European unemployment: the evolution of facts and ideas

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1. INTRODUCTION

From the end of World War II to the end of the 1960s, European unemployment was very low. In the 1970s, it started increasing. It continued to increase in the 1980s, to reach a high plateau in the 1990s. It is still high today, although the average European unemployment rate hides a high degree of heterogeneity across countries.

This has been a tough learning experience, both for economists and for policy makers. When the 1970s started, the concept of a natural rate of unemployment was just born, and still far from operational. The following quote from Milton Friedman (1968) is revealing:

> The natural rate of unemployment is the level which would be ground out by the Walrasian system of general equilibrium equations, provided that there is imbedded in them the actual structural characteristics of the labor and commodity markets,

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including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on.

One might have hoped that, with 30 years of data, with clear differences in the evolution of unemployment rates and policies across countries, we would now have an operational theory of unemployment. I do not think that we do. Many theories have come and – partly – gone. Each has added a layer to our knowledge, but our knowledge remains very incomplete. To use a well worn formula, we have learned a lot, but we still have a lot to learn.

The purpose of this paper is to review the developments, both on the unemployment and the theory fronts, and give an assessment of where we are today. Let me begin with two caveats. I have not tried to be encyclopedic.[1] And, because the editors unwisely encouraged me to do so, I have certainly focused too much on my own research – one of the results being a Stiglitz-like bibliography. For my defence, I would argue that it is broadly representative of the twists and turns of our theories over the last 30 years.

I review the basic facts, across time and across countries, in Section 2. As unemployment increased in the 1970s, the initial focus was on the role of shocks, from oil price increases to the slowdown in productivity growth. This is the topic of Section 3. As the shocks receded but unemployment remained high, the focus shifted in the 1980s to persistence mechanisms, from the role of capital accumulation, to the role of insiders in bargaining. This is the topic of Section 4. In the early 1990s, the focus shifted yet again, this time towards the role of labor market institutions, from employment protection to unemployment insurance. This is the topic of Section 5. Since then, research has tried to sort out the respective role of shocks, institutions, and interactions. The main directions of exploration and the open questions are the topic of Section 6. The state of play, and whether we know enough to usefully guide policy and reforms, are taken up in Section 7.

2. BASIC FACTS

Figure 1 gives the evolution of the unemployment rate for the EU15 as a whole (the 15 member countries of the European Union) since 1960. It shows the steady increase in unemployment from 2% in the 1960s to 8% in the 1980s, and a rough plateau – with cyclical declines at the end of the 1980s and 1990s – since then.

How much of the increase reflects an increase in the natural rate, and how much reflects an increase of the actual rate over the natural rate? The answer to that

[1] A more encyclopedic and very good survey, but now 10 years old, was given by Charles Bean (1994). A more recent one was given by Stephen Nickell (1997). The standard reference on unemployment in general, and European unemployment in particular, remains the book by Richard Layard, Stephen Nickell, and Richard Jackman, published in 1991 (2nd edition, 2005). Another important contribution is the 1994 book by Ned Phelps.

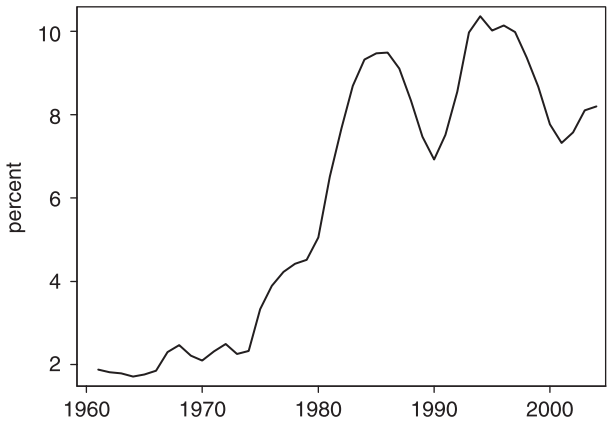

Figure 1. EU15 unemployment rate, since 1960

Source: OECD database.

question is relatively straightforward: since 2000, EU15 inflation has been indeed roughly constant – around 2% using the CPI index. If we take a stable inflation rate to be an indication that unemployment is roughly at the natural rate, this suggests that, today, the EU15 actual unemployment rate is close to the natural rate.[2] It follows that the increase in the actual unemployment rate since 1970 reflects, for the most part, an increase in the natural rate.

Can one tell how the natural rate has increased over time? The answer to that question is obviously much harder. Despite its limits, I find the following exercise to be useful: if we are willing to assume that, when unemployment is below the natural rate, inflation will tend to increase, and when unemployment is above the natural rate, inflation will tend to decrease, we can construct a series for the natural rate using the actual rate and the change in inflation. The results of such a construction are presented in Figure 2.[3] They suggest that the natural rate increased in the 1970s and early 1980s, and has remained roughly stable since then.

2.1. Heterogeneity across countries

Turning from the EU15 average to individual countries, Figure 3 gives the unemployment rates in each of the EU15 countries as of May 2005 (for reference, the evolution of unemployment rates in each EU15 country is shown in the appendix).

[2] One may question, however, whether this relation holds at very low rates of inflation; I return to the issue in the last section of the paper.

[3] The series for the natural rate is constructed as follows: Start from the relation $\pi = \pi(-1) - a(u - u^*)$ where π is the rate of inflation, u *and* u^* are the actual and natural rates of unemployment respectively. Rewrite the relation as $u^* = u + (1/a)\,\Delta\pi$. The series for u^* in Figure 2 is constructed using this relation, using $a = 0.5$ (a value consistent with econometric estimates for Europe) and a three-year moving average of the change in CPI inflation for $\Delta\pi$. (A different value for a would change the amplitude of the movements in u^* relative to u, but not the ordering of the two rates in a given year.)

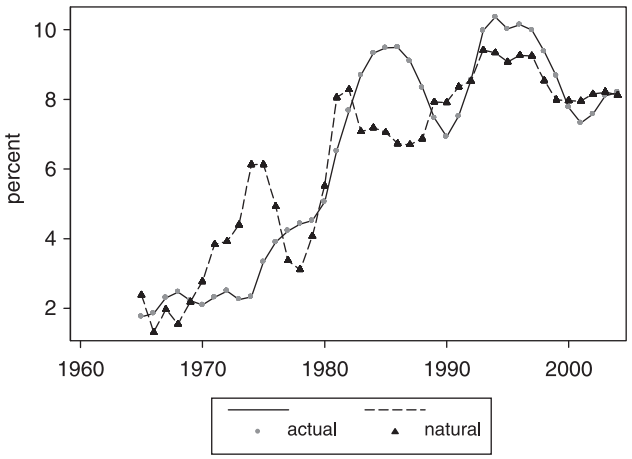

Figure 2. EU15 actual and constructed natural rate

Source: OECD database and see text.

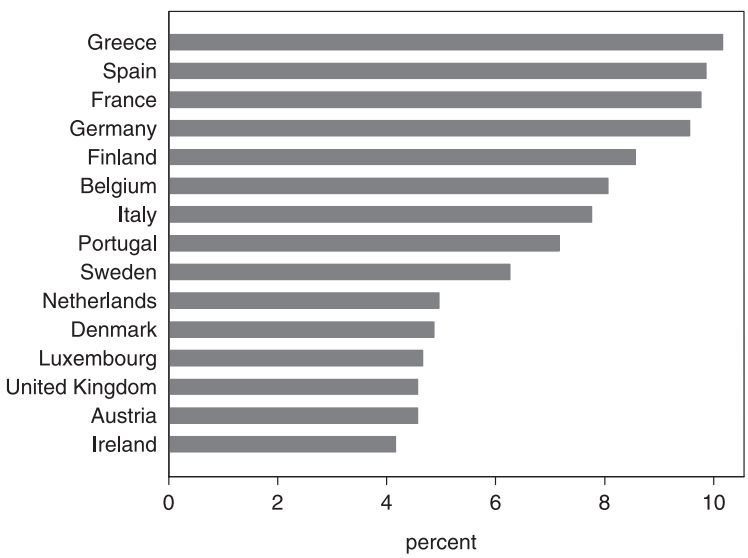

Figure 3. EU15 unemployment rates, 2005

Source: Eurostat.

The figure shows the large heterogeneity of unemployment rates across countries. While this heterogeneity has always been present, it is more marked today, to the point where talking about 'European unemployment' is indeed misleading. Unemployment is low in many countries: as of mid-2005, the United Kingdom, the Netherlands, Denmark, Ireland and Austria all have unemployment rates lower than the United States. And high average European unemployment reflects high unemployment in the four large continental countries, Germany, France, Italy and Spain. Even among these four countries,

Figure 4. Unemployment rate and duration in France

Source: Enquètes Emploi, INSEE, series longues; with adjustment by author for 1968 to 1974.

the differences are striking. Spain's unemployment rate is down from more than 20% in the early 1990s.[4] Germany's unemployment rate is instead up from its low pre-reunification level, and shows sharp regional differences between the West and the East. Italy's and France's unemployment rates have been high since the early 1980s. But Italy's rate shows sharp regional differences between the north and the south. France's does not.

2.2. Unemployment, flows and duration

As a matter of arithmetic, a high unemployment rate may be the result of high flows in and out of unemployment, or/and a high average duration of unemployment. Figure 4, which gives the evolution of the unemployment rate and unemployment duration in France (for which data on the composition of unemployment by duration exists from 1968 onwards) shows that the increase in the unemployment rate has come with a large increase in duration. The figure suggests that duration, which was already higher than that of the United States in the late 1960s, has more than doubled since then, and now stands at well over a year.[5] The proportion of long-term unemployed (unemployed for more than a year) has increased from 20% in the late 1960s, to more than 40% today. From the point of view of the unemployed, being unemployed in Europe has always been a different experience from being unemployed in the United States – where mean duration has remained around 3 months – and has become increasingly so over time.

[4] In 1994, the official number for the unemployment rate reached 24%. The definition of unemployment and the numbers have since been revised, and the current time series have unemployment peaking at 18.4% in 1994.

[5] The increase in duration would be even larger, were it not for the increasing role of temporary contracts since the early 1980s, contracts which are typically associated with shorter ensuing unemployment spells.

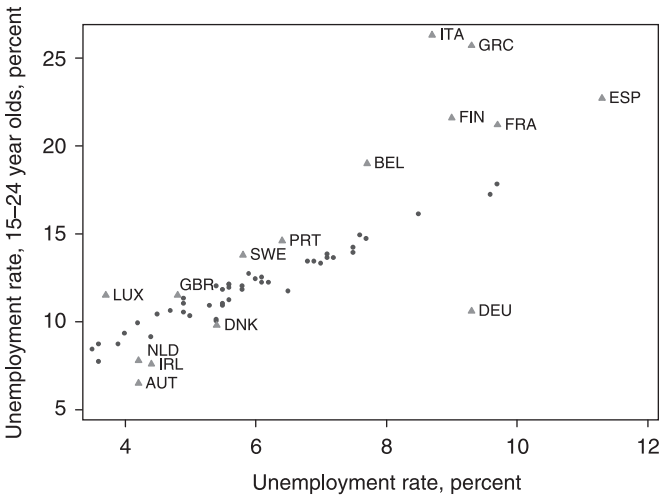

Figure 5. Youth unemployment rate (%): across EU15 countries and across time for the US

Source: OECD database.

2.3. Unemployment rates across workers

Another dimension of unemployment is how it affects different groups, skilled versus unskilled workers, young versus older workers, men versus women. One often-mentioned characteristic of European unemployment is how high the unemployment rate is among young workers. This is shown in Figure 5, which plots the unemployment rate for the 15–24 age group against the overall unemployment rate for each EU15 country for the year 2004. Some countries, such as Italy and Greece, indeed have very high youth unemployment rates, in excess of 25%. Whether this reflects a uniquely European pathology is less clear, however. In all countries, high unemployment is associated with higher unemployment for some groups, the young and the unskilled in particular. To see whether the experience of Europe is unusual in this respect, I also plot in Figure 5 the corresponding numbers for the United States for each year since 1960 – each year represented by a small dot. Put simply, the points for the cross section of European countries are not far off the regression line one would obtain from US time series. Italy and Greece indeed have much more youth unemployment than the regression line would predict, Germany much less (because of its apprenticeship programmes); on average, the experience of the EU15 does not appear that unusual.[6]

[6] Bertola *et al.* (2005) provide a detailed description of the patterns of unemployment and employment rates for different age groups across time and OECD countries. They conclude that decreases in the employment rates of younger (15–24) and older (55+) have typically been stronger in more unionized countries.

2.4. Unemployment versus other labour market indicators

Yet another question is whether the unemployment rate is in fact a good indicator of the general state of the labour market. Faced with poor employment prospects, people may decide not to join the labour force, students may decide to stay longer at the university; these decisions will show up as lower participation rates, not as higher unemployment rates. Governments may also want to reduce unemployment numbers; and indeed many governments have. Measures have ranged from training programmes, real or perfunctory, to generous disability programmes (the example of the Netherlands being the best known), to subsidized early retirement programmes (which have played an important role in France since the mid 1980s).

There is thus little question that a complete examination of the labour market requires looking not only at unemployment rates, but also at participation and employment rates.[7] But it is still the case that, in the case of European unemployment, focusing on the unemployment rate is not misleading. This is because, in general, depressed labour markets have shown not only higher unemployment, but also lower participation and employment rates. To take one example, the participation rate of men, aged 55 to 59, in France, went from 85% in the late 1960s to below 70% in the mid 1980s, reflecting subsidized early retirement, precisely at the time when unemployment was increasing.

Figures 6 and 7 provide more time series and cross-section evidence on this point. Figure 6 shows the evolution of the unemployment and participation rates for Spain since 1960. It shows how the large increase in unemployment was associated with a decrease in participation, and how the more recent decrease has been associated in turn with a large increase in participation. Figure 7 plots the employment rate against the unemployment rate across EU15 countries for men for the year 2003, and shows a strong negative correlation between the two.[8]

Having laid the basic facts, I now look at the history more closely.

3. THE INITIAL RISE IN UNEMPLOYMENT: THE ROLE OF SHOCKS

Along a balanced growth path, the wage consistent with stable employment must grow at the rate of Harrod-neutral technological progress.[9] In addition, if the prices of the other factors of production increase, the wage must decrease so as to maintain zero net profit for firms. Call this wage the 'warranted wage'. Call the wage set in bargaining the 'bargained wage'. If, for given labour market conditions, the bargained

[7] The participation rate is defined as the ratio of the sum of the employed and unemployed to the population of working age. The employment rate is defined as the ratio of employment to the population of working age.

[8] The reason for focusing on men in the figure is that cross-country variations in the participation rates of women reflect in part cultural differences. A low participation rate of women is not, *per se*, an indication of a badly functioning labour market.

[9] Much of our intuition and most of our models are based on the assumption that technological progress is Harrod-neutral and that there is a balanced growth path. What happens if not is largely unexplored, but may well be relevant.

Figure 6. Unemployment and participation rate in Spain

Source: OECD database.

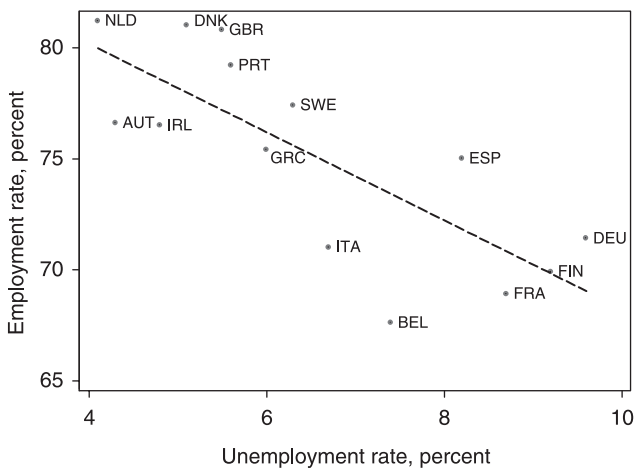

Figure 7. Unemployment and employment rates of men: 2003, EU15 countries

Source: OECD database.

wage grows faster than the warranted wage, equilibrium employment will decline, and the natural rate of unemployment will increase.

This proposition is the key to understanding what happened to unemployment in the 1970s. European countries were hit by a series of adverse shocks, shocks which implied a slowdown in the rate of growth of the warranted wage:

Just like the rest of the world, European countries were hit by two major oil price increases, the first one triggered by the Arab oil embargo of 1973–74, the second by the Iranian revolution in 1979 and the Iran–Iraq war of 1980. Figure 8 gives the price

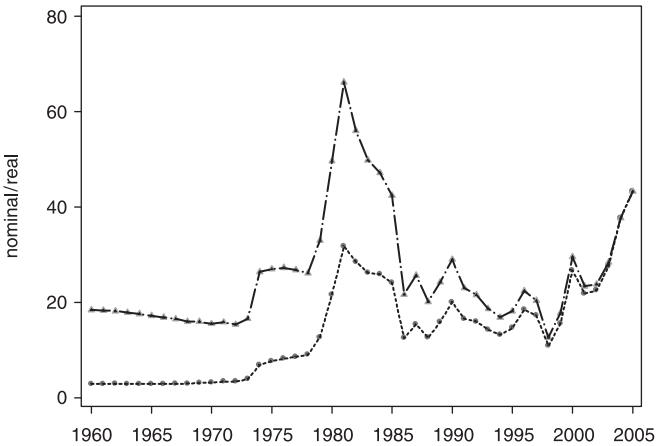

Figure 8. Nominal and real price of crude oil: 2005 dollars

Source: US Department of Energy.

of oil, in dollars and in real (US) terms, since 1960. It shows that, by the early 1980s, the real price of oil, in dollars, stood at nearly four times its level at the start of the 1970s.

Another shock, less visible initially but eventually more important, both in terms of its impact on growth and on unemployment, was also at work. Total factor productivity (TFP) growth, which had been high in the 1950s and 1960s, slowed down considerably. By the late 1970s, the rate of Harrod-neutral technological progress (constructed using the Solow residual, and dividing it by the labour share), which had run at more than 5% in the 1950s and 1960s, was down to 2%. In other words, the annual rate of growth of warranted wages had decreased by three percentage points, a dramatic decline. Figure 9 gives five-year averages of estimates for the five major EU countries (Germany, France, Spain, Italy, and the UK) – the EU5 for short. It shows that the decline was largely similar across countries.[10]

These two shocks would have required slowdowns in the rate of growth of actual wages to avoid an increase in unemployment. In fact, both came after a period of labour unrest in many European countries – May 1968 in France, Spring 1969 in Italy, the end of dictatorships in Portugal and Spain in 1974 and 1975 – in which workers had asked for increases in wages. Not surprisingly, the joint outcome of lower growth of warranted wages and higher wage demands was an increase in unemployment. By the end of the 1970s, unemployment for the EU15 had increased to 5%, up from 2% at the start of the decade; Spain's unemployment rate exceeded 10%, France's and Italy's exceeded 6%.

The development of a conceptual frame, and the econometric fleshing out of this story, were largely the work of Michael Bruno and Jeffrey Sachs, who put it together

[10] For a tentative explanation, see Temin (2002).

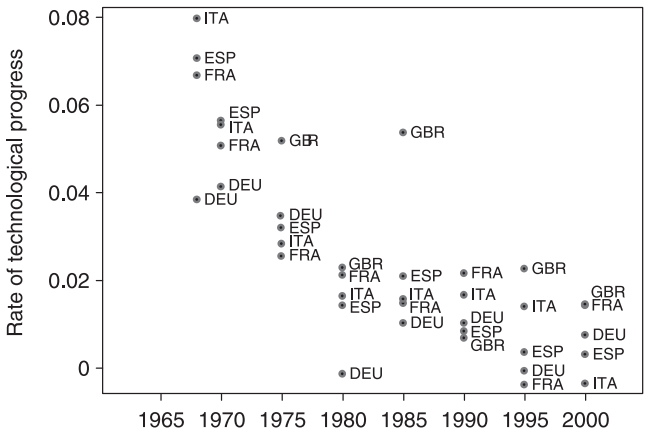

Figure 9. Rate of Harrod-neutral technological progress, EU5: Centred five-year averages, 1968 onwards

Source: Blanchard and Wolfers (2000) database.

in a series of articles and then in a book in 1985.[11] Their book can be seen as a first attempt to put together a working theory of movements in the natural rate. They argued that the rise in unemployment could be explained by shocks interacting with two types of rigidities, real and nominal (Box 1 gives the basic algebra):

- 'Real wage rigidities' captured the speed at which real wages adjusted to changes in warranted real wages, the speed at which, for given unemployment, workers would for example accept a slowdown in actual wages in response to a productivity slowdown. The slower the adjustment, the higher and the longer lasting the effects of adverse shocks on unemployment.
- 'Nominal wage rigidities' captured the speed at which nominal wages adjusted to changes in prices. The slower the adjustment, the larger the decrease in the real wage in response to an unanticipated increase in prices. And by implication, the slower the adjustment, the more the monetary authorities could use inflation to reduce real wages and therefore limit the increase in actual unemployment in response to an adverse supply shock.

Differences in real and nominal rigidities could explain why, despite largely similar shocks, different countries experienced different increases in unemployment. A smaller increase in unemployment could be due to smaller real rigidities, resulting in a smaller increase in the natural rate; or it could be due to larger nominal rigidities, allowing policy makers to achieve, through the use of inflation, an unemployment rate below the natural rate; or it could be due to a more aggressive use of monetary policy, leading to higher inflation and an unemployment rate below the natural rate.

[11] Other researchers share the credit, among them Gordon (1975), Modigliani and Padoa-Schioppa (1977), and Branson and Rotemberg (1980).

Box 1. Real and nominal rigidities

The purpose of this and the following boxes is to formalize some of the arguments in the text. I have made the choice of presenting simple, related, but ad-hoc models. References to explicitly micro-founded models – which are needed if one wants to derive optimal policy – are given when available.

This box shows the role of real and nominal rigidities in shaping the effects of adverse shocks to warranted wages on unemployment.

Consider firms with constant returns to labour (we leave aside capital for the time being), so, using logs:

$$y = a + n$$

where y is log output, n is log employment, and a is log productivity (either TFP or labour productivity; the two are the same here). Assuming either competition in the goods market or a constant markup, the wage paid by firms, the warranted real wage, is given by:

$$w - p = a$$

where w is the log nominal wage, and p is the price level (constant terms are left out throughout for notational simplicity). Assume further that a follows:

$$a = a(-1) + \varepsilon$$

so we can focus on the effects of a negative realization of ε, a decrease in productivity.

Assume the bargained wage is given by:

$$w - p = Ea - \beta u$$

The bargained wage depends on expected productivity Ea and is a decreasing function of the unemployment rate u. Assume that expected productivity adjusts over time to actual productivity according to:

$$Ea = \lambda Ea(-1) + (1 - \lambda)a$$

I take the speed of adjustment of expected to actual productivity, $(1 - \lambda)$ as given here. In more explicit models, the λ like parameter has been derived from learning in a Bayesian environment in which firms and workers have to assess whether shocks are temporary or permanent, or from staggering of wage decisions (*à la* Taylor, 1980, or Calvo, 1983), or both.

Combining the equations for the warranted and the bargained wage gives:

$$u = -\frac{1}{\beta}(a - Ea)$$

An unexpected decrease in productivity leads to an increase in unemployment. Combining the equation for expected productivity with the equation above gives the behaviour of the natural rate of unemployment:

$$u = \lambda u(-1) - \frac{\lambda}{\beta}\varepsilon$$

A permanent decrease in productivity increases equilibrium unemployment (equivalently, the natural rate of unemployment) for some time, but not forever. λ and β capture the two dimensions of real rigidities. The higher λ, i.e. the slower the adjustment of expectations, the longer lasting the effects of the shock. The lower β, the larger the effect of the adverse shock on unemployment.

Now introduce nominal rigidities. To do so, replace the equation for the bargained wage by:

$$w = Ep + Ea - \beta u$$

The nominal wage is set on the basis both of the expected price level and expected productivity. Combining the equations for the warranted and the bargained wage gives:

$$u = -\frac{1}{\beta}[(a - Ea) + (p - Ep)]$$

(Ignoring the unexpected productivity term and moving terms around gives the conventional expectational Phillips curve, $p = Ep - \beta u$). The central implication of this equation is that, in the presence of nominal rigidities, monetary policy can, to the extent that it can increase $p - Ep$, potentially offset the adverse effects of adverse productivity shocks. Put another way, expansionary monetary policy can offset the increase in the natural rate by maintaining the actual rate below the natural rate. The precise form of monetary policy required to do so depends on the formation of price expectations and the rest of the model; it is not essential to the argument made here.

In short, this box has shown how, in general, the response of unemployment to adverse supply shocks will depend on real and nominal rigidities. (An explicitly micro-founded treatment of these issues is given in Blanchard and Galì, 2005.)

Where did these differences in real and nominal rigidities themselves come from?

Differences in real rigidities were naturally traced to differences in the structure of collective bargaining. Sweden, with an unemployment rate of 2.2% at the end of the decade, was seen as a poster child for the case for corporatism, i.e. centralized bargaining and strong unions. An important contribution here was that of Calmfors

and Driffill (1988), who argued, both theoretically and empirically, that, in the face of adverse supply shocks, countries with either very centralized bargaining or very decentralized bargaining would fare better than those with intermediate bargaining structures. With centralized bargaining in particular, the parties at the bargaining table could see the need for and implement the wage adjustment required to maintain employment.

Differences in nominal rigidities were also traced to collective bargaining, albeit to different aspects of it. The degree of indexation, present in many European countries, played a central role. High indexation in effect prevented the use of monetary policy to limit the increase in unemployment, or required a very high rate of inflation.

Overall, this initial strand of research must be seen as a major achievement. Macroeconomists had entered the 1970s without a model of the natural rate, and had not anticipated stagflation. By the end of the decade, there was a working model of the natural rate, and stagflation was well understood. And the increase in unemployment was explained by adverse shocks interacting with country-specific collective bargaining structures.

4. CONTINUING UNEMPLOYMENT: SOURCES OF PERSISTENCE

Unemployment continued to increase throughout the 1980s, from 5% for the EU15 in 1980, to 8% at the end of the decade, with a peak of 9.5% in 1986.

The further increase in the first half of the 1980s was still easy to explain. Partly accommodating monetary policy in response to the adverse shocks of the 1970s had led to a large increase in inflation: in 1980, EU15 inflation was 12.5%. Throughout Europe, governments and central banks decided to reduce inflation through tight monetary policy, starting with Mrs Thatcher in the UK in 1979. By 1986, the EU15 inflation rate was down to 3%. This was achieved, however, through a large increase in the unemployment rate – reflecting an increase in the actual rate of unemployment over the natural rate.

For the rest of the decade, however, inflation was roughly stable, an indication that the actual unemployment rate was now close to the natural unemployment rate – around 8–9% for the EU15. This high natural rate was more difficult to explain: as can be seen from Figure 8 earlier, by the mid-1980s, the sharp increases in oil prices had been largely reversed. The decline in productivity growth was still very much present, and now well understood and documented. But it appeared increasingly unlikely, more than ten years after the decline, that wage setters would not have adjusted to the new reality of lower productivity growth.

This led researchers to focus on persistence mechanisms, on why the initial adverse shocks might have very long lasting effects on unemployment. Research focused mainly on two mechanisms, capital accumulation, and the role of insiders in collective bargaining. (See Box 2 for a more formal treatment.)

Box 2. Persistence mechanisms

The first persistence mechanism focuses on capital accumulation and its implications for the warranted wage. The second focuses on collective bargaining and its implications for the bargained wage.

Capital accumulation, and the two effects of monetary policy

Assume that, instead of the assumption of constant returns to labour we made in the previous box, the production function is Cobb–Douglas in capital and labour, and constant returns to scale:

$$y = \alpha(a + n) + (1 - \alpha)k$$

where k is the log of the capital stock, and a is the index of Harrod neutral technology (technology for short). Assuming perfect competition in the goods market or a constant markup, the warranted real wage is given by (up to a constant term that I ignore):

$$w - p = (\alpha - 1)(n - k + a) + a$$

For a given capital stock, the higher is employment, the lower is the marginal product of labour, the lower is the warranted real wage.

The profit rate associated with a given real wage is given by the factor price frontier relation (up to a constant term, again ignored)

$$\pi = -\frac{\alpha}{1 - \alpha}(w - p - a)$$

where π is the log of the profit rate.

Let r be the log of the user cost of capital. If π is less than r, k decreases over time. If π is greater than r, k grows over time. In the long run, the profit rate must be equal to the user cost, so the warranted real wage is given by:

$$w - p = a + \frac{1 - \alpha}{\alpha} r$$

Assume the bargained wage is given, as in Box 1, by:

$$w - Ep = Ea - \beta u$$

Let $\bar{n}$ be the log of the labour force, so $u \approx \bar{n} - n$. Then, using the equation for the warranted real wage in the short run and the equation for the bargained wage gives:

$$p + (\alpha - 1)(\bar{n} - k + a) - (\alpha - 1)u = Ep + Ea - \beta u$$

Or, reorganizing:

$$u = -\frac{1}{1-\alpha+\beta}[(a - Ea) + (p - Ep) + (\alpha - 1)(\bar{n} - k + a)]$$

In the short run, unemployment depends, as in the previous box, on $a - Ea$, and $p - Ep$. But it also depends on the capital stock. The lower the capital stock, the lower the demand for labour, the higher the unemployment rate.

Now consider a permanent decrease in productivity, leading, initially, to a negative $a - Ea$. For the time being, ignore nominal rigidities and the term $p - Ep$. Other things equal, unemployment will initially go up, and then come down as expectations of productivity adjust to the new lower level. This is what we saw in the previous box. But, now, another mechanism is at work. So long as employment is lower, so is profit, and so is capital accumulation. Thus, unemployment returns to normal, but this may take a long time.

In the context of this model, it is worth returning to the role of monetary policy. First, and as before, expansionary monetary policy, to the extent it can affect $p - Ep$, can reduce real wages and limit the increase in unemployment, by having actual unemployment remain below the natural rate. Second, to the extent that it also reduces the real interest rate and therefore the user cost, it can also reduce the effect on capital accumulation, and thus reduce the increase in the natural rate over time. What happened in the second half of the 1970s can be interpreted in this light. Had monetary policy been tighter, unemployment would have been higher, and the decrease in capital accumulation larger.

If, however, monetary policy turns contractionary, then both effects work in reverse. Tight money leads to an increase in the unemployment rate over the natural rate. And high real interest rates lead to a decrease in capital accumulation, and to an increase in the natural rate. This can be seen as what happened during the disinflationary episodes of the early 1980s.

Insider effects, hysteresis, and persistence

Assume that technology, and so the warranted wage, are the same as above. The real wage paid by firms – equivalently the relation between employment and the real wage – is given by:

$$w - p = (\alpha - 1)(n - k + a) + a = (\alpha - 1)(n - k) + \alpha a$$

To focus on the dynamics of collective bargaining, we turn off the other source of persistence, and assume the capital stock is fixed.

Turn to wage setting. Think of wages as being set by a monopoly union that chooses the wage, and then lets the firm decide about employment.

Suppose the nominal wage is chosen so that, in expected value, the membership of the union is employed:

$w \mid En = m$

where m is log membership. Suppose that membership is given by:

$m = n(-1) + \theta(\bar{n} - n(-1))$

If $\theta = 0$, then membership is just equal to employment last period: the union cares only about the employed. If $1 > \theta > 0$, the union puts some weight on employment of the unemployed, but less than on the employment of those already employed.

Assume that the union chooses the nominal wage, based on the warranted wage relation above, and based on expectations of both technology and the price level, so

$w = Ep + (\alpha - 1)(n(-1) + \theta(\bar{n} - n(-1) - k)) + \alpha Ea$

Combining the equations for the warranted and the bargained wage, and reorganizing, using $u = \bar{n} - n(-1)$, gives:

$$u = (1 - \theta)u(-1) - \frac{1}{1 - \alpha}[(p - Ep) + \alpha(a - Ea)]$$

Unemployment adjusts over time to unexpected movements in prices and technology. The lower θ – the lower the weight of unemployment in bargaining – the higher the persistence. The initial Blanchard–Summers (1986) formulation assumed θ equal to zero. Under that assumption, the process for the unemployment rate has a unit root: the unemployment rate does not return to any particular value, and where it is depends on the history of surprises to both the price level and technology. It exhibits hysteresis.

As many pointed out, however, the assumption that θ is equal to zero is too strong. Even if the union does not care about the unemployed, they care what could happen to their members if there were adverse shocks and some members became unemployed. The higher the unemployment rate, the more careful they will be in their wage demands. Also, unions rarely set the wage unilaterally; to the extent that there is bargaining, firms can threaten to hire the unemployed. The higher the unemployment rate, the stronger the threat. All these factors imply a positive value of θ, and thus persistence rather than hysteresis.

Capital accumulation was already one of the themes of Bruno and Sachs. It was the focus of a major project later on, directed by Bean and Dréze (1991). The basic logic was straightforward: if, in response to a slowdown in productivity growth or an increase in the price of non-labour inputs, bargained wages did not adjust fast enough, employment decreased. If employment decreased, so did the profit rate. And as long as the profit rate was below the user cost, capital decreased over time, leading

to a further decrease in employment. The dynamics of capital accumulation could therefore lead to a long and deep increase in unemployment.[12]

This had interesting and highly relevant implications for monetary policy. In that context, expansionary monetary policy potentially played two roles. The first was, as before, to decrease real wages and limit the decrease in employment for a given capital stock. The second was to decrease the real interest rate, and by implication the user cost; by doing so it limited the decrease in capital accumulation, and so the further decrease in employment over time. Both channels had clearly been at work in the second half of the 1970s. Inflation steadily increased; *ex-post* real interest rates were negative, and – using forecasts of inflation at the time – so were *ex-ante* real interest rates in most European countries (Blanchard and Summers, 1984).

By symmetry, a monetary contraction, such as that engineered by most central banks in the early 1980s, also had two effects. The first one was to increase real wages, and thus decrease employment given the capital stock. The second was to increase the real interest rate, and thus decrease capital accumulation, and by implication, further decrease employment. Again, both channels were clearly at work in the first half of the 1980s. Inflation was sharply lower, and real interest rates were much higher than they had been earlier.

In short, the delayed reaction of monetary policy, first accommodating and later contractionary, could explain why the effects of the initial shocks were in effect delayed. Under this interpretation, with a more neutral monetary policy, the increase in unemployment would have been higher initially, but shorter in duration.

An interesting twist to the theory was suggested by Hellwig and Neumann (1987) in their study of Germany. If bargained wages were set by looking at labour productivity growth rather than at the underlying rate of technological progress, then a vicious cycle could easily emerge. Suppose workers asked for too high wages. Firms would respond by reducing employment, thereby increasing the capital-labour ratio, and thus increasing labour productivity – relative to the underlying rate of technological progress. This might trigger further wage demands, further decreases in employment, further increases in labour productivity, and so on, leading to a potentially very large increase in unemployment.

The second line of research focused on *collective bargaining*. It was based on the idea that wage bargaining typically takes place between employed workers (or, more specifically, their union representatives) and firms, and that the unemployed are not represented at the bargaining table. This 'insider-outsider' theory was developed by Lindbeck and Snower (as summarized for example in their 1989 book), and applied to unemployment, first by Gregory (1986), then by Blanchard and Summers (1986) and by Gottfries and Horn (1987).

[12] The focus here is on the effect on the increase in the natural rate. The decrease in investment demand could well lead to an even larger increase in the actual unemployment rate.

The basic idea was straightforward. Suppose that unions set the wage subject to the firms' demand for labour. And suppose that unions cared only about the employment prospects of the currently employed. Then, they might set the wage so that, in expected value, employment remained the same. Because of unexpected shocks, employment would be sometimes smaller and sometimes larger than expected. In other words, employment would follow a random walk, and for a given labour force, so would unemployment. There would no longer be a natural rate of unemployment to which the economy would return; unemployment would exhibit 'hysteresis', not returning to any particular value, but being determined instead by the whole history of shocks to the economy.

This extreme form of the theory was provocative, and rightly criticized as being too strong. Empirically, it implied that movements in the labour force would not be reflected in employment; but a strongly established fact is that, even in economies with high unemployment, exogenous movements in the labour force – due to demography or repatriation, such as the return of European nationals after the independence of former colonies (for example Hunt, 1992) – translate fairly quickly into movements in employment. Empirically also, why would hysteresis be relevant for Europe from the 1970s on, but not elsewhere and at other times?

Theoretically, even if the unemployed do not participate in bargaining, there are at least two reasons to think unemployment will affect the outcome. The first is that, given the positive probability of finding themselves unemployed, employed workers should and will care about the state of the labour market: the higher the unemployment rate, the more careful they will be in setting the wage. The second is that wages are not set unilaterally by unions, but rather by bargaining between unions and firms. And firms can threaten to hire the unemployed; the higher the unemployment rate, the more relevant the threat.

These criticisms suggested that the central role of employed workers in bargaining implied persistence of unemployment in response to adverse shocks, but typically not hysteresis. The effect of unemployment on wages might be weak, but was not zero; even if the unemployed were not present at the bargaining table, high unemployment still led the economy to return to the natural rate, albeit slowly.

An important extension to this line of argument was provided by Layard and Nickell (1987), focusing on the effects of high unemployment on *human capital* – following an argument first developed by Phelps in 1972. They pointed out that, in European countries, high unemployment typically implied very high average unemployment duration (recall Figure 4). Such high duration was likely to lead to loss of skills, loss of morale, and thus make many of the long-term unemployed in effect unemployable. In that case, the higher the unemployment rate, the higher the duration, the higher the loss of skills, the lower the pressure on wages from a given unemployment rate. Separating the unemployment rate between short-term unemployment (the ratio of those unemployed less than a year to the labour force) and long-term unemployment (the ratio of those unemployed for more than a year to the

labour force), Layard and Nickell indeed showed that, in Phillips curve type relations, what seemed to matter was short-term unemployment, not long-term. This provided a potential explanation for why persistence was higher in Europe than, say, in the United States (where the proportion of long-term unemployed was and is very low).

Overall, these developments again represented progress. The focus on the joint movement on employment and capital, on the role of monetary policy through real wages and the real interest rate, on the implications of collective bargaining, were important extensions of the initial framework. They also made clear a number of holes, theoretical and empirical, in our understanding of wage determination. Were wages in collective bargaining set with an eye to TFP growth (more specifically, the rate of Harrod-neutral technological progress) or labour productivity growth? As we saw earlier, the answer makes a lot of difference to the dynamic effects of capital accumulation on unemployment for example. Looking at bargaining more closely, how did unemployment affect wage bargaining? How did employment protection, which clearly affects the probability that employed workers will find themselves unemployed, affect the outcome? This takes us to the next stage, the shift in focus towards labour market institutions.

5. STUBBORNLY HIGH UNEMPLOYMENT: THE ROLE OF INSTITUTIONS

In the 1990s, average European unemployment remained very high, peaking at 10.4% for the EU15 average in 1993, and ending at 7.6% in 2000 (a cyclical peak; the unemployment rate stands at 8.6% in mid-2005.) But this average reflected an increasing heterogeneity of evolutions across countries:

- Unemployment remained high in France, Spain and Italy. Germany's unemployment rate, which had remained relatively low until the early 1990s, steadily increased after reunification; it now stands (mid 2005) at about 10% (8.5% in Western Germany, twice as much in Eastern Germany).
- Unemployment decreased to under 5% in the UK, Ireland and the Netherlands, all from high levels in the early 1990s. (Belgium, with an unemployment rate of 8%, is an interesting case; the unemployment rate in the Flemish provinces – those close to the Netherlands – is 5%, while the unemployment rate in the Wallon provinces – those close to France – is 11.0%.)
- Unemployment remained relatively low in Austria, Norway and Portugal. And, while it went up sharply in Sweden, Denmark and Finland, the behaviour of inflation suggests that this was mostly a cyclical movement – an increase in the actual unemployment rate over the natural rate – and unemployment sharply declined thereafter; of the three countries, only Finland still has high unemployment.

With these evolutions, a clear shift in focus took place, both among policy makers and among researchers, for two reasons. First, continuing high unemployment in the major continental countries made the earlier explanations, based on adverse

shocks and persistence, increasingly implausible: could shocks in the 1970s and the 1980s still have such strong effects in the 1990s and 2000s? And second, given the continued large commonality of shocks, the differences in unemployment rates across countries pointed to differences in institutions as central to any explanation of unemployment.

The most dramatic evidence of this shift in focus was the 1994 OECD 'Jobs Study'.[13] Ill-adapted labour market institutions, the OECD report argued, were the source of high unemployment. And the report went on to advocate reforms, from the design of unemployment insurance and employment protection, to a reduction of the tax wedge and the minimum wage, to better training and active labour market policy programmes. The report was – and its general line still is – extremely influential. The notion that 'labour market rigidities' are at the core of European unemployment has gained wide acceptance among policy makers.

In parallel, on the academic research side, the shift in focus towards institutions was made easier by the emergence of a new and richer framework to think about unemployment, a framework based on flows, matching and bargaining. For some time already, Christopher Pissarides, building on earlier work by Peter Diamond on search and bargaining (1982), had explored models of the labour market which explained unemployment in the labour market as a result of a process of creation and destruction, large flows of workers in the labour market, and a complex matching and bargaining process between firms and workers (for example, Pissarides, 1985). His 1990 book (with a second edition in 2000), and the development and extension of the model in a series of articles with Dale Mortensen (for example, Mortensen and Pissarides, 1994) made the framework extremely influential, and rightly so. One of its strengths was to allow for a much more specific analysis of the role of institutions, both theoretically and empirically (Box 3 gives a more formal description).

The framework started from a basic fact: the labour market is characterized by large flows – high rates of separations from firms, and high rates of hires by firms. In France for example, 1.5% of all jobs are destroyed each month and roughly as many are created – interestingly, this is about the same percentage as in the United States. As there are many reasons other than job destruction why a worker may separate from a firm, the flows of workers are typically much higher. In France, they are of the order of 4% per month (Cahuc and Zylberberg, 2004).

In such a labour market, the process of matching workers and jobs is a complex one, and there will always be workers looking for jobs (unemployment) and jobs looking for workers (vacancies). From the point of efficiency, there is an optimal rate of unemployment, and this rate of unemployment is clearly positive.

[13] To be historically fair, the importance of institutions was already an important theme in the first edition (1991) of the book by Layard *et al.*

Box 3. Flows, matching, and bargaining: the Beveridge curve and the Phillips curve

The purpose of this box is to present the basic implications of the flow approach for understanding unemployment. I have presented it in a way which makes it most easily comparable to the theories presented in the previous boxes. For a full treatment, see the book by Pissarides (2000).

Gross flows

The starting point of the theory is that relatively stable aggregate employment is the result of large gross flows of job creation and job destruction. Let x and y be respectively the logs of the flows of jobs created and jobs destroyed. Assume that x and y are given by:

$$x = -\theta_x(w - p) + z_x$$

$$y = -\theta_y(w - p) - z_y$$

w and p are the logs of the nominal wage and the price level respectively. Job creation is decreasing in the real wage, job destruction increasing in the real wage. z_x and z_y are the factors that affect creation and destruction given the real wage (for example, productivity, oil prices, the cost of capital, which we focused on earlier).

In steady state, employment must be stable, so creation must be equal to destruction: $x = y$. This implies that the warranted real wage satisfies:

$$w - p = z \equiv \frac{1}{\theta_x + \theta_y}(z_x + z_y)$$

This in turn determines steady state gross flows x and y.

Matching, unemployment, and vacancies

At any point in time, there are workers looking for jobs (the unemployed), and jobs looking for workers (vacancies). The matching process is characterized by a matching function, which relates hires to the stock of unemployed and vacancies. Assume this function is of the form:

$$h = \alpha U + (1 - \alpha)V + z_m$$

h is the log of hires, U and V are the logs of unemployment and vacancies respectively. The higher the number of unemployed, or the higher the number of vacancies, the more matches, the more hires. z_m captures all the factors that affect the efficiency of the matching process. For example, a decrease in the search intensity of the unemployed, or an increased mismatch between the skills of the unemployed and the skills desired by firms, both lead to a decrease in z_m.

The relation between unemployment and vacancies for a given h is called the Beveridge curve. Shifts in the Beveridge curve correspond to changes in z_m.

The relation between h, U and V can also be written as:

$$(h - U) = (1 - \alpha)(V - U) + z_m$$

$h - U$ is the log of the ratio of hires to unemployment, thus the log of the probability per period of finding a job when unemployed, or, put yet another way, minus the log of average unemployment duration. The relation therefore says that unemployment duration is a decreasing function of the ratio of vacancies to unemployment.

Bargaining, and the determination of the bargained wage

If we think of wages as being the result of bargains between individual workers and firms, the outcome will depend on the state of the labour market. The higher $h - U$, the easier it is for a worker to find a job if unemployed, and so the stronger the worker will be in bargaining. Symmetrically, the higher $h - V$, the easier it is for a firm to fill a vacancy, and so the stronger the firm will be in bargaining. This suggests a wage relation of the form:

$$w - Ep = \beta[(h - U) - (h - V)] + z_b$$

where the nominal wage depends, as before, on the expected price level, the difference between the labor market prospects of the worker, $h - U$, and of the firm, $h - V$. z_b stands for all the other factors that affect bargaining; for example, the level of unemployment benefits if unemployed – which strengthen the worker in bargaining and increase the wage, or employment protection – which makes it more costly for the firm to replace a worker by another.

Note that the wage equation can be rewritten as:

$$w - Ep = -\beta(U - V) + z_b$$

Or equivalently, using the relation derived from the matching function:

$$w - Ep = \frac{\beta}{1 - \alpha}[(h - U) - z_m] + z_b$$

Note that this suggests the correct labour market variable in the equation for the bargained wage is not the unemployment rate (the variable traditionally used in such equations), but either the ratio of unemployment to vacancies, or the probability of exiting unemployment (or its inverse, average unemployment duration).

Combining the first of the two wage equations with the equation for the warranted wage earlier gives a Phillips curve relation:

$$p - Ep = -\beta(U - V) - z + z_b$$

The natural unemployment rate

Combining this equation and the equation for the warranted wage, and assuming $Ep = p$, gives a characterization of equilibrium unemployment duration:

$$h - U = \frac{1}{\beta}[(1 - \alpha)z + \beta z_m - (1 - \alpha)z_b]$$

Equilibrium duration (recall that $U - h$ is the log of duration) depends on the factors that shift the warranted wage, those that shift the matching function, and those that affect bargaining (some factors may be common to the different z's.)

The equilibrium flow h must be equal to job creation, so $h = x$ where x is determined by the warranted wage. This in turn determines the natural rate of unemployment as the product of equilibrium duration and the equilibrium flow.

Note how, in principle, we can learn about the sources of the shifts in the natural rate by looking both at the Beveridge curve relation – which tells us about shifts in z_m – and at the Phillips curve – which tells us about shifts in z and z_b.

Actual unemployment is unlikely to be optimal, however, and depends on the nature of bargaining. Even in the absence of collective bargaining, both the firm and the worker typically have some bargaining power. The worker can threaten to walk away from the job, but walking away and finding another job is costly, the more so the higher the unemployment rate. The firm can threaten to fire the worker; but doing so and replacing the worker by another is also costly, the more so the tighter the labour market, the lower the unemployment rate. This has two main implications. First, the bargained wage depends on the labour market prospects of workers and firms: high unemployment weakens workers and strengthens firms. Second, labour market institutions also play a central role in wage determination: the more generous the unemployment insurance, the less costly it is for the worker to look for another job. The higher the level of employment protection, the more costly it is for the firm to fire a worker.

From a methodological viewpoint, this framework led to major progress. It allowed for a more careful analysis of the implications of complex labour market institutions than could be done before. Take, for example, employment protection. The framework made three broad predictions. First, employment protection, to the extent that it increased the cost of laying off workers, was likely to decrease layoffs, and thus to reduce the flow of workers entering unemployment. Second, by increasing the costs to firms, and more importantly, by strengthening the bargaining power of workers, it was likely to lead to an increase in bargained wages, and in turn to an increase in the duration of unemployment. Third, given that the unemployment rate is the

product of the flows into unemployment and unemployment duration, lower flows and higher duration implied that the effect of employment protection on the unemployment rate itself was ambiguous. All three implications have proven to fit the facts well (for example Blanchard and Portugal, 2001). Employment protection is probably one of the main factors behind the long unemployment duration in Europe; differences in employment protection seem, however, largely unrelated to differences in unemployment rates across countries.

It allowed for a better mapping between the increasingly available panel-data microeconomic evidence on firms and households, and macroeconomic models. Take, for example, unemployment insurance. The framework points to two separate effects of insurance on unemployment. The first is through its effect on search intensity, and thus the matching between unemployment and vacancies. The second is through the reservation wage: higher unemployment benefits make unemployment less painful and are likely to lead to an increase in the bargained wage. Both effects in turn imply an increase in equilibrium unemployment duration, and thus an increase in the natural rate. Guided by search theory, much empirical work has looked into the effects of the schedule of unemployment benefits on search by the unemployed. The findings in turn allow for a better calibration of our macro models. (There has been, however, little empirical micro work on the other channel, namely the effects of unemployment insurance on bargained wages. This reflects a more general shortcoming, a still poor empirical understanding of wage determination in environments such as Europe where both individual and collective bargaining are likely to play a role.)

It gave new macro tools to interpret facts and look at the sources of unemployment. In particular, it gave a way to combine the evidence from the Phillips curve with the evidence from the Beveridge curve – the relation between unemployment and vacancies. Conceptually, the Beveridge curve evidence tells us about factors that affect matching in the labour market, whereas the Phillips curve evidence tells us also about factors that affect bargaining. A shift in the Phillips curve not associated with a shift in the Beveridge curve points to factors related to bargaining; a joint shift points to factors related to matching. I initially hoped that the joint use of these two tools would prove powerful (Blanchard and Diamond, 1989; Blanchard, 1990); I have been disappointed, at least in its application to unemployment in Europe (for a recent examination, and a slightly more optimistic conclusion, see Nickell *et al.*, 2002). It has proven hard to learn much from the shifts in the Beveridge curve across countries; one reason may be that data on vacancies are often of poor quality.

Did the shift in focus towards institutions give us the key to the evolution of European unemployment, across countries and time? The first systematic look at the data, at the end of the 1990s, gave a mixed answer.

Differences in institutions appeared able to explain much of the differences in unemployment rates *across countries* either in the 1980s or in the 1990s. This was first shown in a cross-country regression by Stephen Nickell in 1997. Using quantitative indexes for a number of labour market institutions for the mid- and late-1980s, he

found that, together, they did a good job of explaining differences across 20 OECD countries. Among the most economically significant variables in his regression were the duration of unemployment benefits (which increased unemployment), and the degree of coordination in collective bargaining (which decreased it).

Changes in institutions did not appear able, however, to explain the evolution of unemployment rates *over time*. Even if the initial increase in unemployment was due to shocks rather than institutions, the difference between unemployment today and unemployment in the 1960s should be explained by much less 'employment friendly' institutions than 40 years ago. In 2000, Justin Wolfers and I took a careful look at the relation between unemployment, shocks and institutions, relying on a panel data approach over countries and time. We were not the first to do so. In an important book published in 1994, and building on his earlier work with a number of collaborators (Hian Teck Hoon, George Kanaginis, and Gylfi Zoega in particular), Ned Phelps had articulated a theory of movements in the natural rate based on shocks and institutions, and taken it to the data using panel data. Our contribution was in part to construct and include time series for a larger set of institutions than Phelps. And our first pass at the time series evolution of institutions was not very encouraging.

Figures 10 and 11 reproduce two of the time series we gave in that paper, for replacement rates and for employment protection respectively, for each EU5 country, for each five-year period since 1960. The replacement rates shown in Figure 10 were constructed from an OECD data set, which measured the ratio of pre-tax social insurance and social assistance benefits to the pre-tax wage, for various categories of unemployed workers, depending on income, family status, and duration of unemployment. Figure 9a gives an unweighted average of these replacement rates, the summary measure often used by the OECD. What is striking are the different evolutions of the five countries, and the absence of a common trend. Figure 10b provides a different and more relevant angle by showing the *maximum* replacement rate over all categories for each country and each subperiod. Again, no clear trend emerges. Clearly, some of the maximum replacement rates increased in the early 1980s, but they have declined since then.

The indexes of employment protection shown in Figure 11 were constructed by combining two sources, the series constructed by Lazear (1990) for the period before 1985, and the indexes constructed by the OECD for the 1980s and the 1990s. Again, what is striking is the absence of a clear trend, and the heterogeneity of evolutions across countries.

A more systematic construction of time varying measures by others (in particular Belot and van Ours, 2001) suggested roughly similar conclusions. In panel data regressions of unemployment rates on institutions across 20 countries since 1960, and allowing for country and time dummies, none of the labour market institutions appeared significant.

In this context, one variable deserves particular mention because it often comes up in discussions. The 'tax wedge', i.e. the difference between take-home pay for workers and the cost of labour for firms, divided by the wage, has steadily gone up in most

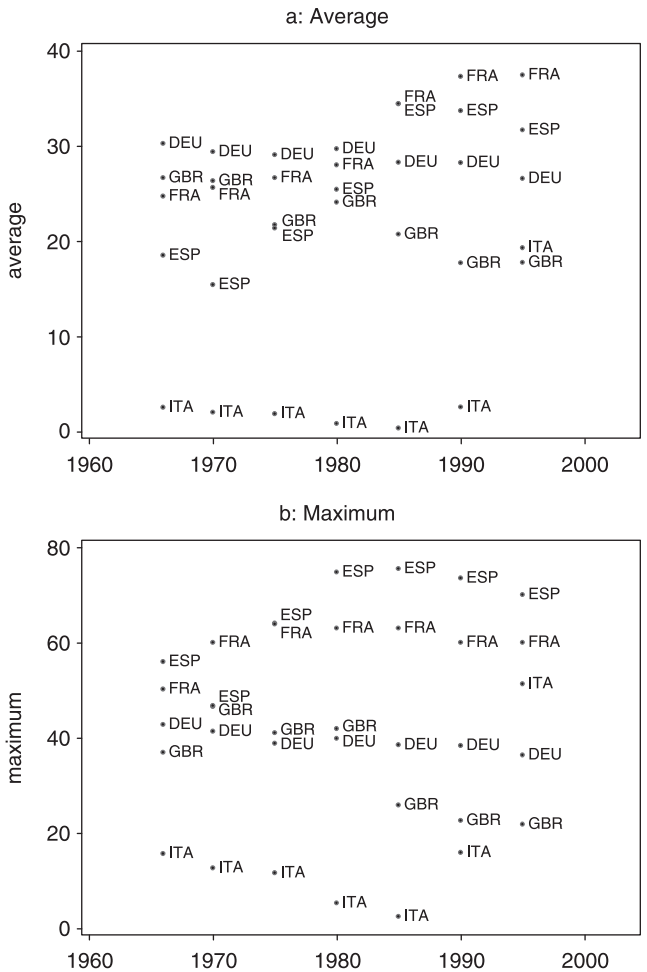

Figure 10. Replacement rates, EU5 since 1960

Source: Blanchard and Wolfers (2000).

European countries since the 1960s. In many countries, it stands at above 30%, and it is often blamed by firms and policy makers as one of the major sources of unemployment. Most economists are more sceptical (a formal discussion is given in Box 4).

On theoretical grounds, taxes or social contributions that treat income equally whatever its source (labour income or unemployment benefits) should not affect the cost of labour to firms, and thus not affect unemployment. The same should be true for taxes or social contributions which come with corresponding benefits, such as retirement contributions, so long as they are not redistributive.[14] On empirical

[14] Major effects of the tax wedge are likely to be present only for wages which are at or close to a minimum wage floor. In this case, additional contributions by firms cannot be shifted to workers, and thus lead to an increase in cost. For this reason, many European countries have decreased the tax wedge for low wages since the late 1980s, sometimes by substantial amounts.

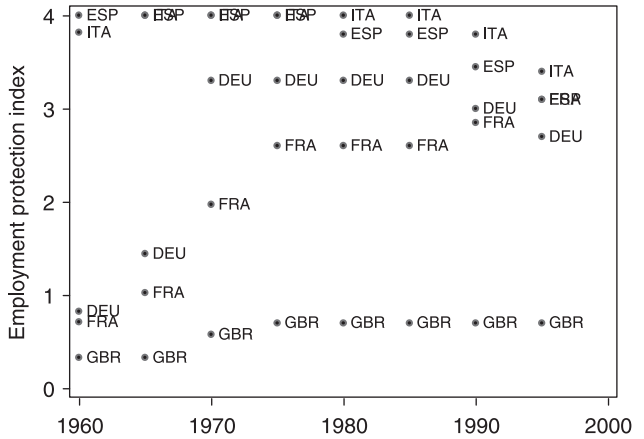

Figure 11. Employment protection index, EU5 since 1960

Source: Blanchard and Wolfers (2000); OECD (courtesy of Luca Nunziata).

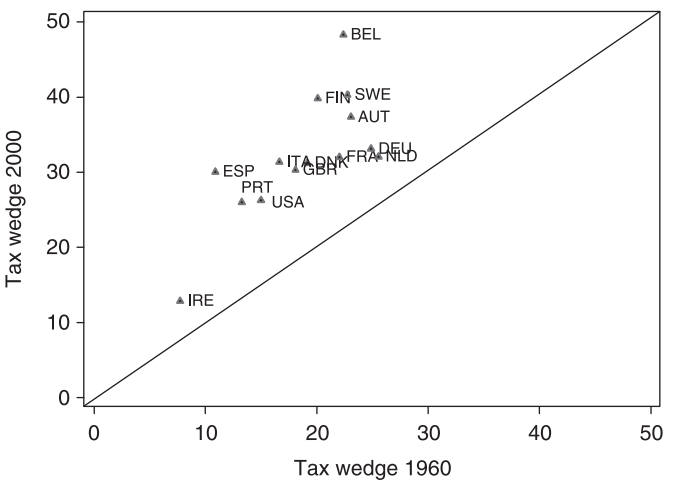

Figure 12. Tax wedge, 2000 versus 1960, by country

Source: OECD, and Luca Nunziata.

grounds, while the increase in the tax wedge fits the general increase in unemployment, it does poorly in explaining differences in unemployment across countries. This is shown in Figure 12, which plots the tax wedge (defined as the sum of payroll taxes paid by employers and employees and income taxes paid by employees) in 1960 and 2000 for each EU15 country and for the United States.

All the points are above the 45 degree line, indicating that the tax wedge is higher in all countries in 2000 than it was in 1960. But the ranking of countries shows little relation to unemployment rates. Three of the four countries with the highest tax wedge, Finland, Sweden and Austria, are also countries with a low natural rate.

Box 4. The tax wedge and unemployment

Suppose that there are two types of taxes. (Assume both are paid by workers rather than by the firm, but, except in the presence of a binding minimum wage, it does not matter whether these are paid by the worker or by the firm.)

A tax levied on all income (or consumption; the two are taken to be the same here), be it unemployment benefits or labour income, τ_1. (For example, an income tax, or a VAT.)

A tax levied on labour income only, τ_2, with benefits (in present discounted value) equal to $\lambda\tau_2$. λ may be equal to zero, if the tax is not associated with any benefit to the worker. It may be close or equal to one if it goes towards financing a retirement account.

Consider the choice between unemployment and employment. If unemployed, the worker receives $b - \tau_1 - f(u), f(.) > 0, f'(.) > 0$, where b is unemployment benefits, and $f(u)$ captures the private cost of being unemployed, which is assumed to be increasing in the unemployment rate. If employed, the worker receives $w - \tau_1 - \tau_2 + \lambda\tau_2$. His surplus from working for the firm is therefore:

$$V_w \equiv w - b + f(u) - (1 - \lambda)\tau_2$$

If the firm employs the worker, the firm receives $y - w$, where y is the productivity of the worker. If it does not, it receives nothing. Thus the firm's surplus from employing the worker is:

$$V_f \equiv y - w$$

The total surplus from the match is given by:

$$V = y - b + f(u) - (1 - \lambda)\tau_2$$

If we assume that workers receive a share β of the surplus, so $V_w = \beta V$, the wage (and the cost of labour to the firm) is given by:

$$w = \beta y + (1 - \beta)(b - f(u)) + \tau_2(1 - \lambda)(1 - \beta)$$

So

$$d\text{Cost}/d\tau_1 = 0 \quad d\text{Cost}/d\tau_2 = (1 - \lambda)(1 - \beta)$$

This makes clear that the frequent practice of simply adding all the social contributions together, plus the VAT and/or the income tax to get a tax wedge does not make sense (with one exception: if the alternative to work is not unemployment, but a job in the underground economy, then the VAT rate becomes again relevant). For each tax, we need to know whether it is levied on labour income and other benefits, or just on labour income. For each tax, we also need to know the relevant value of λ. In the case of social security for example, some redistribution is typically at work, so λ depends on the wage level.

To take stock: we ended the 1990s with a much better framework to study unemployment. But we also ended with many questions. Even if the earlier shocks were no longer the main source of unemployment, they clearly were responsible for the initial increase. If institutions were primarily responsible for unemployment at the end of the century, is it because they had become steadily less employment friendly? If so, why was it not reflected in the series we were constructing? One can see the research since then as exploring different answers to these questions. This is the topic of the next section.

6. INSTITUTIONS AND SHOCKS: CURRENT DIRECTIONS OF RESEARCH

Giving a clear description of current research is always harder than giving one of past research; research appears to go in many directions, only some of which will eventually pan out. I see roughly three main directions at this point. The first is an exploration of the role of other shocks, other institutions, other interactions. The second is a more careful exploration and measurement of institutions. The third is an attempt to look not only at unemployment, but at the joint behaviour of unemployment, employment, capital, wages and user costs. I take them in turn.

6.1. Other shocks, other institutions, other interactions?

Another line of research has extended the initial panel data examination of institutions and shocks, to look at other shocks, other institutions, other interactions:

- There are potentially many more relevant institutions than those included in the initial regressions by Nickell and Blanchard and Wolfers. Researchers have examined the effects of many others, from measures of product-market regulation, to measures of home ownership – a variable suggested by Oswald (1997).
- There are potentially many shocks as well. There used to be a sign at train crossings in France that said: 'A train may hide another'. It is not implausible that, in the same way that oil price increases initially hid the decline in productivity growth, the slowdown in productivity growth also hid other shocks. Researchers have looked, for example, at shifts in labour demand away from low skilled workers, or at increased turbulence – due to higher competition in the world economy, through deregulation of domestic goods markets, the decrease in trade barriers, and globalization. (I return to this particular theme below.)
- There are potentially many interactions between shocks and institutions. Recall that the initial focus of research by Bruno and Sachs was on the interaction between adverse supply shocks and the structure of collective bargaining. Recall that the focus of the research on persistence was on the strength of insiders; this strength clearly depends on institutions such as employment protection and unemployment benefits.
- There are also potentially many interactions between institutions, a theme explored, for example, by Coe and Snower (1997). The effects of taxation may depend, for

example, on the structure of collective bargaining, a theme explored by Daveri and Tabellini (2000). The effects of employment protection – which reduce layoffs – may be partly offset by collective bargaining focused on reducing wage dispersion – which may increase layoffs – a hypothesis explored by Bertola and Rogerson (1997) to explain the surprisingly high labour turnover numbers in Europe.

All these and a few more, have been explored through panel data regressions. A partial summary of the results is given in Baker *et al.* (2002). Some correlations are intriguing; the conclusion by Nickell *et al.* (2005) that time series for institutions do a better (but still mediocre) job of fitting some of the evolutions of unemployment across time than initially suggested by the Blanchard–Wolfers series is perhaps the most interesting. It is clear, however, that the number of potential shocks, institutions, and interactions is sufficiently large that the ability of such panel data regressions to tell us what exact combination matters is limited. Such regressions allow us to check for simple and partial correlations; they are unlikely to tell us about which combination of shocks and institutions is responsible for unemployment (for a similar view, see Freeman, 2005).

Of all the hypotheses listed above, at least one deserves a longer treatment.[15] It is the idea that higher competition in the goods market, lower trade barriers and higher integration of goods markets across countries, higher globalization and outsourcing, are all leading to a more turbulent environment, an environment with more job destruction and job creation. When the environment becomes more turbulent, existing labour market institutions may become dysfunctional and lead to substantially higher unemployment. Employment protection, which was rarely binding before as firms rarely laid off workers, becomes binding and increases the cost of firms. Unemployment benefits, which were not very costly so long as few workers were laid off, become costly, requiring higher contributions and leading again to higher costs of firms. The general story is appealing, and most of us believe that, indeed, there is more economic turbulence today than there was 30 years ago. There is one catch, however. We may all believe it, but the data just do not show it.

This puzzle showed up early on, when European unemployment was just rising in the late 1970s. Increased turbulence already seemed to be a plausible candidate. But it turned out that the measures of reallocation we could construct then – typically measures based on the standard deviation of rates of change of employment, either across sectors or across regions – showed no trend increase. The evidence as of the early 1980s is well summarized in Johnson and Layard (1986), who construct a table of standard deviations by industry or by region for a number of countries: half of the standard deviations are higher in 1979 than they were in 1960, half are lower. In all cases, the changes are small. I could not locate an update of this table for the 1980s

[15] Another hypothesis worthy of a longer treatment is the presence and the role of skilled-biased technological progress. I shall not do it here, except to mention that, while it is surely relevant, one observes that, in countries with high unemployment, unemployment is typically high across the skill spectrum (although obviously higher for low-skilled workers).

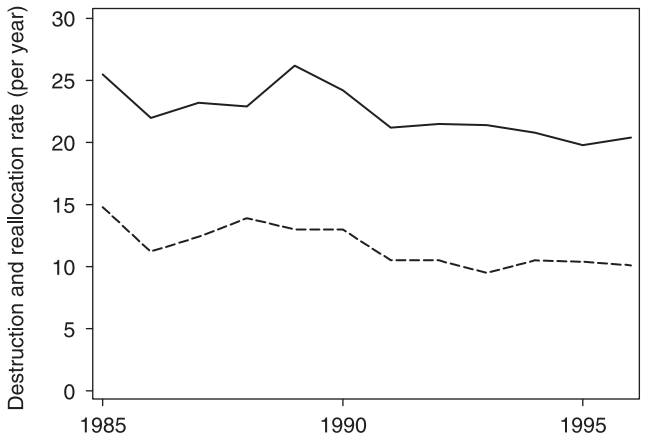

Figure 13. Job destruction and job reallocation: France 1985–96

Source: Blanchard (2000), updated.

and 1990s, but the series I have seen for a few countries yield the same conclusion: there is no apparent increase.

One may reasonably argue that these measures are too raw. Perhaps, the increase in reallocation is taking place mostly within industries or regions, rather than across industries or across regions. In that respect, measures of job flows based on plant-level data, along the lines of the work by Davis *et al.* (1996) are clearly preferable. The practical issue is that they typically do not go back far enough in time. But to the extent that they do, they also show little sign of increased turbulence. Figure 13 gives the evidence for France, based on two studies, one by Nocke (1994) for 1985 to 1990, and the other by Duhautois (1999) for 1990 to 1996.[16] The lower line shows the evolution of job destruction (the sum of all employment changes at plants with decreasing employment, divided by total employment); the upper line shows the evolution of job reallocation, defined as the sum of job destruction and job creation. The conclusion is clear: at least starting from when data becomes available, namely 1985, there is no evidence of an increase in turbulence.[17]

Is the argument therefore settled? No, for two reasons, one empirical, the other theoretical. The empirical reason is that other – admittedly conceptually less appropriate – measures of turbulence send a different message from job flows. For example, the measure of sales volatility constructed by Comin and Philippon (2005), based on the firms in the Compustat data set, show a steady increase in this measure of

[16] The juxtaposition of the two series, constructed using slightly different data and methodology, imply that there may be an artificial break in the series between 1990 and 1991.

[17] One might argue that, in the case of France, turbulence has increased, but its effects on flows has been offset by increasing employment protection. This suggests looking at data for the United States, where employment protection is low and has not increased. The evidence there is that, if anything, there has been a decrease in flows relative to total employment over the last 30 years (Davis *et al.*, 2005, Figure 4 for the private sector since 1990, and Figure 5 for manufacturing since 1947).

variability over time since the late 1960s. Reconciling the evidence on flat job flows and increasing sales variability remains to be done.[18] Until then, the discrepancy should make us more careful about conclusions.

The theoretical reason is that one can construct models in which turbulence is not necessarily reflected in higher job flows. Such models have been explored by Ljunqvist and Sargent in a series of contributions (for example, 1998, 2005). In their formalization, increased turbulence is reflected in an increase in the specificity of skills associated with particular jobs. The implication is that an involuntary job change is associated with a larger drop in the wage distribution facing a laid-off worker than was the case in the past. In this case, if unemployment benefits are linked to past wages, the unemployed may have high reservation wages, and remain unemployed for a long time. Furthermore, if skills deteriorate through unemployment, some of the unemployed may even become trapped into unemployment. Differences in the generosity of the unemployment insurance system, Sargent and Ljunqvist argue, may therefore explain why Europe is doing so much worse than the United States in facing the same increase in turbulence – an example of the interaction between institutions and shocks. While the theory is appealing, direct evidence of a larger decrease in skills for laid-off workers is however so far very limited.

6.2. A closer look at institutions

Labour market institutions are typically multidimensional. Reducing them to quantitative indexes is not easy: how does one compare, for example, two unemployment insurance systems, if the first has more generous unemployment benefits, but also more conditionality of benefits on search effort? How does one compare two systems of employment protection, when the first includes higher protection for some workers, and lesser protection for others?

In the process of looking at the effects of institutions, I have become less convinced that existing measures fully capture what is going on. This has led me to explore, in on-going work with Daniel Cohen and Cyril Nouveau (Blanchard *et al.*, 2005), the evolution and the determinants of labour market institutions in France since the 1950s.[19] What emerges is a more complex picture than that given by quantitative measures.

What we find is that the increase in unemployment in the mid-1970s led to major changes in institutions. Under the initial assumption that the shock, and therefore the increase in unemployment, was temporary, unemployment insurance was made substantially more generous, and employment protection was sharply increased. Early retirement programmes were put in place to 'make room' for young workers. As high unemployment turned out to persist, both financial pressures on the unemployment

[18] The two series differ in coverage in many ways – plant versus firm level data, manufacturing for the long series for job flows, large firms for Compustat, employment versus sales.

[19] For an exercise in the same spirit for Germany since 1990, see Wunsch (2005).

system, and the realization that some of the earlier measures probably contributed to unemployment, have led most of the initial changes to be reversed. But the reversal has not taken the form of a return to earlier institutions. The decrease in employment protection has come in the form of the introduction of two types of labour contracts, traditional and highly protected permanent contracts, and new, less protected, temporary contracts. Whether such a reform actually decreases unemployment is ambiguous; what is certain is that it has created a dual labour market, with protected and marginal workers.

So, while existing time series for labour market institutions in France show little change since the 1960s, a closer look at history suggests that, at least for France, institutions indeed became less employment-friendly in the 1970s and early 1980s. While things turned around starting in the early 1980s, many of the reforms have had perverse effects, either because of poor design, unanticipated consequences, or political constraints.[20] Institutions today are less employment friendly than they were in the early 1970s.

I do not know whether the conclusions reached from similar studies of other European countries will be similar. I suspect that the message is more general: one of the reasons why the shocks of the 1970s and 1980s have led to high unemployment in some European countries today is that they triggered a change in institutions, which has been partly and poorly undone in these countries.

6.3. Employment, capital, wages and interest rates

All the theories we have discussed have testable implications not only for unemployment, but also for capital accumulation, wages, profits and interest rates. For example, an increase in bargained wages, for given labour market conditions, should lead not only to an increase in unemployment, but also to a decrease in the labour/capital ratio, a decrease in the profit rate, and, for a given user cost, a decrease in capital accumulation over time. Yet, few of these theories have been tested using more than data on unemployment and through the estimation of unemployment equations.

This led me, in the late 1990s, to perform a conceptually simple exercise, that of looking jointly at capital, employment, wages, profits and user costs, and use this information to try to identify shifts in either 'labour demand' (the relation giving warranted wages as a function of employment, capital and the level of technology) or 'labour supply' (the relation giving bargained wages as a function of labour market conditions) (Blanchard 1997, 1998).[21] On the labour demand side, I assumed that firms chose capital and labour subject to convex costs of adjusting both investment

[20] In addition, France has suffered from a number of policies based on the lump-of-labour fallacy, from the generous early retirement programmes put in place in the 1980s – aimed at freeing jobs for new workers – to the 35-hour laws at the end of the 1990s – aimed at creating jobs by decreasing hours per worker. Both of these programmes have turned out to have large budgetary costs.

[21] Semantics are not settled here. The relation giving warranted wages is often called the 'price setting relation' as it gives the prices set by firms given wages and other variables. The relation giving bargained wages is often called the 'wage setting' relation, because it gives the wages set in bargaining, given the price level, actual or expected, and other variables.

and factor proportions. On the supply side, I assumed that bargained wages depended on the level of technology, the unemployment rate, with all other factors showing up as shifts in the relation. I then constructed shifts in labour demand and labour supply for 14 OECD countries for the period 1970–95. My papers were primarily an exercise aimed at organizing the empirical evidence in a simple but interpretable way. A conceptually more ambitious attempt was made by Caballero and Hammour (1998), who constructed a structural model starting more explicitly from bargaining and institutions such as employment protection, and allowing for endogenous technological progress. Their model was not estimated, but calibrated, and Caballero and Hammour used it to look at the evolution on capital, employment, productivity and factor prices in France.

Both exercises proved interesting, and the evidence more complex than I had expected. On the one hand, many of the dynamics suggested by the early work of Bruno and Sachs and the later work on the role of capital accumulation, were clearly present in the data. The early 1970s were characterized by 'adverse labour supply shifts' – that is, increases in bargained wages given unemployment. The effect of profit rates and interest rates on capital accumulation were also clearly visible, with low interest rates delaying the slowdown in capital accumulation to the 1980s. These labour supply shifts were largely reversed starting in the mid 1980s. Countries, such as the Netherlands and Ireland, which had seen a major decrease in unemployment, also showed a large decrease in wages in efficiency units – wages divided by the index of Harrod neutral progress.

The reversal of adverse labour supply shifts should have led to a decrease in unemployment over time. But, the data suggested, something else was at work starting in the early 1980s. At a given wage (in efficiency units) and given capital stock, employment was lower: there was an adverse shift in labour demand. The result was a decrease in the labour share in most European countries, starting in the early 1980s. Figure 14a gives the behaviour of the labour share in France, one of the countries where the decline was the most dramatic, for the business sector, from 1965 to 2001. The labour share, which had gone up by five percentage points from 1970 to 1981, then went down by 12 percentage points from 1980 to the early 2000s; it has remained roughly at that level since.[22] Figures 14b and 14c show the proximate causes of the evolution of the labour share. Figure 14b shows the evolution of the wage (in efficiency units), and Figure 14c shows the evolution of the ratio of employment (in efficiency units) to capital, since 1965.

In the second half of the 1970s, the wage (in efficiency units) went up, and the ratio of employment (in efficiency units) went down over time in response; the result was

[22] There are many issues of measurement associated with the labour share. The series used in the figure is adjusted for self-employment. Labour income includes not only the wage but also payroll taxes and other social contributions paid by firms. Some of the data have been reconstructed by the OECD since 2000, and the current series for France shows a smaller decrease; the basic evolution is still the same. Some of the evolution of the labour share is due to composition effects, the result of a shift to sectors with lower labour shares. Again, for France, this composition effect is small (de Serres *et al.*, 2002).

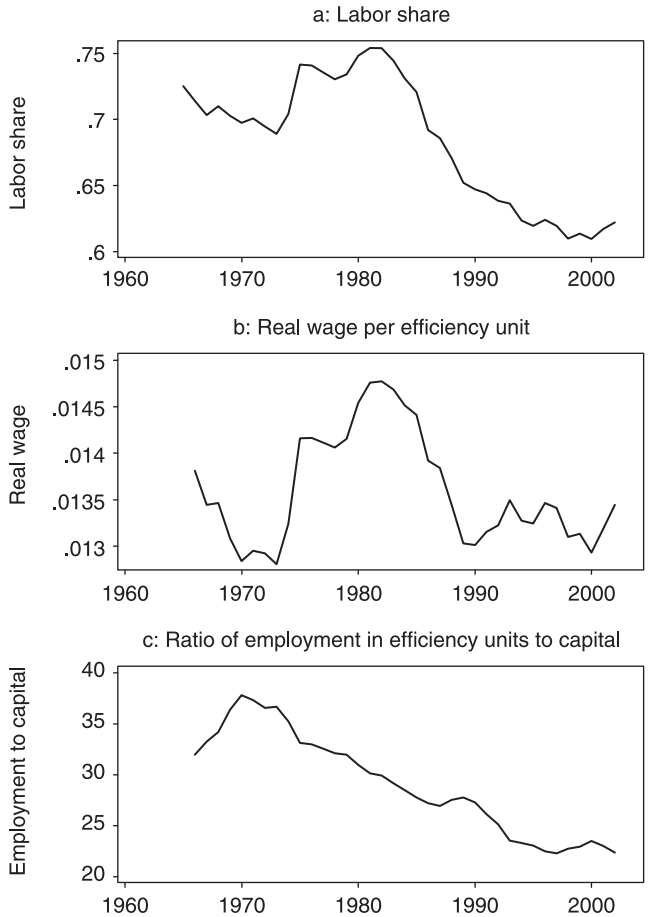

Figure 14. Share, employment and real wage: France

Source: OECD database, and author's computations.

an increase in the labour share, and this is exactly what we would expect in response to an adverse labour supply shock – an increase in the bargained wage for given labour market conditions. Since then, however, the wage has come down; since 1990, it has remained roughly at its 1970 level. The ratio of employment to capital has not recovered, however: lower employment at a given wage is what mechanically explains the lower labour share. (The basic algebra of the labour share is given in Box 5.)

Why is employment lower at a given wage? In my 1997 and 1998 papers, I considered various candidates and converged on a decrease in 'labour hoarding', due perhaps to higher competition and tougher corporate governance, as the more likely one. Under this explanation, however, the decrease in excess labour should have led to an increase in profit, an increase in capital accumulation, and an eventual recovery of employment; so far the increase in capital and employment has not taken place, at least not in France or in Germany, where a similar evolution of the labour share has taken place.

Box 5. The labour share

Assume that the production function has constant returns to scale, and Harrod-neutral technological progress, so:

$$y = f(k, an)$$

where y, k, n, and a are the levels of output, capital, employment, and technology respectively.

Let $\tilde{n} \equiv an$ and $\tilde{w} \equiv w/a$ denote employment and the wage in efficiency units (I shall drop in efficiency units in what follows). Then, assuming firms take the wage as given, labour demand is given by:

$$\frac{\tilde{n}}{k} = g(\tilde{w}) \quad g'(.) \leq 0$$

The ratio of employment to the capital stock is a decreasing function of the wage. The share of labour is given in turn by:

$$s \equiv \frac{wn}{y} = \frac{\tilde{w}\tilde{n}}{y}$$

Now consider an exogenous increase in the wage $\tilde{w}$. Suppose that in the short run, there is no scope for substitution between labour and capital, so $g' = 0$. The ratio of labour to capital remains the same, and so does the ratio of labour to output. Thus, $\tilde{w}$ goes up, $\tilde{n}/y$ does not change, and the labour share goes up.

What happens over time depends on the long-run elasticity of substitution. If it is less than one, the labour share decreases from its initial peak, but remains higher than before the increase in the wage; if it is equal to one, the share returns to its initial value; if it is greater than one, the share returns to a lower value than before the increase in the wage.

These dynamics can clearly explain why, after the increase in $\tilde{w}$, the labour share went first up, and then down over time. But they do not easily explain why the labour share decreased below its initial level. A permanent increase in $\tilde{w}$, and a long-run elasticity of substitution greater than one would explain it; but as we saw in the text, $\tilde{w}$ decreased back to or below its original value from the mid-1980s on.

Another element is therefore needed to explain the combination of a lower wage and a lower share. One potential explanation is a decrease in labour hoarding. Extend the equation for the demand for labour to be:

$$\frac{\tilde{n}}{k} = g(\tilde{w}, z) \quad g'_z > 0$$

Then, a decrease in z, due for example to the reduction of x-inefficiency, will decrease labour demand, and decrease the labour share. This is the explanation suggested in Blanchard (1998).

Suppose instead that firms are not wage takers, and that the marginal wage, call it $\tilde{w}_m$, differs from the (measured) average wage. The demand for labour is therefore given by:

$$\frac{\tilde{n}}{k} = g(\tilde{w}_m)$$

In this case, an increase in the marginal wage for a given average wage, will lead to a decrease in employment, and thus to a decrease in the labour share. One can think of a number of institutions which might lead to such an increase in the marginal wage: for example, additional regulations, additional workers' rights as the size of the firm increases. This is the line of explanation suggested by Caballero and Hammour (1998).

An alternative interpretation was given by Caballero and Hammour (1998). They argued that the decline in the labour share below its initial level reflected instead an increase in the marginal wage relative to the average wage (an increase in the marginal wage for a given average wage will lead to a decrease in employment, and thus a decrease in the labour share). Caballero and Hammour's conclusion was therefore that the low labour share reflected the firms' desire to decrease labour beyond what the average cost of labour would suggest. And, they argued, this reluctance of firms to hire labour could be traced to a worsening of labour market institutions. Their explanation leads to a much less optimistic view of the future: a low labour share does not lead to higher incentives to invest, nor to an increase in employment.

I see the labour share puzzle as largely unsolved. The decrease in the labour share has been much smaller in the UK and the United States than in continental Europe, pointing indeed to factors specific to continental Europe: institutions are a natural starting point. At the same time, within continental Europe, the decrease in the labour share has taken place both in countries that have reduced unemployment (the Netherlands, for example), and in countries that still have high unemployment (France, for example). I also see the puzzle as a potentially major piece of the story of European unemployment, and one on which more work should be done.

7. DO WE KNOW ENOUGH TO GIVE ADVICE?

At the end of this tour, one may ask whether we know enough to give advice to policy makers about how to reduce unemployment. I believe we do – with the proper degree of humility. In this last section, I summarize what I think we know and we do not know.

7.1. A general story line

Going back over the last 30 years, there is little question that the initial increase in unemployment in Europe was primarily due to adverse and largely common shocks, from oil price increases to the slowdown in productivity growth.

There is not much question that different institutions led to different initial outcomes. Whether collective bargaining led to a decrease in the growth of bargained wages, whether inflation could be used to reduce real wage growth, all played a central role in determining the size of the increase in unemployment.

There is not much question that the increase in unemployment led, in most countries, to changes in institutions as most governments tried to limit the increase in unemployment through employment protection, and to reduce the pain of unemployment through more generous unemployment insurance.

There is not much question that, since the early 1980s, because of financial pressure and intellectual arguments, most governments have partly reversed the initial change in institutions. But this reversal has been partial, and sometimes perverse. The different paths chosen may well explain the differences in unemployment rates across European countries today.

Despite the twists and turns of research, the sediments from the successive theories are nearly all relevant. The role of shocks and the interaction with collective bargaining emphasized by initial theories, the role of capital accumulation and insider effects emphasized by the theories focusing on persistence, the role of specific institutions clarified by flow-bargaining models, all explain important aspects of the evolution of European unemployment.

7.2. Which institutions?

It is one thing to say that labour market institutions matter, and another to know exactly which ones and how.

Humility is needed here, and there is no better reminder than the comparison between Portugal and Spain. Both experienced revolutions and wage explosions in the 1970s (the Portuguese labour share reached 100% in the mid 1970s); both have, at least on the surface, rather similar institutions, including high employment protection. Yet, Spanish unemployment has been very high, exceeding 20% in the mid-1990s, whereas Portuguese unemployment has remained low, with a high of 8.6% in the mid-1980s, and a decrease thereafter. Many researchers, including myself, have tried to trace the differences to differences in shocks or institutions (for a recent attempt, see Bover *et al.*, 2000). I am not sure that our explanations are much more than *ex-post* rationalizations.[23]

[23] Along the same lines, the rapid decrease of the unemployment rate in Spain – which has now fallen below 10% – is also hard to trace back to either shocks or dramatic changes in institutions. Yet another puzzle is the coincidence of very low productivity growth – zero measured TFP growth in Spain over the last 15 years – and decreasing unemployment.

And the history of the last 30 years is a series of love affairs with sometimes sad endings, first with Germany and German-like institutions – until unemployment started increasing there in the 1990s – then with the United Kingdom and the Thatcher–Blair reforms, then with Ireland and the Netherlands and the role of national agreements, and now with the Scandinavian countries, especially Denmark, and its concept of 'flexisecurity'.[24]

Nevertheless, even if one cannot pretend to have much confidence about the optimal overall architecture, much has been learned about the effects of the various pieces, especially from the large number of empirical micro-studies and natural or designed experiments. As a review of the relevant research would require another survey, let me just mention a few directions of research. We know much more about the incentive aspects of unemployment insurance on search intensity and unemployment duration, be it the length and time shape of unemployment benefits, or the form of conditionality or training programmes (see, for example, the surveys by Fredriksson and Holmlund, 2003, on unemployment insurance, and by Martin and Grubb, 2001, on active labour market policies). We know more about the effects of decreasing social contributions on low wages (for example, Crépon and Desplatz, 2001, on the French experience). We know more about the effects of employment protection, and the effects on the labour market of introducing temporary contracts at the margin while keeping employment protection the same for most workers (Blanchard and Landier, 2002, for France).

From both the macro evidence and this body of microeconomic work, a large consensus – right or wrong – has emerged. It holds that modern economies need to constantly reallocate resources, including labour, from old to new products, from bad to good firms. At the same time, workers value security and insurance against major adverse professional events, job loss in particular.

While there is a trade-off between efficiency and insurance, the experience of the successful European countries suggests it need not be very steep. What is important in essence is to protect workers, not jobs. This means providing unemployment insurance, generous in level, but conditional on the willingness of the unemployed to train for and accept jobs if available. This means employment protection, but in the form of financial costs to firms to make them internalize the social costs of unemployment, including unemployment insurance, rather than through a complex administrative and judicial process.

This means dealing with the need to decrease the cost of low skilled labour through lower social contributions paid by firms at the low wage end, and the need to make work attractive to low skill workers through a negative income tax rather than a minimum wage.

[24] For descriptions of events and reforms see Nickell and van Ours(2000) for the Netherlands and Ireland, Honohan and Walsh for Ireland (2002), Card and Freeman (2004) for the UK, and Westergaard-Nielsen (2001) for Denmark.

This consensus underlies most recent reforms or reform proposals, for example in the recent Hartz reforms in Germany (for a description, see Wunsch 2005), or the 'Camdessus Report' on reforms in France (2004).

These measures are probably all desirable. If they were to be implemented, would they be enough to eliminate the European problem? I see at least two reasons to worry.

7.3. Collective bargaining and trust

The first worry is that these reforms deal only with a subset of the institutions that govern the labour market. An early theme of the research on European unemployment was the importance of collective bargaining. And it is a fact that some of the successful countries, the Scandinavian countries in particular, have very different structures of collective bargaining from, say, France or Italy, with much more of an emphasis on national, trilateral, discussions and negotiations between unions, business representatives, and the state.

This raises two questions. First, whether countries such as France or Italy need to also modify the structure of collective bargaining. Second, whether, even if they did, the results would be the same as in Sweden or Denmark. I think we do not know the answer to either of the two questions. In work with Thomas Philippon (Blanchard and Philippon, 2003), we explored the hypothesis that differences in trust between unions and firms, perhaps trackable to differences in economic models between unions and firms, explain some of the difference in unemployment rates across countries. We found that various measures of trust, from strike intensity in the 1960s to survey measures of trust between firms and workers, could explain a substantial fraction of differences in unemployment across European countries.[25] Even if these findings reflect causality from lack of trust to unemployment, it is just a start. The question is whether trust can be created. The example of the UK where the unions have not only become weaker but have also changed attitudes, suggests that trust cannot be taken as an immutable country characteristic.[26]

7.4. Low inflation, the natural and the actual rate of unemployment

Since 2000, European unemployment has been associated with roughly constant inflation. This would suggest that the current high unemployment rate reflects a high natural unemployment rate, rather than a large deviation of the actual unemployment rate above the natural rate. This is indeed the assumption which justifies the focus on inflation by the European Central Bank: maintaining constant inflation is

[25] A recent paper by Cahuc and Algan (2005) takes another step in that direction, and argues, theoretically and empirically, that the efficiency cost of social insurance depends on civic attitudes.

[26] This section can be seen as a variation on the old theme of whether there are different national models, adapted to different countries, an 'Anglo-Saxon' model, a 'Scandinavian' model, and so on.

then equivalent to maintaining unemployment close to its natural rate; this natural rate can only be reduced by labour market reforms, and this is not the responsibility of the central bank.

One may, however, question this assumption. Inflation in the EU15 is now running under 2%, and close to 0% in countries such as Germany. At these low inflation rates, it is not implausible that nominal rigidities matter more, that workers, for example, are reluctant to accept nominal wage cuts – a hypothesis explored, for example, by Akerlof *et al.* (1996). In such an environment, it may be that an unemployment rate above the natural rate may lead to low rather than declining inflation. Put another way, it may be that, in fact, an expansion of demand might decrease unemployment without leading to steadily higher inflation. The experience of Spain, where unemployment has steadily decreased without major labour market reforms and without an increase in inflation, can be read in this light.

Another, conceptually different, argument for a more expansionary monetary policy, is that institutional reforms encounter less opposition when economies are growing and unemployment is decreasing. In other words, a decrease in unemployment below the natural rate may actually help decrease the natural rate itself. This argument is an old one (Blanchard *et al.*, 1985, already argued for such a 'two-handed' approach in Europe) but is still relevant today. One issue, however, is whether, in fact, growth and the decrease in unemployment do not alleviate the political need for reform, and thus delay rather than encourage reforms. The experience of the late 1990s in Europe, where a cyclical expansion often delayed reforms, is not reassuring in that respect. Developing this last point would take us to the political economy of labour market reform, and this should be the topic of another survey.

Discussion

Charles Bean

Bank of England

Persistently high unemployment in some European countries has been one of the major policy challenges for the last quarter of a century, so it is hardly surprising that the result has been a voluminous analytical, empirical and normative literature. More than a decade ago, I attempted to survey – not altogether successfully, I should add – the extant research for the *Journal of Economic Literature* and found it challenging to produce a manuscript that came in below a hundred pages. Since then, the literature has continued to mushroom. That Olivier Blanchard has managed to produce such a coherent and representative survey in less than half the length of my effort represents a notable achievement.

Broadly speaking, Blanchard's tale runs thus. Unemployment first rose in the 1970s as a result of real wage resistance, which raised the natural rate of unemployment in

the face of the oil price shocks and the slowdown in productivity growth. International differences could be traced at least in part to differences in wage bargaining structures. Initially policymakers sought to maintain growth and employment, but in doing so ran demand above potential, leading to a pickup in inflation. Subsequently policies were tightened to squeeze inflation out of the system so that the hitherto suppressed component of unemployment emerged.

But as the 1980s wore on this unemployment persisted, leading researchers to focus on mechanisms that amplified the effects of the original shocks and propagated them over time. Key mechanisms included those operating via the impact of capital decumulation on labour demand and insider-outsider effects on wage setting, whether operating through the disenfranchisement of the unemployed in the wage bargaining process or the progressive disconnection from the labour market of the long-term unemployed.

As we move into the 1990s, unemployment continued to remain high in some countries – particularly the big four continental economies – but fell back in others. Researchers and policy makers focused increasingly on institutional differences in labour market, and to a lesser degree, product market institutions and regulations. In some cases, poorly designed responses to the initial rise in unemployment that were focused on the symptoms rather than the causes had aggravated matters. Elsewhere, reforms had caused unemployment to fall. The research effort here was spurred by theoretical advances in modelling worker flows which permitted a rigorous analysis of the implications of alternative labour market arrangements, as well as the development of multi-dimensional measures of labour market institutions on a comparable basis, so facilitating cross-country empirical work.

As a result of all this effort we have a good, though still imperfect, idea of which labour market reforms work and which don't. The principles can be summarized thus: protect workers, not jobs; couple unemployment benefits with pressure on the unemployed to take jobs and measures to help them find them; ensure that employment protection merely internalizes social costs and does not inhibit job creation and labour reallocation; and avoid artificial restrictions on individual employment contracts wherever possible.

I think this tale is a pretty fair summary of where the literature has got to. In fact I found very little to disagree with in terms of the substance of Blanchard's conclusions about what we know and what we don't. If I do have a disagreement, it is with the detail of the narrative of how we got here. Reading Blanchard's account one has the impression of an orderly, linear flow as ideas gradually developed, building on those that had gone before. My recollection is that the journey was rather more scenic than that. Progress was distinctly crabwise and the neat temporal structure of Blanchard's narrative was in reality rather more higgledy-piggledy.

Thus much of the analysis of institutions that took place in the 1990s was foreshadowed in earlier work. To give a few examples, Bentolila and Bertola (1991) isolated the main consequences of hiring and firing costs, though the subsequent embedding

within a general equilibrium flow model of the labour market containing job creation and job destruction certainly provided a fuller picture. Moreover, early matching models had already been employed in the 1980s to study the unemployment-vacancy relationship. And, on the empirical side, the impact of different institutions on the key parameters in the wage-setting and price-setting schedules in different countries plays a starring role in Chapter 9 of the first 1991 edition of Layard *et al.*'s (2005) monumental study of unemployment. This is not to deny that we have learnt a lot from the later work, but merely to stress that it is only with hindsight is it possible to paint as neat a picture as Blanchard does. But then that is probably an acceptable piece of artistic licence on his part.

Two unresolved issues that Blanchard touches on at the end of his survey are, I think, worth dwelling on. The first relates to the political economy of labour market reform. As Blanchard notes, past institutional reforms have not always gone in the right direction. And though the economics profession may now have a pretty good idea of the principles that should guide institutional design, and of what works and what doesn't, the prospects for reform still remain dim in some countries. In part that may be because politicians have not yet been convinced by the arguments of economists. But a larger part may be down to the incentives facing governments and the difficulty of building a sufficiently strong coalition in favour of reform in an environment where the losers from reform may be immediate and obvious, but uncertainty and lags renders the gains more diffuse. Maximizing the constituency for reform then dictates undertaking reform when growth is rapid and a lot of job creation is taking place. But those same circumstances probably also weaken the incentive for governments to undertake reform – when unemployment is falling, why go through the hassle of pushing through unpopular changes?

There is a small, but growing, analytical literature that explores these issues, such as the paper by Saint-Paul (1996) published in this journal nearly a decade ago. Moreover, an empirical literature on this topic is also starting to emerge, such as the recent paper by Duval and Elmeskov (2005). On a data set covering 21 countries over the period 1985–2003, they find that structural reform is more likely: when unemployment and the output gap are high and there is consequently a sense of crisis; when public finances are healthy; and when there are multiple reforms, presumably because bundling makes it harder for special interest groups to block them. It also helps being small, possibly because it is easier to build consensus. This is far from being the last word, but progress is being made.

The second issue relates to the apparent flattening of the Phillips curve plot as inflation has subsided. This is apparent in many developed economies, but is particularly evident in the United Kingdom (see Figure 15). In the 1970s, the plot is roughly vertical, reflecting the rapid ratcheting up of wage settlements in the wake of the oil price shocks, aggravated by the indexation clauses that were widely in force then. The 1980s look more like the traditional inverse short-run textbook relationship between unemployment and inflation, though the persistence of high unemployment

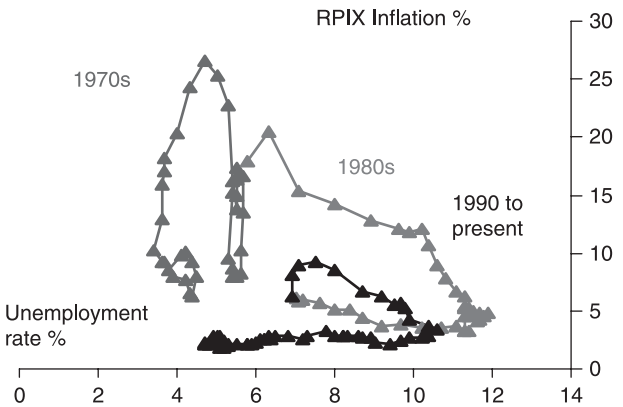

Figure 15. Inflation and unemployment in the United Kingdom, 1970 to present

after inflation was brought back down points to the importance of the persistence mechanisms discussed in Blanchard's paper. But what is going on in the 1990s?

One possible explanation runs as follows. The usual inverse short-run trade-off is alive and well, but the natural rate of unemployment has been falling as a result of past and continuing labour market reforms. Policy makers, seeking to stabilize inflation, have then managed to expand real demand at just the right rate so that actual unemployment has fallen in line with that declining natural rate. The problem is that this assumes an ability to fine-tune that is frankly unbelievable, especially once one recognizes the data fog in which policy decisions are taken. If the short-run trade-off were still there, it surely would have revealed itself as control errors pushed inflation either above or below target.

The alternative explanation is that the short-run trade-off is indeed flatter now. That is predicted by some New Keynesian pricing models, which suggest that prices should be changed less frequently at low inflation rates. Alternatively, the stabilization of inflation and greater counter-inflationary credibility in monetary policy may have anchored inflation expectations more successfully and ensured that more of an expansion in nominal demand is transmitted into higher activity and less into inflation than was the case in the 1970s. Moreover, the persistence mechanisms that helped to keep unemployment high in the 1980s after the original shocks had dissipated may now be operating in reverse. Finally, in recent years for the UK, endogenous inward migration may also have been important in limiting upward pressures on inflation in a tight labour market.

There is good news and bad news for policy makers if this is what is going on. The good news is that monetary policy becomes a more potent weapon for managing activity and upside control errors are less likely to lead to bouts of inflation that have subsequently to be painfully eradicated. The bad news – and central bankers are conditioned to spot the clouds even on a sunny day – is that it becomes harder to

identify the economy's true level of potential supply. Getting a better understanding of this changing nexus between unemployment and inflation should be an important item on the future research agenda.

To conclude, let me say again how much I enjoyed and admired Blanchard's paper. I confidently expect it to become a, if not *the*, standard reference on the topic for years to come.

Wolfgang Münchau

Financial Times

Olivier Blanchard's paper takes a bird's-eye view at the development of unemployment in Europe over the last 30 years, and how economists have tried to make sense of it at different times. On a different level, this paper is also a good account of our policy failures, and a critique of what one might call the European labour market consensus.

The European unemployment debate is still determined by the 1994 OECD jobs study, which has produced this consensus. This consensus is indeed shared by almost all European economic policy officials, including top officials at the European Central Bank, the European Commission and national governments. It says that high European unemployment is the result of structural rigidities in labour markets rather than macroeconomic policy failures.

I quote the prime minister of Luxembourg, Jean-Claude Juncker, who said not too long ago: 'We all know what we have to do. We just don't know how to win elections after we have done it.'

Essentially, this paper says that Mr Juncker's statement is simply not true. It says that Mr Juncker does not really know what he is doing. In fact, this paper argues there is a lot we do not yet know about the causes for unemployment, and that as a consequence we should be careful in dispensing policy advice.

Instead of commenting on each aspect of the paper, I will focus on the latter part, the implication of what we know and what we do not know about the causes of European unemployment for the way we have framed labour market policy.

In contrast to the OECD, Olivier Blanchard gives a relatively subtle set of policy recommendations. There are eight altogether:

- Economies constantly need to reallocate resources from good to bad companies. This is in reality not a call for labour market reform, but for reforms in product markets.
- Workers need security and insurance against major adverse risks.
- We should protect workers, not jobs.
- We need unemployment insurance, generous in level, but with strict conditions attached.
- Employment protection should be provided through economic rather than legal procedures. This means, companies should contribute to the social costs of unemployment.

- We should reduce non-wage labour costs especially for the low-skilled.
- We should introduce a negative income tax (in the UK this used to be known as the working families tax credit).
- We should supplement labour market reform with a more expansionary monetary policy for two reasons. First, at very low rates of inflation, we run into the problem of nominal wage rigidities. The second reason is an economic policy argument: institutional reforms encounter less political opposition when economies are growing.

Blanchard is more cautious, however, on reforms of collective bargaining systems. I would argue that if you framed labour market reforms in those terms, you might even win elections, contrary to what Mr Juncker believes, and contrary to what others, like Gerhard Schröder, the German chancellor, has just experienced.

A year before the publication of the OECD jobs study, the EU actually agreed with what I considered then and now a fairly sensible blueprint, the Delors White Paper on Growth, Competitiveness and Employment. It was a far more balanced approach, which included a combination of macroeconomic and microeconomic policies. It is much more in tune with this paper's conclusions, and unfortunately now largely forgotten.

The OECD consensus, by contrast, entails, in abbreviated form, that the most effective way to reduce unemployment is through deregulation of labour markets: reduction in unemployment subsistence, reduction in employment protection, and more flexibility in wage bargaining. The underlying assumption is that countries with more flexible labour markets have lower rates of unemployment.

The second part of this consensus is that macroeconomic policy, including both monetary and fiscal policy, plays no determining role in reducing unemployment.

Looking at the first consensus – that economies with deregulated labour market have lower rates of unemployment, there exist are a number of counterfactual arguments. While that pattern superficially appears to explain the difference in unemployment performance between, for example, the UK and France, over the last 10 years, it does not explain it for other countries. Blanchard cites the curious case of Portugal and Spain, two countries with similar political histories, and similar labour market institutions. Yet, following the revolutions of the 1970s, Spain developed a high rate of unemployment, while Portugal achieved a low rate of unemployment. Blanchard writes: 'Many researchers including myself have tried to trace the differences to differences in shocks or institutions. I am not sure that our explanations are much more than ex-post rationalisations.'

Another example is Austria, which runs an almost identical economic system as Germany, with centralized wage bargaining, strong labour market institutions, hiring and firing laws, a reduced role of the central government in labour market policy, in combination with a welfare system that could certainly not be classified as either Anglo-Saxon or Scandinavian. Austria has a lower rate of unemployment than the United States.

In this context I would like to make an unprovable proposition: If German unification had not occurred, West Germany would have an Austrian-like economy today. By the end of the 1980s, the West German economy was already on the trajectory to full employment.

There is one small aspect on which I would like to take issue with the paper. It is, I think, a little too complimentary on the type of reforms undertaken in Europe. It says that among those measures that could definitely be recommended are those that decrease the cost of low skilled labour through lower social contributions paid by firms at the low wage end, and, secondly, a negative income tax, or tax credits as this is sometimes known. It cites the Hartz Reforms in Germany as an example. In fact, I would argue that the Hartz Reforms go in exactly the opposite direction. The most important element has been the reduction in subsistence pay for the long-term unemployed, and a general tightening of eligibility rules. The Hartz Reforms have in my view not increased incentives to take up work. They have merely made life more miserable for the unemployed. The problem with these reforms were a lack of simultaneous reforms in product, service and financial markets. In an economy that lacks dynamism, the singular pursuit of labour market reforms could prove extremely counter-productive in the short term, while the long-term benefits are uncertain.

In the European debate about labour market reforms it is puzzling that economists have often taken a more political view than some politicians, who seem to be prepared to risk their careers in the pursuit of reforms that have become politically unpopular.

What explains this puzzle? The answer is actually given in this paper. Economists have developed a reasonably good understanding of various specific aspects of unemployment, for example, how unemployment insurance affects people's incentives to search for new jobs. We are still lacking what physicists would call a grand universal theory. The answer to this puzzle is that politicians like Mr Schröder and Mr Juncker are trying to solve a problem that neither they nor economists fully understand.

Panel Discussion

Chris Pissarides mentioned that, on the basis of Beveridge curve relationships between unemployment and vacancies for the UK, unionization and the monetary policy framework are indeed the most important determinants of the natural rate and of inflation expectations. Dynamics, however, also reflect shocks; in the 1980s, interest rates affected empirical unemployment developments in ways consistent with the forward-looking matching model's theoretical perspective.

Several panellists remarked that not only unemployment, but also employment rates are importantly different across labour markets. Pam Woodall pointed out that since labour force participation has increased in Europe but fallen in the US, average

unemployment rates are currently higher in Europe but employment rates are becoming very similar. Chris Giles mentioned that in the UK the earned income tax credit has empirically had a limited effect on unemployment but a stronger impact on employment. Paul Seabright suggested that labour market participation may be related to education system developments, and that higher university attendance may increase the employability of newer worker cohorts. Manuel Arellano suggested that another reason for changing unemployment rates in Spain was the influx of immigrants, who tend to be fully employed.

Lars Jonung, Rick Van der Ploeg, and others emphasized the role of cultural features and past policy mistakes in shaping unemployment problems on the one hand, and theoretical perspectives on the other. For example, female employment is very strongly related to economic and institutional as well as to cultural factors, and the role of sickness and retirement schemes is likely to be changing over time also as a response to unemployment developments. Others focused on disaggregated dimensions of unemployment. Stephen Nickell noted that in several European countries common labour institutions across regions with different productivity levels imply highly dispersed unemployment rates. Pierre Cahuc pointed out that while prime-male employment rates are very homogenous, differences in unemployment rates between countries are very pronounced in other demographic groups. This can give an important role to, for example, youth unemployment rates in cross-sectional empirical evidence, and to family structure in theoretical perspectives.

APPENDIX

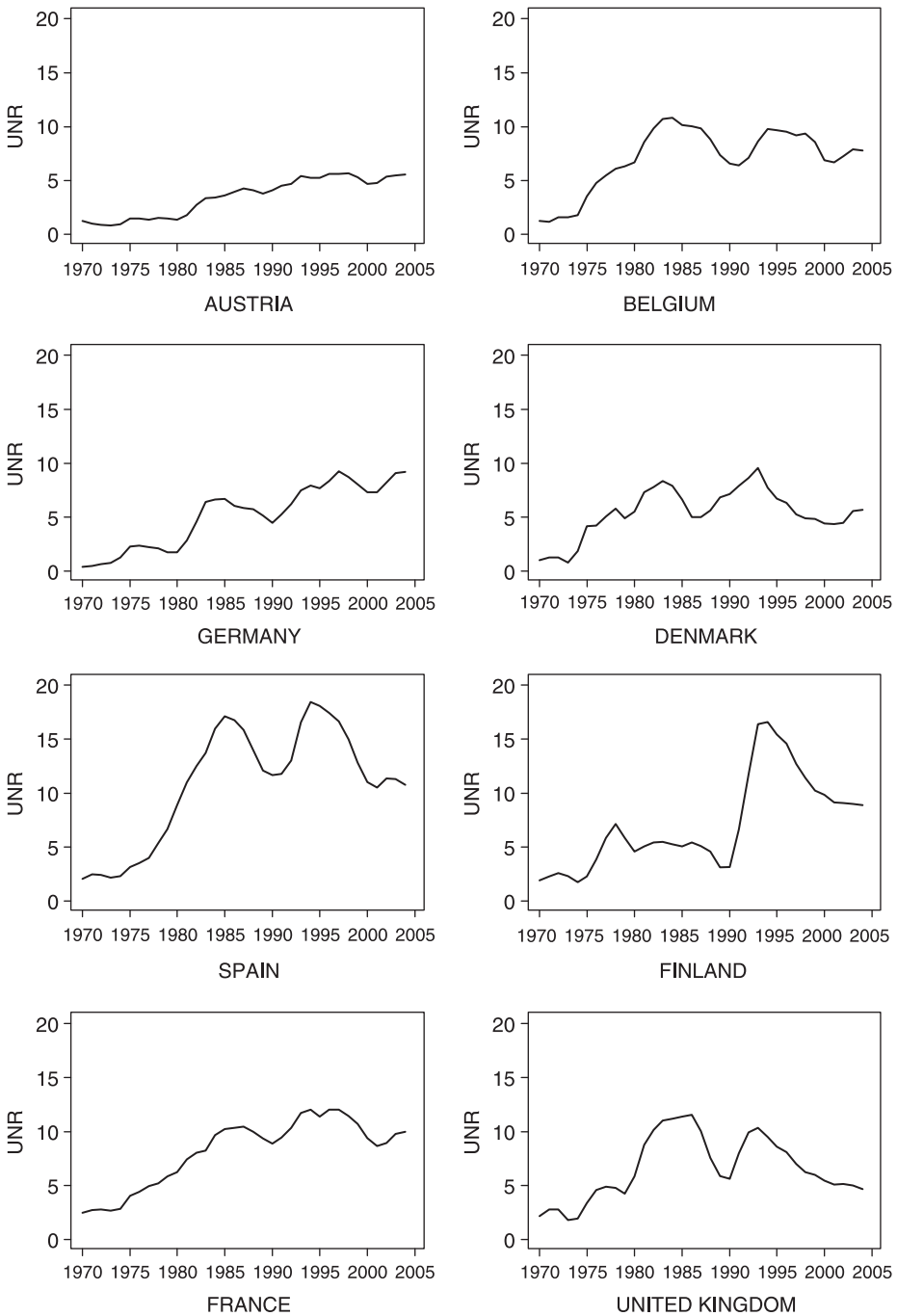

Figure A1. Unemployment rates, by country

Source: OECD database.

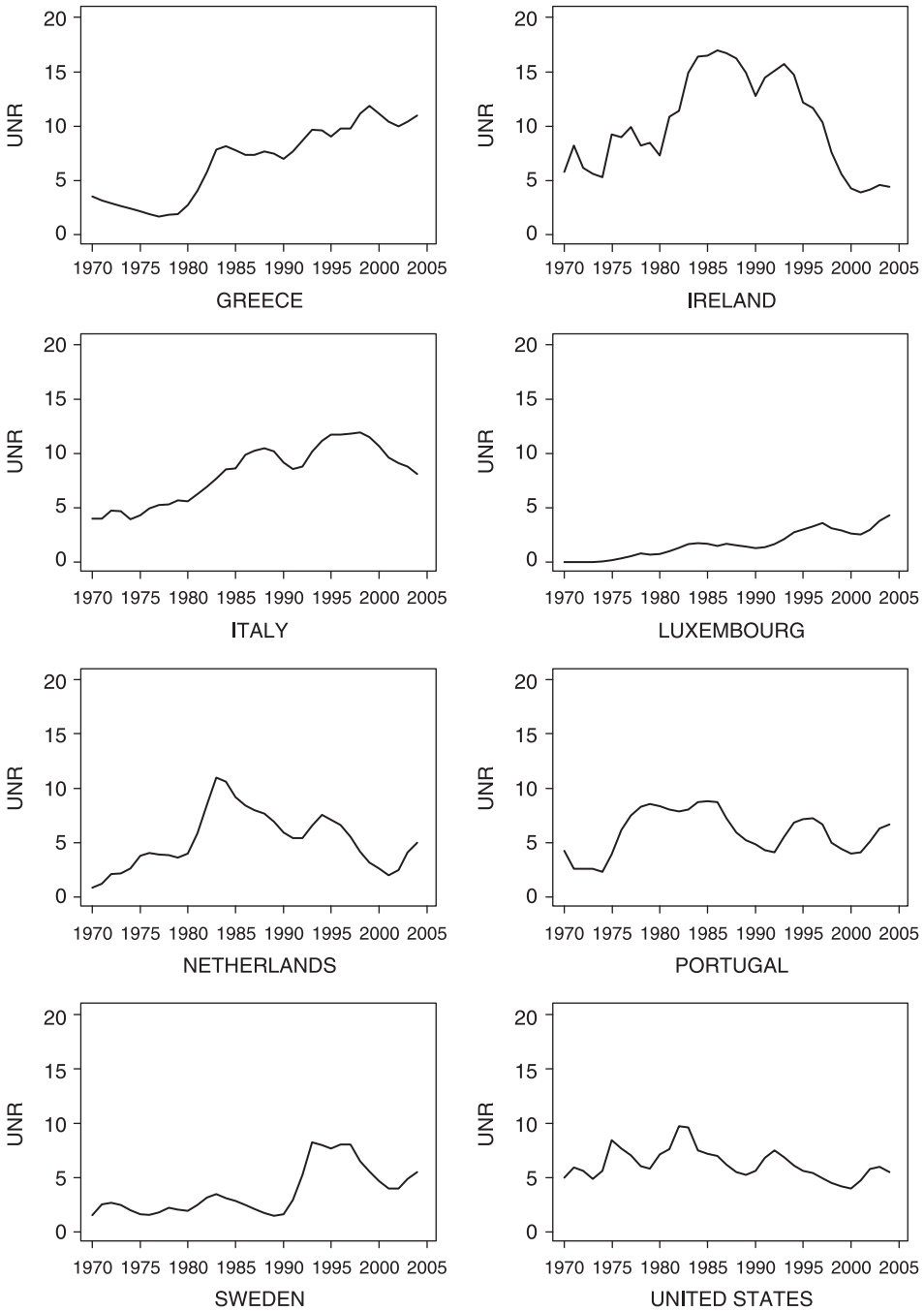

Figure A1. ***Continued***

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