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Deconstructing Job Creation

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Abstract

This paper studies net employment growth across 21 OECD economies in 1980-97, focusing on experiences within the European Union. It finds that sectoral effects can only partially account for differences in job creation. By contrast, it shows that a policy package including low taxation and flexible employment protection legislation is associated with high job creation and can account for most of the observed differences. The Netherlands' success is largely accounted for by the creation of part-time jobs for women aged 25-49 in the services sector, but in most EU countries the substitution of part-time jobs for full-time jobs is considerable.

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I. INTRODUCTION

The key policy challenge for many European countries is to create more jobs. The unemployment rate has been notoriously higher in Continental Europe (11½ percent in the Euro area in 1998) than in the United States (4 ½ percent), but there have also been considerable differences within Continental Europe, where the unemployment rate currently ranges from 5 percent in Portugal to 17 percent in Spain. While many studies have attempted to explain why some countries have had higher unemployment rates than others,[2] less attention has been devoted to countries' relative performance in terms of net employment growth. (The terms ``employment growth' and "job creation" will be used interchangeably).[3] This paper provides a systematic and detailed analysis of job creation over the past two decades across the OECD countries, with particular emphasis on the differences within Europe.

Shifting the focus to job creation has four advantages. First, employment is easier to measure than unemployment, because it does not depend on subtle distinctions between individuals who are in the labor force and those who are not.[4] Second, for a given level of unemployment, higher job creation results in higher output and lower financial pressures on the social security system. Third, the empirical regularities that have been uncovered by previous studies on aggregate unemployment are not necessarily confirmed in the case of job creation. For example, one of the main findings of this paper is that while employment protection legislation seems to be unrelated to unemployment, it is significantly associated with low job creation. Fourth, a much richer analysis can be conducted by using employment rather than unemployment as the main variable of interest. In particular, data on unemployment do not ascribe workers to a particular sector or type of contract, whereas the composition of employment by sector and by type of contract is available. This information makes it possible to assess whether better performance in the United States than in Continental Europe is due to differences in the initial composition of employment by sector; and to address relevant policy questions such as whether the creation of part-time contracts

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[2]Recent cross-country studies on the sources of unemployment include Nickell (1997), Scarpetta (1996), and Nickell and Layard (1998) on the empirical side; and Bertola (1998) and Mortensen and Pissarides (1998a,b) on the theoretical side

[3]This paper focuses on net job creation. Davis and Haltiwanger (1998) survey existing studies on gross job creation and destruction. Garibaldi et al. (1997) analyze the impact of labor market policies on gross job flows in OECD countries.

[4] As is well known, individuals who are not working are recorded as part of the labor force (and therefore as unemployed) only if they are actively looking for a job. However, especially in high unemployment countries such as those of Continental Europe, the low likelihood of finding a job may imply that many people will have stopped actively searching for one (the ``discouraged worker" phenomenon); conversely, many people may declare that they are actively searching for a job when in fact their search effort is minimal.

results in higher overall job creation or merely substitutes for the creation of full-time contracts.

It might be argued that the attention to job creation rather than the unemployment rate is misplaced, because most theories of the job market predict that employment growth should equal working age population growth in the long run. However, the focus of this paper is on the medium run, a time frame over which working age population growth, albeit significantly correlated with employment growth, deviates significantly from it; furthermore, working age population growth is itself endogenous: countries that create many jobs will tend to attract large immigration flows.

Net job creation has varied considerably among the OECD countries over the past two decades. In particular, some non-European countries, including the United States, Canada, Australia, and New Zealand have created far more jobs than a majority of the European countries, notably France, Italy, and some of the Nordic countries. Within Europe, the Netherlands and Ireland clearly outperformed other countries, and were among the fastest job creators in the OECD especially during the 1990s.

Drawing on a variety of data sources, this paper considers, for each country, the age and gender groups, sectors, and type of contracts (part-time versus full-time, and temporary versus permanent) that account for employment growth, and analyzes interactions between these dimensions.[5] To the best of our knowledge, this paper represents the first attempt to provide such a detailed cross-country comparison of job creation among the OECD economies over the past two decades.

Using straightforward shift-share analysis, the paper finds that the fact that certain countries did especially well in a limited number of sectors (for example, the United States in retail trade) or that they had a favorable initial sectoral composition of employment (e.g., a low share of agriculture) can only account for a small portion of their better employment performance. By contrast, using regression analysis on aggregate employment data, the paper shows that a policy package consisting of low dismissal costs and low taxation is significantly associated with more rapid job creation. This accounts almost fully for the different performance of the high-performing non-European countries compared with the European countries. However, with this approach it is somewhat more difficult to account for the different performance of countries within Europe. Regarding that issue, the success of the Netherlands is largely accounted for by the remarkable growth of part-time employment in that country. While that experience is impressive and merits further study, systematic analysis on the countries in the European Union reveals that substitution of part-time for full-

[5] The ongoing policy debate has suggested that these dimensions may be relevant in determining overall job market performance. At the same time, most existing theories of the labor market focus on aggregate employment and unemployment.

time jobs seems to have been considerable. Throughout the paper, the emphasis is on quantities rather than on prices.[6]

The paper is structured as follows. Section II ranks the performance of the various OECD countries in terms of aggregate job creation over the past two decades, taking into account their growth of output, capital, and working age population. Section III studies job creation at the sectoral level, using an international data set with information on employment in agriculture, four industrial sectors, and six service sectors. Section IV uses regression analysis to examine the correlation between aggregate job creation and institutional variables including taxation, union density, employment protection legislation, and unemployment benefits. Section V considers job creation within Europe, with a view to understanding the role played by part-time (versus full-time) and temporary (versus permanent) contracts, and their interactions with age and gender groups as well as economic sectors. It uses panel regressions to estimate the extent to which part-time jobs have crowded out full-time jobs. Section VI discusses the policy implications and concludes.

II. Slow and Fast Job Creators

The differences among OECD countries in terms of average job creation over the past two decades are remarkable. Table 1 reports average job creation between 1980 and 1997 for 21 OECD economies.[7] It shows that some non-European countries including Australia, the United States, Canada, and New Zealand clearly outperformed most Continental European countries, with the exception of the Netherlands and Switzerland. These non-European countries sustained an average job creation of 1½ percent a year in 1980-97, compared with less than ½ percent in Continental Europe. In absolute terms, these differences are very large: for a country the size of Italy, for instance, a 1 percentage point difference in employment growth implies a difference of some 200,000 jobs per year, or 3½ million jobs over the 17-year time period.

In order to obtain clues as to whether a given country's higher employment growth reflects a better-functioning labor market or other factors, it is useful to take into consideration the growth in other variables, including working-age population, output, and the capital stock. To that end, Table 1 also presents the cumulative change (in percentage points) in the employment to working-age population ratio between 1980-82 and 1995-97, the average difference between employment growth and output growth over 1980-97, and the average difference between employment growth and the growth rate of the capital stock over 1980-97. The ranking of most countries remains broadly unchanged when using these

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[6] Cross-country analyses of differences in wage formation and wage dynamics include Freeman and Katz (1995) and Davis (1992). Bertola and Ichino (1995) and Bertola (1998) argue that the different employment performance of the United States and Europe may be attributed to differences in wage flexibility and job security provisions.

[7] A sample period spanning almost two decades ensures that cyclical effects will not distort cross-country comparisons.

Table 1. Slow and Fast Job Creators in the OECD, 1980–97

Country	Job Creation 1/	Rank	Δ(L/P) 2/	Rank	Δ(L/Y) 3/	Rank	Δ(L/K) 4/	Rank
Australia	1.72	1	2.63	5	-1.40	7	-1.10	4
United States	1.58	2	7.61	1	-0.97	3	-0.68	2
Canada	1.37	3	1.68	7	-1.16	6	-4.25	20
Netherlands	1.26	4	4.73	3	-1.00	4	-1.25	5
Switzerland	1.09	5	5.14	2	-0.20	1	-2.38	9
New Zealand	1.09	6	-1.46	13	-1.06	5	-0.43	1
Japan	1.00	7	4.05	4	-2.13	16	-4.25	19
Ireland	0.95	8	-1.71	14	-4.01	21	-1.87	8
Norway	0.83	9	1.33	8	-2.20	19	-1.76	7
Greece	0.83	10	-0.85	12	-0.39	2	-2.38	10
Portugal	0.59	11	0.11	9	-1.94	13	-4.54	21
West Germany	0.47	12	...	...	-2.18	18	-1.05	3
United Kingdom	0.42	13	2.13	6	-1.88	11	-1.27	6
Denmark	0.39	14	-0.33	11	-1.83	10	-2.73	13
Spain	0.35	15	-3.53	15	-2.17	17	-4.08	17
Austria	0.27	16	-3.61	16	-1.90	12	-4.23	18
France	0.14	17	-4.24	17	-1.80	9	-2.63	12
Belgium	0.05	18	-0.80	11	-1.69	8	-2.91	13
Italy	-0.18	19	-5.47	18	-1.96	15	-2.62	11
Finland	-0.37	20	-9.81	20	-2.64	20	-3.09	16
Sweden	-0.43	21	-9.23	19	-1.94	14	-3.00	15

Sources: OECD; and Fund staff calculations.

1/ Average employment growth (in percent).

2/ Change in employment-working age population ratio (in percentage points). Average 1995–97 minus average 1980–82.

3/ Average growth of employment to output ratio (in percent).

4/ Average growth of employment to capital ratio (in percent); business sector.

alternative indicators. Nevertheless, useful information can be gained by focusing on those countries whose ranking changes considerably.

A country's job creation performance will usually be viewed as positive to the extent that it keeps pace with its working-age population growth, and indeed countries with more rapid working-age population typically end up creating more jobs. From that standpoint, the United States' experience is confirmed as an "employment miracle," in that many more jobs were created than would have been required to keep pace with the growth of the working-age population (Krueger and Pischke, 1997). Over the last 20 years, the United States' employment to working-age population ratio increased by more than 7 percentage points, despite sizable immigration. Considering the change in the employment to working-age population ratio rather than the employment growth rate, the ranking of Australia, Canada, Ireland, and New Zealand is somewhat lower, and that of the United Kingdom and Belgium is somewhat higher, but the overall picture remains similar.

Job creation is intrinsically linked to output growth. In the limit, if the production function was characterized by a technology with fixed coefficients in labor and capital, output growth and job creation would be the mirror image of each other. Although the difference between employment growth and output growth is nothing other than the inverse of productivity growth, it may still provide clues regarding the sources of countries' employment growth. For example, if a given country were to develop a new product or to become more internationally competitive (including for reasons unrelated to its labor market), the demand for its output would increase substantially, and employment would rise in turn to meet that additional demand. In some sense, this may have been the experience of Ireland, which displayed extremely rapid output growth and could perhaps be characterized not as an employment miracle, but rather as an output growth miracle. At the opposite extreme, in countries such as Greece and Sweden slow employment growth may have reflected low output demand to a greater extent than inefficient labor markets.

Finally, over periods of several years, countries with favorable labor market institutions and conditions may be more likely to meet the demand for additional output by increasing their labor input rather than their capital stock. Considering the difference between the growth of labor and the growth of the capital stock, it seems that a majority of the European economies substituted capital for labor to a greater extent than the high-performing non-European economies.[8] Canada also increased its capital stock far more rapidly than the number of its employed workers, which suggests that some potential to create jobs was left unexploited.

Focusing only on the 1990s, the performance of some European countries becomes even more impressive, particularly that of Ireland, which displayed the highest average rate of job creation (almost 3 percent in 1990-97) among OECD countries, and of the Netherlands

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[8]Blanchard (1997) and Caballero and Hammour (1998) have recently argued that heightened demands by the trade unions beginning in the late 1970s led to considerable substitution of capital for labor in Europe.

(Table 2). By contrast, Switzerland's employment growth, which had been rapid until 1990, has slowed considerably since then, consistent with a slowdown in output. For most other countries, however, the ranking based on 1990-97 is similar to that related to 1980-97.[9]

All in all, these considerations tend to confirm that the United States has displayed an employment miracle, and that a majority of European countries have performed rather poorly in terms of job creation. 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 creating jobs. While Ireland's success seems to be less closely related to its labor market, the case of the Netherlands seems to have greater potential for policy lessons that might be followed by other countries.

III. Do Sectors Matter?

Recent studies have suggested that sectoral effects play a large role in explaining cross-country differences in employment growth. Piketty (1998) has argued that higher job creation in the United States than France can largely be attributed to differences between the two countries in employment growth in the retail trade sector. This is somewhat in line with the popular view that most of job creation in the United States has taken the form of low-skill, low-wage jobs. A considerable part of employment growth in some of the fast job creators has indeed taken place in the retail sector, whose average annual contribution to employment growth[10] amounted to ½ of a percentage point over 1983-94 not only in the United States, but also in Australia and Canada (Table 3).[11]

Marimon and Zilibotti (1998) have estimated that sectoral effects account for a large portion of the variance in job creation across country/sector units in a sample of European countries, and have suggested that the initial sectoral composition of employment is a major determinant of overall job creation. This possibility is supported by Table 4, which

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[9] Considering an even shorter sample period, some countries' job creation performance seems to have changed considerably in recent years. In this regard, Spain is particularly striking, having displayed average employment growth of about 3 percent since 1995. However, it is still early to tell to what extent this merely reflects cyclical factors.

[10] Appendix I reports the simple formulas used for the accounting exercises carried out in this section.

[11] This section analyzes the OECD ISDB data set, which consists of employment data for 11 economic sectors in 11 countries between 1982 and 1994. Although the country coverage is more limited than in section II, the sample includes rapid job creators both among the high-performing non-European countries (Australia, Canada, and the United States) and in Continental Europe (the Netherlands), as well as some of the slowest job creators in Europe (such as Italy, France, and Sweden).

Table 2. Slow and Fast Job Creators in the OECD, 1990–97

Country	Job Creation 1/	Rank	Δ(L/P) 2/	Rank	Δ(L/Y) 3/	Rank	Δ(L/K) 4/	Rank
Ireland	2.53	1	3.31	3	-3.89	20	-0.32	3
New Zealand	2.31	2	4.96	1	-0.53	3	1.39	1
Netherlands	1.82	3	4.05	2	-0.51	2	-1.33	6
United States	1.25	4	1.70	5	-1.21	7	-0.54	4
Norway	1.12	5	3.05	4	-2.79	18	-0.23	2
Australia	0.99	6	0.45	8	-2.06	14	-1.17	5
Canada	0.83	7	-1.64	12	-1.12	6	-3.99	17
Japan	0.69	8	1.65	6	-1.03	5	-3.77	16
Greece	0.52	9	0.67	7	-0.59	4	-2.05	8
Austria	0.34	10	-1.86	14	-1.64	9	-4.36	18
Denmark	0.23	11	-1.04	10	-2.32	15	-2.68	9
Switzerland	-0.06	12	-3.87	17	-0.26	1	-3.33	14
France	-0.07	13	-1.66	13	-1.41	8	-2.74	10
United Kingdom	-0.08	14	-1.11	11	-1.82	12	-1.52	7
Spain	-0.11	15	-2.92	15	-1.92	13	-4.84	19
Belgium	-0.14	16	-1.04	10	-1.92	13	-2.96	11
Portugal	-0.53	17	-6.74	18	-2.69	17	-6.57	20
Italy	-0.64	18	-3.02	16	-1.76	11	-3.27	13
Sweden	-1.87	19	-11.10	20	-2.58	16	-3.65	15
Finland	-1.96	20	-9.68	19	-3.02	19	-3.02	12

Sources: OECD; and Fund staff calculations.

Table 3. Distribution of Employment Across Sectors, 1982

	Australia	Belgium	Canada	Denmark	France	Italy	Japan	Netherlands	Sweden	United States	W. Germany 1/
Agriculture	6.6	3.0	5.2	7.6	7.8	12.1	12.1	5.6	5.1	3.4	5.0
Industry	28.9	30.8	26.5	26.5	33.3	34.2	34.2	29.4	30.6	26.7	42.0
Construction	7.1	6.9	5.6	6.4	8.4	8.1	9.7	8.0	6.8	5.1	7.5
Electricity	2.2	1.6	1.1	0.6	0.7	0.9	0.6	1.0	0.8	0.9	1.0
Manufacturing	18.2	22.2	18.2	19.4	23.5	25.3	23.7	20.2	22.7	19.5	32.6
Mining	1.5	...	1.6	0.1	0.7	...	0.2	0.2	0.3	1.2	0.9
Services	64.5	66.2	68.3	65.9	58.8	53.7	53.7	65.0	64.3	69.9	53.1
Transport	7.9	7.1	7.2	7.1	5.6	5.9	5.6	6.6	6.7	4.5	5.7
Retail Trade	23.3	19.2	22.8	13.3	17.0	20.0	21.0	18.9	13.5	21.9	15.9
Finance	9.9	8.1	9.9	8.1	8.1	6.3	4.3	8.9	5.8	11.9	7.6
Comm. Ser.	18.8	9.1	7.7	5.4	5.3	4.3	14.1	14.7	5.8	14.5	5.2
Government	4.7	19.9	20.1	30.8	20.8	14.9	6.7	14.8	31.3	17.1	15.1
Other	...	2.8	...	1.1	2.0	2.3	2.1	1.1	1.0	...	3.7
Total	100	100	100	100	100	100	100	100	100	100	100

Sources: OECD; ISDB dataset; and Fund staff calculations.
1/ Data refer to 1982–90.

Table 4. Sectoral Contribution to Average Job Creation, 1982–94

	Australia	Belgium	Canada	Denmark	France	Italy	Japan	Netherlands	Sweden	United States	W. Germany 1/
Agriculture	-0.02	-0.05	-0.02	-0.22	-0.25	-0.30	-0.32	-0.02	-0.12	0.01	-0.15
Industry	0.06	-0.28	0.05	0.05	-0.59	-0.46	0.35	-0.10	-0.62	0.08	0.11
Construction	0.18	0.04	0.09	0.03	-0.14	-0.07	0.15	0.02	-0.15	0.14	-0.03
Electricity	-0.07	-0.06	-0.06	0.00	0.00	0.00	0.01	-0.01	-0.01	0.01	0.01
Manufacturing	-0.05	-0.25	-0.04	0.02	-0.43	-0.38	0.18	-0.12	-0.43	-0.02	0.16
Mining	-0.01	...	-0.01	0.00	-0.03	...	-0.01	0.00	-0.01	-0.05	-0.03
Services	2.22	0.57	1.67	0.34	0.90	0.78	0.95	1.19	0.09	2.01	1.10
Transport	0.04	-0.04	0.03	0.01	0.02	0.04	0.04	0.08	-0.04	0.08	0.06
Retail Trade	0.77	0.04	0.48	0.02	0.05	0.16	0.13	0.40	-0.03	0.51	0.26
Finance	0.58	0.25	0.39	0.19	0.25	0.23	0.08	0.47	0.19	0.60	0.38
Comm. Ser.	0.75	0.38	0.33	0.05	0.15	0.18	0.62	0.26	0.06	0.63	0.15
Government	0.08	-0.02	0.44	0.10	0.41	0.11	0.00	-0.05	-0.11	0.18	0.12
Other	...	-0.04	...	0.00	0.03	0.07	0.06	0.02	0.00	...	0.14
Total	2.26	0.24	1.70	0.21	0.06	0.03	0.98	1.07	-0.64	2.10	1.07

Sources: OECD; ISDB data set; and Fund staff calculations.

1/ Data refer to 1982–90.

shows that several slow job creators (including France, Italy, and other Southern European economies not included in the OECD ISDB data set) had a relatively large share of agriculture and industry in total employment in 1982. Over the past two decades, most advanced economies lost many jobs in agriculture and, to a lesser extent, in industry.

Using a sample of OECD countries, this paper finds that although sectoral factors are significant, for most countries they explain only a small portion of aggregate job creation and in any case they do not reverse the various countries' ranking based upon aggregate employment growth. Piketty's (1998) hypothesis that retail trade accounts for most of the cross-country differences in aggregate employment growth is not confirmed in the sample considered in this paper. In line with his conjecture, inspection of the ISDB OECD data shows that retail trade is a relatively low-wage sector: with the exception of agriculture, retail trade is the sector characterized by the lowest average wage in 10 of the 11 countries in the sample. However, if countries' average job creation is computed under the extreme assumption that no jobs were created in the retail trade sector, the high-performing non-European countries remain by far the most rapid job creators, and the overall ranking is unchanged (Table 5, "No Retail Trade").[12]

Although the limitations of shift-share analysis are well known and cannot be overemphasized,[13] this paper uses this procedure to address Marimon and Zilibotti's (1998) hypothesis and to quantify the effects of the initial sectoral composition of employment on overall job creation. The spirit of this exercise is to show that even using the same type of technique as the proponents of the idea that sectoral effects are key determinants of aggregate job growth, such effects can only account for a small proportion of the cross-country variation in overall employment growth. Specifically, this accounting exercise estimates what each country's overall job creation would have been if its sectoral composition of employment in 1982 had been the same as the average for the countries in the sample. In other words, each country's employment growth rate in a given sector is weighted by the average employment share of that sector in the whole sample.

The results show that all slow (fast) job creators suffered (benefited) from adverse (positive) initial conditions, but the countries' ranking remains broadly unchanged (Table 5) and the cross-country variance of job creation under this exercise is only about a fifth smaller than considering actual employment growth. At the same time, initial conditions appear to have played a significant role in some countries (especially the Southern European countries, given their large share in agriculture at the beginning of the sample period). For

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[12]Table 5 also shows that some countries' contribution of the government sector to overall job creation was relatively high, notably 0.4 percentage point per year in Canada and France.

[13]The most important limitation is that shift-share analysis assumes that an unfavorable 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). But of course in general equilibrium this adjustment would take place. Another limitation is that it is not clear which sectors would have been the most successful if their initial geographical distribution had been different.

Table 5. Job Creation and Sectoral Characteristics-Shift-Share Analysis

Country	Job Creation 1/	Rank	No Retail Trade	Rank	Common Initial Distribution 2/	Rank	Common Sectoral Growth 3/	Rank
Australia	2.26	1	1.59	1	1.98	1	1.37	2
United States	2.10	2	1.49	2	1.82	2	1.41	1
Canada	1.70	3	1.22	3	1.62	3	1.09	6
Netherlands	1.07	4	0.85	4	0.99	5	1.29	3
West Germany 4/	1.07	5	0.81	5	1.16	4	1.18	5
Japan	0.98	6	0.67	6	0.99	6	0.93	8
Belgium	0.24	7	0.20	7	0.34	9	1.19	4
Denmark	0.21	8	0.19	8	0.26	8	0.94	7
France	0.06	9	0.01	9	0.20	10	0.90	10
Italy	0.03	10	-0.13	10	0.53	7	0.76	11
Sweden	-0.42	11	-0.45	11	-0.49	11	0.91	9
Average	0.82		0.57		0.85		1.08	
Standard dev.	0.93		0.70		0.77		0.76	

Sources: OECD; ISDB dataset; and Fund staff calculations.
1/ Average change in employment between 1982 and 1994.
2/ Average job creation based on a common initial distribution.
3/ Average job creation based on a common sectoral growth.
4/ Data refer to 1982–90.

example, taking this exercise at face value, if Italy's sectoral distribution of employment had been the same as the sample average in 1982, it would have had at least 1,200,000 more jobs in 1994 and its ranking relative to other countries would have been noticeably better (Table 5, "Common Initial Distribution"). The extent to which initial conditions represented an advantage or a disadvantage can be assessed through a similar accounting exercise, which estimates what overall job creation would have been in each country if each of its sectors had grown at the same rate as the average for all the countries in the sample (Table 5, "Common Sectoral Growth"). As already mentioned, these are simple descriptive exercises and they should not be taken too seriously.

The result that differences in the initial sectoral distribution of employment can explain only about one fifth of the cross-country variation in overall job creation is consistent with Marimon and Zilibotti's (1998) finding that sectoral effects account for a large portion of the variance in job creation across country/sector units, as confirmed by the fact that a regression of the employment growth rate in each of the 121 country-sectors in the sample on 11 sectoral dummy variables yields an R^2 of 0.48, whereas the same regression on 11 country dummy variables yields an R^2 of just 0.13 (Table 6).

Table 6: Country and Sectoral Characteristics

Dependent Variable [α]: Average Job Creation in Country *i*, Sector *j* Number of Countries: 11 Number of Sectors: 11				
Specification	R^2	$\overline{R}^2$	$\Pr. > F$	$P > \lvert t \rvert^b$
Country Dummies	0.13	0.05	0.12	2
Sector Dummies	0.48	0.43	0.00	5
Country-Sector Dummies	0.61	0.52	0.00	9

[α] Data refer to 1982-1994. Germany 1982-1990

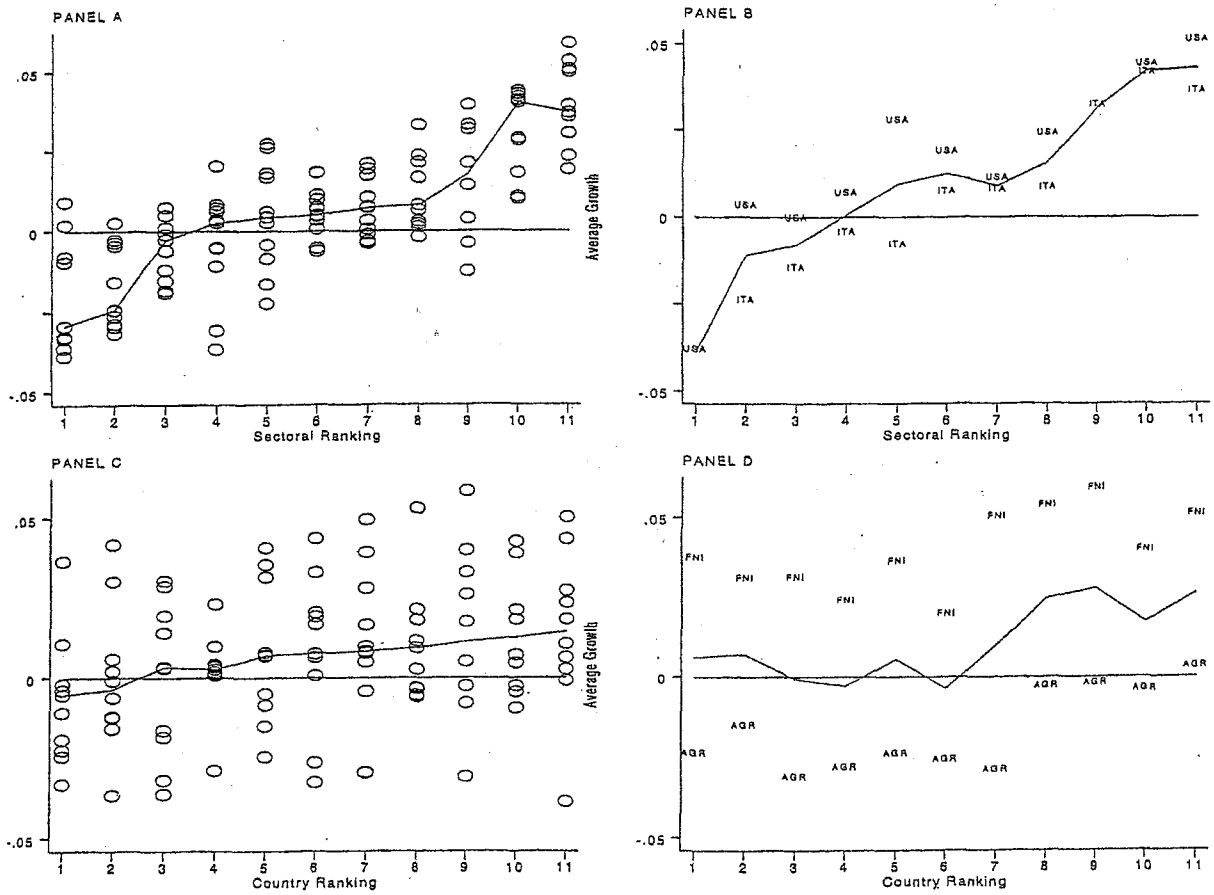
[b] Number of controls with significant coefficient.

Source: OECD ISDB dataset, and Authors' calculations.

The importance of sectoral effects in the variation of employment growth among country/sector units is confirmed by Figure 1. Panel A plots, on the vertical axis, the average employment growth in each of the 121 country/sectors in the sample against, on the horizontal axis, the sectors arranged according to their average employment growth rate (reported in Table 7).[14] Panel C plots, on the vertical axis, the same country/sectors against, on the horizontal axis, the country rankings reported in Table 5. 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 and insurance has been far higher than in agriculture,

[14] 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.

Figure 1. Average Job Creation and Sectoral and Country Effects: 1982-94



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), sectoral characteristics have less explanatory power. In fact, for example, the United States created more jobs than Italy in all the 11 sectors considered in this paper (Panel B).[15] Therefore, it seems that cross-country differences in overall employment growth can only partially be attributed to sectoral effects, and the key explanation needs to be sought elsewhere.

Table 7: Job Creation: Sectoral Ranking

Ranking	1	2	3	4	5	6	7	8	9	10	11
Sector	MID	AGR	MAN	EGW	CST	TRS	PGS	RET	OPR	SOC	FNI
JC_j	-1.95	-1.72	-0.57	-0.36	0.45	0.51	0.73	1.22	1.59	3.17	3.87

JC_i is average employment growth in sector i in 1982-94.
Definitions of the sectors are provided in appendix II.
Source: OECD ISDB dataset, and Authors' calculations.

IV. Aggregate Job Creation and Economic Policies

A more promising avenue for explaining cross-country differences in job creation is to analyze the relationship between overall employment growth and labor market policies and institutions. Candidates include unemployment benefits, trade union coverage and coordination, the level of taxation, and employment protection legislation.

Higher unemployment benefits (in terms of both replacement rates and duration) result in higher unemployment and lower job creation in most theoretical models of the labor market, and have been found to be empirically associated with higher unemployment (Nickell and Layard, 1998). 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 the existing empirical studies, these proxies appear to increase unemployment, though this effect seems to be mitigated when unions and firms coordinate their bargaining activity (Nickell, 1997).

On a priori grounds, the role of taxation and employment protection legislation in determining employment growth is less clear-cut, as witnessed by the ongoing debate. Theory suggests that the effects of changes in taxation on unemployment depend largely on the elasticity of labor supply, and on the extent to which the additional tax burden is shifted to labor.[16] Bell and Nickell (1997) argue that, in the long run, any tax on labor is borne by the

[15] Panel B would look very similar if Italy was replaced by France, for example.

[16] Studying the same questions in a variety of equilibrium models of the labor market, Pissarides (1998) has shown that tax cuts affect employment only if they alter the ratio of net wages to unemployment compensation.

employees, as evidenced by the absence of a cross-sectional empirical relationship between total taxation and unit labor costs. By contrast, Daveri and Tabellini (1997) 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.[17]

Most theoretical studies predict that employment protection legislation should not affect unemployment: since dismissal costs increase the cost of labor 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).[18] However, Caballero and Hammour (1998) have recently argued that increases in dismissal costs may lead entrepreneurs to substitute capital for labor in the medium run.[19] On the empirical side, employment protection legislation does not appear to be significant in cross-sectional regressions that analyze 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).

A. Empirical Regularities

Several empirical relationships identified by existing studies on unemployment are confirmed by the matrix of bivariate correlations between average job creation in 1980-97 and a number of economic policy indicators for a sample of 21 OECD countries (Table 8).[20] Job creation is negatively correlated with union density, and the close link between working-age population growth and job creation is also strongly confirmed. By contrast, the relationship between unemployment benefits and job creation is not statistically significant.

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[17] Using a similar approach, Nickell (1997) finds evidence of an association between total taxation and unemployment, but not between payroll taxes and unemployment.

[18] That view is also supported by the small flows into and out of unemployment in European countries compared with those observed in North America (see, for example, Blanchard, 1998). At the same time, gross job creation and destruction in continental European countries are as high as in North America. Bertola and Rogerson (1997), Boeri (1999) and Garibaldi (1998) interpret the evidence on these gross flows. Blanchard and Portugal (1998) compare the experiences of Portugal and the United States.

[19] Their view is also consistent with developments in the labor share of income in the major industrial countries, as also documented by Blanchard (1997).

[20] See Appendix II for data sources and variable definitions.

Table 8. Job Creation and Policy Variables: Correlation Matrix

Country	JC 1/	ΔΠ	EPL	Taxes	Payroll	Union	Benefit	Coord
ΔΠ	0.03							
	0.89							
EPL	-0.62	-0.26						
	0.00	*0.26*						
Taxes	-0.61	0.36	0.19					
	0.00	*0.11*	*0.42*					
Payroll	-0.34	0.32	0.53	0.22				
	0.14	*-0.16*	*0.02*	*0.35*				
Union	-0.47	0.07	-0.01	0.61	-0.32			
	0.03	*0.76*	*0.95*	*0.00*	*0.15*			
Benefit	-0.06	0.18	-0.12	0.50	0.01	0.19		
	0.79	*0.43*	*0.58*	*0.02*	*0.93*	*0.41*		
Coord	-0.53	0.44	0.29	0.66	0.30	0.53	0.13	
	0.02	*0.05*	*0.21*	*0.00*	*0.19*	*0.01*	*0.56*	
Wkage	0.76	-0.17	-0.42	0.52	-0.34	-0.34	-0.15	-0.52
	0.00	*0.45*	*0.06*	*0.01*	*0.14*	*0.12*	*0.49*	*0.01*

Sources: OECD; and Fund staff calculations.

Note: p-values in italics.

Variable definitions: JC is average job creation; ΔΠ is average change in inflation; EPL is the 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 unemployment benefits; Coord is the index of employer-employee coordination; and wkage is the growth of working population.

More interesting, negative and significant correlations are found between job creation and taxation, as well as between job creation and a measure of employment protection legislation. Figure 2 shows that these bivariate correlations are not driven by outliers.

The robustness of these cross-sectional associations is confirmed by running 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). First, job creation is regressed against a constant, the growth in working-age population,the variable of interest, and each of the other explanatory variables in turn. Second, the same procedure is repeated using each possible pair of the other explanatory variables. The most robust association is found to be that between employment protection legislation (EPL) and job creation: the coefficient on EPL is statistically significant in 24 out of 27 regressions, and it always has a negative sign (Table 9). The estimated value of the coefficient is also very stable. The relationship between job creation and total taxation is also fairly robust, with the coefficient significant in 13 out of 27 regressions. The other relationships are not robust to the inclusion of additional regressors.

Small panel regressions are then run relating average job creation to the various institutional measures as well as working-age population growth[21]. The average change in inflation is included as an additional variable, to proxy for business cycle and macro-economic policy stance effects. Six year (1980-85, 1986-91 and 1992-97) averages are used as the basic data points to smooth out business cycle and other temporary effects.[22] Unfortunately, some of the right hand side variables, and the measure of EPL in particular, are time-invariant owing to data limitations.[23] With 21 countries, the total number of observation is 63. The estimation is based on the random effects generalized least square procedure.[24]

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[21] The methodology is similar to that recently applied by Nickell (1997) and Layard in Nickell (1998) in their studies on unemployment differences across OECD countries. Scarpetta (1996) runs similar regressions on small panel data sets, but adopts a more structural approach.

[22] An alternative procedure that would exploit the time series information in the data to a greater extent would be to run dynamic panel regressions with fixed effects in which the ratio of employment to working-age population be imposed to be constant in the long-run leaving no role for policy variables in the long run. However, this exercise is not conducted because the focus of this paper is on medium run developments.

[23] The OECD is currently in the process of updating the EPL ranking used in the present paper. The new measures, which are not officially available yet, display some variation over time, reflecting reform efforts in some countries. Preliminary regression results obtained with the new measures are very similar to those reported above.

[24] This is essentially ordinary least squares corrected for the fact that three successive observations for each country cannot be treated as independent random draws.

Figure 2. Job Creation, Population Growth and Institutional Variables: 1980-97

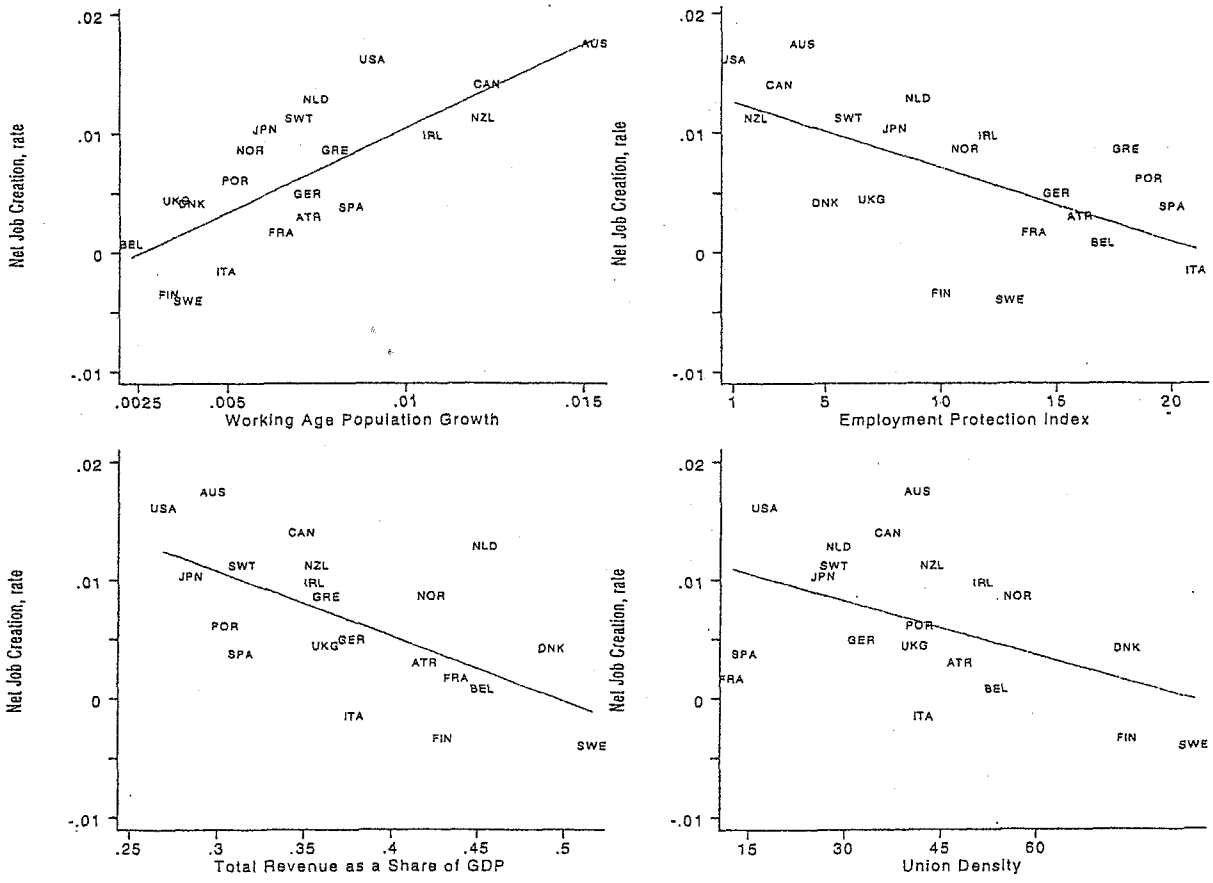

Table 9. Job Creation and Policy Variables: Robustness Checks

	Min 1/	Max 1/	P < 0.1 2/	Regr. 3/
EPL 4/	-0.0004	-0.0003	7 out of 7	4
EPL	-0.0004	-0.0003	17 out of 20	5
Tot Tax	-0.0391	-0.0160	3 out of 7	4
Tot Tax	-0.0483	-0.0149	10 out of 20	5
Payroll	-0.0376	-0.0186	1 out of 7	4
Payroll	-0.0483	-0.0149	2 out of 20	5
Coord	-0.0002	-0.0001	5 out of 7	4
Coord	-0.0002	-0.0001	7 out of 20	5
Union	-0.0001	-0.0001	2 out of 7	4
Union	-0.0000	-0.0002	6 out of 20	5
Benefit	-0.0001	-0.0001	0 out of 7	4
Benefit	-0.0000	-0.0002	1 out of 20	5

Source: OECD; and Fund staff calculations.

Note: The left-hand side variable is average job creation for 1980–97. All regressions include a constant and the growth of working age population.

1/ Min (max) is the minimum (maximum) value of the coefficients in the regression.

2/ Number of regressions whose coefficient has a p-value less than 10 percent.

3/ Total number of regressors in each regression.

4/ 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; coord is the index of employer-employee coordination; union is the proportion of workers that belong to a trade union; and benefit is unemployment benefits

The coefficients on EPL and taxation are significant (Table 10), and quantitatively similar to those obtained in the cross-sectional regressions; they are also fairly stable across different panel specifications.[25] The coefficient on EPL, however, is marginally less significant in the panel regressions than in the cross sectional regressions, reflecting in part the fact that the EPL variable is time-invariant. The results suggest that, on average, within the period considered, a higher EPL ranking by five position is associated with lower average job creation by 0.1-0.2 percentage point (or, for a country like Italy, some 20,000-40,000 jobs per year, or some 400,000-800,000 jobs over 20 years). A reduction in total taxation by 1 percentage point of GDP is associated with higher average job creation by some 0.05 percentage point. Finally, disinflation is significantly associated with lower job creation in these panel regressions based upon 6-year averages, whereas it is not significant in the cross-sectional regressions based upon 17-year averages.

Overall, these small panel regressions fit the data relatively well: the estimated and the actual value of average job creation in the sample of 21 countries, as well as their actual and fitted ranking are fairly similar (Figure 3)[26], although the fit is somewhat less satisfactory in the case of the European countries. Section 5 explores alternative avenues to account for the heterogeneous job creation performance within Europe.[27]

B. 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 job creation. Further research should therefore try to assess whether these correlations reflect causal relationships or are merely spurious.[28] Nevertheless, it seems easier to reconcile these correlations with some theories than others.

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[25] The only exception is specification 5 in Table 10, which includes payroll taxes instead of total taxes.

[26] The fitted values in Figure 3 are based upon the specification in the second column of Table 10.

[27] Section 5 is based on data from Eurostat, the statistical agency of the European Union. Switzerland, a European country that displayed rapid employment growth in the 1980s, is not analyzed here because of data limitations. It is worth noting, however, that Switzerland has relatively low taxation, union density, and employment protection.

[28] In this spirit, Section 6 suggests some possible avenues.

Figure 3. Actual and Estimated Job Creation: 1980-97

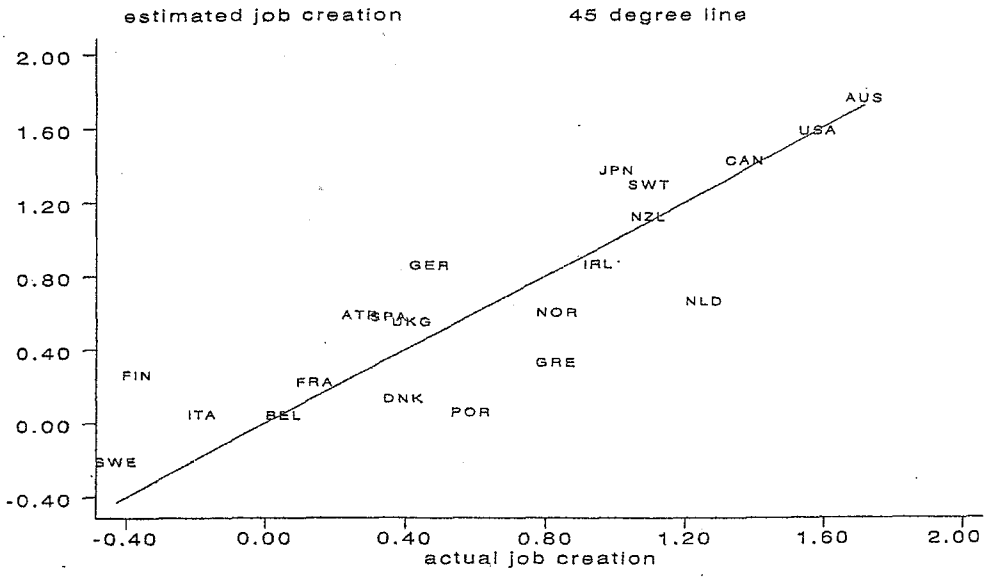


Table 10. Panel Regressions: Institutions and Job Creation
Dependent Variable: Average Job Creation Random Effects GLS
Regressions Six Year Averages: 1980–85; 1986–91; 1992–97

	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5
Working age population Growth	...	0.6826	0.7076	0.6763	0.682
		1.960	2.128	2.318	1.995
EPL	-0.0004	-0.0002	-0.0003	-0.0002	-0.00002
	-2.074	-1.413	-1.527	-1.449	-0.114
ΔΠ	0.0077	0.0076	0.0102	0.103	0.0120
	3.556	3.656	4.692	4.682	4.891
Total taxes/GDP	-0.06120	-0.04624	-0.0456	-0.0559	...
	-3.645	-2.560	-2.199	-2.042	
1986–91 2/	-0.00427	-0.0063	-0.0054	-0.0054	-0.0048
	-1.500	-2.128	-1.850	-1.847	-1.449
1992–97 2/	0.0029	0.0030	0.0040	0.0040	0.0034
	1.028	1.063	1.524	1.520	1.204
Constant	-0.0004	0.026405	0.0274	0.0291	0.0227
	5.37	2.958	3.236	3.232	3.225
Union density	...	...	-0.00002	-0.00001	-0.001
				-0.176	-2.474
Unem. Benefits	...	...	...	0.00005	-0.00007
				0.581	-0.908
Payroll taxes/GDP	...	...	...	...	-0.0582
					-1.967
N. observations	62	62	59	59	53
N. countries	21	21	21	20	20
R^2 within	0.356	0.356	0.497	0.496	0.569
R^2 between	0.635	0.754	0.762	0.773	0.568
R^2 overall	0.428	0.465	0.560	0.563	0.568
$\chi 2$	41.92	47.88	65.00	64.49	57.99
Hausman test 3/	1.31	1.24	5.56	5.72	18.48
p-value	0.859	0.940	0.474	0.572	0.010

Sources: OECD data; and Fund staff calculations.
1/ z statistics reported below coefficients.
2/ Time dummy for 1986–91 and 1992–97.
3/ Hausman specification test for random effects models. EPL is the index of employment protection legislation; ΔΠ is average change in inflation;

This paper's result that employment protection legislation is negatively associated with job creation appears consistent with the hypothesis proposed by Caballero and Hammour (1998). In principle, it might also be consistent with the traditional Bentolila-Bertola view (according to which employment protection reduces both hiring in upswings and dismissals in downswings, with no net impact on employment): if the 1980-97 period could be seen as a cyclical upswing, it would be reasonable to expect the employment increase 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 United States). However, 1980-97 seems too long a period to be qualified as a cyclical upswing.

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 Europe, a considerable portion of that additional burden was shifted onto employers, who shed labor as a result. At the same time, that view would predict an even stronger link between payroll taxation and employment growth--a link for which, however, this paper does not find significant and robust evidence.

Finally, the result that disinflation is significantly associated with lower job creation in the panel estimates, but not in the cross-sectional regressions based upon 17-year averages is consistent with the view that disinflation has costs in the short-medium run, but not in the long run (Ball 1997).

V. Inside Europe

Section IV has shown that differences in tax pressure and firing costs may partially account for the differences in job creation performance across the OECD countries, most notably between the high-performing non-European countries and the countries of Continental Europe. However, a considerable part of the wide variation in performance among the Continental European countries remains unexplained. This section accounts for differences among the countries in the European Union with respect to the composition of job creation by type of contract (part-time versus full-time, and temporary versus permanent), the broad economic sector in which jobs are created, as well as the age and gender characteristics of the people who fill the new positions. It also analyzes a number of interactions between these dimensions, reporting the extent to which, for example, full time jobs have been taken up by young males, or by males in industry. The key finding is that the best European performer, the Netherlands, stands out in that about half of its job creation since the mid-1980s can be accounted for by part-time jobs taken up by females aged 25-49, typically in the service sector (Figures 4 and 5).

A. Job Creation by Age, Gender, Sector, and Type of Contract

The composition of job creation seems largely to reflect developments in technology or labor supply. In virtually all European Union countries, employment growth was much faster for females than males, mirroring higher growth in labor force participation among women. Declines in youth employment seem to have been determined to a significant extent by increases in schooling age, but have also been associated with the increase in youth

Figure 4. Part-Time/Full-Time, Gender and Age: 1983-97

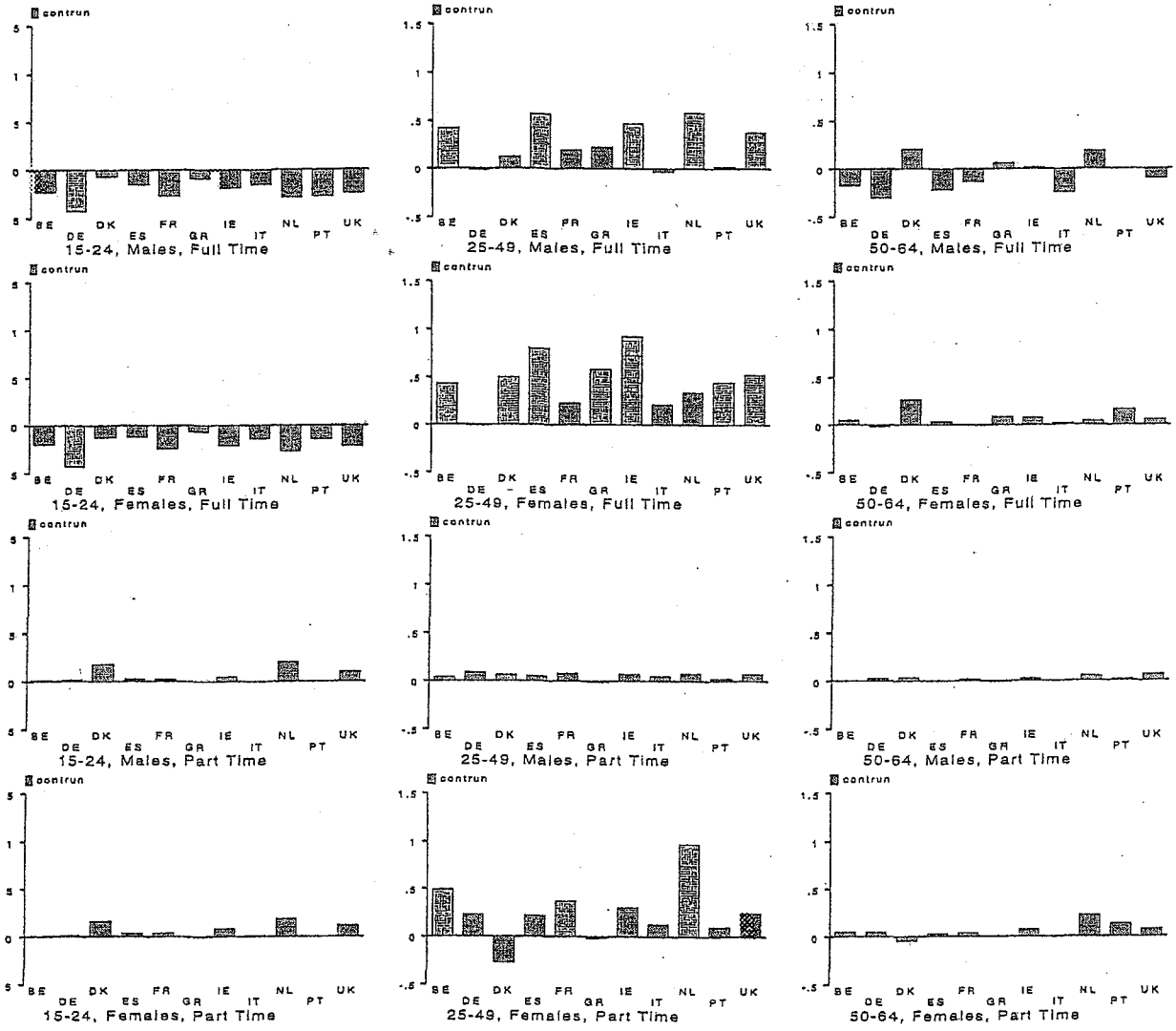
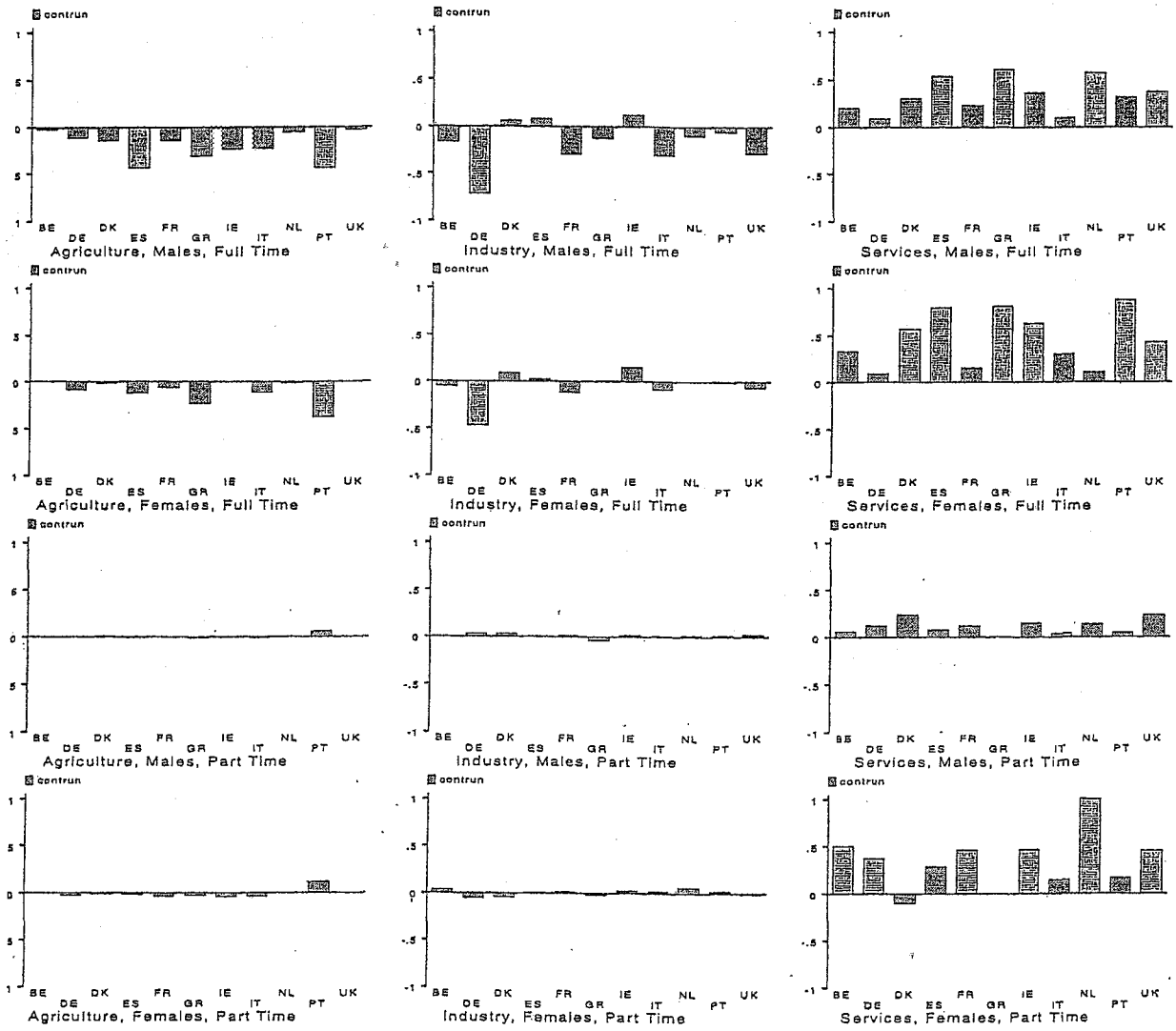


Figure 5. Part-Time/Full-Time, Gender and Sector: 1983-97



unemployment, which may in turn have reflected labor market institutions such as high firing costs. While job creation among those aged 25-49 was positive in all countries in the sample, job creation performance among those aged 50-64 was more mixed, reflecting in part the tendency toward early retirement in a number of countries. The developments by economic sector (also documented in Section III) have interacted with age and gender, notably in the case of rapid employment growth among females aged 25-49 in the service sector.

A key question is whether increases in the share of employment under a particular type of contract are associated with higher overall job creation. There were substantial differences among the various European countries with respect to the type of contracts that accounted for job creation. The case of the Netherlands clearly stands out, in that half of employment creation was accounted for by part-time contracts. The reforms undertaken by the Netherlands in the early 1980s (which, interestingly, were not specifically aimed at promoting part-time contracts) seem to have succeeded in raising overall employment through a sharp increase in part-time employment. The experience of the Netherlands seems suggestive. At the same time, considering the eleven European countries for which data are available, there is no clear evidence of a systematic relationship between the cumulative increase in the share of part-time jobs and total job creation in 1983-97, whether for the economy as a whole or for each of the three broad economic sectors, namely agriculture, industry, and services (Figure 6).

B. Types of Contract and Aggregate Job Creation

The extent to which increases in part-time jobs have been associated with reductions in full-time jobs can be estimated more precisely through panel regressions, which focus on the time-series information in the data. A simple approach is to use part-time and total employment in a particular country in a given year as the basic observations. With 11 countries and the sample period 1983-97, there are 124 observations (allowing for missing values). Overall employment growth is regressed on the increase in the share of part-time jobs in total employment, as well as 10 country dummies and 13 year dummies. The question being addressed is the following: over the sample considered, when 100 part-time jobs were created, what was the total employment creation associated with that increase? Three possible benchmarks seem particularly interesting. First, overall employment also rose by 100 jobs, i.e., there was no crowding out at all of full-time jobs. In that case, the coefficient on the increase in the share of part-time jobs would be 1. Second, there was no net gain or loss of hours worked, that is - given that the average weekly hours of part-time jobs are about half of those of full-time jobs - overall employment rose 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 on the increase in the share of part-time jobs would be 0.5. Third, there was complete crowding out of full-time jobs, i.e., overall employment remained unchanged. In that case, the coefficient on the increase in the share of part-time jobs would be 0.

Estimation of the regression described above yields a point estimate of about 0.3, but with a rather high standard error—also 0.3 (Table 11). Nevertheless, it is possible to reject the null of no crowding out (i.e., that the slope equals 1). Therefore, this approach suggests that increases in part-time employment have typically been associated with some

Figure 6. Change in Part-Time Shares and Job Creation: 1983-97

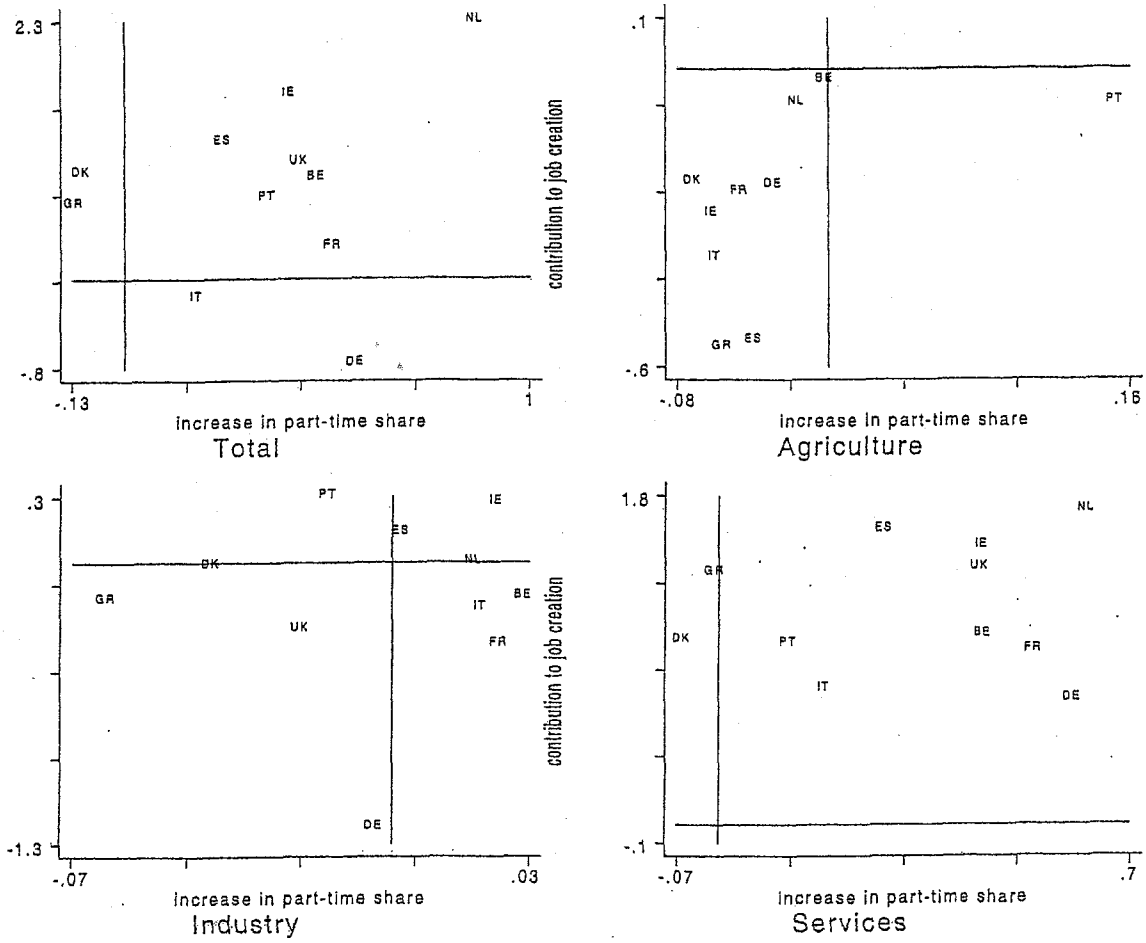


Table 11. Part-time and Aggregate Job Creation, 1983–97

Fixed effects regression including 10 country dummies and 13 year dummies; 124 observations.
Left-hand side variable is average job creation in country$_i$;
Right-hand side variable is change in part-time share in country$_i$.

	Slope $\hat{\beta}$	$\sigma(\hat{\beta})$	$H_0: \beta = 1$	$H_0: \beta = 0.5$	$H_0: \beta = 0.0$
Employment β	0.30	0.30	*0.02*	*0.49*	*0.31*

Fixed effects regressions including 32 country/sector dummies and 13 year dummies; 378 observations;
Left-hand side variable is average job creation in country/sector$_i$;
Right-hand side variable is change in part-time share in country/sector$_I$

	Slope $\hat{\beta}$	$\sigma(\hat{\beta})$	$H_0: \beta = 1$	$H_0: \beta = 0.5$	$H_0: \beta = 0.0$
Agriculture β	1.03	0.37	*0.93*	*0.15*	*0.01*
Industry β	0.43	0.51	*0.26*	*0.88*	*0.40*
Services β	0.46	0.20	*0.01*	*0.85*	*0.02*

Sources: Eurostat data; and Fund staff calculations.
Note: Numbers in italics are p-values of the corresponding null hypothesis.

crowding out of full-time jobs, although the exact extent of that crowding out is not estimated very precisely. 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 3 broad economic sectors for each of the 11 countries, over 1983-97, yielding almost 400 observations. In that case, it is possible to estimate the relationship between increases in the ratio of part-time jobs in a given sector to total employment in the country and the contribution of that sector to overall job creation in the 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 3 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. Moreover, the estimated slope coefficients vary considerably among the three sectors, though formal testing rejects the null hypothesis of slope homogeneity only at the 15 percent level. In agriculture, by far the smallest sector, the point estimate of the slope coefficient amounts to 1, and is significantly different from zero, though not significantly from 0.5. In industry, the point estimate equals 0.4, but is not estimated very precisely. In services, the largest sector, the point estimate is 0.4 and is estimated more precisely, so that it turns out to be significantly different from both 0 and 1. These results suggest that in the services sector increases in part-time employment have been associated with increases in the overall number of jobs but also with partial crowding out of full-time jobs. At the same time, it is not possible to reject formally the null hypothesis that there has been 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. Overall, it seems clear that $\beta=1$ can be rejected, and that β is most likely around 0.5. Again, these coefficients ought to be seen as descriptive, because data limitations make it difficult to analyze causal relationships.

Turning to the case of temporary (versus permanent) contracts, Spain is the country that stands out over the past two decades, in that its net job creation was entirely accounted for by temporary contracts (Figure 7).[29] The reforms of the early 1980s in Spain, which introduced temporary contracts against the background of extremely high dismissal costs, appear to have resulted in an increase in the share of temporary employment while overall employment grew very slowly.[30] As a result, Spain's share of temporary employment currently stands at one third, by far the highest in the OECD. Given that Spain has had

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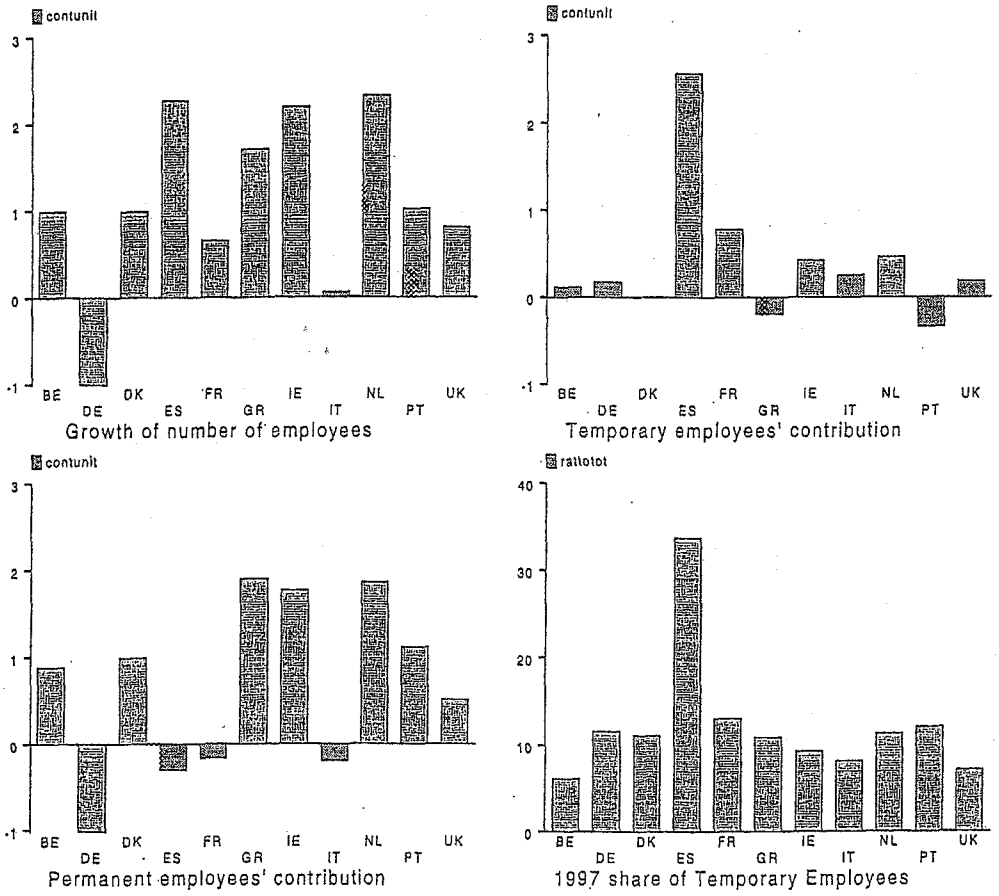
[29] Owing to data limitations, Figure 8 relates to the number of employees, rather than total employment (i.e., it excludes the self-employed). The contribution to employment growth of the self-employed was very low in countries such as Spain and relatively high in countries such as the Netherlands.

[30] Bentolila and Dolado (1994) provide further detail on the impact of the reforms of the early 1980s in Spain.

Figure 7. Temporary/Permanent Employees: 1983-97



(together with Italy) the highest dismissal costs in the OECD, it might be tempting to conclude that countries with high dismissal costs have a higher share of temporary employment or that they experienced a greater increase in the share of temporary employment. However, these empirical relationships do not seem to be robust, particularly when Spain is excluded from the sample.

All in all, although there are no statistically significant cross-country relationships, the success of the Netherlands with part-time contracts and the complete substitution of temporary contracts for permanent contracts observed in Spain seems to suggest that part-time contracts may be a more promising avenue of job creation than temporary contracts.

There is also evidence that workers tend to be happier with part-time contracts than with temporary contracts. About 58 percent of the workers under part-time contracts in the European Union in 1997 declared that they did not want a full-time job instead, and only 20 percent stated that they would have preferred a full-time job if they had been able to find it.[31] In the Netherlands, 72 percent of workers under part-time contracts in 1997 declared that they did not want a full-time job instead, and only 6 percent stated that they would have preferred a full-time job if they had been able to find it.[32] By contrast, only 7 percent of workers with temporary contracts in the European Union in 1997 declared that they did not want a permanent job instead, and 40 percent stated that they would have preferred a permanent contract if they had been able to find one.[33] The proportion of workers with temporary contracts because they could not find permanent jobs amounted to 87 percent in the case of Spain, where the share who did not want permanent jobs was negligible. Unfortunately, a corresponding survey of entrepreneurs is not available, and it seems likely that entrepreneurs would give a more positive view of temporary contracts, although they too may appreciate job stability, because it facilitates the acquisition of firm-specific skills by workers. Similarly, workers currently employed under full-time contracts might take a less positive view of part-time contracts.

VI. Concluding Remarks

Drawing on a variety of data sources, this paper has analyzed in a systematic way the job creation performance of 21 OECD economies between 1980 and 1997, focusing on the role of age and gender characteristics, economic sectors, institutions, and types of contract. There are four main findings. First, the experience of the United States is confirmed as an "employment miracle", taking into account the growth rate of population, output, and capital. At the same time, although most continental European countries created far fewer jobs than

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[31] Another 12 percent were in school or suffered from illness, and the remaining 10 percent did not give a reason for having a part time job.

[32] The remaining 21 percent were in school or suffered from illness.

[33] Another 29 percent did not give a reason for having a temporary job; and 24 percent were under training contracts or in a probationary period.

the United States, the case of the Netherlands demonstrates that good job creation performance is possible also in Europe. Second, the fact that certain countries did especially well in a limited number of sectors or that they had a favorable initial sectoral composition of employment can only account for a small portion of the cross-country differences in job creation. Third, certain labor market policies and institutions (in particular, a flexible employment protection legislation and a low tax burden) are significantly associated with rapid employment growth, and account for most of the cross-country differences, notably between the high-performing non-European countries and Continental Europe. Fourth, within Europe, the success of the Netherlands is largely accounted for by the creation of part-time jobs for women aged 25-49 in the service sector. Systematic analysis of the data on European countries suggests that substitution of part-time jobs for full-time jobs is partial, though considerable. Turning to temporary contracts, the experience of Spain beginning in the early 1980s suggests that temporary jobs seem to have merely substituted for permanent jobs, a process that may have been caused by Spain's high dismissal costs.

The set of empirical regularities outlined above suggests a number of policy considerations. Although data limitations make it difficult to identify the role of individual policies, and the direction of causality between institutions and labor market outcomes remains to be analyzed, the results are consistent with the view that a policy package including low dismissal costs and a moderate tax burden might foster higher employment growth. Further empirical research should explore the mechanisms underlying these regularities. Regarding the possible link between taxes and job creation, further work could seek to establish, for example, whether increases in taxation have been associated with a decline in the ratio of net wages to net unemployment compensation. Regarding the possible link between employment protection legislation and job creation, it would seem useful to analyze whether countries that increased employment protection legislation also moved toward more capital-intensive technologies.

With respect to the role of contracts, it would seem sensible to remove any remaining obstacles to the use of part-time contracts. These have proved to be a popular vehicle to increase labor force participation, and may foster overall employment growth as well—an issue that warrants further research. At the same time, measures to foster part-time contracts should not be relied on as an instrument that would permit a delay in other labor market reforms.

Shift-Share Analysis

In what follows, countries are indicated with i=1.....I, sectors with j=1.....K, and years with t = 0.....T. In this section, I=11, K=11 and t = 0 refers to 1982. Average job creation in country i, g_{it} can then be written as

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

where N_{ijt} is employment in sector j, country i and time t. The contribution to average growth of sector j in country i will be

$$g_{ijt}^{c} = \frac{\left(N_{ijt} - N_{ij0}\right)}{(T-1)\sum_{j=1}^{k} N_{ij0}}$$

It follows that the g_{ijt}^{c} can be expressed as the product of the growth rate of sector i weighted by its share in the initial distribution of employment:

$$g_{ijt}^{c} = g_{ijt} w_{i0}$$

where g_{ijt} is average job creation 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 first quantitative exercise carried out in Section 3 measures average job creation by weighting g_{ijt} by the average employment share across countries. More specifically, we indicate with $\tilde{g}_{it}$ how a country would have grown if its initial employment share had been the same as the average in the sample:

$$\tilde{g}_{it} = \sum_{j=1}^{k} g_{ij} \overline{w}_{j0}$$

where $\overline{w}_{j0}$ is the share of sector j in the average country in the sample, and its expression reads

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

The second accounting exercise carried out in Table 5 measures job creation in each country under the assumption that each sectors had grown uniformly across countries. Defining with prime $\widetilde{g}_{it}$ ' this new measure, its expression reads

$$\widetilde{g}_{it} = \sum_{j=1}^{k} \overline{g}_{ij} w_{j0}$$

where

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

is average job creation in sector j.

Data Sources And Definition Of The Variables

Section B uses data from the OECD analytical database and the Business Sector Database. Job creation 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.

Change in the Labor-Capital Ratio is measured from the business sector data set.

Section C uses the ISDB 97, International Sectoral Data Base 97. The ISDB combines a range of data series related primarily to industrial output and primary factor inputs used in 15 OECD member countries. For limited data coverage Finland, Germany (including East Germany), Korea and the United Kingdom are excluded from the sample. The variable used in this chapter is total employment.

The sectoral classification of different countries is not identical. In particular, the International Standard Industrial Classification (ISIC) differs from the General Industrial Classification of all Economic Activities in the European Communities (NACE), which in turn differs from the baseline (ISDB) classification. In order to obtain the cross-country/cross-sector distribution proposed in Section C, the following adjustments were made:

In countries that follow the NACE classification (West Germany, Belgium, and Italy), the subsector Real Estate and Business Sector (RES) which belongs to the sector Financial, Insurance and Real Estate Business (FNI) was included in the sector Other Producer (OPR). Thus, in order to estimate employment in subsector RES for the missing countries, the average proportion of RES within FNI in the other countries is used, and is subtracted from OPR.

Further adjustments had to be made to address country-specific data limitations. In the case of Japan, the subsector HOT (Hotels and Restaurants) was included in the sector SOC (Community Social and Personal Services). In the case of France, PGS (Producer of Government Service) was included in OPR. In both cases, the share was computed as the average in the sample.

Section D uses aggregate data from the following sources:

Average change in inflation is the average change in consumer price inflation (in percentage points) between 1980 and 1997. Data are drawn from the International Financial Statistics of the IMF.

Employment Protection Legislation represents a country's ranking of overall strictness of protection against dismissals. It is an average ranking of four different subindices related to period 1985–93: 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 Jobs Study (1994) and was compiled by Grubb and Wells (1993).

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

Unemployment benefits measures 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 E uses 1983-97 data from Eurostat's Labour Force Survey. Data refer to 1991-97 for Germany; 1987-97 for the Netherlands; 1986-97 for Portugal; and 1987-97 for Spain.

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