Employment growth

Accounting for the facts

SUMMARY

This paper studies net employment growth across 21 OECD economies since 1980, focusing on the wide range of experiences within the European Union. The initial composition of employment across sectors is relevant in a few countries, but can only partially account for cross-country differences in net employment growth. Institutions play a more important role. A policy package including low dismissal costs and low taxation is significantly associated with high net employment growth and can account for a substantial share of cross-country differences. While the Netherlands' employment miracle is largely accounted for by an increase in part-time jobs for women aged 25–49 in the services sector, we find that in the whole sample part-time jobs largely replace full-time jobs, and temporary jobs replace permanent jobs, with small net effects on hours worked. Continental Europe did not increase employment as much as other OECD countries until the mid-1990s, but later appears to be staging a resurgence of employment growth. We argue that this resurgence is not merely cyclical, is likely related to reforms, and may well be there to stay.

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Anatomy of employment growth

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1. INTRODUCTION

Unemployment is much higher in Continental Europe than in the United States, and European policy makers have long viewed the labour market as Europe's Achilles' heel. In describing their policy objectives, however, they appear to be shifting emphasis from lowering unemployment to 'creating more jobs', by which they likely mean 'increasing employment'. For example, the *Presidency Conclusions* of the Extraordinary European Council, Lisbon, March 2000, place much of their emphasis on higher employment and labour market participation.

Since higher employment growth is a primary policy goal in the EU, in this paper we attempt to see what country characteristics, institutions or policies are associated with good performance in this dimension. Net employment growth has varied considerably among the OECD countries over the past two decades. In particular, the United States, Canada, Australia and New Zealand have created far more jobs on a net basis than most European countries. But some European countries, notably Ireland and the Netherlands, were among the fastest job creators in the OECD. Moreover, a resurgence of employment growth in Europe is apparent in the second half of the 1990s.

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The role of rapid employment growth as a key policy goal motivates our work in this paper. But there are additional reasons to focus on employment growth as a very interesting and useful empirical labour market outcome. First, employment is easier to measure than unemployment, because it does not depend on subtle distinctions between individuals who are in the labour force and those who are not. As is well known, such distinctions are problematic. Especially in high unemployment countries, many people may declare that they are actively searching for a job (and be counted as unemployed) even when in fact their search efforts are minimal. And others may stop actively searching for jobs, effectively dropping out of the labour force, if jobs are too scarce and hard to find (the well-known 'discouraged worker' phenomenon). Moreover, for a given level of unemployment, higher net employment results in higher output and lower financial pressures on the social security system (as explicitly recognised by the European Council in its *Conclusions*). Last, but not least, empirical analysis of employment can be conducted at a very fine level of disaggregation and detail. Only aggregate unemployment is measured, but data on the composition of employment by sector and by type of contract are available. It is then possible to ask, for example, whether better employment performance is associated with differences in the initial composition of employment by sector; and whether increases in the number of part-time jobs result in higher overall net employment growth or merely substitute for increases in the number of full-time jobs.

We perform two sets of analytical exercises. First, we document medium-run differences in aggregate employment growth, both across countries and over time, taking into account such country specific factors as population growth and sectoral composition of employment. Then we investigate whether institutional characteristics, policy packages and recent reform efforts in Europe are related to fast employment growth in the medium run. We find that country characteristics that are *prima facie* unrelated to policy-makers' actions, such as the sectoral composition of employment, do not account for the big divide between the well-performing non-European countries and the Continental European laggards. By contrast, we find an empirical association between policies, reforms and employment growth over the medium run. Indeed, a policy package consisting of low dismissal costs and low taxation is significantly associated with higher net employment growth. Further, we argue that the recent employment resurgence in Europe is not merely a cyclical phenomenon; on the contrary, it is likely to be of a more long-lasting nature and may be partly linked to labour market liberalisation via reforms undertaken since the mid-1990s.

Our empirical exercises draw on a large variety of data sources. Specifically, we decompose employment growth along a number of dimensions, including age and gender groups, sectors, and types of contract (part-time versus full-time, and temporary versus permanent), as well as their interactions. The main spirit of our analysis is to ask which of the different dimensions of employment growth can account (at least in the non-causal sense of the word) for overall employment growth. While many studies (e.g., Blanchard and Wolfers, 2000; Nickell, 1997; Nickell and Layard,

1999; Scarpetta, 1996) have attempted to explain why some countries have had higher unemployment rates than others, less attention has been devoted to countries' relative performance in terms of net employment growth.

While we try to be as comprehensive as possible, we certainly cannot address all aspects of labour market dynamics. In particular, our approach is mainly quantity-based, and does not consider the adjustment of wages over the medium run. It is important to keep in mind that, from an economist's point of view, employment and jobs are inputs, not outputs, and more jobs are not necessarily a good thing if they fail to increase production or to reduce involuntary unemployment. Indeed, the same EU documents that call for policies to promote employment growth also stress that 'good' jobs are what is needed, where 'good' jobs in the policy-makers' jargon are likely to be synonymous with high wage and high productivity jobs. Even though we neglect the 'job quality dimension', we feel that our admittedly narrow focus can give useful information to wider-ranging discussions on the welfare implications of policies aimed at fostering employment growth.

It might also be argued that from a theoretical standpoint, our attention to net employment growth rather than unemployment is misplaced, because employment growth should equal working age population growth in the long run. However, the primary focus of our study is on the medium run, a time frame over which working age population growth, albeit significantly correlated with employment growth, can deviate significantly from it. In the long run, working age population growth may itself be endogenous, in that countries that create many jobs on a net basis will tend to attract large immigration flows.

Before turning to the detailed documentation of Section 2, and to the policy and reform analysis of Section 3, we present a road map of our paper, including the key questions and a sneak preview of the main results.

1.1. Key questions and preview of the answers

We begin by documenting medium-run differences in aggregate employment growth. In Section 2.1 we document which OECD countries, and which countries within Europe, have been more successful in terms of net employment growth in the last two decades. We recall that some non-European countries, such as the US, have done extremely well, and that most Continental European countries have lagged behind. Nevertheless, rapid job growth has also been observed in a few European countries, such as Ireland and the Netherlands. The performance of the US and of the Netherlands is impressive, even taking into account their rapid output growth rates and other factors. Conversely, Ireland's spectacular output growth appears to be the main driving force of its excellent employment performance. In Section 2.2 we continue our documentation effort: we ask whether sector composition can account for the big divide between the well-performing non-European countries and the Continental European laggards. The answer is that they cannot. We show that the fact that certain countries did especially well in a limited number of sectors (for example, the US in retail trade) or that they had a favourable initial sectoral composition of employment (e.g., a low share of agriculture)

accounts for a small portion of their better employment performance. Only in southern Europe (Greece, Portugal, and to a lesser extent Spain and Italy) an unfavourable initial sector composition of employment seems to play a relevant role.

We then turn to investigating whether institutional characteristics, policy packages and recent reforms are related to fast employment growth in the medium run. Our findings are strongly indicative that policies do matter, and we report clear signs that recent reforms have begun to have visible effects on employment growth in the past five years. In Section 3.1 we use cross-country and panel regression analysis on aggregate net employment growth and find that a policy package consisting of low dismissal costs and low taxation is significantly associated with higher net employment growth. This package accounts for a sizeable proportion of the performance gap between the more successful non-European countries and the Continental European countries. With this approach, however, it is somewhat more difficult to account for cross-country differences in employment growth within Europe.

In Section 3.2 we therefore restrict our analysis to the heterogeneous experience in Europe, which does not appear to be accounted for by differences in taxation and dismissal costs. A key feature of European labour markets has been the emergence of so-called 'atypical' (part-time, temporary, etc.) contracts over the last twenty years. We study whether the incidence of such atypical contracts is indeed associated with more rapid net employment growth, or whether jobs covered by atypical contracts merely substitute for jobs covered by traditional contracts. We find that the success of the Netherlands is largely accounted for by the remarkable growth of part-time employment among women aged 25–49 in the services sector. That experience is impressive and merits special attention. Systematic panel regressions applied to the countries in the European Union, however, reveal that the substitution of part-time jobs for full-time jobs has been sizeable: our best guess is that increases in the share of part-time employment have been associated with no net gains in total hours. Temporary contracts are also no panacea. Indeed, we do not find any systematic association between increases in the share of temporary employment and overall net employment growth.

Finally, an important question currently facing policy-makers concerns the nature of the recent employment boom. In Section 3.3 we ask whether the increase in employment growth observed in Europe since the mid-1990s is a cyclical or a structural phenomenon. Our view is that part of this increase is certainly cyclical, but we are confident that a significant portion of such resurgence is the result of more structural factors – including substantial labour market liberalization via reforms undertaken since the mid 1990s. Section 4 briefly summarizes the policy implications of our analysis.

2. DOCUMENTATION

This section documents medium-run differences in aggregate employment growth. It is divided into two parts. Section 2.1 studies average net employment growth across the OECD, and Section 2.2 considers the role of sectors.

Table 1. Net employment growth in selected OECD countries, 1980–2000

	Employment growth[a]	Rank	Δ(L/P)[b]	Rank	Δ(WP)[c]	Rank
Ireland	1.92	1	7.86	3	1.20	3
Australia	1.79	2	3.58	11	1.48	1
United States	1.54	3	8.89	2	0.92	5
Canada	1.49	4	4.10	8	1.15	4
Netherlands	1.47	5	9.31	1	0.71	8
Switzerland	1.08	6	5.04	4	0.70	9
New Zealand	0.99	7	−3.44	18	1.26	2
Spain	0.91	8	0.95	14	0.76	6
Norway	0.88	9	4.31	6	0.57	12
Portugal	0.87	10	4.64	5	0.48	13
Greece	0.80	11	−0.65	15	0.76	7
Japan	0.75	12	4.26	7	0.47	15
Denmark	0.58	13	3.91	9	0.36	18
United Kingdom	0.52	14	3.75	10	0.37	17
Austria	0.43	15	−2.31	16	0.62	10
France	0.39	16	−2.61	17	0.60	11
Germany	0.30	17	3.05	12	0.47	14
Belgium	0.25	18	1.16	13	0.19	21
Finland	0.04	19	−5.94	20	0.34	20
Italy	0.00	20	−4.24	19	0.39	16
Sweden	−0.10	21	−7.53	21	0.35	19

Notes:
[a] Average employment growth (in %).
[b] Change in employment-working age population ratio (in percentage points). Average 1998–2000 minus average 1980–82.
[c] Average growth of working age population.

Sources: OECD and authors' calculations.

2.1. Overall net employment growth across OECD countries

The differences among OECD countries in terms of average net employment growth over the past two decades are remarkable. Table 1 reports average net employment growth between 1980 and 2000 for 21 OECD economies. It shows that non-European countries (such as Australia, Canada, New Zealand and the US) clearly outperformed Continental European countries (with the exception of the Netherlands and Switzerland). These non-European countries sustained an average net employment growth of about 1.5% a year in 1980–2000, compared with about 0.5% in Continental Europe. In absolute terms, these differences are very large: for a country the size of Italy, for instance, a one percentage point difference in employment growth implies a difference of some 200,000 jobs per year, or 4 million jobs over the twenty-year period.

A first issue we consider is whether the cross-country ranking in terms of employment growth is correlated with other aggregate employment measures, such as the cumulative change (in percentage points) in the ratio of employment to working age

population. From this standpoint, the second column of Table 1 confirms the US 'employment miracle' (as labelled by Krueger and Pischke, 1997): net employment gains in the US were far larger than would have been required to keep pace with the working age population increase. Over the last twenty years, the US employment to working age population ratio increased by almost nine percentage points, despite sizeable immigration. Overall, the ranking of most countries remains broadly unchanged using this alternative indicator (Spearman's rank correlation coefficient between the first and second columns in Table 1 is 0.71).

Table 1 also reports the growth rate of working age population, and shows that countries with more rapid working age population typically end up creating more jobs on a net basis (Spearman's rank correlation coefficient between the first and third columns in Table 1 is 0.85). The good performance of countries such as Australia, Canada, Ireland, New Zealand and the United States is further highlighted by considering their working age population growth rates – all in excess of 0.9% on average over the past two decades. Our view is that in a medium-run horizon, the growth rate of working age population is endogenous to a country's ability to expand employment, primarily through immigration. Thus, not only did these countries reduce their non-employment rate (as shown in the second column), but they also successfully attracted and absorbed sizeable migration flows – reversing past emigration flows in the case of Ireland.

On the whole, the results of Table 1 reassure us that countries' rankings do not depend much on our choice of employment growth as the main indicator of performance. At the same time, we would also like to obtain clues as to whether a given country's higher employment growth really reflects a better-functioning labour market. To that end, we take into consideration the behaviour of other key macroeconomic variables, such as output, the capital stock, and total factor productivity. Using a standard growth accounting framework, one can decompose employment growth into the contributions of output growth, total factor productivity growth and changes in the capital/labour ratio. The top panel of Figure 1 plots average employment growth (as reported in Table 1), while the bottom panel reports the three components of employment growth for each OECD country over 1980–2000. Countries had rapid employment growth to the extent that they had high output growth, low total factor productivity (TFP) growth, and low growth in the capital labour ratio. For each country, the bar in the top panel is equal to the sum of the three bars in the lower panel.

This decomposition is based on a simple identity, but additional information may provide hints on the direction of causality and ultimately on the sources of employment growth. The most striking example of this is Ireland. In our opinion, the exogenous force driving its success was a well-thought out strategy to attract foreign direct investment; this led to an increase in the demand for Ireland's output, which in turn was accommodated by increases in employment. In fact, while some labour market reforms were undertaken, they do not seem to have been of such a

fundamental nature as to trigger Ireland's staggering success in terms of output growth. At the same time, the labour market did play a key role in accommodating the increase in demand for Ireland's output: as shown in the bottom panel of Figure 1, Ireland had the lowest negative contribution from substituting capital for labour. On the other hand, it had the largest negative contribution from productivity growth. (Of course, total factor productivity has beneficial welfare effects. Here, however, we are interested in assessing sources of cross-country differences in employment growth.)

Focusing on employment growth in the top panel of Figure 1 and the contributions of the capital/labour term in the bottom panel, it is apparent that the cross-country correlation between employment growth and the change in the capital to labour ratio is negative: indeed, it is minus 0.33. This negative correlation is consistent with the view that capital was substituted for labour to a greater extent in Continental Europe than it was in the high-performing countries outside Continental Europe. Blanchard (1997) and Caballero and Hammour (1998) attribute this to trade union wage pushes in Europe, beginning in the early or late 1970s. By contrast, there is no empirical association between employment growth and total factor productivity growth.

Table 2 reports measures of employment performance in 1996–2000. Clearly, the performance of most European countries improves substantially in that recent period. Ireland, and to a lesser extent the Netherlands, become even more impressive, with average employment growth rates of about 6% and about 3%, respectively, over the past five years. Perhaps more interesting, some of the highest employment growth rates among OECD countries in 1996–2000 are observed in countries that previously ranked among Continental European laggards, such as Portugal and, especially, Spain. This is intriguing, and leads to our analysis in Section 5 of whether such acceleration may be a cyclical or a structural phenomenon.

All in all, these considerations tend to confirm the good performance of the US, and the relatively poor performance of a majority of European countries in terms of net employment growth. At the same time, there has been a wide range of experiences within Europe. In particular, Ireland and the Netherlands have been very successful in increasing employment. While Ireland's success seems to be less closely related to its labour market, the case of the Netherlands appears to have greater potential for policy lessons that might be followed by other countries.

2.2. Do sectors matter?

The object of this section is to document whether sectoral effects play a large part in explaining cross-country differences in employment growth, as recent studies seem to suggest. We find that although sectoral effects may have been relevant in a few southern European countries, they account for only a small portion of aggregate employment growth, and cannot be responsible for the big divide between European laggards and high-performing non-European countries.

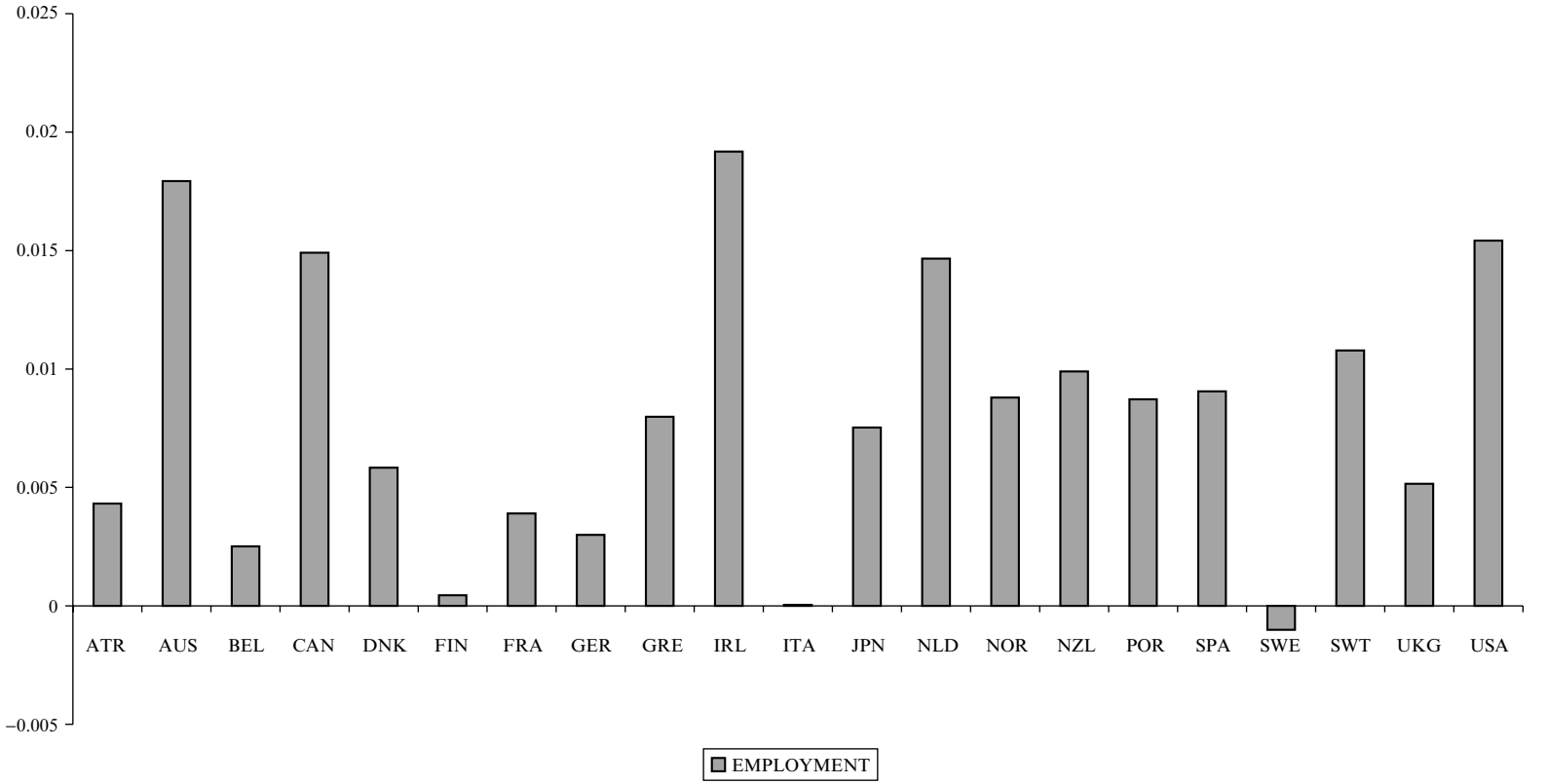

Figure 1. Decomposition of employment growth in terms of output growth, capital labour ratio growth and total factor productivity (TFP) growth.

Note: TFP growth is computed on the basis of a Cobb–Douglas production function, $Y = AK^{\beta}L^{1-\beta}$, where Y is output, A is total factor productivity (Solow residual), K is capital, L is employment. Estimating β as the 1980–2000 average of capital's share in output, employment growth is decomposed as follows:

$$\frac{dl}{dt} = \frac{dy}{dt} - \frac{da}{dt} - \beta\frac{d[\ln(K/L)]}{dt}$$

where lower-case letters are in logarithms.

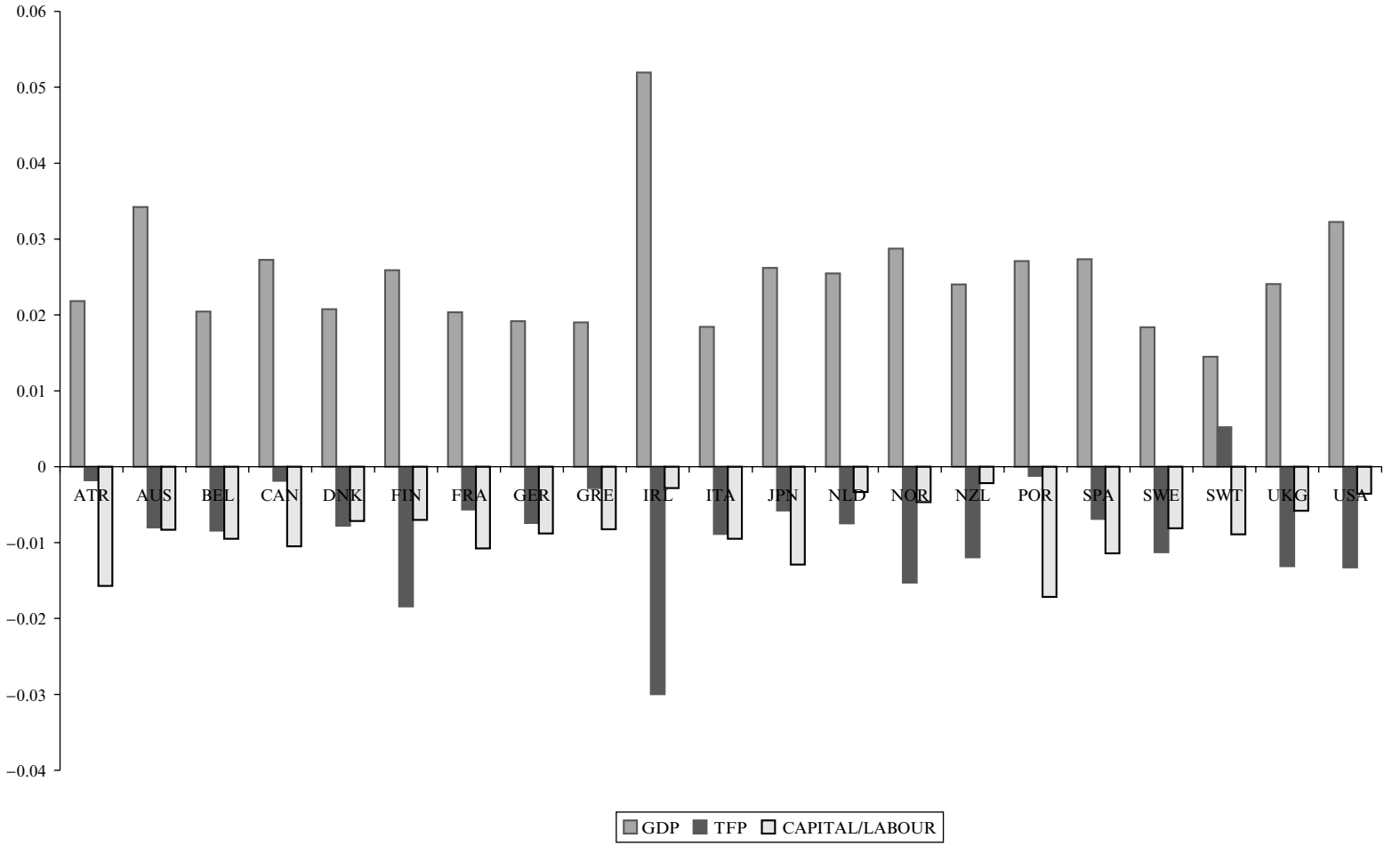

Figure 1. (*continued*)

Table 2. Net employment growth in selected OECD countries, 1996–2000

	Employment growth[a]	Rank	Δ(L/P)[b]	Rank	Δ(WP)[c]	Rank
Ireland	6.06	1	10.17	1	1.93	1
Spain	3.86	2	8.20	2	−0.05	19
Netherlands	2.92	3	6.17	3	0.41	8
Canada	2.58	4	3.85	6	1.21	3
Finland	2.47	5	5.55	5	0.33	12
Portugal	2.45	6	5.64	4	0.30	13
Australia	1.98	7	1.73	16	1.36	2
Norway	1.63	8	3.42	7	0.52	6
United States	1.62	9	1.73	17	1.03	4
France	1.44	10	2.65	9	0.34	10
United Kingdom	1.37	11	2.66	8	0.43	7
Sweden	1.15	12	2.34	11	0.33	11
Belgium	1.09	13	2.42	10	0.04	17
Austria	1.02	14	2.24	14	0.26	15
Italy	0.98	15	2.33	12	−0.14	20
Denmark	0.89	16	2.16	15	0.17	16
Greece	0.85	17	1.00	19	0.39	9
Germany	0.85	18	2.26	13	0.02	18
Switzerland	0.74	19	1.46	18	0.28	14
New Zealand	0.55	20	−0.85	21	0.90	5
Japan	−0.19	21	−0.09	20	−0.16	21

Notes:
[a] Average employment growth (in %).
[b] Change in employment-working age population ratio (in percentage points), 2000 minus 1996.
[c] Average growth of working-age population.

Sources: OECD and authors' calculations.

A first line of research emphasizing the importance of sectoral effects is exemplified by Piketty (1998), who argues that higher net employment growth in the US than France can largely be attributed to differences between the two countries in employment growth in the retail trade sector. His hypothesis is in line with the popular view according to which the bulk of net employment growth in the US may have taken the form of low-skill, low-wage jobs.

The importance of sectoral effects was also stressed by Marimon and Zilibotti (1998), who argue that sectoral effects account for a large portion of the variance in net employment growth across country/sector units in a sample of European countries, and suggest that the initial sectoral composition of employment is a major determinant of overall net employment growth. This is a reasonable possibility as several of the southern European countries with relatively low overall employment growth had a relatively large share of agriculture and industry in total employment in 1980. Over the past two decades, most advanced economies lost many jobs in agriculture and, to a lesser extent, in industry.

We analyse the hypotheses put forward by Piketty (1998) and Marimon and Zilibotti (1998) for the fifteen countries for which OECD Statistical Compendium

Table 3. Net employment growth of wage earners and sectoral characteristics; shift-share analysis, 1981–97

Country	Net employment growth[a]	Rank	No trade	Rank	Common initial distribution[b]	Rank	Common sectoral growth[c]	Rank
Netherlands	2.78	1	1.95	1	2.90	1	1.53	1
Japan	2.10	2	1.59	2	2.12	4	1.28	6
Australia	2.02	3	1.29	4	1.90	6	1.38	4
United States	1.71	4	1.39	3	1.68	8	1.47	2
Ireland	1.63	5	1.15	5	1.83	7	1.22	9
Spain	1.57	6	1.03	6	2.35	3	0.85	13
Greece	1.49	7	0.80	8	2.46	2	1.06	11
Denmark	1.19	8	0.82	7	1.30	10	1.40	3
Canada	0.94	9	0.21	11	1.33	9	1.07	10
France	0.78	10	0.59	9	0.80	11	1.28	5
Portugal	0.78	11	0.30	10	1.98	5	0.79	15
United Kingdom	0.28	12	0.09	12	0.31	15	1.26	8
Germany	0.08	13	−0.14	14	0.45	13	1.04	12
New Zealand	0.08	14	−0.12	13	0.36	14	1.26	7
Italy	−0.14	15	−0.21	15	0.57	12	0.84	14
Average	1.15		0.71		1.48		1.18	
Standard dev.	0.85		0.68		0.83		0.23	

Notes:
[a] Average change in employment of wage earners between 1981 and 1997.
[b] Average net employment change based on a common initial distribution.
[c] Average net employment change based on a common sectoral growth.

Sources: OECD Statistical Compendium and authors' calculations.

data on wage earners are available for nine sectors, over 1981–1997 (owing to data limitations). In earlier work (Garibaldi and Mauro, 1999) we analysed the OECD International Sectoral Data Base (ISDB), which reports total employment for eleven economic sectors in eleven countries between 1982 and 1994. In the present paper we report the results obtained using the OECD Statistical Compendium data on wage earners, but we point out any relevant differences from the results obtained using the ISDB. The overall finding of this section is that, although sectoral factors may have been relevant in a few Southern European countries, for most countries they explain only a small portion of aggregate net employment growth and do not reverse the ranking based upon aggregate employment growth (Table 3).[1]

We begin by testing Piketty's (1998) hypothesis that retail trade accounts for a substantial portion of cross-country differences in aggregate employment growth.

[1] Readers may notice that, for some countries, growth in the overall number of wage earners as reported in Table 3 is substantially different from employment growth as reported in Table 1. The difference is entirely accounted for by different growth rates for the self-employed. This does not much affect the results, which were similar in our 1999 paper based upon total employment.

The results do not support Piketty's view: if countries' average net employment growth is computed under the extreme assumption that employment did not grow at all in the retail trade sector, the overall ranking is basically unchanged (Table 3, comparing the first column, 'Net employment growth' with the second column, 'No trade'). This result is the same as what we obtained with the ISDB OECD data set, whose wage data made it possible to verify that retail trade is indeed the lowest-wage non-agricultural sector in ten of the eleven countries in the sample.

To explore Marimon and Zilibotti's (1998) idea and quantify the effects of the initial sectoral composition of employment on overall net employment growth, we use straightforward shift-share analysis (see Box 1). The limitations of shift-share analysis are well known. But the exercise usefully shows that, even using the same technique as the idea's proponents, sectoral effects can only account for a small proportion of the cross-country variation in overall employment growth. Shift-share analysis can tell us what each country's overall employment growth would have been if its sectoral composition of employment in 1981 had been the same as in that observed on average across the countries in the sample (Table 3, 'Common initial distribution'). In other words, each country's employment growth rate in a given sector is weighted by the employment share of that sector in the world economy. A similar exercise yields the overall net employment growth each country would have displayed if each of its sectors had grown at the same rate as the average for all the countries in the sample (Table 3, 'Common sectoral growth').

Box 1. Shift-share analysis

Let countries be indexed by $i = 1 \ldots I$, sectors by $j = 1 \ldots K$, and years by $t = 0 \ldots T$. In the available sample, $I = 11$, $K = 11$ and $t = 0$ refers to 1982. Average net employment growth in country i can then be written as

$$g_{it} = \frac{\sum_{j=1}^{K} (N_{ijt} - N_{ij0})}{(T-1)\sum_{j=1}^{K} N_{ij0}}$$

where N_{ijt} is employment in sector j, country i, time t.

The contribution to average growth of sector j in country i,

$$g^{c}_{ijt} = \frac{(N_{ijt} - N_{ij0})}{(T-1)\sum_{j=1}^{K} N_{ij0}},$$

can be written as the product of the growth rate of sector i weighted by its share in the initial distribution of employment, $g^{c}_{ijt} = g_{ijt} w_{i0}$, where g_{ijt} is average net employment growth in sector i and

$$w_{ij0} = \frac{N_{ij0}}{\sum_{j=1}^{K} N_{ij0}}$$

is the share of sector j in total employment.

The 'Common initial distribution' employment growth is computed weighting g_{ijt} by the average employment share across countries:

$$\tilde{g}_{it} = \sum_{j=1}^{K} g_{ij} \bar{w}_{j0},$$

where

$$\bar{w}_{j0} = \frac{\sum_{i=1}^{I} N_{ij0}}{\sum_{i=1}^{I} \sum_{j=1}^{K} N_{ij0}}$$

is the share of sector j in the average country in the sample.

The 'Common sectoral growth' accounting exercise in Table 3 reports net employment growth in each country under the assumption that each sector had grown uniformly across countries:

$$\tilde{g}_{it} = \sum_{j=1}^{K} \bar{g}_{ij} w_{j0}$$

where

$$\bar{g}_{ij} = \frac{\sum_{i=1}^{I} N_{ijt} - \sum_{i=1}^{I} N_{ij0}}{\sum_{i=1}^{I} N_{ij0}}$$

is average net employment growth in sector j.

The results show that the countries' ranking remains broadly unchanged, suggesting that sectoral effects are not able to revert the overall ranking of countries. But Table 3 suggests that there are also interesting exceptions, since initial conditions appear to have played a relevant role in a few countries, notably some of the smaller southern European countries, given their large share in agriculture at the beginning of the sample period. Greece and Portugal, and even Spain and Italy to a lesser extent, might have had a much better employment performance had they started off with a lower share of agriculture.

As already mentioned, these are descriptive exercises that need to be interpreted with caution. We see these estimates as an upper bound on the role that sectoral factors may have played. In fact, shift-share analysis assumes that an unfavourable

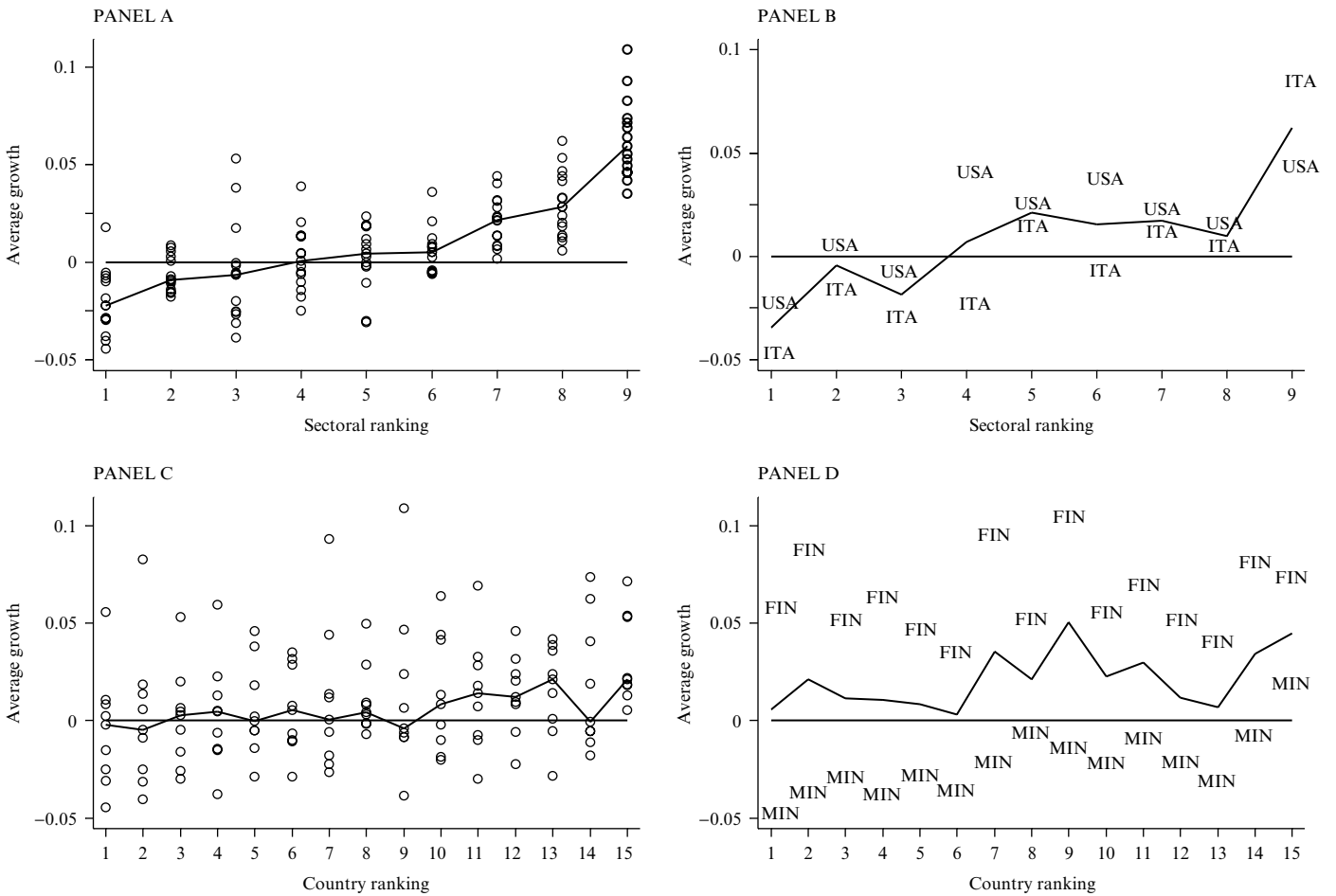

Figure 2. Sector and country effects in employment growth

initial composition of employment (say, a large share of agricultural employment) cannot be corrected by an adjustment in relative wages (i.e., a decline of relative wages in the agricultural sector). Moreover, it is not clear which sectors would have been the most successful if their initial geographical distribution had been different. Finally, sectoral structure is not independent of population structure or – as shown by Davis and Henrekson (2000) – labour market institutions.

The result that differences in the initial sectoral distribution of employment do not seem to explain the cross-country variation in overall net employment growth is consistent with Marimon and Zilibotti's (1998) finding that sectoral effects account for a large portion of the variance in net employment growth across country/sector units.[2] This is confirmed by Figure 2. Panel A plots, on the vertical axis, the average employment growth in each of the 135 country/sectors in the sample against, on the horizontal axis, the sectors arranged according to their average employment growth rate.[3] Panel C plots, on the vertical axis, the same country/sectors against, on the horizontal axis, the country rankings in terms of overall employment growth. Comparing Panels A and C, sectoral characteristics provide a far better explanation than country characteristics for the variation in employment growth among country/sectors. Another illustration of this is the fact that employment growth in finance has been far higher than in mining, in all countries in the sample (Panel D). However, if the objective is to explain the variation in employment growth across countries (rather than across country/sectors), sector composition has lower explanatory power. In fact, for example, the US created more jobs on a net basis than Italy did in eight out of nine of the sectors considered in this paper (Panel B; Figure 2 would look very similar if Italy was replaced by, for instance, France). Therefore, it seems that cross-country differences in overall employment growth can only partially be attributed to sectoral effects. Explanations need to be sought elsewhere.

3. POLICY AND REFORM ANALYSIS

This section analyses the association between employment growth and labour market institutions, economic policies and recent reform efforts within the European Union. In Section 3.1 we consider our OECD sample and ask what policies and institutions, if any, are associated with good performance in terms of employment growth. In Section 3.2 we ask whether the recent expansion of temporary and part-time contracts can account for the heterogeneous experience within Europe. Finally, in Section 3.3 we ask whether the recent resurgence of employment growth in Europe has cyclical or structural character, possibly reflecting labour market reforms.

[2] In fact, a regression of the employment growth rate in each of the 135 country-sectors in the sample on nine sector dummy variables yields an R^2 of 0.52, whereas the same regression on eleven country dummy variables yields an R^2 of just 0.09.

[3] In each panel, the line goes through the median growth rate among countries (sectors) for a given sector (country), when sectors (countries) are on the horizontal axis.

3.1. Aggregate net employment growth and economic policies

A promising avenue for explaining cross-country differences in net employment growth is to analyse the relationship between overall employment growth and labour market policies and institutions. But before asking which policies and institutions may be relevant, one needs to consider whether (and, if so, how) labour market institutions can theoretically influence the growth of employment, rather than simply its level. In most steady state models, unemployment is constant and employment growth, if positive, is just equal to an *exogenous* growth of working age population. In such models, economic policies and labour market institutions can have only an impact on unemployment and employment levels. While we are aware of such theoretical predictions, we believe at least two important channels may link institutions to employment growth.

A first channel, already highlighted in our documentation section, may be the impact of immigration on working age population growth. Most theoretical models shut down this and other demographic channels by simply assuming that working age population grows exogenously. In reality, however, employment-friendly labour market policies and institutions that increase a country's ability to create jobs probably tend to attract and absorb larger immigration flows. This results in a link between institutions and employment growth even when unemployment is in its steady state.

Employment growth may also be linked to institutions by endogenous productivity growth. It can be argued that policies and institutions, such as the level of taxation, are important determinants of economic growth, and that unemployment is not invariant to economic growth. The overall relationship is fairly complex, and in general non-linear – see Aghion and Howitt (1994) and Mortensen and Pissarides (1998). On the one hand, faster economic growth pushes up job profits and job creation, leading to faster net employment growth. On the other hand, faster economic growth speeds up the obsolescence of existing jobs, increasing job destruction and reducing employment growth. Which of the two effects prevails in reality depends on technological factors, such as the cost of implementing new technologies. Thus, labour market institutions and economic policies might influence employment growth through their impact on the adoption of new technology and, in turn, productivity growth.

Accordingly, we proceed to consider several policies and institutions potentially affecting employment growth over the medium run. Candidates include unemployment benefits, trade union coverage and co-ordination, the level of taxation, and employment protection legislation. Before turning to estimation, we describe the possible relationship between employment growth and each of these policies and institutions.

Higher unemployment benefits (in terms of both replacement rates and duration) result in higher unemployment in most theoretical models of the labour market, and

have been found to be empirically associated with higher unemployment (Nickell and Layard, 1999). Trade union strength leads to higher wages and higher unemployment in 'right-to-manage' models (Farber, 1986). Empirically, union strength is often proxied by measures of union density or by the proportion of workers covered by union contracts. In existing empirical studies, these proxies appear to increase unemployment, though this effect seems to be mitigated when unions and firms bargaining is co-ordinated (Nickell, 1997).

On *a priori* grounds, the role of taxation and employment protection legislation in determining employment growth is less clear-cut. Theory suggests that the effects of changes in taxation on unemployment largely depend on the elasticity of labour supply, and on the extent to which the additional tax burden is shifted to labour. Pissarides (1998) argues that tax cuts affect employment only if they alter the ratio of net wages to unemployment compensation. Bell and Nickell (1997) argue that, in the long run, any tax on labour is borne by the employees, as evidenced by the absence of a cross-sectional empirical relationship between total taxation and unit labour costs. By contrast, Daveri and Tabellini (2000) argue on both theoretical and empirical grounds that higher taxes lead to higher unemployment and lower output growth. Using panel regressions, they present evidence that European unions have been able to shift part of the increases in the tax burden onto firms. Nickell (1997) finds evidence of an association between total taxation and unemployment, but not between payroll taxes and unemployment.

Most theoretical studies predict that employment protection legislation should not affect unemployment – since dismissal costs increase the cost of labour adjustment, the argument goes, both job creation and destruction will be lower, but the effect on average employment will be ambiguous (Bentolila and Bertola, 1990). That view is supported by the small flows into and out of unemployment in European countries compared with those observed in North America (see, for example, Blanchard and Portugal, 1998), though not by the fact that gross job creation and destruction in Continental European countries are as high as in North America. However, Caballero and Hammour (1998) have recently argued that increases in dismissal costs may lead entrepreneurs to substitute capital for labour in the medium run, consistent with developments in the labour share of income in the major industrial countries, as also documented by Blanchard (1997). Further, even if employment protection has no adverse effect on unemployment, it may have an adverse effect on economic growth, by lowering capital accumulation and growth, or reducing firms' incentives to adopt new technologies (Schivardi, 2000). On the empirical side, employment protection legislation does not appear to be significant in cross-sectional regressions that analyse the determinants of unemployment rates across countries (Nickell, 1997). However, empirical studies that exploit the time-series information in the data have found a positive relationship between dismissal costs and unemployment (Lazear, 1990 and Scarpetta, 1996).

Table 4. Net employment growth and policy variables: correlation matrix

	Em.G.	EPL	Taxes	Payroll	Union	Benefit	Co-ord
EPL	−0.58	1					
	0						
Taxes	−0.54	0.2	1				
	0.01	*0.37*					
Payroll	−0.52	0.63	0.27	1			
	0.02	*0*	*0.25*				
Union	−0.34	0.03	0.61	−0.24	1		
	−0.13	*0.88*	*0*	*0.3*			
Benefit	−0.14	0.15	0.36	0.12	0.18	1	
	0.55	*0.52*	*0.11*	*0.61*	*0.44*		
Co-ord	−0.61	0.53	0.65	0.4	0.53	0.55	1
	0	*0.01*	*0*	*0.09*	*0.01*	*0.01*	

Notes: *p*-values are in italics. Em.G. is average employment growth in 1980–2000; EPL is the average value of the OECD index of employment protection legislation; Taxes is total taxation as a share of GDP; Payroll is payroll taxes as a share of GDP; Benefit is the replacement rate; Union is union density; Co-ord is the index of employer-employee co-ordination.

Sources: OECD and authors' calculations. See the Appendix for data sources and variable definitions.

A few recent studies have analysed cross-country differences in long-run unemployment dynamics, stressing the need and usefulness of considering the interactions between shocks and institutions (Blanchard and Wolfers, 2000; Bertola *et al.*, 2001; Den Haan *et al.*, 2001). Further, Belot and Van Ours (2000) emphasize the complementarities among various policies in their impact on unemployment. One way to proceed is to analyse such complex interactions using employment growth or employment rates, rather than unemployment rates as in the studies mentioned above. We have attempted to model such interactions with non-linear estimation, along the lines of Blanchard and Wolfers (2000), but found it impossible (possibly because of the short sample period) to obtain significant and robust results.

3.1.1. Empirical regularities. Following the discussion of the previous section, we now proceed to analyse possible empirical relationships between institutional variables and employment growth. We use two approaches. First, we seek to establish which policies and institutions are robustly correlated with employment growth across countries over the whole sample period. Then, we analyse the same correlations using small panel-data regressions.

We begin by considering the matrix of bivariate correlations between average net employment growth in 1980–2000 and a number of economic policy indicators for a sample of 21 OECD countries (Table 4). All variables are period averages, subject to data availability. Several empirical regularities identified by existing studies on unemployment are confirmed by this exercise. Net employment growth is negatively and significantly correlated with overall taxation, payroll taxation, a measure of employment protection legislation, and – at borderline significance – union density. Net employment growth is also negatively and significantly correlated with an index

of employer–employee co-ordination (which may actually proxy for whether a country is in Continental Europe). By contrast, the relationship between unemployment benefits and net employment growth is not significant. Figure 3 shows some of these bivariate correlations, confirming that they are not driven by outliers. Table 4 confirms that many of these policies and institutions are correlated, making it difficult to tell which individual policies are most closely associated with employment growth.

To test the robustness of these relationships, and to establish which policies appear to be most closely correlated with employment growth, we run a battery of cross-sectional regressions. In the spirit of the extreme bound analysis previously used in cross-country regressions on the determinants of output growth (Levine and Renelt, 1992), we regress net employment growth on a constant, the variable of interest, and each of the other explanatory variables in turn. In an alternative exercise, we include the growth in working age population as an additional explanatory variable in all regressions. We conduct the same exercise for both 1980–2000 and 1980–1995. Table 5 reports the results, which indicate that the variables most robustly associated with employment growth are employment protection legislation (EPL), overall

Table 5. Net employment growth and policy variables: robustness checks

	Min[a]	Max[a]	$p < 0.1$[b]	Wkag
1980–2000[c]				
EPL	−0.42	−0.2	9	–
EPL	−0.14	−0.09	0	Yes
Payroll	−8.28	−3.92	6	–
Payroll	−3.59	−1.6	0	Yes
Tot Tax	−8.44	−3.04	10	–
Tot Tax	−3.74	−1.48	1	Yes
Co-ord	−0.3	−0.2	8	–
Co-ord	−0.18	−0.06	1	Yes
1980–1995[d]				
EPL	−0.37	−0.13	9	–
EPL	−0.23	0.08	8	Yes
Payroll	−7.14	−3.66	8	–
Payroll	−5.84	2.61	1	Yes
Tot Tax	−7.46	−3.81	10	–
Tot Tax	−3.91	−1.78	2	Yes
Co-ord	−0.26	−0.09	3	–
Co-ord	0	0.01	0	Yes

Notes: The left-hand side variable is average net employment growth for 1980–95 and average net employment growth for 1980–2000. All regressions include a constant. Wkag is working age population growth; EPL is the index of employment protection legislation; Tot Tax is total taxation as a share of GDP; Payroll is payroll taxes as a share of GDP; Co-ord is the index of employer-employee coordination. Other regressors include the replacement rate, an index of benefit duration, an index of labour standard, a measure of active labour market policies, and an index of union co-ordination.

[a] Min (max) is the minimum (maximum) value of the coefficients in the regression.

[b] Number of regressions whose coefficient has a p-value less than 10%.

[c] Average net employment growth for 1980–2000.

[d] Average net employment growth for 1980–95.

Source: OECD and author's calculations.

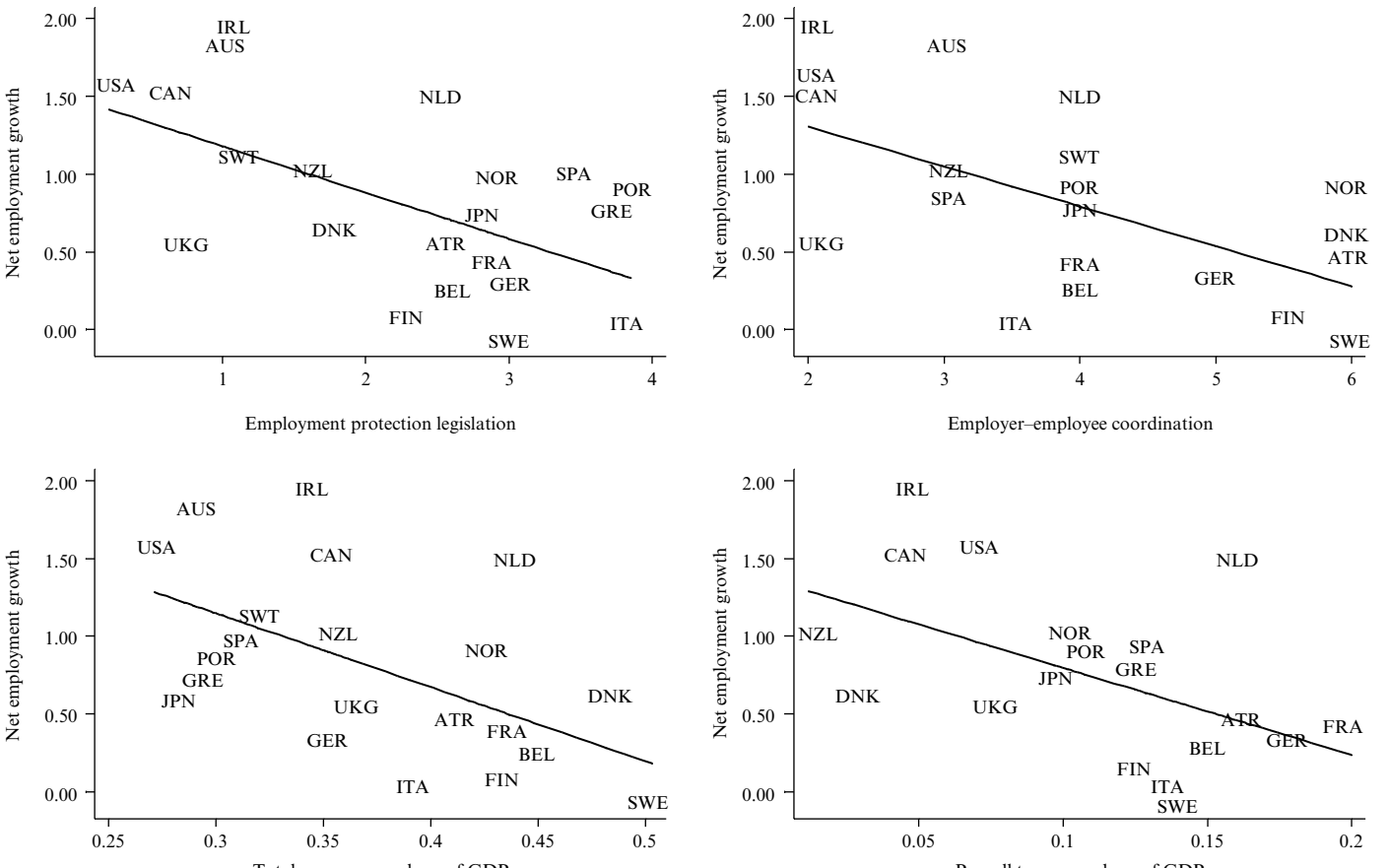

Figure 3. Net employment growth and policy variables, 1980–2000

taxation, and payroll taxation. EPL's effects are particularly interesting. For example, when we use 1980–2000 average employment growth and we exclude working age population growth from the control variables list, the coefficient on EPL is negative and statistically significant in nine out of nine regressions. The relationships tend to be more robust for 1980–1995 than for 1980–2000, because the resurgence of employment growth since the mid-1990s was especially pronounced in some of the countries with high EPL indices. Our own interpretation of this finding is that these same countries began to liberalize their labour markets (including in terms of employment protection) in the mid- and late 1990s. However, this is not fully captured in the EPL indices in the regressions, which are averages of the EPL indices for the late 1980s and the late 1990s, and which do not display much time variation anyway. We return to this issue in Section 3.3.

As always, regressions of this type can be given a causal interpretation only to the extent that one accepts the strong assumption that all institutional variables are exogenous to employment. While we accept that institutional variables may in principle be endogenous to employment outcomes, our prior is that the possible bias is likely to be small in light of institutional variables' strong persistence. Since there is no obvious way to avoid such bias, we view this approach as a useful first step, even though it may fail to capture the full gamut of complicated interactions between institutions and employment.

We then run small panel regressions relating average net employment growth to the various institutional measures as well as working age population growth. Five-year averages of growth rates (1980–85, 1986–90, 1991–95, and 1996–2000) are used as the basic data points, to mitigate business cycle and other temporary effects. With 21 countries, the total number of observations is 84. We use both fixed effects and random effects panel regressions. All specifications for which we report the results are linear. (As mentioned above, non-linear estimation did not yield significant results.) We have EPL data from the OECD only for the late 1980s and late 1990s: when we include EPL among the regressors, we therefore use the late 1980s observation for both 1980–85 and 1986–90, and the late 1990s observation for both 1991–95 and 1996–2000. In particular, we run regressions of employment growth on overall taxation and EPL, or payroll taxation and EPL. (Overall taxation and payroll taxation are highly collinear.) We see in Table 6 that the coefficients of total taxation and, in separate regressions, payroll taxation are negative, and significant in several specifications. Their relative degree of significance depends on the estimation method. EPL is borderline significant with a negative sign in only one specification, but one needs to bear in mind that there is very little time variation in EPL. Taken at face value, the results suggest that a reduction in total taxation by one percentage point of GDP is associated with higher average net employment growth by some 0.02–0.18 percentage point, depending on the specification.

Using these small panel regressions, the estimated and actual values of average net employment growth in the sample of 21 countries, as well as their actual and fitted

Table 6. Panel regressions: institutions and net employment growth
Dependent variable: Average net employment growth[a]
Five-year averages: 1981–85; 1986–90; 1991–95; 1996–2000

	Tot Tax[b]		Payroll[c]	
	Tot Tax	EPL	Payroll	EPL
Fixed effects	−0.16	–	−0.54	–
	−1.87		−3	
Fixed effects	−0.15	0	−0.54	0.01
	−1.72	0.7	−3.02	1.31
Fixed effects (add Wkag)	−0.1	0	−0.47	0
	−1.24	0.43	−2.7	0.84
Fixed effects (no period 4)	−0.18	–	−0.63	–
	−1.83		−2.73	
Random effects	−0.05	–	−0.04	–
	−2.95		−1.89	
Random effects	−0.04	−0.01	−0.03	−0.01
	−2.58	−1.87	−1.05	0.87
Random effects (add Wkag)	−0.02	0	0	0
	−1.07	−0.52	0.05	0.52
Random effects (no period 4)	−0.06	–	−0.04	–
	−3.04		−1.36	
N. observations: 86				
N. countries: 21				

Notes:
[a] z statistics reported below coefficients.
[b] Regressions for total tax.
[c] Regressions for payroll taxes.
Sources: OECD data and authors' calculations.

rankings are similar, as shown in Figure 4. (The fitted values in Figure 4 are based upon the random effects panel regression of employment growth on total taxes and EPL, as reported in the sixth row of Table 6.) At the same time, the fit is somewhat less satisfactory in the case of the European countries; in particular, actual net employment growth in Ireland and the Netherlands is much larger than its employment growth as would be predicted using the regressions above.

3.1.2. Interpretation. The regressions presented above need to be interpreted with caution. First, the small number of observations and the high collinearity among the various policy variables make it difficult to identify the effectiveness of individual policies, although there seems to be a significant association between high employment growth and a policy package including low dismissal costs and a moderate tax burden. Second, and more important, such observed associations are not sufficient to establish the direction of causality between institutions and net employment growth.

The observed correlation between the overall tax burden and employment growth is consistent with the view that, as the burden of taxation was gradually raised in

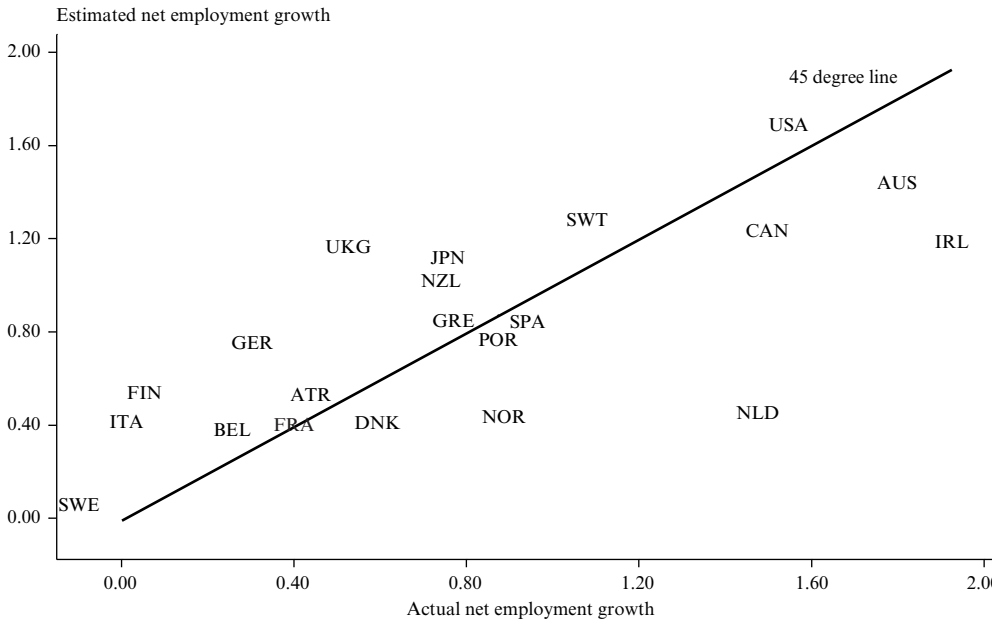

Figure 4. Actual and estimated employment growth, 1980–2000

Europe, a considerable portion of that additional burden was shifted onto employers, who reduced employment growth as a result. That view would predict an especially strong link between payroll taxation and employment growth – for which we find evidence, though only in some specifications.

The result that employment protection legislation is negatively associated with net employment growth appears consistent with the view proposed by Caballero and Hammour (1998), and with the argument that in countries with high employment protection legislation the incentives to adopt new technologies are lower. In principle, it might also be consistent with the view that employment protection reduces both hiring in upswings and dismissals in downswings, with no net impact on employment. To the extent that, on balance, upswings might have prevailed over downswings in 1980–2000, that view would lead one to indeed expect employment increases to be smaller in countries with high dismissal costs (e.g., those in Continental Europe) than in those with low dismissal costs (e.g., the US). Further, we should also recall that analysing employment protection without controlling for wages may give misleading results. In fact, it is well known that any effects of mandated severance payments, one of the most important dimensions of employment protection, could be undone by wage adjustments if the contracting parties were to take such payments into account when negotiating over wages.

Despite such caveats, our overall interpretation of these findings is that a policy package consisting of low dismissal costs and low taxation is significantly associated with higher net employment growth. This accounts for a sizeable proportion of the

performance gap between the more successful non-European countries and the Continental European countries. However, this approach does not make it possible to account for the sizeable differences in performance within Europe. We turn to that issue in the next section.

3.2. Inside Europe

Having seen that the substantial differences in employment growth within Europe cannot be accounted for by differences in policies such as taxation and employment protection legislation, we turn to the possible role of the so-called 'atypical contracts', that is, part-time contracts and temporary contracts, as well as other important dimensions, such as age and gender, and interactions between these dimensions, reporting the extent to which, for example, an increase in full-time employment is accounted for by young males, or by males in industry. The data, which are only available on a consistent basis for the European Union countries, are drawn from Eurostat's *Labour Force Survey*.

Section 3.2.1 reports the contributions of these various dimensions to overall employment growth. Our key finding is that the best Continental European performer, the Netherlands, stands out in that about half of its net employment growth since the mid-1980s can be accounted for by part-time jobs taken up by females aged 25–49, typically in the service sector. In Section 3.2.2 we use panel regressions to determine whether there is a systematic relationship between overall employment growth and increases in part-time jobs. We find that increases in part-time jobs have been associated with a partial, yet significant, crowding out of full-time jobs; while there has been some net gain in total jobs, the gain in total hours worked, if any, has been small. Section 3.2.3 looks briefly at temporary contracts, and does not find a significant correlation between net employment growth and the increase in the incidence of temporary contracts.

3.2.1. The role of part-time contracts and interactions with age, gender and sectors. Table 7 decomposes average employment growth by broad economic sector (agriculture, industry, or services), gender, and part-time/full-time between 1983 and 1997 (owing to data limitations). Each cell reports the contribution to employment growth stemming from a combination of these three dimensions, so that each country's employment growth is decomposed into twelve components. Looking at the gender dimension, Table 7 shows that employment growth was much faster for females than males, consistently with strong growth in labour force participation among women. In terms of sectors, most of the net gains in jobs were in services, as confirmed by the relatively large numbers in the sixth column of Table 7. For example, in Italy net gains in jobs taken up by females accounted for 0.45 percentage points of overall employment growth (the latter, by comparison, was negative 0.13). Looking at the part-time versus full-time dimension, it is remarkable to notice that eight out of ten countries experienced larger growth contributions in terms of part-time (the only exceptions

Table 7. Contribution to average employment growth between 1983 and 1997 by sector, gender and part-time/full-time

	Male			Female			Total[a]
	Agriculture	Industry	Services	Agriculture	Industry	Services	
Belgium							
Part-time	0.00	0.00	0.06	0.00	0.04	0.51	0.60
Full-time	−0.02	−0.17	0.20	0.00	−0.51	0.33	−0.17
All contracts	−0.03	−0.16	0.26	0.00	−0.47	0.83	0.43
Germany							
Part-time	0.00	0.03	0.11	−0.03	−0.06	0.38	0.43
Full-time	−0.11	−0.71	0.12	−0.09	−0.46	0.09	−1.17
All contracts	−0.12	−0.68	0.23	−0.12	−0.52	0.47	−0.74
Denmark							
Part-time	0.01	0.03	0.23	−0.02	−0.05	−0.10	0.10
Full-time	−0.14	0.05	0.30	−0.02	0.09	0.57	0.85
All contracts	−0.14	0.08	0.54	−0.03	0.04	0.46	0.95
France							
Part-time	−0.01	0.01	0.11	−0.04	0.02	0.46	0.56
Full-time	−0.14	−0.29	0.23	−0.07	−0.12	0.15	−0.23
All contracts	−0.15	−0.28	0.34	−0.10	−0.10	0.61	0.32
Greece							
Part-time	−0.01	−0.04	0.01	−0.03	−0.02	0.00	−0.10
Full-time	−0.30	−0.12	0.61	−0.23	0.00	0.81	0.77
All contracts	−0.31	−0.16	0.62	−0.26	−0.02	0.81	0.67
Ireland							
Part-time	−0.01	0.02	0.14	−0.04	0.02	0.47	0.61
Full-time	−0.23	0.12	0.35	−0.01	0.15	0.62	1.01
All contracts	−0.24	0.14	0.49	−0.05	0.18	1.09	1.62
Italy							
Part-time	0.02	0.01	0.04	−0.04	0.02	0.15	0.20
Full-time	−0.22	−0.31	0.10	−0.12	−0.09	0.30	−0.33
All contracts	−0.20	−0.30	0.14	−0.15	−0.07	0.45	−0.14
Netherlands							
Part-time	0.00	0.19	0.14	0.00	0.06	0.99	1.38
Full-time	−0.06	−0.10	0.56	−0.02	0.00	0.10	0.49
All contracts	−0.06	0.09	0.70	−0.02	0.06	1.09	1.87
Portugal							
Part-time	0.06	0.01	0.05	0.12	0.02	0.17	0.42
Full-time	−0.43	−0.06	0.31	−0.38	−0.01	0.87	0.32
All contracts	−0.37	−0.05	0.36	−0.26	0.02	1.04	0.74
United Kingdom							
Part-time	0.00	0.02	0.23	0.00	−0.02	0.45	0.69
Full-time	−0.03	−0.29	0.37	0.00	−0.07	0.43	0.42
All contracts	−0.03	−0.27	0.60	0.00	−0.08	0.88	1.11

Notes:
[a] Refers to total average employment growth by type of contract.

Sources: Eurostat and authors' calculations.

being Denmark and Ireland). The contribution to employment growth from part-time jobs in the Netherlands was as large as 1.38 percentage points, with 0.99 percentage points accounted for by women in the service sector. The latter category accounts for more than half of overall employment growth experienced by the Netherlands (1.87%).

Table 8. Contribution to average employment growth between 1983 and 2000 by age, gender and part-time/full-time

	Male			Female			Total[a]
	15–24	25–49	50–64	15–24	25–49	50–64	
Belgium							
Part-time	0.03	0.14	0.03	0.03	0.52	0.07	0.82
Full-time	−0.18	−0.12	−0.28	−0.16	0.11	−0.02	−0.65
All contracts	−0.15	0.02	−0.25	−0.13	0.63	0.05	0.17
Germany							
Part-time	0.03	0.07	0.04	0.03	0.30	0.07	0.53
Full-time	−0.26	0.00	−0.21	−0.27	0.00	−0.01	−0.75
All contracts	−0.23	0.07	−0.18	−0.24	0.29	0.06	−0.22
Denmark							
Part-time	0.07	0.05	0.01	0.14	−0.21	−0.01	0.05
Full-time	−0.09	0.17	0.20	−0.11	0.43	0.27	0.88
All contracts	−0.02	0.22	0.21	0.03	0.22	0.26	0.93
France							
Part-time	0.02	0.07	0.02	0.03	0.33	0.06	0.53
Full-time	−0.17	0.18	−0.02	−0.16	0.20	0.05	0.09
All contracts	−0.15	0.25	0.00	−0.13	0.53	0.12	0.62
Greece							
Part-time	0.00	−0.01	−0.01	−0.01	−0.13	−0.01	−0.18
Full-time	−0.05	0.23	0.03	−0.03	0.56	0.10	0.84
All contracts	−0.05	0.22	0.02	−0.04	0.43	0.09	0.65
Ireland							
Part-time	0.07	0.07	0.05	0.17	0.46	0.15	0.96
Full-time	0.01	0.75	0.15	−0.11	0.98	0.10	1.88
All contracts	0.08	0.82	0.20	0.06	1.44	0.25	2.84
Italy							
Part-time	0.00	0.06	0.00	0.01	0.18	0.01	0.26
Full-time	−0.19	0.08	−0.14	−0.14	0.21	0.05	−0.13
All contracts	−0.19	0.14	−0.14	−0.13	0.39	0.06	0.12
Netherlands							
Part-time	0.24	0.12	0.11	0.25	0.97	0.32	1.99
Full-time	−0.18	0.43	0.28	−0.20	0.27	0.06	0.66
All contracts	0.06	0.55	0.39	0.05	1.24	0.38	2.66
Portugal							
Part-time	0.00	0.01	0.03	−0.01	0.11	0.12	0.26
Full-time	−0.16	0.37	−0.08	−0.07	0.58	0.07	0.71
All contracts	−0.16	0.38	−0.05	−0.08	0.69	0.19	0.98
United Kingdom							
Part-time	0.09	0.06	0.07	0.10	0.21	0.08	0.61
Full-time	−0.20	0.38	−0.17	−0.18	0.46	0.10	0.39
All contracts	−0.11	0.44	−0.11	−0.08	0.67	0.18	0.99

Notes:
[a] Refers to total average employment growth by type of contract.
Source: Eurostat and authors' calculations.

Table 8 offers an alternative decomposition of employment growth by part-time/full-time and gender, interacted with age instead of sector, for a longer sample period, namely 1983–2000. While net employment growth among individuals aged 25–49 was positive in all countries in the sample, net employment growth was more mixed

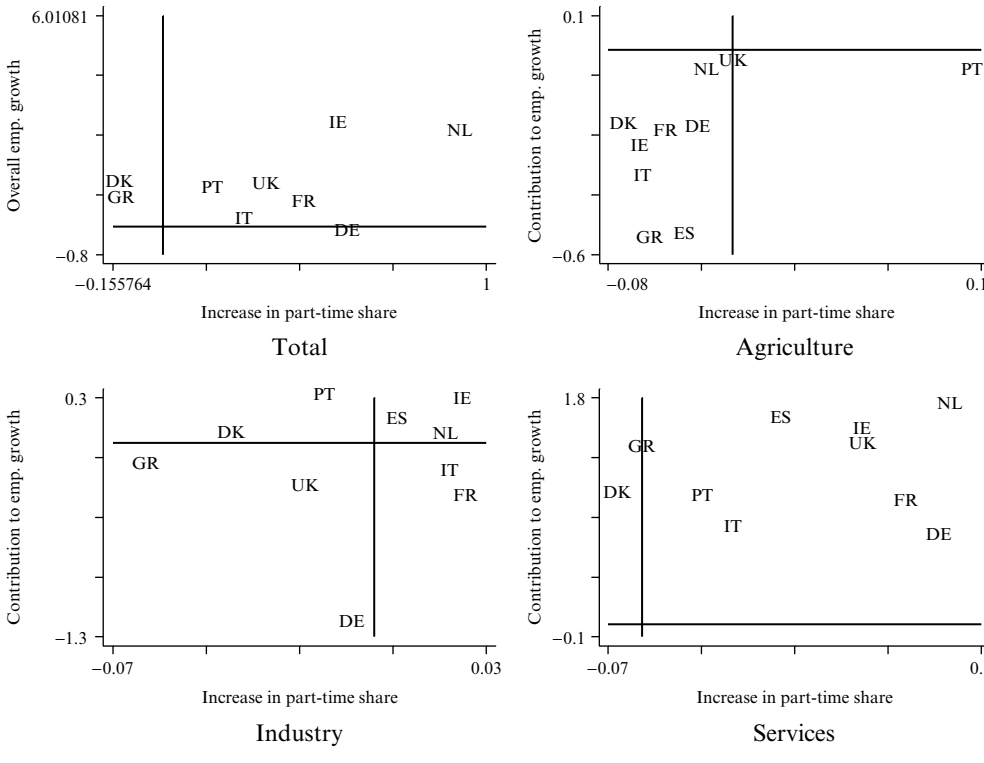

Figure 5. Share of part-time jobs and employment growth

among those aged 50–64, reflecting the tendency toward early retirement, and among those aged 15–24, reflecting increases in average school-leaving age. Table 8 shows that half of overall employment growth in the Netherlands was accounted for by part-time women aged 25–49. Jointly considered, the information in Tables 7 and 8 indicates that the Netherlands' exceptional performance was concentrated among women aged 25–49 employed in the service sector.

There is substantial heterogeneity in the shares of net employment growth accounted for by different contract types across the various European countries in our data sets. As mentioned, part-time employment of female workers accounts for a large share of net employment growth in the Netherlands. Conversely, in countries such as Belgium, Germany, France and Italy we do observe growth in part-time jobs, but also a decline in full-time jobs. Hence, it is interesting to study whether part-time or other atypical contracts are more generally associated with faster overall net employment growth. Figure 5 plots overall employment growth (averaged over 1983–1997) against the cumulative change in the share of part-time jobs, for the ten countries for which we have data. The top left-hand side panel refers to overall employment, and the other three panels refer to each broad economic sector. The Netherlands, where half of total net employment growth was accounted for by part-time employment, clearly stands out in these graphs. While the Netherlands undertook a comprehensive reform strategy in

the early 1990s, including labour and product market deregulation, wage moderation, fiscal consolidation, and a peg to the deutschemark (see Nickell and van Ours, 2000, and Watson *et al.*, 1999, for detailed discussions), it is interesting that liberalization or promotion of part-time employment was not explicitly targeted by any major policy measure. In any event, the data offer no clear evidence of a systematic cross-country relationship between part-time share changes and employment performance. The correlation between part-time share changes and employment growth is 0.4 for the aggregate economy, and only 0.12 for the service sector, where part-time employment opportunities might be expected to be more important. Given the small number of observations, these correlations are purely illustrative, and we now turn to panel regressions.

3.2.2. Types of contract and aggregate net employment growth. The extent to which increases in part-time employment have been associated with reductions in full-time employment can be estimated through panel regressions. We treat part-time and full-time employment in a particular country in a given year as the basic observations. With eleven countries and the sample period 1983–97, there are 124 observations (allowing for missing values). We use simple regression techniques (see Box 2) to ascertain the impact of part-time job growth on total employment. The results, reported in Table 9, indicate that creation of one part-time job was associated

Box 2. Part-time versus full-time employment

We regress the change in full-time jobs on the change in part-time jobs, as well as 10 country dummies and 13 year dummies. We estimate $\Delta FT_{it} = \alpha_i + \gamma_t + \beta\Delta PT_{it} + \varepsilon_{it}$, where ΔFT_{it} is the change in full-time jobs, ΔPT_{it} is the change in part-time jobs, α_i are country fixed effects, γ_t are year dummies and β is the coefficient in which we are interested. Its estimate answers the following simple question: over the sample considered, when part-time employment increased by 100 jobs, how many full-time jobs were created? Three possible benchmarks seem particularly interesting. First, full-time jobs did not decline, so that there was no crowding out. In that case, the coefficient β on the increase in full-time jobs would be 0. Second, there was no net gain or loss of total hours worked, that is – given that the average weekly hours of part-time jobs are about half of those of full-time jobs – full-time jobs declined by 50 jobs. (If two part-time workers could indeed substitute for one full-time worker with no net change in total hours, there would seem to be no fixed costs associated with individual workers). In that case, the coefficient β on the increase in the share of part-time jobs would be -0.5. Third, there was complete crowding out of full-time jobs, that is, overall employment remained unchanged. In that case, the coefficient β on the increase in part-time jobs would be -1.

with loss of 0.27 full-time jobs on average. The precision of the estimates is rather low (the standard error is 0.25). So the results do reject the hypothesis that part-time jobs completely crowd out full-time jobs (in which case the coefficient would be minus unity), but this cannot estimate precisely the extent of crowding out (if any). Robustness tests also suggest that the coefficient is somewhat sensitive to excluding individual years or countries, or to changes in the functional form of the regression.

A more detailed approach is to use data on country/sectors (e.g., industry in France) as the basic units of analysis. This provides a richer data set, with three broad economic sectors for each of the eleven countries, over 1983–97, yielding almost 400 observations. In that case, it is possible to estimate the relationship between increases in part-time jobs in a given sector and country to increases in full-time jobs in the same sector and country. In estimating the relationship, both *a priori* reasons and inspection of the data suggest that it is important to permit the slope coefficient to vary among the three broad sectors. In fact, the extent to which part-time jobs may substitute for full-time jobs may depend on technological considerations: for example, firm-specific knowledge might be more important in some sectors than others. The regressions also include specific dummies for each country/sector, as well as country/sector specific time trends. The latter are intended to control for the fact that some country/sectors may have done particularly well or particularly badly over time for reasons that are unrelated to the types of contracts used. In agriculture, by far the smallest sector, the point estimate of the slope coefficient is very close to zero, but the standard error is very large (0.57), though one can formally reject that the coefficient equals −1. In industry, the point estimate is as high as 0.54, but again with a very large standard error (0.54).

Our main interest is in the estimate of the coefficient for the service sector, where most part-time jobs were created. Table 9 shows that in services the coefficient is −0.27, just like that estimated for the aggregate economy. The coefficient is fairly

Table 9. Part-time and aggregate net employment growth, 1983–97

	Slope β	Std. Dev. (β)	H_o: $\beta = 0$	H_o: $\beta = -0.5$	H_o: $\beta = -1$
Fixed effects regression including 10 country dummies and 13 year dummies; 124 observations. Left-hand side variable is change in full-time jobs in country *i*; Right-hand side variable is change in part-time jobs in country *i*.					
Employment β	−0.27	0.25	*0.28*	*0.35*	*0*
Fixed effects regressions including 32 country/sector dummies and 32 country/sector trends; 378 observations; Left-hand side variable is change in full-time in country/sector; Right-hand side variable is change in part-time in country/sector *ij*;					
Agriculture β	0.03	0.57	*0.95*	*0.35*	*0.07*
Industry β	0.54	0.54	*0.31*	*0.05*	*0*
Services β	−0.27	0.16	*0.09*	*0.18*	*0*

Note: Numbers in italics are *p*-values of the corresponding null hypothesis.
Data source: Labor Force Survey, Eurostat.

precisely estimated, with a standard error of 0.16. Again one can strongly reject that the coefficient equals −1; one can also reject that the coefficient equals zero, though only at the 10% level; but one cannot reject that the coefficient equals −0.5. These results suggest that in the service sector increases in part-time employment have been associated with increases in the overall number of jobs but most likely also with partial crowding out of full-time jobs. At the same time, it is not possible to reject the hypothesis of no net change in the number of hours. Again, robustness tests suggest that the coefficient estimates are somewhat sensitive to specification changes and the removal of individual countries or individual years. These coefficients ought to be seen as descriptive, because data limitations make it difficult to analyse causal relationships.

3.2.3. A brief look at temporary contracts. In this section, we briefly look at the European Union countries' experience with temporary contracts – a topic that has recently received considerable attention in the literature and public debate. Even though data limitations make it impossible to perform the same detailed decomposition as for part-time contracts, simpler similar exercises are interesting. Figure 6 shows the contribution to average overall employment growth stemming from temporary and permanent contracts, for 1983–2000. Along this dimension, Spain is the country that stands out over the past two decades, in that its net employment growth was largely accounted for by temporary contracts (Figure 6). However, it is important to note that

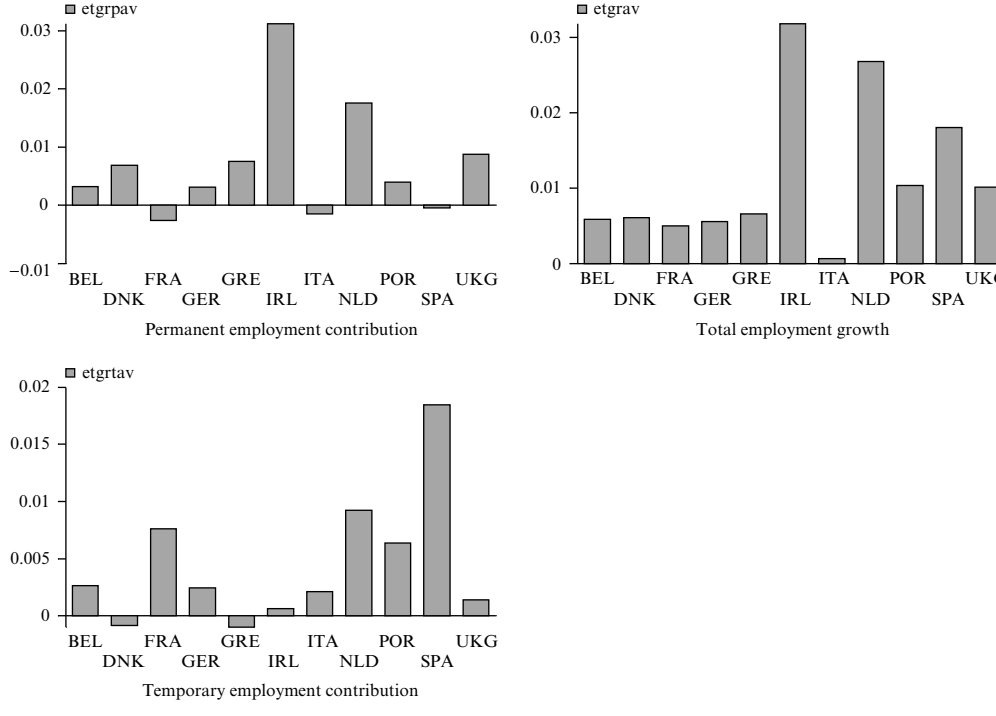

Figure 6. Temporary, permanent, and total employment growth, 1983–2000

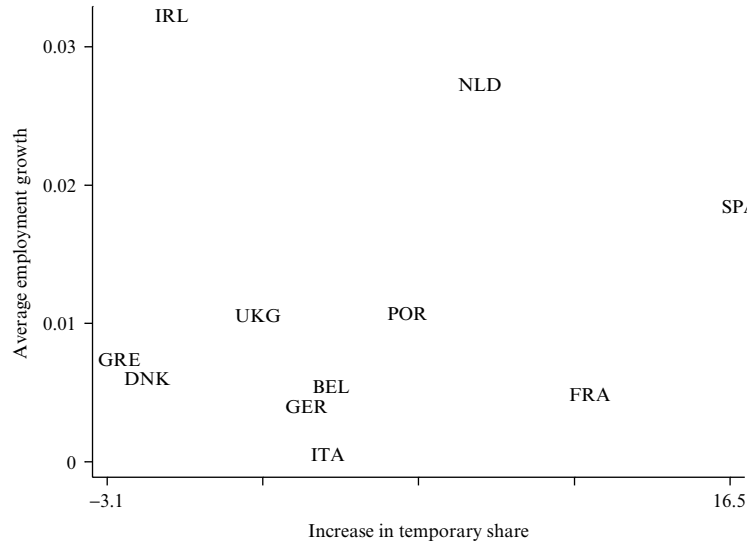

Figure 7. Change of temporary jobs share and employment growth, 1983–2000

Spain's employment has begun rising rapidly only since the mid-1990s. The reforms introducing temporary contracts in Spain date from the early 1980s. Those reforms took place against the background of extremely high dismissal costs and resulted in a massive increase in the share of temporary employment while overall employment growth at the time remained disappointing.[4] As a result, Spain's share of temporary employment currently stands at one-third, by far the highest in the OECD. The timing of events in this case makes it clear that temporary jobs were not underlying Spain's relatively successful performance as viewed over the whole period. The case of Ireland is also interesting, in that its rapid overall employment growth is accounted for mainly by permanent contracts, with a contribution from temporary contracts very close to zero.

As in the case of part-time contracts, we consider in more detail the potential relationship between increases in the share of temporary employment and overall increases in employment growth across the EU countries. We see in Figure 7 that, even disregarding the experiences of Ireland and Spain, which appear to be obvious outliers, there is no evidence of any relationship between overall employment growth and the change in the share of temporary employment. This simple chart, albeit not conclusive, is consistent with the view that temporary contracts tend to substitute for permanent contracts.

All in all, despite the absence of clear cross-country relationships, the success of the Netherlands with part-time contracts and the substitution of temporary contracts for permanent contracts observed in Spain in the aftermath of its reforms in the early 1980s seem to suggest that part-time contracts may be a more promising avenue of net employment growth than temporary contracts. As documented by Garibaldi and

[4] Bentolila and Dolado (1994) and Dolado *et al.* (2001) provide further detail on the impact of the reforms of the early 1980s in Spain.

Mauro (1999), there is also evidence that workers tend to be happier with part-time contracts than with temporary contracts.

3.3. Is something new happening in Europe?

We saw in Table 2 that net employment growth has risen dramatically in many European countries in 1996–2000 compared with the previous fifteen years. This recent pick up of employment growth is particularly impressive in countries such as Italy and Spain, but also Norway and Sweden, which had previously lagged behind their partners. While no doubt some of this pick up is purely cyclical, one may wonder whether something new is happening beyond the cycle. Gros *et al.* (2001) argue that higher employment growth in Europe since the mid-1990s is an entirely cyclical phenomenon. They point out that employment and unemployment rates today are still roughly at the same levels as in the early 1990s, and that labour market reforms have been limited. By contrast, Decressin *et al.* (2001) point out that the ratio of employment growth to output growth has been much larger than in previous cyclical expansions. They attribute more rapid employment growth to wage moderation. The jury is still out, and the only true test of whether employment growth has really increased in a non-cyclical sense is what happens at the next cyclical downturn. Nevertheless, at this early stage we venture the guess that something may be happening in Europe beyond the cycle. In this section we attempt to support our claim with some tentative empirical evidence.

The idea that the resurgence in Europe in the second half of the 1990s may not be entirely explained by cyclical factors is linked to the sharp acceleration in the reform process in the European Union. Table 10 reports information on the number of labour markets reforms observed in Europe using the updated edition of the RDB Reform Database. European countries undertook 24 reforms aimed at making EPL more flexible, and 61 reforms aimed at increasing the attractiveness of employment (versus non-employment) in 1995–2001, compared with 16 reforms and 32 reforms, respectively, for 1986–1994. These data include reforms that are clearly in the direction of making the labour market more flexible and promoting employment. Even though it would be difficult to control for the exact quality and intensity of the reforms, our reading of the evidence is that European countries as a whole look certainly more flexible and more employment-friendly today than they did prior to the mid-1990s.

We begin by asking, once again, whether particular sectors or types of contract might account for the relatively high employment growth in 1996–2000 in Continental Europe. Inspection of the data shows that both part-time and full-time contracts, and both temporary and permanent contracts have contributed to the resurgence of total employment growth in the past few years. (The data and the tables are reported in the Web Appendix which can be found on http://www.economic-policy.org.) No doubt temporary contracts played a crucial role in Portugal: but they were inconsequential in Ireland. Both temporary and permanent contracts increased substantially on a net basis in other countries, such as Spain, that recently improved their performance. On

Table 10. Labour market reforms in Europe

	EPL[a]	Non-employment assistance[b]
Number of reforms up to 1995	16	32
of which comprehensive	3	
Number of reforms since 1995	24	61
of which comprehensive	4	

Notes:
[a] Number of reforms that reduce strictness of EPL in European Union countries.
[b] Number of reforms that increase returns to employment in European Union countries.
Source: Fondazione Rodolfo Debenedetti (RDB) Reform Database.

the whole, this recent European resurgence seems to be broad-based. We therefore turn back to considering aggregate employment growth.

3.3.1. The recent resurgence of European employment growth. As shown in Section 2.1, in many European countries employment growth was higher in 1996–2000 than in 1980–1995, even taking into account output growth. This is good news for employment growth though of course it is also bad news as it translates identically into lower productivity growth. To see whether employment growth after 1995 has risen taking into account the pick up in economic activity in Europe, we run simple regressions (see Box 3). The results of three different panel regressions, reported in

Box 3. Estimating the cyclical component of European employment

We run regressions in the form

$$\Delta l_{i,t} = a_i * \Delta y_{i,t}^{PRE-95} + b_i * \Delta y_{i,t}^{POST-95} + \varepsilon_{i,t}$$

that is, we relate employment growth to output growth allowing the regression coefficient to differ between the pre-1995 and post-1995 periods. The regressions always include dummies for each individual country (to allow for higher country-specific long-run employment growth) and each individual year (to account for world-wide economic cycles).

The results of the basic OLS regression are reported as Specification 1. Other specifications attempt to control for difficult estimation issues. To control for cyclical effects not captured by current output growth (because employers' hiring decisions depend on whether increases in output are perceived to be permanent or temporary), we include the change in the output gap for country i at time t in the regression above (Specification 2 in Table 11) and run the regression

$$\Delta l_{i,t} = a_i * \Delta y_{i,t}^{PRE-95} + b_i * \Delta y_{i,t}^{POST-95} + \Delta GAP + \varepsilon_{i,t}$$

where ΔGAP is the (absolute) change in the output gap, in percentage points, computed using the standard Hodrick–Prescott filter methodology. This is far from perfect, because the filter's sensitivity to the last few observations at the end of the sample can make it difficult for our estimates to discriminate between trend and cycle in the late 1990s. This approach is equivalent to letting the temporary and permanent components of output affect employment with different coefficients. Let employment L be a function of the permanent component of output, Y^{HP}, and the temporary component of output, Y^{TEMP}, and output $Y = Y^{HP} + Y^{TEMP}$. Then, we can write

$$l = a * y^{HP} + b * y^{TEMP}$$

where l and y are employment and output in logarithms. Recalling that $GAP = Y^{TEMP}/Y^{HP}$ and defining $\alpha \equiv a + b$ one can show that $l = \alpha * y - \alpha * GAP - b * \ln(GAP)$.

Relaxing the restriction that the coefficients be the same on y and GAP, $l = \alpha * y + \gamma * GAP - b * \ln(GAP)$. Taking derivatives with respect to time yields $dl/dt = \alpha * (dy/dt) + \gamma * [d(GAP)/dt] - b * [d \ln(GAP)/dt]$. The last term (the proportional change in the output gap) does not have a clear interpretation and was insignificant in estimation: dropping it, we return to the functional form shown above. A second difficult issue relates to the endogeneity of output growth to employment growth: just as employment demand is a function of the demand for output, output is in turn a function of employment inputs. In some estimates, we attempt to reduce the resulting bias by using the trade-weighted output growth rate of each country's trading partners as an instrument for domestic output growth. That is, we run first stage regressions for domestic output growth as

$$\Delta y_{i,t} = \sum_{k \neq i}^{K} \Delta y_{k,t} + u_{i,t}$$

where $k = 1 \ldots K$ are i's trading partners. This is reported as Specification 3 in Table 11.

These first stage regressions have high R^2 coefficients for most countries. This approach assumes that the only way in which the trading partners' output growth affects domestic employment growth is through the domestic output growth rate, as captured by the first stage regression. While this may be too strong an assumption for large countries such as the US and Germany, it may be more reasonable for smaller countries, although even there it might be argued that supply-side/productivity effects could be highly correlated across countries.

Table 11. Panel regressions of employment and cyclical conditions, 1976–2000

	Coefficient	*t*-statistic
Specification 1: Ordinary least squares		
Output growth	0.402	9.96
Output growth outside Europe	0.084	1.28
Post-95 output growth	0.240	2.91
Post-95 output growth outside Europe	−0.321	−3.31
Post-95 output growth in liberalizing Europe	0.152	1.71
Specification 2: Ordinary least squares (controlling for change in output gap)		
Output growth	1.082	8.70
Output growth outside Europe	−0.398	−1.75
Post-95 output growth	0.101	1.17
Post-95 output growth outside Europe	−0.285	−3.11
Post-95 output growth in liberalizing Europe	0.094	1.09
Specification 3: Two-stage least squares		
Fitted growth	0.480	3.52
Fitted growth outside Europe	0.201	1.43
Post-95 fitted growth	1.005	4.96
Post-95 fitted growth outside Europe	−0.535	−3.96
Post-95 fitted growth in liberalizing Europe	0.102	0.80

Notes:
All regressions include country dummies and individual year dummies. The coefficients are not reported, for the sake of brevity.

Output growth outside Europe (post-95 output growth) is coefficient over and above output growth coefficient for Europe, for whole sample period. Post-95 output growth outside Europe (post-95 output growth in liberalizing Europe) is over and above coefficient for post-95 output growth (reference group is non-liberalizing Europe).

Liberalizing Europe includes Belgium, Denmark, Finland, Germany, Italy, the Netherlands, Portugal, Spain, Sweden. Non-liberalizing Europe includes Austria, France, Greece, Ireland, and Norway. Outside Europe includes Australia, Japan, New Zealand, and the United States. Liberalizing versus non-liberalizing is defined depending on whether employment protection index declined in late 1990s compared with late 1980s.

In Specification 2, the output gap is obtained by using the Hodrick–Prescott procedure on GDP. The change in the output gap is the absolute change (in percentage points). The coeffificients (one for each country) are not reported, for the sake of brevity.

In Specification 3, the instrument in the first stage regressions for each country is trade-weighted output growth in partner countries, as explained in the main text.

Data source: OECD.

Table 11, estimate the extra employment growth associated with a one percentage point increase in output growth, before 1995 and after 1995, for various groups of countries.

Recall that our objective is not only to assess whether Europe's resurgence is of a cyclical or a more long-lasting nature, but also to attempt to gain some insights into the possible sources of such resurgence. Thus, we constrain the pre-1995 responsiveness of employment to output to be the same within two groups of countries: European, and non-European ones. And we constrain that responsiveness after 1995 to be the same within three groups of countries: (1) the 'liberalizing' countries in Europe, which we define to be the countries whose OECD index of EPL is lower in the 1990s than in the 1980s (Belgium, Denmark, Finland, Germany, the Netherlands, Italy, Portugal, Spain and Sweden); (2) the 'non-liberalizing' countries in Europe that did not lower

their EPL (Austria, France, Greece, Ireland and Norway); and (3) the countries outside Europe. In other words, we ask not only whether the extra employment growth associated with a one percentage point increase in output growth has risen in Europe after 1995, but also whether that increase has been more pronounced among liberalizing European countries than it has among non-liberalizing European countries.

Our criterion for distinguishing between liberalizing European countries and non-liberalizing European countries has the advantage of being based upon objective, quantitative information. At the same time, its focus on EPL as the only relevant measure may be somewhat narrow. Our findings in Section 3.1 lead us to believe that EPL is clearly an important measure, but it would surely be desirable to incorporate information about other types of labour market reforms. One could make the heroic assumption that other labour market reforms are well proxied by changes in the EPL index, but this is not always the case. A notable example in this respect is France, where important reforms have been made, especially by cutting social security contributions for firms hiring low-wage workers (and where employment growth has risen substantially after 1995). Such reforms are not reflected in the EPL index, leading us to classify France as a 'non-liberalizing' country according to the criterion above.[5] This and other aspects of our distinction between liberalizing and non-liberalizing countries need not be fully accurate, and any such misclassification makes it more difficult for our estimates to find significant differences between European liberalizers and non-liberalizers even if reforms truly affect the acceleration in employment.

In a similar vein, one is more likely to capture significant differences between the pre-1995 and post-1995 periods, the closer 1995 is to the real 'cut-off date' or 'turning point' in European labour markets. At the same time, if a break exists in the association between employment growth and output growth, we could still obtain significant, if somewhat weaker, results even if this were not the right cut-off date.

The regression results reported in Table 11 show that, even controlling for the cycle or for endogeneity, the extra employment growth associated with a one percentage point increase in output growth is significantly higher in 1996–2000 than in 1980–1995 for the countries in Europe, and significantly lower for the countries outside Europe. Moreover, the increase in the coefficient is more pronounced in liberalizing Europe than it is in non-liberalizing Europe, though not significantly so.

Consider the results of Specification 1 in Table 11. Before 1995, the extra employment growth associated with a one percentage point increase in output growth is estimated to be 0.40 percentage point (with a standard error of 0.04 percentage point) for European countries. Outside Europe, that coefficient is 0.08 percentage point higher. After 1995, that coefficient is 0.24 percentage point higher (and significantly so) in non-liberalizing Europe than it was before 1995. And, for liberalizing Europe, it is a further 0.15 percentage point higher (significantly, but only at the 10% level)

[5] On labour market reforms in France and their impact, see Estevão (2001) and Pisani-Ferry (2000).

than for non-liberalizing Europe in the post-1995 period. By contrast, it is significantly lower outside Europe. To sum up, after 1995 the extra employment growth associated with a one percentage point increase in output growth is estimated to be 0.64 percentage point for non-liberalizing Europe (0.40 + 0.24 in Specification 1, Table 11), 0.79 percentage point for liberalizing Europe (0.40 + 0.24 + 0.15 in Specification 1, Table 11), and 0.32 outside Europe (0.40 + 0.24 − 0.32 in Specification 1, Table 11).

Turning to Specification 2, where we control for changes in the output gap, and Specification 3, where we control for endogeneity, the broad pattern of the results is fairly similar to that reported above, as can be seen in Table 11. However, with these specifications the post-1995 difference between the coefficients for liberalizing and non-liberalizing Europe is somewhat smaller, and no longer significant at the conventional levels. (The coefficient falls to 0.12 percentage point, with a *t*-statistic of 1.09, in Specification 2; and to 0.10 percentage point, with a *t*-statistic of 0.8, in Specification 3.)

Our own reading of these results is that they reflect the acceleration of the reform process observed in Europe from the mid-1990s, and that those countries that liberalized their labour markets ended up with even higher employment growth (taking into account cyclical developments) after 1995. However, the evidence we have reported, while consistent with this hypothesis, is not statistically significant.

It is also worth noting that our regression results presented in this subsection are consistent with the view that labour market liberalization (and the reduction in dismissal costs in particular) has rendered employment more cyclical, rather than, as we think, fostering its medium-term growth. Under that alternative view, the same factors that are currently speeding up employment growth would also speed up employment declines in a recession. Our cross-country regressions based on twenty-year averages (Section 3.1.1) tend to support the view that lower dismissal costs foster employment growth in the medium run, but – once again – we admit that we will only find out for sure at the next cyclical downturn.

Our own bottom line is that the acceleration in the reform process observed in several European countries has resulted in labour markets that look more flexible and more employment-friendly than they did prior to the mid-1990s, and that this is likely to be an important factor in the resurgence of employment growth observed since 1995.

4. SUMMARY AND POLICY IMPLICATIONS

Drawing on a variety of data sources, this paper has analysed in a systematic way the net employment growth performance of 21 OECD economies between 1980 and 2000, focusing on the role of age and gender characteristics, economic sectors, institutions and types of contract.

We find that sectoral factors, whether a small initial share of employment in agriculture, or good performance in a limited number of sectors, only explain a small portion of differences in overall employment growth across countries. Only in a few southern European countries such as Portugal, Greece, and – to a lesser extent – Spain

and Italy do sectoral factors seem to be relevant. Conversely, a policy package of low taxation and low dismissal costs may have an important role in fostering employment growth in the medium run. Indeed, such a policy package seems to account for a sizeable portion of the difference between Continental Europe and the high-performing non-European countries.

Within Continental Europe, the success of the Netherlands is largely accounted for by a net increase in part-time jobs taken up by women aged 25–49 in the service sector. However, more systematic analysis suggests that a move toward more part-time work is associated with no net gains in total hours. Therefore, while it is sensible to reduce obstacles to adopting more part-time contracts, this should not be used to postpone other needed labour market reforms. Similarly, temporary contracts are no panacea: their introduction in Spain in the presence of high dismissal costs on permanent jobs gave rise to a dual labour market with no net gains in total employment. Systematic analysis for the EU countries does not yield any relationship between increases in the share of temporary employment and increases in overall employment. Finally, there seems to be an interesting resurgence of employment growth in Europe since the mid-1990s. In our view this is not purely driven by cyclical factors, though the true test of whether this resurgence is there to stay will be at the next cyclical downturn. Our results are consistent with the view that this resurgence is related to the observed acceleration of labour market reforms – including reductions in employment protection – undertaken in several European countries since the mid-1990s.

Discussion

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Employment is perhaps the most important policy area in economics in these days. The paper analyses the employment growth in OECD countries between 1980–2000, trying to test several hypotheses that have been put forward for explaining the cross-country differences in their employment performance. Also the paper asks the question whether the recent increases in employment in Europe are temporary and cyclical, or whether they are the result of policy reforms, and more permanent. Among the hypotheses tested are:

- the idea that countries' performance differences are the results of differences in the sectoral composition of the countries' economies;
- the differences in performance reflect differences in the countries' labour market institutions;

- the differences can be explained by particular institutional changes, for instance, the creation of more part-time jobs, or temporary employment opportunities.

The answers given are:

- country differences regarding the sectoral structure play some, but not a major role;
- special regulation such as the creation of part-time jobs generates more jobs, but does not really change employment in terms of total hours worked;
- labour market institutions such as unemployment benefits, trade union coverage, level of taxation, and employment protection laws all matter, but to different degrees.

The authors carefully discuss the methodological problems of measuring unemployment to justify their approach of focusing on employment data. The concept of measuring employment leads to methodological questions and problems that are similar to these problems. So something may be gained by looking at employment instead of unemployment, but not very much. For instance, would one like to add up employment in the official sector and employment in the shadow economy? And if so, how should one estimate the employment in the shadow economy? How should one address the problem that the regular weekly workload for an average full-time job has changed? How should one account for overtime work? How should one treat self-employment? The relationship between employment and self-employment is not necessarily constant over time, not invariant across countries, and sensitive to reform. For instance, Germany recently redefined self-employment, in order to enlarge the set of contributors to social security. Disregarding the economic incentive effects of the reform, the reform increased the statistical measure of (non-self) employed and decreased the number of self-employed by the same amount. Accordingly, the employment statistics would be misleading by measuring an increase in employment that is a pure artefact. Even worse, the reform is also likely to have decreased the total number of hours worked in the official economy (as employed or self-employed), and may also have decreased labour supply in general. Further, how should one count jobs that are generated as part of governmental employment programmes, in which long-term unemployed persons are hired by the government to do work which is fairly unproductive, and, to some extent, similar to 'workfare'? In the employment statistics, these jobs are indistinguishable from productive jobs in the public sector, and these jobs come in large numbers, and play a major role, for instance, in the eastern part of Germany.

I found the results on the role of institutional characteristics such as unemployment benefits, trade union coverage, level of taxes, and employment protection laws of particular interest. Also, an economist is inclined to believe the message that these institutions affect employment. A few comments or questions are as follows. The first question points

at some methodological issues that are fairly difficult to address, and, to some extent already discussed in the paper. First, it is not clear whether employment performance should explain the choice of these institutions, or whether the choice of institutions explains performance, or whether there are even more fundamental and hidden variables that explain most of the country performance plus the four institutional variables. This is difficult to disentangle because, as discussed in the paper, the four institutional variables are somewhat collinear, and because there is not much within-country variation regarding these variables during the time period considered.

Taking the results at face value, economists are probably happy to see confirmation of their theory-based expectation of negative employment effects of unemployment benefits, trade union coverage, taxes and employment protection laws. However, the analysis here goes further: the claim is that the institutional variables explain employment growth, not just the level on which this employment occurs. Two possible reasons were offered, also during the panel meeting. First, a change in growth could mean that it takes a long time until employment has fully adjusted to institutional change, in which case 'growth' as measured in the data is simply the gradual adjustment from one growth path to another growth path. Hence, the additional 'growth' is only temporary, until the new growth path is reached. Alternatively, the authors discussed that the institutional set-up can influence the factors that work as engines of growth in an endogenous growth model. One obvious channel here would be taxation, which, according to several models of endogenous growth, has a negative impact on growth. The authors may make their own point of view more transparent. In particular if the authors take the view that the institutional set-up influences possible engines of growth, they may want to make clear which channels they have in mind. Also they may want to control for capital income taxation, public investment, types of public spending of tax revenues, and other variables that have been considered in the theory of endogenous growth as possible engines of growth, or factors that affect such possible engines of growth.

Finally, if economists' theory-based expectations are confirmed according to which labour market institutions affect employment or even employment growth, it would be interesting to go one step further, trying to explain the poor status of these institutions in many European countries and the lack of reform, and trying to explain the reasons for the country differences both with respect to the status of these institutions and the ability to implement reforms. Of course, measurement of the differences and the measurement of the correlation of employment performance and institutional arrangements is a very important step forward in the right direction, making this paper extremely valuable.

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What explains net employment growth differentials across OECD countries? This paper offers the following answers: not sector composition, not special contracts; perhaps

labour market policies, output growth (but not only), and labour market reforms since the mid-1990s. I will concentrate my comments on the latter three possible explanations.

The paper's evidence is based on bivariate correlations between economic policy indicators and net employment growth from 1980 to 2000; on a battery of regressions for the sub-samples 1980–2000 and 1980–1995; and on panel regressions relating employment and output growth rates for different groups of countries. The results suggest that the labour market reforms implemented by some European countries in the mid-1990s had an impact on employment creation. Countries with low employment protection legislation (EPL) had higher employment growth after 1995, and countries that implemented labour market reforms after 1995 have a higher elasticity of employment with respect to output.

In light of these results, it is natural to ask three questions. First, have countries in the first group increased employment more than what would be justified by output expansion since 1991 (the trough in the US) and since 1993 (the trough in Europe)? This is a hard question to answer for the data, because since 1995 both Europe and the US have experienced a period of output expansion.

The next question is related to decreasing labour productivity in European countries. Standard data indicate that, since 1995, output growth has increased both in the US and in Europe, but labour productivity has decreased in Europe, not in the US. The paper's regression results are largely driven by this simple fact. But does the decrease in labour productivity reflect higher elasticity with respect to output growth, or does it reflect a permanent increase in the employment content of output growth? In the former case, the likely decline of European output growth in the near future should lead to declining employment growth, and the faster employment growth of the last six years would be just a temporary phenomenon. Reforms may then have had an impact through an increase in labour market flexibility, but we should not expect them to have a lasting effect on employment creation.

Lastly, if the authors were right in interpreting post-95 European employment growth as permanent, there is still the question of whether 1995 is the right cut-off date. The year 1995 has been chosen to study the effect of reforms on employment, but it would be interesting to see whether other cut-off dates confirm the results. Average growth rates of output, employment and labour productivity before and after 1990, for example, indicate that productivity is decreased in Europe on average, and both in countries where output growth was increasing (e.g. Ireland) and in countries where it was decreasing (e.g. France and Italy). I have experimented with running regressions similar to those in the paper taking 1990 as a cut-off year, obtaining results broadly similar to those obtained using 1995.

In summary, declining labour productivity is a feature of European economies at least since 1990, a year that precedes most reforms, and this feature seems to be independent from the cycle since it is independent of the behaviour of output growth. These observations lead me to view the paper's main conclusions with less than complete confidence. What happened in the 1990s? Perhaps a case study of France,

a non-reforming country with remarkable employment growth, would provide some useful clues on possible answers.

Panel discussion

Replying to the discussants, Paolo Mauro admitted that disentangling cyclical from permanent effects is difficult and agreed that econometric models cannot reliably account for every possible effect. Pietro Garibaldi agreed that measurement is problematic for employment, but noted that, for example, black economy measurement issues are relevant for unemployment as well. The authors admitted that 1995 need not be the most informative cut-off date, but argued that it can serve as a useful benchmark date for the acceleration of labour-market reforms.

Jan van Ours pointed out that the definition of full- and part-time work had changed over time. Pierre Cahuc concurred, and mentioned that hours-per-job variation should be taken into account when assessing growth of total employment.

Patrick Honohan pointed out that using the share of part-time jobs as an explanatory variable may not be appropriate. He also mentioned that Irish output growth data may not be fully reliable, since multinational transfer-pricing practices and high-tech price index problems introduce important measurement problems. James Markusen pointed out that trade restrictions affected employment growth, and so would capital market restrictions. Such policies are likely correlated with others, such as employment protection, and it is in general very difficult to disentangle the effects of individual elements of observed policy packages.

Mathias Dewatripont advocated country-level case studies as a way to strengthen the interpretation of statistical relationships between dismissal costs, taxation and employment growth. Dismissal costs are not easily measured, and highly heterogeneous (across, for example, blue- and white-collar workers) in most countries.

Philip Abraham and Giuseppe Bertola thought that perhaps the most important issues in the paper's context are whether non-reforming countries could react to future employment growth slowdowns by further restricting dismissals, and whether countries with more flexible labour markets will fare worse in that situation. Paul Seabright mentioned that the effects of labour market reforms can be difficult to disentangle from those of information technology and telecommunications booms in 1990s experience. Perhaps a study of the UK, where the labour market was reformed in the 1980s, could offer more useful information.

Michael Moore doubted that foreign direct investment (FDI) was the main explanation for employment growth in Ireland, since FDI is itself endogenous and decreased during the 1990s. He considered macro reforms a more likely explanation. Finally, Jacques Drèze wondered why wages were disregarded in the analysis. Paolo

Mauro answered that estimating price and quantity effects is very difficult in general, and focusing on quantities helped the paper focus on specific empirical facts.

APPENDIX. DATA SOURCES AND VARIABLES DEFINITIONS

Section 2.1 uses data from the OECD analytical database, the OECD Economic Outlook, and the Business Sector Database. Net employment growth is simply measured as the average growth in total civilian employment. Working age population is the number of people between the age of 15 and 64. The shares of the capital stock and the capital-labour ratios refer to the business sector.

Section 2.2 uses sectoral data from the OECD Statistical Compendium. Owing to limited data coverage, Norway was not included in the sample. Further adjustments had to be made to address country-specific data limitations. In the case of Canada, Electricity and Mining were missing between 1980 and 1988, and they were estimated with sector specific growth rates from the rest of the sample. Similar adjustments were made for Electricity in Italy between 1980 and 1982 and Agriculture in the US between 1980 and 1989. The data for New Zealand and Greece are missing for 1997.

Section 3.1 uses aggregate data from the following sources:
The indices of Active Labour Market Policies and Labour Standards are those used by Nickell and Layard (1999).

Employment protection legislation represents a country's ranking of overall strictness of protection against dismissals. It is an average index of four different sub indices related to late eighties and late nineties: Maximum Pay and Notice Period, Strictness of Protection against Regular and Fixed-Term Contracts, Index of Obstacles to dismissals and the Ranking proposed by Bertola (1990). The index appeared in the OECD Employment Outlook (1999).

Overall taxes and payroll taxes are measured as average total taxation and average payroll taxes, respectively, as a share of GDP. The data are drawn from the OECD Revenue Statistics.

Union density measures the proportion of workers that belong to a trade union. Data refer to 1980, 1990 and 1994 and were compiled by the OECD (1997).

Union co-ordination is an index that measures the extent to which both employers and employees across the economy co-ordinate in the bargaining process. The index takes values between 1 and 3 and is available for 1980, 1990 and 1994. It was compiled by OECD (1997).

Unemployment benefits measure the average net replacement ratio for an unemployed worker. Information refers to 1981 and 1991 and the data are drawn from the OECD Jobs Study.

Section 3.2 uses data from Eurostat's Labour Force Survey. The data refer to the period since 1991 for Germany.

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