for the euro area, which is why I believe, as the guardian of the currency, that we have a legitimate interest in talking about them. However, we should recognise that our weak long-term performance also provides an opportunity. Since many economies are distant from the frontier of best practice in at least some policy areas, the gains from structural reforms are easier to achieve and the potential magnitude of such gains is greater.

To give just one example, research by the Organisation for Economic Co-operation and Development suggests that committed convergence towards best practice across labour and product markets, tax policy and pensions would raise GDP per capita by about 11% after ten years for the average EU country. In the United States, which starts from a more favourable position, the benefit would be under 5%.<sup>21</sup>

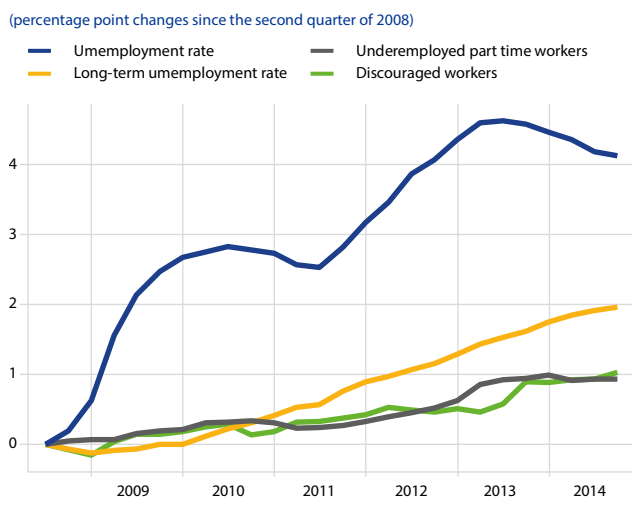
It is not difficult to understand why the benefits of reform could be so high in the euro area. High levels of structural unemployment, compounded by high numbers of underemployed and discouraged workers, imply a latent potential in our economies for a major positive shock to labour supply (Chart 5). We also have scope for a large catching-up in terms of productivity growth. Total factor productivity (TFP) has increased by only 1.5% between 2000 and 2014 in the euro area, far below the 10.9% increase in the United States over the same period (Chart 6).

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<sup>20</sup> Coenen, G. (2003), "Zero lower bound: is it a problem in the euro area?", *Working Paper Series*, European Central Bank, No 269, September.

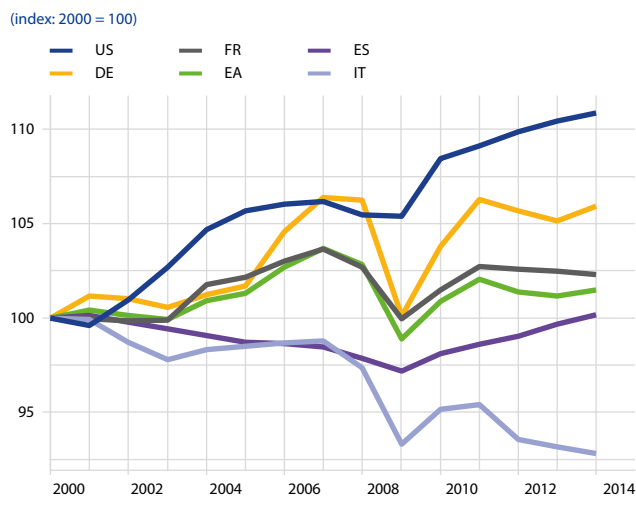
<sup>21</sup> Bouis, R. and Duval, R. (2011), "Raising the Potential Growth after the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond", *OECD Economics Department Working Papers*, No 835, January.

**Chart 5**  
Unemployment/underemployment/discouraged workers



Sources: Labour Force Survey and ECB staff calculations.

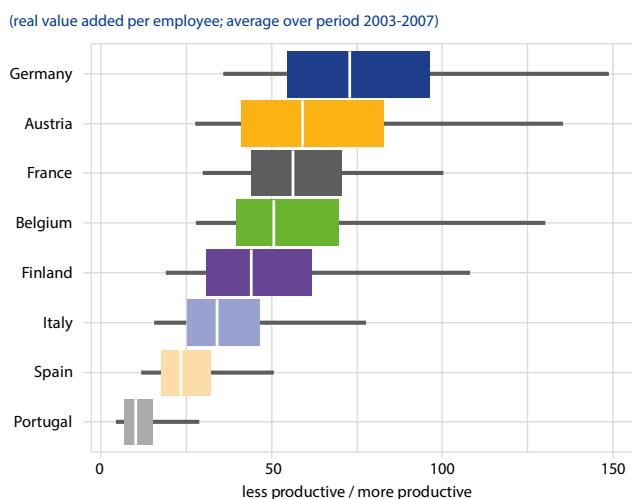
**Chart 6**  
Total factor productivity



Source: European Commission.

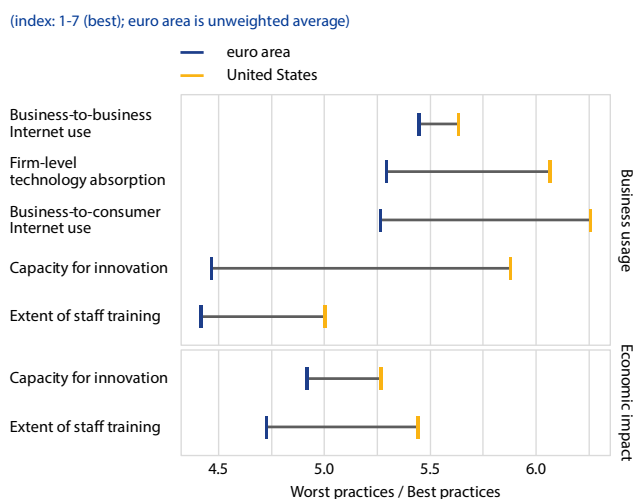
The types of policy that could release this upward shock to potential growth are not just those focused on price flexibility. They include, on the labour supply side, policies aimed at providing job search support for the long-term unemployed and requalification for the low skilled. And on the TFP side, policies that encourage the reallocation of resources – which could be powerful in the euro area given the wide and skewed distribution between the least and most productive firms<sup>22</sup> (Chart 7) – and policies that accelerate the diffusion of new technology, where the euro area on the whole lags some way behind the United States (Chart 8).

**Chart 7**  
Labour productivity of firms



Source: CompNet.

**Chart 8**  
ICT adoption



Source: World Economic Forum Networked Readiness Index 2015.

<sup>22</sup> Lopez-Garcia, P., di Mauro, F. and the CompNet Task Force (2015), "Assessing European Competitiveness: The new CompNet micro-based database", Working Paper Series, No 1764.

There are many other examples one could give. The important point, however, is that in the euro area today structural reforms are not about creating minor efficiencies or marginal gains. They are about unleashing an untapped potential for substantially higher output, employment and welfare. In the current environment, this would play a crucial role in ensuring that the ongoing cyclical recovery becomes a stronger, structural recovery.

## 5 Structural reform in a fragile demand environment

This discussion on the importance of structural reforms leads in principle to only one conclusion: the earlier they take place, the better.

However, while most of us might agree with this statement in normal times, the fact that interest rates have reached the effective lower bound, coupled with the still fragile cyclical situation, makes the situation less straightforward. In particular, the question has been raised as to whether implementing structural reforms when the economy is still weak would be counterproductive, in the sense that it would make it harder to achieve our mandate by further reducing short-term demand.

One argument that has been put forward in this context is that, if reforms lead to a credible increase in aggregate supply, they will exert downward pressure on inflation expectations and, if nominal interest rates cannot fall because monetary policy is at the lower bound, real interest rates will then rise, creating contractionary short-term effects.<sup>23</sup>

A parallel argument in favour of postponing structural reforms relates to their short-term effects on employment. The reasoning is that reforms implemented at the trough of the cycle or too early in the recovery may increase job insecurity among workers, which may in turn result in a rise in precautionary savings and thereby reduce consumption. Factors such as a depressed housing market would also exacerbate these effects by hindering geographical mobility and the reallocation of resources.<sup>24</sup>

There is some empirical foundation to these concerns. For example, research suggests that reforms that increase employment flexibility, such as reducing employment protection, are more likely to depress demand during downturns.<sup>25</sup> I would, however, reject the conclusion that this means all structural reforms should be postponed.

The reason is that the short-term impact of structural reforms does not just depend on when they are implemented, but how – namely, the credibility of reforms, the types of reform and their interaction with other policy measures. If structural reforms are well-designed along these parameters, they can, in fact, have a largely neutral, if not positive impact on short-term demand – even in adverse cyclical conditions.

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<sup>23</sup> Eggertsson, G., Ferrero, A. and Raffo, A. (2014), “Can Structural Reforms Help Europe?”, *Journal of Monetary Economics*, No 61, January.

<sup>24</sup> Andrews, D., Caldera Sanchez, A. and Johansson, A. (2011), “Housing Markets and Structural Policies in OECD Countries”, *OECD Working Papers*, No 836, January.

<sup>25</sup> Gnocchi, S., Lagerborg, A. and Pappa, E. (2014), “Do labor market institutions matter for business cycles?”, *Journal of Economic Dynamics and Control*, Vol. 51, February.

## 6 Credibility of reforms

First, if reforms are credible, their positive effects on short-term demand, via confidence, can more than compensate for any negative effects on inflation via increased supply.

This is because, for firms, an upward shift in potential growth implies higher expected revenues and higher future profitability, which should in turn encourage them to bring forward investment into the present. It should be recalled that investment raises both supply tomorrow and demand today. Therefore, it can in no way be construed as being detrimental to our monetary policy objective.

A similar logic applies to households and their life-cycle income. Reforms that raise expectations of life-cycle income should immediately support current consumption. To give just one example of this effect, an extension of the retirement age should lift not only medium-term supply – by expanding the active population – but also short-term demand, by reducing the need for precautionary savings ahead of retirement.

However, credibility is crucial in determining how quickly these positive effects materialise. If there is uncertainty about the timeline over which reforms will be implemented, or about the commitment of successive governments to maintaining them, it will take longer for firms and households to adjust their expectations, and the benefits of reforms will be delayed.<sup>26</sup> Moreover, if reforms are not perceived to be sustainable under a wide variety of conditions – for example, if a pension reform is unrealistic over the longer-term – agents will anticipate a reversal in the future and refrain from adjusting their behaviour today.

We have used our euro area and global economy (EAGLE)<sup>27</sup> model to analyse for a medium-sized euro area country the effect of credibility and timely implementation<sup>28</sup> – in this case for a structural reform in the services sector – and we find the benefits of reforms are clearly brought forward, even in a situation where monetary policy is constrained by the zero lower bound (Chart 11). This provides a strong rationale to implement reforms in a way that is committed, credible and consistent.<sup>29</sup> In fact, such an approach is even more important for reforms to yield short-term benefits in the special environment we face today.

Following seven years of crisis marked by several false dawns, firms and households have become more hesitant about taking on economic risk. This is mirrored in the fact that medium-term growth expectations among forecasters have not only shifted downwards

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<sup>26</sup> Giavazzi, F. and McMahon, M. (2008), “Policy Uncertainty and Precautionary Savings”, *NBER Working Papers*, No 13911, National Bureau of Economic Research.

<sup>27</sup> Gomes, S., Jacquinot, P. and Pisani, M. (2010), “The EAGLE. A model for policy analysis of macroeconomic interdependence in the euro area”, *Working Paper Series*, European Central Bank, No 1195, May.

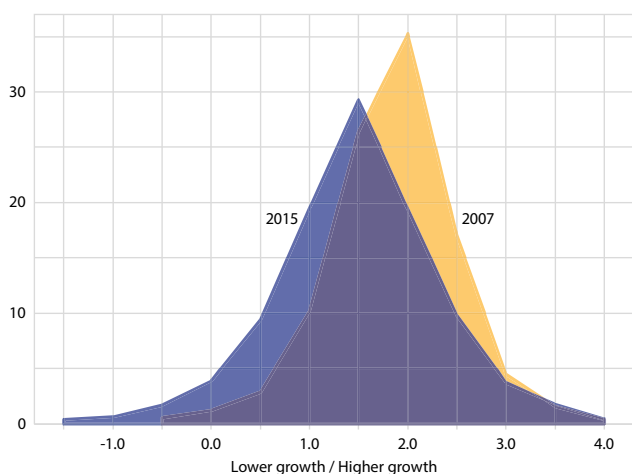
<sup>28</sup> Under full credibility, firms anticipate the full amount of the implied long-run increase in output, which leads to an immediate increase in asset prices and, hence, firms’ net worth, triggering more investment already in the short term. Similarly, households anticipate an increase in real wages and, hence, life-cycle income, which in turn supports current consumption. In the case of imperfect credibility, firms and households instead partially adjust over time their knowledge of the favourable long-run effects. The analysis also captures the notion that credibility is endogenous and adversely affected by delaying reform implementation.

<sup>29</sup> For more on the importance of front-loading structural reforms, see Coeuré, B. (2014), speech on “Structural reforms: learning the right lessons from the crisis”, Bank of Latvia Economic Conference 2014, Riga, 17 October.

in that period, but the distribution of possible outcomes has also widened (Chart 9). In this uncertain context, credibility is key, as the strength of the reform signal has an even stronger determination over the magnitude of the short-term benefits.

**Chart 9**  
Longer-term GDP growth expectations

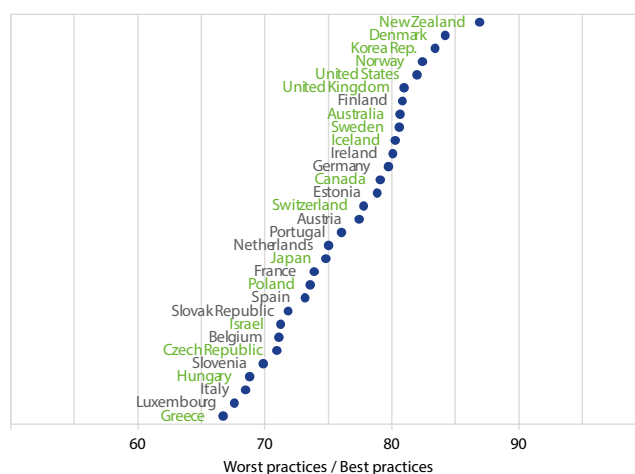
(five-years ahead expectations, aggregated probability distribution)



Source: ECB Survey of Professional Forecasters.

**Chart 10**  
Ease of doing business (2015)

(distance to frontier; 100 = global best practices)



Source: World Bank.

## 7 Types of reform

Those short-term benefits can also be maximised, however, if the types of reform are carefully chosen. How structural reforms affect the economy is of course complex, but the evidence suggests that the short run gains can be amplified if reforms are well designed, packaged and sequenced<sup>30</sup>, with a focus on measures that minimise short-term costs.

For example, the experience of Germany during the crisis suggests that reforms aimed at adjustment through the intensive margin – that is, working hours and wages – are less likely to have negative short-term effects than reforms that operate through the extensive margin – i.e. dismissals.<sup>31</sup> This is supported by new micro level research from the Eurosystem which shows that, for a larger sample of countries, firms with flexibility at the plant-level have reduced employment less during the crisis than those bound by centralised wage bargaining agreements, partly because they have been more able to adjust wages to economic conditions.<sup>32</sup>

<sup>30</sup> Blanchard, O. and Giavazzi, F. (2003), "Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets", *Quarterly Journal of Economics*, Vol. 118, February.

<sup>31</sup> See, for example, Burda, M., and Hunt, J. (2011), "What Explains the German Labour Market Miracle in the Great Recession?", *NBER Working Papers*, No 17187; and Brenke, K., Rinne, U. and Zimmermann, F. (2011), "Short-Time Work: The German Answer to the Great Recession", *International Labour Review*, Vol. 152(2), June.

<sup>32</sup> di Mauro, F. and Ronchi, M. (2015), "Centralisation of wage bargaining and firms' adjustment to the great recession: A micro-based analysis", *CompNet Policy Brief*, Competitiveness Research Network (CompNet), No 8, May.

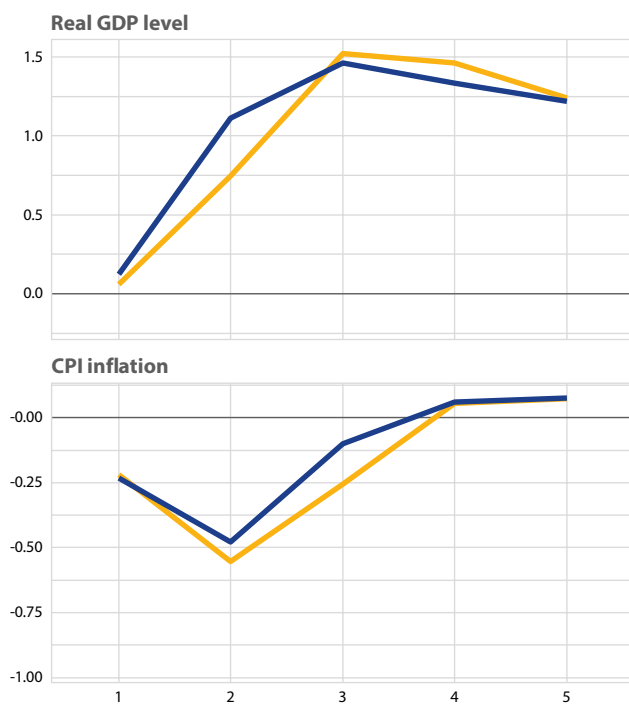
Moreover, if reforms are targeted specifically at frictions that hold back investment demand, their short-term effects should be largely positive, even at the bottom of the cycle. For instance, reforms directed at sectors with large pent-up demand, such as professional services and retail trade, could be expected to elicit a rapid investment response.<sup>33</sup> Indeed, our EAGLE simulations show that the short-term benefits from structural reform in the service sector arise mainly via a strong reaction of investment.

Similarly, reforms designed to reduce bottlenecks to new investment that come from onerous business conditions should also have mainly benefits in the short-term. This would include measures such as reducing the administrative burden on young firms, or speeding up insolvency proceedings that raise the opportunity cost of investment by tying up capital for years longer than initially assumed. For many euro area countries there are several “low hanging fruit” that can still be picked in this area (Chart 10).

**Chart 11**  
EAGLE simulation – gradualism and imperfect credibility

(x-axis: years since start of reform; y-axis: percentage (GDP) and percentage point (CPI) deviations)

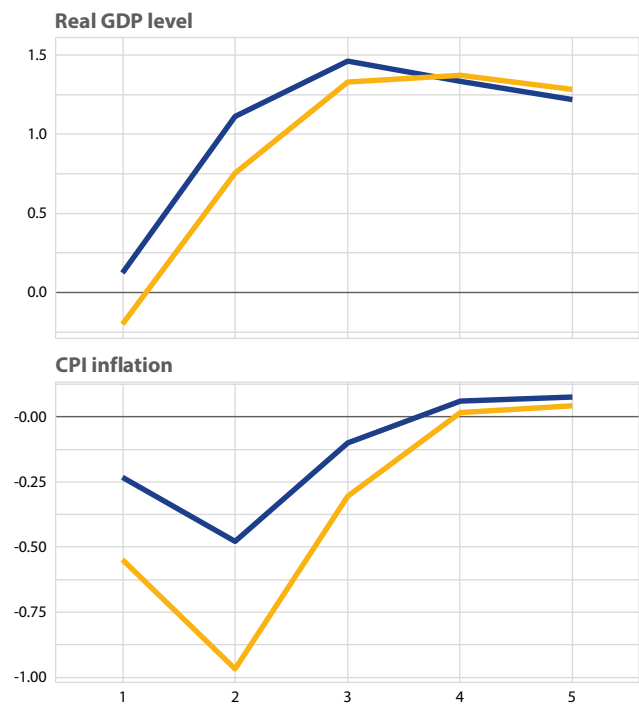
— base case: credible area-wide reforms with monetary policy unchanged for two years  
— simulation



Source: ECB staff calculations.

**Chart 12**  
EAGLE simulation – country-specific reform

(x-axis: years since start of reform; y-axis: percentage (GDP) and percentage point (CPI) deviations)



Source: ECB staff calculations.

The EAGLE simulations show that if reforms are also well coordinated across the euro area, the short-term benefits for a medium-sized country can be further maximised, especially in terms of limiting the downward effects on inflation (Chart 12). This reinforces what I have said about the need for stronger common governance of structural reforms in the

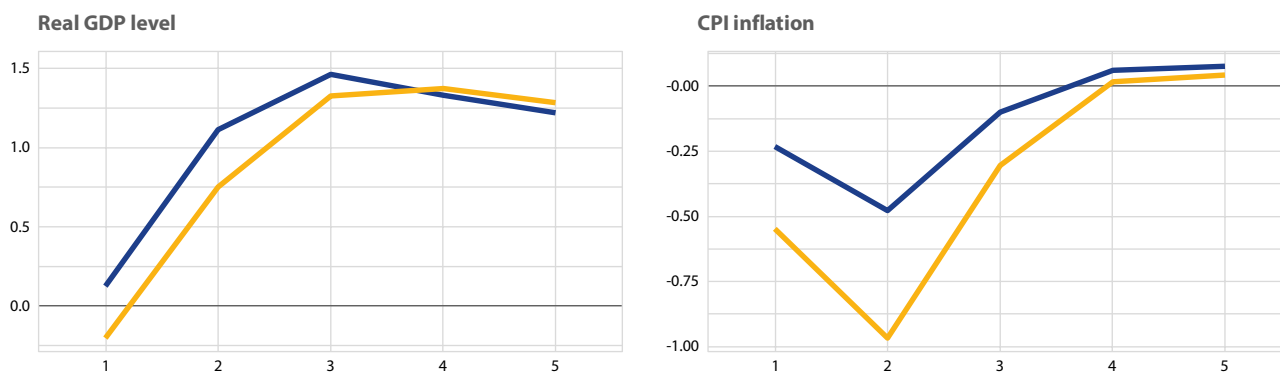
<sup>33</sup> See, for example, Forni, L., Gerali, A. and Pisani, M. (2010), “Macroeconomic Effects of Greater Competition in the Service Sector: the case of Italy”, *Macroeconomic Dynamics*; or Faini, R., Haskel, J., Navaretti, G., Scarpa, C. and Wey, C. (2006), “Contrasting Europe’s Decline: Do Product Market Reforms Help?” in Boeri, T., Castanheira, M., Faini, R. and Galasso, V. (eds.), *Structural Reforms Without Prejudices*, Oxford University Press.

euro area: if all countries reform together, then all countries benefit more. These findings hold even under the assumption that monetary policy is constrained.

**Chart 13**

EAGLE simulation – endogenous monetary policy

(x-axis: years since start of reform; y-axis: percentage (GDP) and percentage point (CPI) deviations)



Source: ECB staff calculations.

## 8 Interaction with other policy measures

However, it is also important to underline that this assumption is, in fact, inaccurate for the euro area today. Contrary to models in the literature, monetary policy is not constrained because we have reached the lower bound. Rather, as I laid out in a recent speech in Washington, I think we have demonstrated in recent months how effective monetary policy can be when it has to resort to unconventional measures.<sup>34</sup>

The difference this makes in terms of the short-term effects of reforms is clearly visible in our EAGLE simulations. With monetary policy able to respond to any negative inflation shocks, consumer price inflation is barely affected (Chart 13).

What has been constrained in the euro area in recent years is fiscal policy, as some countries faced a loss or near loss of market access. However, we should remember that, in these circumstances, structural reforms are in fact crucial to support fiscal stabilisation. Insofar as they raise expectations of future government revenue, they make public debt more sustainable, lessen the constraint of market discipline, and thereby reopen fiscal space.

In any event, demand is today being meaningfully buttressed in the short term by monetary policy, and the stance of fiscal policy is broadly neutral. The arguments for postponing structural reform therefore become less convincing still. Any reforms undertaken now will, in fact, have an improved interaction with macroeconomic stabilisation policies. And I would go even further: I would argue that our current monetary stance actually makes accelerating structural reforms desirable, because it brings forward their positive demand effects.

<sup>34</sup> Draghi, M. (2015), "The ECB's recent monetary policy measures: Effectiveness and challenges", Camdessus Lecture at the International Monetary Fund, 14 May.



For example, the literature suggests that a well-functioning banking sector is key to reap the short-term benefits of reforms, as it ensures that funds flow quickly to the new investment opportunities they create.<sup>35</sup> In this context, the combination of our interest rate and credit easing policy, together with the recently completed comprehensive assessment of bank balance sheets, can be seen as creating the ideal conditions for reforms to succeed.

By bringing real interest rates well below the medium-term growth rate, this policy package is creating strong price incentives to invest. Moreover, by improving the transmission of those low real rates into actual borrowing conditions, it ensures that the financial sector can quickly reallocate finance to firms that capitalise on those incentives.

In this way, accommodative monetary policy supports structural reform by ensuring that the investment and employment benefits materialise faster. In turn, structural reform, by reducing uncertainty about the future macroeconomic and microeconomic outlook, supports monetary policy by releasing the pent-up investment demand that accommodative policy creates.

It should therefore be clear that the argument that accommodative monetary policy constitutes an excuse for governments and parliaments to postpone their reform efforts is incorrect. In fact, I would submit it actually makes reforms less socially and politically costly, as it reduces the time it takes for reforms to produce positive effects. All of this confirms my main contention that the current environment, per se, creates no reason for delay.

## 9 Conclusion

The economic outlook for the euro area is brighter today than it has been for seven long years. Monetary policy is working its way through the economy. Growth is picking up, and inflation expectations have recovered from their trough.

This is by no means the end of our challenges, and a cyclical recovery alone does not solve all of Europe's problems. It does not eliminate the debt overhang that affects parts of the Union. It eliminates neither the high level of structural unemployment that haunts too many countries nor the need to perfect the institutional set-up of our monetary union.

However, what the cyclical recovery does achieve is to provide near perfect conditions for governments to engage more systematically in the structural reforms that will anchor the return to growth. Monetary policy can steer the economy back to its potential. Structural reform can raise that potential. It is the combination of these demand and supply policies that will deliver lasting stability and prosperity.

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<sup>35</sup> Bouis, R., Causa, O., Demmou, L., Duval, R. and Zdzienicka, A. (2012), "The Short-Term Effects of Structural Reforms: An Empirical Analysis", *OECD Working Papers*, No 949.

# Inflation and activity – two explorations and their monetary policy implications

By Olivier Blanchard<sup>36</sup>, Eugenio Cerutti<sup>37</sup> and Lawrence Summers<sup>38,39</sup>

## Abstract

We explore two issues triggered by the crisis. First, in most advanced countries, output remains far below the pre-recession trend, suggesting hysteresis. Second, while inflation has decreased, it has decreased less than anticipated, suggesting a breakdown of the relation between inflation and activity. To examine the first, we look at 122 recessions over the past 50 years in 23 countries. We find that a high proportion of them have been followed by lower output or even lower growth. To examine the second, we estimate a Phillips curve relation over the past 50 years for 20 countries. We find that the effect of unemployment on inflation, for given expected inflation, decreased until the early 1990s, but has remained roughly stable since then. We draw implications of our findings for monetary policy.

## 1 Introduction

We explore two empirical issues triggered by the Great Financial Crisis. First, in most advanced countries, output remains far below the pre-recession trend, leading researchers to revisit the issue of hysteresis, and, more generally, the effect of recessions on output. Second, while inflation has decreased, it has decreased less than was anticipated (an outcome referred to as the “missing disinflation”), leading researchers to revisit the relation between inflation and activity.

Clearly, if confirmed, either the presence of hysteresis or the deterioration of the relation between inflation and activity would have major implications for monetary policy and for stabilisation policy more generally. In the first case, it would imply that the cost of output shortfalls is much higher than typically assumed. In the second case, the lack of a reliable relation between inflation and activity, be it output or unemployment gaps, would require a major rethinking of the inflation targeting architecture.

With these motivations in mind, we have a broad look at the evidence. First, we revisit the hysteresis hypothesis, defined as the hypothesis that recessions may have permanent

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<sup>36</sup> International Monetary Fund.

<sup>37</sup> International Monetary Fund.

<sup>38</sup> Harvard University.

<sup>39</sup> We thank Larry Ball and Sandeep Mazumder for comments and help, as well as Yangfan Sun and Daniel Rivera for excellent research assistance. Comments by Larry Ball, who was our discussant, led to substantial changes in the second part of the paper. We also thank Zeno Enders, Stephan Danninger, Chris Erceg and Jaewoo Lee for comments. Our paper builds on Martin and Wilson (2013) and IMF (April 2013) Chapter 3.

effects on the level of output relative to trend. Second, we revisit the evidence on the strength of the relation between the unemployment gap and inflation, the Phillips curve.

We do this by looking at output, unemployment and inflation over the course of roughly 50 years for 23 advanced economies and draw the conclusions set out below.

We find that a high proportion of recessions, about two-thirds, are followed by lower output relative to the pre-recession trend even after the economy has recovered. Perhaps more surprisingly, in about one-half of those cases, the recession is followed not just by lower output, but by lower output growth relative to the pre-recession output trend. That is, as time passes following recessions, the gap between output and projected output on the basis of the pre-recession trend increases.

If these correlations were causal, they would suggest important hysteresis effects and even “super-hysteresis” effects (the term used by Larry Ball (2014) for the impact of a recession on the growth rate rather than just the level of output). Correlation, however, does not imply causality. The causality may indeed run from the recession to lower output later, and hysteresis or super-hysteresis may be at work. Nevertheless, the correlation may instead reflect common third factors. Supply shocks, such as an increase in oil prices, or a financial crisis, may be behind both the initial recession and lower output later. Alternatively, the correlation may reflect reverse causality: the anticipation of lower output or lower growth in the future may lead to a decrease in consumption and investment spending, and, as a result, to a recession today.

This leads us to look at recessions associated with different shocks. We find that, indeed, recessions associated with either oil price increases or with financial crises are more likely to be followed by lower output later. But we find that recessions plausibly triggered by demand shocks are also often followed by lower output or even lower output growth. Even in the case of recessions associated with intentional disinflations, which probably represent the purest case of demand shocks we can identify in the sample, we find that still nearly two-thirds are associated with lower output later and that a significant fraction of those are associated with lower output growth.

We draw two tentative conclusions. It is likely that, in many cases, the correlation between recessions and subsequent poor economic performance reflects reverse causality: the realisation that growth prospects are lower than was previously assumed naturally leads to both a recession and subsequent poor performance. But the finding that recessions plausibly triggered by intentional disinflations are also often followed later by lower output, or even, in some cases, lower output growth, suggests that hysteresis, and perhaps even super-hysteresis may indeed also be at work. Both conclusions have different, but important, implications for monetary policy, to which we will come back later.

Turning to the Phillips curve relation, we start by estimating, for each country, a relation between inflation, expected and lagged inflation, and a measure of the unemployment gap. The specification allows for both the natural rate and the coefficients to evolve over time. We confirm that the coefficient on long-term expected inflation (as opposed to the coefficient on lagged inflation) has steadily increased over time. This explains in large part why we have not observed a deflation spiral, despite the presence of sustained large

unemployment gaps. But we also find clear evidence that the effect of the unemployment gap on inflation has substantially decreased since the 1970s. Most of the decrease, however, took place before the early 1990s. Since then, the coefficient appears to have been stable, and, in most cases, significant; indeed it does not appear to have decreased during the crisis.

In the last section, we explore the implications of our findings for monetary policy.

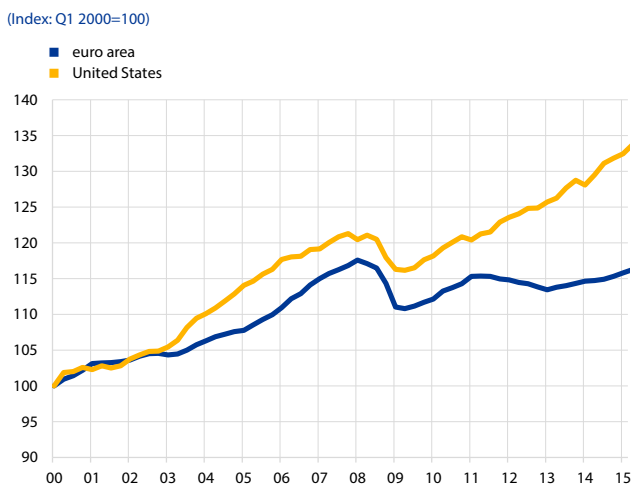
The findings of the first section have opposite implications for monetary policy depending on their interpretation. To the extent that recessions are due to the perception or anticipation of lower underlying growth, this implies that estimates of potential output, based on the assumption of an unchanged underlying trend, may be too optimistic, and lead to too strong a policy response to movements in output. However, to the extent that recessions have hysteresis or super-hysteresis effects, then the cost of allowing downward movements in output in response to shifts in demand increases implies that a stronger response to output gaps is desirable.

The findings of the second section yield less dramatic conclusions. To the extent that the coefficient on the unemployment gap, while small, remains significant, the implication is that, within an inflation targeting framework, the interest rate rule should put more weight on the output gap relative to inflation. A more general conclusion is that this small coefficient reinforces the case for a dual mandate: stabilising inflation may require very large changes in the unemployment gap, and lead to large welfare losses.

## 2 After effects of recessions – hysteresis?

**Chart 1**

Advanced economies real GDP



The issue of hysteresis in output and unemployment surfaced in Europe in the 1980s (Blanchard and Summers, 1986), and never got settled. It eventually lost its centre-stage position. The crisis has brought the issue again to the fore. The reason is not hard to see, and is shown in Chart 1. The chart shows the evolution of output in the United States and in the euro area since 2000. Its visually striking implication is that, after the crisis, output appears to be evolving on a lower path, perhaps even a lower growth path, especially in the euro area.

Some researchers (Ball, 2014) have taken this as evidence of hysteresis. One can plausibly argue that the lower path is due to institutional changes in response to the crisis, such as tougher capital requirements, or changes in bank business models, a form of institutional hysteresis.

However, correlation does not imply causality. One can also plausibly argue that the sharp decline in output at the start

and the later lower growth path are due to the same underlying cause, namely the crisis of the financial system, manifesting itself through an acute effect at the start and a more chronic effect thereafter. As a matter of logic, one could even argue, although less

plausibly in this case, that the recession was partly owing to the anticipation of lower growth to come.<sup>40</sup>

These considerations led us to look at a much larger set of recessions, over many countries and many years and to proceed in two steps. First, by establishing stylised facts and correlations: how often have recessions been followed by lower output relative to trend, or even by a lower trend? Second, by attempting to control for the cause of the recession, and focusing on those recessions which were more likely to be caused by demand rather than by supply factors, thus where causality was more likely to run from the recession to subsequent developments.

To do so, we look at the evidence from 23 advanced countries, using quarterly data starting in 1960 (or whenever data starts being available). In doing so, we build on the work of Martin and Wilson (2013).<sup>41</sup> Our contribution is in using a slightly different methodology, looking at the effect of recessions conditional on different types of shocks, and in the interpretation of the results. We rely on a non-parametric method, focused on recessions rather than on general fluctuations.

The approach consists of the following two steps.

- We define recessions using the methodology of Harding and Pagan (2002). Roughly speaking, the method identifies peaks and troughs as local maxima and minima in the log level real GDP series, and, with some exceptions, defines recessions as times between a peak and a trough, for example  $t_0$  and  $t_1$  in Chart 2.<sup>42</sup> We keep all the recessions for which we have sufficient data before and after the recession to estimate pre-recession trends and post-recession gaps. This forces us to ignore the recessions of the 1960s and those of the 2010s, and leaves 122 recessions.
- We then estimate pre-recession trends.

The first issue is how to take into account the fact that the economy may have been in a boom, and thus above trend, before the recession started. We explore two alternatives. The first, similar to Martin and Wilson (2013), is to exclude the two years before the recession from the computation of the trend, and to base the start of the estimated trend at the value of log real GDP excluding two years before the recession (thus, at time  $t_0-9$ , as we measure time in quarters, in Chart 2). The second alternative recognises one of the lessons of the crisis, namely that the economy may be on an unsustainable path even if output growth does not appear unusually high, but financial imbalances are building up which must eventually lead to an adjustment and to lower growth. Empirically, we use a rule in which, to choose the starting point of the trend extrapolation, we exclude at least the two years prior to the recession and possibly more years if they are characterised by

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<sup>40</sup> “Less plausibly in this case”, because, as far as we know, nobody mentioned such an underlying decrease in growth at the start of the Great Financial Crisis. More recently, however, research has concluded that, at least in the United States, there was indeed a slowdown in productivity starting a few years before the crisis (Fernald 2014).

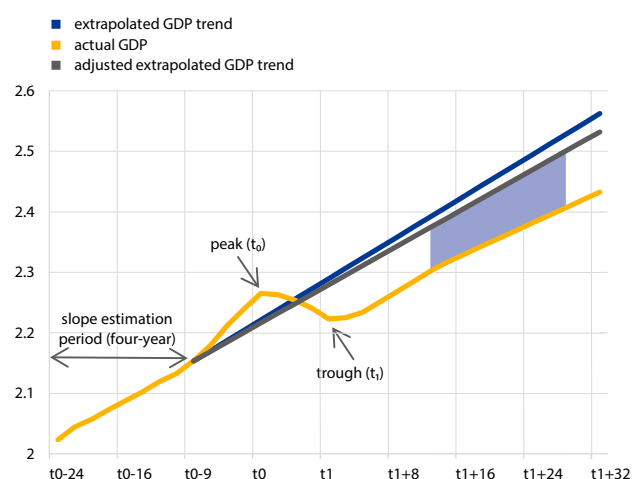
<sup>41</sup> Martin and Wilson build in turn on Cerra and Saxena (2008), which, using an autoregressive projection model and consensus surveys, documents the behaviour of output following financial crises and civil wars.

<sup>42</sup> Following Harding and Pagan (2002), we set to two quarters the number of observations on both sides over which local minima and maxima are computed, to two quarters the minimum duration in every contraction or expansion phase, and to five quarters the minimum duration between two peaks and two troughs.

unusual credit growth. To define unusual credit growth, we rely on the episodes identified by Dell’Ariccia et al. (2012), which are based on an annual growth rate of the credit to GDP ratio exceeding 10% and a deviation from a credit to GDP trend greater than 1.5 times its standard deviation. In only eleven recessions does this additional constraint bind, so that, for most recessions, the trend is anchored at a point in time corresponding to two years before the recession.

**Chart 2**  
Actual GDP and extrapolated trends

(x-axis: time in quarters; y-axis: log real GDP)



The second issue is the length of time to be used in estimating that trend. We explore again two alternatives, one in which the (log linear) trend is estimated over four years (so, in the absence of a credit boom, over  $t_{0-9}$  to  $t_{0-24}$ , in Chart 2). This allows for a flexible trend, but makes the estimated trend quite sensitive to what may have in effect been cyclical fluctuations. The other is thus to estimate the trend over ten years, so, in the absence of a credit boom, over  $t_{0-9}$  to  $t_{0-48}$ . The potential shortcoming is the symmetrical risk that this may not capture recent changes in the underlying trend.<sup>43</sup>

The various alternatives (the two choices for the start of the pre-recession trend, and two periods of estimation for this trend) give us four different combinations. We derive results in each country for each of the four combinations. The graphs giving actual log real GDP, recession dates, and estimated trends, are given in a web appendix. Charts 3 and 4, which are based on a four-year trend anchored two

years before the recession, give a flavour of these graphs. In the charts, the green lines in each case give the one-standard deviation band associated with uncertainty about the value of the estimated trend coefficient.

Chart 3 shows the evolution of the United States. While the decrease in output relative to trend is most striking in the case of the Great Financial Crisis, some of the other recessions appear also to be associated with a lower level of output relative to trend.

<sup>43</sup> To state the obvious: two-sided filters, such as an HP filter, cannot be used for these purposes, as the behaviour of output after the recession would affect the estimated trend before the recession. By construction, output would return to the constructed trend, thus negating any level or growth effect of recessions.

**Chart 3**

Evolution of log real GDP and extrapolated trends for the United States

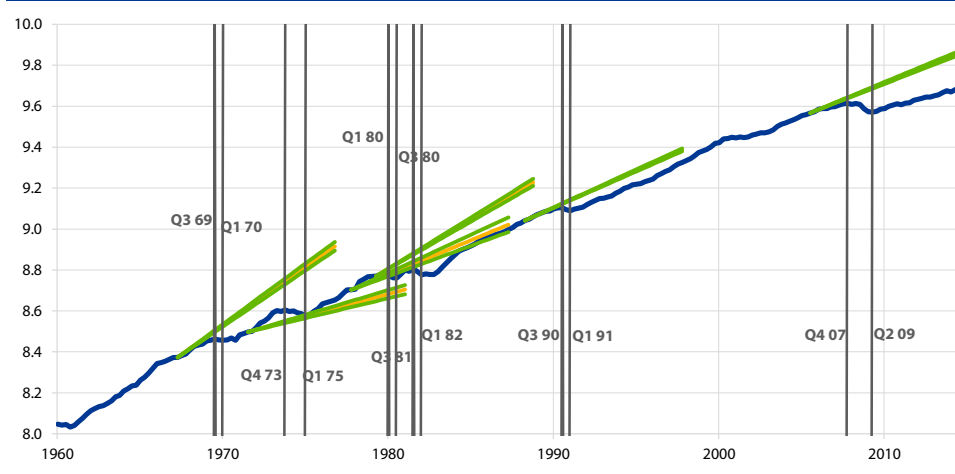
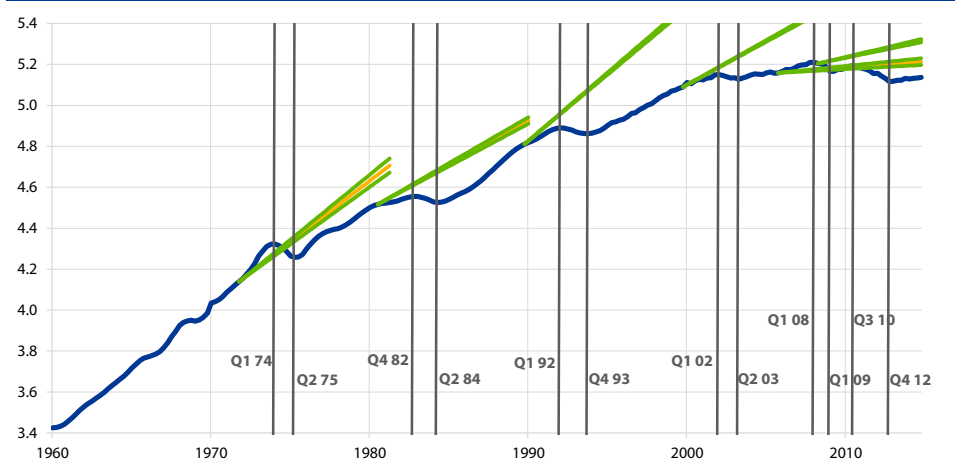


Chart 4 shows the evolution of Portugal and is representative of the evolutions of a number of European countries. All but one of the recessions since 1960 appear to be associated not only with a lower level of output relative to trend, but even with a subsequent decrease in trend growth, and thus increasing gaps between actual output and past trend.

**Chart 4**

Evolution of log real GDP and extrapolated trends for Portugal



We make two additional adjustments aimed at reducing the probability of finding a spurious post-recession gap. First, given the uncertainty about the exact value of the estimated time trend, we adjust down the slope of the trend using the estimated coefficient minus one standard deviation (e.g. the adjusted extrapolated trend in Chart 2 or the lower bands in Charts 3 and 4). Second, and more importantly, we need to take into account the fact that, since the 1960s, most countries have experienced declining growth. Surely, much of this decline reflects a secular decrease in growth, which has nothing to do with the potential after-effects of recessions. This implies that, on average, log linear time

trends estimated on earlier data will tend to over-predict later output, and, thus, will generate spurious gaps between later output and the time trend estimated on earlier data. To account for this, we first regress log GDP on linear and quadratic time trends over the whole sample. Then, for each recession, and for each post-recession quarter, we adjust down the estimated pre-recession trend by a factor equal to the coefficient on the quadratic term times the square of the difference between the mid-range of the trend estimation period ( $t_0-16$  and  $t_0-28$  for the four and ten year windows respectively) and the relevant quarter.<sup>44</sup> This adjustment turns out to be empirically significant, and to substantially reduce the number of cases where we find output to be below the adjusted pre-recession trend.

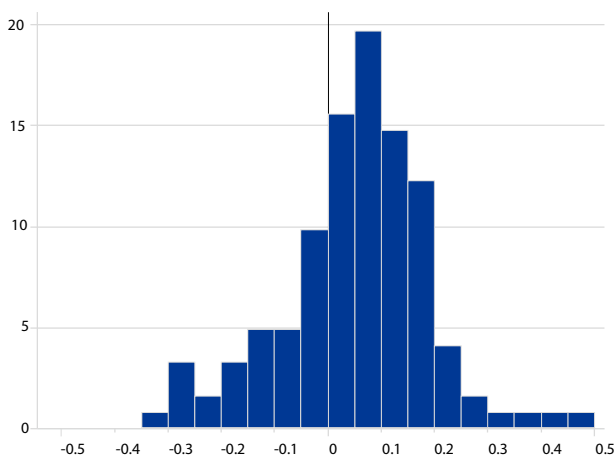
We define output gaps as the difference between the adjusted pre-recession trend and actual log GDP. We define post-recession output gaps as the average output gaps from three to seven years after the recession, thus, in terms of quarters, from  $t_1+12$  to  $t_1+27$  (the shaded area in Chart 2). Chart 5 plots the resulting distributions of the output gaps for each of our four different sets of assumptions. In all cases, the means and the medians of the distribution are positive. Thus, on average, output is lower than the pre-recession trend.

### Chart 5

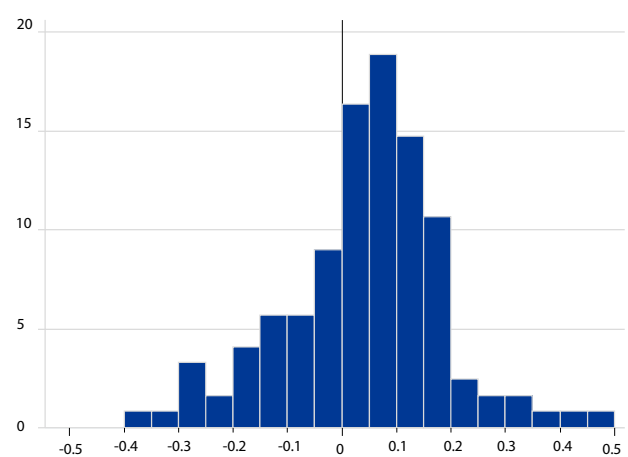
#### Histogram distribution of average adjusted output gaps

(y-axis: ages; x-axis: average output gap during  $t_1+12 - t_1+27$ )

Log real GDP, four-year window, benchmark



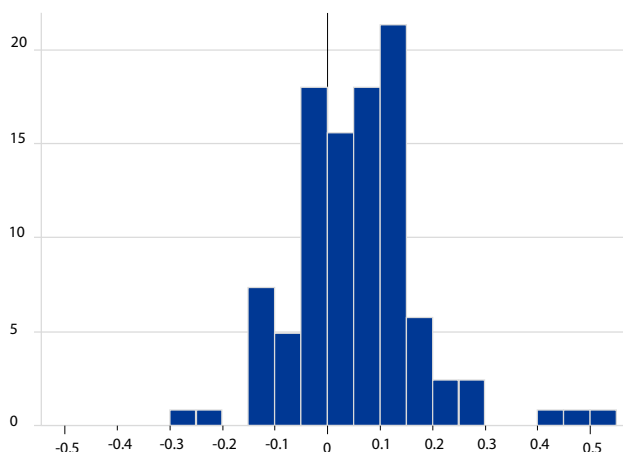
Log real GDP, four-year window, adjusted for credit booms



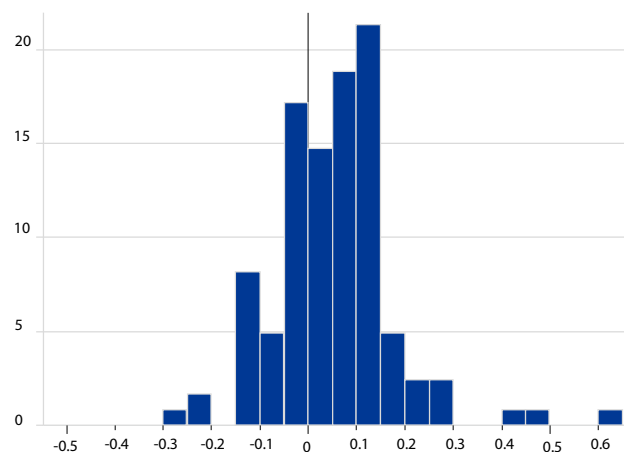
<sup>44</sup> To understand the adjustment, note that, if the coefficient on the quadratic term is  $c$ , the derivative of the growth rate relative to time is equal to  $2c$ , and thus, after  $n$  quarters, log output will be lower relative to a linear trend by  $2c(0+1+\dots+(n-1)) = cn^2$



Log real GDP, ten-year window, benchmark



Log real GDP, ten-year window, adjusted for credit booms



Finally, to summarise results here and below, we use the following classifications. If the average gap during  $t_1+12$  to  $t_1+27$  is non-positive, we classify the recession as having no sustained gap. If the average gap is positive, we classify the recession as having a sustained gap. To see whether the recession is associated with a lower level or a lower growth rate of output, we regress each gap from  $t_1+12$  to  $t_1+27$  on a constant and a time trend. If the estimated time trend is positive (i.e. if the gap is increasing) and statistically significant at the 1% level, we classify the recession as having not only a sustained gap, but an increasing gap

Based on this methodology and these classifications, the results are shown in the top half of Table 1.

**Table 1**  
Analysis of the differences between output level and trend across recessions

GDP series used	Trend extrapolation starting point	Trend calculation: four-year window				Trend calculation: ten-year window			
		Episodes with no sustained gap	Episodes with sustained gap	of which:		Episodes with no sustained gap	Episodes with sustained gap	of which:	
				increasing over time	stable over time			increasing over time	stable over time
Log real GDP	Benchmark: two years before	29%	71%	31%	40%	32%	68%	34%	34%
	Adjusted for credit booms	31%	69%	31%	38%	33%	67%	34%	34%
Log real per capita GDP	Benchmark: two years before	27%	73%	30%	43%	33%	67%	33%	34%
	Adjusted for credit booms	31%	69%	30%	39%	34%	66%	34%	33%

Notes: A total of 122 recession episodes are included in the analysis. Recession episodes during the 1960s are not included owing to lack of data for estimating trends. Similarly, recessions after 2010 are not included owing to lack of enough observations.

The two sets of columns give the results corresponding to the two ways of computing the pre-recession time trends, over four years or over ten years respectively. The first two lines correspond to the two ways of anchoring the pre-recession trend (leaving out the two years before the recession, or leaving out more quarters if there is evidence of a credit boom).

For each of the two time trend treatments, the table has four columns. The first gives the proportion of recessions with no sustained gap (according to the definition above). The

second gives the proportion with a sustained gap. The last two columns give the proportion of recessions with a stable gap, and the proportion of recessions with an increasing gap.

The results are very similar for all four combinations, and are the main findings from this section. Taking the average over the four combinations, they show that in only 31% of cases, the recession was not followed by a sustained gap. Equivalently, in 69% of the cases, the recession was followed by a sustained gap. And, in 47% of these sustained-gap cases, the recession was followed by an increasing gap.

As a robustness test, we calculate the gap using log real GDP per capita (calculated as GDP over population of 16 to 64 years old) for the same recession periods. The results, shown in the last two rows of Table 1, are very similar. In only 31% of the recessions, the recession was not followed by a sustained gap. Equivalently, 69% of the recessions were followed by a sustained output gap, with 46% of recessions followed by an increasing output gap.<sup>45</sup>

We have also performed a number of visual robustness checks (i.e. whether or not the increasing output gap in years three to seven was as a result of an outlier or another recession). Our conclusion is that, in roughly 80% of the cases classified as “increasing output gap”, the increase was indeed unambiguous. This suggests that at least 30% of all recessions were followed by lower output growth later.

Focusing on the recessions followed by either a stable or increasing output gap, we can think of the following three potential explanations.

The first explanation is indeed hysteresis: recessions have lasting effects and are indeed the cause of the lower output later. A number of mechanisms have been suggested which might generate such effects. In the labour market, the recession and the associated high unemployment may lead some workers either to drop out permanently, or to become unemployable. Prolonged unemployment may lead to a change in labour market institutions, which in turn affects the natural rate later (these were the hypotheses explored by Blanchard and Summers in the 1980s to explain the increase in unemployment in Europe). Firms may invest less, leading to a lower capital stock for some time (although presumably not forever). Firms may do less research and development during the recession, leading to a permanently lower productivity level than would have been the case without the recession.<sup>46</sup> The recession may lead to lower job creation and job destruction, and thus lower reallocation and productivity growth, which is not made up later. It is fair, however, to say that none of these hypotheses has been conclusively shown to be empirically important.

It is also fair to say that it is more difficult to think of mechanisms through which the recession leads to lower output growth later, i.e. to “super-hysteresis”. Permanently lower output growth requires permanently lower total factor productivity growth; the recession would have to lead to changes in behaviour or in institutions which lead to permanently

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<sup>45</sup> In the literature, results by Haltmaier (2012) – using a methodology based on HP filters – and Martin and Wilson (2013) also suggest that recessions (in general) lead, in many cases, to a lower level of output. Studies focusing on deep recessions, such as Cerra and Saxena (2008), Reinhart and Rogoff (2009) and IMF WEO (2009), among many others, also highlight highly persistent effects on the level of output.

<sup>46</sup> Such a mechanism is explored by Comin and Gertler (2006).

lower research and development or to permanently lower reallocation. These may range from increased legal or self-imposed restrictions on risk-taking by financial institutions, to changes in taxation discouraging entrepreneurship. While these mechanisms may sometimes be at work, the proportion of cases where the output gap is increasing seems too high for this to be a general explanation.

The second explanation is that supply shocks may be behind both the recession and the lower output later. For example, if real wages are sticky in the short run, an increase in oil prices may lead to a sharp initial recession and, unless long-run labour supply is fully inelastic, lower employment and lower output later. A financial crisis may lead to worries about liquidity and a collapse of financial intermediation in the short run; long-run effects of changes in bank behaviour, or bank regulation, in the form of higher capital ratios for example, may lead to less risky, but also less efficient intermediation and lower output later. One might even argue that less efficient intermediation may decrease the efficiency of the reallocation process and generate not only lower output, but even lower growth.<sup>47</sup>

The third explanation is that the correlation instead reflects reverse causality: an exogenous decrease in underlying potential growth leads households to reduce consumption and firms to reduce investment, leading to an initial recession.<sup>48</sup> A variation on this theme is that it may take time for households and firms to realise that underlying growth has started to decline, so that the decrease in productivity may start before the recession. Two intriguing facts support this hypothesis. An old fact documented by Robert Gordon in 1980 and revisited by him more recently (2003), in which productivity declines at the end of the expansion.<sup>49</sup> A fact documented by Paul Beaudry (2014), in which firms appear to over-accumulate capital during periods of expansion. Both are what one would expect if firms and households took some time to realise that productivity growth had actually slowed down.

One way to make some progress is to differentiate between recessions resulting from different factors, and see how the outcomes differ.

In the first breakdown, we separate out those recessions associated with either financial crises, or oil price increases, and other recessions. The motivation is straightforward: in both cases, the supply-side factors behind the recession may also be behind lower output later.

The results of the financial crisis breakdowns are shown in Table 2. They are similar across the different specifications for each type of classification. They show, as one might expect, that recessions associated with financial crises, as defined in Laeven and Valencia (2013), are more likely to show a sustained output gap, 83% on average across specifications,

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<sup>47</sup> For example, Ennis and Keister (2003) have illustrated in a theoretical model how a higher probability of banks runs can reduce the stock of capital and output as well as the long run growth rate. Empirical evidence in this regard has been provided by Ramirez (2009) in his analysis of the 1893 US financial crisis.

<sup>48</sup> A model along these lines is presented and estimated in Blanchard, L'Huillier and Lorenzoni (2015). The model, however, assumes that the news is bad news about the level of productivity, not bad news about the growth rate.

<sup>49</sup> Robert Gordon, however, offers a different interpretation of the fact. He argues that the decrease in productivity during the boom is due to overoptimistic expectations by firms, which hire too many workers. He sees the recession as correcting this over-hiring, and thus correcting the decrease in productivity. This, however, would not explain why productivity growth remains permanently lower after the recession.

compared to 66% in the absence of a financial crisis. In 35% of all the cases, recessions associated with financial crises are followed by an increasing output gap.

**Table 2**

Recessions with/without financial crises

GDP series used/ trend extrapolation	Scenario	Trend calculation: four-year window				Trend calculation: ten-year window			
		Episodes with no sustained gap	Episodes with sustained gap	of which:		Episodes with no sustained gap	Episodes with sustained gap	of which:	
				increasing over time	stable over time			increasing over time	stable over time
Log real GDP/benchmark	With financial crisis	17%	83%	35%	48%	13%	87%	48%	39%
	Without financial crisis	31%	69%	30%	38%	36%	64%	31%	32%
Log real GDP/adjusted	With financial crisis	17%	83%	39%	43%	13%	87%	48%	39%
	Without financial crisis	34%	66%	29%	36%	37%	63%	30%	32%
Log real per capita GDP/benchmark	With financial crisis	22%	78%	22%	57%	13%	87%	30%	57%
	Without financial crisis	28%	72%	32%	39%	37%	63%	33%	29%
Log real per capita GDP/adjusted	With financial crisis	26%	74%	22%	52%	13%	87%	35%	52%
	Without financial crisis	32%	68%	31%	36%	38%	62%	33%	28%

Note: A total of 122 recession episodes are included in the analysis, of which 23 happened together with financial crisis (based on the definition by Laeven and Valencia (2012) of systemic financial crisis).

The results based on oil price increases are shown in Table 3. Recessions linked to oil price increases are more likely to show a sustained gap, 90% on average, compared to 65% in the rest of the cases. In 76% of all the cases, recessions associated with an increase in the price of oil are followed by an increasing gap.

**Table 3**

Recessions with/without oil price increases

GDP series used/ trend extrapolation	Scenario	Trend calculation: four-year window				Trend calculation: ten-year window			
		Episodes with no sustained gap	Episodes with sustained gap	of which:		Episodes with no sustained gap	Episodes with sustained gap	of which:	
				increasing over time	stable over time			increasing over time	stable over time
Log real GDP/benchmark	With oil price increases	17%	83%	72%	11%	0%	100%	78%	22%
	Without oil price increases	31%	69%	24%	45%	38%	63%	27%	36%
Log real GDP/adjusted	With oil price increases	17%	83%	72%	11%	0%	100%	78%	22%
	Without oil price increases	34%	66%	24%	42%	38%	62%	26%	36%
Log real per capita GDP/benchmark	With oil price increases	22%	78%	72%	6%	0%	100%	83%	17%
	Without oil price increases	28%	72%	23%	49%	38%	62%	24%	38%
Log real per capita GDP/adjusted	With oil price increases	22%	78%	72%	6%	0%	100%	83%	17%
	Without oil price increases	33%	67%	22%	45%	39%	61%	25%	36%

Note: A total of 122 recession episodes are included in the analysis, of which 18 coincided with oil prices increases (mostly during the 1970s).

In the second breakdown, we separate out those recessions associated with an increase in inflation and those associated with a decrease in inflation.<sup>50</sup> The motivation is again straightforward: the first set is more likely to be associated with supply shocks, which may have an effect lasting for some time after the recession; the second set is more likely to be associated with demand shocks, which are less likely to be associated with those after effects. (The distinction is far from tight. While financial crises should be thought as a

<sup>50</sup> We classify as recessions with increasing inflation those for which the average inflation during the year before the start of the recession is below the average inflation during the recession. Recessions with declining inflation capture the rest.

supply shock, they may also lead, as they did in the recent crisis, to a very large initial decrease in demand, leading to a decrease in output larger than the decrease in natural output, and thus to a decrease in both output and inflation. It remains the case that recessions associated with an increase in inflation are more likely to come from supply shocks, recessions associated with a decrease in inflation to come from demand shocks.)

The results are presented in Table 4. The results conform to priors, but less strongly than in the previous two tables. Recessions associated with increasing inflation are more likely to show a sustained gap, with a frequency of 72%, compared with 63% for those associated with decreasing inflation. Another way of reading the table is that, even for those recessions associated with decreasing inflation (and thus more likely to be due to demand shocks), the proportion of recessions followed by lower output is still 63% (with the large majority of those associated with an increasing gap over time rather than just a stable gap).

**Table 4**  
Recessions with/without increasing inflation

GDP series used/ trend extrapolation	Scenario	Trend calculation: four-year window				Trend calculation: ten-year window			
		Episodes with no sustained gap	Episodes with sustained gap	of which:		Episodes with no sustained gap	Episodes with sustained gap	of which:	
				increasing over time	stable over time			increasing over time	stable over time
Log real GDP/benchmark	With increasing inflation	29%	71%	32%	39%	26%	74%	38%	36%
	With declining inflation	29%	71%	29%	42%	42%	58%	29%	29%
Log real GDP/adjusted	With increasing inflation	31%	69%	31%	38%	27%	73%	36%	36%
	With declining inflation	31%	69%	31%	38%	42%	58%	29%	29%
Log real per capita GDP/benchmark	With increasing inflation	23%	77%	31%	45%	29%	71%	36%	35%
	With declining inflation	33%	67%	29%	38%	40%	60%	27%	33%
Log real per capita GDP/adjusted	With increasing inflation	29%	71%	30%	42%	30%	70%	36%	34%
	With declining inflation	36%	64%	29%	36%	40%	60%	29%	31%

Note: A total of 122 recession episodes are included in the analysis, of which 77 happened with increasing inflation (the average inflation during the year before the start of the recession was below the average inflation during the recession).

“Demand shocks” comprise many different types of shock, some of which can have lasting effects on potential output. The cleanest demand shocks we can think of are the episodes of intentional disinflations, which happened mostly in the 1980s. So, as a final step, we identify recessions associated with intentional disinflations as those recessions characterised by a large increase in nominal interest rates, followed by a subsequent disinflation. We identify 28 such recessions. Table 5 shows the breakdown for recessions with and without intentional disinflations.

Recessions associated with intentional disinflations are somewhat less likely to show a sustained gap, 63% on average, compared to 70% for others. But the difference is small, and again, the results can be read as saying that even recessions associated with intentional disinflations are followed by a sustained gap in 63% of the cases. In 20% of all the cases, they appear to be actually followed not only by lower output, but by lower output growth.

**Table 5**

## Recessions with/without intentional disinflations

GDP series used/ trend extrapolation	Scenario	Trend calculation: four-year window				Trend calculation: ten-year window			
		Episodes with no sustained gap	Episodes with sustained gap	of which:		Episodes with no sustained gap	Episodes with sustained gap	of which:	
				increasing over time	stable over time			increasing over time	stable over time
Log real GDP/benchmark	Without intentional disinflation	28%	72%	34%	38%	29%	71%	39%	32%
	With intentional disinflation	32%	68%	21%	46%	43%	57%	18%	39%
Log real GDP/adjusted	Without intentional disinflation	31%	69%	34%	35%	30%	70%	38%	32%
	With intentional disinflation	32%	68%	21%	46%	43%	57%	18%	39%
Log real per capita GDP/benchmark	Without intentional disinflation	27%	73%	34%	39%	30%	70%	36%	34%
	With intentional disinflation	29%	71%	18%	54%	43%	57%	21%	36%
Log real per capita GDP/adjusted	Without intentional disinflation	32%	68%	33%	35%	31%	69%	37%	32%
	With intentional disinflation	29%	71%	18%	54%	43%	57%	21%	36%

Note: A total of 122 recession episodes are included in the analysis, of which 28 were classified as intentional disinflation periods given that they were followed by important decreases in inflation and also accompanied by large increases in the policy rate.

To summarise, a surprisingly high proportion – two-thirds – of recessions are followed by lower output relative to the pre-recession trend. Even more surprisingly, almost one-half of those are followed not only by lower output, but also by lower output growth relative to the pre-recession trend. These proportions are larger for recessions associated with supply shocks. Even for recessions plausibly induced by intentional disinflations, the proportion of recessions followed by an output gap remains high, at around 63%.

From these findings, we conclude that it is likely that all three explanations are relevant. The fact that recessions identified with specific supply shocks, whether oil prices or financial crises, are more likely to be followed by sustained gaps suggests that such shocks probably explain both the recession and the subsequent lower output or output growth. The fact that almost two-thirds of the recessions associated with decreasing inflation, and thus with demand shocks as the more likely factor behind the recession, are associated with a sustained gap points to one of the other two explanations, hysteresis or reverse causality. Finally, the fact that also nearly two-thirds of the recessions associated with intentional disinflations show a sustained gap is suggestive of hysteresis. These conclusions have important implications for monetary policy that we go on to develop in the last section.

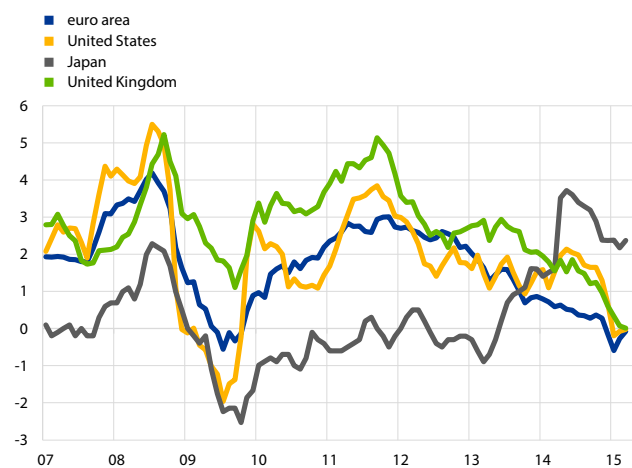
### 3 Does unemployment affect inflation?

As the crisis unfolded and GDP declined, most economists expected inflation to decrease sharply, with some forecasting a deflation spiral, along the lines of what had been observed in the Great Depression. Chart 6 plots inflation since 2007 in the United States, the euro area, United Kingdom and Japan. It shows that inflation indeed declined, and in some countries, has now turned into deflation, but that deflation has remained limited.

## Chart 6

### CPI headline inflation in advanced economies

(percentages, year-on-year)



Sources: IMF, Global Data Source.

Much of the explanation clearly comes from the changes in the way people and firms form expectations of inflation. As has been documented by many, the shift to inflation targeting and stable inflation for the two decades preceding the crisis have led forecasts of future inflation to put less weight on past inflation, and more weight on the perceived target of the central bank. (An alternative interpretation is that low inflation has led to decreased inflation salience, and that less attention is paid by workers and firms to actual inflation). This in turn has led to a shift from an “accelerationist Phillips curve”, in which the unemployment gap led to a change in inflation, to something closer to a “level Phillips curve”, in which the gap is associated with a level of inflation.

Some empirical evidence suggests, however, that more has been at work, namely that, controlling for expected inflation, the effect of the unemployment gap (i.e. the

distance between the actual and natural unemployment rates) on inflation has diminished over time. In particular, this was the conclusion of the study conducted in the IMF’s April 2013 World Economic Outlook (WEO) study, which we take as our starting point here.<sup>51</sup>

The study, which was based on quarterly data from 20 countries since 1960 showed the results of estimation of the following relation (see Matheson and Stavrev (2013) for more specification and estimation details):

$$\pi_t = \theta_t(u_t - u_t^*) + \lambda_t \pi_t^e + (1 - \lambda_t) \pi_{t-1}^* + \mu_t \pi_{mt} + \varepsilon_t \quad (1)$$

Where  $\pi_t$  is headline CPI inflation (defined as quarterly inflation, annualised),  $u_t$  is the unemployment rate,  $u_t^*$  is the natural rate,  $\pi_t^e$  is long-term inflation expectations,  $\pi_{t-1}^*$  is the average of the last four quarterly inflation rates, and  $\pi_{mt}$  is import price inflation relative to headline inflation.

The parameters  $\lambda_t$  (the coefficient reflecting the stability of inflation expectations),  $\theta_t$  (the slope of the Phillips curve), and  $\mu_t$  (the coefficient reflecting the importance of import-price inflation), as well as the natural rate,  $u_t^*$ , which is unobservable, are all assumed to follow constrained random walks ( $\theta_t$  and  $\mu_t \geq 0$ , and  $0 \leq \lambda_t \leq 1$ ).<sup>52</sup>

The equation is estimated separately for each country by maximum likelihood, using a non-linear Kalman filter. The results differ from those in the WEO chapter only to the extent that we use two more years of data, with the samples ending in 2014.

Chart 7 shows median estimates for  $\lambda_t$  and  $\theta_t$ , the two coefficients we focus on, together with the interquartile range of estimates across countries.

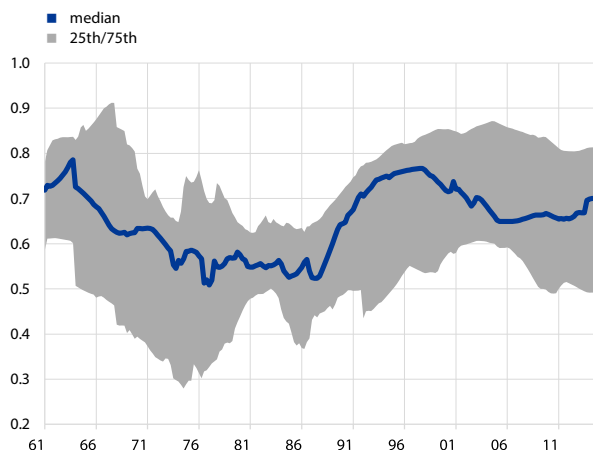
<sup>51</sup> Capturing in a more poetic way the argument in the previous paragraph, the title of the study was called “The dog which did not bark”.

<sup>52</sup> Further details about the specification of the equation are given in Appendix 1 of the IMF chapter.

## Chart 7

### Median estimates (across all countries)

Anchoring of inflation to long-term expectations ( $\lambda$ )



Slope of the Phillips curve ( $\Theta$ )

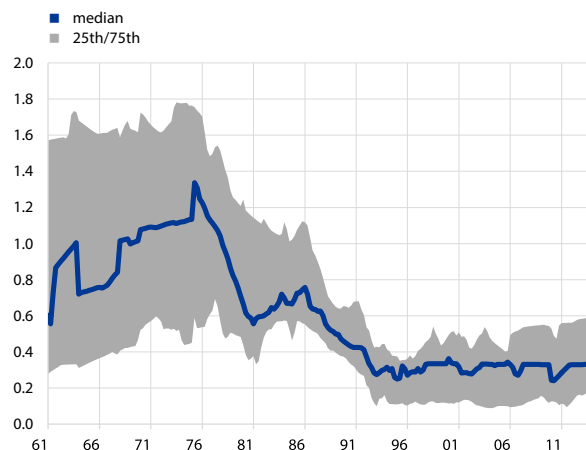


Chart 7 confirms the two main conclusions of the earlier IMF study: (i) since the mid-1970s, short-run inflation expectations have become more stable ( $\lambda_t$  has increased), and (ii) the slope of the Phillips curve ( $\theta_t$ ) has flattened over time, with nearly of the all decline taking place from the mid-1970s to the early 1990s, and the coefficient remaining roughly constant since then. It also does not show any further decrease since the beginning of the crisis.

What Chart 7 does not show, however, is that, for most countries, the coefficient  $\theta_t$  today is not only small, but statistically insignificant. This can be seen, for example, in Chart 8, showing estimates for the United States and Germany, two countries which are representative of other countries (the results for other countries are presented in a web appendix). In both countries, the one-standard-deviation band reaches the horizontal axis some time in the mid-1990s, and remains there thereafter (the estimated coefficient is constrained to be non-negative).

The graphs are representative of the results for the larger set of countries. While, in 1985, the coefficient  $\theta_t$  was significant for all but two countries, in 2014 it is insignificant for all but four countries.<sup>53</sup>

In the draft we initially wrote for the conference, we emphasised this point, indicating that the absence of a reliable relation between activity and inflation raised fundamental questions for the conduct of monetary policy. How could a central bank do inflation-targeting if there was no reliable relation between the unemployment gap and inflation?

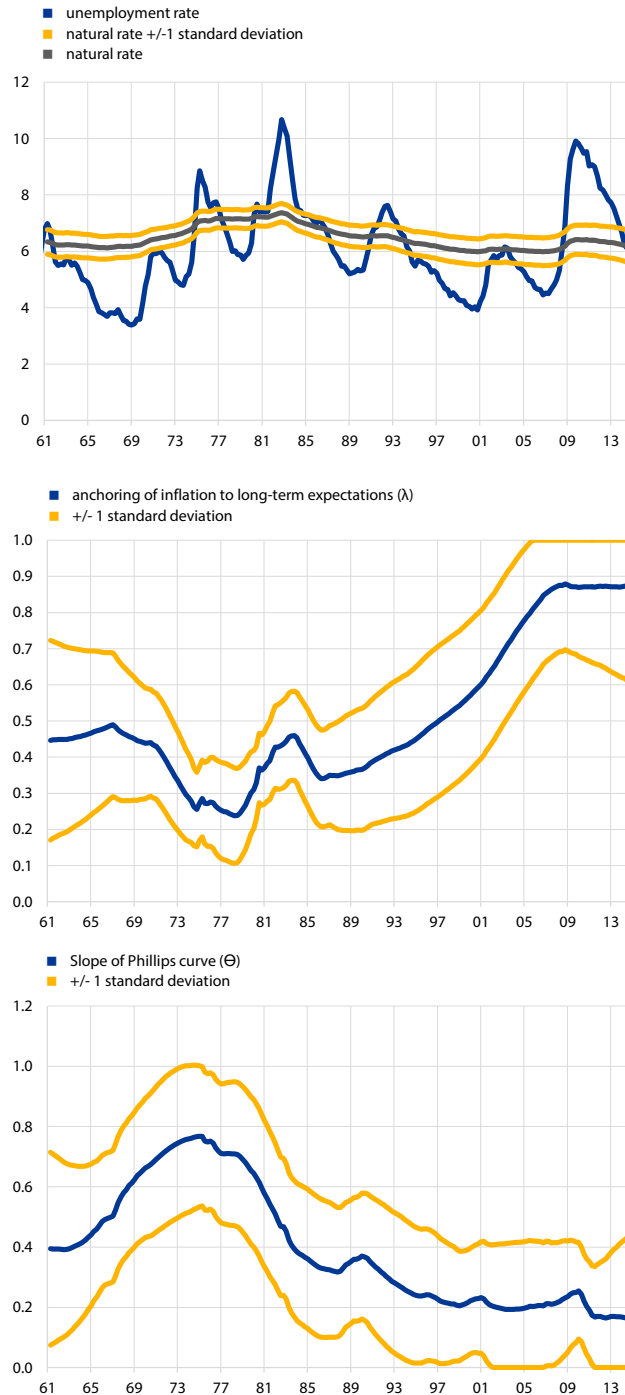
<sup>53</sup> The appropriate specification of the Phillips curve, if there is indeed one, is far from settled. The above results were robust to either allowing the natural rate to depend partly on the actual unemployment rate – reflecting a crude form of the hysteresis issue dealt in the previous section – or replacing the unemployment rate with the short-term unemployment rate.



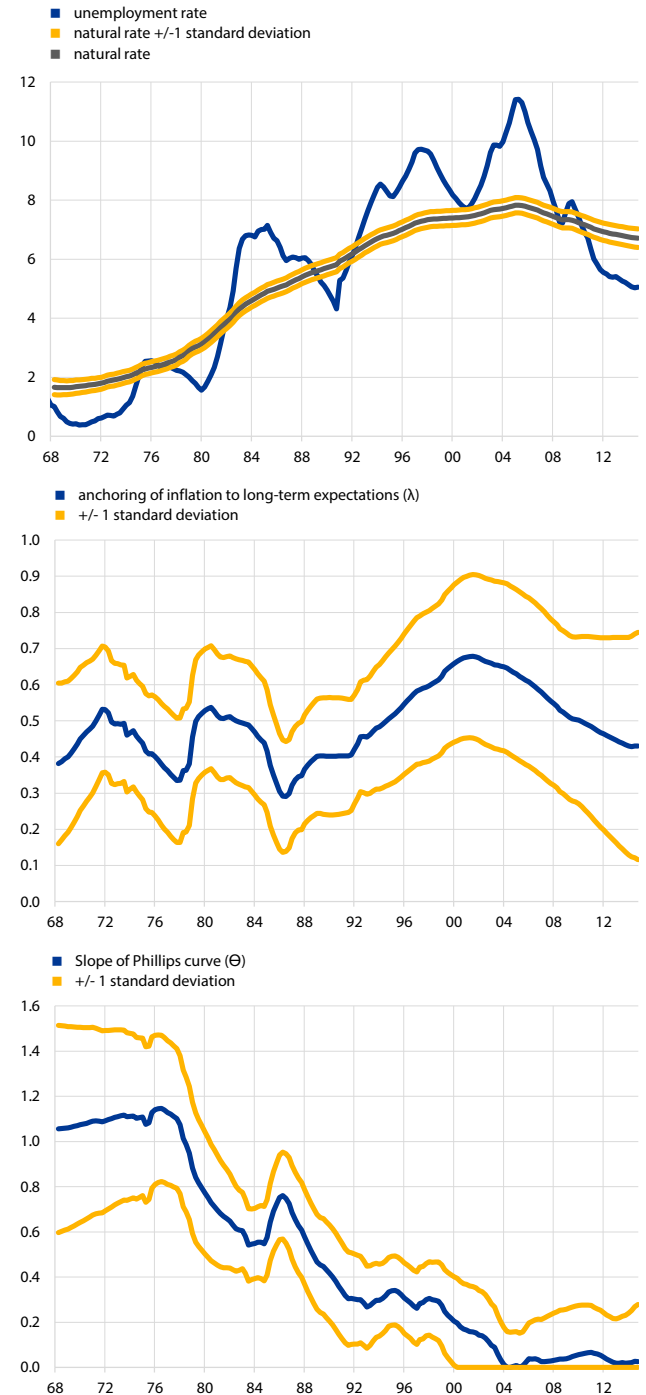
## Chart 8

### Estimates for Germany and the United States

#### United States



#### Germany



Our discussant, Laurence Ball, however, expressed scepticism. He argued that the low significance of the coefficients may have come from our specification of the inflation unemployment relation. The Kalman filter may have a hard time distinguishing how much of the change in the relation between the two came from changes in  $\theta_t$  or from changes

in  $u_t^*$ : for example, the lack of an apparent effect of an increase in unemployment on inflation could be equally well explained by a smaller coefficient  $\theta_t$  or by an increase in  $u_t^*$  in parallel with the increase in  $u_t$ . The large standard deviations may then be the result of this poor identification. He showed that, for the United States and for the euro area, simple regressions delivered significant coefficients.

This led us to follow his lead and explore simpler and tighter specifications. Based on the observation that, in most countries, the estimated coefficient was roughly stable starting in the early 1990s, we limited the sample to the period 1990-2014. Based on the observation that, again starting in the early 1990s, inflation expectations appeared well anchored, we dropped lagged inflation as an explanatory variable, and we estimated the following relation, assuming constant rather than time-varying coefficients:

$$\pi_t = \theta(u_t - u_t^*) + \lambda\pi_t^e + \mu\pi_{mt} + \varepsilon_t \quad (2)$$

We estimated, for each country, the relation over the whole period, 1990-2014, and over the crisis period, 2007-2014. We made two different assumptions about  $u_t^*$ . In the first, we took the time series for  $u_t^*$  from the Kalman filter estimation. In the second, we simply assumed  $u_t^*$  to be constant and equal to the average unemployment rate over the whole period ( $\bar{u}$ ). Table 6 reports estimated coefficients for  $\theta$  and their standard errors over both the 1990-2014 and the 2007-2014 periods, for the two specifications of the natural rate,  $u_t^*$  and  $\bar{u}$  (full results, and other coefficients, are available in the web appendix).

The table yields the following conclusions.

The main conclusion is that the estimated coefficient,  $\theta$ , is typically significant (at the 95% confidence level). When the natural rate is proxied by  $u_t^*$ , the coefficient is significant in 15 out of the 20 countries. When the natural rate is proxied by  $\bar{u}$ , the coefficient is significant in 14 out of the 20 countries. Countries where the coefficient is not significant in either specification are Germany, the United Kingdom, Norway, and Denmark.<sup>54 55</sup> These results suggest that the Kalman filter results indeed understated the significance of the coefficient. In most countries, even if the coefficients are smaller than they were earlier, there remains a significant relation between activity and inflation.

As in the Kalman filter results, coefficients vary widely across countries, and appear roughly inversely related to the levels and the movements in unemployment. For example, in the specification using  $u_t^*$ , the coefficient for Japan is equal to -1.08, the coefficient for the United States, is -0.29, and the coefficient for Spain is -0.08. The coefficients are typically larger when  $u_t^*$  is used. The likely explanation is that when the natural rate is allowed to move over time, it tends to move with the actual rate, reducing the unemployment gap, requiring a larger coefficient to explain the movement in inflation.

<sup>54</sup> In the case of the United Kingdom, there appears to be a stable and significant relation between wage inflation, expected inflation and unemployment (Broadbent, 2014). What appears to have broken down is the relation between wage inflation and price inflation.

<sup>55</sup> We do not look at the euro area as a whole. Work by Andrieu et al. (2013) suggests the presence of a significant relation between inflation and unemployment there as well.

**Table 6**  
Slope of the Phillips curve

Country	Sample period	Natural rate: U*		Natural rate: $\bar{U}$	
		Coefficient 1/	Standard deviation	Coefficient 1/	Standard deviation
United States	1990-2014	-0.29 ***	0.07	-0.25 ***	0.07
	2007-2014	-0.26 *	0.13	-0.24 *	0.12
Japan	1990-2014	-1.09 ***	0.17	-0.50 ***	0.09
	2007-2014	-2.37 ***	0.64	-1.54 ***	0.43
Germany	1990-2014	-0.11	0.09	-0.12	0.07
	2007-2014	0.15	0.20	0.11	0.14
United Kingdom	1990-2014	0.04	0.11	0.02	0.10
	2007-2014	-0.04	0.30	-0.04	0.28
France	1990-2014	-0.49 ***	0.14	-0.32 ***	0.08
	2007-2014	-0.63 ***	0.20	-0.52 ***	0.16
Italy	1990-2014	-0.12	0.09	-0.15 ***	0.06
	2007-2014	-0.30 ***	0.10	-0.25 ***	0.08
Canada	1990-2014	-0.32 ***	0.16	-0.21	0.13
	2007-2014	-0.52	0.45	-0.50	0.41
Australia	1990-2014	-0.68 ***	0.14	-0.49 ***	0.10
	2007-2014	-0.78 **	0.38	-0.79 **	0.36
Spain	1990-2014	-0.08 **	0.04	-0.07 ***	0.03
	2007-2014	-0.09 *	0.05	-0.07 *	0.04
Netherlands	1990-2014	-0.40 ***	0.12	-0.31 ***	0.10
	2007-2014	0.01	0.20	-0.01	0.16
Switzerland	1990-2014	-0.71 ***	0.15	-0.64 ***	0.08
	2007-2014	-0.59	0.79	-0.65	0.60
Sweden	1990-2014	-0.55 ***	0.12	-0.48 ***	0.09
	2007-2014	-1.21 ***	0.32	-1.10 ***	0.26
Belgium	1990-2014	-0.62 ***	0.20	-0.37 ***	0.14
	2007-2014	-1.13 *	0.62	-0.74 **	0.30
Norway	1990-2014	-0.06	0.20	-0.07	0.20
	2007-2014	-0.80	1.52	-0.73	1.41
Austria	1990-2014	-0.68 ***	0.25	-0.11	0.14
	2007-2014	-1.62 ***	0.42	-1.26 ***	0.36
Denmark	1990-2014	-0.17	0.12	-0.13	0.10
	2007-2014	1.72 ***	0.49	1.53 ***	0.44
Ireland	1990-2014	-0.28 ***	0.04	-0.21 ***	0.03
	2007-2014	-0.26 ***	0.08	-0.22 ***	0.07
Greece	1990-2014	-0.15 **	0.07	-0.14 ***	0.03
	2007-2014	-0.19 ***	0.06	-0.11 ***	0.04
Portugal	1990-2014	-0.23 ***	0.07	-0.17 ***	0.05
	2007-2014	-0.01	0.11	-0.02	0.08
New Zealand	1990-2014	-0.50 ***	0.09	-0.33 ***	0.11
	2007-2014	-0.60 *	0.34	-0.58 *	0.28

Notes: 1/ \*\*\* indicates significance at 1%, \*\* at 5%, and \* at 10%, respectively, based on robust standard errors.

One might have expected that the reluctance of employers to impose (and of employees to accept) decreases in nominal wages (a hypothesis sometimes referred to as the “zero bound” on wage growth), combined with very low inflation, might have led to a decrease in the effect of the unemployment gap on inflation. This does not appear to be the case. The coefficients do not appear to have decreased in the recent past. Among countries

with significant coefficients over the period 1990-2014, only two have much smaller and insignificant coefficients when estimated over 2007-2014, namely the Netherlands and Portugal.<sup>56</sup> In all other cases, the coefficient is about the same or larger.

To summarise: it is clear that the slope of the Phillips curve has decreased over time in most countries. Most of the decline, however, took place from the mid-1970s to the early 1990s. Since then, the coefficient has remained roughly stable. In particular, it does not appear to have decreased during the crisis.

## 4 Implications for monetary policy

Based on the conclusions from our empirical work, what are the implications for monetary policy? A full answer would require a much better understanding of the underlying mechanisms behind hysteresis, if indeed present, or behind the decrease in the slope of the Phillips curve. Nevertheless, we feel we can draw the following conclusions.

Depending on their interpretation, the findings of the first section have strong, but conflicting implications for monetary policy (and for macroeconomic policy in general).

To the extent that hysteresis is present, it implies that deviations in output from its optimal level are much longer-lasting and thus more costly than usually assumed. The implication is straightforward, namely that monetary policy should react more strongly to output movements, relative to inflation. It also implies that stabilising inflation is definitely not the optimal policy: to the extent that an increase in actual unemployment leads to an increase in the natural rate, the unemployment gap, and by implication inflation, will give a misleading signal about the degree of underutilisation of resources in the economy.<sup>57</sup>

To the extent, however, that some recessions are caused by an underlying decrease in growth, there is instead the risk of overestimating potential output during and after the recession, and by implication of overestimating the output gap. In turn, this may lead to too strong a response of monetary policy to output movements during and after the recession.<sup>58</sup> This is illustrated in Chart 9 below. Suppose that after time  $t$ , potential growth decreases, and that it takes a while for firms and households to realise it. For some time, growth, determined by demand, will continue at close to the old trend, until the adjustment of expectations leads to an adjustment in spending and a recession. If, in real time, the central bank constructs the output gap under the assumption that the underlying trend has not changed, the negative output gap will be measured by the sum of the orange area and the right blue area in the picture, whereas the true negative output gap is given by the right blue area only. Only over time, will it become clear what the correct output gaps (blue areas) were and what monetary policy should have been.

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<sup>56</sup> At the microeconomic level, there is substantial evidence of a binding zero lower bound on wage changes in Portugal, which might explain why the coefficient on the unemployment gap has become insignificant. The question is then why the same has not happened in other countries, which also have low wage inflation.

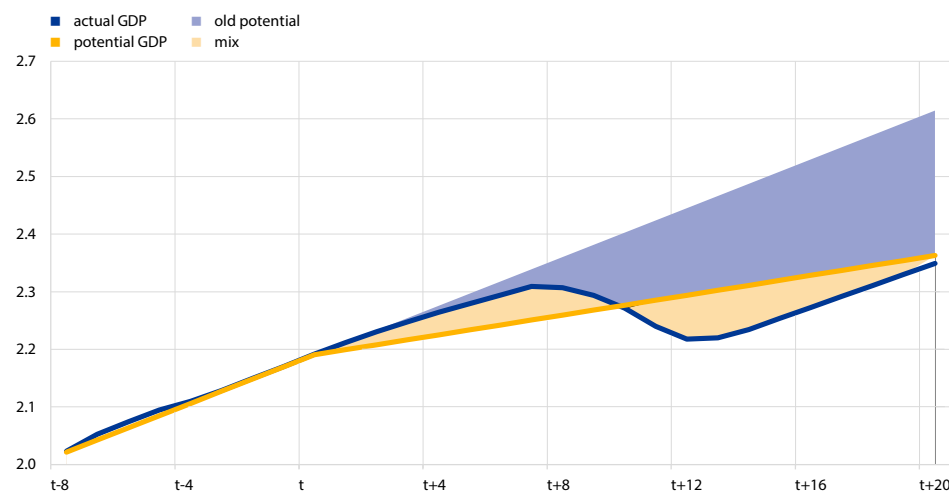
<sup>57</sup> We are not aware of a derivation of optimal monetary policy under hysteresis. For a beginning, see Galí(2015).

<sup>58</sup> It is indeed often the case that estimates of output gaps associated with recessions are revised down ex post.

## Chart 9

### Decreases in growth, recessions and output gaps

(y-axis: log real GDP)



The findings of the second section are less dramatic. Our initial hypothesis, which was that there might no longer be a significant relation between inflation and unemployment, is not supported by the data. While the Phillips curve coefficient is clearly lower than it was up until the early 1990s, it appears to have remained stable since then, including during the crisis, and is significant in most countries.

This decrease does not, by itself, put into question the standard inflation-targeting framework, but it has implications for the optimal policy rule. To draw specific policy implications, one would need to identify why the coefficient became smaller, whether it comes, for example, from wage-setting or from price-setting behaviour, whether it comes from changes in the structure of wage bargaining, or in the pricing behaviour of firms in the product market.<sup>59</sup> However, more generally, to the extent that the unemployment gap has a smaller effect on inflation, monetary policy rules should put relatively more weight on the unemployment gap relative to inflation. Trying to stabilise inflation may require very large movements in the unemployment gap.

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<sup>59</sup> More specifically, the issue is whether the factors behind the decrease in the coefficient also affect the weights of inflation and the output gaps in the welfare function. In formal NK models, this may not be the case (see, for example, Woodford 2005, Chapter 6).

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# Comment on “Inflation and activity” by Olivier Blanchard, Eugenio Cerutti and Lawrence Summers

By Laurence Ball<sup>60</sup>

This paper reports two important findings. First, recessions in advanced economies are typically followed by persistently low levels of output relative to pre-recession trends, or even lower growth rates of output. One reason for this finding, the authors suggest, is hysteresis: recessions cause long-term damage to economies.

Second, Phillips curves in advanced economies flattened between the 1970s and early 1990s, but their slopes have been stable since then. Today, in a typical country, a one-percentage-point rise in unemployment reduces inflation by about one-quarter or half of a percentage point.

Regrettably, from the point of view of writing an entertaining discussion, I find the authors’ analysis sensible and mostly agree with their conclusions. I will nevertheless highlight some key evidence and discuss policy implications, which are profound.<sup>61</sup>

## 1 Long-term damage from recessions

The authors examine how recessions affect the economy in the medium run – three to seven years after the recessions end. They find that output over this period is below the pre-recession trend in 66% to 73% of episodes, depending on how the trend is estimated. Averaging across all episodes, a recession reduces medium-run output by about 5%. In 30% to 34% of cases, the post-recession output loss rises significantly over time.

This finding probably reflects several phenomena. An adverse supply shock may trigger a recession and also reduce long-run output. Anticipation of a growth slowdown may cause a recession by reducing current consumption and investment. Or a recession may leave long-term scars on the economy.

This last possibility – the hysteresis hypothesis – is a major challenge to the macroeconomic models that appear in textbooks, and that guide policy-making at central banks. In those models, the long-term path of output and short-run fluctuations are determined by different factors. The effects of a recession disappear within a few years.

I agree with the authors that the cleanest test for hysteresis is to examine recessions caused by intentional disinflations. These shifts in monetary policy are demand shocks that should not have persistent effects on output, according to conventional models.

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<sup>60</sup> Johns Hopkins University. Sandeep Mazumder collaborated on the empirical work I report.

<sup>61</sup> At the conference where the paper was presented, the authors and I disagreed strongly about the part on the Phillips curve. However, we have since had a meeting of minds.



Of the 122 recessions examined by the authors, they attribute 28 to intentional disinflations. Between 57% and 71% of those recessions caused persistent output losses, and the average effect on medium-run output is 3% or 4%. This effect is slightly smaller than the 5% average for all recessions, but still substantial. I think these findings are important evidence for hysteresis.<sup>62</sup>

Only 18% to 21% of the disinflations lead to output losses that grow over time. I find this low figure reassuring because, as the paper points out, growth-rate effects of demand shocks are an extreme form of hysteresis that may not be plausible. I would like to take the paper as finding that demand shocks often reduce output levels, but usually not growth rates.

A critical question is why many disinflations (57% to 71%) reduce output permanently, but some (29% to 43%) do not. I believe a key factor is what policy-makers do after the initial tightening that reduces output and inflation. In some episodes, such as the Volcker disinflation in the United States, policy quickly shifts toward expansion, pushing output back to its pre-recession path (the “morning in America” celebrated by Ronald Reagan). In other episodes, such as the Thatcher disinflation in the United Kingdom, policy stays tight for longer and that causes permanent output losses (Ball (1999)).

I tried to test this idea with the data from this paper, but I ran into a problem. The authors estimate pre-recession output trends with several different methods, and they are agnostic about which method is best. They emphasise that their results about the average effects of recessions are robust. Unfortunately, the estimated trends make a big difference for the costs of individual recessions. For recessions caused by disinflation, the correlation of medium-run output gaps with trends based on four-year and ten-year windows (not adjusted for credit booms) is only 0.44. With a four-year window, the largest gap is 29% for the recession in Portugal, 1992-93; with a ten-year window, the gap for that episode is -8%. With a four-year window, the gaps are 12% for the Volcker disinflation and -23% for the Thatcher disinflation; with a ten-year window, the gaps for both of those episodes are close to zero.

Since it is unclear which recessions have the largest costs, it is hard to identify factors that determine the costs. To make progress on this issue, we need an accurate method for estimating pre-recession trends. Developing such a method is a challenge for future research.

Let's turn to policy. If hysteresis effects are significant, that fact has a simple but vitally important implication: **A central bank should not have a single mandate for price stability.**

The case for a single mandate rests on the theory that monetary policy affects only nominal variables in the long run. Hysteresis means that policy has long-run effects on employment and output, so a central bank may succeed at producing price stability but also cause economic stagnation. Policy-makers should have a dual mandate that reflects their influence on the real economy.

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<sup>62</sup> I computed average effects of the 28 disinflations from the data in the paper's web appendix.

The danger of a single mandate is illustrated by Jean-Claude Trichet's remarkable statement at a press conference in 2011. Challenged to defend ECB policy, Trichet said:

"We were called on by all the democracies of Europe to deliver price stability ... We have delivered price stability over the first 12-13 years of the euro! Impeccably! I would like very much to hear some congratulations ... "

In 2011 the unemployment rate in the euro area was over 10%. Unemployment was 15% in Ireland, 18% in Greece and 21% in Spain. The ECB needs a dual mandate so no policy-maker can expect congratulations in these circumstances.

## 2 The Phillips curve

The paper reports two findings about changes over time in the Phillips curves of advanced economies. First, short-run inflation expectations have become more anchored, in the sense that inflation depends more on long-term expectations ( $\pi^e_t$ ) and less on actual inflation rates in the recent past. Most of this shift occurred between the mid-1980s and mid-1990s (Chart 7 in the paper).

The terminology here is potentially confusing. Other researchers use the term "anchoring" for a different phenomenon: long-term expectations,  $\pi^e_t$ , have become less responsive to actual inflation, and stayed near the 2% targets of central banks. This change has occurred since the late 1990s. The two types of anchoring, while distinct, have complementary effects: both reduce the persistence of shocks to inflation.<sup>63</sup>

Second, Phillips curves became flatter – the effects of unemployment on inflation fell – from the 1970s to the early 1990s. Since the 1990s, however, Phillips-curve slopes have been roughly constant. In a typical country, a one-percentage-point rise in unemployment reduces inflation by one-quarter or half a point.

These results differ significantly from the past International Monetary Fund (IMF) research on which the paper builds (WEO (2013)). That work found that the Phillips curve has flattened since 2000 and attributed the change to the interaction of low inflation and downward nominal wage rigidity. The current finding of constant slopes since the 1990s, when inflation was higher in most countries, suggests that downward wage rigidity has *not* had important effects on the Phillips curve.

The earlier research in the WEO posited a Phillips curve with four unobservable, time-varying parameters. As Blanchard et al. discuss, they changed their mind about the slope of the curve after simplifying the WEO specification. Their paper reminds us that parsimonious specifications can be vital for credible empirical work.

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<sup>63</sup> To make this point more formally – the paper's Phillips curve includes a weighted average of long-term expectations and past inflation:  $\lambda\pi^e_t + (1-\lambda)\pi_{t-1}$ . Suppose  $\pi^e_t = \omega\pi^* + (1-\omega)\pi_{t-1}$ , where  $\pi^*$  is the central bank's inflation target. Combining these expressions, a reduced-form Phillips curve includes  $\lambda\omega\pi^* + (1-\lambda\omega)\pi_{t-1}$ . The current paper finds that  $\lambda$  has risen, and previous work finds that  $\omega$  has risen. Both of these changes have reduced  $1-\lambda\omega$ , the effect of past inflation on current inflation.

For even greater transparency, I modify Blanchard et al.'s analysis in several ways. First, I aggregate the euro area into one economy and study its Phillips curve along with that of the United States. Second, I omit the import-price variable (which presumably is less important for Europe as a whole than for individual countries). Finally, to reduce the noise in quarterly inflation rates, I study core inflation as measured by the weighted median of industry price changes (which is calculated by the Cleveland Fed for the United States and by Andrieu et al. (2013) for Europe).

As a robustness check, I estimate Phillips curves that include output as well as unemployment. My specification is

$$\pi_t = \pi_t^e + \alpha x_t + \epsilon_t$$

where again  $\pi^e$  is long-run expected inflation as measured by surveys, and  $x$  is the level of economic activity. I measure activity with a four-quarter moving average of detrended unemployment or detrended log output, computed with the Hodrick-Prescott filter. I estimate the equation for the United States since 1985 and for Europe since 1999.

**Table 1**  
Phillips curves

U.S., 1985Q1-2014Q4		
(1)	$\pi_t = \pi_t^e + \alpha \frac{1}{4}(\bar{y}_t + \bar{y}_{t-1} + \bar{y}_{t-2} + \bar{y}_{t-3}) + \epsilon_t$	
$\alpha$		0.265 (0.058)
$\bar{R}^2$		0.704
(2)	$\pi_t = \pi_t^e + \alpha \frac{1}{4}(\bar{u}_t + \bar{u}_{t-1} + \bar{u}_{t-2} + \bar{u}_{t-3}) + \epsilon_t$	
$\alpha$		-0.452 (0.084)
$\bar{R}^2$		0.732
Euro Area, 1999Q1-2014Q4		
(1)	$\pi_t = \pi_t^e + \alpha \frac{1}{4}(\bar{y}_t + \bar{y}_{t-1} + \bar{y}_{t-2} + \bar{y}_{t-3}) + \epsilon_t$	
$\alpha$		0.278 (0.046)
$\bar{R}^2$		0.494
(2)	$\pi_t = \pi_t^e + \alpha \frac{1}{4}(\bar{u}_t + \bar{u}_{t-1} + \bar{u}_{t-2} + \bar{u}_{t-3}) + \epsilon_t$	
$\alpha$		-0.553 (0.103)
$\bar{R}^2$		0.367

Note: OLS with robust (HAC) standard errors is used (standard errors in parentheses).

Table 1 reports the results. For both the United States and Europe, the coefficient on output is near 0.25, and the coefficient on unemployment is near -0.5. These results are consistent with an Okun's Law in which output rises by 2% when unemployment falls by one percentage point. The fit of the equations is good, especially for the United States (adjusted  $R^2 > 0.7$ ).

Chart 1 shows scatterplots of  $\pi - \pi^e$  against the output or unemployment gap, which confirm the good fit of the Phillips curve. Observations since 2007 are highlighted in red; we see no evidence that the inflation-activity relationship changed during the Great Recession.

What does the current state of the Phillips curve mean for monetary policy? Blanchard et al. stress that the effect of unemployment on inflation is smaller than it was 40 years ago, and conclude, "Trying to stabilise inflation may require very large movements in the unemployment gap". I think this statement is misleading, however. The biggest change in the Phillips curve is the anchoring of

expectations, and that makes it easier to stabilise inflation. If a shock pushes inflation up, anchored expectations push it back down without the need for a monetary tightening and higher unemployment.

A flat Phillips curve does, however, pose a problem for the euro area: it makes it difficult to restore competitiveness in the periphery by adjusting national price levels. Krugman (2015) provides an illustrative calculation for Greece, in which he assumes its real exchange rate is overvalued by 25%. He assumes the output coefficient in the Phillips curve is 0.25, which is close to my estimates in Table 1. With these numbers, Greece must

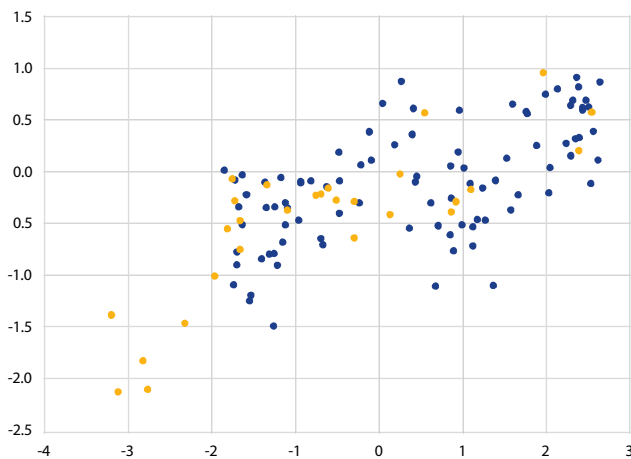
sacrifice 100% of a year's output to achieve the temporary decrease in inflation that it needs.

### Chart 1

Scatterplots of  $\pi - \pi^f$  vs. activity variable (red points show 2007 data)

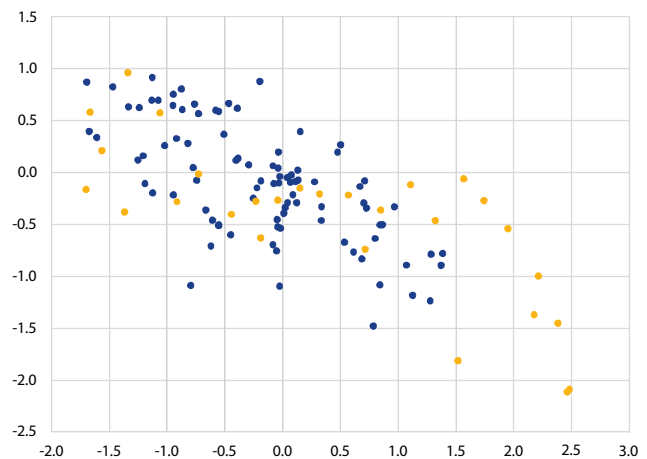
#### a) United States; output gap

(y-axis: median- $\pi^f$ ; x-axis: YGAP (Avg. t...t-3))



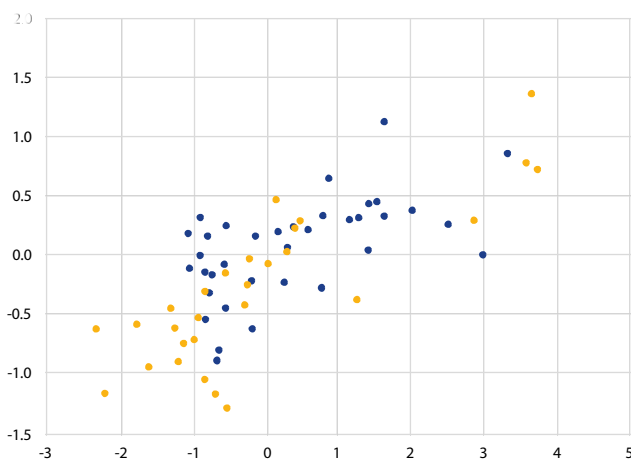
#### b) United States; unemployment gap

(y-axis: median- $\pi^f$ ; x-axis: UGAP (Avg. t...t-3))



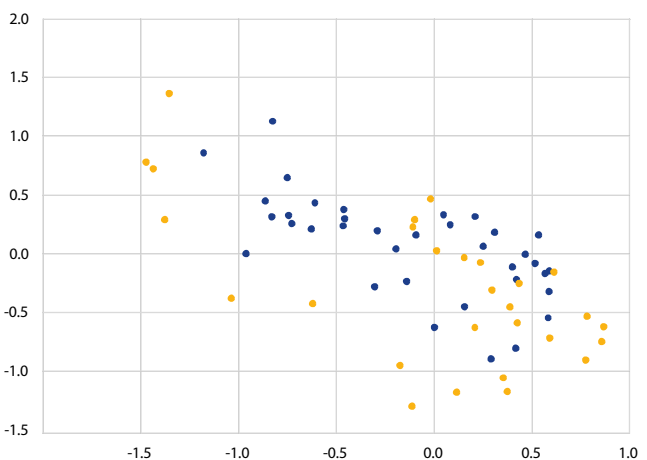
#### c) Euro area; output gap

(y-axis: median- $\pi^f$ ; x-axis: YGAP (Avg. t...t-3))



#### d) Euro area; unemployment gap

(y-axis: median- $\pi^f$ ; x-axis: UGAP (Avg. t...t-3))



This estimated cost is huge, yet it is conservative. The 100% figure is the total shortfall of output from its long-run level during Greece's adjustment. Krugman implicitly assumes that long-run output is not affected: hysteresis does not exist. If hysteresis effects are substantial, as Blanchard et al. find, then the cost of price-level adjustment is greatly amplified by long-term damage to the economy.

As many have noted, relative price adjustment in Europe could be accomplished either through lower inflation in the periphery or through temporarily higher inflation in the core. The costs of reducing inflation in already-depressed economies make a compelling case for the latter.

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# Hysteresis and the European unemployment problem revisited

By Jordi Galí<sup>64</sup>

## Abstract

The unemployment rate in the euro area appears to contain a significant non-stationary component, suggesting that some shocks have permanent effects on that variable. I explore possible sources of this non-stationarity through the lens of a New Keynesian model with unemployment, and assess their empirical relevance.

## 1 Introduction

The existence of significant differences in the behaviour of unemployment in the United States and in Europe has long been recognised, at least since Blanchard and Summers' influential *hysteresis* paper.<sup>65</sup> Such differences are apparent in Chart 1, which displays quarterly time series for the unemployment rate in those two economies, spanning the period from the first quarter of 1970 to the fourth quarter of 2014, and with the (current) euro area taken to represent Europe (here and throughout the paper). The US unemployment rate shows substantial cyclical volatility, but with a clear tendency to revert back to some (nearly constant) resting point. By contrast, the unemployment rate in the euro area wanders about a (seemingly) upward trend, showing variations that are both smoother and more persistent than its US counterpart. Each recession episode appears to pull the euro area unemployment rate towards a new, higher plateau, from which it eventually drifts away as the economy recovers, but without any apparent tendency to gravitate towards some constant long-run equilibrium value.

In the language of time series analysis, the behaviour of the US unemployment rate seems consistent with a *stationary* stochastic process, while in the euro area the same variable displays fluctuations characteristic of a stochastic process with a *unit root*, i.e. a non-stationary process with a random walk-like permanent component.

In the present paper, I take seriously (i.e. as a fact) the hypothesis of a unit root in euro area unemployment and explore some of its possible causes.<sup>66</sup>

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<sup>65</sup> Blanchard and Summers (1986). See Ball (2009) for a recent analysis of potential hysteresis in unemployment in a large number of OECD countries.

<sup>66</sup> See below for some caveats on a literal interpretation of the unit root property in the unemployment rate.

The presence of a unit root in the unemployment rate implies the existence of at least one type of economic disturbance that has a permanent effect on that variable. In the analysis below I seek to uncover *possible sources of that unit root*, and assess their *empirical plausibility*, using as a reference framework a New Keynesian model with unemployment, as developed in Galí (2011a and 2011b) and Galí, Smets and Wouters (2012).

Below I put forward three (non-mutually exclusive) hypotheses on the source of the unit root in unemployment, which I refer to as the *natural rate hypothesis*, the *long-run trade-off hypothesis* and the *hysteresis hypothesis*. The analysis in the paper suggests that none of the three hypotheses can, by themselves, account for the evidence on unemployment and wage inflation for the period 1970-2014, though both the long-run trade-off hypothesis and hysteresis hypothesis can help interpret certain aspects of the joint behaviour of the unemployment rate and wage inflation. In particular, the long-run trade-off hypothesis could in principle account for the secular rise in unemployment in the 1970s and 1980s as a consequence of the disinflation experienced over that period, though the large decline in the unemployment rate is hard to rationalise. The hysteresis hypothesis, on the other hand, can potentially account for the remarkable stability of wage inflation over the post-1994 period, despite the persistent non-stationary movements in the unemployment rate.

From a modelling point of view, the present paper can be seen as suggesting alternative approaches to allow for a non-stationary unemployment rate in a standard macro model. That analysis may prove useful in efforts to incorporate unemployment in dynamic stochastic general equilibrium (DSGE) models for the euro area.

The paper is organised as follows. Section 2 contains a first look at the data, focusing on the seemingly non-stationary behaviour of the euro area unemployment rate and its comovement with wage inflation. Section 3 sketches the main elements of the New Keynesian model. Section 4 discusses the three possible sources of a unit root in the unemployment rate through the lens of that model, and discusses their relative empirical relevance in accounting for the euro area evidence. Section 5 summarises and concludes with a brief discussion of the policy implications.

## 2 Unemployment and wages in the euro area: a first look at the data

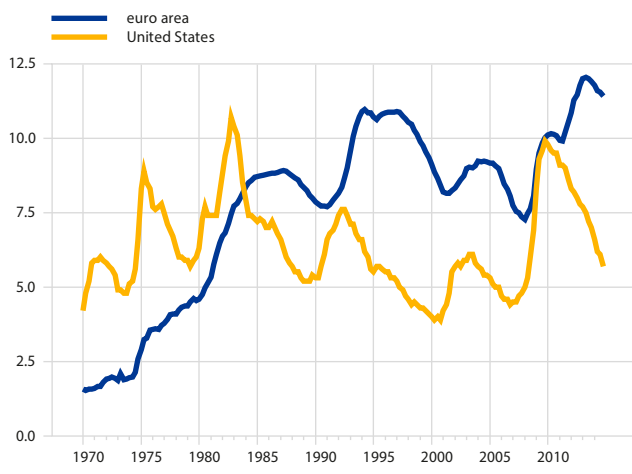
### 2.1 The unit root hypothesis

As discussed in the introduction, even a casual glance at a plot of the unemployment rate in the euro area and the United States reveals substantial differences in the behaviour of that variable between the two economies (see Chart 1). In particular, the unemployment rate in the United States appears to behave like a mean reverting variable, while its euro area counterpart displays a random walk-like pattern.

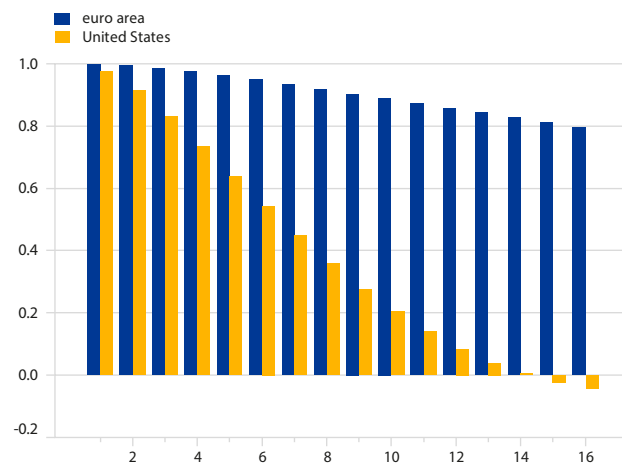
That visual assessment is confirmed by formal statistical tests. As reported in Table 1, an Augmented Dickey-Fuller (ADF) test of the null of a unit root cannot be rejected for the euro area unemployment rate at conventional significance levels. The opposite result is

obtained for the United States, where the null of a unit root is rejected at a 5% significance level.<sup>67</sup>

**Chart 1**  
Unemployment rate: euro area vs. United States



**Chart 2**  
Unemployment rates: autocorrelations



The different persistence properties of the two variables are also reflected in their estimated autocorrelations, shown in Chart 2. The one for the US unemployment rate declines rapidly as the lag order increases, whereas the corresponding autocorrelation for the euro area remains close to unity even at relatively high lags, showing the very slow decline characteristic of unit root processes.

The previous characterisation has potentially dramatic consequences on the long-run unemployment gap between the United States and the euro area. To illustrate this point, I simulate an out-of-sample path for those variables using two parsimonious statistical models that fit their behaviour surprisingly well. In particular, for the US unemployment rate I use the  $AR(2)$  process

$$u_t^{US} = 0.26 + 1.63u_{t-1}^{US} - 0.68u_{t-2}^{US} + \varepsilon_t^{US}$$

(0.08)    (0.05)            (0.05)

with an estimated standard deviation for the residual of 0.25.

For the euro area, the following  $AR(1)$  model for the *first difference* of the unemployment rate seems to fit the data well

$$\Delta u_t^{EA} = 0.80\Delta u_{t-1}^{EA} + \varepsilon_t^{EA} \tag{1}$$

(0.04)

with a residual standard deviation of 0.11.

<sup>67</sup> When I restrict the sample period to the single currency period (Q1 1999 – Q4 2014) I cannot reject the null of a unit root in either the euro area or the US unemployment rate. The latter finding may reflect the well-known low power of unit root tests in small samples.



**Chart 3**

Unemployment rate: simulated paths

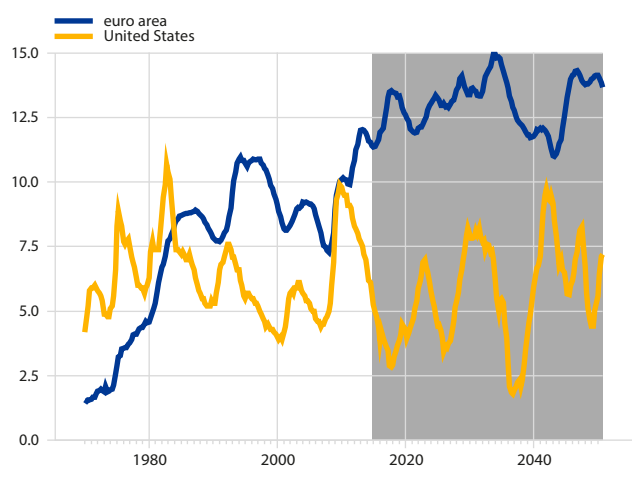


Chart 3 shows the simulated paths for the unemployment rate in the euro area and the United States for the out-of-sample period 2015-2050, as generated by the statistical models above given observed initial conditions at the end of 2014. Note that, in the simulation, the euro area unemployment rate drifts gradually away from its US counterpart, hovering around a 15% plateau at the end of the simulation period, while in the United States it fluctuates around a value of about 5%, as it has done over the past decades. The previous figure illustrates a key difference in the properties of the two models: the fluctuations in the US unemployment rate remain (statistically) bounded around an unchanged mean, though no such “anchor” appears to exist for euro area unemployment.

A first caveat must be raised at this point: a unit root process like (1) cannot describe the behaviour of the unemployment rate unconditionally, given that by definition that variable is bounded between 0 and 100 and nothing prevents model (1) from generating unemployment paths that eventually violate those bounds. Thus, a stochastic process with a unit root like (1) should only be taken as a (local) *approximation* to the behaviour of unemployment in the euro area during a particular sample period. In other words, one should not interpret (1) as a data-generating mechanism that will remain valid independently of the evolution of the unemployment rate.

A second caveat has to do with the power of unit root tests. Whether or not it is possible to uncover a unit root using a finite number of observations spanning a limited period has long been the subject of controversy in the literature. I do not plan to contribute to that debate. Instead, in the remainder of the paper, I take seriously (i.e. as a fact) the presence of a unit root in the euro area unemployment rate in a sense that I find both meaningful and plausible, namely *that some shocks may have a permanent effect on that variable*. With that premise in mind, I explore the possible sources for that unit root and some of its implications.

## 2.2

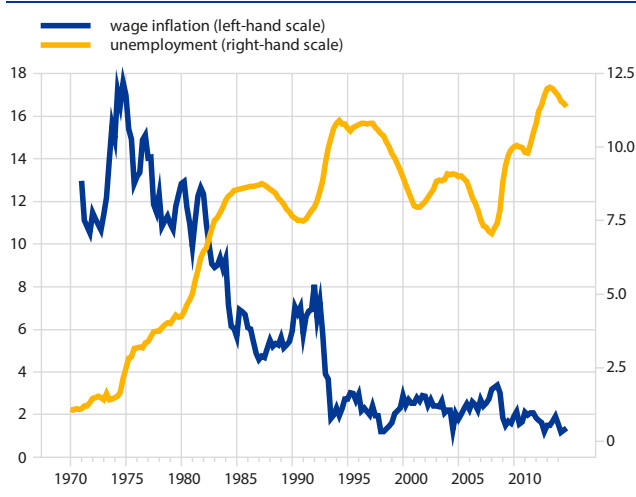
### Unemployment and wages: some reduced form evidence

A central element in the analysis of Blanchard and Summers (1986) was the hypothesis that the high persistence of unemployment in Europe may be due to the nature of its wage-setting institutions and the impact of the latter on the sensitivity of wages to unemployment. In particular, one may consider the hypothesis that wages are *insufficiently* responsive to unemployment as a possible explanation for the high persistence of unemployment fluctuations in the euro area.

Next, I present some evidence on the joint comovement of wage inflation and the unemployment rate in the euro area, in the form of pictures and simple regression estimates. That evidence will lay the ground for some of the analysis and discussion in

subsequent sections. Characterising the relation between wage inflation and unemployment, the two variables found in the original Phillips curve (Phillips (1958)) thus seem a good first step in the quest for an explanation for the unit root behaviour in unemployment. The model in Section 3 below also provides a theoretical justification for focusing on those variables.

**Chart 4**  
Unemployment and wage inflation in the euro area



Charts 4 and 5 provide two perspectives on the evolution of the unemployment rate and wage inflation in the euro area.<sup>68</sup> Chart 4 plots those two variables against time, while Charts 5a and 5b display the same variables against each other on a scatterplot (for different sample periods). In both charts wage inflation is shown in year-on-year terms.

That graphical evidence is supplemented with ordinary least squares (OLS) estimates of the *reduced form* Phillips curve equation

$$\pi_t^w = \alpha_0 + \alpha_\pi \pi_{t-1}^p + \alpha_u u_t + \varepsilon_t$$

which are reported in Table 2, where  $\pi_t^w$  is (quarter-to-quarter) wage inflation,  $u_t$  is the unemployment rate and  $\pi_{t-1}^p$  denotes average price inflation over the past four quarters. The presence of the latter variable is meant to capture the effects on wages of possible indexation to past

inflation.<sup>69</sup> All data in this paper are drawn from the *Area-Wide Model* (AWM) dataset detailed in ECB Working Paper No 42 (Fagan, Henry and Mestre (2001)), which I update through to the end of 2014.<sup>70</sup>

A number of observations stand out, which I summarise in the form of bullet points.

- As shown in Chart 4, wage inflation shows a marked downward trend over the period 1970-1993. The decline in wage inflation coexists with a substantial rise in the unemployment rate. Wage inflation appears to stabilise after 1993, hovering about a mean of 2.2%, in annual terms. The unemployment rate, however, persists in its seemingly non-stationary behaviour. The two variables thus appear to have decoupled.
- The previous impression is verified by some formal tests. Thus, an ADF test cannot reject the null of a unit root in wage inflation for the full sample period as well as for the Q1 1970-Q4 1993 period. However, it is rejected for the post-1993 period. This contrasts with the results of an analogous test applied to the unemployment rate, for which a unit root cannot be rejected in both subsample periods. The previous findings are consistent with the idea of a near-decoupling between wage inflation (which appears well anchored) and the unemployment rate (that keeps behaving in

<sup>68</sup> Year-on-year wage inflation is shown in all charts, for smoothing purposes. Regression estimates are, however, based on quarter-on-quarter wage inflation.

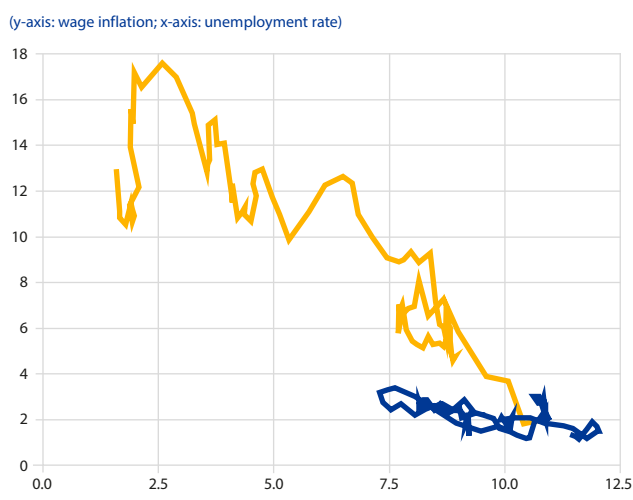
<sup>69</sup> See Blanchard and Katz (1999) and Galí (2011b) for estimates of a similar specification using US data.

<sup>70</sup> The wage refers to compensation per worker. The inflation variable corresponds to the average growth rate in the harmonised index of consumer prices (HICP) over the past four quarters.

a random walk-like manner). Furthermore, a Phillips-Ouliaris test rejects the null of no cointegration between wage inflation and the unemployment rate (with and without price inflation) for the full sample period, as well as for the Q1 1970-Q4 1993 period. Thus the marked (stochastic) trends in wage inflation and the unemployment rate observed in the data before 1993 seem to be related.

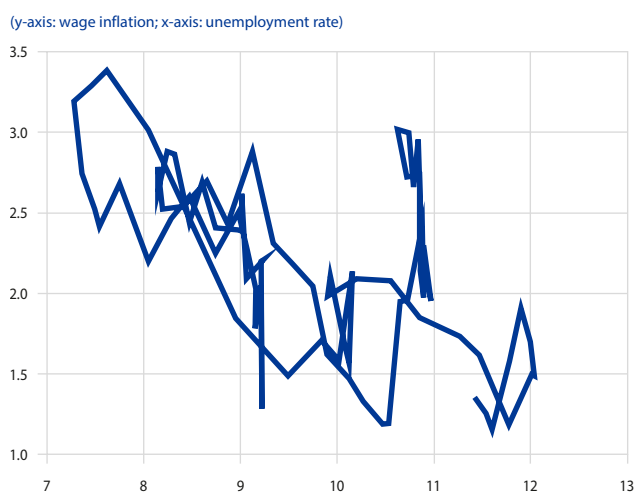
**Chart 5a**

The euro area wage Phillips curve (1970-2014)



**Chart 5b**

The euro area wage Phillips curve (1994-2014)



- The previous observations are clearly reflected in the wage Phillips curve displayed in Chart 5a, which shows a marked negative slope in the first part of the sample, but appears to flatten out almost completely after 1993. Chart 5b zooms in on the post-1993 subsample period, revealing the persistence of an inverse relation between the two variables, but one that is much weaker than in the pre-1993 period.
- The estimates of the reduced form wage equation, shown in Table 2, capture some of the previous observations well. For the overall 1970-2014 period they point to a strong inverse relation between that variable and the unemployment rate. That relation is highly significant, statistically and economically.<sup>71</sup> After 1992, however, the sensitivity to unemployment drops considerably, though the relation remains statistically significant. Finally, note that there is evidence of partial indexation to lagged inflation in the first part of the sample period, but not after 1994.

Below I use the previous evidence to assess some of the hypotheses on the sources of the unit root in euro area unemployment.

<sup>71</sup> The presence of a unit root in both wage inflation and the unemployment rate should make us view the estimated standard errors with caution, however.

### 3 A New Keynesian model with unemployment: a benchmark specification

In this section I sketch the main elements of a model that I use as a benchmark in the analysis below, where I seek to uncover possible sources of a unit root in the unemployment rate and to assess their plausibility as an explanation for the euro area experience.

The model described is an extension of the standard New Keynesian (NK) model. The main difference with respect to the standard NK model lies in the use of a formulation of the household problem which allows for an explicit definition of unemployment, as well as a notion of its natural rate. That formulation of the labour market was originally introduced in Galí (2011a and 2011b) and further developed in Galí, Smets and Wouters (2012).

As discussed below, the benchmark model described in this section is *inconsistent* with the existence of a unit root in the unemployment rate. In a subsequent section I consider three variations on the benchmark model, each of which is, by itself, a potential source of non-stationarity in unemployment.

Next, I sketch the main elements of the benchmark model, with special emphasis on the equations describing the labour market. The reader can find a more detailed description, together with derivations, in Galí (2015a).

#### 3.1 Unemployment and the wage mark-up

A key ingredient of the model is the (log) reservation nominal wage  $\underline{w}_t$  of the marginal worker employed, which is assumed to be given (in logs) by

$$\underline{w}_t = p_t + c_t + \varphi n_t$$

where  $p_t$  is the (log) price level,  $c_t$  is (log) consumption, and  $n_t$  is (log) employment. Galí (2015a) provides microfoundations for that assumption, based on the optimising behaviour of a representative household.

A second ingredient is the (log) labour force,  $l_t$ , which is implicitly determined by

$$w_t = p_t + c_t + \varphi l_t \tag{2}$$

and which can be interpreted as the measure of individuals whose reservation wage is no higher than the current average wage, given the price level and consumption. By definition, those individuals will choose to participate in the labour market – and hence constitute the labour force – though only a subset of them will be employed.

A third key element of the model is the average wage mark-up,  $\mu_{w,t}$ , which is defined as the gap between the average (log) nominal wage and the (log) reservation wage of the average marginal worker:

$$\mu_{w,t} \equiv w_t - \underline{w}_t$$

Finally, the unemployment rate is defined as the (log) difference between the labour force and employment:

$$u_t \equiv l_t - n_t$$

Combining the previous equations one can derive a simple relation between the unemployment rate and the average wage mark-up, namely

$$\mu_{w,t} \equiv \varphi u_t \tag{3}$$

**Chart 6**  
The wage mark-up and the unemployment rate

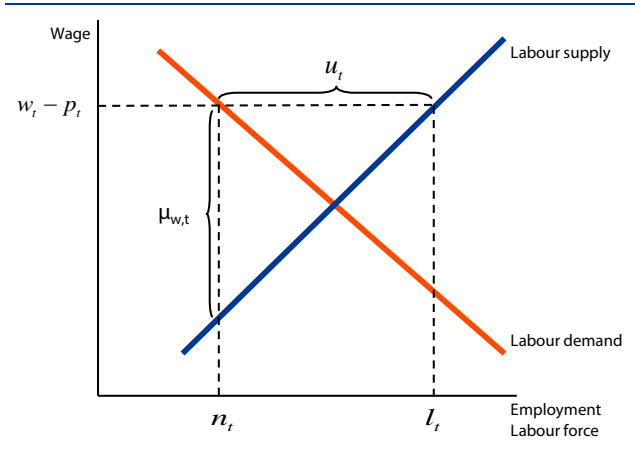


Chart 6 represents graphically the relationship between the average wage mark-up and the unemployment rate, using a conventional labour market diagram. The labour supply is given by the participation equation (2). The unemployment rate corresponds to the horizontal gap between the labour supply and labour demand schedules, at the level of the prevailing average real wage. The wage mark-up  $\mu_{w,t}$ , on the other hand, is represented in the chart by the gap between the wage and the reservation wage (both expressed in real terms now), at the level of current employment  $n_t$ . Given the assumed linearity, the ratio between the two gaps is constant and given by  $\varphi$ , the slope of the labour supply schedule, as implied by (2).

Both the unemployment rate and the average wage mark-up are endogenous variables. Their determination is influenced by the wage-setting framework in place, among

other factors.

### 3.2 Wage setting

In the benchmark NK framework I assume the Calvo-style model of staggered wage setting originally proposed in Erceg, Henderson and Levin (2000) and generally adopted by the literature owing to its tractability. In that model only a constant fraction of worker-types (or the unions representing them), drawn randomly from the population, are able to reset their nominal wage in any given period. Under that assumption the evolution of the average (log) nominal wage is described by the difference equation

$$w_t = \theta_w w_{t-1} + (1 - \theta_w) w_t^* \tag{4}$$

where  $\theta_w$  is the fraction of worker-types that keep their wage unchanged, and  $w_t^*$  is the newly set (log) wage in period  $t$ . The fact that the wage remains unchanged for several periods makes the implied optimal wage-setting decision to be forward-looking. In particular, when setting the wage  $w_t^*$ , unions take into account the current and future demand for their work services, which is given by:

$$n_{t+k|t} = -\epsilon_{w,t}(w_t^* - w_{t+k}) + n_{t+k} \tag{5}$$

for  $k = 1; 2; 3; \dots$  where  $n_{t+k|t}$  denotes period  $t+k$  demand for labour whose wage has been reset for the last time in period  $t$ , and where  $\epsilon_{w,t} > 1$  is the (possibly time-varying) wage elasticity of labour demand effective in that period.

When resetting the wage, each union seeks to maximise the utility of the representative household, to which all union members (employed or unemployed) belong. This gives rise to a (log-linearised) wage-setting rule of the form:

$$w_t^* = (1 - \beta\theta_w) \sum_{k=0}^{\infty} (\beta\theta_w)^k E_t \{ \mu_{w,t+k}^n + \underline{w}_{t+k|t} \} \quad (6)$$

where  $\underline{w}_{t+k|t} \equiv p_{t+k} + c_{t+k} + \varphi n_{t+k|t}$  is the relevant reservation wage in  $t+k$  for a union that has reset its wage for the last time in period  $t$ , and  $\mu_{w,t}^n \equiv \log \frac{\epsilon_{w,t}}{\epsilon_{w,t-1}}$  is the *natural wage mark-up* in period  $t$ . It is easy to show that the latter is the wage mark-up that any union (acting independently) would choose if wages were fully flexible, given a labour demand schedule with an exogenous wage elasticity  $\epsilon_{w,t}$ .

Combining (4) and (6) (after some algebra) yields the wage inflation equation:

$$\pi_t^w = \beta E_t \{ \pi_{t+1}^w \} - \lambda_w (\mu_{w,t} - \mu_{w,t}^n) \quad (7)$$

where  $\pi_t^w \equiv w_t - w_{t-1}$  and  $\lambda_w \equiv \frac{(1-\theta_w)(1-\beta\theta_w)}{\theta_w(1+\epsilon_w\varphi)}$ .

The previous equation can in turn be combined with (muwu0) to obtain a New Keynesian wage Phillips curve:

$$\pi_t^w = \beta E_t \{ \pi_{t+1}^w \} - \lambda_w \varphi (u_t - u_t^n) \quad (8)$$

where

$$u_t^n \equiv \frac{1}{\varphi} \mu_{w,t}^n \quad (9)$$

can be thought of as a *natural* rate of unemployment, defined as the rate of unemployment that would prevail in period  $t$  if wages were fully flexible (and, hence, the wage mark-up was given by  $\mu_{w,t}^n$ ).<sup>72</sup>

A particular case of the model above, and a common assumption in the literature, corresponds to that of a constant natural wage mark-up, i.e.  $\mu_{w,t}^n = \mu_w^n$  for all  $t$ .<sup>73</sup> In the estimated DSGE model of Smets and Wouters (2003 and 2007), on the other hand,  $\mu_{w,t}^n$  is allowed to follow a stationary AR(1) process, and is shown to be an important source of fluctuations of key macro variables at business cycle frequencies. More generally, and to the extent that  $\mu_{w,t}^n$  remains stationary, the same will be true for the natural rate of unemployment,  $u_t^n$ .

<sup>72</sup> In contrast with the original Phillips curve (Phillips (1958)), which involved a static empirical relation between wage inflation and unemployment, (wpc1) is a forward-looking relation derived from first principles, with coefficients that are a function of structural parameters. In Galí (2011b), I showed how an extension of (wpc1) allowing for wage indexation to past price inflation and assuming a constant natural rate fits postwar US data surprisingly well.

<sup>73</sup> See, e.g. Erceg, Henderson and Levin (2000).

### 3.3 Monetary policy

I specify monetary policy by assuming an interest rate rule of the form:

$$\hat{i}_t = \phi_i \hat{i}_{t-1} + (1 - \phi_i) [\phi_\pi (\pi_t^p - \pi^*) + \phi_y \Delta y_t] \quad (10)$$

where  $\hat{i}_t \equiv i_t - (\rho + \pi^*)$  and with  $\pi^*$  denoting the central bank's inflation target.

For values of  $\phi_i$  close to unity (as assumed in the simulations below) the previous rule is similar to the one proposed in Orphanides (2006) and Smets (2010) as a good approximation to ECB policy.

The remaining blocks of the model are standard. Their formal description, as well as the derivation of the relevant equilibrium conditions, can be found in Galí (2015a, Chapter 6). I include a brief summary in the appendix, which also contains a description of the calibration used.

### 3.4 Implications of the benchmark model for the unemployment rate

Under the (standard) assumption of a stationary natural wage mark-up  $\{\mu_{w,t}^n\}$ , the equilibrium of the benchmark model described above can be shown to generate a stationary unemployment rate. This is the case even if technology and demand shocks are permanent.

That result is due to the fact that the gap between the average wage mark-up and its natural counterpart remains stationary, since the presence of nominal wage rigidities only generates a transitory wedge between the two, given that all wages eventually adjust. As a result, and given  $(\mu_{w,t}^n)$ , the gap between the unemployment rate and its natural counterpart will also be stationary. Since the natural rate of unemployment is stationary under the assumption of a stationary natural wage mark-up, so will be the unemployment rate.

Accounting for the unit root in the euro area unemployment rate thus requires deviating from some the assumptions of the benchmark model above. The next section discusses three possible such deviations that are capable of generating, by themselves and through independent channels, a non-stationary unemployment rate.

## 4 Interpreting the unit root in unemployment through the lens of the New Keynesian model: three hypotheses

I examine the possible sources of a unit root in the unemployment rate through the lens of the NK model developed above. I consider three hypotheses, which I refer to, respectively, as the *natural rate hypothesis*, the *long-run trade-off hypothesis* and the *hysteresis hypothesis*. Each of these hypotheses is associated with a particular deviation from the assumptions of the benchmark model described in the previous section.

Next I introduce each of the hypotheses, illustrate them by means of some simulations, and discuss their consistency with the empirical evidence.

## 4.1 The natural rate hypothesis

Under the natural rate hypothesis, the unemployment rate inherits its non-stationarity from the natural rate of unemployment. Non-stationarity in the latter variable is in turn assumed to be inherited from the natural wage mark-up, given the relation

$$u_t^n \equiv \frac{1}{\varphi} \mu_{w,t}^n \quad (11)$$

Note that if we take the model at face value, any permanent change in the natural wage mark-up must result from a corresponding change (of opposite sign) in the wage elasticity of labour demand  $\epsilon_{w,t}$ . More generally, it seems reasonable that any exogenous factors of a structural or institutional nature that imply a permanent change in the bargaining power of wage-setters would have a similar effect (e.g. a change in firing costs, unemployment benefits or in the composition of the labour force).

Variations in the natural unemployment rate of this sort are presumably the ones that authors like Gordon (1997) or Staiger, Stock and Watson (1997) have sought to uncover in their efforts to estimate the non-accelerating inflation rate of unemployment (NAIRU) and its changes over time.

Next I analyse the model's predictions regarding the effects of shocks to the natural wage mark-up under the assumption of a random walk process for that variable (and, hence, for the natural rate of unemployment):  $\mu_{w,t}^n \equiv \mu_{w,t-1}^n + \varepsilon_t^w$

I calibrate the standard deviation of  $\varepsilon_t^w$  so that the standard deviation of the innovations in the random walk component of unemployment generated by the model matches its empirical counterpart. I estimate the latter using a multivariate Beveridge-Nelson decomposition, with the unemployment rate, price inflation and wage inflation included in the information set. The resulting estimate is 0.45%, which given (11) and  $\varphi = 5$  implies a standard deviation for  $\varepsilon_t^w$  of 2.25%.<sup>74</sup>

Chart 7 displays the dynamic responses to a one standard deviation (positive) innovation in the natural wage mark-up based on a calibrated version of the NK model described above. In response to that shock the unemployment rate rises on impact and then keeps increasing until it reaches a permanently higher plateau, close to half a percentage point above its initial level. The response of output is, qualitatively, the mirror image of the unemployment response. Wage and price inflation (reported in annualised terms, here and in all subsequent charts) also increase in response to that shock, but their variation

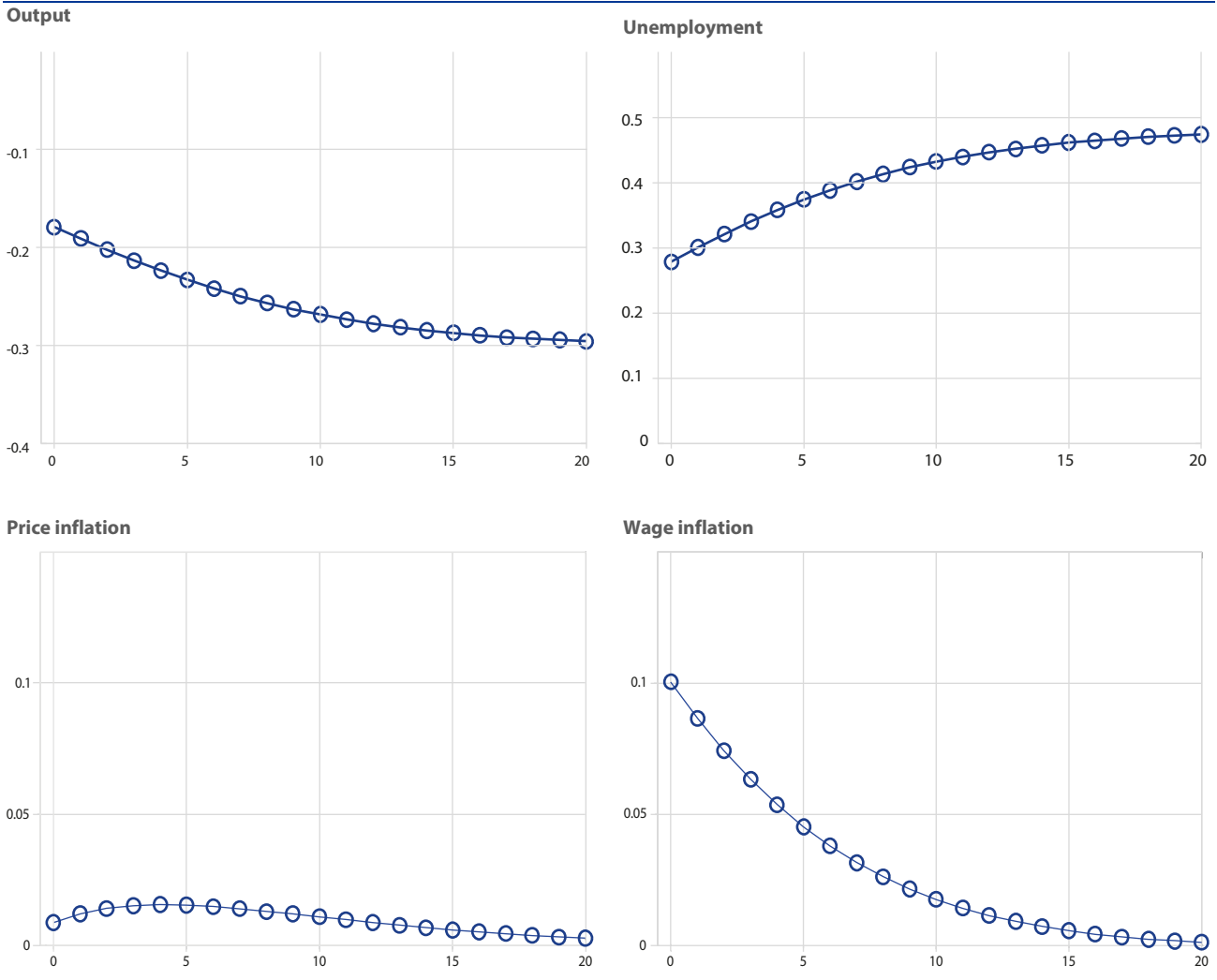
<sup>74</sup> Note that the stationarity of the unemployment gap, combined with equation (11) implies that  $\sigma(\varepsilon_t^w) = \varphi \sigma(u_t^{BN})$ . Given the baseline setting  $\varphi = 5$ , it follows that  $\sigma(\varepsilon_t^w) = 5(0.0045) = 0.0225$ .



seems rather small.<sup>75</sup> Most importantly, however, note that both inflation rates covary positively with the unemployment rate.

### Chart 7

#### Wage mark-up shock: dynamic responses



### 4.1.1 Empirical assessment

To what extent can the unit root in euro area unemployment be viewed as the result of exogenous permanent changes in the natural rate? It should be clear that a proper answer to that question should be based on the analysis of an estimated model with a richer specification than the one considered here. That analysis is beyond the scope of the present paper. Yet, a first assessment can be made by contrasting with the data some of

<sup>75</sup> Note that the reason why wage inflation increases is that the unemployment rate does not increase as much as its natural counterpart in the wake of a shock to the latter. In other words, the average wage mark-up remains persistently below its desired counterpart, leading workers/unions adjusting their wages to raise the latter, thus generating the observed positive response of wage inflation.

the predictions of the above framework under the null hypothesis that the unit root in unemployment is caused by a unit root in its natural rate.

A number of empirical observations appear to be in conflict with that hypothesis. I'll discuss them in turn.

Note, first, that under the maintained assumption of a random walk process for the natural wage mark-up, the hypothesis of an exogenous natural rate implies that we can recover the latter as the “permanent” component in a Beveridge-Nelson decomposition of the unemployment rate, while the unemployment gap will correspond to the “transitory” component of the same decomposition. Under the random walk assumption, that correspondence holds independently of the exact specification and calibration of any other aspect of the model, including the sources of fluctuations.

**Chart 8**  
The natural rate hypothesis

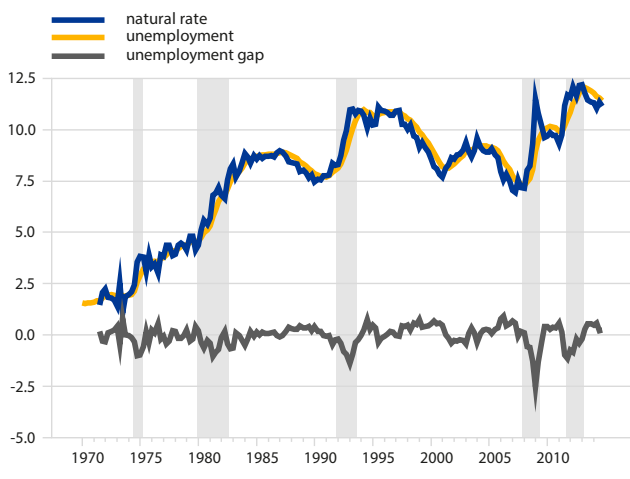


Chart 8 displays the natural rate of unemployment and the unemployment gap, constructed as described above, together with the actual unemployment rate. The shaded areas correspond to euro area recessions, as dated by the CEPR.<sup>76</sup> Note that the amplitude of the fluctuations in the unemployment gap appears quite small relative to the unemployment rate itself. Furthermore, and most importantly, none of the substantial increases experienced by the unemployment rate during the recession episodes since 1970 seem to be driven by increases in the unemployment gap. In fact, the latter is shown to go down during many of the recession episodes. Instead, the bulk of unemployment fluctuations is attributed to exogenous changes in the natural rate itself, with no other disturbances playing a significant role. Such an interpretation of unemployment fluctuations seems to be clearly at odds with conventional accounts of European

business cycle episodes.

The empirical relevance of the natural rate hypothesis can also be assessed by comparing its prediction regarding the evolution of wage inflation with actual wage inflation. Note that (wpc1) can be solved forward to yield:  $\pi_t^w = -\lambda_w \varphi \sum_{k=0}^{\infty} \beta^k E_t \{\tilde{u}_{t+k}\}$

where  $\tilde{u}_t \equiv u_t - u_t^n$  is the unemployment gap, obtained as the cyclical component in the Beveridge-Nelson decomposition of  $\{u_t\}$ , as discussed above. Given that  $\{\tilde{u}_t\}$  is (by construction) stationary it is clear that the previous model has no chance of accounting for the non-stationary behaviour of wage inflation in the pre-1994 period. In order to give the model a better chance and, given the evidence reported in Section 2, I use a version of (8) that allows for indexation to past price inflation and which implies:<sup>77</sup>

$$\pi_t^w = \pi_{t-1}^p - \lambda_w \varphi \sum_{k=0}^{\infty} \beta^k E_t \{\tilde{u}_{t+k}\}$$

<sup>76</sup> Centre for Economic Policy Research. At the time of writing, no call has been made regarding the trough of the last recession, although Q1 2013 has been pointed to as a tentative date.

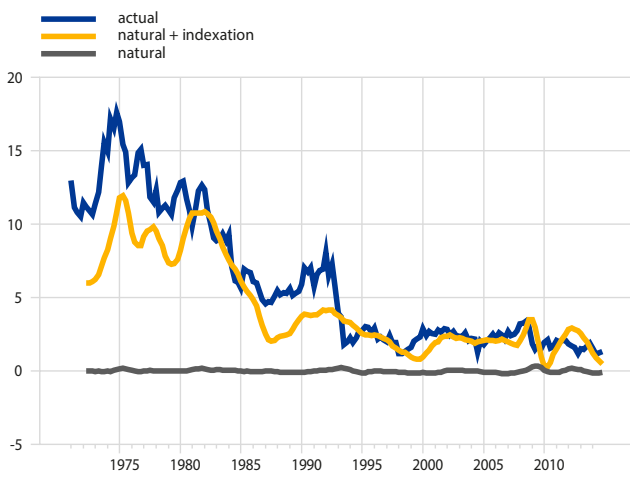
<sup>77</sup> See Galí (2011b) for a derivation and further discussion.

In order to estimate the discounted sum  $\sum_{k=0}^{\infty} \beta^k E_t \{ \tilde{u}_{t+k} \}$  I follow the approach in Campbell and Shiller (1987), using a vector autoregression (VAR) for  $\mathbf{x}_t \equiv [\tilde{u}_t, \pi_t^w - \pi_{t-1}^p]$  to forecast future unemployment gaps.<sup>78</sup>

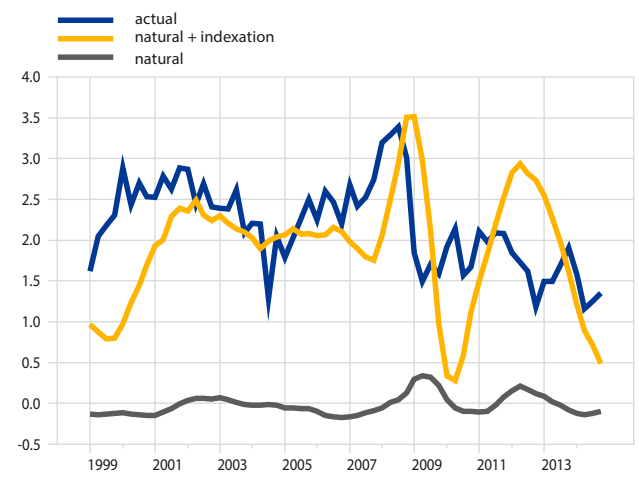
Chart 9a displays actual and predicted wage inflation for the full sample period. Predicted wage inflation tracks actual wage inflation reasonably well, especially over the medium and long term. The correlation between the two series is 0.91. But it should be clear that such high correlation is driven by lagged price inflation, combined with the fact that wage and price inflation comove strongly at low frequencies. This is made clear by looking at the component of predicted wage inflation associated with current and expected future unemployment gaps, i.e.  $-\lambda_w \varphi \sum_{k=0}^{\infty} \beta^k E_t \{ \tilde{u}_{t+k} \}$ , which is also shown in the same chart (labelled as “adjusted”), and which can be seen to play a negligible role in accounting for the overall correlation.

Chart 9b zooms in on the 1999-2014 period, which is characterised by more stable inflation and where, as a result, the unemployment gap-related component should in principle play a more central role in accounting for wage inflation fluctuations. But, as the chart makes clear, the natural rate model has a difficult time accounting for such fluctuations. The correlation between actual and predicted wage inflation is now only 0.24, and descends as low as -0.20 when the lagged inflation component is removed.

**Chart 9a**  
Wage inflation under the natural rate hypothesis (1970-2014)



**Chart 9b**  
Wage inflation under the natural rate hypothesis (1999-2014)



On the basis of the evidence above, I conclude that exogenous changes in the natural rate are not a plausible explanation for the unit root in euro area unemployment, at least when examined through the lens of the NK model above.

<sup>78</sup> See Galí (2011b) for a discussion. Under the null that the model is correct, one can show  $\sum_{k=0}^{\infty} \beta^k E \{ \tilde{u}_{t+k} | \mathbf{x}_t, \mathbf{x}_{t-1}, \dots \} = \sum_{k=0}^{\infty} \beta^k E_t \{ \tilde{u}_{t+k} \}$  implying that the use of current and lagged values of  $\mathbf{x}_t$  as an information set is not restrictive.

## 4.2 The long-run trade-off hypothesis

Under the *long-run trade-off hypothesis*, the unit root in the unemployment rate results from the presence of a unit root in wage inflation, given the long-run relation between these two variables implied by the wage Phillips curve (8). The unit root in wage inflation is assumed to be inherited, in turn, from a unit root in the central bank's inflation target. Thus, under the present hypothesis the assumption of a constant inflation target embedded in (10) is relaxed, with the modified interest rate rule being given now by:  $\hat{i}_t = \phi_i \hat{i}_{t-1} + (1 - \phi_i) [\phi_\pi (\pi_t^p - \pi_t^*) + \phi_y \Delta y_t]$  where the central bank's inflation target  $\{\pi_t^*\}$  is now assumed to follow an exogenous random walk process  $\pi_t^* = \pi_{t-1}^* + \varepsilon_t^*$  and where  $\hat{i}_t \equiv i_t - (\rho + \pi_t^*)$ . Permanent changes in the central bank's inflation target eventually lead, in equilibrium, to permanent changes in both price and wage inflation.

On the other hand, the long-run relation between the unemployment rate and wage inflation follows from (8) and is given by:<sup>79</sup>  $u_t = u^n - \frac{1-\beta}{\lambda_w \varphi} \pi_t^w$

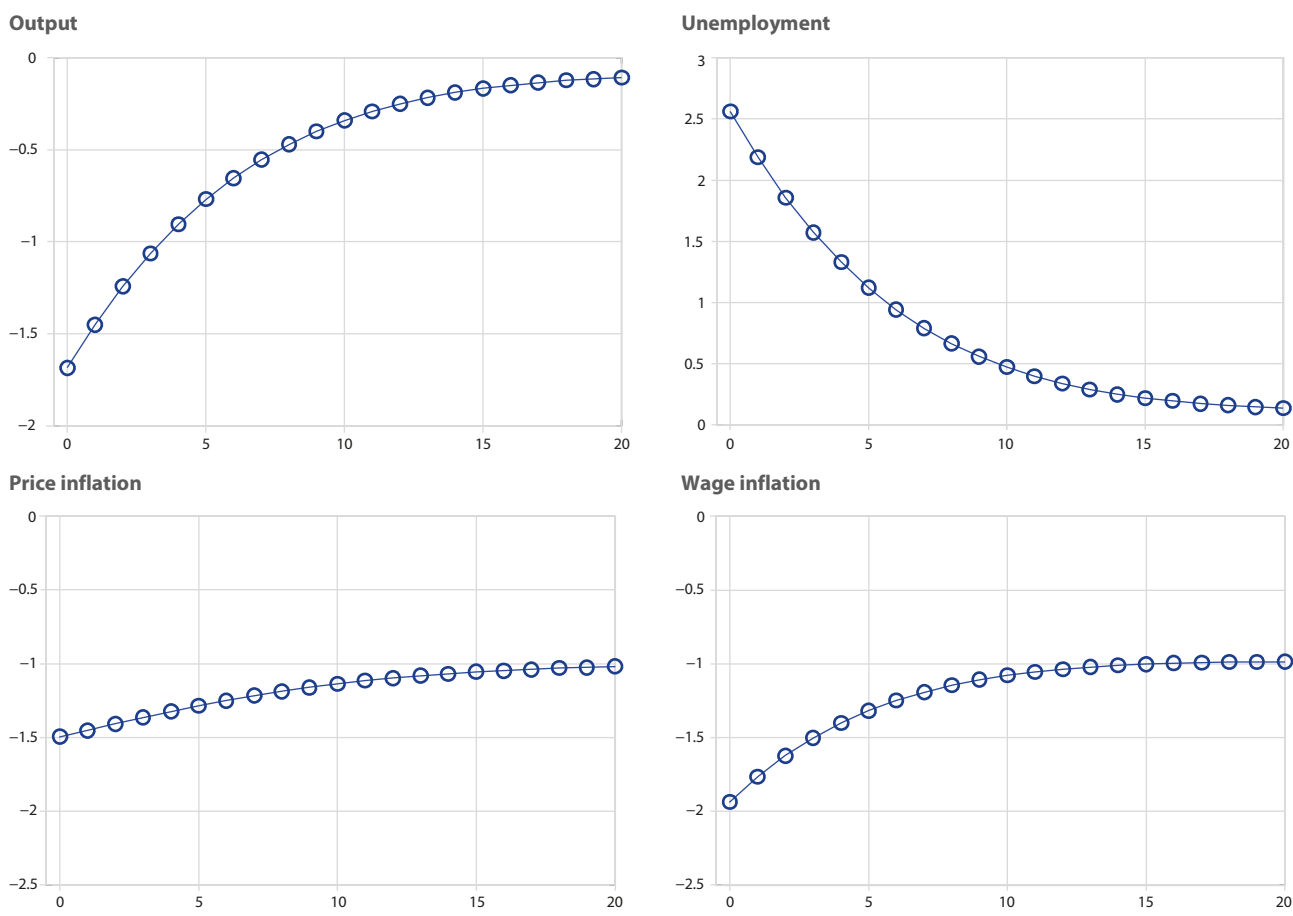
The existence of that *long run trade-off* in the NK model has a simple explanation: the "engine" of wage inflation in the model is the existence of a discrepancy between the average wage mark-up and its desired (or natural) counterpart. Accordingly, the only way to attain permanently higher wage inflation is to increase that gap or, equivalently, the gap between the unemployment rate and its natural counterpart, as implied by (8).

Chart 10 displays the model's implied dynamic responses of unemployment, output, wage inflation and price inflation to a permanent reduction of 1 percentage point in the (annualised) inflation target. Note that the disinflation generates a large recession in the short run, with an output decrease of nearly 2% and a rise in unemployment of 2.5 percentage points. In the short run, inflation, output and unemployment overshoot their long-run level. Most importantly, however, the predicted long-run effect on the unemployment rate is very small. This constitutes the main limitation of the long run trade-off hypothesis, as further discussed below.

<sup>79</sup> In the case of partial indexation to price inflation that long relation becomes  $u_t = u^n - (1 - \beta)(1 - \gamma)/\lambda_w \varphi * \pi_t^w$  where  $\gamma \in [0, 1]$  is the indexation parameter. Note that the long-run trade-off vanishes in the case of full indexation ( $\gamma = 1$ ).

## Chart 10

Inflation target shock: dynamic responses

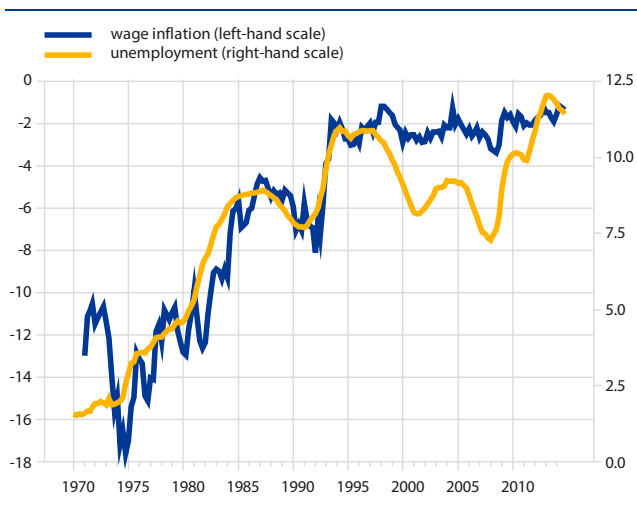


### 4.2.1 Empirical assessment

The long run trade-off hypothesis seems, at least qualitatively, consistent with the evidence of cointegration between wage inflation and the unemployment rate uncovered above. Chart 11 highlights the existence of that long-run relation by plotting the unemployment rate against wage inflation, after changing the sign of the latter. It is clear that cointegration is driven by the comovement between the two variables during the first part of the sample.

**Chart 11**

**A long-run trade-off between inflation and unemployment?**



The estimated coefficient in a cointegrating regression of the unemployment rate on wage inflation (with the latter expressed in quarterly terms) is  $-2.04$  ( $s.e. = 0.09$ ).<sup>80</sup> If one interprets that empirical relationship as a structural one (in a way consistent with the model), that estimated coefficient implies a permanent increase of 0.5 percentage point in the unemployment rate for every percentage point of (permanent) reduction in *annualised* inflation. That estimate reflects the large increase in the unemployment rate experienced by the euro area economy during the disinflation between the mid-1970s to the early 1990s.

The unemployment costs of disinflation implied by the estimated cointegrating relation described above are substantially larger than those implied by the model, at least under its baseline calibration. In the latter, the long-run increase in the unemployment rate from a permanent reduction in (annualised) inflation of one percentage point

is given by  $(1 - \beta)/4\lambda_w\varphi$  which, under my baseline calibration, equals 0.13, well below the 0.5 estimate.<sup>81</sup>

The long-run trade-off between unemployment and wage inflation implied by the model can be reconciled with the estimated cointegrating relation (and, hence, with the size of the rise in unemployment that accompanied the disinflation of the 1970s-80s) by assuming a lower value for  $\gamma$ . In particular, this is possible if I set  $\varphi = 0.08$ , implying a Frisch labour supply elasticity of 12.5, well above any estimates found in the literature. Perhaps not surprisingly, a simulation of the model under that alternative calibration and using the innovations in the multivariate Beveridge-Nelson decomposition of wage inflation as a measure of inflation target shocks generates a highly counterfactual standard deviation of 22 percentage points for the unemployment rate, as a result of inflation target shocks only.

Independently of the role that the presence of a long-run inflation-unemployment trade-off effect may have played in accounting for the permanent changes in the unemployment rate in the 1970s and 1980s, it is clear that such a mechanism cannot have played a significant role in accounting for the low frequency movements in the unemployment rate observed in the post-1994 period, for wage inflation has remained highly stable after that date,<sup>82</sup> while the unemployment rate has persisted in its random walk-like behaviour, as Chart 11 makes clear.

To summarise: the low frequency comovement between wage inflation and the unemployment rate over the period 1975-1993 seems *qualitatively* consistent with the long-run trade-off hypothesis, which would attribute the permanent variations in the unemployment rate over that period to permanent changes in the inflation target and, in

<sup>80</sup> Using the shorter 1970-1993 period yields an identical estimate.

<sup>81</sup> Note that allowing for indexation to past inflation makes things even worse, for in that case the long-run effect on inflation is given by  $(1 - \beta)(1 - \gamma)/4\lambda_w\varphi$  where  $\gamma$  denotes the degree of indexation.

<sup>82</sup> A unit root in wage inflation is easily rejected in the post-1994 period.

particular, to the (successful) disinflationary monetary policies of that period. Yet, neither the relative magnitude of the changes in the unemployment rate and inflation, nor the subsequent decoupling of those two variables after 1994, can be easily reconciled with that hypothesis, at least through the lens of a conventionally calibrated NK model.

### 4.3 The hysteresis hypothesis

In their seminal 1986 paper, Blanchard and Summers propose a theory of unemployment that emphasises insider-outsider considerations in wage setting as an explanation for the high persistence in European unemployment. The basic assumption underlying their theory, closely related to the insider-outsider models of Lindbeck-Snower, Gottfries-Horn and others,<sup>83</sup> is described in the words of Blanchard and Summers as follows:

“ ... there is a fundamental asymmetry in the wage-setting process between insiders who are employed and outsiders who want jobs. Outsiders are disenfranchised and wages are set with a view to ensuring the jobs of insiders. Shocks that lead to reduced employment change the number of insiders and thereby change the subsequent equilibrium wage rate, giving rise to hysteresis.”

Here I use a version of the Blanchard-Summers model consistent with the Calvo wage-setting formalism, and hence one that can be readily embedded in the NK model, replacing the standard wage-setting condition (wx1). My assumed wage-setting rule is a limiting case of a more general rule in the NK model with insider-outsider labour markets developed in Galí (2015b).<sup>84</sup> In particular, I assume that unions resetting the wage in period  $t$  choose the latter so that, in expectation, only current insiders are employed over the duration of the wage. Current insiders are in turn assumed to correspond to individuals that were employed at the end of the previous period.

Formally, the wage  $w_t^*(j)$  for an occupation  $j$  that can readjust its wage in period  $t$  is set so that the following condition is satisfied:

$$(1 - \beta\theta_w) \sum_{k=0}^{\infty} (\beta\theta_w)^k E_t \{n_{t+k}(j)\} = n_{t-1}(j)$$

The previous assumption, combined with the sequence of labour demand schedules

$$n_{t+k}(j) = -\epsilon_w(w_t^*(j) - w_{t+k}) + n_{t+k}$$

for  $k = 0, 1, 2, \dots$  implies that the average newly-set wage,  $w_t^*$ , will be given by:

$$w_t^* = -\frac{1}{\epsilon_w} n_{t-1} + (1 - \beta\theta_w) \sum_{k=0}^{\infty} (\beta\theta_w)^k E_t \left\{ w_{t+k} + \frac{1}{\epsilon_w} n_{t+k} \right\} \quad (12)$$

Thus the newly-set wage is increasing in the current and expected future aggregate wage and employment, for higher values of those variables raise the current and expected future demand for the type of labour provided by the workers/unions currently setting the wage. On the other hand, a high level of employment in the previous period calls for moderate wages in order to preserve the employment status of current insiders.

<sup>83</sup> See, e.g. Gottfries and Horn (1987) and Lindbeck and Snower (1989).

<sup>84</sup> See Galí (2015b) for a detailed derivation and analysis of its monetary policy implications.

Rewriting (12) in recursive form and combining the resulting difference equation with (4) yields, after some straightforward algebra, a modified version of the NK wage Phillips curve:

$$\pi_t^w = \beta E_t\{\pi_{t+1}^w\} + \lambda_n \Delta n_t \quad (13)$$

where  $\lambda_n \equiv \frac{1-\theta_w}{\theta_w \epsilon_w}$

Note that wage inflation no longer depends on the gap between the unemployment rate and its natural counterpart, but on the *change* in (log) employment. As illustrated below, that feature, when embedded in the fully-fledged NK model generates a unit root in both employment and the unemployment rate: shocks of any nature and persistence – even if purely transitory – that have an initial impact effect on employment will have a permanent effect on that variable, as well as on output and the unemployment rate. The reason is that unions have a narrow objective when setting wages: maintaining employment at its most recent level (in expectation). Thus, any change in employment resulting from an unanticipated disturbance is bound to become permanent, even after the shock that triggered it has faded away. This is the phenomenon Blanchard and Summers (1986) referred to as “hysteresis”.

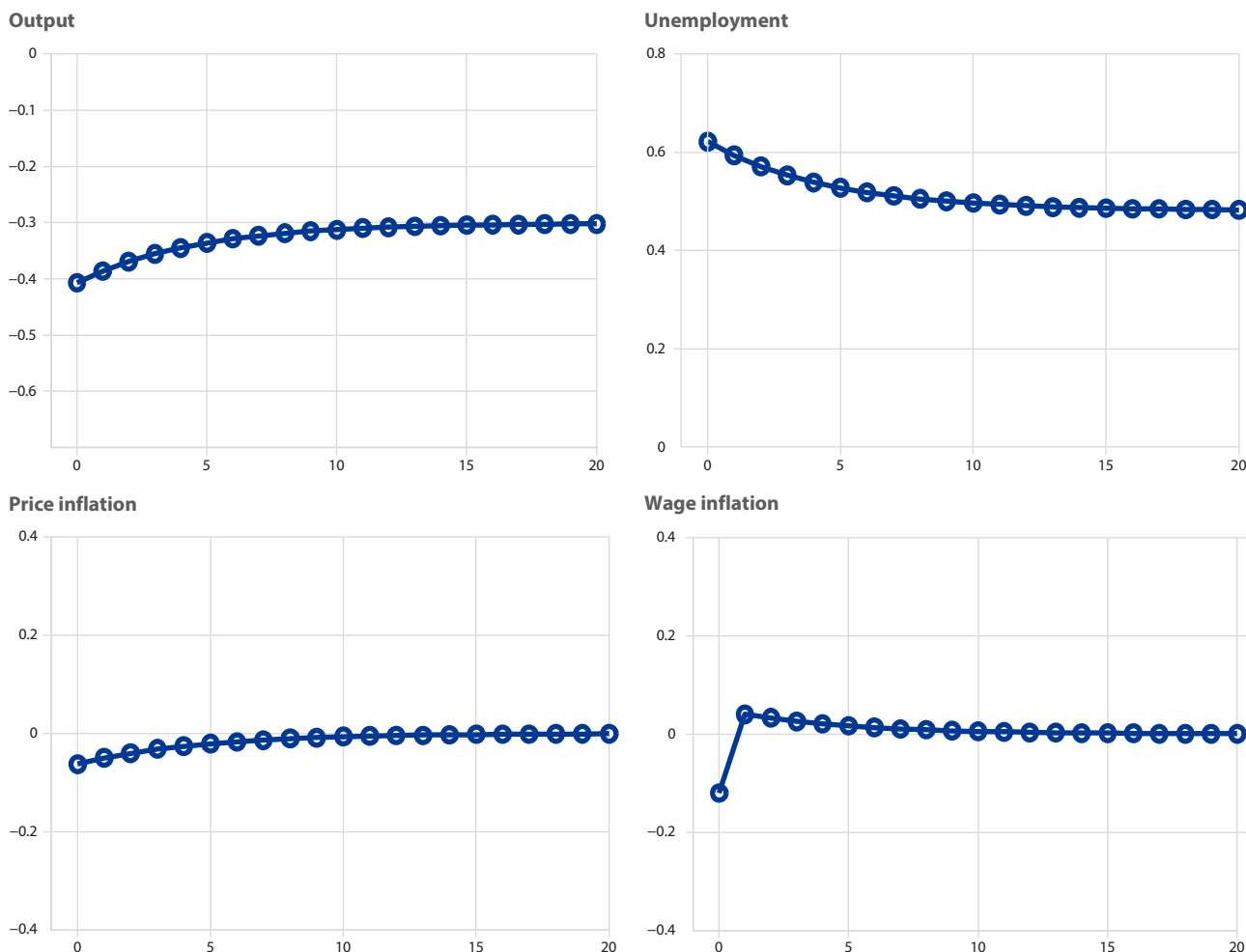
Under the assumed wage-setting arrangement, the relation between the average wage mark-up and the unemployment rate (3) is still valid. The wage mark-up (together with unemployment) evolves endogenously in response to any shock, above and beyond the fluctuations associated with wage stickiness. Note that in the present environment, and in contrast with the wage-setting model found in the standard NK model, there is no “anchor” value towards which the wage mark-up converges after any deviation caused by an exogenous disturbance. As a result, and given (3), there is no mechanism that guarantees that unemployment will revert back towards some constant natural level. Instead, in the wake of an adverse shock, the economy may “stabilise” at a level of employment and output permanently lower, and with a higher unemployment rate.

The previous phenomenon is illustrated in Chart 12, which displays the effects of a *transitory* adverse demand shock in the insider-outsider version of the NK model. The demand shock is formalised as an exogenous, transitory increase in households’ discount rate, which triggers a decline in consumption and, hence, output and employment. The standard deviation of the shock is calibrated for consistency with the observed volatility of the random walk component of the unemployment rate. Note that a one standard deviation shock leads to a permanent increase in unemployment and a commensurate decrease in output. That permanent effect is an illustration of the hysteresis property emphasised by Blanchard and Summers (1986). Note also that the impact on wage and price inflation is very small.



## Chart 12

The insider-outsider model: dynamic responses to a demand shock



### 4.3.1 Empirical assessment

A key element behind the model's hysteresis property is wage equation (12), which I reproduce here for convenience:

$$\pi_t^w = \beta E_t \{\pi_{t+1}^w\} + \lambda_n \Delta n_t \quad (14)$$

where  $\lambda_n \equiv 1 - \theta_w / \theta_w \epsilon_w$

A feature of the previous equation, namely, the dependence of wage inflation on employment growth – as opposed to employment or unemployment levels – is the source of hysteresis in the model. Next I try to assess the extent to which an equation like (13) is consistent with the observed joint behaviour of employment and wage inflation in the euro area.

To begin with one should note that (13) implies a highly implausible positive long-run relation between wage inflation and employment *growth*, which is a very strong form of non-superneutrality. Such a relation is at odds with the lack of evidence of a unit root in  $\Delta n_t$ . Furthermore, a (pseudo) cointegrating regression of  $\Delta n_t$  on  $\pi_t^w$  yields a *negative* estimated coefficient (-0.03), in contrast with the positive one implied by (12), namely  $1 - \beta/\lambda_n$ .

The previous counterfactual implication can be overcome through a (standard) modification of the model to incorporate indexation to past inflation between reoptimisation periods, as assumed earlier when evaluating the NK wage Phillips curve under the natural rate hypothesis. I assume a form of indexation which gives rise to the modified wage inflation equation:

$$\tilde{\pi}_t^w = \beta E_t\{\tilde{\pi}_{t+1}^w\} + \lambda_n \Delta n_t \tag{15}$$

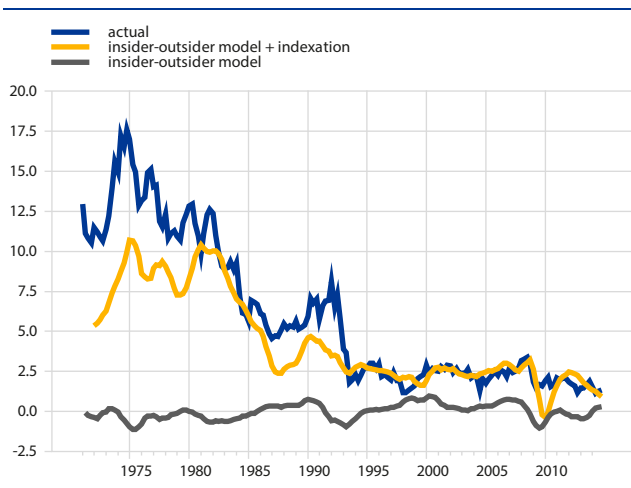
where  $\tilde{\pi}_t^w \equiv \pi_t^w - \pi_{t-1}^p$

Next I assess the empirical relevance of (14) by constructing its implied prediction of wage inflation, given (current and expected) employment growth, and comparing that prediction with actual wage inflation. Thus, note that (14) implies:

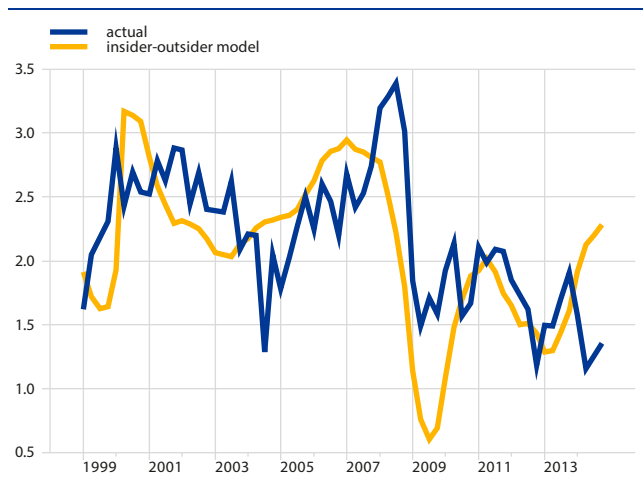
$$\pi_t^w = \pi_{t-1}^p + \lambda_n \sum_{k=0}^{\infty} \beta^k E_t\{\Delta n_{t+k}\}$$

I construct a measure of  $\sum_{k=0}^{\infty} \beta^k E_t\{\Delta n_{t+k}\}$  using forecasts of employment growth based on an estimated VAR for  $\mathbf{x}_t \equiv [\Delta n_t, \tilde{\pi}_t^w]$ . Again, under the null that the model and calibration are “true”, the wage inflation series thus constructed should correspond to its empirical counterpart.<sup>85</sup>

**Chart 13a**  
Wage inflation in the insider-outsider NK model (1970-2014)



**Chart 13b**  
Wage inflation in the insider-outsider model (1999-2014)



<sup>85</sup> See, e.g. Campbell and Shiller (1987). Galí (2011b) for an application to wage inflation.

Chart 13a displays the path of wage inflation predicted by the insider-outsider model with and without indexation, together with its observed counterpart. Note that predicted wage inflation in the model with indexation tracks well the medium and long-term variations in actual inflation: the correlation between the two series is 0.91. Note, in particular, that the model can account for the substantial stability of wage inflation in the post-1994 period in the face of a persistent random walk-like behaviour of the unemployment rate.

Of course, as was the case for the natural rate model analysed above, indexation together with the large low frequency variations in inflation in the early part of the sample period are responsible for much of the observed high correlation, as demonstrated by the limited variation of predicted wage inflation in the absence of indexation. Focusing on a more recent period with low and stable inflation and in which indexation is likely to have been less relevant may provide a better assessment of the model. Chart 13b shows predicted wage inflation using the insider-outsider model without indexation over the single currency period (1999-2014), together with actual wage inflation. A significant positive comovement between the predicted and actual series is apparent, with a correlation of 0.55. Furthermore, a closer look at Chart 13b suggests that the previous correlation would be significantly higher if it weren't for the model's failure to account for the stubborn stability of wage inflation during the 1998-99 episode, in the face of a persistent decline in employment. The presence of downward nominal wage rigidities, ignored in the model above, is a potential candidate explanation for the difference.<sup>86</sup>

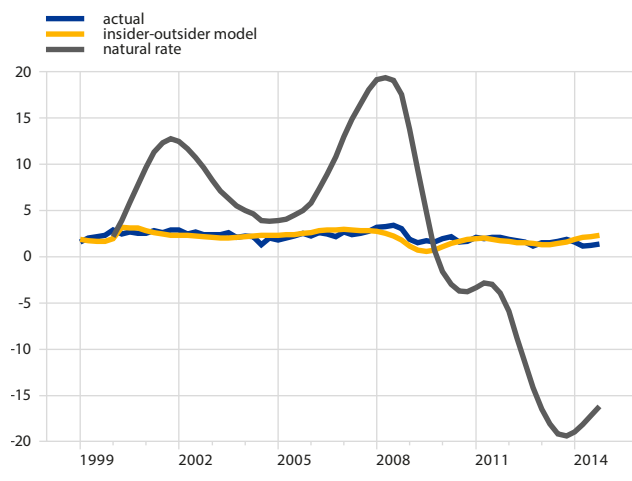
To conclude the empirical assessment of the wage inflation model implied by the insider-outsider assumption, I compare the path for wage inflation implied by the latter model with that generated by the constant natural rate model, and which in the absence of indexation is given by  $\pi_t^w = -\varphi\lambda_n \sum_{k=0}^{\infty} \beta^k E_t \{u_{t+k} - u^n\}$

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<sup>86</sup> Notice also that the model is predicting correctly the level of wage inflation at the end of 2014, and its seeming stability. According to the model, wage inflation remains relatively stable as a result of two countervailing forces: on the one hand, current and expected employment growth would call for an increase in wage inflation (see "adjusted" series). On the other hand, lower price inflation is helping contain that pressure, through the indexation mechanism.

**Chart 13c**

Wage inflation: insider-outsider vs. constant natural rate models (1999-2014)



Again, I focus on the single currency period and approximate the natural rate of unemployment by average unemployment over that period (9.4%). I use a VAR for  $\mathbf{x}_t \equiv [u_t, \pi_t^w]$  to forecast future unemployment rates. Chart 13c displays the implied path for wage inflation generated by the insider-outsider and constant natural rate models, under my baseline calibration, alongside actual wage inflation. As the chart makes clear, the wage inflation fluctuations generated by the constant natural rate model are an order of magnitude larger than those experienced by actual wage inflation or predicted by the insider-outsider model. Thus, I conclude that the wage inflation equation implied by a simple, calibrated NK model with insider-outsider labour markets fits the observed patterns of employment and wage inflation in the euro area better than the constant natural rate model.

## 5 Summary and concluding remarks

The present paper has offered a preliminary exploration of a phenomenon that has (unfortunately) become a distinctive feature of the European economy, namely, the (seeming) non-stationarity in its unemployment rate. I have sought to uncover some clues about the nature and sources of that non-stationarity by analysing the joint behaviour of unemployment and wage inflation in the euro area over the period 1970-2014 and trying to interpret it through the lens of a textbook-like New Keynesian model, to which unemployment is incorporated, following the approach in Galí (2011a and 2011 b) and Galí, Smets and Wouters (2012).

In particular, I have put forward three alternative hypotheses regarding the unit root in the euro area unemployment rate: the *natural rate hypothesis*, the *long-run trade-off hypothesis* and the *hysteresis hypothesis*.

My analysis suggests that exogenous permanent variations in the natural rate are unlikely to be behind the unit root in unemployment. The reason is that the behaviour of the unemployment gap implied by that hypothesis is hard to reconcile with the observed patterns of wage inflation.

The long-run trade-off hypothesis could, in principle, account for the secular rise in unemployment in the 1970s and 1980s as a consequence of the disinflation experienced over that period. Yet, the model cannot simultaneously account for the size of the unemployment decline that accompanied the disinflation and the observed volatility of unemployment.

The hysteresis hypothesis, on the other hand, does not appear to be strongly at odds with any aspect of the data. In particular, it can potentially account for the remarkable stability

of wage inflation in the face of persistently non-stationary movements in the unemployment rate over the post-1994 period.

It goes without saying that further research is needed, possibly involving a richer, estimated structural model in order to draw more precise conclusions about the sources of the unit root behaviour in euro area unemployment. Yet, a number of remarks seem warranted in light of the previous evidence.

First, the low sensitivity of wage inflation (and, by extension, price inflation) to the unemployment rate in the euro area since 1994, uncovered in the estimates above, may have significant implications for the design of monetary policy. On the one hand, it implies that demand-driven fluctuations in the unemployment rate will have small effects on wage inflation and, consequently, on price inflation as well, with smaller second-round effects. This may facilitate the attainment of the ECB's price stability objective. On the other hand, it should require a stronger focus on unemployment stabilisation, since a policy that were to respond only to significant deviations of inflation from target could imply excessive fluctuations in unemployment and economic activity, given the flatness of the Phillips curve.

Furthermore, if the low sensitivity of inflation to the unemployment rate is due to the presence of hysteresis effects, a case for a greater emphasis on unemployment stabilisation can be made, as a formal analysis of optimal monetary policy under hysteresis show.<sup>87</sup> There are two reasons for this. First, in the absence of a counter-cyclical policy there is no "anchor" that guarantees that unemployment will revert back to some "natural" level. Accordingly, in the absence of a forceful counter-cyclical policy, the economy may be stuck with an inefficiently low level of activity for a protracted period. Secondly, and in response to shocks that generate a policy trade-off, any given tightening of monetary policy in response to a deviation from the inflation target would trigger a much larger and persistent increase in the unemployment rate. As a result, the optimal policy is likely to involve a stronger accommodation of inflationary pressures and a greater stability of the unemployment rate than under the labour market environment assumed in the standard New Keynesian model.

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<sup>87</sup> See Galí, J. (2015b).

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## Appendix

### Other blocks

I assume the existence of a continuum of differentiated goods, each produced by a monopolistic competitor, with a production function:

$$Y_t(i) = N_t(i)^{1-\alpha} \quad (16)$$

where  $Y_t(i)$  denotes the output of good  $i$ ,  $N_t(i)$  is a CES (constant elasticity of substitution) function of the quantities of the different types of labour services employed by firm  $i$ , whose elasticity of substitution is given by  $\epsilon_{w,t}$ . Cost minimisation by firms gives rise to the labour demand schedule (5) introduced above.

Price-setting is assumed to be staggered (à la Calvo), with a constant fraction  $\theta_p$  of firms that keep prices unchanged. Firms' desired mark-up in the absence of price rigidities is assumed to be constant and given by  $\mu_p \equiv \log \frac{\epsilon_p}{\epsilon_{p-1}}$ , where  $\epsilon_p$  is the price elasticity of demand. Aggregation of price-setting decisions, gives rise to a NK Phillips curve of the form  $\pi_t^p = \beta E_t\{\pi_{t+1}^p\} + \lambda_p(\mu_{p,t} - \mu_p)$

where  $\mu_{p,t}$  is the average price mark-up in period  $t$  and  $\lambda_p \equiv \frac{(1-\theta_p)(1-\beta\theta_p)(1-\alpha)}{\theta_p(1-\alpha+\alpha\epsilon_p)}$ .

Equilibrium in the goods market, together with the household's intertemporal optimality condition gives rise to a version of the so called dynamic IS equation:

$$\tilde{y}_t^n = E_t\{\tilde{y}_{t+1}\} - (i_t - E_t\{\pi_{t+1}^p\} - r_t^n) \quad (17)$$

where the output gap,  $\tilde{y}_t \equiv y_t - y_t^n$  is defined as the (log) deviation between output and its natural counterpart, with the latter corresponding to the output level that would prevail in an equilibrium with flexible prices and wages. The natural real rate  $r_t^n$  is defined in a similar way. The assumptions made (including log consumption utility) imply  $y_t^n = a_t - \left(\frac{1-\alpha}{1+\varphi}\right)\mu_{w,t}^n$  and  $r_t^n = E_t\{\Delta y_t^n\} + (1 - \rho_z)z_t$  for all  $t$ , where  $z_t$  is a

shock to the discount rate (a "demand" shock, henceforth) that follows an exogenous AR(1) process with autoregressive parameter  $\rho_z$ . Furthermore, the following relation between the output and mark-up gaps can be shown to hold:

$$\tilde{y}_t = -(1 - \alpha/1 + \varphi)(\tilde{\mu}_{w,t} + \tilde{\mu}_{p,t}) \text{ where } \tilde{\mu}_{w,t} \equiv \mu_{w,t} - \mu_{w,t}^n \text{ and } \tilde{\mu}_{p,t} \equiv \mu_{p,t} - \mu_p.$$

## Calibration

Impulse responses and simulations are based on a (rather conventional) calibration of the model's parameter values, which for the most part follows that in Galí (2015a). Thus, I assume  $\beta = 0.99$ , which implies a steady state real (annualised) return on financial assets of about 4%. I also assume  $\varphi = 5$  (which implies a Frisch elasticity of labour supply of 0.2),  $\alpha = 1/4$ , and  $\epsilon_p = 9$  (implying  $\mathcal{M}_p = 1.125$ , i.e. a steady state mark-up of 12.5%). When relevant, I set  $\epsilon_w = 4.5$ , a value consistent with an average unemployment rate of 5%, roughly the mean unemployment rate in the postwar US economy. I also assume  $\theta_p = \theta_w = 3/4$ , which imply average price and wage durations of four quarters, consistent with much of the empirical evidence. As to the interest rate rule coefficients, I assume  $\phi_\pi = 1.5$ ,  $\phi_y = 0.5$  and  $\phi_i = 0.9$ . That calibration is close to the one proposed in Orphanides (2006) and Smets (2010) as a good approximation to ECB policy.

**Table 1**  
Augmented Dickey-Fuller unit root tests

	euro area		United States	
	1 lag	4 lags	1 lag	4 lags
Q1 1970-Q4 2014	-2.03	-1.91	-3.39	-2.94

Notes: t-statistics of Augmented Dickey-Fuller tests (with intercept) for the null of a unit root in the unemployment rate. Sample period Q1 1970 to Q4 2014. Asterisks denote significance at the 5% level. Critical value (adjusted for sample size) for the null of a unit root is -2.87.

**Table 2**  
Estimated reduced form wage equations

	Q1 1970-Q4 2014		Q1 1970-Q4 1993		Q1 1994-Q4 2014	
$u_t$	-0.36**	-0.20**	-0.29**	-0.22**	-0.06**	-0.06**
	(0.018)	(0.023)	(0.029)	(0.034)	(0.018)	(0.019)
$\pi_{t-1}^{(4)}$		0.74**		0.53**		0.11
		(0.008)		(0.111)		(0.131)
R <sup>2</sup>	0.73	0.82	0.58	0.68	0.09	0.09
DW	1.16	1.84	1.62	2.17	2.58	2.61



# Comment on “Hysteresis and the European unemployment problem revisited” by Jordi Galí

By Robert J. Gordon<sup>88</sup>

The contrast between the behaviour of the unemployment rate in the United States and the euro area ranks as among the most important puzzles in macroeconomics. The US unemployment rate is strongly mean reverting and is stationary over long periods of time, reaching a value of 5.3% in June 2015, roughly the same as in 1954 (5.6%), 1964 (5.2%), 1974 (5.6%), 1989 (5.3%), 1996 (5.4%) and 2004 (5.5%). By contrast, the euro area unemployment rate appears to have an upward trend, climbing from 1.6% in early 1970 to 11.4% in late 2014. The point of departure for Jordi’s paper is a set of characteristics of the euro area unemployment rate, which wanders around an upward trend, has movements that are less volatile and more persistent than in the United States, and has no tendency to gravitate towards a long-run equilibrium rate. These differences are visible in Jordi’s Chart 1, which plots the US and euro area unemployment rates in quarterly data from the first quarter of 1970 to the fourth quarter of 2014.

The aim of the paper is to explore the causes and explanations of the unique behaviour of the unemployment rate in the euro area. What factors contribute to its failure to establish a fixed long-run equilibrium value? Three candidate theories are proposed as alternative frameworks for this exploration – the natural rate hypothesis, the long-run trade-off hypothesis and the hysteresis hypothesis. My discussion focuses on the empirical properties of euro area unemployment and inflation behaviour. Several comments on Jordi’s three theories are deferred to the end.<sup>89</sup>

## 1 Unemployment and unit roots

The difference in unemployment behaviour so evident in Jordi’s Chart 1 is confirmed by formal statistical tests. In his Table 1, repeated in the left-hand side of my Table 1, an Augmented Dickey-Fuller (ADF) test of the null of a unit root cannot be rejected for the euro area unemployment rate, but can be rejected for the United States. However, this outcome is entirely due to the rapid increase of the euro area unemployment rate during the 1970s. If the start date is moved forward from the first quarter of 1970 to the first quarter of 1980, as shown in the right-hand side of my Table 1, the hypothesis of a unit root is rejected more strongly for the euro area than for the United States.

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<sup>88</sup> Northwestern University.

<sup>89</sup> All data, including everything on Europe and on the United States unemployment rate, were taken from the data provided in the contribution by Galí. The data used for the US GDP deflator and the food-energy effect were taken from the US National Accounts.

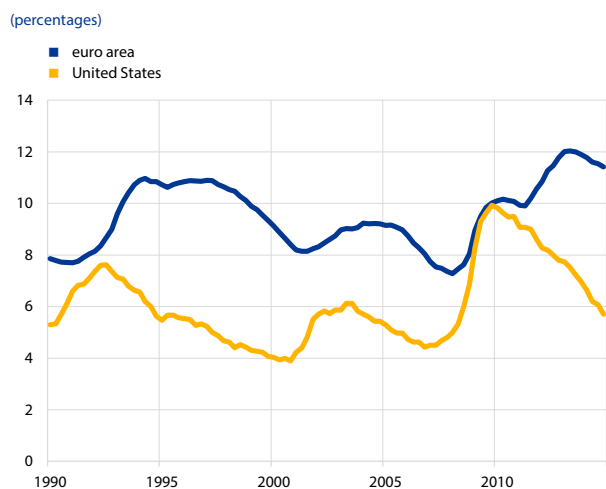
**Table 1**  
ADF unit root tests, revised

1970-2014				1980-2014			
euro area		United States		euro area		United States	
1 lag	4 lags	1 lag	4 lags	1 lag	4 lags	1 lag	4 lags
-2.04	-1.92	-3.4*	-2.97*	-3.28*	-2.73**	-2.83**	-2.42

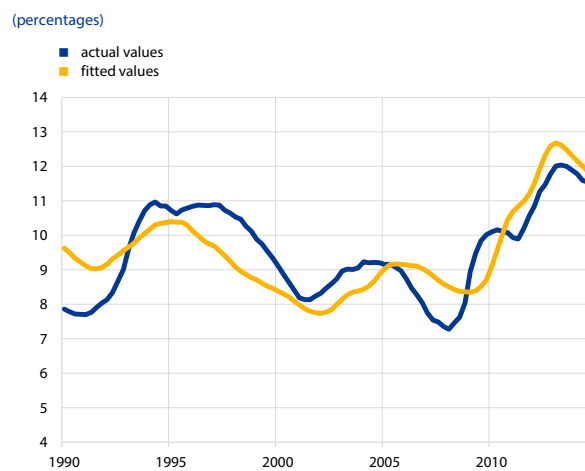
Notes: t-statistics of Augmented Dickey-Fuller tests (with intercept) for the null of a unit root in the unemployment rate; the sample period is from the first quarter of 1970 to the fourth quarter of 2014 and from the first quarter of 1980 to the fourth quarter of 2014; single asterisks denote significance at the 5% level, double asterisk at the 10% level; critical values (adjusted for sample size) for the null of a unit root are -2.58 (10%) and -2.89 (5%).

When the 1970s and 1980s are omitted, as shown in my Chart 1, the behaviour of the unemployment rate in the two areas both appear to be relatively stationary, with the main difference being that the euro area rate is consistently higher by an average of about 3.5%. The euro area rate is relatively stationary, with a value in late 2014 of 11.4%, little different from the 11% rates that occurred between 1994 and 1998. A regression of the euro area rate on the US rate yields an excellent fit without the need for a trend term, as shown by the actual and fitted values in my Chart 2.

**Chart 1**  
Unemployment rates in the United States and euro area for the period 1990-2014



**Chart 2**  
Model of euro area unemployment, constant constrained at 3.55% for the period 1990-2014



Here the euro area rate is regressed on the fourth and twelfth lag of the US unemployment rate, with a constant constrained to be the average difference between the euro area and US unemployment rates (3.5%). The lag structure captures the fact that the euro area unemployment rate responds more slowly, although the total adjustment is the same in that the sum of coefficients on the two US lagged unemployment variables is 0.99.<sup>90</sup> In reaction to the financial crisis, the US unemployment rate jumped quickly from 4.5% in the second quarter of 2007 to 9.9% in the fourth quarter of 2009, whereas the euro

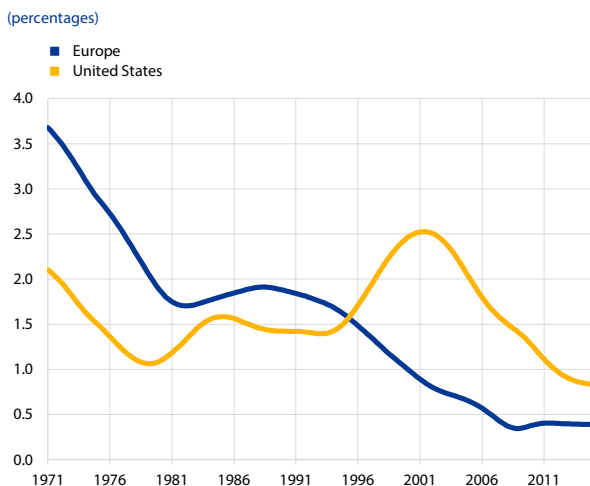
<sup>90</sup> The estimated equation is  $EU_t = 3.55 + 0.496 * M4USU_{t-4} + 0.496 * M4USU_{t-12}$ , where EU is the euro area unemployment rate, USU is the US unemployment rate and M4 is a four-quarter moving average. The t-ratios on the two right-hand variables are 8.8 and 8.5 respectively. The adjusted R<sup>2</sup> is 0.980 and the SEE is 0.888.

area rate rose more slowly from 7.3% in the first quarter of 2008 to 12.0% in the second quarter of 2013, rising almost as much, but over a longer period of adjustment.

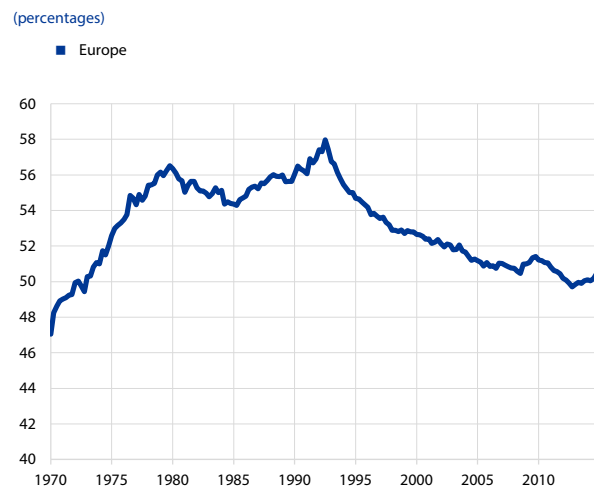
## 2 Price inflation, not wage inflation

Jordi conducts his empirical investigation of the euro area inflation process with data on changes in wages. I prefer to study inflation by using price data for several reasons. First, central banks have a target for price inflation, not wage inflation. Second, time series such as Jordi uses for employee compensation are inherently noisy, as they incorporate changes in the composition of employment between high-paid and low-paid workers. Third, when labour's share is constant, price inflation equals wage inflation minus the trend growth rate of productivity. However trend productivity growth has not been steady in the euro area: it has exhibited a steady deceleration from 4% per annum in 1971 to less than 1% in the past decade, as shown in my Chart 3. Fourth, not only is productivity growth not constant but neither is labour's share. As shown in my Chart 4, labour's share soared from 48% in 1971 to a peak of 58% in 1992, after which it entered a period of slow decline, to stand at 50.4% in the fourth quarter of 2014. Changes in trend productivity growth and in labour's share can cause substantial changes in wage inflation that do not carry over to price inflation.

**Chart 3**  
HP 6400 trend of productivity growth, Europe versus the United States from Q1 1971 to Q4 2014



**Chart 4**  
Labour's share, Europe from Q1 1970 to Q4 2014

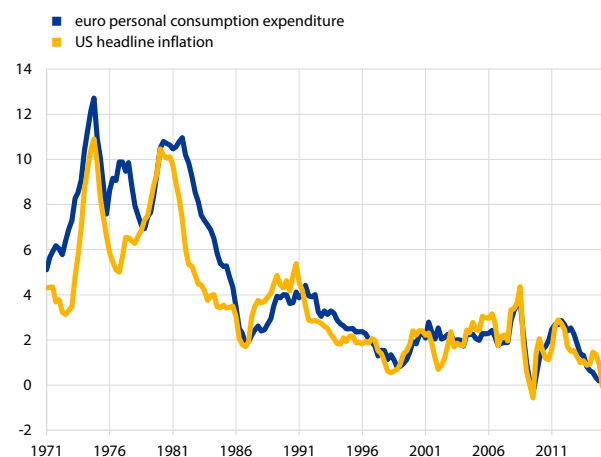


Unlike unemployment, where the euro area has registered an average rate since 1990 that is 3.5% above the US rate, there is virtually no difference in inflation behaviour between the United States and euro area over the entire period going back to 1971, as shown in my Chart 5. Both inflation rates, as measured by the headline deflator for personal consumption expenditures, share the same time path, from high and volatile between 1971 and 1986, followed by much lower volatility after 1986. Both series share a dip in the late 1990s and a zig-zag related to the volatility of oil prices in 2008-09.

## Chart 5

Annual inflation rate, Europe versus the United States from Q1 1971 to Q4 2014

(percentages)



## Table 2

Estimated equations for quarterly changes in the headline PCE deflator, Europe versus the United States from Q1 1987 to Q4 2014

Variable	Lags	Europe	United States
Lagged dependent variable	1-9 <sup>a</sup>	1.00**	1.00**
Unemployment gap	0	-0.17**	-0.24**
Food-energy effect	0-4	0.80**	0.51**
Adj. R2		0.71	0.91
SEE		0.69	0.50
SSR		49.49	25.79

a) Lagged dependent variable is entered as the four-quarter moving average for lags 1, 5 and 9 respectively.

b) \*indicates coefficient or sum of coefficients is statistically significant at the 5% level, \*\* indicates significance at the 1% level.

Is euro area inflation described by a Phillips curve mechanism, in which the change in the inflation rate from its own past values depends on the unemployment rate? The same Phillips curve specification can be applied to data for the United States and the euro area covering the period from the first quarter of 1987 to the fourth quarter of 2014. The influence of past inflation, which represents some combination of expected inflation and the influence of overlapping price and wage contracts, is represented by three successive four-quarter moving averages of the dependent variable for lags one, five, and nine. The influence of unemployment is entered as the unemployment gap, the difference between the actual unemployment rate and the time-varying NAIRU (non-accelerating inflation rate of unemployment). The influence of food and energy prices is represented by the “food-energy effect,” defined simply as the difference between the headline and core (net of food-energy) inflation rates in the United States. This US variable is used in the euro area equation as well, as I did not have data handy to represent the food-energy effect for the euro area.

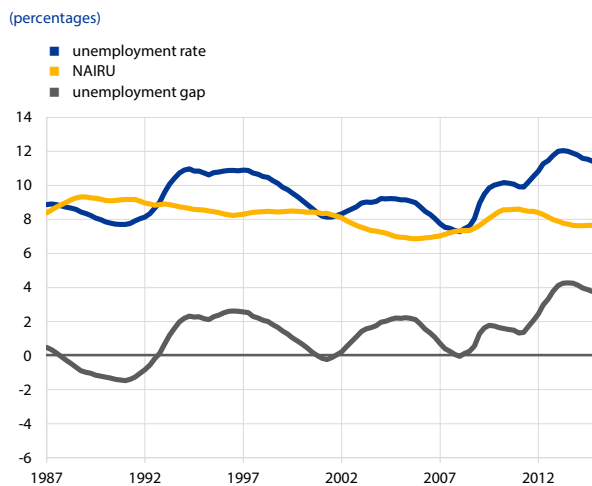
The coefficients and significance levels are displayed in Table 2. Coefficients on the unemployment gap are similar, while euro area inflation has a larger response to the US food-energy variable than does the US. All variables are significant at the 1% level. The fit of the US equation is better than that of the euro area equation, which is not surprising given that the food-energy effect is measured in the euro equation by US data. Chart 6 displays the euro area unemployment rate, estimated time-varying NAIRU and the unemployment gap.

The hysteresis effect, one of the models examined in Jordi’s paper, is usually interpreted as implying that inflation depends only on the rate of change of the unemployment rate, not on its level. If hysteresis dominates the inflation process, then a permanent increase in the unemployment

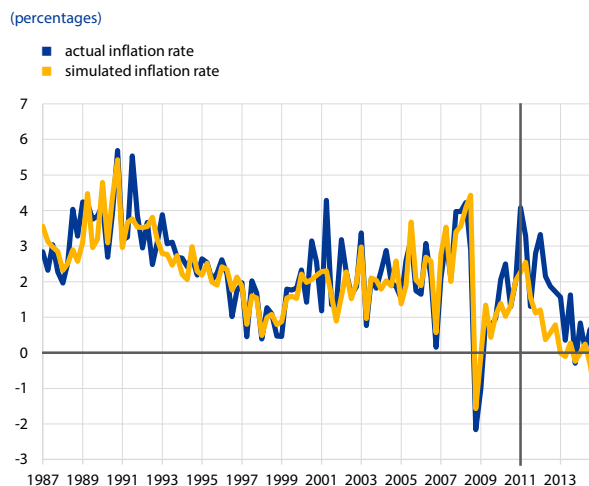
rate, say to 11% as in the case of the euro area, would reduce the inflation rate while the unemployment is rising, but would put no further downward pressure on the inflation rate once the unemployment rate levels off at its new higher value of 11%. With hysteresis the inflation equation has a significant negative coefficient on the *change* in the unemployment rate and an insignificant coefficient on the *level* of the unemployment rate.

**Chart 6**

Unemployment rate, NAIRU and unemployment gap, Europe from Q1 1987 to Q4 2014

**Chart 7**

Actual inflation rate versus simulated inflation rate, Europe, from Q1 1987 to Q4 2014; alternate sample end: Q4 2010

**Table 3**

Estimated equations for quarterly changes in the headline PCE deflator, Europe versus the United States from Q1 1987 to Q4 2014

Variable	Lags	EU	United States
Lagged dependent variable	1-9 <sup>a</sup>	1.00**	1.00**
Unemployment gap	0	-0.13**	-0.22**
Four-quarter difference		-0.19	-0.09
Food-energy effect	0-4	0.66**	0.47**
Adj. R2		0.72	0.91
SEE		0.68	0.50
SSR		47.77	25.55

a) Lagged dependent variable is entered as the four-quarter moving average for lags 1, 5, 9, 13, 17 and 21 respectively.

b) \*indicates coefficient or sum of coefficients is statistically significant at the 5% level, \*\* indicates significance at the 1% level.

Table 3 adds the change in the unemployment rate to the equations already estimated in Table 2. The change term, intended to represent the hysteresis effect, is not significant in either equation, even at the 10% level. The values and significance levels of the other variables remain roughly the same as in Table 2. Thus the hysteresis effect can be rejected for European data, at least for the post-1987 period. An extension of this approach to encompass the full 1971-2014 interval would, however, find evidence of hysteresis in the behaviour of the euro area inflation-unemployment relationship, in the light of the sustained rise of the unemployment rate during the 1970s, when there was a period of sustained high inflation.

Because of the strong explanatory role of the lagged inflation terms in the inflation equations of Tables 2 and 3,

plots of actual and fitted values always provide the appearance of a good fit. A more demanding test of an inflation equation is to estimate the coefficients for a subset of the sample period, which we do for the period from the first quarter of 1987 to the fourth quarter of 2010, and then perform a dynamic simulation for the interval from the first quarter of 2011 to the fourth quarter of 2014 in which the lagged inflation terms are calculated endogenously from the predicted rather than actual values. Chart 7 shows that the simulated values do a good job of tracking the substantial downward movement of the euro area inflation rate over the period 2011-14. This downward movement would not have occurred, given the sustained high level of unemployment during this interval, if the inflation rate had been generated by a hysteresis-like process.

### 3 The three models

Jordi's paper presents three models. The first, called the "natural rate" model, generates increased unemployment through an exogenous shock to the wage mark-up. This approach would be better labelled as the "wage-push" model and can be tested by inspecting a graph of labour's income share, as presented above in my Chart 4. Indeed the euro area labour's share did increase markedly from 1971 to 1980, a period of high inflation, but the timing is not right because the share remained high until 1993, whereas the inflation rate declined from 11% in 1980 to 3% in 1993. According to the model, this decline of inflation should have been accompanied by a marked decline in labour's share. Jordi's discussion of this model makes no mention of the readily available data on labour's share. It does not address the problem that wage shocks occur at the national level (as in the French general strike of 1968) and would have minimal impact on the overall euro area-wide wage level in the absence of contagion effects across national borders.

The second theory is called the "long-run trade-off" model, which is juxtaposed with the natural rate model in which there is no long-run trade-off. Now the shock, instead of to the wage mark-up, instead is to the price target of the central bank. In Jordi's simulations the price adjusts immediately, while output and unemployment respond slowly. This scenario is implausible, because it ignores the timing sequence in the real world, where the instrument of the central bank is the interest rate, not the price level. When there is a shock to central bank policy, the economy evolves as in the example of the US Volcker disinflation of the early 1980s. The interest rate shot up in early 1981, unemployment rose from mid-1981 to late 1982, and the downward adjustment of the inflation rate was stretched out from early 1981 to late 1986.

The third approach is the "hysteresis" model, which I have already tested in Table 3 above. Jordi's version is in the same spirit, except that he relates wage change to the change in employment, whereas above I related the change of the inflation rate to the change in the unemployment rate. The problem with Jordi's application is that his wage data are not cooperative and provide no evidence of a hysteresis effect. As shown in Jordi's charts, the rate of wage change was virtually constant between 1992 and 2014, but the change of employment was not. In fact, the growth rate of euro area employment at an annual rate was 0.4% for 1989-1998, 1.1% for 1999 to 2008, and a turnaround to -0.6% for 2009-2014. Jordi's empirical tests also fall short by failing to provide confidence levels for the level versus the rate of change effect. Further, there is nothing in Jordi's results comparable to my post-sample dynamic simulations.

### 4 Conclusion – puzzles about the euro area inflation-unemployment process

As I look at post-war history and compare the euro area evolution of inflation and unemployment compared to that of the United States, I find three important puzzles that future research should address.

1. **Why was unemployment so low before the 1970s?** How could the euro area maintain an unemployment rate of 2% or below during the 1950s and 1960s without

generating runaway inflation? After all, in the United States, inflation accelerated steadily during the period 1966-70 in response to an unemployment rate of 3.5 to 4.0%. One possible answer is that Europe in those decades experienced a continuous regime of excess demand owing to post-war reconstruction, but this did not have inflationary consequences as a result of a steady flow of labour from farm to city. This idea of the “unlimited supply of labour” was originally formulated by W. Arthur Lewis and was applied to western Europe in a 1966 book by Charles Kindleberger.

2. **Why did the unemployment rate rise so much between 1975 and 1985?**

Macroeconomic theory has long established that supply shocks, such as higher oil prices and increases in labour’s income share, raise some combination of the inflation rate and unemployment rate, with the mix depending on the extent of wage indexation and of monetary policy accommodation. During the 1970s Europe experienced the oil shocks of 1973-75 and of 1979-80, plus the steady increase in labour’s share displayed above in Chart 4. Europe’s response was characterised by wage indexation, and the mix of reactions in the 1980s shifted to more unemployment and less inflation owing in part to the tight monetary policy imposed by the Deutsche Bundesbank.

3. **Why was the euro area unemployment rate so high in 2014?** This question can be rephrased – why in May 2015 was the unemployment rate in Germany 4.7% while that in Greece was 25.6%, that in Spain 22.5%, and that in Italy 12.4%? The weighted average for the euro area was a rate of 11.1%. The ultimate answer to the apparent puzzle of high average euro area unemployment is that the euro was not a good idea, as many economists predicted before 1999, because of the lack of a centralised fiscal budget and insufficient labour mobility. The German economy is thriving and is able to impose its version of tight money on the peripheral countries, most of which suffer from severe forms of structural unemployment and perverse labour-market institutions.

# Unemployment and inflation in the euro area: why has demand management failed so badly?

By Willem H. Buiter<sup>91</sup>

Before getting to the main points I address in my presentation, I would like to comment on the speech made by the ECB's President, Mario Draghi, earlier in this session (Draghi (2015)). The title summarises the message well: "Structural reforms, inflation and monetary policy". President Draghi calls for structural reforms to be accelerated through both common/joint and country-specific policies and reforms that would strengthen euro area resilience (shock absorption capacity) and boost the growth rate of potential output. To boost resilience he makes the case for the elimination or reduction of labour and product market rigidities. To boost the growth of potential output, he calls for measures to increase trend labour supply and productivity growth.

I agree with most of the substantive recommendations for structural reform made by President Draghi. I have a problem, however, with central bankers making public statements about policies or reforms that definitely go well beyond their mandate and quite likely also beyond their competence.

## 1 The sound of silence

Central bankers are unelected, appointed public officials. They are given a mandate that is the product of a legitimate political process. In the case of the ECB, the primary objective is price stability and, without prejudice to the price stability objective, all things bright and beautiful. Of course, the true primary objective of any central bank is financial stability, and the ECB is no exception. The actual references in the Treaties to the true primary objective are de minimis. Protocol No 4, Article 3.3 reads: "In accordance with Article 127(5) of the Treaty on the Functioning of the European Union [TFEU], the ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system". The bold and sweeping actions taken by the ECB when the financial stability, and indeed the integrity of the euro area were at risk in the years since the start of the Great Financial Crisis in the second half of 2007 leave no doubt in my mind that, should there ever be a conflict between price stability and financial stability in the euro area, financial stability would be the winner.

The ECB has been given a high degree of political independence (Article 130 TFEU), operational independence, and some target independence, in the sense that the ECB's Governing Council sets the practical, numerical operationalisation of the price stability objective – unlike, for instance, in the United Kingdom, where the Chancellor sets the

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<sup>91</sup> Citigroup.



operational inflation target. In addition to designing and implementing monetary policy for the euro area, the ECB is, since November 2014, the dominant member of the Single Supervisory Mechanism (SSM) which, in addition to the ECB, has the national bank supervisory entities (national competent authorities or NCAs) as its members. The only chink in the armour of operational independence is the rather bizarre Article 219(2) TFEU, which allows the Council of the European Union (aka Council of (Finance) Ministers) to formulate “general orientations” for exchange rate policy. These orientations have to be “without prejudice” to the primary objective of price stability. Clearly, if the Council were to be able to give binding instructions about exchange rate management, the ECB would lose the substance of operational independence. Not surprisingly, finance ministers and ECB Executive Board members have divergent interpretations of the meaning of “general orientations”.

The notion that central banks should focus exclusively on their mandates and not be active participants in wider public policy debates, let alone be active players in the negotiations and bargaining processes that produce the political compromises that will help shape the economic, social and political evolution of our societies is, I believe, sound. Alan Blinder described this need for modesty and restraint for central bankers as “sticking to their knitting”. Both fiscal policy and structural reform have clear and often significant distributional consequences. They are, therefore, deeply political. As regards fiscal policy, this is so obvious it does not require elaboration. But structural reform too, including labour market liberalisation, opening up the professions, and opening up product markets to greater domestic or external competition, is not just about efficiency gains or the size of the pie, but about the distribution of the pie. What looks like an artificial barrier to entry to an economist is a source of rents to the protected worker, professional or firm. When central bankers take part in the often very partisan political debates on fiscal policy and structural reform, they compromise and undermine their independence.

Central banks and central bankers sticking to their knitting – the design and conduct of monetary policy and credit policy in the pursuit of macroeconomic stability and financial stability – has become the exception rather than the rule since many advanced economy central banks achieved a measure of operational independence, starting with the Reserve Bank of New Zealand in 1989. Indeed, quite a few central bankers devote more of their public utterances to issues like structural reform and fiscal sustainability that ought not to concern them, except in one narrow sense defined below, than to monetary policy and financial stability.

A straightforward brace of illustrations of the kind of “extra-territorial” or “extra-curricular” activities of central bankers that I consider to be inappropriate and a threat to the operational independence of central banks, even where this make sense – in the conduct of monetary policy, narrowly defined – can be found in the 17 October 2014 web edition of the Financial Times (FT). It carries two prominent headlines about central bankers. The first one says “Yellen bemoans rising US inequality”. The subheading is “Boston speech highlights Fed chair’s liberal sympathies”. The speech does not deal with monetary policy or other aspects of central banking. It does not even discuss the impact of monetary policy on inequality or the implications of inequality for the conduct of monetary policy. The second headline reads “Bundesbank hits back at calls for stimulus”. The subheading is “Weidmann says Germany needs to maintain a balanced budget”. In the speech to which

the FT headline refers, Weidmann picks a public argument with the chief economist of the International Monetary Fund (IMF), Olivier Blanchard, about the benefits to the rest of the euro area from a German fiscal stimulus through an increase in German public investment (see Weidmann (2014)).

It does not matter whether the themes developed and statements made by these two distinguished central bankers are right or wrong, or whether we agree with them or not. Both are using – I would say mis-using – the high profile and visibility they possess as a result of their central bank positions to speak out, in their official capacities, on issues that are far from their mandates and (probably) from their domains of expertise and competence. As private individuals or as scholars, they are certainly entitled to their views on these and any other issues. But they cannot use the prominent pulpit provided by their official position to engage in overt political speech-making or other political activities. They ought to wait to speak out on non-central banking issues until they leave their official central bank positions. The central bank should not be used as a political bully pulpit.

There is a long history of central bankers going beyond their mandates and competence to lecture the world on deeply political issues. Former Fed Chairman Bernanke<sup>92</sup> routinely lectured the US Congress and the White House on fiscal sustainability and appropriate fiscal stimulus measures. He played a prominent, high profile public role in gathering support for a fiscal stimulus package to counteract the US slowdown/recession from late 2007 through to 2009. On Thursday, 17 January 2008, for instance, in testimony to the House Budget Committee, he backed calls for a fiscal package to stimulate the economy, but stressed that such a plan should be “explicitly temporary”. He said “... any programme should be explicitly temporary, both to avoid unwanted stimulus beyond the near-term horizon and, importantly, to preclude an increase in the federal government’s structural budget deficit”.

He went on to say that the nation faced daunting long-run budget challenges associated with an ageing population, rising health-care costs and other factors, and that a fiscal programme that increased the structural budget deficit would only make confronting those challenges more difficult. Yet “... fiscal action could be helpful in principle, as fiscal and monetary stimulus together may provide broader support for the economy than monetary policy actions alone”.

Chairman Bernanke may or may not have been right about the usefulness of this kind of fiscal policy package at the time (for what it is worth, I believe he was largely right), but it is an indictment of the American political system that we have the head of the central bank telling members of Congress how they ought to conduct fiscal policy. Fiscal policy is not part of the Fed’s mandate. Nor it is part of the core competencies of the Chairman of the Federal Reserve Board to make fiscal policy recommendations for the US federal government. It is true that Bernanke acting ultra vires was likely the lesser of two evils: usurping the constitutional roles of Congress and the Executive versus permitting a re-run of the Great Depression. The point is that political institutional reforms are required in the United States (and elsewhere) to prevent a recurrence of this “rule by technocrats”.

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<sup>92</sup> Former chairman of the Board of Governors of the Federal Reserve System.

This was not the first time the (former) Chairman of the Fed strayed into controversial policy issues that were none of his and the Fed's business. He lectured, as Chairman of the Fed, on free trade, on aspects of globalisation that were not relevant to the conduct of monetary policy and on equality, equality of opportunity, educational achievement and teenage pregnancy (see Bernanke (2007a, 2007b and 2007c)).

The President of the ECB, Mario Draghi, like his predecessor Jean-Claude Trichet, is actively trying to influence and shape euro area policies in the areas of fiscal policy and structural reform, using a range of possible monetary policy interventions as sticks or carrots to get national governments and the European Commission to do what he considers to be "the right things". His recent address at the Jackson Hole Conference organised by the Federal Reserve Bank of Kansas City demonstrates the broad range of economic issues on which the President of the ECB feels comfortable to lecture, some might say badger, the political leadership of the euro area (Draghi (2014)). Regardless of the economic merits of Draghinomics, there is something worrying, from a constitutional/legal/political/legitimacy perspective, if unelected central bank technocrats become key movers and shakers in the design and implementation of reforms and policies in areas well beyond their mandate and competence. Indeed, when Italian Prime Minister Silvio Berlusconi resigned on 12 November 2011, it was widely reported that the ECB supported his replacement with Mario Monti. Some reports go further and allege that the President of the ECB played an active, albeit indirect, part in Berlusconi's resignation by restricting the ECB's buying of Italian sovereign debt during the days leading up to the announcement of his resignation. This certainly has a ring of plausibility, as on 29 September 2011 the then President of the ECB, Jean-Claude Trichet and the ECB President-in-waiting, Mario Draghi both signed a letter to Berlusconi that contained a detailed list of fiscal and structural reforms the Italian government ought to implement asap. The words "or else" were not part of this missive, but were clearly implied.

I don't wish to assign all or even most of the blame for this usurpation of parliamentary and executive power to the individual central bankers involved. In the case of the ECB, the blame for this intolerable situation lies mainly with the defective institutional design of Economic and Monetary Union (EMU) and the unwillingness and/or inability of the euro area political class to correct the manifold deficiencies of EMU and the European Treaties. The banking union is proceeding only slowly and incompletely: as a result, the failure to sever the two-way umbilical cords between national sovereigns and banks inside their national jurisdictions forced the ECB to take the lead role in the Greek sovereign debt and banking crises since the beginning of 2014. There is no sovereign debt restructuring mechanism; there is no European Monetary Fund with mutualised sources of funding from the Member State sovereigns capable of providing conditional liquidity to sovereigns on a scale sufficient to avoid the risk of fundamentally unnecessary sovereign debt restructuring or to mitigate the trauma associated with unavoidable sovereign debt restructuring; and there are no adequate mutualised "fiscal pots" to back up the Single Resolution Mechanism for systemically important banks or the Single Deposit Guarantee Scheme which may one day materialise. Finally, there has been a steady increase in the scale and scope of ECB/Eurosystem activities that are not subject to the normal profit and loss-sharing rules of activities undertaken as part of the implementation of the single monetary policy. This happened because of an unwillingness of euro area creditor sovereigns and/or those sovereigns with a high sovereign credit rating to assume greater

exposure to the debt of near-insolvent or high credit risk sovereigns through the monetary operations of the Eurosystem. The heads of the central banks of the creditor nations, acting in the pursuit of their narrow national agendas rather than serving the euro area-wide mandate, pushed through the latest (and thus far the largest) infringement of the profit and loss-sharing rule (the own-loss provision attached to up to €760 billion worth of purchases of public sector debt instruments). This represents a further big step on the road turning the Eurosystem from an operationally decentralised monetary union into a system of currency boards (see Buiter (2015)).

The ECB was and is stuck with the uncomfortable choice between letting the euro area collapse or taking on responsibilities and acting in ways that are well beyond its mandate. It is time to correct this situation. Elsewhere I have written extensively on this subject (see Buiter (1999, 2004, 2005, 2007, 2008a, 2008b, 2008c, 2012 and 2014)). Congressional paralysis in the days following the eruption of the Great Financial Crisis compelled the Fed to act, especially in the years 2007-09, in a quasi-fiscal manner on a scale and in ways that had never been seen before and that, in the views of many, went well beyond its mandate. The lack of transparency (shared with the ECB and many other central banks) surrounding the terms of its financial rescue operations and the identity of many of the beneficiaries led to a lawsuit by Bloomberg News against the Fed and The Clearing House Association LLC, which was won by Bloomberg in 2011 and compelled greater disclosure from the Fed. The ECB still provided no relevant information about most of its financial operations, even with a suitable lag to allow potentially turbulent markets to settle down and to ensure commercial confidentiality.

Since the Great Financial Crisis the US Congress has passed legislation, as part of the Dodd-Frank Act, that prevents the bailout by the Fed of individual struggling counterparties, although it left intact Fed powers to provide lender-of-last-resort assistance to groups of firms. Bipartisan proposals to further restrict the power of the Fed to lend and as lender of last resort are currently pending in the US Congress. I consider both the Dodd-Frank restrictions and the new proposed restrictions to be a threat to financial stability. It is not hard to see, however, how the astonishing expansion of the Fed's rescue operations during the Great Financial Crisis and its unwillingness to provide the information necessary to assess the scope and scale of the Fed's quasi-fiscal interventions, created the momentum for legislative initiatives to impair the Fed's ability to act as lender of last resort and market-maker of last resort in the future.

There are just two (related) legitimate reasons for a central banker to talk about fiscal policy or structural reform. The first is that this is part of an explanation of his/her view of the transmission mechanisms of fiscal policy and structural reform – the way in which they, directly or indirectly, affect the variables that are directly or indirectly relevant to the central bank's mandate. The second is to explain the central bank's reaction function: what the central bank's likely response will be to past, current or anticipated future fiscal policy measures and structural reforms. Under no circumstances should the central bank give advice on, recommend or warn against fiscal or structural reform policies.

One of the unfortunate consequences of central bank independence in the euro area has been widespread acceptance of the Teutonic view of central bank independence as being incompatible with coordination of monetary, fiscal and structural reform policies and with cooperation between the monetary, fiscal and structural reform authorities. This view is

illogical: only independent agents can cooperate and coordinate. Subordinates are told what to do. Regrettably, the Teutonic view – which can be summarised as the following guideline for central bankers: don't answer the phone when the ministry of finance calls – is the dominant view in the euro area. Sometimes the Teutonic view appears to be based on a fear of “capture” of a cooperative central bank by a predatory Treasury. Other times it appears to be based on a distorted version of the “commitment problem”, i.e. that only an independent central bank can commit to a set of (possibly contingent) future actions while a cooperative central bank acts in a time-consistent but suboptimal manner.

If the central bank cannot act cooperatively with the other policy-makers in charge of fiscal policy and structural reforms, the only legitimate thing to do is for it to act as a Stackelberg follower in a policy game where the other players, the fiscal authority and the structural reform authority, are likely to possess the political legitimacy that the central bank lacks. The central bank does the best it can (preferably with credible commitment) taking as given the past, current and anticipated future actions or reaction functions of the fiscal authority and the structural reform authorities.

## 2 Unemployment in the euro area

The euro area suffers both from deficient aggregate demand and from fundamental supply side problems – in labour markets, product markets, in the professions and in financial markets. In many countries (France, Finland, Belgium and Austria are obvious examples), the share of public spending in GDP is so high that even the best-designed tax system inevitably ends up being highly distortionary. In addition, high marginal tax rates and, at the lower end of the income distribution, high marginal benefit withdrawal rates plus marginal tax rates damage incentives to work, save and invest. Hysteresis has probably also contributed to supply side weakness (see Blanchard et al. (2015)). Excess capacity depresses capital formation and future potential output. Persistent unemployment, especially long-term unemployment, adversely affects human capital – both the aptitude for work and the attitude towards work.

Of course, the presence of hysteresis in the labour market does not necessarily mean that demand stimulus is called for. If hysteresis is not due to the human capital destruction caused by (long-term) unemployment, but to the disenfranchisement of unemployed and inactive workers from effective participation in bargaining over wages and other conditions of work (the insider-outsider model discussed in this session by Galí (2015)), then a direct assault on the man-made barriers to effective competition from the outsiders can eliminate the problem. This could involve legislation weakening the power of unions, or limiting the capacity of employers and unionised workers (or even just employed workers) to negotiate terms and conditions of employment that are binding not just on those that negotiated the deal but also on all other workers and employers active in the industry or entering the industry in the future. In the Netherlands such collective bargaining agreements are called generally binding declarations (or AVVs). They are, of course, insider-outsider problem generators par excellence.

Deficient aggregate demand is the result of a number of factors. One is continued excessive leverage – in the public sector in the vast majority of euro area Member States,

in the banking sector almost everywhere and in a significant number of countries also in the household sector. Spain, Portugal and Ireland have excessive leverage in all major sectors. High leverage dampens domestic demand and reduces the interest-sensitivity of aggregate demand. The second factor is that the neutral real interest rate (the risk-free short-term real interest rate that would equate aggregate demand and supply at full employment) is likely negative, and the official (nominal) interest rate, the refi rate, is, at 0.05%, near the effective lower bound, although the Swedish example (a refi rate of -0.30%) suggests that there is room for some further reduction in the refi rate. In orderly financial markets, central bank balance sheet expansion, whether through outright asset purchases or through collateralised lending, repos, etc. is not very effective. It tends to affect the most liquid asset markets (government debt markets, the foreign exchange markets and the stock market) with little evidence of transmission to the real economy. Even changes in the exchange rate appear to have most of their impact on profits in exporting and import-competing industries with limited effects on volumes.

### 3 Why is euro area demand management failing?

In the euro area, demand stimulus through fiscal policy has been severely handicapped by the widespread acceptance of the Triad of Teutonic Fallacies. The first of these is that there are reckless and/or stupid borrowers/debtors but no reckless and/or stupid lenders/creditors. As we are talking about the same transactions, that position is rather difficult to defend. It is, however, firmly believed by many living north of the Rhine, and it gives the creditors a sense of moral superiority or even outrage that diminishes their cognitive capabilities. The second fallacy is that expansionary fiscal policy is contractionary. There are indeed models in which this is the case. Provided any fiscal deficit expansion resulting from a fiscal stimulus is monetised, however, this will never be the case in a world with excess capacity and inflation below target. The third fallacy is that any increase in the balance sheet of the central bank will inevitably get monetised and lead to an undesirable increase in the rate of inflation. The fact that this is analytical nonsense does not mean it is not an influential view.

The combination of Fallacies two and three makes it effectively impossible to have a targeted helicopter money drop, that is, a temporary fiscal stimulus, funded permanently by an increase in the stock of base money. To make the meaning of the central bank's contribution to a helicopter money drop clearer, the central bank could cancel, write off or forgive the sovereign debt it purchases as part of the helicopter money drop. Because the Treasury is the beneficial owner of the central bank, buying government debt and holding it permanently is equivalent to cancelling it – at any rate in a system where one central bank is beneficially owned by one Treasury. In the euro area, of course, there are 19 national central banks (NCBs) plus the ECB and there are nineteen beneficial owners – the national Treasuries of the euro area Member States – who (with a growing number of regrettable exceptions) share the profits and losses. With own-risk public debt purchases, we are back in the one-on-one case.

In the euro area, for a helicopter money drop to be most effective, the fiscal stimulus should be targeted at the countries with the largest negative output gaps and at those in need of an appreciation of their real exchange rates vis-à-vis the rest of the euro area.

Article 123 of the Treaty on the Functioning of the European Union makes it awkward even to engage in backdoor helicopter money of the kind that we are now seeing in the euro area: a relaxation of the fiscal austerity imposed either by former Troika programmes or by the European Commission, combined with a “quite separate” monetised purchase of sovereign debt as part of an asset purchase programme that is justified as being in the pursuit of price stability.

Effective supply-side reforms of real significance since 2007 have only been undertaken in Spain and even there much remains to be done. But the sad reality of the euro area’s inability to engage in deep structural reforms should not stop it from at least closing the output gap as soon as possible.

## 4 What is to be done?

To close the output gap, the euro area needs effective combined monetary and fiscal stimulus. Unfortunately, the deeply flawed original design of EMU has not been meaningfully revised since its inception, except as regards the creation of a (too) small sovereign liquidity and bank recapitalisation fund (the European Stability Mechanism (ESM)), some quite impressive, but still incomplete, steps towards banking union and a regrettable increase in the scope and scale of own-risk financial operations by NCBs. Without deep reforms, I believe the euro area will not survive – and does not deserve to.

## 5 Some modest first steps: ten commandments/suggestions

Clearly, many of the deficiencies of EMU could be rectified by a move towards proper fiscal federalism, with a sizeable, independent federal taxation, spending and borrowing capacity under the political control of a euro area parliament. Such a development is, however, not likely in the foreseeable future, and neither are other proposals for mutualisation of the outstanding public debt and/or of future public debt issuance. I will focus therefore on a less unrealistic proposal for a minimal fiscal union to support a viable monetary union.

For EMU to survive and prosper the reforms listed below are required. “Essential” means necessary for survival. “Highly desirable” means necessary for EMU to prosper. The first six reforms relate to the Eurosystem. One of these, number five, is fiscal in nature. The next three address further building blocks of the minimal fiscal Europe. The last one is regulatory.

1. (Essential) Abolish/revoke Article 123 TFEU. The ECB should always have the right to say “no” to a request for monetisation of a sovereign’s debt or deficit. It should not be denied the right to say “yes”. Helicopter money is an essential policy instrument at the effective lower bound and may be essential even away from the effective lower bound if aggregate demand is interest-insensitive.
2. (Highly desirable) Adopt a triple mandate: financial stability, employment and price stability.



3. (Highly desirable) Reduce the size of the Governing Council of the ECB to, say, seven members, five rotating NCB Presidents (or ECB Branch Managers, see reform number six below) and two Board members (the President and the Vice-President, say). The size of the ECB's Governing Council is too large to allow for meaningful discussion. Currently there are 19 NCB governors (the number of euro area Member States) sharing a total of 15 voting rights in rotation (a number that is capped) and six Board members, all of which vote. More radical reform is proposed below in number six.
4. (Highly desirable) End the consensus model of decision-making and move to a simple model, with the President having the casting vote. In a majoritarian decision-making model with seven voting, if four are in favour and three against, the wishes of the four are implemented, even if the President votes with the three. A consensus model implements the decision of the majority only if the losing minority is not too unhappy. In the euro area the losing minority that must be kept reasonably happy can be small indeed. For this to work, it is of course necessary that an actual vote be taken, something that has not been the case for interest rate decisions by the ECB Governing Council in the past.
5. (Essential) Introduce full profit and loss sharing for all operations undertaken by the ECB and the NCBs for implementing the single monetary and credit policy and in the pursuit of financial stability. Currently there are three kinds of transactions that are for the own risk of the NCB undertaking them: (i) lending operations under emergency liquidity assistance (ELA); (ii) lending operations under the de facto resurrected (in 2012) Tier-2 collateral system, where an NCB is responsible for any losses on collateral accepted (with the approval of the ECB) by that NCB but not generally accepted in the Eurosystem; and (iii) up to €760 billion worth of purchases of public debt under the PSPP (public sector purchase programme) component of the ECB's QE programme. Apart from the fact that these "own risk" features infringe the TFEU, it turns the Eurosystem from an operationally decentralised monetary union into a system of currency boards (see Buiter (2015)).

With limits on profit and loss sharing, individual NCBs can become insolvent even if the consolidated Eurosystem is solvent. Solvency here is defined as the capacity to always pay your bills. If a balance sheet version is required it should add to the conventional assets and liabilities the net present value (NPV) of future seigniorage as an asset. A central bank that has few foreign currency-denominated liabilities need never become insolvent, although defending its solvency may require uncomfortably high rates of inflation. The Eurosystem has small foreign-currency-denominated liabilities and has discretionary control of its current and future seigniorage. Not so for individual NCBs. Each NCB gets its ECB capital key-weighted share of the aggregate seigniorage profits (monetary income). The aggregate seigniorage is determined by the majority of the voting members of the ECB's Governing Council, currently 25 in number.

So without profit and loss sharing an individual NCB can become insolvent even if the system as a whole is solvent. The NCB closest to this situation is the Bank of Greece. Unless the insolvent NCB is either recapitalised by its sovereign (unlikely if the insolvency of the sovereign is the cause of the insolvency of the NCB) or, in breach of the no profit and loss sharing conventions, is bailed out ex post by the rest



of the Eurosystem, that NCB ceases to be an eligible counterparty for the rest of the Eurosystem through TARGET2. It would mean the effective exit from the euro area of the nation whose NCB finds itself in that predicament.

6. (Highly desirable) End the nonsense of (currently) 20 entities with legal personality in the Eurosystem – the ECB and the (currently) 19 NCBs. Abolish the NCBs and replace them with a number (say 12) of regional branches of the ECB. The ECB would have legal personality, not the branches. This would have the advantage of avoiding the current situation where NCB presidents too often vote in their national interests instead of serving the ECB's mandate. It would also ensure that there is full profit and loss sharing in the Eurosystem, as none of the branches would have any responsibilities other than the implementation of the single monetary, credit and financial stability policy.
7. (Essential) Establish an orderly sovereign debt restructuring mechanism (SDRM) alongside a serious conditional sovereign liquidity facility (a much larger ESM, with the bank recapitalisation role split off, and with a credit line to the ECB, jointly and severally guaranteed by the euro area sovereigns). There will be future sovereign debt restructurings in the euro area, and no-one wants to see a re-run of the Greek debacle, where the need for debt restructuring was first denied (by all three members of the Troika, including the IMF) and, when recognised at last, implemented only after the euro area Member States had effectively assumed (in breach of Article 125 TFEU) part of the sovereign debt of Greece held by private creditors.
8. (Essential) Complete banking union with a much larger mutualised fiscal backstop than the Single Resolution Fund currently envisaged. The banking recapitalisation facility of the ESM should be merged into this. The new fiscal backstop should have a credit line to the ECB, jointly and severally guaranteed by the euro area sovereigns.
9. (Highly desirable) Mutualise deposit insurance but reduce the upper limit on insured deposits to, say, €20,000 rather than the current €100,000 limit. This is meant to be social policy (the protection of widows and orphans) rather than financial stability policy, for which the Eurosystem is responsible as lender of last resort and market-maker of last resort.
10. (Essential). Strictly limit the exposure of all banks to all sovereign debt, including that of their own sovereign. Risk weighting of sovereign debt for capital adequacy purposes should be no different from risk weighting of commercial debt. Concentration or exposure limits should be the same for public counterparties as for private ones.

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# Current perspectives on inflation and unemployment in the euro area and advanced economies

By Mark Carney<sup>93</sup>

In my remarks today, I'd like to build on some of the material we've covered on inflation and unemployment so far in this conference by focusing on three "puzzles" here in the United Kingdom: missing unemployment, missing disinflation and missing productivity. Let me go through each in turn.

## 1 UK puzzles

First, missing unemployment. In the teeth of the crisis, based on simple Okun relationships, unemployment in the United Kingdom – even though it went up substantially – rose by about 1.5 percentage points *less* than it should have. Contrast that with the United States, where unemployment went up about 1.5 percentage points *more* than it should have.

The moves here in the United Kingdom are not a participation rate story. The participation rate held up in the United Kingdom, whereas it fell by 3.5 percentage points in the United States. So the gap in terms of missing unemployment or missing slack is bigger than it first appears.

The missing unemployment puzzle is explained by two factors. First, labour market flexibility. UK real wages are still down around 10% on their pre-crisis level, whereas they are flat to slightly up in both Europe and the United States. To find falls of a comparable scale in the United Kingdom, you would have to look back to the early 1920s.

Second, nominal wage growth. In the past five years nominal wages have grown at about 1.5% per annum, about 2.5% below pre-crisis averages. There are limits to this flexibility, as John Muellbauer and others will know, but broadly speaking, nominal wage growth during the crisis fell towards zero and a pick-up in inflation delivered the necessary real wage adjustment.

This brings me to the next puzzle: missing disinflation. Inflation should have been about 1% on average from the crisis through to 2013, given a 3.5 percentage point increase in unemployment and our past Phillips curve relationships. Instead it averaged 3.2% over that period. There are two major explanations for that.

The first, very importantly, is a series of one-off price increases, including higher value added tax (VAT), higher university tuition fees and higher utility costs. At the time, Charlie

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<sup>93</sup> Governor, Bank of England.

Bean and his colleagues on the Bank of England's Monetary Policy Committee quite rightly looked through these price level shocks.

Second, higher import prices resulted from the 25% depreciation in sterling. This is relevant for UK monetary policy purposes because pass-through into inflation from material exchange rate moves is high and persistent, stretching over the policy horizon.

The missing disinflation was not a productivity story. Productivity performance was terrible, but wage growth was weak enough that unit labour costs were not strong.

That brings me to the third puzzle: missing productivity. As elsewhere, the United Kingdom has experienced a large shortfall in productivity relative to its pre-crisis trend. This was not surprising given the financial crisis, but it was substantial – a 15% shortfall relative to trend, as of today.

We can explain about 3 percentage points of that in terms of measurement issues and some shifts in sectoral trends, most notably North Sea oil and, to a lesser extent, financial services. But from that point on the picture gets much murkier. I would argue that impairment of the financial system and a slower process of creative destruction played a central role here.

To illustrate that point, it is worth noting one statistic, which is that company liquidations ran 40% below the peak reached in the 1990s recession, during the recent recession, which was the worst since the 1930s. Our estimates using micro data suggest that the contribution of resource reallocation across firms to labour productivity growth in 2013 was around one-third of that seen over the 2004-07 period. And this is not just a question of lack of capital for new enterprises but arguably also partly a product of forbearance, occasioned or allowed by lower interest rates, keeping existing enterprises afloat.

In addition, capital shallowing and lower investment in intangible and human capital have weighed on labour productivity growth. One measure of that from the UK Innovation Survey is that rates of product innovation by firms fell from 24% to 18% between 2008 and 2013.

Finally, and most recently, we have seen important compositional effects in the labour market. Since the end of 2013, employment growth has been disproportionately concentrated among employees in occupations that tend to attract lower average pay rates and, on average, with fewer qualifications. Moreover, increased employment growth and job churn has meant that average tenure in role has been declining a little. We detail this in our latest *Inflation Report*.

We think that these drags on productivity are starting to abate, and we see productivity growth picking up, but not to historic averages any time soon.

## 2 An important driver: labour supply shock

One common driver for these three puzzles has been a very large labour supply shock in the United Kingdom, encouraging the substitution of labour for capital at the margin. Let me give a couple of representations of that shock.

First, the participation rate I referred to earlier is now about a percentage point higher than it would have been if we just rolled forward the cohort participation rates from 2007-08. That equates to about half a million more workers.

Second, desired average hours have rebounded as well. That's a little more speculative in terms of estimating what people say they want to work, compared with the hours they actually end up working. But, broad brush, the increase in average hours in the past two years is equivalent again to another half a million heads.

The reasons for this are not just the impact of the financial crisis and deterioration in household balance sheets, but also changes to the structure of the labour market. Changes to pension and benefits rules (including increases in the retirement age) have encouraged – and in some cases compelled – greater participation for financial reasons.

I would point out that these changing work patterns likely dwarf the increase in net migration in the recent past. If you look at the increase relative to historical averages, the cumulative “excess” net migration in the last two years above trend totals around 50,000 additional workers in the UK economy, versus the much larger magnitudes from increased participation and average hours I referred to earlier.

### 3 Policy implications

Let me map this to a discussion of Phillips curves and policy.

First, my discussion shows that we must look at broader measures of labour market slack than just the unemployment rate. A systematic evaluation of other margins of adjustment in the labour market, including participation rates and average hours, is built into our forecasting process.

Second, I would not give up on our price Phillips curve relationships. We think they are more stable than Olivier Blanchard's comments perhaps suggest. But nor would we slavishly rely on them. I referred to this earlier, but in the crisis in particular there was a series of one-off shocks to the headline price level which could have frustrated the search for a stable Phillips curve relationship over that period.

We do have a very stable *wage* Phillips curve in the United Kingdom, however, and Bob Gordon's cautions on this are absolutely right: you can't look at it without looking at productivity. But that doesn't mean you don't look at it – and I don't think Bob was suggesting that.

We have seen in the very recent past some weakness in wages relative to those relationships. Those compositional effects I mentioned are quite important here. But there is also the possibility of a shift to lower wage expectations – prompted by a long period of very low wage settlements – that may take longer to come off.

In the United Kingdom we're seeing a reversal of the insider-outsider wage bargaining dynamic. Outsiders – in other words, people who are shifting jobs or getting new jobs – are getting much higher wage settlements than those who are staying in work. We expect this gap to close as the labour market continues to tighten.

In the current policy environment we have no inflation. In fact, the most recent numbers show mild deflation of 0.1%. Olivier Blanchard's paper<sup>94</sup> reminds us of the importance of inflation expectations. And we have the advantage in the United Kingdom of a regime that forces the Bank of England – and specifically me in my role as Governor – to write an open letter to explain why inflation is so low and what we're going to do about it.

Predominant reasons for the "why" are pretty easy: lower energy and food prices together with other imported disinflation. That accounts for about three-quarters of the gap between inflation and the target. That leaves only a quarter accounted for by the factors that I've been discussing. That does not mean the energy price shock has been unimportant, but it does mean, in our view, that we should look through it in setting policy.

We need to be mindful, however, of persistent drag from sterling strength and imported disinflation. I'll reference Charlie Bean's comments about the importance of looking at such global factors when setting policy in a very open economy, like the United Kingdom's.

We have signalled our clear intent to return inflation to target within the next two years. That means setting policy to get domestic cost pressures up, and we think we can close the output gap within the next year. That's not as heroic as it sounds, given that we think the potential growth has slowed, having taken a big hit to potential – both actual and trend.

The appropriate path for Bank Rate hinges crucially on the supply outlook and our view of the equilibrium interest rate. We, like others, have faced persistent headwinds that weigh on our economy. We have been talking about this for a number of years. We see weaker global demand. We're pleased that some of that is now coming off with renewed strength in the euro area. We have sustained fiscal consolidation in the United Kingdom. It has been relevant for the last several years. It will be relevant certainly over the policy horizon and beyond. We think we still have ongoing private deleveraging. And we think that, with time, financial intermediation costs are going to go up to a new equilibrium. So when rates come off the zero lower bound there will be higher prices in financial markets for liquidity, meaning the risk-free rate needs to adjust. There are also the longer-term factors that Larry Summers has highlighted, which we think will also persist beyond the policy horizon.

All of this merits a pace of Bank Rate increases, when they come, that would proceed at a gradual pace and to a limited extent.

Let me finish by quoting my colleague Ben Broadbent, who makes the point that whether it's very low interest rates at the effective lower bound, whether it's unconventional monetary policy, whether it is a limited and gradual pace of a prospective tightening of interest rates by central banks, that is not the reason why global interest rates are low. Central banks are actors reading a script written by others. That's Ben's way of putting it.

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<sup>94</sup> Blanchard, O., Cerutti, E. and Summers, L.H. (2015), "Inflation and activity – two explorations and their monetary policy implications", paper presented at the 2015 ECB Forum on Central Banking, Session 1: Current perspectives on inflation and unemployment in the euro area and advanced economies, Sintra, 22 May 2015.

And I salute the contributions of Larry, Olivier and others in bringing the issues of secular stagnation and factors which will be with us for some time to the forefront of these discussions.



# A fresh look at the inflation-unemployment trade-off

By Dennis J. Snower<sup>95</sup>

The great financial crisis of 2008-09 has generated two major challenges to mainstream thinking on the Phillips curve. The first is the mystery of the “missing deflation” – inflation has fallen far less than would have been expected, on the basis of conventional wisdom, from the dramatic increase in unemployment and decrease in output growth. The second is the mystery of the “missing recovery” – output remains far below its pre-crisis trend.

Neither of these phenomena is plausibly explainable through the dominant theory of the inflation-unemployment trade-off, namely, the expectations-augmented Phillips curve (the most popular version currently being the New Keynesian Phillips curve). According to this theory, inflation has a “knife-edge property”; inflation is stable when unemployment is at its natural rate, but inflation falls (or rises) without limit when unemployment is above (or below) this natural rate, which is assumed to be reasonably stable over time. In this context, there should have been substantial deflation in response to the great financial crisis. In the New Keynesian theory, the Phillips curve is generally derived from models in which markets equilibrate promptly, implying that aggregate output should long have returned to its pre-crisis trend by now.

Anyone examining the post-war empirical evidence on inflation and unemployment without theoretical preconceptions will know that inflation generally has no knife-edge property. This is the case not only for the period since the great financial crisis but also for the decades preceding it. There was no trace of the knife-edge property during the steady rise of European unemployment in the period 1982-92, which was unaccompanied by a significant fall in inflation. Nor was this property in evidence during the unusually low US unemployment rate in the period 1996-2000, which was unaccompanied by a significant rise in inflation. For the one hundred years preceding the late 1960s, the empirical work of Phillips and many others at the time uncovered a stable inflation-unemployment trade-off, which again showed no knife-edge property.

The natural rate of unemployment and the knife-edge property of inflation were “discovered” in the late 1960s and early 1970s, when low unemployment was accompanied by rising inflation; but this period is obviously not long enough to establish a timeless empirical regularity. No one disputes that inflation responds dynamically to macroeconomic shocks, but no one in their right mind should conclude from this episode that inflation rises without limit whenever unemployment is low.

What the long-term evidence appears to tell us is this: first, there are often times when inflation is inversely related to unemployment, as experienced during many peacetime episodes prior to the mid-1960s in many countries; second, there are times when inflation is positively related to unemployment, as seen in the period 1973-82 in the United States

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<sup>95</sup> Kiel Institute for the World Economy.

and elsewhere; and third, there are times when inflation does not vary with the unemployment rate, as witnessed in the late 1990s in the United States.

In short, there is no timeless monotonic relationship between inflation and unemployment. This should not be surprising, since inflation and unemployment are both endogenous variables in macroeconomic models and the relationship between these endogenous variables depends on the supply and demand-side shocks the economy is facing. When the economy primarily experiences demand-side swings, inflation is inversely related to unemployment (with inflation rising and unemployment falling in a cyclical upswing, and the opposite in a downswing); but when the economy is primarily hit by supply-side shocks (such as the oil price shocks of the 1970s), inflation is positively related to unemployment (with inflation and unemployment both rising when productive capacity contracts, and the opposite when capacity expands) (see, for example, Gordon, 1997). Needless to say, this dependence of the inflation-unemployment relationship on the prevalence of demand versus supply-side shocks does not imply that inflation rises or falls without limit when unemployment is low or high, respectively.

The other major conventional theory of the inflation-unemployment trade-off is “hysteresis”, the phenomenon that unemployment tends to get stuck at wherever it happens to be (Blanchard and Summers, 1986). (More formally, it implies that the current unemployment rate is the best predictor of the future unemployment rate, in the absence of any predictable shocks.) In other words, in the absence of any shocks, any unemployment rate – regardless of how high or low – can be a long-run equilibrium and in this scenario equilibrium inflation remains stable as well. In the presence of temporary shocks, unemployment follows a random walk – a temporary business downturn raises unemployment to a higher level indefinitely; a temporary upturn reduces unemployment permanently.

Furthermore, in response to permanent labour market fluctuations, unemployment rises or falls without limit. For example, a long-term productivity improvement (not matched by a proportionate real wage rise, as experienced in the United States over the past few decades) leads to an endless fall in unemployment.

This theory is also blatantly counterfactual. Unemployment does not follow a random walk over long time periods in response to temporary shocks. If it did, then countries would surely experience unemployment rates of 100% or 0% if we waited long enough. But of course this does not happen. For all countries, long-run unemployment tends to remain within a relatively narrow corridor, generally between 1% and 15%. The hysteresis theory cannot explain why this is the case. Furthermore, labour markets do experience permanent shocks, but in response unemployment does not rise or fall without limit.

Over the medium run (up to two or three decades) the time-series evidence may lead us to believe that unemployment has a unit root (signifying hysteresis), but over the longer run (five decades or longer) the unit-root property disappears. What this evidence suggests is straightforward; unemployment tends to be very persistent (so persistent that it may seem, over the medium run, that unemployment has a unit root), but clearly not hysteretic (since unemployment does not rise or fall without limit in the long run).

What the two dominant theories above have in common is a belief that the Phillips curve is vertical in the long run. For the expectations-augmented Phillips curve, the Phillips curve is vertical at the natural rate of unemployment. This unemployment rate is compatible with any stable inflation rate. For the hysteresis theory, the Phillips curve is vertical at any unemployment rate that the labour market has experienced. This long-run vertical Phillips curve is associated, as discussed above, with obviously counterfactual predictions.

So why are economists so fond of the vertical long-run Phillips curve? The reason is that most economists accept the classical dichotomy, i.e. the hypothesis that monetary and real variables are unrelated to one another in the long run. If you double all wages and prices in an economy, then real economic activities – production, employment, consumption, investment, and so on – should remain unchanged in the long run. The reason is that real economic activities depend only on relative, not absolute, prices. Rational agents do not suffer from money illusion. For example, consumers do not change their consumption when their monetary incomes rise as much as the prices of the products they purchase; for the same reason, firms do not change their production when their wages and other input prices rise proportionately to the prices of the products they sell. By implication, we are told, the equilibrium levels of real economic activities are compatible with any inflation rate. Whether inflation is high or low should make no difference to the amounts produced and consumed, so long as relative prices are unchanged. Thus, money is “neutral” in the long run; changes in the growth of the money supply (generating equal changes in inflation) have no effect on real economic activities.

This argument, however, has a fateful flaw. The reason is simple. When aggregate inflation rises, relative prices become more unstable, i.e. the higher the inflation rate, the greater is the variability in relative prices. The notion that price dispersion rises with inflation is a reliable, widely observed empirical regularity. Even the standard New Keynesian models can generate this result. Under staggered wage and price setting, a rise in inflation means that sticky wages and prices, at the regular or irregular intervals when they are adjusted, adjust by more, and thus wage and price dispersion (the spread of prices that have adjusted and those that have not) increases.

This means that a rise in inflation is not to be understood as a proportional rise in all wages and prices, which would have no real economic effects. Instead, it must be viewed as responsible for increased wage and price dispersion, which has a number of real effects. In the simple New Keynesian model, for instance, there are three basic effects: i) the employment cycling effect – the greater the inflation rate, the more volatile wages and prices are and the more volatile employment becomes, which reduces average production and employment on account of production inefficiencies that arise from diminishing returns to labour; ii) the labour smoothing effect – the employment cycling effect leads to a rise in the average disutility of labour (since the disutility of labour rises with employment per person), which reduces labour supply; iii) the discounting effect – under staggered nominal contracts, the current price level is a weighted average of the past and future price levels, with the latter receiving less weight on account of time discounting. The greater the inflation rate, the lower the weighted average of past and future prices and consequently the larger the real wealth effect. The first two effects generate a positive trade-off between inflation and unemployment, whereas the third effect generates a

negative trade-off. For plausible calibrations, however, the third effect is negligible. The upshot is that inflation rates above zero tend to have mainly a contractionary effect on production and employment, generating a rise in unemployment.

In short, money is not neutral in the long run. The changes in long-run money growth (generating equal changes in long-run inflation) affect real economic activity because of the induced changes in price dispersion. Thus, the long-run Phillips curve is not vertical. For the simple New Keynesian model above, the long-run relationship between inflation and unemployment is largely upward sloping. In practice, as noted, however, we frequently observe a downward-sloping long-run relationship between inflation and unemployment in response to monetary shocks. The challenge lies in explaining this downward-sloping relationship.

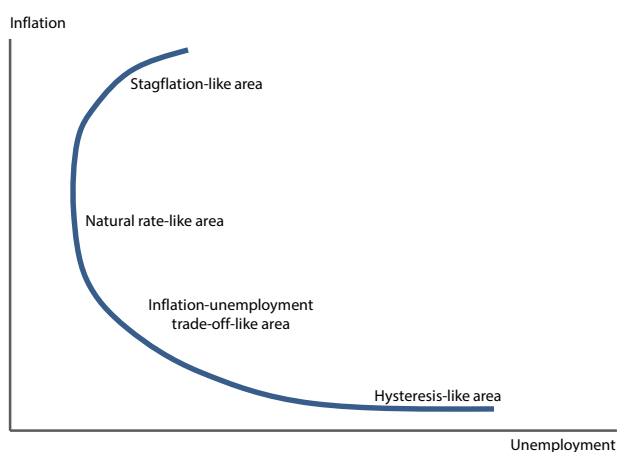
A number of plausible micro-founded macroeconomic models successfully rise to this challenge. Here are some of the successful candidates, along with their underlying rationales.

- Hyperbolic discounting – behavioural economics has adduced much evidence that short-term time discount rates are substantially higher than their long-term counterparts. (Short-term rates of 60%-70% are common in the literature.) This substantially strengthens the discounting effect above, implying a negative relationship between inflation and unemployment at low inflation rates (often below 5%) and a positive relationship at higher inflation rates (Graham and Snower, 2013).
- Inequality aversion – when people are inequality averse, those with relatively low incomes experience disutility from “envy” and those with relatively high incomes experience disutility from “guilt.” The relevant empirical evidence indicates that the envy effect is substantially stronger than the guilt effect. To mitigate their envy, workers seek to raise their incomes by supplying more labour. Consequently, for reasonably low inflation rates, the greater the inflation rate (and underlying money growth rate), the lower the level of unemployment (Ahrens and Snower, 2014).
- Job turnover and productivity growth – in practice, labour markets often exhibit high rates of job turnover. The greater the job turnover rate, the more wage setters must discount the future and the stronger the above discounting rate. Furthermore, the greater the trend rate of productivity growth, the higher the real interest rate, which also strengthens the above discounting effect. Consequently, for reasonably low inflation rates, an increase in inflation is associated with a fall in unemployment (Snower and Tesfaselassie, 2015).
- Nominal rigidities in wage negotiations – in the absence of an agreement in wage negotiations, the fallback position generally depends on the previously agreed nominal wage. Consequently, given the ongoing possibility of a wage negotiation disagreement, a rise in long-run money growth (associated with a rise in long-run inflation) leads to a fall in unemployment (Holden, 2003).
- Further rationales for an inverse relationship between inflation and unemployment include departures from rational expectations and permanent downward nominal rigidities (Akerlof, Dickens and Perry, 1996, 2000), a zero lower bound on nominal

interest rates (Coenen, Orphanides and Wieland, 2004), state-dependent nominal rigidities (Bénabou and Konieczny, 1994), wage setting and effort as a gift exchange (Vaona, 2013) and increasing returns to labour (Snower and Vaona, 2008).

What these contributions have in common is that they describe a phenomenon that may be termed “frictional growth”. Long-term monetary policy changes give rise to changes in long-term inflation, but this growth in prices is subject to various frictions, arising from temporary or permanent nominal rigidities. On account of these frictions, actual wages and prices keep chasing after their frictionless equilibrium targets, but they never catch up with their targets because the money supply keeps growing and the nominal frictions remain operative. On account of this, long-term monetary policy changes can have real effects. (For a more detailed explanation, see Karanassou, Sala and Snower, 2005, 2010).

**Chart 1**  
The long-run inflation-unemployment trade-off



Source: Author's research

These and other rationales of the Phillips curve, especially in combination with one another, suggest that the Phillips curve has the shape in Chart 1.

When the unemployment rate is very high, the Phillips curve is flat, so that variations in the unemployment rate are unaccompanied by significant changes in inflation (which is very low). This may be called the “hysteresis-like area”, since a range of different (very high) unemployment rates are compatible with stable (very low) inflation.

At a somewhat lower range of unemployment rates, there is a long-run downward relationship between inflation and unemployment, in response to long-run changes in monetary policy stance. This may be called the “inflation-unemployment trade-off-like area”, representing the classic long-run trade-off identified by Phillips and others.

At yet lower unemployment, for a range of inflation rates, the Phillips curve turns vertical. This may be considered the “natural rate-like area”.

Finally, at higher inflation rates, the long-run Phillips curve takes on a positive slope. Increases in inflation generate progressively greater inefficiencies in production and consumption, which dominate any positive effects on macroeconomic activity. Thus, increases in inflation, generated through expansionary monetary policy, are associated with increases in unemployment. This may be called the “stagflation-like area”.

In short, the long-run Phillips curve has a C-shape, flat at very high unemployment rates, downward sloping at somewhat lower unemployment rates, vertical for a range of inflation rates when the unemployment rate is even lower, and upward sloping at higher inflation rates. This C-shaped Phillips curve represents the relationship between inflation and unemployment that is generated by long-term variations in monetary policy stance, i.e. it is a Phillips curve arising from demand-side variations in economic activity.

The natural rate-like area was witnessed in the United States and in some European countries in the late 1960s and early 1970s. The stagflation-like area was experienced by various countries in the late 1970s and early 1980s. In the 1980s, the United States and

various European countries entered the inflation-unemployment trade-off-like area. Finally, in the aftermath of the great financial crisis of 2008-09, many established and emerging countries experienced the hysteresis-like area.

Furthermore, the C-shaped Phillips curve may shift in response to supply-side shocks (along the lines of the supply-side shifts in Gordon's triangle model of the Phillips curve; see Gordon, 1997). For example, it shifted outwards in many continental European countries in response to the oil price shocks of the 1970s. It shifted inwards in the United States over the second half of the 1990s in response to positive technology and organisational shocks.

This frictional-growth approach to the inflation-unemployment relationship calls into question the existence of a natural rate of unemployment as a permanent feature of macroeconomic activity. With the exception of the range of inflation rates in the natural rate-like area, long-run changes in inflation are associated with long-run changes in unemployment. The C-shaped Phillips curve suggests why the countless attempts to track an alleged "natural rate of unemployment" or "NAIRU" are futile. It also helps explain why the alleged natural rate of unemployment has often tended to follow the actual unemployment rate, leading many economists to claim that "cyclical unemployment" can turn into "structural unemployment". When an economy is in the inflation-unemployment trade-off-like area, a long-term monetary expansion leads to a permanent fall in unemployment. But this drop in unemployment is to be interpreted as a movement along a downward-sloping portion of the long-run Phillips curve, not as a fall in the natural unemployment rate. The same holds for changes in unemployment in the stagflation-like area.

The frictional-growth approach to the Phillips curve also provides a powerful rationale for what central bankers actually do, especially their aim of targeting a small, positive inflation rate (often specified as close to 2%). Mainstream theories have difficulty explaining the desirability of targeting positive inflation, implying instead that the optimal inflation rate is negative or at most zero. According to the Friedman rule, optimal long-run monetary policy requires deflation at the level of the real interest rate. When the costs of price dispersion are included in this model, the optimal inflation rate is higher, but still negative. Under the frictional-growth approach, by contrast, a positive long-run inflation rate is socially desirable. Under imperfect competition and other market imperfections (arising through efficiency wages, insider-outsider effects, taxes and other sources), the equilibrium levels of production and employment are often inefficiently low. By generating positive inflation in the trade-off-like area, the monetary authorities can stimulate macroeconomic activity in the long run, thereby offsetting these imperfections. On account of this, the optimal inflation rate turns out to be significantly positive, generally near 2% for plausible calibrations.

Thereby the frictional-growth approach helps explain why central banking is accorded so much importance in the public discourse. If monetary policy had only very transient effects on production and employment, if it had no effect on the long-run employment rate, and if any desired inflation rate could be achieved through the appropriate rate of money growth without any real economic consequences, then central banking would be boring and unimportant. The job of central bankers would be reduced to keeping the money supply growing at the socially optimal inflation rate, and central banking would

have no implications for macroeconomic activity beyond the short run. In the presence of frictional growth, however, central banking becomes important and difficult. Important, because monetary policy has long-run effects on production and employment, and difficult, because on account of the various nominal and real frictions, monetary policy influences real macroeconomic activity with significant lags.

The relationship between inflation and unemployment remains one of the central issues of macroeconomics and the influence of monetary policy on the real economy remains a dominant concern of macroeconomic policy. In the light of the manifest implausibility and empirical weaknesses of the mainstream theories – the natural rate theory and hysteresis – the time is ripe for a fresh look at the Phillips curve.

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# Current perspectives on inflation and unemployment in the euro area and advanced economies

By Lawrence H. Summers<sup>96</sup>

It is great to be at this conference. I commend Mario Draghi and the ECB for their openness in hosting this conference and allowing the presentation of so many perspectives. In the spirit of that openness I shall offer some iconoclastic observations.

For the last quarter century, there has been a consensus in favour of macroeconomic models that largely divorce issues of potential and cyclical performance. The consensus affects – and I would argue infects – both academic macroeconomics and, more importantly, central banking practice. It is the central premise behind inflation targeting, and central bankers – essentially without exception – assert that they have the capacity to affect or even determine inflation in the long term, but that they do not have the capacity to affect the average level of output, much less its growth rate over time, even though they may have the capacity to affect the amplitude of cyclical fluctuations.<sup>97</sup>

It is understandable, given the experience of the 1970s, that this consensus formed. Statistics reveal that 2% of Harvard freshmen find themselves alcohol-poisoned and in the hospital in their first month each September. In the same way, the world went badly wrong in its first experiment with purely fiat money in the 1970s and produced high inflation with little economic benefit and at considerable cost. The experience lent strong support to theories of monetary neutrality and, with a lag, to the idea that dynamic consistency issues were central in thinking about inflation. What followed around the world was a consensus or maybe even an obsession with the idea that central banks should be independent and that rules rather than discretion should guide policy.

My thesis this morning is that the pendulum has swung much too far regarding monetary neutrality, central bank independence and the dangers of discretion. While monetary policies are surely not determinative of long-run outcomes, they can, and in some cases do, have major effects on average levels of output over periods of decades. Moreover, the failure to properly integrate monetary policy-making with other areas of policy has had substantial pernicious effects. And the world is too unpredictable for simple feedback rules to be sound guides for monetary policy.

An analogy helps illustrate one aspect of my point. I was told recently by someone who is very knowledgeable that the most important question in assessing the health of an aged

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<sup>96</sup> Professor, Harvard University.

<sup>97</sup> For instance, the ECB's Introduction to Monetary Policy states "It is widely agreed that in the long run – after all adjustments in the economy have worked through – a change in the quantity of money in the economy will be reflected in a change in the general level of prices. But it will not induce permanent changes in real variables such as real output or unemployment. This general principle, referred to as "the long-run neutrality of money", underlies all standard macroeconomic thinking. Real income or the level of employment are, in the long term, essentially determined by real factors, such as technology, population growth or the preferences of economic agents". See the Monetary Policy section on the ECB's website (<https://www.ecb.europa.eu/mopo/intro/role>).

person is “have you had a fall in recent months?”. If you have, that is very bad. Scholars can and do debate whether people who have fallen were hurt by their fall or whether their fall was a symptom of neurological difficulty. They can and they do debate whether the fall hurts a person or whether the fall sets off a process of ongoing deterioration. But there is no division of opinion on the question of whether or not it is desirable to do everything possible to prevent falls. There is no division of opinion on whether it is desirable to do everything possible to cushion falls when they occur. And there is no division of opinion on the question of whether it is best to get people moving again as rapidly as possible after their falls.<sup>98</sup>

I would suggest on essentially the same grounds that it is appropriate in macroeconomic policy, and in particular in monetary policy thinking, to focus on two strands of economic theory – that associated with hysteresis and that associated with secular stagnation. Both pertain to the economic equivalent of falls – shocks that can have long-lasting adverse effects on economic performance.

Before I develop those two thoughts, let me just comment on how remarkable the time in which we are living is. In neither the United States, nor Europe, nor Japan is the market expectation of inflation over the next decade equal to the 2% target. On average, in the industrialised world, the market estimate of the real interest rate over the next decade is zero. It is worth highlighting that those are forecasts by the market, which must recognise that if things get sufficiently bad, actions will be taken. So if one asked “what is the forecast of inflation and real interest rates conditional on the currently announced policy path?”, the response would no doubt be even lower inflation and even lower real interest rates. Keep those realities in mind as you consider the case with respect to both hysteresis and secular stagnation.

I thought it would be my purpose here to briefly rehearse the evidence proving that hysteresis effects are important. Given that close to 90% of the attendees at this conference have just concluded that there are hysteresis effects in which recessions permanently affect output levels or superhysteresis effects in which they affect rates of growth, I will take the likelihood of hysteresis effects as stipulated.

I understand how, on the grounds of counter-causation and a variety of other arguments, one can argue that the case for hysteresis effects is unproven. That would not be my reading of the evidence, but I understand as a matter of logic how that case can be made.

I do not understand how one can accept the reality of hysteresis effects as important and deny that their presence has very substantial implications for the conduct of monetary policy. I do not understand how one can fail to recognise that if hysteresis is important, it is desirable to move as aggressively as possible – even at some inflation risk – to contain recessions when they start.

And importantly and relevantly for current policy debates almost everywhere, I do not understand how one can fail to recognise that there is a major asymmetry suggested by hysteresis effects in which inflation below target is far more costly than inflation above

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<sup>98</sup> The Centers for Disease Control has a section of its website devoted to fall prevention and recovery (see <http://www.cdc.gov/HomeandRecreationalSafety/Falls>).

target. Inflation above target has the distortions associated with excessive inflation, mitigated by the fact that the path that led to inflation above target has some hysteric benefits going forward for output. Inflation below target, on the other hand, has the distortions associated with sub-target inflation, plus the permanent or semi-permanent output cost that could be avoided by doing what was necessary to push inflation up to target.

To conclude this point, I would like to note that some years ago, Brad DeLong and I wrote a paper about fiscal policy and the implications of hysteresis for fiscal policy.<sup>99</sup> We defined in that paper a parameter that we called  $\eta$ . This was essentially the answer to the question, if you have an extra 1% of recession in year T, how much lower will potential output subsequently be? We concluded that if you had hysteresis effects on the order of 0.1 – that is 1% less output, which meant a tenth of a percentage point less potential output – they would have profound effects for questions such as whether fiscal policy paid for itself.

If you take the empirical estimates of Olivier Blanchard<sup>100</sup> and myself seriously, or you take Jordi Galí's<sup>101</sup> empirical estimates seriously, they suggest  $\eta$  parameters that are 10 times that large. I would not be surprised at all if further work refines downwards our estimates of hysteresis effects. But I would be very surprised if it was revised downwards far enough that they did not have profound implications.

That brings me to the closely related, but also clearly distinct, issue of secular stagnation. Secular stagnation and hysteresis obviously have the chance to reinforce each other. If an economy is stagnant for some reason, it can lead to hysteresis effects. The prospect of slower growth then leads to further pressures for stagnation. In a sense, a kind of inverse Say's Law can take hold. Lack of demand creates a lack of supply. In this regard it is worth noting, as Chart 1 illustrates, that all of the progress the United States has made in closing its output gap since 2009 is the result of reductions in estimated potential.

The thesis of secular stagnation is essentially this: because of a chronic, incipient excess of saving over investment, there will, over time, be a tendency for growth to be sluggish and real interest rates to be low – but perhaps constrained above the levels that would be necessary for a full employment equilibrium. Or, as a minimum, rates are forced to levels that raise questions about financial stability because of the implications that very low interest rates have on risk-taking and various other effects that contribute to financial bubbles.<sup>102</sup>

From the perspective of secular stagnation theory, much of what people worry about in monetary policy is endogenous rather than exogenous – such as zero rates, conditions that give rise to negative long-term rates and decisions to expand balance sheets. These are not exogenous acts. These are necessary responses to insufficient employment and to deflationary pressure created by the excess of saving over investment.

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<sup>99</sup> DeLong, J.B. and Summers, L.H. (2012), "Fiscal Policy in a Depressed Economy", *Brookings Papers on Economic Activity*, Spring.

<sup>100</sup> Blanchard, O., Cerutti, E. and Summers, L.H. (2015), "Inflation And Activity" *ECB Forum on Central Banking*, May.

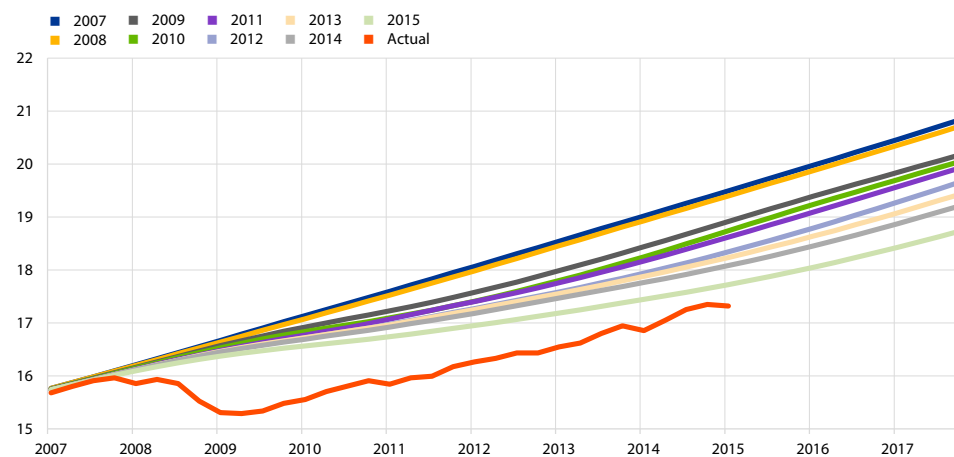
<sup>101</sup> Galí, J. (2015), "Hysteresis and the European Unemployment Problem Revisited", *ECB Forum on Central Banking*, May.

<sup>102</sup> Summers, L.H. (2015), "Demand Side Secular Stagnation", *American Economic Review*, 105(5), May, pp. 60-65.

## Chart 1

### Actual and potential GDP

(USD trillions, at 2013 values)



Sources: CBO Budget and Economic Outlooks 2007-2015, Bureau of Economic Analysis

In the presence of these excesses, monetary policy has no attractive choices. The determined pursuit of financial stability will put at risk the achievement of full employment. The determined pursuit of full employment and adequate product price inflation will put at risk the objective of financial stability.

Central bankers then have a major stake for the achievement of their basic goals in the remainder of economic policy. The best way to aid the central bank will depend on circumstances. In Europe it seems to me that the preponderant secular stagnation solution needs to be structural reform. Quite apart from the traditional virtues of structural reform, it offers the prospect of creating the legendary new frontier of attractive investment opportunity that will raise equilibrium real interest rates and make possible the achievement of full employment at interest rates that are conducive to financial stability. There is also a strong case, where there is room, for fiscal expansion, particularly in those countries that are running large and substantial current account surpluses.

In the United States there is also substantial scope for structural reform but, in my judgment, the larger deficiencies are with respect to the lack of public investment. It is indefensible – on the grounds of microeconomics, macroeconomics or common sense – that at a moment of record low capital costs and substantial construction non-employment, the share of public investment is at a record low. And anyone who flies into John F. Kennedy Airport knows what I mean.

I have been saying this for a while, and what I figured would eventually happen did happen. The person who was in charge of Kennedy Airport called me to get me to stop. He knew he would not get me to stop without giving me a different story, and so he did give me one, which is that the air traffic control system in the United States of America is based on vacuum tube technology. Nobody under 60 can repair it. It has inadequate capacity. And when it gets really crowded over the New York area, they move to a different backup technology – yellow stickies on an oak bulletin board. That is not as it should be. It makes microeconomic sense, macroeconomic sense, and would combat secular stagnation to fix it.

A final thought. Some of you will have noticed that there has been what people have described as a blog battle between Ben Bernanke and myself, in which I am said to be an advocate of the theory of secular stagnation and Ben is said to be an advocate of the theory of the savings glut. They are the same thing. They are the same idea – an excess of saving.<sup>103</sup>

The point which Ben very appropriately emphasises is that unmanaged secular stagnation in one place is contagious – that a higher level of saving over investment leading to low interest rates in one place, leads to current account surplus and leads to a capital outflow, which then leads to currency depreciation and leads to currency appreciation in other places, and therefore to spreading low demand and low interest rates everywhere. Secular stagnation is a contagious malady. It is the obligation of those who have it to fix it. It is the right of those who are exposed to the contagion, to encourage those who are the source of the contagion to act to respond to it.

That is not a call for easier European monetary policy. Easier European monetary policy might or might not be availing in Europe, but it would, through the mechanism I just described, increase the extent of contagion. It is a call, as a matter of urgency, for other actions in Europe that operate to increase equilibrium real interest rates and to stimulate economic growth.

These arguments may or may not be precisely correct, and I put them forward in the spirit of provocation and to stimulate discussion. But of this I am nearly certain: to understand the problems of this moment, we need to move beyond the idea that monetary policy is only about the second moment – the extent of the variability of output – and recognise the profound consequences of monetary and financial policy debates for living standards over time.

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<sup>103</sup> See <http://www.brookings.edu/blogs/ben-bernanke/posts/2015/03/31-why-interest-rates-low-secular-stagnation> for Bernanke's post on secular stagnation and <http://larrysummers.com/2015/04/01/on-secular-stagnation-a-response-to-bernanke/> for my response.

# The unbearable divergence of unemployment in Europe

By Tito Boeri<sup>104</sup> and Juan F. Jimeno<sup>105 106</sup>

## Abstract

Unemployment in Europe is not only “too high”, it is also too different across countries that belong to a monetary union. In this paper we i) document this increasing heterogeneity, ii) try to explain it and iii) draw from our diagnosis indications as to the appropriate set of policies to reduce unemployment and labour market disparities. Our analysis suggests that the divergence in labour market outcomes across Europe is the by-product of interactions between, on the one hand, shocks of varying size and nature, and, on the other hand, country-specific labour market institutions. We argue that EU policy coordination and conditionality during the Great Recession and the euro area debt crisis did not properly take into account these interactions. We also propose a change in the European policy approach for fighting unemployment.

## 1 Introduction

Unemployment in Europe, notably youth unemployment, is not only unbearably high, it is also unbearably different across nations that belong to an economic and monetary union. It is divergent across countries (more so than across regions), so that talking about a European unemployment problem or even more so a European structural unemployment problem is highly misleading.

In this paper we note that this heterogeneity cannot be accounted for only by the size or even by the nature of shocks experienced in the various countries. It is also largely unrelated to region-specific (and presumably sector-specific) evolutions within each country. The European unemployment divergence is largely to do with differences in labour market institutions across countries, notably the way in which these different institutions have reacted to shocks. Learning from these interactions between shocks and institutions is essential not only for devising structural reforms, but also for improving fiscal policy coordination in Europe.

We argue that EU policy coordination and conditionality vis-à-vis highly indebted countries were poorly exerted during the Great Recession. On account of the incompleteness and the imperfection of economic and monetary union (EMU), there has

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<sup>104</sup> INPS and Università Bocconi.

<sup>105</sup> Banco de España.

<sup>106</sup> We are very grateful to Samuel Bentolila, Olivier Blanchard, Georg Fischer, Daniel Gros, Philipp Hartmann, Gilles Saint-Paul, Guido Tabellini and an anonymous referee for comments on previous versions of this paper, and to Samuel Skoda for research assistance. The opinions expressed in this article are strictly those of the authors. They do not necessarily reflect the institutional position of INPS, the Banco de España or the Eurosystem.

been a lack of instruments to address the asymmetric effects of demand shocks across member countries. Even when some advances were made in the fiscal policy framework, too much emphasis was placed on the notion of structural unemployment, whether this was the non-accelerating wage rate of unemployment (NAWRU) or the non-accelerating inflation rate of unemployment (NAIRU). This turns out to be very risky since long-term trends and the long-lasting effects of the crisis on the relationships between macroeconomic variables make it more and more difficult to disentangle structural and cyclical unemployment, and, in fact, the several measures of structural unemployment, however defined, fluctuate too much over time to qualify as structural.

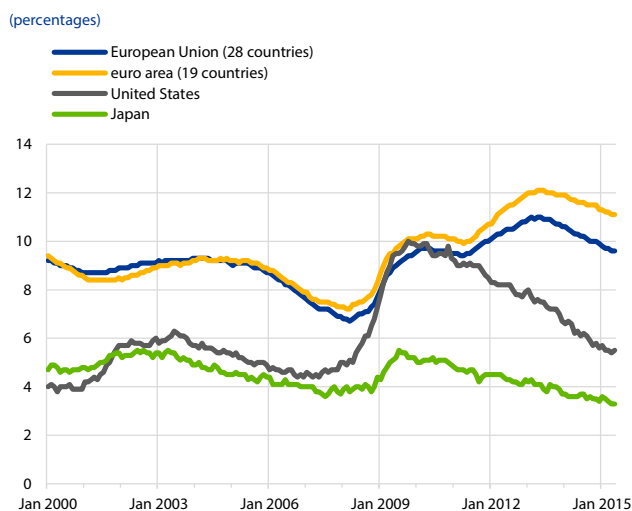
Admittedly, there have been some improvements in the policy coordination framework of the EU, but conditionality over countries, whether or not they were subject to formal rescue programmes, was poorly exerted. Some key reforms were lost in translation, while others were enforced without taking into account their effects over the business cycle.

We begin with some facts about country-specific unemployment trajectories and then move on to analyse the role played by institutions, shocks and the interactions between shocks and institutions in these trajectories. In this context, we look at outliers in Okun's relationship and introduce some new microeconomic evidence on how firms adjusted to different shocks that has come from a new wave of a survey of European firms across 25 countries, conducted by the ESCB's *Wage Dynamics Network*. The final sections draw policy implications from our analysis, substantiating our negative views of the policy responses to unemployment during the crisis, and motivating a proposal for changes to the European policy approach for fighting unemployment.

## 2 Why unemployment is so high and divergent in Europe

**Chart 1a**

Unemployment rates from 2000 to 2015: European Union, euro area, United States and Japan



Source: Eurostat.

Notes: EA-19 refers to the 19 countries of the euro area, while EU-28 denotes the 28 countries of the European Union.

### 2.1 Some key facts

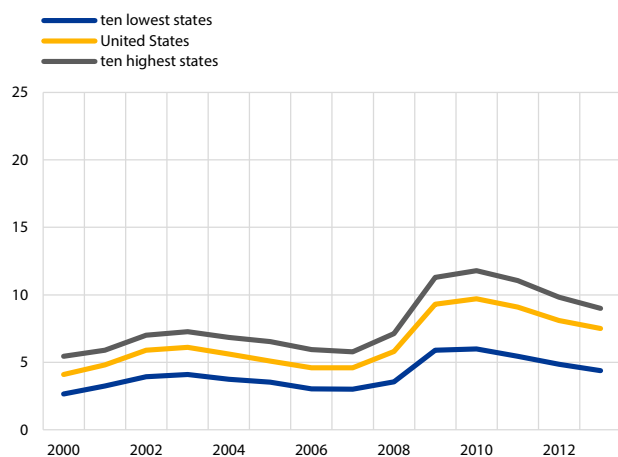
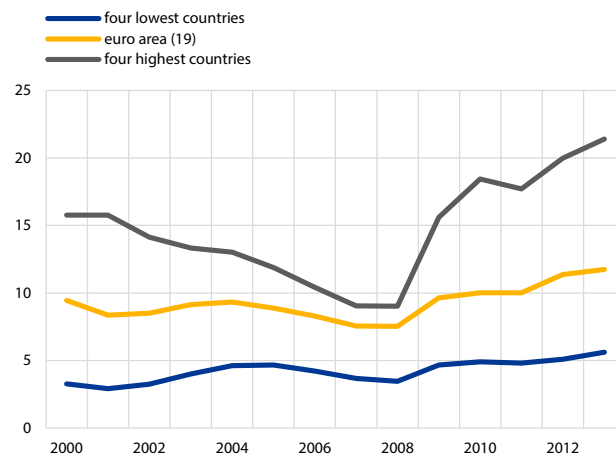
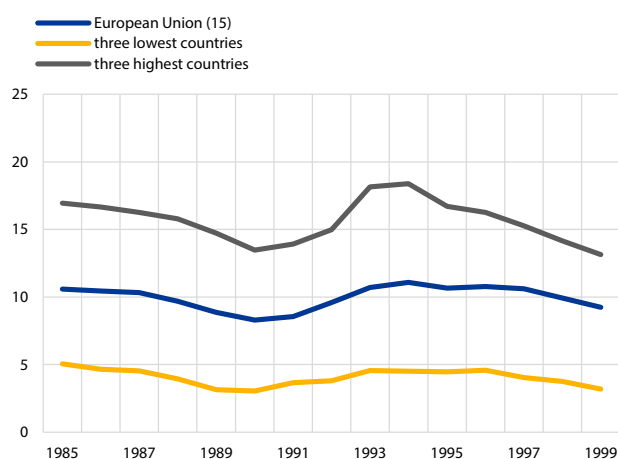
Throughout the Great Recession of 2008 and 2009, unemployment in the United States was consistently higher than in the European Union. Five years down the road from the global crisis, EU unemployment is almost twice as high as in the United States (Chart 1a). In the 19 countries of the euro area it is actually more than twice as high as it is on the other side of the Atlantic. In Europe, unemployment is not only stubbornly high, but it is also very unevenly distributed across countries and population groups. There is clear evidence that since 2007 the dispersion of unemployment rates within the euro area has increased much more than in previous recessions; the gap between the average unemployment rate of the four euro area countries with the highest unemployment rates and that of the four euro area countries with the lowest unemployment rates is more than 15 percentage points. A similar comparison in the United States, between the averages of the ten states with the highest and ten states

with the lowest unemployment rates, yields a gap of less than 5 percentage points (Chart 1b).

### Chart 1b

#### Cross-country (EU and euro area) and cross-state (United States) unemployment rates

(percentages)



Sources: Eurostat and BLS.

Unlike the United States, Europe has not experienced a decline in participation rates, and, in fact, the level of labour supply in proportion to the working age population, which was higher in the United States than in Europe before the Great Recession, is now converging across the two sides of the Atlantic (Chart 2a). Also, in stark contrast with previous recessions, where soft-landing schemes to retirement were widely used by firms attempting to downsize, employment rates among older workers have actually increased in most European countries throughout the Great Recession and the euro area debt crisis (Chart 2b).<sup>107</sup>

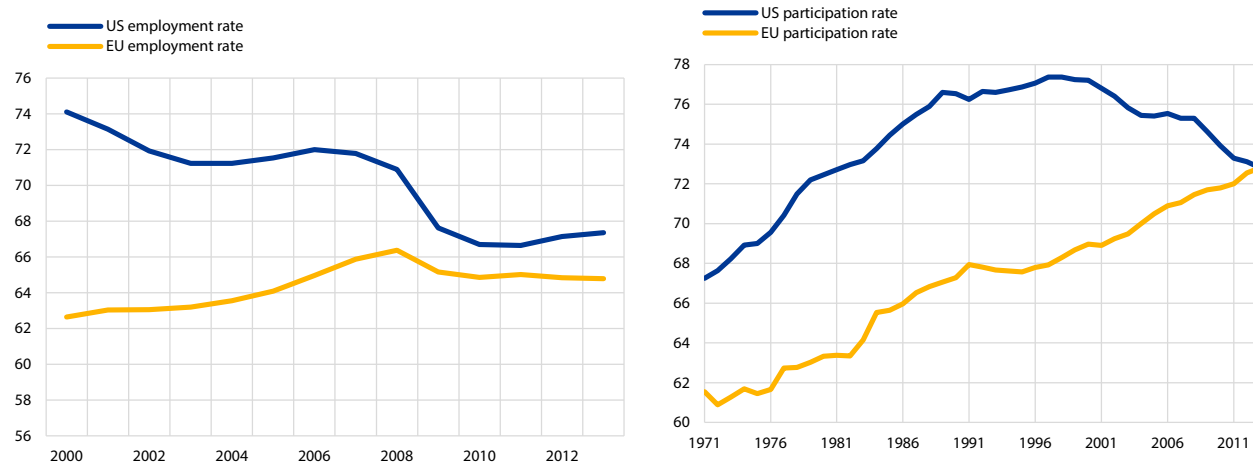
<sup>107</sup> The convergence in European and US labour force participation rates for workers aged 15-64 should not hide large differences in the degree of mobilisation of labour supply among older workers. Employment rates for workers aged 65 or more are close to 20% in the United States and Japan, but lower than 10% in the EU. When the employment rate is computed for the population over 15 years of age, it is 8 percentage points higher in the United States than in the euro area.



## Chart 2a

### Employment and participation rates in Europe and the United States

(percentage of population aged 15-64)



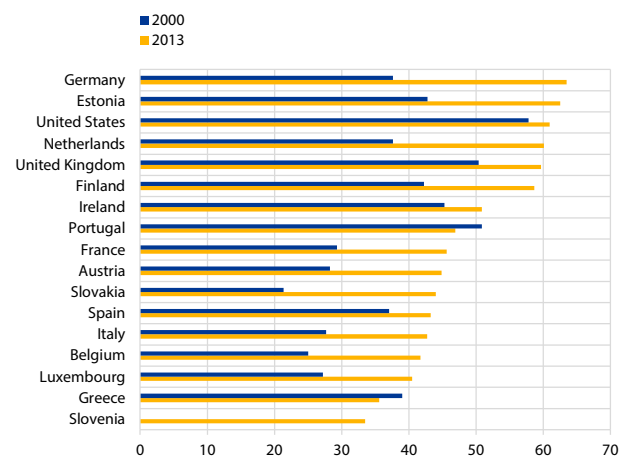
Source: Eurostat.

Note: Data for the EU include only 21 countries because for these variables there are no homogeneous long-time series available for the EU-28.

## Chart 2b

### Employment rates among older workers in 2000 and 2013

(percentage of population aged 55-64)



Source: Eurostat.

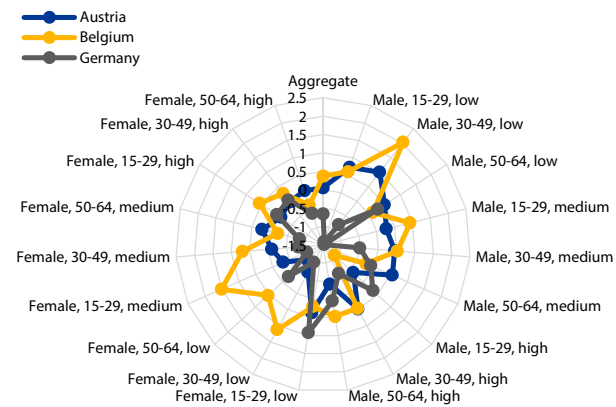
A main driver of European cross-country differences in unemployment is youth unemployment, which stands above (often well above) 40% in southern Europe while remaining at single-digit levels in Austria and Germany. As shown by Casado, Fernández-Vidaurreta and Jimeno (2015), during this recession job losses were highly concentrated among younger workers. Thus the explosion of youth unemployment was, unlike in previous recessions, not only related to a hiring freeze, but also to the heavy destruction of jobs held by young people, with the dissolution of temporary contracts, while at the same time employment rates among older workers were increasing (Chart 3).

### Chart 3

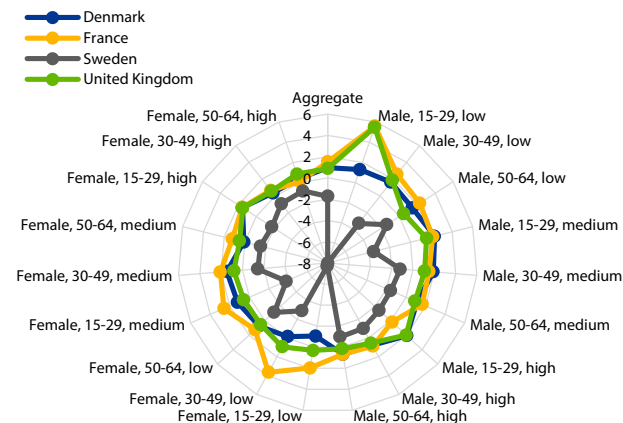
## Changes in the probability of transiting between employment and unemployment between 2007 and 2012 for people of different ages, genders and education levels in various European countries

(annual flows in percentage points)

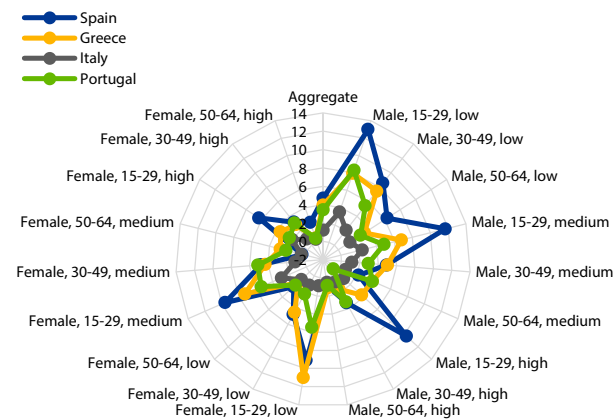
#### From employment to unemployment



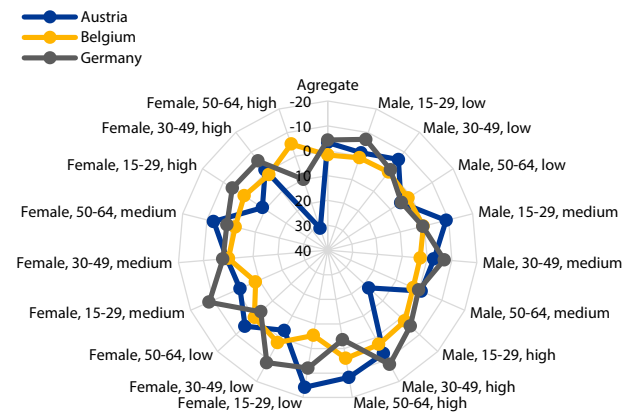
#### From employment to unemployment



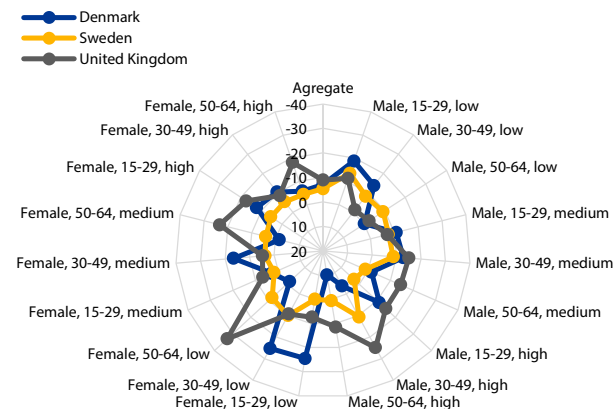
#### From employment to unemployment



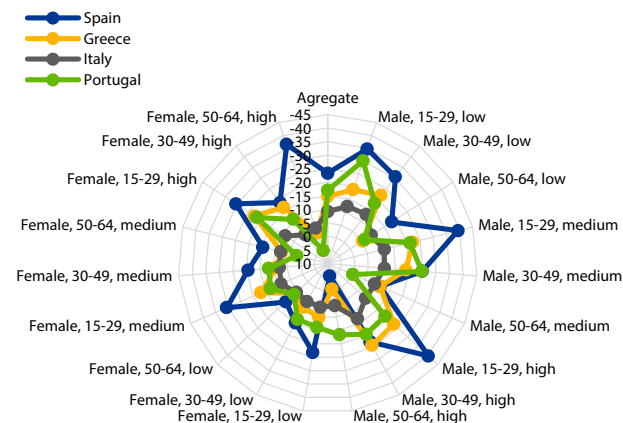
#### From unemployment to employment



#### From unemployment to employment



#### From unemployment to employment



Source: Authors' calculations on data from the European Labour Force Survey.

These two distinguishing features of labour market adjustment in Europe since the Great Recession – the cross-country heterogeneity in unemployment rates, notably among young people, and the increase in labour supply – appear therefore to be closely interrelated. We will now discuss whether they can be attributed to institutional features or to differences within and between countries in the intensity and characteristics of shocks.

## 2.2 Variation between countries vs. variation within countries

Some preliminary indications as to the role played by shocks and labour market institutions in these developments can be identified by disentangling evolutions between countries from those within countries as typically institutions vary more across rather than within countries while shocks tend to be concentrated on specific regions and sectors. Given the high concentration of increases in job destruction and decreases in job creation among the younger cohorts, we focus on youth unemployment to perform this decomposition.

In particular, we treat the EU as a single unit, and compute two well-known indexes of inequality (the Gini and the Theil indexes). They both show a noticeable increase in dispersion (inequality) of youth unemployment rates across EU regions throughout the Great Recession. The overall Theil index, for example, climbed from 13% in 2007 to 21% in 2013, an increase of eight percentage points. This regional dispersion can be broken down into variations within countries and between countries, according to the following formula<sup>108</sup>:

$$T = \underbrace{\sum_{k=1}^m \left( \frac{r_k \bar{u}_k}{r \bar{u}} \right) T_k}_{T_{within}} + \underbrace{\sum_{k=1}^m \left( \frac{r_k \bar{u}_k}{r \bar{u}} \right) \ln \left( \frac{\bar{u}_k}{\bar{u}} \right)}_{T_{between}}$$

The first component,  $T_{within}$ , expresses the weighted average of the Theil indexes of each sub-group of NUTS-2 regions, which is the dispersion rate of youth unemployment due to the variability within countries of youth unemployment rates at the regional level. The second component,  $T_{between}$ , captures inequality between EU countries, basically computing the Theil by using the countries' mean values of regional youth unemployment rates. As can be seen from Table 1, from 2007 to 2013 the  $T_{between}$  increased from 8% to 18%. On the contrary, regional divergence within each country decreased, with a reduction in the  $T_{within}$  from 7% to 4%. Thus, the growing dispersion of European youth unemployment rates appears to have a marked national dimension. Similar qualitative results arise when performing this decomposition on the overall unemployment rates.

<sup>108</sup> The notation is as follows:  $m$  is the total number of EU Member States,  $r$  is the total number of NUTS-2 regions,  $r_k$  is the number of NUTS-2 regions in country  $k$ ,  $\bar{u}$  is the average youth unemployment rate in the EU,  $\bar{u}_k$  is the average youth unemployment rate of NUTS-2 regions in country  $k$  and  $T_k$  is the Theil index of country  $k$ .

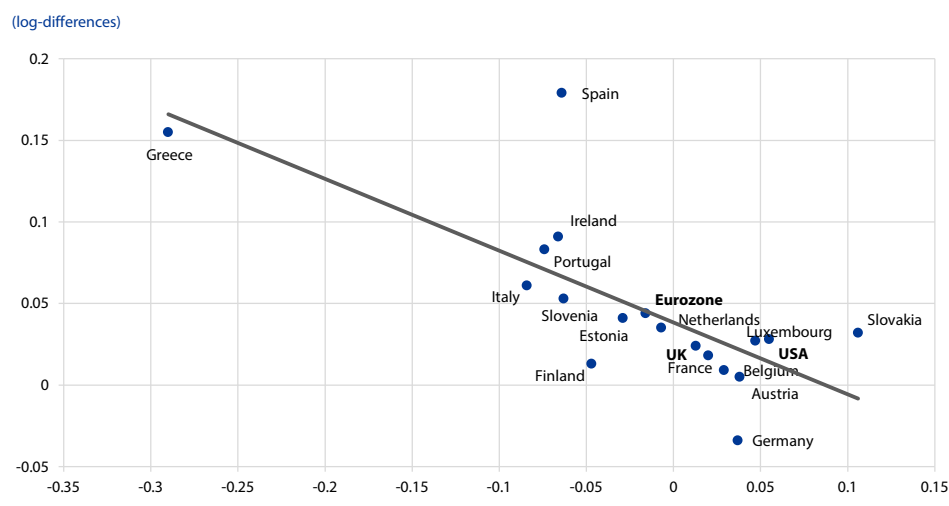
**Table 1****Measures of dispersion of youth unemployment rates**

Regional dispersion of youth unemployment	2007	2013	Variation
EU regions (NUTS-2 level)			
Gini index	29%	37%	28%
Theil index (total)	13%	21%	58%
Theil within	7%	4%	-48%
Theil between	8%	18%	135%

## 2.3 Okun in Europe

In addition to labour market institutions, national (as opposed to regional) differences in the size of macroeconomic shocks may have been responsible for the increasing cross-country divergence in unemployment rates.

A very crude way to assess the relative importance of institutions and shocks in unemployment dynamics is in terms of Okun's law elasticities. Deviations from the overall euro area elasticity can be attributed to labour market institutions, while different country positioning along the same unemployment-GDP or employment-GDP elasticity can be related to the magnitude of the macro shock. Needless to say, part of the output fall itself can be attributed to labour market institutions (in their role as sources of shocks or in the transmission mechanism of shocks generated elsewhere), but, with very few exceptions that we highlight below, during the Great Recession the effects of shocks generated in the labour market on output are relatively second order.

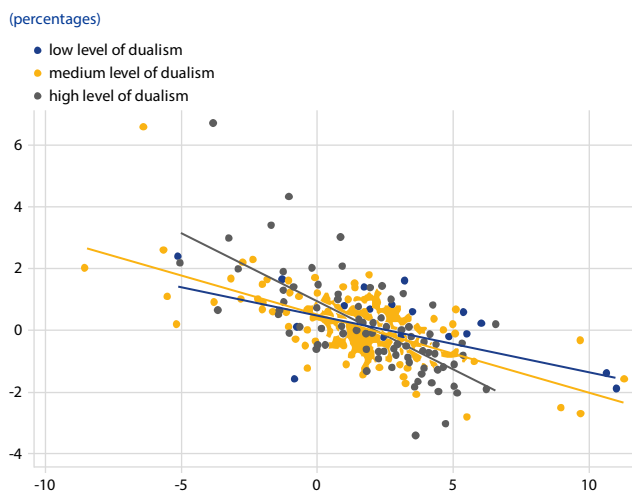
**Chart 4****Accumulated variations in unemployment and output between 2007 and 2013**

Sources: Authors' calculations on Eurostat and OECD data.

Note: The y-axis shows changes in unemployment rates and the x-axis shows the accumulated change in GDP throughout the period.

Chart 4 provides a visual representation of this admittedly rough decomposition. It plots the cumulated output (horizontal axis) and unemployment (vertical axis) variations over the period 2007-2013.<sup>109</sup> The message is rather clear. Just over one-half of the variation (about 52%) in national unemployment rates is related to a different exposure to shocks per given beta coefficient. The cumulated growth rates in GDP during the period 2008-2013 range from almost -30% in Greece to more than +10% in Slovakia. Some features of the current crisis, from its different nature across countries (i.e. the presence and magnitude of housing bubbles in the pre-crisis period and the depth of financial markets) and the different policy responses (i.e. fiscal and external financing problems and bail-out issues), to the influence of the labour market in the transmission of fundamental shocks and lack of automatic stabilisers at the country level, explain the dispersion in GDP growth rates and, hence, in unemployment rates.

**Chart 5**  
Unemployment responsiveness to output changes in countries with different degrees of dualism



Source: Authors' calculations on OECD data.  
Note: GDP variation is shown on the x-axis, while variation in unemployment is shown on the y-axis.

The remaining 50% of the variation is not explained by GDP variation. As Chart 4 shows, there are some outliers in the relationship between GDP growth rates and unemployment variation: Spain and Germany, most notably (also Finland and Slovakia, to some extent). Labour market institutions and employment policies, mostly (but not only) by determining the degree of labour hoarding in response to shocks, are likely to be behind this residual source of unemployment divergence in the euro area during the Great Recession. The fact that Okun's coefficients turned out to be higher in countries with dual employment protection legislation (Chart 5) also confirms that cross-country differences in labour market institutions are important determinants of the divergence of unemployment in Europe.

A simple decomposition can offer additional clues as to the sources of these differences in Okun's coefficients and their relationships with labour market institutions. Given that  $u \approx -\ln(e)$  where  $u$  denotes the unemployment rate, and

$e$  the ratio of employment ( $N$ ) to the labour force ( $LF$ ), we have

$d \ln(N) = d \ln(Y) - d \ln(Y/H) - d \ln(H/N)$  with  $Y$  being GDP and  $H$  being hours worked. Then

$$du = -d \ln(Y) + d \ln(LF) + d \ln(Y/H) + d \ln(H/N) \quad (1)$$

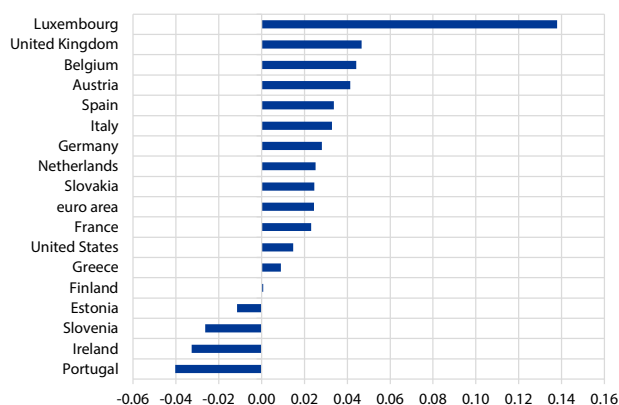
<sup>109</sup> The regression line involves a beta coefficient of -0.44 (t-statistics: -4.19).

## Chart 6

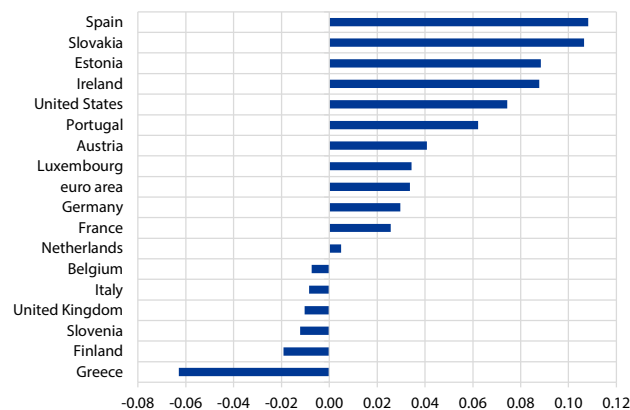
### Role of intensive, extensive and participation margins in unemployment to output response (2007-2013)

(log-differences)

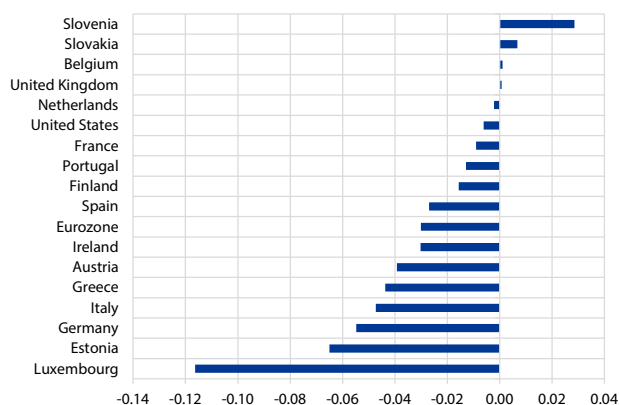
#### Change in the labour force



#### Change in output per hour worked



#### Change in working hours per worker



Hence, the Okun's ratio  $du/d\ln(Y)$  can be decomposed into a component related to the participation margin, a component related to productivity (per hour worked), and a component related to the intensive margin (hours worked per employee).<sup>110</sup> Clearly, EU countries behaved very differently in the way these three components accommodated the response to negative demand shocks (Chart 6). This heterogeneity in the use of intensive and extensive margins also points to the role played by labour market institutions during the Great Recession and the euro area crisis.

Source: Authors' calculations on Eurostat and OECD data.

## 2.4 Some new microeconomic evidence on the nature of shocks

Okun's law coefficients control for the size of the aggregate shock, but they are silent on its nature, duration, sources and differential incidence across sectors and firms. Microeconomic evidence about sources of shocks to firms and their corresponding responses, in terms of employment, wages, hours worked and other adjustment mechanisms, is provided by an ESCB research network (the Wage Dynamics Network, WDN), which has conducted ad hoc surveys on firms. Its most recent wave, covering 25 European countries, was used to measure firms' perceptions of the nature of shocks driving the Great Recession, responses to those shocks and the constraints imposed by labour market institutions on those responses.

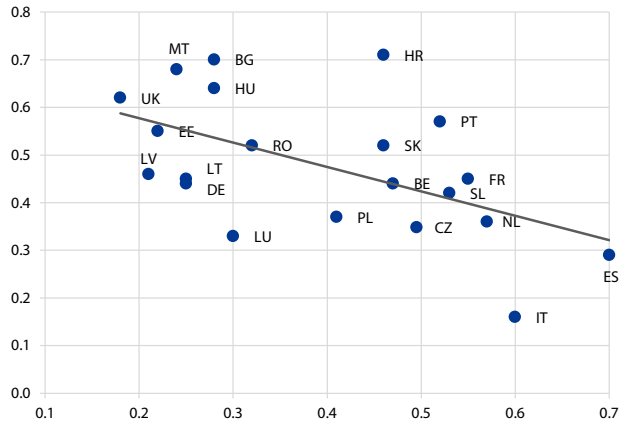
<sup>110</sup> We take OECD data for GDP, unemployment rate, labour force and GDP per hour worked and obtain hours worked per worker as the residual of the equation (1).

At the time of writing this paper, only very preliminary third-wave data from the WDN (and not for all countries that performed the survey) are available.<sup>111</sup> Nevertheless, some interesting patterns, which will be further investigated when the whole dataset is compiled and harmonised, are emerging.

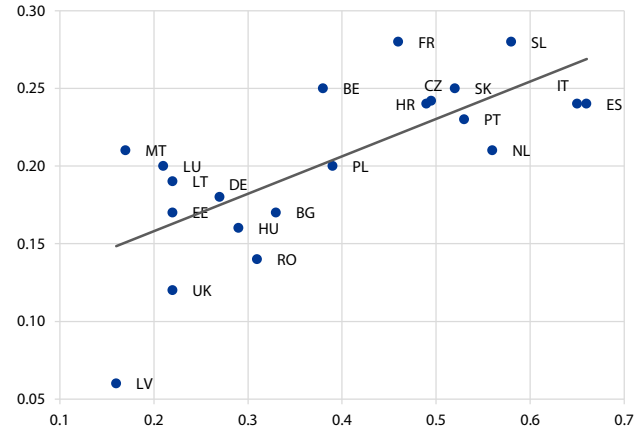
### Chart 7

Sources of shocks between 2010 and 2013 according to firms' perceptions

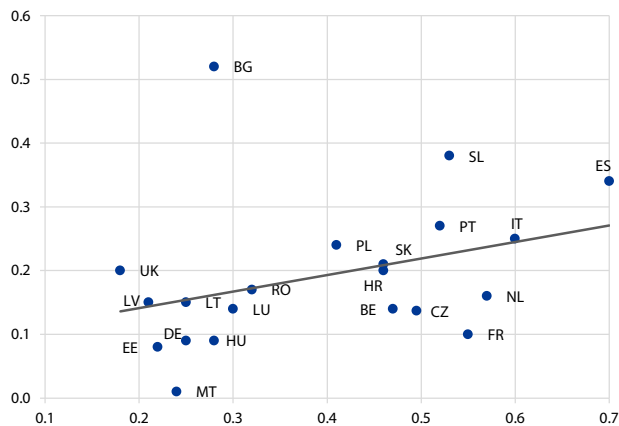
(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms with permanent effects of lower demand)



(x-axis: percentage of firms suffering a decrease in domestic demand; y-axis: percentage of firms suffering a decrease in foreign demand)



(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms claiming debt refinancing problems as relevant)



Source: Third wave of the Wage Dynamics Network Survey.  
Note: Data are third-wave WDN survey results and as such are very preliminary data.

First, as shown in Chart 7, there is a wide cross-country heterogeneity in the nature of the shocks, as reflected in the proportion of firms declaring that decreasing demand and financial problems were relevant or very relevant during the period 2010-2013. There are also noticeable cross-country differences in the duration of the negative demand shock, being perceived by firms as less permanent in those countries where more firms were experiencing decreasing demand. Across countries, there is also a positive association between the domestic and the foreign components of the fall in demand. The likelihood of a lack of finance being perceived as relevant by firms is also positively associated to the perception of a fall in demand.

As for the responses to these shocks, there is a clear positive association between the proportion of firms suffering a decrease in demand, and the proportion of firms declaring that their base wages did not change during the 2010-2013 period (Chart 8a). A similar cross-country positive association is also observed with regard to the incidence of debt refinancing problems. This suggests that wage reductions could have been a way for liquidity-constrained firms to borrow from workers.<sup>112</sup> Also, given the magnitude of the demand and financial shocks, downward nominal wage rigidity seems to be more binding

<sup>111</sup> We are grateful to participants of the WDN network for allowing us to use these preliminary data, and to Samuel Skoda for his help in computing the statistics presented below.

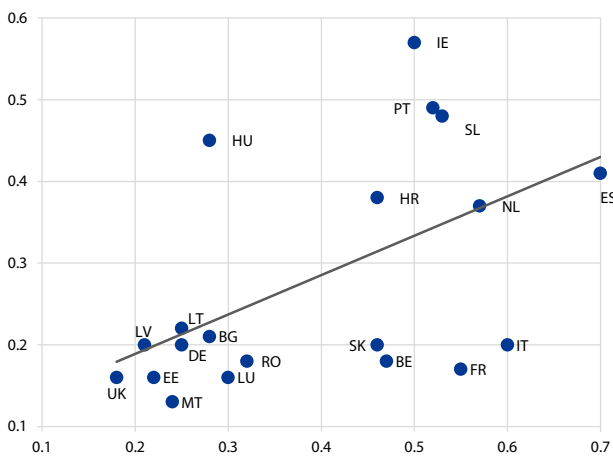
<sup>112</sup> There is also evidence to suggest that credit-constrained firms increased markups as a way of raising internal funds (see Montero and Urtasun, 2014, and Gilchrist et al., 2015).

in southern European countries (France, Spain and Italy) than in eastern European countries (Slovenia, Latvia and Estonia) where internal devaluations took place in a less gradual fashion. Finally, in those countries where downward nominal wage rigidity was more binding, employment adjustments were more prevalent with significant differences between temporary and permanent employment in countries with dual employment protection legislation (Spain and Italy) and with fewer firms reducing employment in countries, such as Germany, that could rely mostly on other margins of adjustment (Chart 8b).

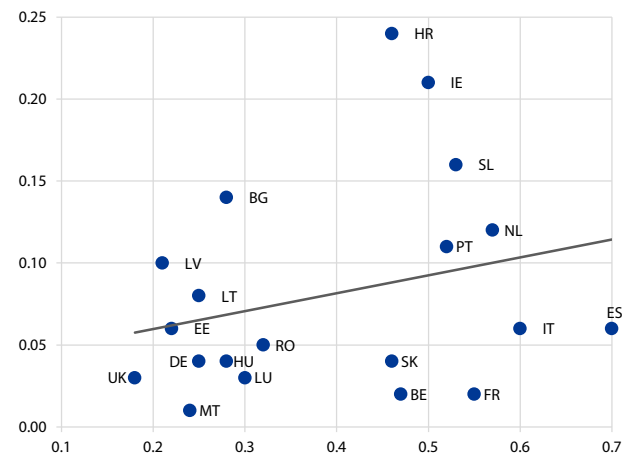
### Chart 8a

#### Wage responses to shocks between 2010 and 2013

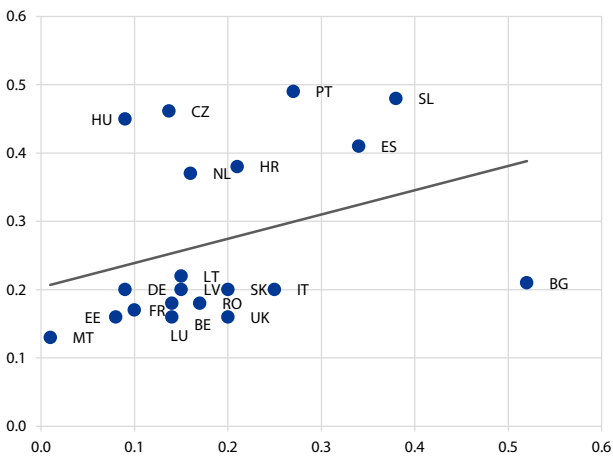
(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms with unchanged wages)



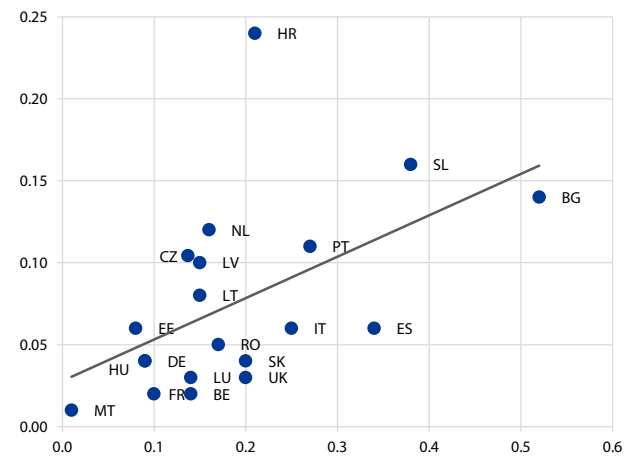
(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms with lowered wages)



(x-axis: percentage of firms with worsening access to financing firm's activity; y-axis: percentage of firms with unchanged wages)



(x-axis: percentage of firms with worsening access to financing firm's activity; y-axis: percentage of firms with lowered wages)



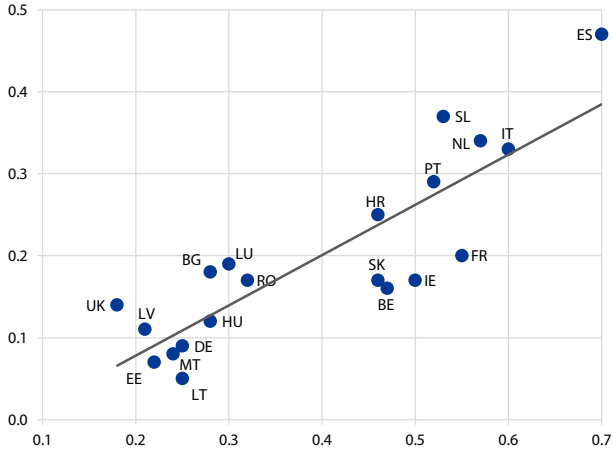
Source: Third wave of the *Wage Dynamics Network Survey*.  
Note: Data are third-wave WDN survey results and as such are very preliminary data.



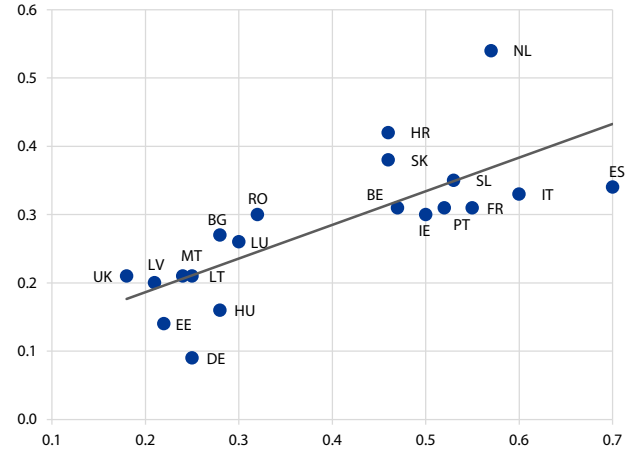
### Chart 8b

#### Employment responses to shocks from 2010 to 2013

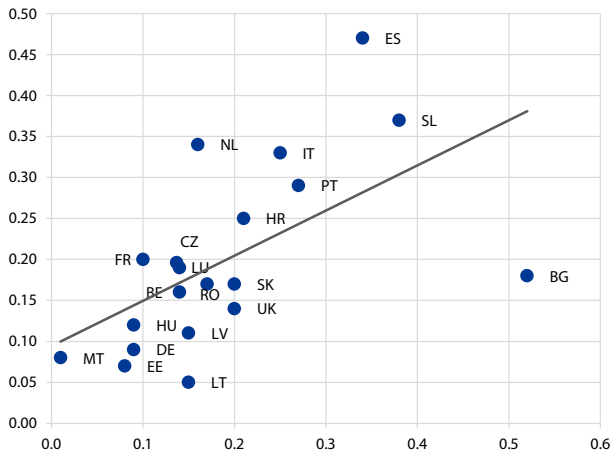
(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms reducing temporary employment)



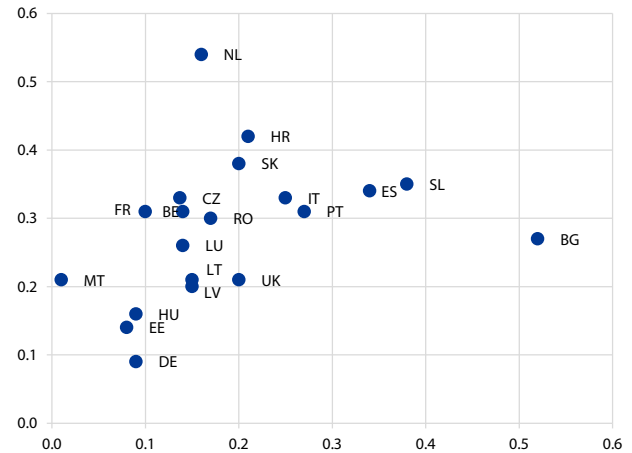
(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms reducing permanent employment)



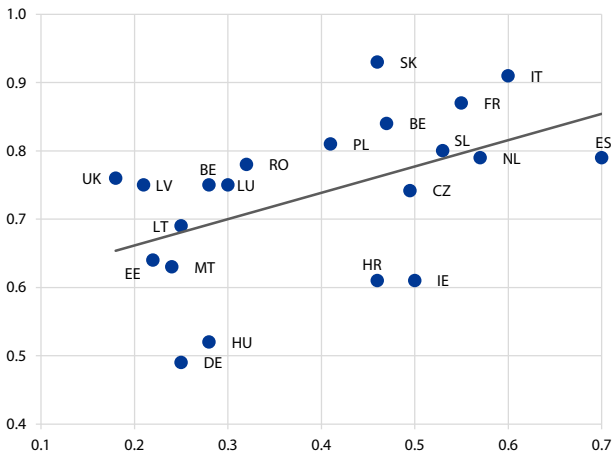
(x-axis: percentage of firms with worsening access to financing firm's activity; y-axis: percentage of firms reducing temporary employment)



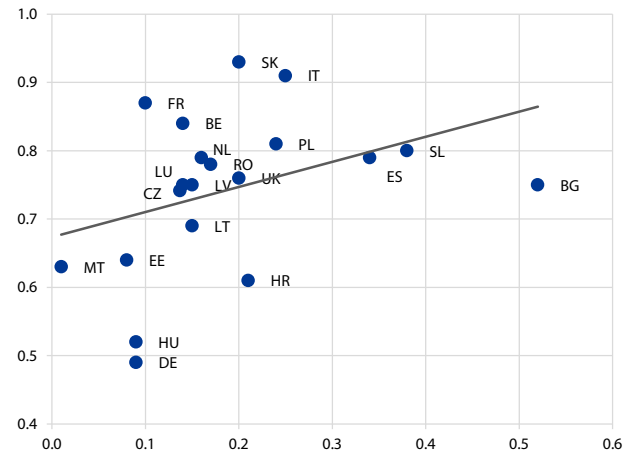
(x-axis: percentage of firms with worsening access to financing firm's activity; y-axis: percentage of firms reducing permanent employment)



(x-axis: percentage of firms with a decrease in demand; y-axis: percentage of firms freezing new hires)



(x-axis: percentage of firms with worsening access to financing firm's activity; y-axis: percentage of firms freezing new hires)



Source: Third wave of the *Wage Dynamics Network Survey*.  
Note: Data are third-wave WDN survey results and as such are very preliminary data.

Hence, micro data suggest that differences in the characteristics of the demand and financial shocks hitting EU countries during the euro area crisis involved different adjustment mechanisms. While some countries seem to have had in place the proper institutions to deal with the shocks – Germany, for instance, could respond to a temporary shock by adjusting working hours – others were in a more difficult position, having to deal with permanent shocks, while also facing a credit crunch, implying a large reallocation of resources, and with labour market institutions not very likely to facilitate the needed adjustment.

## 2.5 Institutions and shocks: learning from outliers

The above macro and micro evidence points to relevant interactions between shocks and institutions (Blanchard and Wolfers, 2002) that have yet to be fully understood. The role of these interactions can be characterised by considering the two key outliers in the Okun's relationship, notably Germany and Spain. Without a doubt, the two countries faced shocks of different intensities and natures. Yet the asymmetry in the labour market response is quite striking. While in Germany adjustment along the intensive margin reduced the response of unemployment to the output fall, in Spain it is the decline in labour hoarding (a rise in productivity) together with a slight increase in participation and an initial increase in hours worked per employee that explains the rise in the unemployment rate.

This comparison between Germany and Spain highlights the fact that three labour market institutions have been particularly important with regard to the characteristics of the macroeconomic adjustment observed in EU countries: i) subsidised short-time work, ii) the decentralisation of collective bargaining, and iii) dualism in employment protection legislation (EPL).

### 2.5.1 Subsidising reductions in working hours

Germany activated a variety of instruments concentrated on the intensive margin in its adjustment to the Great Recession. First, it increased the scope of subsidised short-time work. Second, it used working-time accounts, essentially a scheme allowing firms to borrow from their employees. Rather than being paid for overtime worked, the employees earned the right to work fewer hours at a later stage. Third, there was yet another margin of adjustment: the introduction of mini-jobs increased the scope of multiple job holdings in Germany and this helped to prevent outright unemployment for many workers in the event of the loss of a primary (or secondary) job.

Spain did not activate any such schemes. As a matter of fact, while in most OECD countries hours per worker reduced during the Great Recession, in Spain hours worked per employee actually increased between 2008 and 2010 (see Bentolila, Dolado, and Jimeno, 2012).

## 2.5.2 Decentralising bargaining

Germany decentralised wage setting in the early 1990s and was a pioneer in the introduction of “exit clauses”. It could therefore use plant-level “pacts for employment and competitiveness” to enable wage reductions rather than collective dismissals. At least up to 2011, collective bargaining institutions in Spain were instead imposing wages established at “higher” (provincial or sectoral) levels to lower bargaining structures, i.e. plant-level bargaining. This de facto prevented wage concessions being traded for more employment security as in the agreements signed in Germany at the company level.

This lack of adjustment of hours and wages to negative shocks in countries with two-tier bargaining structures is well documented in previous waves of the WDN survey, in which firms were asked whether they would reduce labour costs by cutting hours, wages (either the base wage or bonuses) or employment (either temporary contracts or permanent contracts). The firms applying plant-level agreements on top of multi-employer ones adjusted employment more than wages or hours in response to adverse shocks, unlike firms where there was no collective bargaining at all. In fact, about 60% of firms involved in the two bargaining levels adjusted mainly employment, just as firms involved only in multi-employer bargaining did. Firms where bargaining presumably takes place only at the individual level instead adjusted mainly wages in response to adverse shocks. These findings are robust to controls for country, sector and size of firms. This suggests that plant-level bargaining in two-tier regimes is inefficient in that it does not allow wage concessions to be traded for employment security, as in the case of stand-alone plant-level bargaining, concentrating all the adjustment on the extensive margin (Boeri, 2015).

## 2.5.3 Dual employment protection legislation

Spain is the land of dual EPL, that is, the coexistence of two different segments in the labour market: employees with open-ended contracts and employees with temporary contracts. This coexistence generates larger fluctuations in employment than those observed in fully flexible labour markets (see Chart 5). Countries with a higher contractual dualism display stronger responsiveness of unemployment to output changes. The reason for this role of contractual dualism is that employers do not have to pay costs, even in terms of severance payments, to dismiss temporary workers as they can simply wait until contract termination and not renew their contract. Moreover, the very fact that all the adjustment is concentrated on temporary employment de facto insulates workers holding permanent contracts from the consequences of negative shocks.<sup>113</sup> Large job losses in the temporary worker segment may well coexist with wage rises among the permanent contract segment. Something similar happened in the Spanish construction sector during the first phase of the Great Recession (2008-2010); while about one-third of jobs on *contratos temporales* were destroyed, workers holding permanent contracts continued to enjoy real wage increases. Needless to say, there is something fundamentally wrong with a labour market operating in this way.

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<sup>113</sup> On the dynamics of employment under dual EPL see Boeri (2010) and Costain, Jimeno, and Thomas (2010).

## 3 What went wrong

Let us summarise the evidence produced so far. High and unevenly distributed unemployment in Europe is not only the consequence of asymmetric shocks. It is true that shocks were of varying intensity and nature across countries, but even after controlling for these differences, the labour market responses appear to have been different across countries. Some countries used the intensive margin of labour market adjustment more, while others concentrated their response on the extensive margin. Some countries had bargaining structures that allowed for nominal wage cuts preventing mass lay-offs, while others could not use wage reductions as an alternative to dismissals. These institutional differences, in a context where the inactivity margin was not used – the labour supply of older workers was increasing, unlike in previous recessions – turned out to be very important in the differential rise in unemployment. Another important factor was labour market segmentation between temporary and permanent contracts, allowing wage increases to coexist with large employment losses, even within the same sector.

This does not mean that policies aimed at bringing unemployment down should only address these institutional failures, learning from the best (and worst) performers, and forgetting about aggregate demand management. It only means that greater attention should be paid to the interaction between macroeconomic policies and institutions. Aggregate demand management should be better synchronised with institutional reforms if the task is to avoid excessive employment destruction. The optimal design of institutions is not independent of the underlying cyclical conditions. Some badly needed institutional reforms aimed at restoring competitiveness can have undesirable effects in severe downturns, and stabilisation policies can reduce the risk of these reforms backfiring. At the same time, labour market institutions themselves may have to be designed in such a way as to have counter-cyclical properties, and this requires giving some fiscal leeway to countries in a monetary union hit by asymmetric shocks.

In this section we first evaluate what appear to be the most relevant interactions between cyclical conditions and the optimal design of labour market institutions, also drawing on recent results from the literature. As aggregate demand management in a monetary union requires cross-country coordination, we will then consider the way in which fiscal policy coordination in the EMU takes into account cyclical conditions. Finally, we will consider how conditionality, vis-à-vis stressed countries, was used in the Great Recession and the ensuing euro area crisis.

### 3.1 The timing of labour market reforms over the cycle

There is a huge amount of literature on the effects of institutions on labour market outcomes (Boeri and van Ours, 2013). This literature typically offers insights as to the long-run effects of institutional reforms. Less is known about the effects of reforms at business cycle frequencies, notably their effects during downturns.

One of the key findings of the literature is that during downturns it is generally preferable to increase wage flexibility as opposed to employment flexibility. The disemployment costs of minimum wages are indeed stronger during recessions, as the setting of the

minimum wage may not internalise macroeconomic constraints when electoral cycles coincide with business cycles. Reforms of collective bargaining, notably those inducing more decentralisation in wage setting have been found to increase the correlation of wages with labour productivity over the business cycle (Gnocchi et al., 2015). The fiscal costs of minimum wages and collective bargaining also tend to be particularly pronounced during downturns, as displaced workers draw unemployment benefits for a relatively long time before finding alternative employment.

In contrast, reforms reducing employment protection tend instead to amplify the responsiveness of unemployment to output changes. This is particularly true when these reforms involve contractual dualism of the “Spanish type” (Boeri, 2010). Indeed, the presence of a stock of temporary jobs built up after a two-tier reform significantly increases the response of unemployment to output decline (Bentolila et al., 2012). Gnocchi et al. (2014) also find that reforms reducing EPL involve an increase in the volatility of employment. Furthermore, Casado, Fernández-Vidaurreta and Jimeno (2015), looking at worker flows and at the socio-demographic composition of these flows based on micro data from the European Labour Force Survey, find that during the Great Recession a higher proportion of flexible temporary contracts were associated with fewer transitions of young and middle-aged workers out of unemployment.

As for unemployment benefits, their optimal level is inversely related to the magnitude of the elasticity of unemployment duration to unemployment benefits. The latter is generally found to be much weaker during downturns. For instance, according to Kroft and Notowidigdo (2014), a one standard deviation increase in the unemployment rate almost halves the duration elasticity. This suggests that reforms should possibly increase generosity when the unemployment rate increases, and reduce it during expansions. Similarly Landais (2014) finds that the labour supply response to unemployment benefits is pro-cyclical, while Jung and Kuester (2014) and Mitman and Rabinovich (2014) suggest that unemployment benefits should be raised in the aftermath of a negative shock. Overall, it may be desirable to provide more generous insurance during periods of high unemployment and reduce benefit generosity during periods of low unemployment. This may require a rule-based system, with automatic clauses consistent with a fiscal budget balanced automatically over the business cycle (Andersen, 2014).

A similar structure also seems appealing in pension systems. Reforms increasing the retirement age steeply while labour demand is declining may backfire as employers stop taking on new workers, preventing recessions from being used as cleansing devices (Caballero and Hammour, 1994), especially in countries where young workers are better educated than incumbents. Some flexibility in retirement age may be desirable when actuarial reductions are applied to people retiring before the normal retirement age. Clearly this flexibility would increase the annual government deficit, but would not affect the implicit debt of pension systems or the intertemporal budget constraint. By increasing public deficits during downturns and improving the fiscal balance later on, this actuarially neutral flexibility operates as an automatic stabiliser.

## 3.2 The drawbacks of the EU fiscal policy framework

The theoretical and empirical results summarised in the previous section suggest that countries badly hit by shocks should not be forced to consolidate immediately, and that the fiscal framework should give some fiscal leeway to reforming countries. An environment of very tough fiscal consolidation may be inconsistent with an acceleration of structural reforms, not only because such reforms may be politically more difficult, but mostly because they may not be desirable under an environment of strong fiscal contraction.

**Table 2**  
Conditions under the new EU fiscal framework

(percentage points of GDP)

	Condition	Required annual fiscal adjustment	
		Debt below 60% and no sustainability risk	Debt above 60% or sustainability risk
<b>Exceptionally bad times</b>	Real growth < 0 or output gap < -4	No adjustment needed	
<b>Very bad times</b>	-4 ≤ output gap < -3	0	0.25
<b>Bad times</b>	-3 ≤ output gap < -1.5	0 if growth below potential, 0.25 if growth above potential	0.25 if growth below potential, 0.5 if growth above potential
<b>Normal times</b>	-1.5 ≤ output gap < 1.5	0.5	> 0.5
<b>Good times</b>	output gap ≥ 1.5 %	> 0.5 if growth below potential, ≥ 0.75 if growth above potential	≥ 0.75 if growth below potential, ≥ 1 if growth above potential

Source: European Commission.

EU macroeconomic policy coordination throughout the Great Recession was in clear contradiction with the principles stated above. With regard to demand management, fiscal policy was constrained by the way the EU policy coordination framework was designed and imposed. The fiscal framework at the EU level draws largely on the notion of the natural rate of unemployment, i.e. the NAWRU. In particular, in the presence of output gaps exceeding 4%, temporary deviations from both the deficit and the debt targets are allowed (see Table 2). Output gaps are themselves estimated on the basis of the potential labour input, which is obtained as follows:  $L^p = \text{WAPOP} * \text{LFPR} * (1 - \text{NAWRU}) * \text{HW}$  where WAPOP stands for the working-age population, LFPR for the labour force participation rate, and HW for hours worked per employee. The NAWRU itself is estimated applying a Kalman filter to a system of two equations estimated simultaneously. The first equation is the Phillips curve (which can be estimated with different specifications in different countries) linking wage growth to productivity and unemployment, while the second equation delivers the NAWRU itself. The measurement and estimation problems related to estimates of the NAWRU in the United States (a country with longer series and better measures of inflation than many euro area countries) are discussed in some detail in Staiger et al. (1997), Ball and Mankiw (2002) and, more recently in the context of the Great Recession, Watson (2014).

**Table 3**  
Dispersion of NAWRU estimates

a) OECD

	Mean	Coefficient of variation		
		Overall	Between	Within
Belgium	7.89	3.6%	3.7%	0.5%
Czech Republic	7.38	9.7%	1.6%	9.6%
Denmark	4.91	6.1%	4.8%	3.9%
Germany	8.04	5.4%	4.8%	2.9%
Ireland	6.4	20.8%	19.8%	7.7%
Greece	9.88	6.2%	5.4%	3.3%
Spain	11.42	14.2%	11.5%	8.7%
France	8.59	3.0%	1.1%	2.8%
Luxembourg	3.65	15.4%	8.5%	13.0%
Hungary	6.85	9.6%	4.4%	8.5%
Netherlands	3.76	6.5%	3.5%	5.5%
Austria	4.57	10.0%	10.1%	1.8%
Poland	15.31	14.9%	3.5%	14.5%
Portugal	6.48	16.5%	13.3%	10.1%
Slovakia	15.59	10.6%	2.5%	10.4%
Finland	8.54	9.4%	3.8%	8.7%
Sweden	6.84	14.2%	14.5%	1.9%
United Kingdom	5.63	5.0%	3.0%	4.0%

b) European Commission estimates

	Mean	Coefficient of variation		
		Overall	Between	Within
Denmark	5.0	24.5%	3.3%	24.3%
Germany	5.9	42.8%	3.7%	42.6%
Ireland	9.9	38.5%	1.5%	38.4%
Greece	6.1	44.4%	6.8%	43.9%
Spain	11.4	36.1%	3.9%	35.9%
France	7.6	30.1%	2.9%	30.0%
Italy	8.1	18.3%	3.6%	18.0%
Netherlands	4.9	34.1%	6.6%	33.5%
Austria	2.8	39.5%	1.6%	39.5%
Portugal	5.8	19.7%	2.0%	19.6%
Finland	6.8	50.1%	2.2%	50.0%
Sweden	3.6	59.4%	11.2%	58.4%
United Kingdom	6.7	31.9%	0.8%	31.8%

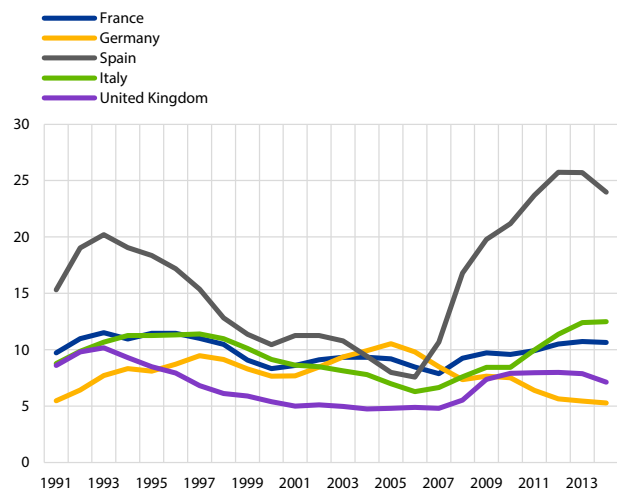
Source: Authors' calculations on OECD and European Commission data.

Table 3 provides a synthetic measure of the dispersion in the estimates of the NAWRU provided by the OECD. In particular, we decompose the total variance in two components – one that is related to time variation within any forecast round, and another that captures differences across forecast rounds. The message is quite clear: for some countries, including Ireland, Spain and Portugal, there are very large confidence intervals around the mean, even when only variation within the round (for given policies) is considered. Similar results are obtained by using the European Commission's estimates (Chart 9).

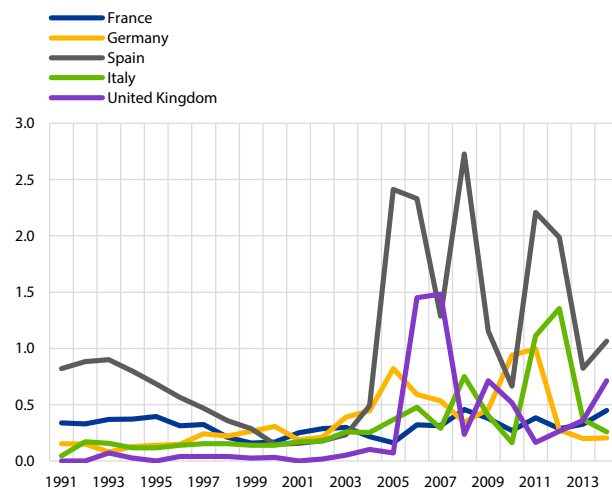
## Chart 9

### NAWRU estimates for various euro area countries

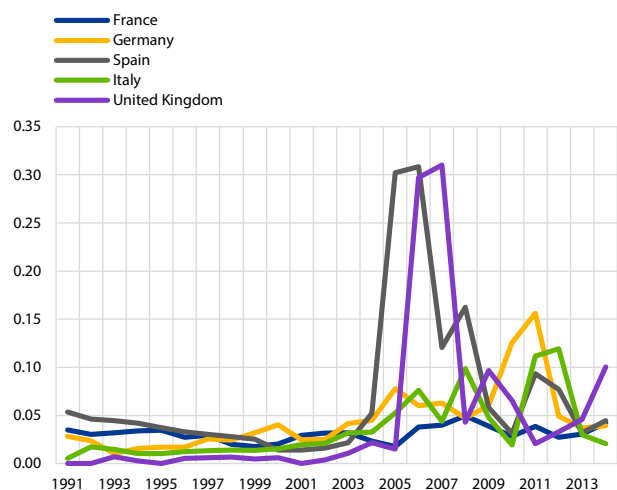
#### European Commission estimates



#### European Commission estimates, standard deviation across vintages



#### European Commission estimates, coefficient of variation across vintages



Source: Authors' calculations on European Commission data.

Needless to say, there is nothing natural about unemployment rates that appear to fluctuate so much over time, not only between vintages but also within vintages, for given policies. All this suggests that the output gap measures used in fiscal policy coordination are unreliable.

Moreover, structural unemployment is also an elusive concept from a microeconomic perspective. The empirical implementation of measures of (inter-industry, occupational and regional) mismatch unemployment (Sahin et al., 2014) faces daunting problems of consistency and comparability as data on vacancy rates in some countries are meaningless. Skills mismatches are also rather poorly defined when allowances are made for the skill downgrading of significant portions of the workforce (for instance, first-generation migrants) and the fungibility of a

more educated labour force with youngsters being overrepresented in the unemployment pool.

But even supposing that it were possible to disentangle cyclical unemployment from structural unemployment and that unemployment in the EU was mainly of the mismatch type, strongly increasing labour demand would not be quite as harmful because now the enemy would be deflation and wage growth would remain subdued. In fact, if one takes seriously the hypothesis that Europe, given its demographic and productivity outlook, is bound to suffer from a permanent shortfall in demand (the so-called secular stagnation hypothesis), then "there is room for doubt about whether the cycle actually cycles" (Summers, 2014), and higher wage inflation would bring the economy closer to the full employment equilibrium (see Eggertsson and Mehrotra, 2014; Jimeno, 2015).



In summary, cross-country coordination in fiscal policies would be better off taking the actual unemployment rates as a reference, rather than being based on unreliable and possibly meaningless estimates of structural unemployment or output gaps, whose association with inflation and other macroeconomic imbalances may be different in the current macroeconomic context than in the standard macro stabilisation manual.

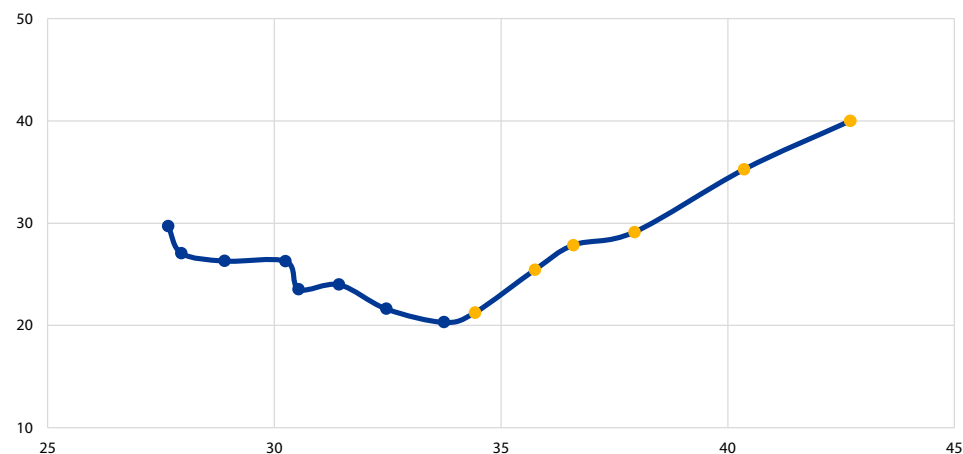
### 3.3 Bad conditionality and misguided reforms

EU conditionality placed a great deal of emphasis on labour market reforms, which received much more attention than product market reforms. Even when the diagnostics of dysfunctional labour markets were right,<sup>114</sup> formal or informal rescue programmes rarely addressed the main determinants of poor labour market performance. The key lessons from the international experience of labour market reforms were lost in translation. Recommendations from international institutions were translated into reforms that backfire during recessions, ignoring the issue of contractual dualism, overlooking best practices in subsidising short-time work, and not addressing the key issues related to the reforms of collective bargaining and pension systems. We offer below three examples, drawing on the Italian, Spanish and Greek experiences throughout the crisis.

#### Chart 10

#### Youth unemployment and employment rates among older workers before and after the Great Recession

(y-axis: unemployment rate (percentage of population aged 15-24), x-axis: employment rate (percentage of population aged 55-64))



Source: OECD.

Note: Data from before the Great Recession are marked in blue and those after the Great Recession in yellow.

In the case of Italy, fiscal consolidation forced the government to reduce the duration of the income support schemes for the unemployed at the same time as a pension reform was increasing the retirement age. In the midst of a major recession, this left many older workers displaced during the Great Recession without the soft landing scheme that had been internalised in the collective dismissal agreement (the so-called “esodati” problem), forcing the government to adopt a number of ad hoc (and costly) measures to deal with

<sup>114</sup> See, for instance, Blanchard, Jaumotte and Loungani (2014).

this problem. As older workers are more protected than young workers, the phasing out of any escape route to retirement also helped concentrate even more employment adjustment on youngsters. While in normal times there is no “lump of labour” and youth unemployment generally declines as employment among older workers increases (blue symbols in Chart 10), increasing retirement age and phasing out any bridging scheme to retirement in the midst of a major recession may concentrate all the adjustment on young people (red symbols in Chart 10).

In Spain, a strong case was made for wage moderation (as opposed to microeconomic wage flexibility). The request was also for a stricter control of the budget execution of regional governments and for more transparency, timeliness and detail in the publication of monthly and quarterly government finance statistics. In fact, during the execution of the financial sector rescue programme in 2012 the Spanish government implemented comprehensive labour market reforms to provide firms with more flexibility in adjusting their labour force by reallocating workers internally, reducing working hours and altering other employment conditions, modifying wages for incumbent workers and allowing for more decentralisation in wage setting. A pension reform aimed at slowing down the rise of pension expenditures was also carried out. Although it seems evident that these labour market reforms may have been instrumental in delivering faster wage adjustment and a realignment of competitiveness in the Spanish economy, they did not successfully address contractual dualism and only mildly affected wage flexibility at the microeconomic level. As for the pension reforms, they were far from guaranteeing the actuarial neutrality in pension systems that was needed to adjust the labour force smoothly in times of recession and very far from restoring the long-term sustainability of Spanish pensions.

Finally, in the case of Greece, the Memorandum of Understanding asked for fiscal austerity and welfare cuts to consolidate public accounts, and wage reductions to restore competitiveness. This was done by cutting the coverage of unemployment and health benefits, reducing the minimum wage by between one-third and one-quarter and increasing retirement age. No reference was made to measures to promote economic efficiency and enhance productivity. The imposition of these policies on an economy with such profound structural weaknesses as Greece exacerbated the social impact of the crisis by harming in particular the less protected segments of the population and spreading poverty in a country where levels of wage, income and wealth inequality were already high (Matsaganis, 2013).

Overall, within the three cases reviewed above, the key policy actions were i) wage moderation, ii) reductions in severance pay and, more broadly, the strictness of employment protection, and iii) increases in retirement age. References to either contractual dualism or to schemes inducing more adjustment along the intensive margin, such as short-time work or working-time accounts, were either less emphasised in the recommendations by international institutions or “lost in translation” when national governments acknowledged these recommendations. The possibility of introducing actuarial reductions to early retirement rather than forcing a rapid increase in the retirement age was also overlooked, and, in any event, prevented by the objective of obtaining immediate reductions in public pension outlays.

In summary, there are reasons to believe that labour market reforms were generally implemented without learning from the heterogeneity in labour market responses to

shocks in the euro area, and not taking into account the fact that fiscal measures and labour market reforms that are effective in normal times may not be desirable during major recessions.

### 3.4 Moral hazard

A final lesson learnt from the recent experience is how to use the fiscal constraint as a device to induce institutional reforms. Relaxing the fiscal constraint during a recession was deemed to exacerbate moral hazard problems in a monetary union. A typical (and topical) concern when discussing the implementation of labour market reforms is indeed that governments are less willing to do so without being constrained by a strong fiscal restriction. However, our analysis suggests that this argument is ill suited for a number of reasons.

First and foremost, the effects of structural reforms are not independent of cyclical conditions. Some reforms may be desirable only during upturns and would deliver higher unemployment than in a no-reform scenario during downturns. This is particularly the case for EPL, but unemployment benefit and retirement plan reforms should also be fine-tuned to take into account cyclical fluctuations.

Second, the types of reforms that are desirable during downturns are typically those that involve higher public expenditure. This is the case, for instance, for the short-time work schemes used in Germany to mitigate the effects of the Great Recession. Many countries, including the United States, also made their unemployment benefit systems more generous, a reform that is not within the realm of possibilities for countries forced to carry out a major fiscal consolidation in the midst of a recession. By the same token, flexicurity reforms that substitute employment protection (involving severance payments by firms) for unemployment benefits (paid out of social security contributions and general government revenues during recessions) require some fiscal room, particularly during a recession. Finally, reforms operating on the intertemporal budget constraint, which is relevant for pension systems, are inconsistent with fiscal consolidation targeting the yearly public deficit.

Third, although the institutional framework put in place in the EU to deal with policy coordination has been somewhat enhanced during the crisis, there is still a long way to go to make its implementation more efficient. A better way to exert EU conditionality is to go directly to citizens and promote best-practice institutions.

## 4 How EU conditionality can help governments reduce unemployment

There is still a lot of ground to cover in improving labour market institutions in Europe, and supranational authorities have a crucial role to play in this reform process. The cross-country divergence in unemployment evolutions is not a reason to strengthen the country-specific dimension of employment policies. Quite the opposite; the difficulties faced by governments in introducing best-practice institutions highlight the resistance to

reforms by powerful interest groups favouring the status quo.<sup>115</sup> In this context, more active involvement of the European Commission in the design and implementation of labour market policies is essential. At the same time, these reforms have strong effects on income distribution and may require those losing out to be compensated. Thus greater involvement of the EU would be acceptable to governments of Member States only if it goes hand in hand with adequate funding from European employment programmes. This supranational funding, if well designed, could also lessen the institutional shortcomings of some of the countries and play a stabilising role across the euro area. As is the case with access to fiscal leeway, it is more about using the carrot than the stick.

## 4.1 Towards positive conditionality

In order to establish other conditionality mechanisms that could operate without reducing the scope of structural reforms, we propose three such supranational “positive conditionality” schemes, as opposed to the negative conditionality used to date. These schemes are designed i) to be partial complements of national programmes, not substitutes for them, ii) to solve the moral hazard issue as access to the European programmes is conditional on accepting new rules for EPL, wage setting and entitlements to unemployment benefits, and iii) not necessarily to imply either large expenditures or permanent transfers across countries.

Moreover, a key ingredient of our proposals is the partial and gradual introduction of individual accounts, so that the benefits of implementing the programmes go directly to the workers, rather than to governments, social agents and other intermediaries. And as a result of such benefits being fully portable across national jurisdictions, they would be perceived as EU-wide entitlements and would also reduce some barriers to transitory labour mobility, which could also play a role as a stabiliser in the event of asymmetric shocks.

### 4.1.1 The European employment contract for equal opportunity

Labour costs, including high and uncertain firing costs, are often singled out as the main reason why employers refrain from hiring workers under the regular full-time/open-ended employment contract. This is particularly true in the countries where EPL reforms progressed “at the margin”, not by changing employment conditions for the regular contracts, but by introducing other types of “atypical” contracts, usually either part-time or fixed-term contracts. The inefficient turnover generated by this reform strategy seriously impedes productivity growth (Bassanini et al. 2014; Boeri, Garibaldi, and Moen, 2015).

Facing similar problems (and an acute pension funding problem), Austria successfully implemented an EPL reform in 2002 by introducing individual savings accounts. In the new regime, severance pay does not depend on the reasons for terminating the contract and is covered by the employers’ contributions (1.53% of the salary) into a fund. In the

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<sup>115</sup> On this topic it is very enlightening to read Fornero (2013).

case of dismissal after three years of tenure, the employee can choose between either receiving the funds accumulated in their account or saving them for a future pension.<sup>116</sup>

The reform experience during the European crisis shows that no significant improvements were achieved in the reform of inefficient EPL or in the correction of labour market segmentation, even when EPL reforms were mandated under a formal rescue programme. We believe that an alternative strategy based on the Austrian system could have been more successful.

Let us examine how it could work. The European Commission would design a new single open contract with severance pay gradually increasing with worker tenure, just like in the new open-ended contract introduced in Italy, effective since March 2015. The contract comes with individual savings accounts into which both employers and some European funds (Structural Funds combined with the European Social Fund) contribute. Employers get some reduction in severance pay obligations and some reduction in labour costs (as European contributions also play the role of deferred wage subsidies). Workers gain from more stable jobs (and from the wage subsidy). Additional European funding to be put towards active labour market policies or unemployment insurance could also be implemented through contributions to the individual accounts.

#### 4.1.2 The European unemployment insurance programme

The lack of automatic stabilisers operating at the EMU level has been evident throughout the crisis. At the same time, “solidarity” and the promotion of social and economic cohesion among Member States are explicitly stated goals of the European Treaties. Thus, unemployment insurance implemented at the central level could be an attractive development, insofar as it could deliver on both fronts (i.e. the absorption of asymmetric shocks and the promotion of economic convergence).<sup>117</sup> However, current unemployment insurance schemes in many European countries are far from optimal as there is inadequate management of moral hazard issues on both sides. On the one hand, the search activity of insured workers may be affected by entitlements. On the other hand, the financing of benefits does not always make employers internalise the social costs of unemployment. Moreover, introducing an EMU-wide unemployment insurance scheme when labour market performance and institutions are as heterogeneous as highlighted in previous sections may be counterproductive.

Nevertheless, there is a simple way to overcome these problems – by making the unemployment insurance scheme available only to those countries that achieve substantial progress towards a better design of labour market institutions. As in the case of the European employment contract, the implementation of this scheme could be eased by the introduction of individual accounts that could make unemployment benefits portable across countries, complementing the national insurance schemes. This European unemployment benefit could also be operated in conjunction with the equal opportunity

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<sup>116</sup> For more details, see Hofer, Schuh, and Walsh (2011).

<sup>117</sup> References to previous proposals along these lines include Delpla and Gourinchas (2014) and Claeys, Darvas and Wolff (2014).

contract in order to improve employment incentives (Brown, Orszag and Snower, 2008) and introduced as a partial complement to national unemployment schemes. As shown by Dolls, Fuest, Neumann and Peichl (2014), with proper contingency and claw-back mechanisms this European unemployment insurance scheme does not need to imply substantial permanent transfers across countries, while it does preserve some redistributive and stabilising properties.

#### 4.1.3 Actuarial neutrality and the portability of pension rights across jurisdictions

Public pension systems across the EU differ substantially from one another. Some of these systems have recently been reformed to achieve long-term sustainability, while others are still accumulating an increasing and potentially explosive (implicit) pension debt. EU fiscal coordination should force governments to make this implicit debt explicit, at the same time as informing citizens about their future pension rights. One way to do this would be to require social security administrations to produce personalised pension projections that would be disclosed to all contributors along the lines of the Swedish orange envelope experience (Sunden, 2014). These projections could then be aggregated at the country level to produce not only projections of total pension expenditures, but also entire distributions of pension outlays for particular groups of individuals. This information is essential for evaluating not only the financial but also the social sustainability of public pension systems, hence the potential spillovers of pension reforms into other social transfer schemes.

It would also be sensible to use these projections in fiscal policy coordination at the EU level, allowing for temporary increases in public pension outlays during recessions, provided that these increased expenditures are compensated by larger savings later on and that they do not have an impact on the overall pension debt. This would be an important step towards improving the cyclical properties of labour market and social policy institutions and enhancing the intertemporal and long-run dimension of the EU fiscal framework at the same time.

In this context, reforms introducing a level of pensions which is at least compatible with self-sufficiency and actuarial reductions to pensions obtained before the retirement age would no longer be unattainable by countries facing adverse shocks. This flexibility in retirement age could soften the cost of adjustment to macroeconomic shocks while rejuvenating the workforce. The fact that differences in the age of retirement involve actuarially neutral adjustments also makes the full portability of pension rights across jurisdictions sustainable and intra-EU bilateral agreements among social security administrations more transparent. Workers could move across jurisdictions, cumulating pension rights that would be paid by the administrations where the contributions were collected, based on the country-specific rules. Given the presence of actuarial reductions, differences in the retirement age across jurisdictions would not prevent this full portability, as they do not affect the long-term debt of the single national administrations involved.

## 5 Final remarks

Unemployment in Europe is becoming more and more country-specific. Asymmetric shocks combined with cross-country institutional differences have resulted in highly heterogeneous effects on national labour markets. It is difficult to foresee a united Europe and a properly functioning Economic and Monetary Union with so much cross-country divergence in labour market conditions and very limited instruments to insure unemployment risks across countries.

European supranational institutions throughout the crisis over-emphasised the realignment of external competitiveness by relying on wage reductions, not realising that these reductions are most costly when they have to be achieved by nominal wage cuts (given the low inflation rate), households are highly indebted, and governments had to reduce public consumption, investments and transfers to consolidate public debt. When structural reforms were implemented, either at the initiative of national governments or of countries under formal programmes, they focused on reducing the costs of dismissals and forcing downward wage adjustments in the middle of a recession, rather than on removing structural impediments to productivity growth in poorly regulated labour markets. The international institutions with the capacity to apply some of their own initiatives to change the orientation of reforms and employment policies (for instance the European Commission) did very little in this respect and failed to design new programmes at the supranational level.

In this paper we offer some proposals to change this state of affairs, looking forward to an enhanced role for European supranational institutions in improving the functioning of labour markets. In this regard, we call for European employment policies to complement not substitute national policies in the areas of EPL, unemployment insurance and pension entitlements. They would be introduced under positive conditionality, offering different (and we believe more effective) incentives for national governments to introduce badly needed structural reforms. And, finally, they would target EU citizens rather than governments or local administrations or intermediaries, meaning they would be more transparent and socially acceptable.

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# Comment on “The unbearable divergence of unemployment in Europe” by Tito Boeri and Juan Jimeno

By Gilles Saint-Paul<sup>118</sup>

Tito Boeri and Juan Francisco Jimeno have written a provocative paper. It contains novel economic analysis on the role of shocks and institutions in the evolution of unemployment in Europe and on the relevance of the natural rate of unemployment concept. But its main content lies in its policy proposals. The general view of the authors is that the conditionality imposed on troubled Member States by the European Commission or the Troika – fresh money, or a postponement of action required under the excessive deficit procedure in exchange for structural reforms – is counterproductive because it does not pay enough attention to cyclical aspects. A reform can be good if introduced in a boom but bad if introduced in a slump. By insisting that structural reforms should be implemented regardless of current macroeconomic conditions, the Commission and the Troika are adding fuel to the fire instead of helping the euro area exit the crisis. The authors suggest that what we call the “Brussels consensus” could be replaced by a nicer, friendlier approach to structural reforms, which in particular would make sure that institutions, such as unemployment benefits, pensions and employment protection, are cyclically adjusted, so as to reflect what recent empirical studies have found regarding the way relevant elasticities vary over the business cycle. The authors also argue that the Commission could use the structural funds to create incentives for individual countries to adopt some of the reforms they advocate, a feature they refer to as “positive conditionality”.

Overall, the paper is an important policy proposal which calls for a total overhaul of the current approach.

## 1 Methodological issues

I will first make a few comments on some methodological aspects of the paper.

In the first section, the authors propose a simple methodology to disentangle the role of shocks from that of institutions. They interpret movements along Okun’s law as due to shocks, and differences across countries in the slope of Okun’s law as due to institutions.

In my view, this method tends to put too much weight on shocks and not enough on institutions. To begin with, we generally think that the first order effect of institutions is to raise the equilibrium rate of unemployment, which is filtered out by Okun’s law since it relates the change in output to the change in unemployment. Furthermore, I can think of many changes in institutions that would move the economy along Okun’s law, such as an increase in the minimum wage. Okun’s law is not a structural relationship, just a rule of

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thumb. The structural relationship between output and employment – the conceptual equivalent of Okun’s law in well-specified models – is the production function, and clearly most institutions will move the economy along the production function. Okun’s law can be thought of as a shortcut which captures the extent of labour hoarding along the business cycle. The more responsive unemployment is to output growth, the lower the degree of labour hoarding. Labour hoarding is also, presumably, related to institutions such as employment protection, so we do expect countries with different EPL regulation to have a different Okun’s relationship. But this is certainly not the only thing one has in mind when discussing labour rigidities; it is not even the most important thing (wage bargaining systems probably matter more).

Second, the authors criticise the concept of a natural rate of unemployment (and consequently that of the output gap) on the grounds that estimates are not robust and that when allowed to vary over time in the specification, the estimated NAIRU (or NAWRU) closely tracks the actual rate. This critique has important policy consequences to the extent that the EU fiscal framework explicitly ties the acceptable level of the budget deficit to the output gap, with more unfavourable output gaps allowing for greater deficits; that is to say, what matters is the “structural” deficit, and one has to correct for the cycle.

I agree with the authors that getting a reliable, stable estimate of the NAIRU/NAWRU is tricky. But I do not know of any coherent macroeconomic model that does not have a natural rate of unemployment. The natural rate may depend to some extent on the lagged actual rate, implying it is not the same in the long run as in the short run. And such persistence can and must be taken into account when designing optimal policy rules, both at the country level and when searching for an appropriate EU-level fiscal framework. But if we dismiss the notion altogether, we have to replace existing macroeconomic theory with a radically different theory, and what is more it is no longer possible to rely on cyclical considerations to compute the acceptable level of deficit. There is no meaningful definition of the cycle if there is no definition of what output and unemployment would be in the absence of the cycle. In such a world the EU fiscal framework is obsolete but so are the authors’ recommendations for adjusting institutional parameters to the business cycle.

## 2 Policy issues

The economic arguments put forward by Boeri and Jimeno in favour of their proposed reforms make sense. But I believe they do not capture the whole picture. In particular, they ignore the political dynamics associated with decision-making and the context in which the bargaining process between the “centre” and the troubled countries takes place.

Boeri and Jimeno focus on three main examples of how the economy would work better if institutional parameters were made cyclically dependent. First, unemployment benefits could be extended in duration and be made more generous in slumps than in booms because job creation is less responsive to the generosity and duration of benefits in bad times than in good times. Second, the retirement age could be lowered in recessions (in an actuarially fair way, according to the authors), because “the jobs are not there” to absorb an increase in the labour force. Therefore, a higher retirement age simply means

fewer jobs for new entrants into the labour market. Third, employment protection legislation could be tighter in recessions, or at least it makes little sense to reduce the strictness of such legislation in a recession, because the impact of reforming employment protection is to destroy a mass of unprofitable jobs that survive only thanks to the regulation; this effect is more harmful in bad times than in good times.

While these points are well taken, their practical relevance also hinges on other considerations that are absent from the discussion in the paper.

By way of example, as unemployment started going up in 1974, the French government of Valéry Giscard d'Estaing and Jacques Chirac implemented an increase in the generosity and duration of unemployment benefits, which appears to be in line with the authors' advice. Yet the increase turned out to be very difficult to offset and contributed to the secular rise in unemployment rates that took off in the 1970s. Making unemployment benefits more generous in a recession with the hope of offsetting it later runs into the problems of economic and political hysteresis. By economic hysteresis I refer to the phenomenon of the reduced job search intensity of the unemployed increasing long-term unemployment and wage pressure and postponing recovery. The authors seem to downplay this effect because the "jobs are not there". But in fact we do know that job flows are large in both directions and that even in a recession an economy creates many jobs. By political hysteresis I refer to the fact that when it is time to reduce the generosity and duration of the benefits, there will be a lobby that may successfully oppose it. For example incumbent employees may fear that such a reduction would reduce their "outside option" in the wage-setting process. These observations certainly square with the French anecdotal evidence. An obvious solution to this commitment problem would be to delegate the cyclical adjustment of the unemployment benefit parameters to an independent agency, in line with the arguments for delegating monetary policy. But it is not possible to have a complete contract for designing the mandate of such an independent agency, as the many discretionary moves undertaken by the ECB during the crisis teach us.

As for the cyclicity of retirement age, I think it would run into even greater political difficulties for reasons of intergenerational fairness. If workers have to retire in a recession at a younger age, under "actuarially fair terms", this means that their pensions will actually be lower than those of the workers who retire in expansions. As long as some individual freedom to pick one's own retirement age remains, I do not see why workers would sign up for this. Of course one could give the same pension to those who retire earlier, but this is then unfair to those workers who retire in booms<sup>119</sup> and takes us back to discretionary pre-retirement schemes that were used for years before being discredited as contributing to the insolvency of public pension systems.

The logic behind such a proposal seems to be that it is acceptable or desirable to reduce aggregate supply if aggregate demand is low. It is in fact similar to proposals, such as working-time reductions, that are based on the lump-of-labour fallacy. But I do not know

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<sup>119</sup> In fact it is unclear what "actuarially fair" means if some workers are compelled to retire at a different age than others, because we do not know the choice an individual would have made between consumption and leisure under free markets. And this choice differs from one individual to another.

of any reasonable model where adding a negative supply shock to a negative demand shock improves outcomes.

Let me now turn to the question of whether employment protection legislation should be reformed in booms or in slumps.

I agree that the impact of reducing the strictness of EPL is a mass of job destruction and that the positive effects on job creation are reaped only gradually. However, it does not follow that it is better to implement the reform in an expansion than in a recession. It is quite possible in principle that the job losses associated with EPL reform are lower in recessions than in expansions, for example because, intuitively, firms will layoff many workers during a recession even under the initial level of EPL, leaving fewer jobs under threat when the regulation is relaxed. Of course it is also true that, in a recession, the opportunity cost of work is lower, making it more valuable to keep people in their jobs. At the end of the day we want to know more about the cyclical behaviour of the wedge between the private and social opportunity costs of work at the job destruction margin, assuming such a wedge would exist in the absence of EPL, which is not obvious. Similarly, from a political economy perspective, the recession may reduce the uncertainty about who will lose their jobs as a result of the reform, by making the jobs of those who remain employed more secure. This makes it easier to bring together a coalition in favour of a reform of EPL at the end of a recession, after adverse macroeconomic shocks have helped identify the losers from the reform by allocating them to unemployment. I have referred to this effect as the “identifiability effect”.<sup>120</sup>

More generally, we may ask whether institutional parameters should be made cyclical. That is, do we want to supplement stabilisation policies based on fiscal and monetary instruments with other margins of adjustment?

In an ideal world, any policy parameter should depend on all the relevant information. Therefore, it should depend on macroeconomic conditions. One always does better by conditioning on macroeconomic conditions than by not doing so, since the latter is a special case of the former. However, if institutional parameters are stickier than interest rates or budget deficits, it may be because they are more costly to adjust. And there is some virtue in making these parameters more predictable to economic agents, which wouldn't be the case if they changed all the time.

As for the macroeconomic timing of the reforms, even though many of them are best implemented in booms, political logic makes them more likely to happen in slumps. In a boom the politician in power is all too happy to capitalise on existing good macroeconomic conditions and will not jeopardise his popularity by engaging in a structural reform with uncertain consequences, especially if the associated losses are front-loaded and the gains come later (perhaps after the next election). Furthermore, assuming that society is constantly learning about the costs and benefits of reforms, it should rationally infer in a boom that rigidities are not that costly, and infer the opposite in bad times. This effect alone would tend to favour reforms in bad times. Finally, one should keep in mind that even if the net present value of a reform may be lower in a

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<sup>120</sup> See Saint-Paul, G. (2000), *The Political Economy of Labour Market Institutions*, Oxford University Press, Oxford.

recession than in an expansion, as long as it is positive one should implement it without any delay.

The authors then argue that the current EU conditionality framework is inadequate because it is counterproductive to impose structural reforms in a slump in exchange for more fiscal leniency, as these reforms are likely to amplify the macroeconomic crisis and therefore run against their purported goal of fiscal consolidation. In particular, imposing cuts on the welfare system, such as pension reforms or reductions in unemployment benefits, may be particularly harmful in the light of the arguments developed by the authors about the optimal cyclical adjustment of these policies. Furthermore, the costs of such reforms may disproportionately fall upon the poor.

In the case of the action required by France under the excessive deficit procedure, the country has been allowed by the Commission to postpone its Stability Programme and run a deficit above 4% of GDP for many years in a row, in exchange for the promise of structural reforms. A key criterion for such leniency is that the macroeconomic situation is not good enough to take the risk of supplementary fiscal adjustment. And if we compare the policy mix faced by the country – zero central bank interest rate and a 4% budget deficit – with the one that had prevailed before the crisis for similar unemployment levels, we can conclude that it is much more expansionary. This exemplifies the fact that the Commission is well aware of the adverse macroeconomic conditions in France, but believes that they should lead to a postponement of fiscal effort rather than a postponement of the structural reforms. In some senses, the Commission considers that the expansionary policy mix, which is justified by business-cycle conditions but runs against the objective of fiscal stabilisation, is sufficient to make the required structural reforms acceptable. We want to understand why the Commission does not follow the advice of the authors and accept the postponement of structural reforms, or even abandon “negative conditionality” and turn to “positive conditionality”. We may even challenge the “Brussels consensus” and ask whether it is legitimate for the Commission or Troika to grant fiscal support on the condition that structural reforms are carried out if these reforms are unrelated to the crisis at hand and may even worsen the fiscal situation in the short run.

In my view, the key justification behind conditionality is that a country that is plagued by structural rigidities is bound to end up in another fiscal crisis because it will always be tempted to inflate its economy above its (suboptimal) equilibrium rate of activity by using fiscal policy. This is a built-in mechanism for cumulative imbalances between euro area countries in terms of public and foreign debt and real exchange rates as long as there are too many asymmetries in market imperfections between these countries. By imposing structural reforms the Commission or Troika is therefore buying a commitment for a more responsible fiscal stance in the future, in exchange for accepting a looser fiscal policy now.<sup>121</sup>

At the end of their paper, the authors give three examples of policies that would improve labour market performance that could be promoted by the European Commission.

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<sup>121</sup> One should also add that countries remain free to consolidate their budget by cutting expenditures that benefit the poor less than social expenditures, or even by raising taxes.

1. An “equal opportunity” employment contract, by which the worker would accumulate rights to severance payment by contributing to an account which would automatically index this severance payment to the duration of a job. According to this model, while workers with greater tenure have higher severance payments than more junior workers, it is not more costly for the firm to fire them. Their greater rights only come from the greater balance on their account. This is in contrast to the concept of “single contracts” that has been proposed in France, for which the firing cost increases with tenure.
2. An allowance that would subsidise labour mobility between European countries. This would compensate for the relative lack of portability of social rights, which remains pervasive even though it contradicts the provisions of the Single Market.
3. A European unemployment benefit programme, which, if I understand correctly, would involve a transfer in favour of countries with relatively high unemployment, and would be more attractive, the less generous the initial system is. This scheme would only be made available if the country has shown sufficient progress in implementing labour market reforms, such as moving towards a single contract in line with recommendation 1 above.

The policies would be supported by “positive conditionality”, i.e. using a carrot rather than the stick of negative conditionality, that is, accepting an adjustment programme only to the extent it includes the required structural reforms.

From an economic perspective, it is unclear why the kind of conditionality advocated by the authors is any more positive than the one embodied in the “Brussels consensus”. In the case of Greece, for example, conditionality is associated with a transfer from other European countries, much like the use of structural funds to pay for European unemployment benefit schemes involves transfers, at the expense of the countries that previously received these funds. One may always argue that the structural funds are inefficiently used, but it does not follow that they should be reallocated to the policies advocated by the authors. For those countries that are net losers from the structural funds and that would get nothing from an equal opportunity contract or a European unemployment benefit scheme (Germany, for instance), getting their money back is clearly a superior option. In the case of France and other countries that are under scrutiny for violating the Stability and Growth Pact, the carrot is their ability to infringe on a treaty they have signed, in a way that gives the government more resources than if it had respected the Treaty. Here again the distinction between carrot and stick is not so clear.

As for the policies that are proposed, we may ask why the authors pick these ones rather than many others that could have similar virtues, and, most importantly, what the principles are behind the position that such reforms should be promoted at the European level rather than the country level.<sup>122</sup>

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<sup>122</sup> The mobility allowance proposal lies in another dimension somewhat. Here fiscal transfers are used to offset the member countries’ inability to fully implement the principles of the Single Market. It is unclear why an individual country should pay for another country’s lack of compliance, although contributions to the scheme could be made conditional on the country’s level of compliance.

We may think of the European Commission as a paternalistic planner which has figured out that, say, the equal opportunity employment contract is good for Spain, despite Spain's reluctance to implement it, and is using EU money to improve the welfare of Spanish residents, against the will of their (democratic) government. The problem with this perspective is that it lacks an explanation for why the Spaniards do not implement this contract voluntarily – is this a cognitive limitation of the Spanish population or an outcome of the political balance of power in Spain? Also, why should other countries pay taxes so as to raise the welfare of Spain?

Or, we may think of the European Commission as representing the long-term interests of other European countries. If it is believed, perhaps wrongly, that excess accumulation of public debt by a member of the euro area may jeopardise the viability of the euro area (perhaps because its banks would be in trouble, compelling the ECB to provide liquidity, at some cost to the other members of the euro area, or perhaps because the ECB would not be able to refuse to purchase the debt of that country in the face of political pressure), then the objectives of the Commission differ from that of the country; the structural reforms that it will impose are the ones that are likely to quickly restore fiscal balance, such as pension reform and cuts in public expenditure, not the ones that are “optimal” for the country, for which, by definition, the country needs neither a carrot nor a stick.



# Structural perspectives on European employment: the role of innovation and growth

By Christopher Pissarides<sup>123</sup>

## Abstract

In this paper I examine the factors that lead to more innovation and growth and show the gaps that exist in Europe, especially in recent years. I evaluate the impact of growth on structural change and on job creation and job destruction. I argue that although growth can bring benefits to everyone there are also risks, such as job displacement and inequality in earnings, which need policy action. An examination of data from the United States and the European Union shows that the main employment implications of growth are shifts of jobs from the innovating sectors to labour-intensive services connected with business and real estate, retail and health and education.

## 1 Introduction

Innovation is essential in order to maintain a country's competitiveness in an open world economy. When there is a loss of competitiveness (because other countries innovate faster) the country does not export enough and foreign goods replace domestic production. If exchange rates are free to fluctuate the country's exchange rate depreciates, making the imported goods more expensive. There is a new equilibrium, which could in principle benefit the country after some internal adjustments. For example, if Europe loses competitiveness in low-skilled manufacturing as compared with China, its production lines of these goods stagnate and its exchange rate depreciates against the Chinese currency. But the Chinese become wealthier and could demand more European goods in sectors where Europeans still have the comparative advantage, for example in the production of luxury goods or tourism. The European economy adjusts in favour of the production of these goods and a new equilibrium is reached with both countries becoming better off.

This kind of optimistic scenario, however, ignores real-world distortions that could dramatically change the situation. One that is particularly pertinent to Europe is the fixed exchange rate that is imposed by the single currency. With fixed exchange rates and free capital mobility the loss of competitiveness could have dire consequences. If a trading partner gains competitiveness its goods become more attractive and the imports of the lagging country increase. Domestic production stagnates but relative prices cannot adjust to correct the imbalance because of the common currency. The country runs balance of

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<sup>123</sup> London School of Economics and University of Cyprus. I have benefited from the comments of P. McAdam and J. Fernald.

payments deficits which are ultimately financed by foreign debt. The equilibrium becomes unsustainable if the balance of payments deficit is not corrected quickly.

This is a problem faced by countries in the euro area which fail to keep up with innovation and productivity growth in the larger economies. The treaties establishing the single currency did not specify a course of action in response to balance of payments deficits, which creates uncertainties and policy failures. It is essential that countries of the euro area converge to common rates of productivity growth through innovation and (if necessary) structural reform in order to maintain a sustainable equilibrium in the monetary union without the need for large-scale migration flows or fiscal transfers.

Sustainable growth over long periods of time can only be achieved with innovation and technology adoption. Without innovation there can be only short episodes of growth that are either associated with reconstruction after some catastrophe that destroys the country's capital stock or some structural reform that opens up more markets for investment. There can be full employment, but it will be at lower wages, low productivity and will waste a lot of human resources. Very often this waste comes in the form of underemployment in agriculture, domestic services or the public sector. Wage growth and the creation of "good" jobs depend on innovation and productivity growth.

The important questions that will occupy me in this presentation are the market conditions that are conducive to more innovation and growth and the channels through which more innovation influences the dynamics of employment. I will argue that innovation and growth can benefit all sections of society, but policy is often needed to give extra incentives and to help reintegrate any losers in the new economy. My focus will be the structural changes that are caused by innovation and growth and the implications that they have for employment.

In Section 2 I discuss the drivers of economic growth and the conditions that give more incentives for innovation. In Section 3 I argue that with uneven innovation across the economy there is job displacement in the innovating sectors and increased demand for the products of all sectors. I discuss the implications of this process for the distribution of employment and inequality in incomes. Section 4 expands the same theme by looking at long-run data trends and derives policy conclusions about the conditions needed to maximise employment following episodes of innovation. Finally, section 5 discusses the links between productivity growth and overall employment, in the light of the results derived in preceding sections.

## 2 Innovation and economic growth

Innovation can raise the productivity of all factors of production so both the owners of capital and the workers can have more income. How this income is allocated between them depends on their relative bargaining strengths and on market forces. One of the policy concerns in the last two to three decades has been that capital owners have been able to secure more of the gains from growth than they were in the long period of industrialisation that preceded them. This has raised income inequality across different labour market groups with potentially difficult policy challenges.

In general, wealth creation comes from growth and although in the long run innovation is the only driver of growth, there can be lengthy episodes of growth, some of which can stretch for up to two or three decades, without innovation. This mainly comes from above-average levels of capital accumulation but also from other sources. The employment implications of each growth episode depend on the reason for growth. Growth can come from a reorganisation of production, a weeding out of inefficiently employed labour and an improvement in the organisation of companies and markets. The impact of this development is very similar to that of innovation in the sense that it increases the productivity of labour, even if it is at the cost of some jobs. It is an innovation in a “general purpose” technology: office and production line reorganisation, as opposed to the more easily understood innovation activity that mainly has a direct impact on production.

Temporary growth episodes can also come from imitation and capital accumulation that rises above the trends of the past. Growth in Europe after the destructive activities of the Second World War was largely of this kind. When growth slowed down in the 1970s the leading European countries had more or less completed their reconstruction and got as close to the United States as their institutional structure permitted. Growth in Japan a little later and in the Asian “tigers”, including China, in the 1980s and 1990s was mostly of this kind as well (Young, 1995; Krugman, 1994; Kim and Lau, 1994). This kind of growth can be very fast, creating large amounts of wealth, but it cannot last beyond 20 to 30 years because of diminishing returns to capital. Eventually capital will need to find new and more productive ways of producing in order to maintain its high rate of return.

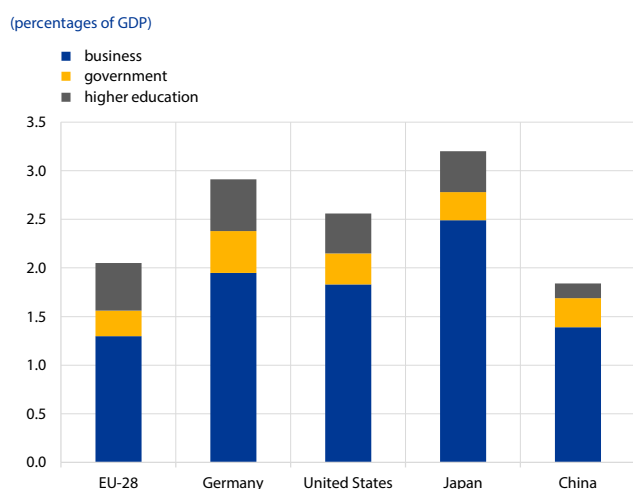
The only sustainable form of growth over long periods of time is new innovation. New innovation requires research and the incentive to apply the new ideas in the marketplace. The factors that are needed to make it happen, and to drive wealth creation, can be grouped into three categories: a well-trained labour force to generate and apply the discoveries, sufficient investment to enable the replacement of old and unproductive capital equipment, and a market environment that is flexible enough to accommodate the required changes in production before competitors get in first and take the benefits.

Europe as a whole does not have a good record in these dimensions, although there are exceptions. It has a well-trained labour force but when judged by the growth of modern technology companies it does not perform very well. The modern technology giants are mostly American or Asian, in particular Korean and Japanese. The way that higher education and research are organised is important in this respect. The best way to achieve results is to combine university research with industrial R&D, as is most successfully done in the United States in places like Silicon Valley, which benefits from its proximity to the high-level universities of Stanford and Berkeley. It is not easy to achieve high standards in research in most countries, to some extent because of educational policies that do not give top-level researchers the incentives to work in those countries. At the higher levels of research, workers are very mobile and they need strong incentives to stay in countries that offer worse facilities through their universities than the very top ones.

The incentives needed by top researchers are not just high salaries that reward their input into research. In order to achieve high standards in research, universities need to be well-funded and independent. In most countries and most universities funding is primarily provided by the government so it may be difficult for politicians to accept that they should have limited say over salary levels, appointments, promotions and other types of

spending when they provide the money from tax revenues. But it is necessary if research is to be free of political interference. This is why there are large advantages to obtaining funding directly from private industry or distributing state funding through independent bodies, such as the National Science Foundation in the United States and the European Research Council in Europe. Interference with the university administrative structures and their internal procedures is less likely when the funding bodies are independent of national politics.

**Chart 1**  
Domestic research and development in 2012



Source: Eurostat.

In the United States university budgets are over 3% of GDP but in Europe they are less than half, about 1.3%. Americans also give more independence to their universities and public donations are more generous. According to influential observers, this is an important reason why Europe lags behind the United States in top university performance and top innovations (see Aghion et al., 2008). This is reflected in expenditure on R&D, which is also lagging behind the United States and Japan (Chart 1). Europe is still ahead of China but this is not likely to last for long, as Chinese R&D spending has been on an upward trend and it has closed a large gap vis-à-vis Europe in the last ten years. But there are exceptions. The success of German industry in producing top-level export manufactures is reflected in its R&D spending.

Successful innovation and growth also require investment because most innovations need new capital. The disembodiment assumptions of traditional economic theory (the Solow Growth Model) are convenient simplifications, not depictions of reality. In particular, new investment by private companies is needed to bring the new technology into being, and new investment by the public sector is needed to build the infrastructure that is a necessary means of support for private companies.

In total volumes, capital formation in Europe is on par with that in the United States, at about 18-20% of GDP (and well below the Asian countries, especially China). But the dynamics of investment in the recent crisis do not bode well for the structural recovery of the heavily indebted countries. In Chart 2, I show private investment in the United States, the European Union and the four “programme” countries. Whereas investment fell everywhere between the peak year of 2007 and 2012, when the recession ended (for most countries), in the heavily indebted countries private investment fell by a lot more than in the other countries.

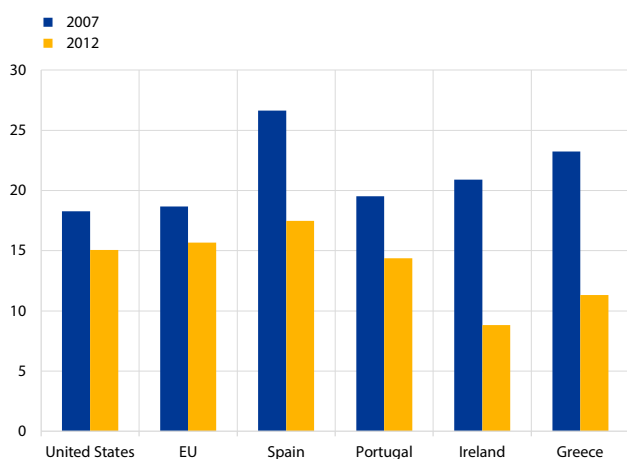
Public investment, which is more important for the infrastructure that supports productivity growth, tells a similar story (see Chart 3). In proportional terms, public investment fell more than private investment at a time when budgets had to be cut to check the explosion of debt. Public investment is the easiest to cut, or “postpone”, in government spending programmes, and this shows up especially in the indebted countries of the euro area. Whereas in the United States public investment fell by a mere 6% and in the European Union as a whole by 11%, in the four indebted countries it fell between 40% and 60%. This of course cannot be good for their recovery or even for their

debt reduction programmes. At a time when GDP levels fall on account of a recession, a robust way of cutting the debt is to focus the government spending programmes on items that yield a return in the future. Government fixed capital formation is foremost amongst these. Ultimately, the fault for this fall in infrastructure spending lies with the rescue programmes, which did not discriminate between different kinds of government spending.

**Chart 2**

Fixed capital formation, private

(percentages of GDP)

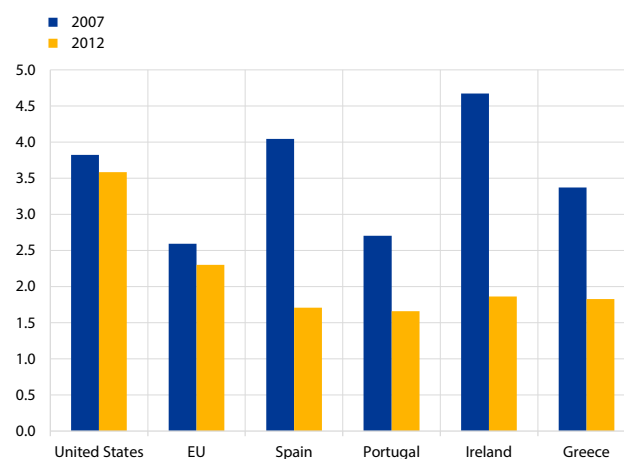


Source: OECD National Accounts at a Glance 2014.

**Chart 3**

Fixed capital formation, public

(percentages of GDP)



Source: OECD National Accounts at a Glance 2014.

Finally, innovation and productivity growth also need well-functioning labour and product markets. Labour markets need to be flexible because innovation carries risks. Start-ups and older firms introducing new products need to know that they can recruit the workers quickly and terminate contracts quickly should things not work out. Inflexible labour markets make firms too cautious and introduce too many administrative burdens that work as disincentives to innovation. Administrative burdens add to costs and managers are cautious not to get into risky situations, where there is no easy escape. A flexible labour market will not by itself lead to more innovations but it will remove impediments that could reduce the innovation potential of the country. It helps in the speedy implementation of innovations and the faster adaptation to new technological conditions. The ability to do this makes countries more competitive in world markets and so gives them additional incentives to invent new cost-cutting techniques.

The same applies for product market regulation, especially as it applies to new enterprises. High start-up costs, either as direct payments or administrative procedures, act as disincentives to the formation of companies and to the dissolution of the unsuccessful ones. High administrative operating costs have similar effects and encourage the development of an underground economy, which is a strong disincentive to new innovation. When a job is not secure because it is not registered and regulated neither the employee nor the employer has an incentive to engage in research or training that improves the productivity of the workforce. In countries that have open capital markets, such as those in the European Union, high administrative costs in one country lead to the migration of companies to other countries that have friendlier business environments.

The reward structure within the company and in the labour market as a whole should be such that it rewards the successful innovators more generously than the rest, even if the input is similar. The incentive to innovate is greater when success brings large payoffs. But here one needs to be concerned about inequality because larger inequality resulting from large rewards to successful innovators will create tensions and potential conflict. The balancing of financial incentives for top innovators with sufficient payoffs for lower-level employees may vary from country to country and even from company to company, depending on both economic factors, such as the structure of taxation and non-economic factors such as attitudes towards inequality.

Finally, there is the issue of competition and innovation. Although there is some controversy in the economics literature about the connection between the two, there is no doubt that when there are monopolies which are protected by the state or by other barriers, the incentive to innovate disappears and the company stagnates. In general, product and labour markets need to be competitive to attract new innovation. Even in situations where a large player dominates the market, there should be no barriers to entry that can give protection to the incumbent. In market environments where there is either actual or potential competition from new entrants the incentive to innovate is greater because the incumbent needs to do so to keep ahead of the competition. Popular literature about business success emphasises that the truly successful businesses develop “monopoly” power through innovation, by which it is usually meant a niche that keeps them ahead of the competition (see, for instance, Thiel, 2014). In market environments where competition is low, reforms to improve the competitive environment enhance the incentives to innovate (Aghion et al., 2005).

### 3 Innovation, job creation and job destruction

Innovation brings wealth creation and more prosperity but how does it influence employment? The impact of innovation on jobs is both controversial and important. Workers fear that innovation will destroy their jobs and displace them; yet a well-functioning society should be able to share the rewards from more growth for the benefit of all. The best way to share the rewards from new growth is through employment, in particular it is to ensure that growth is inclusive. Transfers and redistribution are easy political options in many societies but they are not good for inclusiveness, either for the morale of the workers themselves or for economic incentives. The important questions to ask relate to the ways in which innovation and growth influence new job creation and whether any displaced employees are absorbed quickly back into employment. Policy should aim to improve inclusiveness through facilitating the transition of workers from old to new jobs rather than through passive income support after displacement.

Many commonly heard discussions about the relationship between innovation and jobs suffer from what one might call an aggregation fallacy. There is no doubt that a company that is a successful innovator creates more jobs, but usually this is at the cost of jobs at its competitors. Even if the company is a perceived monopolist this is still the case. For example, Google displaced a lot of jobs in non-digital advertising and selling, even though a newspaper may not be regarded as its direct competitor. Amazon displaced many jobs in high street bookstores. But if we aggregate over all companies in a sector we find that

innovation usually destroys jobs in the sector as a whole. The jobs created by the innovator are not enough to replace all jobs destroyed in the competitor firms that fail to innovate. It is very likely that fewer person-hours are today employed to sell a euro's worth of books than before Amazon was created. But at the level of the economy as a whole innovation creates jobs through the wealth creation and higher incomes of those working for the successful innovators. The jobs are created elsewhere, usually in labour-intensive services.

The way that this works and the impact that it has on the total number of jobs in a company or sector depend on the substitution possibilities between goods. When an innovation delivers a good at lower cost the jobs that produce close substitutes receive a negative shock – because demand for their products falls. But jobs that produce goods that are broadly complementary to the innovating goods receive a positive shock, as demand for their products will increase. To refer again to the book-selling example, high street bookstores and Amazon offer similar services that are strong substitutes for each other but bookselling as a whole is complementary to most other retail services. So if innovations in online marketing for books reduce the resources that go into book selling as a whole, the released resources spill over into other retail sectors and the profitability of jobs in those sectors increases.

Historically, innovation has been uneven across sectors of the economy. Before looking more closely into the implications of this for employment, I discuss more generally the type of jobs that are created in the economy as a whole when there is new innovation in some sectors.

Usually the jobs that are created to absorb the workers who are displaced by innovation are in service sectors, where the possibilities for labour-saving technology are limited. Such jobs are in both business and personal services. As businesses become larger and more complicated with new and more specialised technology they hire more specialist service providers. These could be hired by the firm to provide the services internally, in which case they are classified as workers in the sector of the firm, or the firm buys the required services from specialist providers (outsourcing), in which case the workers providing them are classified as business services employees. Distinguishing between the two in official statistics is difficult but given the large growth in service jobs in the business sector it is likely that there has been net growth in addition to the rapid expansion of outsourcing.

Job creation in the personal services sector is much more straightforward to understand. As wealth grows households travel more, consume more and require better service that saves them time, a resource that becomes more valuable with rising living standards. This is reflected in the growth of jobs in retail, catering, health care, child care, education and domestic service. Despite many technological improvements that benefit these types of jobs, especially retail, they are ultimately jobs that provide services directly to the public relying on person-to-person contact. For example, in the retail sector technological improvements in stock taking and re-ordering may accelerate the time needed to deliver products, but when visiting stores customers evaluate the quality of service from the personal contact that they have with the retail assistants. Similarly, domestic service has been revolutionised with the invention of consumer durables and gadgets; however, although one might safely argue that the number of domestic employees is not as great

as it was at the beginning of the 20th century, the number of employees in domestic jobs recorded in official statistics is growing as incomes grow (this is documented in the KLEMS database; see Koszerek et al., 2007, for a description and Ngai and Pissarides, 2007, for an analysis of the US case).

Jobs in both business and personal services could be well-paid jobs but there is no guarantee that they will be, especially the ones in the personal sector. In contrast, the profits that go to the innovators that displaced the workers in the first place are usually very high, otherwise the incentive for innovation would not be present. Countries that do not offer high rewards to innovators may end up with less inequality between the innovators and the service providers but they will also be characterised by less innovation. Countries that permit the growth of large inequalities attract more innovation activity and the final outcome is the one that I have described; high profits go to the innovators and whether wages in the jobs created elsewhere are also high depends on other factors. We see in this the risk of increasing inequality in innovating countries. Balancing the two – the high rewards necessary for innovation with the desire to raise wages across the board – is one of the biggest challenges that societies face today.

## 4 Innovation-induced structural change and job creation

I now look at the dynamics of employment during periods of growth and structural change, beginning with a long-term look at the United States. I have chosen the United States for this because it is the leading nation in innovation and its implementation. It also has reliable data going back more than 100 years. Similar stories can be told about other industrialised economies and I will refer to some important cases.

In 1900 in the United States, when industrialisation was well under way, 35% of employment was in agriculture, another 35% in industry and the remaining 30% in services. Agriculture was mainly based on family concerns and was inefficient. Services were also inefficient. Large numbers of new immigrants were working in domestic service, looking after the children and homes of rich industrialists. John Leeds (1917), in one of the very first house-to-house surveys of working conditions in Philadelphia, found that middle class homes employed a large number of people in the early 20th century, working as cleaners, washers, clothes makers and maintenance workers.

Then the big innovations started reaching the general public: cars, refrigerators, washing machines, vacuum cleaners and the many other household appliances that today we take for granted. There has never been a more intense period of innovation and there will probably never be one again (Gordon, 2012, 2014). People became wealthier and the demand for all kinds of goods and services grew rapidly. But the share of employment in industry, where all this growth had started, increased just a little, from 35 to 40%. It remained at 40% until 1970 when the big innovations came to an end and growth slowed down. It subsequently declined to 20%, in the face of competition from Europe and Asia that had copied US technology. The domestic service that John Leeds found in 1900 had virtually disappeared, the workers being displaced by machines. Agricultural employment also virtually disappeared, falling from 35% of total employment at the beginning of the



twentieth century to 3% at the end. The main beneficiary from all this growth was services, which now account for more than 70% of employment.

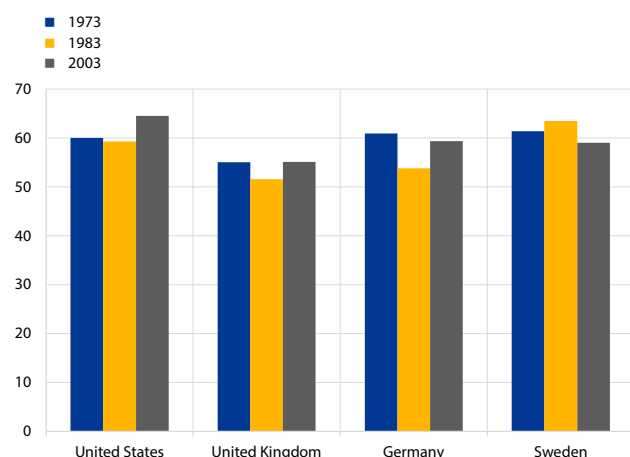
This story illustrates that innovation is needed to increase a country's wealth and competitiveness but the jobs created to employ the citizens of the innovating country are not in the sectors that experience most productivity gains. The jobs are created elsewhere, where productivity gains are much smaller, because wealthy citizens are also big spenders and want professionals to look after them when they are sick, to educate their children and to manage their businesses and properties (see Baumol, 1967; Ngai and Pissarides, 2007).

European countries share this experience. Consider three of them: the United Kingdom, Germany and Sweden. The data that we have come from the sectoral data set KLEMS, which goes back to 1970. I report consistent data for the population aged 15 and above for the United States and the three European countries. In Chart 4 I report overall employment rates for 1973, the year of the productivity slowdown, 1983, when productivity turned mostly up and 2003. Sweden is the only country that succeeded in increasing overall employment between 1973 and 1983 but it did it so through a large expansion of its public welfare programmes. Industrial employment declined everywhere and service employment increased. Comparing 1973 with 2003, overall employment rates changed a little, except in the United States where they grew faster as a result of the growth of female participation rates.

The more interesting data for our purposes is shown in Chart 5. The decline in industrial and agricultural employment was replaced, with some overall gains as shown in Chart 4, by business services and those catering for the individual (including health and education) in approximately equal measure.

**Chart 4**  
Employment rates in four countries

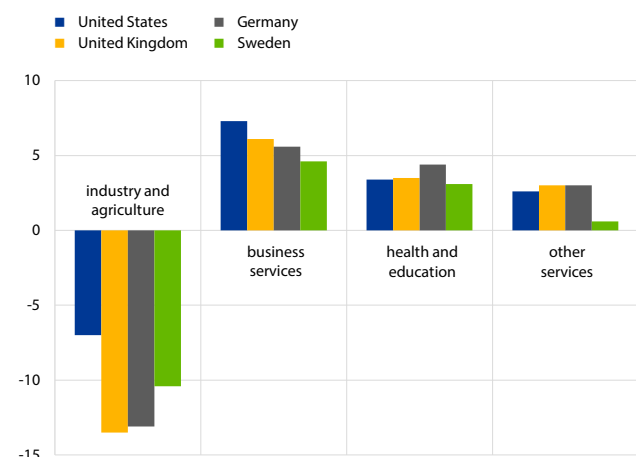
(percentage of population aged over 15)



Source: EUKLEMS data.

**Chart 5**  
Change in employment rates between 1973 and 2003

(percentage of population aged over 15)



Source: EUKLEMS data.

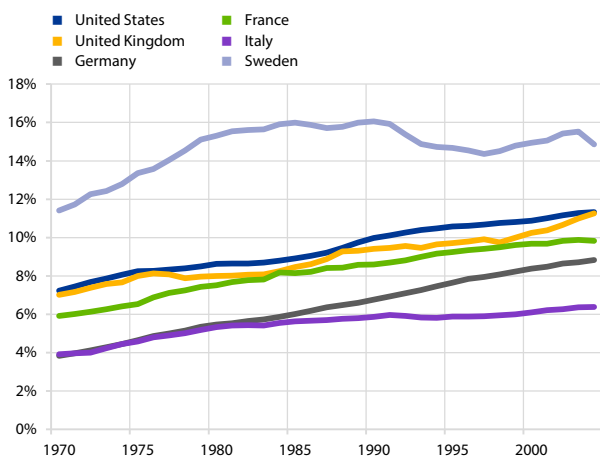
The implications of this transition for policy, in Europe and elsewhere, are clear cut. Incentives for R&D are needed to speed up productivity growth, which is the only source of new wealth in the medium to long run. These could take the form of more favourable

tax treatment for R&D activities, better protection of property rights, the effective implementation of patent laws and more generally a more favourable environment for business activities than we find in many European countries. Since the new jobs that are created to absorb the workers who are displaced by new technology will most likely be in labour-intensive services it is necessary to liberalise services and make it easier to start and run new businesses. Freeing services from excessive regulation and creating a single market in services in Europe is still incomplete, something that reflects political pressures and constraints rather than any serious economic obstacles.

**Chart 6**

**Employment rates in health and education**

(percentage of population aged over 15)



Source: EUKLEMS data.

Women have a comparative advantage in the performance of service jobs. Especially older women, whose participation is weak, have a considerable advantage in health care jobs, which is a major growth sector. Europe is still behind the United States in getting rid of discrimination and creating a female-friendly work environment. Sweden has succeeded in drawing women of all ages into the market through the subsidisation of jobs where female labour has the advantage, especially in the health and education sectors (see Chart 6). The United States and United Kingdom have also been more successful in employment growth in these sectors, mainly through the expansion of their higher education sectors. But many other countries, especially in southern Europe are still a long way behind in achieving the European Union’s employment targets for women.

## 5 Productivity growth and aggregate employment

Economists often find it a challenge to rationalise the relationship between productivity growth and overall employment levels. A similar difficulty arises when explaining the relationship between productivity growth and unemployment. Economic theory helps more in our understanding of the relationship between the level of productivity and employment than it does in our understanding of the relationship between productivity growth and employment (or unemployment). Yet, statistically there seems to be a positive correlation in both cases (Pissarides and Vallanti, 2007).

An economy that has higher productivity can afford to pay higher wages for market work. The interaction between wages and productivity has two implications for employment. The first is that higher wages attract a greater supply of labour, mainly through higher rates of participation for women and older people. The second is that higher productivity brings more success in international trade.

The trade-offs that influence the participation of women and older people are associated with comparing the advantages of staying at home and engaging in “home production”, work that is not remunerated but is consumed by the household, and of participating in market work and “marketising” the home work; eating in restaurants more frequently,

employing childminders and cleaners, and so on. In countries where market work is more rewarding marketisation is more common and employment rates are higher. The driving forces for this effect are the higher wages that more productive labour could attract (Freeman and Schettkat, 2005; Ngai and Pissarides, 2008).

International trade is another factor influencing employment that is linked to productivity. More productive countries export more because their products are more competitive in international markets. More exports mean a larger tradable sector, which is entirely market based, and so there is more market activity. More trade is also associated with more wealth, and in turn with more demand for labour-intensive services.

Productivity growth also has a considerable influence on employment and unemployment. In traditional static models of labour market equilibrium there should be no connection between productivity growth and employment or unemployment. But statistically there is such a relationship. In order to rationalise it we need to think in dynamics terms; that is to say, we must think of job creation as a capital investment. The employer invests in the creation of the job position and spends resources on recruitment, which are costly as they must search for the right person, provide training on or off the job and make initial capital outlays. In such an environment there is a “capitalisation” effect on job creation which is a result of productivity growth. When employers anticipate productivity growth they will hire more intensively so as to be able to take advantage of the higher productivity when it arrives. This has an impact on both employment and unemployment.

## 6 Conclusions

Innovation and technology adoption are the only sources of sustainable economic growth in the longer term. In this paper I discussed the factors that lead to more innovation and technology adoption, in particular R&D, investment in infrastructure and education and a favourable business environment. I have argued that Europe needs to do a lot to improve its performance in all of these, especially when compared with the United States and the leading Asian economies. Growth brings rewards but in order for it to be inclusive the market environment needs to be conducive to the creation of good jobs in the service sector. In this connection much needs to be done in European Union countries in order to avoid exclusion and increasing inequality.

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# Comment on “Structural perspectives on European employment: the role of innovation and growth” by Christopher Pissarides

By John G. Fernald<sup>124</sup>

I make three points in this comment. First, ideas are global, but have to be implemented locally. There is a global frontier of knowledge; policies and institutions then shape the degree to which individual countries benefit from them. Second, whether a country implements reforms or not, there will be structural changes in employment – structural policies (i.e. reforms) simply determine how much you benefit. Third, the future pace of innovation at the frontier is uncertain, which makes sensible policies all the more imperative.

## 1 Introduction

The starting point for this paper is that innovation is crucial for raising living standards over time. Chris Pissarides extends this point by providing a clear vision of how innovation links to structural change and employment growth.

The key finding is that structural change is an important channel for benefiting from innovation. More innovative economies have greater increases in employment. However, crucially, the employment gains tend to occur *outside* of the innovating industries themselves. The interrelated imperatives of innovation and structural change drive the policy recommendations made in the paper by Chris Pissarides.

I largely agree with the vision set forth in this paper. In my comments, I emphasise a more global perspective and look closely at how the United States and Europe compare. In taking this perspective, I provide some concrete examples of how Pissarides’ vision applies and suggest some nuances. In the conclusion, I identify possible implications for policy.

I will make three points. First, ideas are global, but have to be implemented locally. Second, there will be structural changes in employment regardless of barriers and rigidities; those barriers and rigidities may simply work to limit the benefits that accrue from ongoing employment shifts. Finally, the future pace of innovation is uncertain, which makes sensible policies all the more imperative.

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<sup>124</sup> Federal Reserve Bank of San Francisco. The views in this comment are my own and not necessarily those of others associated with the Federal Reserve Bank of San Francisco or the Federal Reserve System. I thank Bing Wang for helpful research assistance.

## 2 Innovation is global

My first point is that ideas are global, but have to be implemented locally. There is a global frontier of knowledge, but country-specific policies and institutions shape the degree to which any individual country benefits from frontier ideas. I will illustrate this point by comparing productivity data for selected countries with that for the United States, and then give some detail on the US experience.

Chart 1 shows labour productivity, measured as GDP per hour worked relative to the US level, for various economies in Europe and elsewhere.<sup>125</sup> The United States is normalised to 100. Advanced economies grow fast and converge towards the US level in the post-war period. For example, Greece and Japan run together until the 1970s, when Greece levels off at about half of the US level. Japan continues to grow rapidly until about 1990, when growth flattens out at about two-thirds of the US level. France and Germany catch up until the mid-1990s, at which point they are just below the US level.

This figure for advanced economies is consistent with a framework of “conditional convergence”. Countries far from the frontier can grow rapidly and converge towards US levels of productivity and GDP per capita. When countries reach their own “conditional” steady states, they grow at a rate similar to that of the frontier.<sup>126</sup>

Why would advanced economies grow at similar steady-state rates? The reason is that ideas do not respect borders. Innovations in one country are, in principle, available in all countries. In some cases, innovations can be directly observed and (perhaps with some effort) replicated. In other cases, key innovations are embedded in tangible or intangible goods that can be purchased, such as information technology hardware and software. Furthermore, cross-border investments also transfer knowledge.

Nevertheless, ideas flow imperfectly across borders, so there is still an important local dimension to innovation. Pissarides’ paper focuses mainly on this aspect. In a conditional convergence model, local institutions determine where countries level off relative to the frontier. In almost all cases, it turns out to be short of US levels of productivity.

Equally interesting in the light of Pissarides’ paper is that, after the mid-1990s many continental economies actually diverge from US levels. Understanding this divergence sheds light on the imperfect flow of ideas across borders. My analysis of the interaction of ideas and institutions is consistent with the spirit of Pissarides’ paper. Specifically, innovations that raised productivity growth in the United States were not replicated in Europe because of institutional barriers.

To understand this story, let me now discuss US productivity, drawing on Fernald (2014b). Chart 2 shows the log level of business sector labour productivity in the United States since 1973. In the mid-1990s, there was a sharp pick-up in growth rates, shown as a steeper slope, but it did not last. Formal statistical tests for breaks in labour productivity

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<sup>125</sup> The Conference Board data used in this chart look reasonably similar to that in Bergeaud, Cette, and Lecat (2014).

<sup>126</sup> See Jones and Vollrath (2013) for a discussion of growth models and how conditional convergence fits into them.

growth – or in total factor productivity (TFP) growth – find that it sped up in the mid-1990s and was followed by a statistically and economically significant slowdown in the early to mid-2000s.

The statistical tests put the break several years prior to the Great Recession. Indeed, looking at the four years prior to the Great Recession, as shown by the vertical line, the growth rates of both labour and total factor productivity were almost identical to what we have seen in the seven or so years since it began.

A vast literature has explored that speeding up in productivity in the mid-1990s and found that it reflects innovations related to the production and use of information technology – computers, communications equipment, software and the Internet.<sup>127</sup> Much more than just buying IT, the benefits often come from substantial reorganisations in how business is done. Sometimes, reorganisations are done by existing firms, sometimes by new ones. Conceptually, these reorganisations are intangible investments in organisational capital, which (plausibly with a lag) raise measured productivity growth for a time.<sup>128</sup> For example, wholesale and retail trade was revolutionised by Walmart and others, who designed business models that were complementary with improvements in information and communications technology. These more productive firms expanded at the expense of less productive ones, such as “Mom and Pops”.<sup>129</sup>

Only a small literature has looked at the slowdown after the early 2000s. Based on aggregate data, many interpretations are possible. However, industry data on TFP are consistent with the slowdown being the flip side of the speed-up – it was an end to the exceptional pace of gains from IT.

Chart 3 decomposes aggregate TFP growth by subperiod into industry sources.<sup>130</sup> The bars sum to average TFP growth for the periods shown. The data for this decomposition are available for the period 1987-2011. To avoid cyclical effects related to the Great Recession, I will focus on the period up to 2007. Focusing *before* the Great Recession highlights that the slowdown in productivity predated the Great Recession.

I have divided the bars into four mutually exclusive parts. First, there were the unusual features of the mid-2000s – with the housing boom and subsequent bust; excesses in the financial sector and surging commodity prices. The first slice of the data focuses on the “bubble” sectors of the mid-2000s, i.e. construction, real estate, finance and natural resource industries. The contribution of these industries to overall TFP fell – becoming more negative – from the period 2000-2004 to the period 2004-2007. But the contribution of the remaining three-quarters of the economy fell even more, as shown by the bars that lie above zero.

These non-bubble sectors are further divided into three mutually exclusive parts: IT producing, intensive IT-using, and non-IT-intensive. The latter two categories are based on

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<sup>127</sup> See van Reenen et al. (2010) for an extended discussion; Fernald (2014b) provides a more recent discussion.

<sup>128</sup> See Basu, Fernald, Oulton and Srinivasan (2003) for a model of how IT-related intangible investments map to growth accounting.

<sup>129</sup> See Haltiwanger, Jarmin and Krizan (2009).

<sup>130</sup> The figure is taken from Fernald and Wang (2015), and is based on Fernald (2014b).

estimated shares of IT capital in industry value added. These two categories are divided so that their total size, in terms of GDP, is the same.

As the figure shows, the TFP slowdown is concentrated in industries that produce IT or that use IT intensively. The contribution of IT producers, especially semiconductors, was inordinately high in the late 1990s. That sector alone accounts for over half of overall TFP growth in this period – even though it accounts for only 5% of the economy.

In the 2000s the pace of TFP gains in IT production eased. Hence, the direct contribution of IT-producing industries fell. However, the contribution of intensive IT-using industries bulged – before then receding markedly in the 2004-07 period.<sup>131</sup> That pattern is consistent with the view that, by the mid-2000s, the “low-hanging fruit” of IT-based reorganisation had been plucked. For example, in wholesale and retail trade, the outsized gains ended once the industry had been reorganised and low-productivity establishments driven out. After that, the industry returned to more incremental growth.<sup>132</sup>

This analysis is why I agree with Blanchard, Cerutti and Summers (2015) in their paper given at this conference, that there was a change in underlying US productivity growth around the time of the Great Recession. However, in contrast to the view in that paper, the slowdown predated the Great Recession and it was linked to information technology.

Yet, even if it were just a one-time boost in the level of productivity, Europe never received that boost at all: it just got the slower underlying trend. The leading hypothesis in the literature as to why Europe did not experience these gains is consistent with Pissarides’ arguments, namely that product and labour market regulations got in the way.<sup>133</sup> For example, van Reenen et al. (2010) note that labour market regulations “impede firms’ abilities to hire, fire, pay and promote in a way that maximises their productivity.” They find that stricter European regulations “hamper the ability of European firms to rapidly adapt their organisational structures to most effectively use new ICT technologies” (p. 19).<sup>134</sup>

In other words, as Pissarides emphasises, benefiting from innovation – whether through the direct production of new ideas or through its diffusion – requires structural change. It requires creative destruction and the reallocation of resources.

Of course, structural change can be socially costly. Incumbent firms and workers with stable jobs may well prefer to remain protected from the process of creative destruction. I turn next to the question of whether there is, in fact, a substantial trade-off between the benefits of innovation and the costs of structural change.

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<sup>131</sup> A few of these IT-intensive industries are in manufacturing, but many of the are in services, including broadcasting and telecommunications, wholesale trade, utilities, and professional and scientific services.

<sup>132</sup> See also Cowen (2011) and Gordon (2014).

<sup>133</sup> See also van Ark, Inklaar and McGucken (2003), Gust and Marquez (2004), van Reenen et al. (2010), and Bartelsman (2013). Van Reenen et al., in particular, provide micro-evidence on the linkages.

<sup>134</sup> In his speech at this conference, President Draghi noted some of the differences in IT usage and efficiency between the United States and Europe.



### 3 Structural change is going to happen

This brings me to my second point: structural change is going to happen, whether we want it to or not.

This point implies that there might be less of a trade-off than one might think between the benefits of innovation and the costs of structural change. To make this point, I compare industry evolutions across countries, in a similar way to Pissarides in his paper, but with even more industry detail. In the past few decades, despite substantial differences in product and labour market rigidities, the cross-industry pattern of employment growth is almost identical across major regions.

The horizontal axis of Chart 4 shows average annual industry employment growth from 1978 to 2007 for the major euro area economies combined. The vertical axis shows the corresponding industry growth rate in the United States. The r-squared is about 0.9 and the slope is 1 – the dots lie almost on a 45-degree line. In other words, the (net) changes in industry employment are almost identical in the United States and Europe. The same picture holds for the United Kingdom or Japan, or over a shorter time period. Throwing out the obvious outlier, i.e. textiles, does not change the story.

It is clear that the industries in the upper right part of the chart are mainly services, whereas the industries in the lower left are mainly goods. This pattern could reflect technology – TFP growth has been much lower for the industries in the upper right than in the lower left part of the chart. As Pissarides indicates, you cannot look for innovation to generate jobs in the innovating sector: you have to look elsewhere. The pattern could also reflect trade or preferences. It does not matter: structural change in employment is happening everywhere.

One implication of this is that Europe had greater labour and product market barriers. It can be argued that this reduced reallocations within and across establishments and held back productivity gains. However, the regulations did not stop the tide of structural change in employment. Europe arguably received the costs of the regulatory barriers without even getting the benefits of more stable employment patterns. If change is inevitable and unavoidable, one might as well undertake reforms and reap the productivity gains.<sup>135</sup>

One note of hope is that European economies and others have been implementing structural reforms. Chart 5, replicated from Fatas (2015, Figure 17), is a convergence plot for one measure of product market rigidities. The horizontal axis is the index as of 1998, with a higher value meaning greater rigidity. The vertical axis shows the change in the index from 1998-2013. The figure shows that countries that were further from the regulatory frontier, with more rigid markets, reduced barriers more than countries close to the frontier. In other words, “reforms are happening and they are happening faster in the countries where reforms are most needed” (Fatas, 2015, p. 32).

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<sup>135</sup> A caveat to this point is that the figure shows net changes, whereas an individual worker may be unhappy if he is laid off, even if another job is created in the same industry. Nevertheless, a fluid and dynamic labour market would make it easier for that displaced worker to find a new position.

There is an important question about the timing of reform, which I will not discuss here. In an economy with a shortfall of aggregate demand, as in Europe at present, some supply-side reforms could even be counterproductive.<sup>136</sup> In the medium and longer run, of course, the growth considerations are more important.

## 4 Future innovation is highly uncertain

My final point is that the future pace of innovation is highly uncertain. Whatever happens, there is a good chance that future innovations are going to require substantial reorganisations as well, so the need to be ready will continue to be high.

For example, one source of uncertainty surrounds the future of robots, artificial intelligence, self-driving cars and the like. Irrespective of whether or not their productivity benefits measure up to the host of major pre-1970 innovations that Bob Gordon<sup>137</sup> highlighted in 2014, they are likely to lead to structural changes. This is often hard to predict, and Europe cannot escape that.

A second source of uncertainty goes back to the point that ideas flow across borders. Pissarides compared research and development data by country. For some issues this has an impact, but the fact that many more people around the globe are engaged in looking for ideas that advance the frontier than were in the past is equally important.<sup>138</sup>

Chart 6 shows research and development as a share of GDP for a selection of countries. Some 20 years ago, if you were thinking about the research that mattered for advanced economies at the frontier, you would have pointed to the United States, Japan and a few countries in Europe. Today, research efforts in places like China or Korea have taken off, much of which is relevant for advanced economies. I do not have any data on India, but anecdotally this is also the case there.

Having a larger pool of potential Thomas Edisons and Steve Jobses plausibly raises the chances of future major breakthroughs that will spill across borders.

## 5 Conclusion

Let me conclude with a discussion of policy recommendations. As Pissarides highlights, there is clearly a role for policies that advance the research frontier, such as adequate funding for basic research.

That said, for a given country, research is likely to be less important than policies that affect the ability to benefit from frontier ideas. From the perspective of conditional convergence, an important aspect of structural reforms is about changing the relative

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<sup>136</sup> Fatas (2015) discusses this caveat as well as others. For example, it is hard to know exactly which reforms are most important or how long it will take to see the benefits.

<sup>137</sup> Gordon, R.J. (2014), "The Demise of US Economic Growth: Restatement, Rebuttal, and Reflections", *NBER Working Paper Series*, No 19895, February.

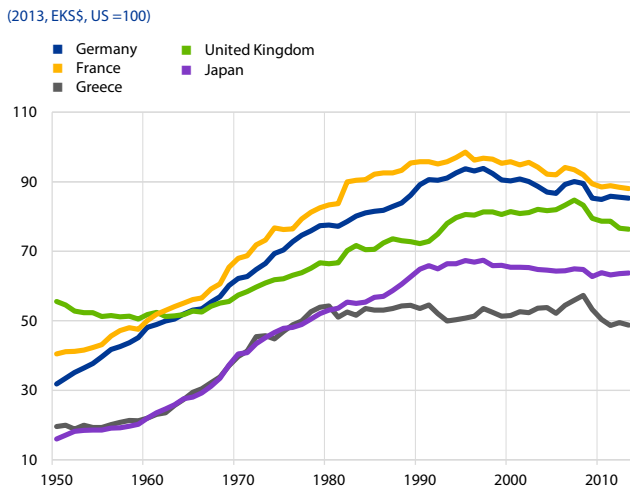
<sup>138</sup> Fernald and Jones (2014) discuss the role of R&D in the context of a model of semi-endogenous growth.

level of productivity or (very closely related) GDP per capita. A lesson from studies on information technology adoption is that economic fluidity and dynamism are necessary to take advantage of growth opportunities. Flexible product and labour markets may help to allow “frontier” ideas to be implemented locally. Flexibility is particularly important given the uncertainty about the future pace and direction of technical change.

Finally, given that structural change is likely to occur in any case, policies can help address the inevitable uncertainty facing individuals. Not all workers will benefit equally from the inevitable economic changes, whether they are related to growth, the focus here or business cycles. Policies that focus on education and skill development can help more people to take advantage of the opportunities that innovation brings. An appropriate social safety net can help individuals to weather the volatility and upheaval that may accompany ongoing changes. Active support at the individual level can assist those workers who are negatively affected in better adapting and making a positive contribution rather than simply being “left behind”.

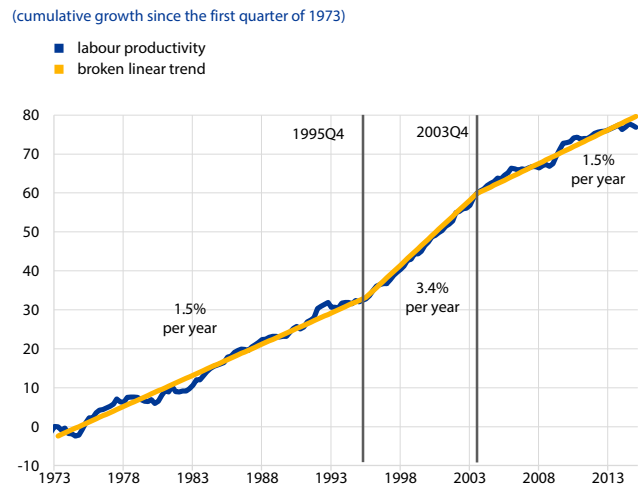
## Annex

**Chart 1**  
GDP per hour relative to the United States



Source: Conference Board.

**Chart 2**  
Business sector labour productivity

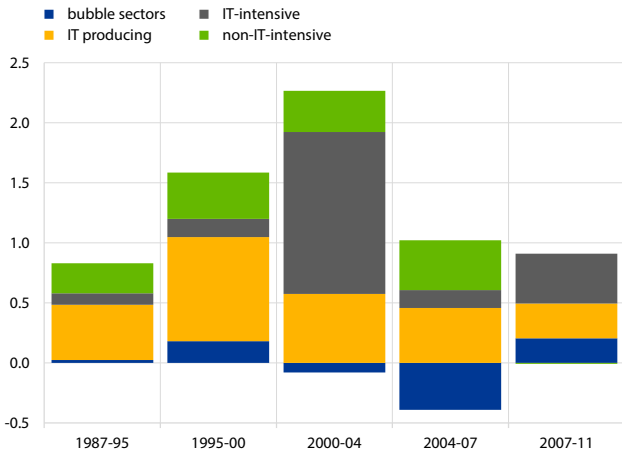


Source: Fernald, J. (2014a), “Productivity and Potential Output Before, During, and After the Great Recession, *NBER Macroeconomics Annual 2014*.”

**Chart 3**

**Total factor productivity by industry sub-group**

(annual percentage changes)

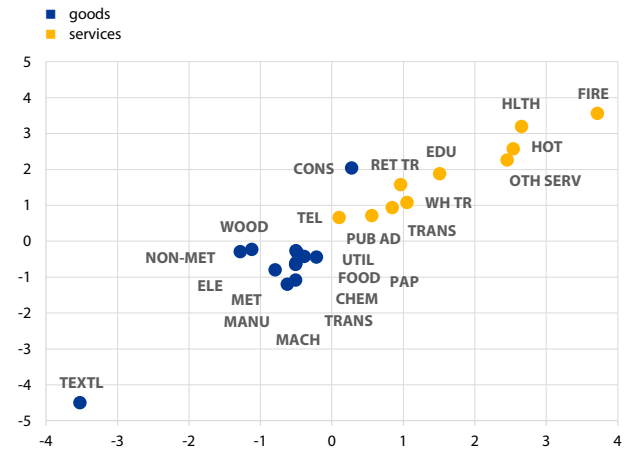


Source: Bureau of Labour Statistics, Fernald (2014a).  
 Note: Bubble sectors are construction, real estate, finance, mining and agriculture.

**Chart 4**

**Employment in the euro area compared with the United States**

(average annual percentage changes by industry, 1978-2007; x-axis: euro area; y-axis: United States)

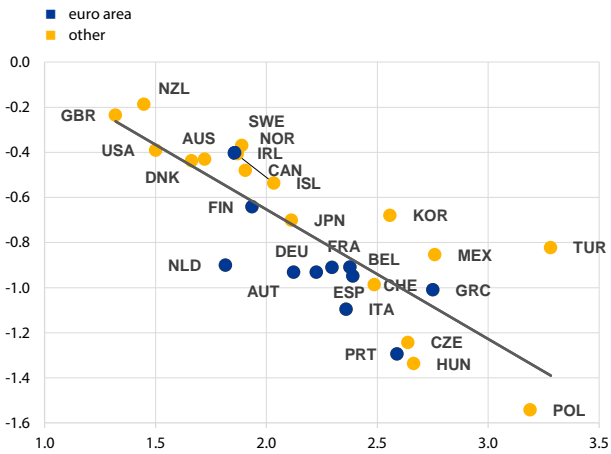


Source: EUKLEMS.  
 Notes: euro area is "Euroex" aggregate: BE, DE, ES, FR, IT, NL, AT, FI and DE; Industries cover the non-mining, non-agricultural economy.

**Chart 5**

**Product market regulation**

(Index, lower value means lower regulatory burden; x-axis: 1998 Value of Product Market Regulation (PMR) Index; y-axis: Change in PMR 1998-2013)

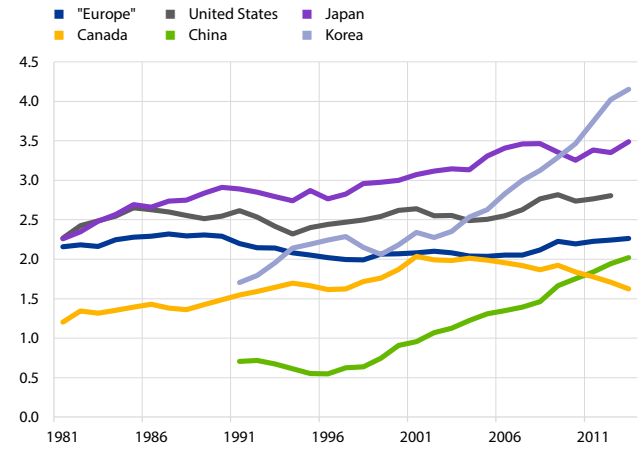


Sources: OECD and Fatás (2015, Figure 17).  
 Note: For the United States, the difference shown is for between 1998 and 2008.

**Chart 6**

**Research and development expenditures**

(percentages of GDP)



Source: OECD.  
 Note: "Europe" is an unweighted average of France, Germany and the United Kingdom.

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# Structural perspectives on European employment, productivity and growth in a global context

By Patrick Honohan<sup>139</sup>

It is a long time since I worked on the econometrics of structural policies and growth, at a time when it seemed that financial depth was the only robust variable in regression analyses of cross-country growth. (Of course, too much financial depth could – and did – have the opposite effect).

But instead of talking about the causal link from structure to performance, I will try to deconstruct three dimensions of the current debate about this huge topic.

First of all I will ask why we are especially concerned about structural reform now. I will list six different reasons and point out that the particular reason motivating any given speaker colours the emphasis and focus that they have.

My second dimension relates to issues of language and communication. As policy advisers and central bankers, are we paying sufficient attention to these aspects?

Finally, drawing on my own experience in Ireland, I will ask what lessons for the debate on structural policy we should draw from the Irish post-crisis employment and growth recovery. If the Irish structures have contributed to recovery, is there an underlying factor to which the adoption of these structures can be attributed?

## 1 Knowing why reform is needed

As I have said, there are several contrasting motivations for emphasising structural reforms now.

1. For example, the enthusiast for such reforms may simply be aiming for an improvement in the flagging trend in long-term growth. This may seem especially urgent now in Europe given the degree to which Europe may have fallen behind on the technological frontier, the convergence of emerging markets and the impact of that on employment in Europe. This is clearly one of the elements inspiring some people to re-emphasise the structural reform agenda. The desire not to miss the political “opportunity of a good crisis” may be part of this story. Accordingly, this may not be the best time from a narrowly economic perspective to adopt reforms that will benefit growth in the long run, but it may be the only time that politics gives a window for reforms.
2. Rather different is the idea that reforms are more urgent now with many euro area countries well below the peak of output and employment, and the rest well below

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<sup>139</sup> Governor, Central Bank of Ireland.

trend. This is a reason for looking to structural measures that might accelerate the recovery. To be sure, as discussed earlier today, some structural reforms may be job-destroying at least in the short run. Indeed, the hope that reform of employment protection legislation will be associated with quick improvements in the level of employment in this kind of conjunctural environment really depends on confidence arguments of a type previously employed in the literature on expansionary fiscal contraction. As Mario Draghi hinted yesterday, the question here is the intermediate role of confidence in translating such reforms into, for example, investment spending.

3. The third – and I think quite a different – reason for focusing more now on structural reforms is that we are realising the cost of shocks and therefore the need to build resilience through structural reforms. Along these lines, Tito Boeri’s paper showed the contrasting degree to which different euro area countries have been able to respond to the crisis (I will mention Ireland in this context later).
4. Different again is the thought that structural reform is needed especially at this time to avoid the trap of (to use Gilles Saint-Paul’s term) political hysteresis (for example counter-cyclical movements in unemployment benefit) and of measures being adopted that amount to anti-reform, damaging long-term growth prospects.
5. Or is the need for extra focus on reforms now because the crisis has uncovered reform needs about which we did not previously know? Certainly we hear this line of argument a lot: “look how we got into this crisis, we need to make structural reforms to fix what got us into it”. This is less convincing at the level of the euro area when you think about the contrasting causes of the severity of the crisis in the worst-affected countries. The sluggish growth of Italy, the fiscal excesses in Greece, the private credit bubble in Ireland; these are each quite distinct problems.
6. Finally the call for reform may simply come because people are really looking for fiscal adjustment and are pointing to structural reform as a technique for achieving that adjustment. They see a double dividend for fiscal correction; you get your fiscal adjustment and you get a growth benefit in the long run. However, if we do not think carefully about which of these considerations is motivating our call for structural reform we may choose the wrong reform packages and our policy advice may not ring true to our audiences.

## 2 Language

That brings me to the question of language. As central bankers we should understand the importance of communications. But when it comes to talking about structural reforms, we tend to use a lot of tautologies and vague language. I suspect that the language that we tend to use and how we use it can be unnecessarily provocative or counterproductive. Ambiguous or euphemistic language, used to avoid triggering too sharp a reaction can end up being patronising and occasionally – as Paul de Grauwe suggested yesterday – even intrusive on politics. So for example when we talk about “labour market flexibility” are we sure we are not just talking about low wages? Well, in this room we are not, but

sometimes policy advocates speak of labour market flexibility when they just mean low wages. Is “fiscal reform” just a synonym for size of government? It is often believed to mean that by those who prefer a large role for government. On the other hand, when “dismantling protection” is criticised, is it clear just whose protection is being advocated? Protection is often selective in favour of some at the expense of others. Failure to introduce reforms in order to maintain some element of protection may actually be inequality-increasing. Reform generally has complex distributional effects; we should be more precise about how we talk about it.

### 3 Ireland: underlying reasons for its relatively good recovery

Finally to Ireland: the recovery is reasonably strong now. Employment has been growing at about 2% per annum for the past two years. So, does Ireland provide a poster-boy story for structural reforms? True, the statistics do suggest a striking improvement in productivity, as well as in employment. While, as was mentioned earlier, productivity and employment can be enemies in the short term and friends in the long term, there has been no evidence of such a lump-of-labour limitation in the Irish data.

But I must remind you that there are traps of interpretation in the national accounts of any economy as open as that of Ireland, one of the most globalised economies in the world. In particular, because of composition shifts and the role of multinational profits, reality can be flattered by data on aggregate productivity and unit labour cost movements. For this reason we should be cautious about exaggerating the pace of recovery in Ireland, particularly in those dimensions. Competitiveness gains at the firm level have been appreciable, but they are not at all as strong as suggested by the economy-wide unit labour cost averages. In the 1990s the Irish story was indeed one of excellent productivity growth as well as solid improvements in competitiveness. There has been a good post-crisis recovery in these elements, but neither productivity nor competitiveness improvements have been as strong drivers in the recovery as is often believed.

So what have been the big drivers of the Irish recovery? John Fernald showed an interesting slide with Ireland having already reached a high score in the OECD’s ratings on structural reforms 20 years ago, with little change since then. Indeed, Ireland had done a lot of the things that all of us in this room want countries to do in the area of structural policies; and because Ireland had done them before the crisis it was able therefore to respond to the emerging situation quicker and achieved better results. (Of course there is more left on the agenda; that is another story.) But that raises the further question: why did Ireland make these changes so early? My suggested answer is that it was the massive fiscal crisis of the 1980s which served as a wake-up call leading to policy changes. Ireland took advantage of that earlier crisis.

This in turn can lead us to ask: why did Ireland seize that opportunity in the 1980s instead of sinking further into the mire in the 1980s? For this, I think we should look behind the actions to discover the Northian institutions that must have been driving the adoption of reforms and ensuring ownership of those reforms. For me, it is the fact of Ireland’s globalisation that has ensured that Irish people – not just policy leaders – are aware of the business world. Migration, trade, foreign ownership of firms: these are all such dominant



features of the Irish economy that most Irish people understand to a remarkable degree how business works in the modern economy. Even if they do not like some aspects of how business works, they know what is needed to get the benefit from how business works.

As an aside, let me mention, as a good illustration of the internationalisation of Ireland, the dynamic behaviour of Ireland's unemployment rate (which has just gone below 10%). The Irish rate strikingly tracks UK unemployment much more closely than domestic output or euro area unemployment. This reflects the close ties between the two economies and the openness of the Irish labour market.

Thus, if the Ireland story offers an underlying driver for stronger economic structures, I would point to the potential for international openness and globalisation itself to create the social and political awareness of what it takes to prosper in the modern economy.

# Structural perspectives on European employment, productivity and growth in a global context

By Catherine L. Mann<sup>140</sup>

This is an enormous topic, so these comments choose the lens of public debt burdens and ask what role structural policies can play in achieving the growth that is needed to put European countries on a path to making these debt burdens both more sustainable and less onerous. There are three key messages: (i) prolonged weak demand has left many European economies with heavy public debt burdens, low investment rates and slow growth of potential output; (ii) renewed attention to structural policies, in the context of active demand management, would address these challenges – the European Commission’s Investment Plan for Europe has a role to play; and (iii) new research points to how structural policy packages – to address labour, product and financial market rigidities – differ for each country, but chosen wisely these can promote productivity growth, reduce skill mismatches and also alleviate inequalities.

## 1 To address debt dynamics, growth is key

The first issue is debt burdens – the source of the problem, indeed the policy straightjacket that many countries find themselves wearing (Chart 1a). At some point, indeed for some countries this point has already come, there is a constraint imposed by the market or by the Maastricht Treaty. But the debt burden dynamic, e.g. debt-to-GDP ratio, is the outcome generated by the dynamics of two terms: the numerator (debt) and denominator (GDP).

Chart 1b reveals the extent to which the change in the debt-to-GDP ratio is due to nominal debt increase vs nominal GDP growth. Over the course of the 2000s, nominal GDP growth kept the rise in the ratio in check. During the recession fiscal deficits and the debt increase were the more important source of the rise in debt ratios. But since 2012 growth has generally not been sufficient to bring debt ratios down. Deficit reduction efforts (that is, a focus on the numerator), rather than the promotion of growth, have slowed growth and yielded a worsening of the fiscal objective. Indeed, sluggish growth both worsens the numerator (by way of automatic stabilisers working through the fiscal deficit) and the denominator. Therefore boosting growth would both slow the rise in the numerator and increase the denominator – a double benefit for the debt ratio.

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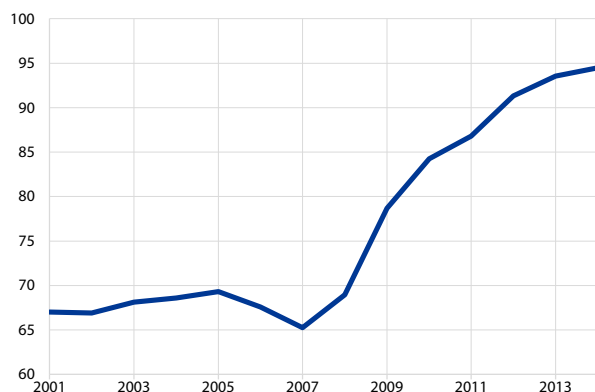
<sup>140</sup> OECD Chief Economist.

## Chart 1

### Public debt dynamics in the euro area

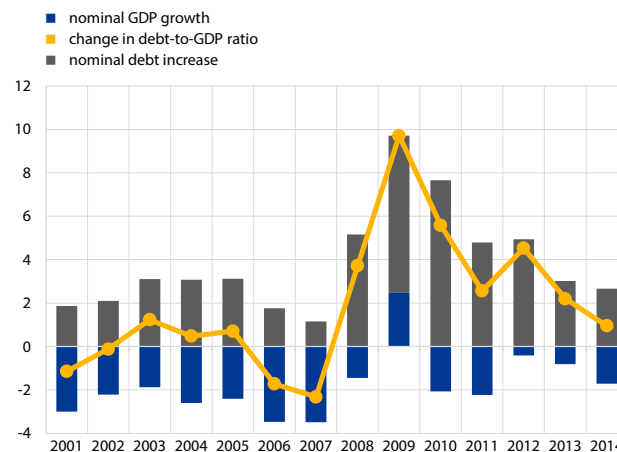
#### a. General government gross debt, Maastricht definition

(percentage of GDP)



#### b. Components of annual change in debt-to-GDP ratio

(percentage points)



Source: Preliminary June 2015 OECD Economic Outlook database (STEP97).  
Note: The data for the euro area cover 15 countries.

## 2

### Sluggish investment is holding back growth

What is holding back growth? Although there are a number of factors, a key one is sluggish investment – public investment on account of fiscal austerity and private investment in response to the slowdown in demand. Chart 2a compares the growth in real non-residential fixed investment across Europe and for other OECD countries. The collapse in private investment in many European economies is notable. But so too is the lack of investment even in relatively strong economies, such as the Netherlands, the United Kingdom and Germany where there has been no real private investment gains in seven years (2007-2014). Across the OECD, real private investment from the first quarter of 2008 for 28 quarters increased less than 5% from the previous peak. In other business cycles real private investment in the 28 quarters from the previous peak increased by more than 20% (1973, 2001) or by nearly 40% (1981).

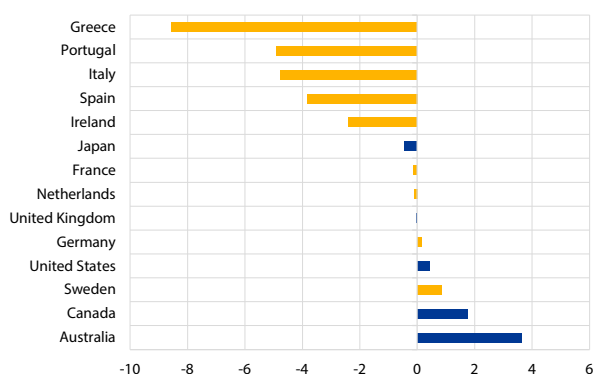
In evaluating the reasons for sluggish business investment many researchers have found simply that private investment is low because demand is low. Are we trapped in the low-level equilibrium? There could be a high-level equilibrium: higher investment yields more jobs, higher wages, more consumption and demand growth, which then validates the higher investment rate.

## Chart 2

### Investment growth in European and OECD countries

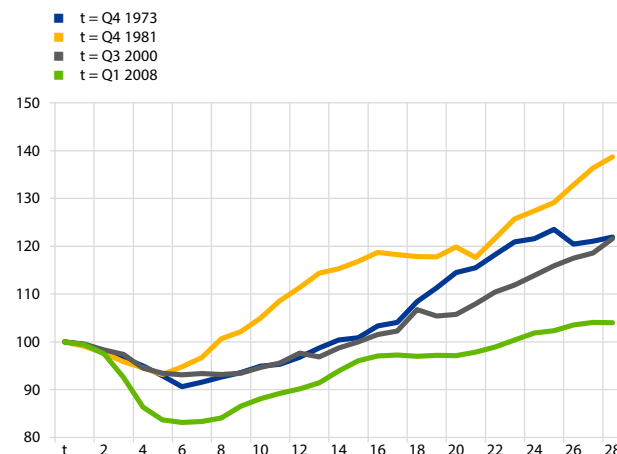
#### a. Non-residential fixed investment

(average annual percentage change from 2007 to 2014)



#### b. Business investment over different cycles

(Cyclical peak in OECD real business fixed investment = 100; quarters since the peak)



Source: Preliminary June 2015 OECD Economic Outlook database (STEP97).

Note: Non-European countries are shown in blue.

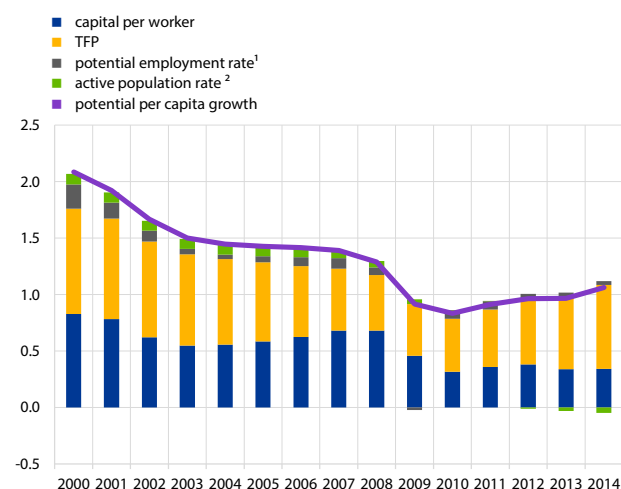
What would it take to get to the high-level equilibrium? Research prepared for the OECD Economic Outlook June 2015 (Box 3.2) shows first that a country's own aggregate demand matters the most for the support of real private non-residential investment. But global demand is important as an additional factor. Considering that many firms are globally engaged, it is not surprising that there is an independent effect of global demand on investment in a particular country. Nearly as important is the regulatory climate facing network industries (telecoms, energy and transport). The research shows that reducing regulatory rigidities along the lines of what has been achieved in the last two decades would significantly boost private investment. Additional factors of political uncertainty

and financing constraints (particularly within Europe) also hinder investment. Finally, public investment, which can have higher multipliers relative to other public spending, has often borne the brunt of fiscal cuts.

## Chart 3

### Growth of OECD potential output per capita

(contribution of components in percentage points)



Source: Preliminary June 2015 OECD Economic Outlook database (STEP97).

1) Potential employment as a share of the working age population (15-74).

2) Share of the population of working age in total population.

## 3 Low investment rates weaken potential output growth

Not only do low investment rates slow aggregate demand, they also have implications for potential growth (Chart 3). Two channels are addressed below – more direct is the capital per worker measure but there is also the role that investment plays in growth expressed as total factor productivity (TFP). The slowdown in capital per worker is particularly salient. TFP growth is rebounding from the depths of the crisis, but it is not yet contributing to the growth of potential as compared with the early 2000s.

Why does the slowdown in potential growth matter? Potential output is a measure of the capacity of an economy to ensure rising living standards for its current and future citizens, as well as to make good on its obligations to its pensioners; it represents the means to repay previously incurred debts. So, the slowdown in potential growth per capita indicates a reduced ability to raise living standards for the young, to meet promises made to the old and to make good on commitments to investors. There is no conflict between young, old, investor or debtor in seeking to achieve higher potential output per person.

## 4 Potential roles for the Juncker Plan

In the context of weak investment, the European Commission's Investment Plan for Europe, better known as the Juncker Plan, could be a useful initiative. The Juncker Plan has been described and judged by numerous pundits, authorities and researchers. In my view, the Plan is less about the money and more about animal spirits, structural policies and collective action. With regard to animal spirits the Juncker Plan offers a common vocabulary to European governments: it is a supply-side initiative for those who see that as being the constraint on European growth and it is a demand-side initiative for those who see that as the constraint. Second, the European Fund for Strategic Investment helps address a problem of collective action. Research noted above points to the importance of collective growth to support an individual country's private investment. As outlays from the EFSI are intended to be treated outside fiscal deficit rules, they are an active policy tool to help promote collective growth. Moreover, to the extent that these outlays are directed toward projects with Single Market impact, their multipliers can be larger by having a catalytic effect on private investment.

A key aspect of the Juncker Plan is that it addresses regulatory barriers to network industries, including telecoms, energy and transport. New research from the OECD shows that both regulatory stringency and regulatory heterogeneity hamper intra-EU trade. Reducing regulatory heterogeneity by one-fifth (by having the worst regulatory indicators converge to the average of the top half of the best indicators) could increase trade intensity within the EU by more than 10% with gains for growth and therefore impetus for investment.

## 5 Innovation, diffusion and structural factors that affect productivity growth

Labour productivity is a key element supporting the growth of potential output. New research at the OECD using firm-level data decomposes productivity into two elements: the pushing out of the global innovation frontier and the diffusion gap between the firms at the frontier and other firms. According to these firm-level data, the frontier of innovation, as measured by labour productivity growth and populated by firms from different countries and sectors, is doing well, indeed accelerating in the case of services firms (after the dip in the year of the financial crisis) to an average labour productivity growth of 5% per year (manufacturing at 3.5%) between 2000 and 2009 (when the data series ends).

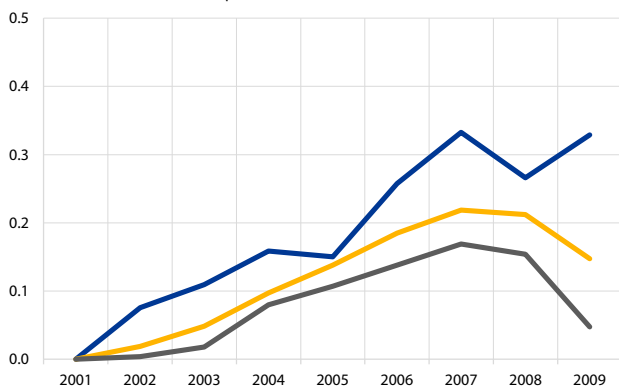
## Chart 4

### Solid growth at the global productivity frontier but spillovers disappointed

(Labour productivity; index 2001=0)

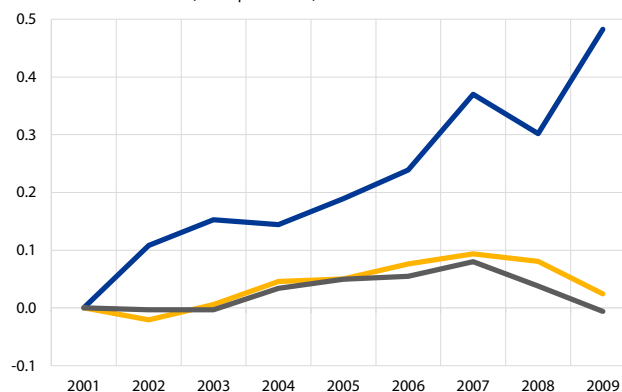
#### a. Manufacturing sector

- Frontier firms (3.5% per annum)
- All firms (1.7% per annum)
- Non-frontier firms (0.5% per annum)



#### b. Services sector

- Frontier firms (5.0% per annum)
- All firms (0.3% per annum)
- Non-frontier firms (-0.1% per annum)



Source: Andrews, Criscuolo and Gal (2015).

Notes: "Frontier firms" corresponds to the average labour productivity of the 100 globally most productive firms in each two-digit sector in ORBIS. "Non-frontier firms" is the average of all other firms. "All firms" is the sector total from the OECD STAN database. The average annual growth rate in labour productivity over the period 2001-2009 for each grouping of firms is shown in parentheses. The broad patterns depicted in this chart are robust to: i) using different measures of productivity (for example MFP); ii) following a fixed group of frontier firms over time; and iii) excluding firms that are part of a multi-national group (i.e. headquarters or subsidiaries) where profit-shifting activity may be relevant.

However, average productivity comes not from the innovative frontier, but from the whole population of firms. Most firms lag behind the innovation frontier, particularly in the services sectors. This diffusion gap, i.e. the difference in take up of innovations that exist between firms at the frontier and average firms, is a key aspect of the slowdown in productivity. In the manufacturing sector globalisation and competition may help keep the diffusion gap narrow. But services firms are, as a general rule, less globalised, more localised and, overall, more regulated. The diffusion gap is wide and widening, meaning that average annual productivity growth for services over the period is nearly zero.

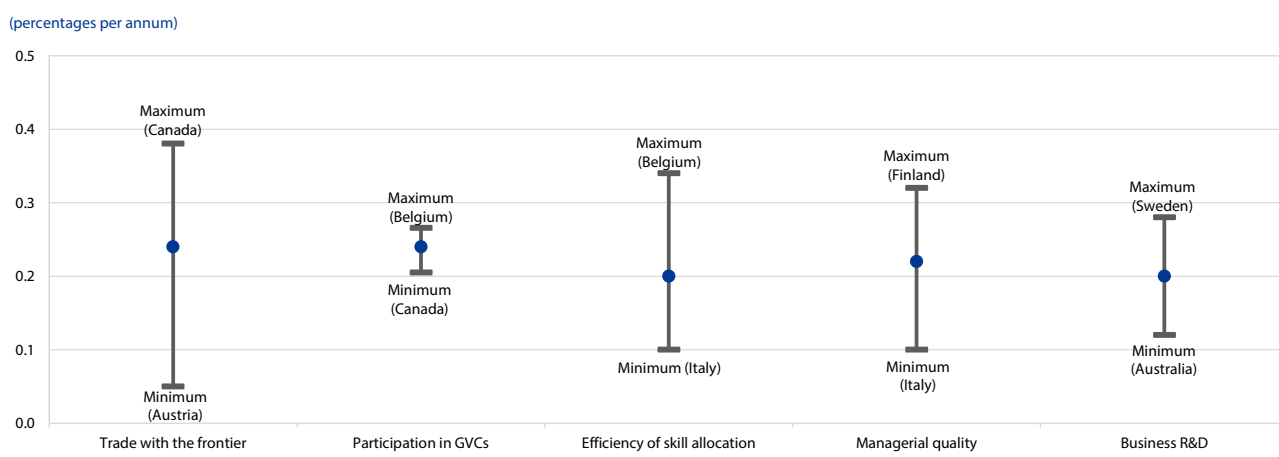
The challenges firms face in absorbing innovation from the frontier vary tremendously across countries because structural characteristics of the business environment and labour markets differ. Among the various indicators available to researchers, three relevant sets of structural factors related to globalisation, the ability to reallocate resources and investments in knowledge-based capital emerge. In this regard, Chart 5 presents estimates of how the benefits of a 2% acceleration in productivity growth at the global frontier – roughly equivalent to the acceleration observed in the United States during the late 1990s ICT boom – diffuse to economies, depending on these factors. For example, countries that trade very intensively with the frontier economy (for instance Canada) would realise about 0.15 percentage point higher productivity growth per annum from a more rapid diffusion of the shock to frontier growth, compared with the average OECD economy. Firms in different countries have different potentials for increased productivity given the characteristics of their environment.

Higher productivity is the outcome of the reallocation process and the embodiment of knowledge-based capital. Considering Chart 5, if Italy's business environment overall allowed more flexible reallocation (up to the average of OECD economies), then innovation diffusion might increase by 0.1 percentage point with productivity advancing

by around 0.2 percentage point under this scenario. Managerial quality has long been key for diffusion because of its role in bringing about successful change and finding complementarities among new products, business processes and workplace practices. Finland's above-average managerial quality could imply a 0.1 percentage point greater ability to absorb productivity gains from the innovation frontier relative to the average OECD country, yielding increased productivity growth of around 0.2 percentage point per year.

**Chart 5**

Estimated frontier spillover associated with a 2 percentage point increase in TFP growth at the global productivity frontier



Source: Saia, Andrews and Albrizio (2015).

Notes: The chart shows how the sensitivity of TFP growth to changes in the frontier leader growth varies with different levels of each structural variable. The diamond refers to the estimated frontier spillover effect associated with 2% MFP growth at the frontier around the average level of the structural variable. The labels "Minimum" and "Maximum" indicate the countries with the lowest or highest value for the given structural variable. Estimated frontier spillovers in Column 1 are obtained from a sample that covers only manufacturing industries. Trade with the frontier is defined as the percentage of total trade flows (observed in the sample) of country-industry  $i$ s with the industry leader in industry  $s$  at time  $t$ . (source: OECD, STAN database). GVC Participation is sourced from the OECD's TIVA database. Efficiency of skill allocation and managerial quality are derived from the OECD Survey of Adult Skills (2012). Business R&D is defined as the ratio of business R&D expenditures to value added and is sourced from the OECD Main Science and Technology Indicators.

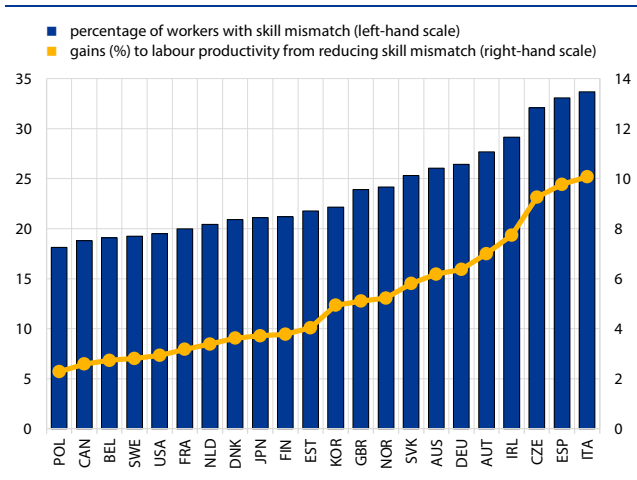
Investment links the innovation frontier and diffusion. Firms need to invest both to innovate and to absorb innovation. Firms experiencing a slow-growth environment or a credit-constrained one are less likely to invest in innovation, thus slowing diffusion and reducing overall productivity growth. Hence, the low-investment/low-demand equilibrium has both short-run and long-run consequences.

## 6 Skill mismatches, productivity growth and the policy environment

Sluggish investment is not the only source of productivity problem. Problems emanate from the labour market as well. New OECD PIAAC data on adult skills point to the importance of skill mismatch. Between 17% and 33% of workers in OECD countries appear to have skills poorly matched to their jobs; and over-skilling appears to be more prevalent than under-skilling, with consequences for wages and the returns to schooling. Moreover, new OECD research suggests that skill mismatch harms productivity growth. Within the OECD improving skill matching to the best practice level within each industry could increase the level of labour productivity by between 2% in Poland (lowest percentage of workers mismatched) to up to 10% in Italy (highest percentage of mismatch).

**Chart 6**

**Potential gains from reducing skill mismatch**

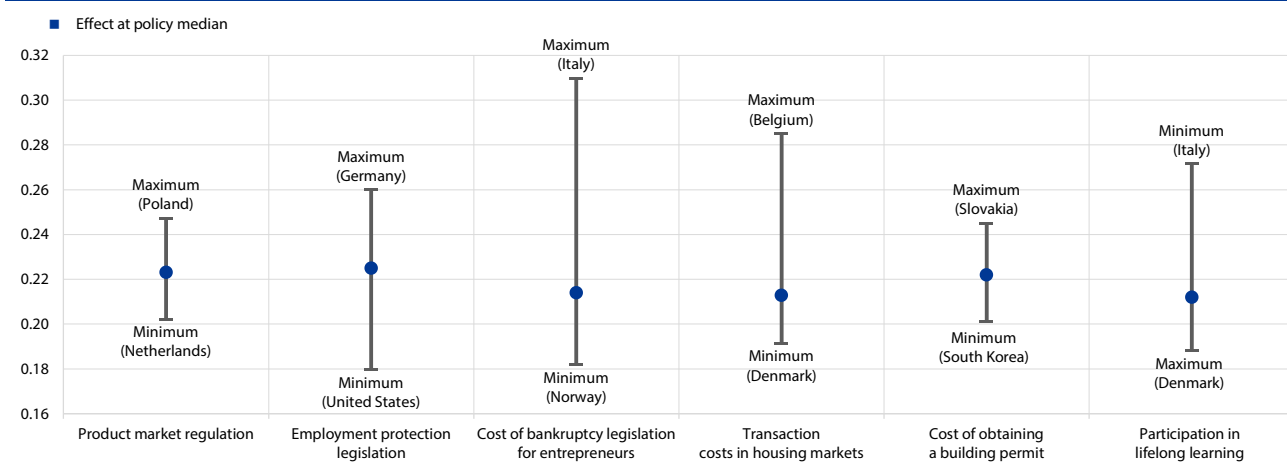


Source: McGowan and Andrews (2015).  
 Note: The chart shows the percentage of workers who are either over or under-skilled and the simulated gains to allocative efficiency from reducing skill mismatch in each country to the best practice level.

The sources of skill mismatch are plentiful, but the policy focus tends to be on educational systems, which certainly makes some sense. However, the new OECD research suggests that skill mismatches may also result from the same types of structural business characteristics as are relevant for innovation diffusion. For example, improving Polish product market regulation to the average of OECD economies might reduce the probability of skill mismatch by around 0.03 percentage point. Reducing employment protection legislation in Germany could reduce skill mismatches by around 0.04 percentage point. The impact of these reduced skill mismatches on productivity growth depends on the prevalence of skill mismatches, as discussed above. The point is that structural policies to address both innovation diffusion and skill mismatches can promote productivity growth.

**Framework policies and the probability of skill mismatch**

**Chart 7**



Source: McGowan and Andrews (2015).  
 Notes: The diamond is the average probability to have 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.

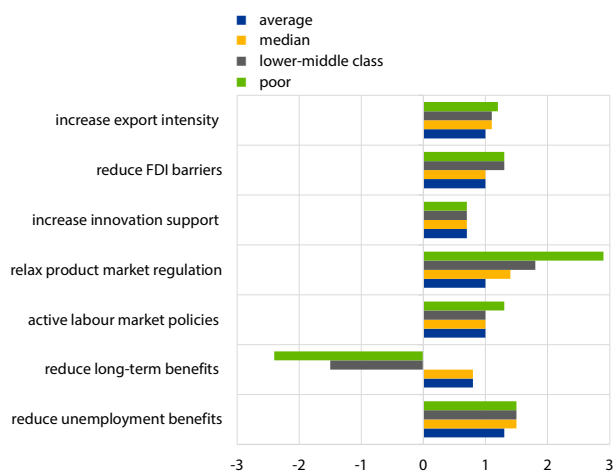
**7 Policy packages, productivity and inequality**

Policies chosen to enhance productivity can affect inequality. For example, a policy such as R&D subsidies intended to promote innovation may also yield a skill-biased technical change that enhances wage dispersion. But, as it turns out, some structural policies – which in the context of the discussion in this paper could serve to increase investment, intended to promote the diffusion of innovation and to reduce skill mismatch – could also improve the income of the average household as well as the income of poorer households. The key is that the improvement in household income can come through real wages or through employment, and building greater employment opportunities appears to be particularly important. For example, addressing product market competition



## Chart 8 Structural reforms and changes in households' disposable income

(scaled relative to 1 percentage point increase in GDP per capita in the long run)



Source: Causa, de Serres and Ruiz (2014).

appears to improve household income at the lower end of the distribution as does encouraging global integration through FDI and trade. Household incomes benefit not only through lower prices but also through enhanced productivity and employment growth.

For changes to these policies that differentially hurt segments of the income distribution, such as limitations on long-term unemployment benefits, a policy package that pairs, say, product market competition intended to promote job creation with a reduction in long-term unemployment is needed.

## 8 Final thoughts

In summary, using individual firm and household data, OECD research is delving deeper into the best ways of crafting structural policy packages (to include changes in

product, labour and financial market policies) within the context of active demand management (fiscal and monetary policies) to raise investment and productivity growth, to reduce debt burdens and increase potential growth and to ensure that growth is widely shared.

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# Central bank advocacy of structural reform: why and how?

By Jean Pisani-Ferry<sup>141</sup>

In his introductory speech Mario Draghi (2015) not only argued forcefully in favour of structural reforms in the euro area. He also explained why he considers it legitimate for the European Central Bank to relentlessly push governments into more and more ambitious reforms.

This is a controversial position, not because reforms are unnecessary – they are indeed indispensable – but for two related reasons: first, because the central bank is a specialised institution with a narrowly defined mandate that does not include structural reforms; and second, because many reforms amount to changing the economic and social institutions underpinning a society and therefore involve choices that only an elected body can make. It is not by accident that reforms of the labour market, of competition laws, of bankruptcy procedures or of pensions, to name just a few, require legislation and therefore decision by parliament.

As argued by Willem Buiter (2015), standard economic and political economy arguments rather suggest that independent central banks would be better off sticking to their mandate and refraining from making statements about policies that do not fall within their remit. This is typically the attitude of the Federal Reserve System or the Bank of England (things are somewhat different in Germany and Italy, but mainly because these central banks enjoy considerable prestige inherited over time). So why should the ECB behave differently? This is a question of major importance for the policy system of the euro area.

Related questions can actually be raised for the other EU institutions. Since 2010 structural reform in the euro area has increasingly been the focus of policy attention. Conditional assistance programmes have involved extensive reform requirements; the macroeconomic imbalances procedure (MIP) has been introduced; annual country-specific recommendations (CSR) are being issued within the framework of the European Semester; in 2011 the heads of state and government of the euro area countries and six other countries agreed on a reform-centred Euro Plus Pact; in 2012-2013 discussions were held on German-inspired “contracts for competitiveness and growth”; in its January 2015 recommendation on the best use of flexibility within the Stability and Growth Pact, the Commission proposed to take reform efforts into account when assessing a country’s public finances; and finally, the Five Presidents’ report of June 2015 emphasises the need to strengthen the coordination of reform policies and the MIP, while streamlining processes to favour better ownership. A consequence of the crisis has unequivocally been increased EU involvement in policy areas that primarily belong to national competence.

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<sup>141</sup> Commissaire général at France Stratégie, Paris, and Professor at Hertie School of Governance, Berlin. I am grateful to Arthur Sode for his collaboration in the preparation of this paper.

Again, this attention is natural in the light of the magnitude of imbalances across countries and of their non-fiscal dimensions; it is also indisputable that the weakness of potential output growth in nearly all countries calls for remedial action. But these are hardly sufficient justifications for EU involvement in policy areas that are deeply national and for EU recommendations that may conflict with domestic social choices. To put it bluntly, why is economic underperformance in a particular country a matter for EU concern? If labour market institutions are organised such that unemployment is structurally higher in that country, what is the justification for requiring a change to these institutions? Why should the corresponding reform choices not be left to the domestic decision-makers?

This short paper includes two sections. In Section 1, I discuss whether the particularities of the euro area provide a rationale for departing from central bank neutrality, or at least prudence as regards national structural reform policies. In Section 2, I examine the structure of reform discussions between EU institutions and national governments and examine how they could be improved.

## 1 Should the ECB get involved in the setting of structural reform priorities?

There is surprisingly little clarity in the official literature on the issue of structural policy coordination. Article 121 of the Treaty on the Functioning of the European Union, which applies to all EU members, includes the strong, but unspecific statement that “Member States shall regard their economic policies as a matter of common concern and shall coordinate them within the Council”. Article 136, which refers to the euro area members, is equally vague. It stipulates that the Council shall “set out economic policy guidelines for them, while ensuring that they are compatible with those adopted for the whole of the Union and are kept under surveillance”. Drawing lessons from the crisis, the Van Rompuy Task Force report of 2010 advocated making the framework for policy coordination more enforceable to ensure that unsustainable policies “do not put stability in EMU at risk” – an important reference to a vital public good. Finally, the Five Presidents’ report justifies coordination by the fact that “euro area members depend on each other for their growth” and adds that “it is in each member’s common and self-interest to be able to cushion economic shocks well, to modernise economic structures and welfare systems, and make sure that citizens and businesses can adapt to, and benefit from, new demands, trends and challenges. It is equally in each member’s interest that all others do so at a similar speed” – a rather general statement that could equally apply to the G20.

The case for international coordination of supply-side policies is generally considered weak. Tabellini and Wyplosz (2004) reviewed the main arguments in a paper on the Lisbon strategy. Their conclusion is that because they are not beggar-thy-neighbour policies, supply-side policies are best dealt with at the national level, without coordination. They argue that externalities involved are generally positive (higher productivity in country A improves real income in country B) and are in any case pecuniary. Furthermore, they consider that from a political economy standpoint, policy competition is desirable because it favours learning and creates incentives to overcome political obstacles to reform. Overall, they find limited scope for reform coordination; beyond the single market,

the case for it is strong only in fields related to labour mobility or higher education and research.

Mario Draghi however puts forward in his speech two arguments for departing from neutrality, the first of which has to do with the resilience of the euro area and the second with its growth performance.

The resilience argument has a technical side; only reforms can limit asymmetry within the currency union and prevent or correct internal divergence. They are therefore indispensable to the proper functioning of the euro area. The absence of a coordination of structural reforms can contribute to divergent labour and product market developments, real exchange rate misalignments (Allard and Everaert, 2010) and large current account imbalances. Conversely, coordinated reforms would help reduce divergences in response to shocks and limit asymmetry in the transmission mechanism of monetary policy. Tighter market integration would also strengthen the equilibrating mechanisms through the competitiveness channel and contain the risk of protracted divergence.

This argument can be read as a restatement, in the context of the euro, of the long-standing rationale for IMF surveillance: oversight of national supply-side policies is justified because divergence within the currency union could ultimately cause external instability.

It is indisputable that asymmetry and divergence are bound to reduce the benefits of participating in the euro. Critics object, however, that national governments are perfectly capable of making informed choices and correcting their policies accordingly. For them, the ECB has no place in the corresponding discussion. Should a country fail to rise to the challenge and to put in place policies that are needed to enable it to thrive within the currency union, the consequences should be borne by its citizens alone. It should not count on its partners' solidarity.

This is a logically coherent view, but its consequences must be spelled out explicitly. It implies limiting mutual support mechanisms, so that the costs of failure are not borne by euro area partner countries. This in turn requires putting in place a sovereign debt resolution scheme, so that private creditors pay for the insolvency that is likely to result from lack of growth. And according to the same logic, a country that is unable to perform within the euro should ultimately be allowed to exit, or be driven to the exit.

This is where the political side of the argument fits in. The logic of accepting that a euro area member performs miserably assumes that other member countries and the euro area as a whole can be protected from the potential consequences of such behaviour, including from those of an exit. But if the ECB regards itself as having the responsibility of maintaining the "integrity" of the euro area (to quote from Draghi's speech), it follows that it must also have a view on the actions that member countries must carry out in order not to risk jeopardising this integrity.

There are, in other words, two logically coherent views. One regards monetary union as a framework within which member countries are free to perform or fail. Should they fail, they should not count on the support of their partners and they should possibly exit. The euro area framework should accordingly be reformed to ensure that insolvency within and

exit can both be managed. The other starts from the notion that the integrity of the euro area is a common asset that must be preserved, because exit would have far-reaching damaging consequences. The implication is that countries that underperform represent a potential threat to common prosperity. This justifies the involvement of the EU institutions and the ECB itself in the setting of priorities for structural reforms.

The tension between these two views underpinned the July 2015 debate on the handling of Greece. The fact that the choice was made to keep Greece inside the euro area may be read as a vindication of the second.

The growth argument, which largely rests on collective-action reasoning, is more oblique. Draghi gives three reasons for why low growth is problematic, but only the last two are related to monetary policy: excessively low potential output growth would first make the private debt overhang persistent (hampering the transmission of monetary policy); and it might also result in an excessively low, potentially negative equilibrium real interest rate (making standard monetary policy ineffective). Both point to a relatively specific case for reform coordination that would apply fully in current conditions but less so in normal times.

The picture is somewhat more complex, both because there are reasons for coordinating supply-side reforms in a monetary union in normal times and because the case for doing so in a zero lower bound environment is more ambiguous than has been suggested by Mario Draghi.

The case for coordination in normal times relates to the adverse short-term effects of structural reforms; in a stand-alone country, monetary policy endogenously exploits the room for demand-side expansion generated by potential output-enhancing supply-side policies. But this does not apply in the euro area, which may result in a disincentive to reform. Reform coordination is thus needed to overcome the collective-action problem and to restore the incentive (Everaert and Schule, 2008). Applied to exceptional times, however, the same argument suggests advocating caution with reforms because when the policy rate is at the zero lower bound, monetary policy cannot respond to increased supply, which would aggravate deflation (Eggertsson, Ferrero and Raffo, 2014).

The point made by Eggertsson et al. is important but less compelling than it may seem, first because a number of growth-enhancing reforms do not have short-term deflationary effects, and second because the existence of such effects has more implications for the design of reform strategies than for their coordination. Cœuré (2014) even considers that structural reforms can foster growth in a context where demand-side policies are either constrained (by high public debt) or are of limited effectiveness (because high private debt limits the effectiveness of monetary policy and because dysfunctional markets hamper the positive supply response to a demand stimulus). He argues that supply-side policies are necessary to “empower demand”.

The upshot from this short review of the debate is that participation in a monetary union has deep implications for the relationship between structural reforms and monetary policy. Unlike in a stand-alone country where the central bank can let the government know about its reaction function and “stick to its guns”, the ECB is necessarily part of an

overall conversation about the priorities, the intensity and the degree of coordination of supply-side reforms.

## 2 How should the reform discussion be structured?

It would be interesting to conduct a systematic analysis of the speeches by members of the ECB's Governing Council to see what they mean by structural reforms. My suspicion is that one would find that certainly the members of the ECB's Executive Board, but probably also the governors of the national central banks, have been quite unspecific in their reform advocacy. There is a good reason for central banks to limit themselves to general statements; as independent and specialised institutions they should not interfere with social preferences, so they cannot be too specific. But this caution involves the risk of having little impact on actual decisions; the repetition of an unspecific mantra is unlikely to be effective.

Worse, as pointed out by Patrick Honohan, structural reforms can easily be caricatured as an implicit plea for a particular policy agenda involving the reduction of employees' protection and cuts in welfare entitlements. This is not a fantasy. In the eyes of public opinion, "structural reform" has already become toxic. All this implies that the issue of granularity in the recommendations is a delicate but an important one.

A natural solution for the ECB would be to rely on other European institutions that have legitimacy for spelling out in more detail what the structural reform agenda should be. However, they also face difficulties. The European Commission has struggled to work out reform priorities in a way that ensures traction at the national level. Members of national parliaments are finding it difficult to decipher the various EU procedures and what they imply for their country. A cursory glance at the country-specific recommendations suggests that they suffer from a bias (fiscal and labour market dimensions take precedence, while issues having to do with equality of opportunities, human capital and the distribution of income are played down, if not overlooked), they are mostly geared towards strengthening competitiveness on a country-by-country basis (the common euro area dimension is not absent, but the euro area CSR is very general), and they are largely repetitive from one year to the next. Boeri and Jimeno (2015) strongly criticise the EU recommendations for lacking granularity and for failing to take into account the interaction between shocks and institutions. More generally, it is clear from a national perspective that the design of feasible structural reforms requires immersion into a second – or third – best world that is hardly accessible to outsiders.

Furthermore, the choice of reform priorities by the EU authorities does not rest on an explicit definition of the objectives to be pursued at the euro area level as well as at the national level, and it lacks a transparent methodology for defining priorities. Unlike the OECD in its Going for Growth reports, the Commission does not start from a precisely stated goal, from which priorities can be derived for each country. The upshot is that reform recommendations are neither coherent enough to provide a reference framework for individual country choices, nor granular enough to be part of the national policy conversations.

How can the situation be improved? How could the discussion on reform priorities be better structured? There is certainly no magic bullet, but three directions are worth exploring: first, a case can be made for a new approach consisting of building bridges between euro area level reform requirements and national decisions; second, the ECB should use the opportunity presented by this new approach to clarify its own assessment of the policy priorities for the euro area and its member countries, and the way it is communicated to national authorities; and third, thoughts should be given to a more incentive-based approach to reforms.

Decentralisation is on the agenda because for action to be taken at the national level, awareness of the constraints emanating from participation in the euro should be increased at that same level. One step in this direction could be the creation of national institutions that would help increase consistency between euro area-wide requirements and national decisions. The model has already been adopted in the fiscal field; national fiscal councils have been created that are able to provide independent assessments of the economic and fiscal perspectives and to contribute to the preparation of national fiscal choices. Following proposals by Wolff and Sapir (2015) and Bénassy-Quéré and Ragot (2015), the Five Presidents' report of June 2015 endorsed the idea of replicating the model by creating national competitiveness councils entrusted with the task of monitoring wage developments and assessing progress made with economic reforms.

The precise remit of entities of this type needs to be thought out and is, at any rate, likely to differ somewhat from country to country, depending on the nature of labour market and, in particular, wage-setting institutions. What is important is that they could serve as bridges between euro area institutions and national players. They could, for example, follow a common template for the analysis of competitiveness, thereby ensuring that adding-up constraints are respected, and translate the implications of common directions so that they can be adapted to the various national contexts. This would require a much more detailed approach to the determinants of wages and prices, taking into account skills, sectoral, regional and, at the very least, institutional dimensions. The same method could be applied to potential growth.

This paper is not the place to discuss in detail the mandate, composition and functioning of such councils (or authorities, to use the terminology of the Five Presidents' report). However, since they would constitute a network and would presumably work as such, their creation should help the ECB to define its voice in the discussion of the reform agenda. For example, the Eurosystem could provide these councils with mutually consistent assessments of the competitiveness position of all participating countries. This would imply estimating real equilibrium exchange rates on the basis of a coherent methodology, something that the IMF is doing for its member countries, but which the ECB has so far refrained from publishing for the euro area countries. A scoreboard of this sort would help to decide which countries need to depreciate in real terms and which need to appreciate.

The creation of competitiveness councils should also provide the ECB with an opportunity to be more transparent in its assessment of the economic challenges facing the euro area and the answers it expects from governments. National authorities and governments should know precisely how the Governing Council assesses the potential for growth and employment in the euro area and how this will affect monetary policy. They should have a

clear idea of what they can expect from the ECB, depending on their own behaviour – in other words they should be able to reach an informed judgement on its reaction function. And they should also know what outcome (rather than the precise measures) the ECB expects from national decision-makers. A network of competitiveness bodies could usefully serve as intermediaries between the macro requirements expressed by the ECB and the granular reforms needed in each particular country.

Finally, ways should be found to incentivise national reforms. The very fact that these reforms involve externalities is a justification for an incentive-based approach. The question is how it should be implemented. One way, already proposed by the Commission, is to make use of the existing flexibility within the Stability and Growth Pact. The problem is that it applies neither to countries in a sound fiscal situation (because they do not need it) nor to those in a dire situation (because they do not have access to it). So this approach is intrinsically too limited in scope to provide a response to the problem.

Another possibility would be to rely on the “contracts for competitiveness and growth” floated by the German chancellery. The idea starts from the accurate observation that all governments face political constraints at home and that they would therefore prefer to agree on a menu of reforms that correspond to their preferences and take into account their constraints than to be presented a laundry list of things to do. But the problem is that such contracts could easily be pictured as Troika-light programmes, which would immediately make them unacceptable for national governments.

Tito Boeri and Juan Jimeno propose a new approach based on what they call “positive conditionality”, for which they propose a few examples. The key in this respect should be to create euro area or EU-wide schemes, access to which would be limited to countries fulfilling minimum requirements (Pisani-Ferry, 2013). Such schemes could involve transfers (in the case of a common unemployment insurance) or not (in the case of an additional employment contract). Access to them would be conditional on domestic reforms ensuring that national policies do not contradict the aims of the common scheme. So there would be no overall conditionality, rather there would be “local” conditionality.

The differences as compared with the competitiveness contract would be threefold. First, governments would not be told what is good for them. The EU or the euro area would instead set its own goals and pursue them. Second, the schemes would not single out particular countries. The choice of priorities would imply a focus on some of them (as a scheme intended to remedy long-term unemployment would necessarily target countries where long-term unemployment is high), but this would only be de facto. Third, conditionality would not consist of a comprehensive laundry list, rather it would in each case be targeted towards significant roadblocks to the achievement of specific goals.

Bridge building, transparency in the advocacy of reforms and positive conditionality are modest proposals because, when it comes to pro-growth reform, there is no magic bullet. There can be no centralisation, and coordination always risks becoming murky. But the measures recommended here would serve to build a more decentralised, predictable and incentive-based policy regime. They are worth a try.



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# Designing and communicating structural reforms in the euro area: the unequivocal responsibility of Member States' governments

By Christoph M. Schmidt<sup>142</sup>

## 1 Facts and perceptions

In his introductory speech, President Draghi reminded the audience of a fundamental economic insight: in economic downturns, monetary policy might be able to lead an economy back to its potential growth path, but it is not the adequate policy tool to raise the slope of that path. For this purpose one would need to conduct structural reforms, and this is certainly the responsibility of fiscal policy-makers – in the euro area of the Member States' governments. President Draghi also made clear that expansionary monetary policy serves to make such reforms less costly and therefore provides helpful support to all policy-makers engaging in reform efforts. Reflecting on these insights, any excuses for not undertaking serious reforms today in the euro area are simply not credible.

But facts are one thing, and perceptions are quite another. Actually, many contributors to the current political debate in the euro area demand even more support – to be provided either by the ECB or by the stronger Member States – before those Member States that need reform the most can earnestly pursue this endeavour further. This suggests the question: "Do voters in the respective countries understand that their current situation is much better due to the expansionary monetary policy than it would have been otherwise?" One does not have to search for long to find illustrative examples of the relevance of this question.

Many Germans tend to think, for instance, that it is the ECB's interest policy which is the root cause of the crisis, perceiving this policy not as an act of protection but rather as a reckless endangerment of their retirement savings. Yet, while the concrete details of monetary policy throughout the crisis might very well be critically discussed, it can hardly be disputed that it is the crisis which justified and even required setting low interest rates in the first place. Low interest rates on German savings are an unfortunate consequence and not the original cause of the euro area's problems. And these original causes implicate many culprits, most importantly the fiscal policy-makers that allowed public debts to pile up so relentlessly.

Similarly, in Greece, many voters were apparently convinced that the crisis management coordinated by the Troika institutions was fully to blame for the detrimental rise in unemployment throughout the last couple of years and not the sudden stop of financial

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flows from private sources in 2010 (Merler and Pisani-Ferry (2012)). This regime change reflected international lenders' abrupt loss of confidence in Greece with regard to the actual sustainability of the observed pre-crisis growth rates. Quite obviously, while the concrete details of the provision of financial support and its conditions might very well be critically discussed, blaming the crisis management for the existence of the crisis confuses causes and consequences (Feld et al. (2015)).

A variant of this concern regarding the obvious divergence between facts and perceptions is the question: "Do voters understand that the current time of ensuing economic recovery is indeed the best period to implement structural reforms?". Most importantly, since structural reforms tend to challenge entrenched privileges, those losing out because of them can be compensated more easily. If this is not understood, the call for reforms now will only be supported by those voters whose economic prospects in the absence of reform remain dismal. Interestingly, it is a centrepiece of Keynesian thinking that unpopular measures should be carried out in good times, for the purpose of economic stimulus in less prosperous times. While voters typically like economic stimulus, they do seem to have difficulty accepting that any given time can be regarded as "good", irrespective of the true state of economic affairs.

There is a clear lesson in all this: policy-makers do not only have to get the counterfactual right themselves, but they also have to convince their voters that they have managed to do so. This is particularly difficult in all cases where the right counterfactual cannot be found by a simple before-after comparison. Notably, this easy route is typically taken by populist contributors to the public debate. Presuming that the previous state of affairs should be serving as the counterfactual is often highly attractive for policy-makers and commentators alike, since it makes understanding the world purportedly so simple. But easy to understand (and to communicate) is not tantamount to being appropriate. Often life is more complicated, and it is wrong to pretend otherwise.

To come back to my illustrative examples, German savers might melancholically recall the pre-crisis interest rates they enjoyed on the basis of stable financial markets. Greeks might deplore the lack of ample private capital flows entering their country and the resulting decline in living standards that they have experienced since 2010. But both groups would simply have no realistic chance of enjoying the same circumstances today, even if other economic policies had been conducted since the crisis broke out. Indeed, the debate on how to get the counterfactual right should be one, if not the predominant, focus of academic economists taking part in the current political debate on the crisis in the euro area. It is telling that this aspect is so often missing from the strong statements issued by prominent commentators.

When the main conceptual task for policy-makers is getting the counterfactual right, we know immediately who should be in the spotlight. After all, who, if not the national governments of the euro area Member States, has the knowledge, the mandate and the credibility to design, communicate and conduct structural reforms? My remarks will probe into this issue more deeply, first, by discussing the identification of the appropriate reform strategy, drawing above all on Germany's recent experience, and, second, by recalling the implications of the euro area architecture for assigning responsibilities for economic policy decisions and, most importantly, the responsibilities with regard to structural reforms.

## Identification of the appropriate reform strategy

President Draghi also told us in his initial address that structural reform efforts in Europe would be much more effective if they were conducted in a coordinated fashion. It indeed seems quite convincing that at least the euro area Member States, and actually all European economies, are to some extent companions in fate which win and lose together and that all suffer if individual Member States fail to engage in reform. Thus, the plea for simultaneous and encompassing reform efforts by all national policy-makers in the euro area is well founded.

From the viewpoint of economic analysis, however, this raises the following questions: “Is providing extensive monetary support the best way to accomplish such coordination, thereby relieving Member States of the pressure to reform their factor and goods markets, and then trying to convince governments that all Member States should engage in structural reform?” and “Would it not be preferable to leave the situation as it is, with the resulting challenges providing the impetus to reform?” I will leave these questions unanswered here, since my focus will be on another aspect, identifying the right reform strategy for each country.

To start this discussion, it is interesting to note what President Draghi did not say. He did not argue that Member States should implement harmonised reform packages. It is important to understand that one should not misconstrue the call for a coordination of reform efforts as a call for a “one-size-fits-all” reform package. Irrespective of the factual degree of coordination, the questions to ask are: (i) “What exactly is the right set of reforms for any particular Member State?”, (ii) “Who will identify them?” and (iii) “How will they be identified?”.

In this context, President Draghi’s introductory remarks conveyed two messages, one which I thought was very constructive and one which, I think, should be qualified. He defined “structural reforms” very generally as all sets of reforms lifting the potential growth path – thereby wisely avoiding any implication that the right set of reforms might be the same everywhere. This is very constructive, since it points at the genuine strength of Europe: comprising economies which are inherently heterogeneous in many institutional and structural aspects, thus providing a fruitful competition between systems and approaches in an ever-changing world. Encouraging national policy-makers to conduct “structural reforms” without defining more concretely what exactly they should do is something that should be welcomed and not criticised by national policy-makers.

Yet he also suggested that the German way of using short-time work arrangements and working-time and overtime accounts, etc. – which are all devices to reduce workers’ hours while they retain their job – might be a preferred strategy for countries hit by a macroeconomic shock. But it is important to realise that this strategy of emphasising adjustment at the internal margin was only fruitful for Germany in 2009 because the retained jobs became productive again after the shock subsided. German companies in the automotive, machinery and chemical industries compete strongly on world markets today, just as before the crisis hit. Germany simply had a dose of good luck that its institutional arrangements, which focused on internal flexibility, and the nature of the shock were so highly compatible (GCEE (2013), Chapter six).

Other Member States would have been ill-advised had they pursued the same strategy, retaining jobs in the construction industry in Spain, say. And Germany might not at all be so well-prepared for a genuine shock challenging its portfolio, such as a persistent decline of interest in German cars, say. (And the German government is currently moving in the direction of making things worse in this regard.) The lesson is clear: it is prudent to be prepared for different potential shocks and integrate elements of internal and external flexibility. But, quite obviously, there is also a need to find the right balance between continuity and flexibility – it is not simply a matter of maximising the latter. I am quite convinced, in particular, that the resilience of the employer-worker relationship in Germany against the vicissitudes of working life is at the heart of German workers' substantial investment in their human capital, specific to their firms and sectors.

We can nevertheless learn a lot from the German experience by analysing the elements and process of recent reforms.

(i) The structural reforms conducted in the first decade of the century were a response to long-prevailing structural deficits and the consequent increasingly acute economic hardship, not a visionary project implemented in good times. Most disconcerting at the time, German unemployment throughout the 1980s and 1990s was high and persistent, and it continued to rise after the turn of the century. Labour market and other structural reforms were therefore only implemented under considerable pressure. Indeed, the so-called Agenda 2010 was a bold move by Chancellor Schröder to reverse the declining trend in the popular support of his government, as the number of registered unemployed workers reached the five million mark and the share of long-term unemployed was alarmingly high.

Consequently, it might well be that, in an ideal world with no political impediments, in economically stressed times one would abstain from implementing reforms which threaten to exert negative short-term effects, and simply introduce them later when economic waters are calm. This is the recipe which many commentators suggest in response to the current crisis in the euro area, as especially the economies in the periphery are going through quite a rough patch (Eggertson et al. (2014)). Some commentators are strongly criticising the disregard for the simple Keynesian recipe in the context of the current "quid pro quo" strategy of combining financial support with requests for consolidation and reform. Looking at the German case reminds us, though, that accepting support today and promising to conduct reforms later is simply not credible. So, in that sense, the world is not an ideal one.

(ii) The reforms conducted under Agenda 2010 were structural reforms addressing some of the most severe structural problems dogging the German economy at the time (Caliendo and Hogenacker (2012)). Providing an internationally more competitive system of corporate taxation, making the pension system more resilient (only until 2030, though) in the face of demographic change, and installing some elements of external flexibility in the labour market altered the slope of the potential growth path and the level of structural employment and unemployment (GCEE (2014), Box 22). Although these reforms were initiated, after intense academic and political discussions had paved the way, by acute manifestations of economic hardship, they were addressing persistent structural problems, not merely a transitory cyclical downturn.

This explains the, at first glance, perhaps somewhat confusing decline in the German unemployment rate during the crisis years. Germany's structural unemployment rate was already on a steady way down as the crisis hit – the decline was not a result of the crisis management. Indeed, the most important reform of the pension system – the increase in the statutory retirement age (*Rente mit 67*) – was introduced before the crisis. Similarly, these structural reforms prepared the ground for the widespread use in Germany of the various internal flexibility instruments, especially overtime and working-time accounts, during the initial crisis years. Again, when looking at the data, it is profoundly important to avoid mistaking correlation and causality.

(iii) Moreover, important, even well-designed political reforms might have little impact if they are conducted in isolation and “out of sync” with what happens in enterprises and markets. Indeed, the Agenda 2010 reforms built on changes aimed at creating more flexible labour markets that had already been introduced, originally initiated by the German social partners during the years of the so-called wage restraint (Dustmann et al. (2014)). The combined efforts made it possible to reintegrate in the labour market many low-skilled German workers – whose woeful employment record had existed alongside an internationally highly competitive export-oriented industry – in the first decade of the century.

In addition, even though many commentators seem to view the “Hartz I” to “Hartz IV” labour market reforms as the pivotal item in the reform portfolio, they were only part of a wider package of reforms. The German system of corporate taxation, for instance, was changed to place Germany roughly in the middle of the international ranking of corporation tax rates. It is extremely difficult to identify their respective marginal effects, and it would be a somewhat futile exercise, since they probably had such an impact precisely because they were introduced in such close succession. It seems safe to say that the best labour market policy might sometimes be to conduct reforms elsewhere in the economy.

### 3 The limits of international coordination

These insights clearly suggest that it would have been difficult for any European institution, the European Commission say, to implement these or similarly rigorous reforms top down. Arguably, nobody but the elected government of a euro area Member State would (i) have the incentive to spend its political capital to initiate serious reforms, (ii) be able to devise a package of reforms capable of targeting the major structural shortcomings of the respective economy, and (iii) manage to embed labour market reforms into a more comprehensive set of reforms in such a way to enhance the adjustment processes already underway in enterprises and markets.

An alternative and, in principle, also potentially promising way of identifying the appropriate reform strategy for any euro area economy would be to look more closely at the combined experiences of all of the Member States. Starting from a cross-country analysis, one might identify measures and arrangements which tend to work, suggesting them as prime candidates for initiating reform in any given country. Such an analysis would certainly be the starting point for any serious exploration of reform necessities and

possibilities. Yet it cannot provide much more than an indicative starting point for a deeper discussion about identifying the best set of institutions for any given economy and the appropriate reforms to achieve them, for two reasons.

First, merely finding a sensible starting point for the discussion is a highly challenging task, because institutions represent a tremendously complex web of arrangements which are the outcome of historic developments and societal preferences. Capturing this complexity empirically reaches its limits when the number of institutional facets to be considered in the analysis is approaching the number of available data points. Second, identifying the appropriate strategy not only requires solid theoretical considerations and sophisticated empirical skills, but also an intimate knowledge of the idiosyncrasies characterising the economy under scrutiny. One needs to probe deeper than any cross-country analysis, standing on its own, will ever be able to.

As an illustrative example, one might take the recent discussion on the introduction of a statutory minimum wage in Germany. Many international commentators were bewildered as to how a developed country such as Germany could so adamantly resist the introduction of a minimum degree of protection for low-skilled workers. After all, such a minimum threshold is in many countries the only device protecting workers against low incomes. But Germany has had an implicit minimum wage for a long time under its comprehensive arrangements for poverty relief (income supplements). Not understanding these arrangements, ill-informed commentators might be tempted to suggest that Germany should introduce a statutory minimum wage to boost disposable incomes and, thus, domestic demand. Very bad advice indeed, since the German system of poverty relief by income supplements guarantees that individuals enjoy a higher income while working – and a high statutory minimum wage will endanger some jobs at least (GCEE (2014), Chapter six).

Identifying the appropriate reforms for any given economy on the basis of internationally comparable data is all the more difficult in the euro area today since some of the economies most hit by the crisis are merely experiencing a correction towards their genuine sustainable level of economic activity. This is clearly not the textbook case of a protracted, yet still temporary, downturn away from the potential growth path. Quite obviously economic activity as measured in the national accounts was not accurately reflecting the ability of the Greek or the Spanish labour markets to create sustainable jobs during the pre-crisis years. Rather, these figures were inflated by credit-fuelled exaggerations. Consequently, to a large extent, the post-2008 figures indicate the degree of correction towards that genuine, yet so far unobserved, state.

I would like to end by briefly mentioning governance issues. After all, the euro area is constructed as a union of otherwise sovereign states. While its original architecture arguably displayed severe shortcomings, and ultimately failed to prevent the current crisis, it was reinforced during the crisis. The procedures designed for crisis prevention have been strengthened with the implementation of the banking union, for instance. And with the European Stability Mechanism (ESM) a permanent mechanism for crisis management has been introduced. In this process, the emphasis lies on the individual responsibility of Member States for household consolidation and structural reforms. We have come close to a world of “Maastricht 2.0” in which the responsibility for fiscal and

economic policy rests entirely with the Member States, backed by a revitalised no-bailout principle (GCEE (2012), Chapter two).

In this arrangement it would not make any sense whatsoever to offer some Member States transfers in order to enable or even persuade them to conduct structural reforms. They do not need to be enabled to conduct reforms as long as they enjoy complete market access, different from a crisis situation in which financial support needs to be combined with a macroeconomic adjustment programme. And they do not need to be persuaded to undertake reforms which ultimately benefit themselves, most importantly because this would generate serious incentive problems. Not only would it be difficult for the financiers among the Member States to identify the appropriate mix of reforms, it would be extremely difficult to avoid entering a transfer union, with all the conflicts characterising such arrangements. The potential obstacles to consensual coexistence are numerous, starting with the questions of what exactly would be the constituent elements of a “reform” and whether it is effort or success which should be rewarded.

To avoid these political conflicts, policy-makers in the euro area should recollect that it is the very competition of different approaches which enables Europe to learn from successes and failures. This competition naturally arises from the diversity which makes Europe so special, and it is perhaps the decisive characteristic of this region which will allow it to successfully tackle the many new challenges of the future. Rather than drowning its potential in an ill-fated attempt at excessive harmonisation, we should cherish the European principle of unity in diversity. Even though it might seem more demanding in the light of current challenges, accepting the individual responsibilities accompanying this principle will ultimately be rewarding.

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