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The Incidence of Temporary Employment in Advanced Economies: Why is Spain Different?

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This study analyses the determinants of the rate of temporary employment in 15 advanced economies using both macro-level data drawn from the OECD and EUROSTAT databases, as well as micro-level data drawn from the eighth wave of the European Household Panel. Comparative analysis is set out to test different explanations originally formulated for the Spanish case. The evidence suggests that the overall distribution of temporary employment in the analysed countries does not seem to be explicable by the characteristics of national productive structures. This evidence seems at odds with previous interpretations based on segmentation theories. As an alternative explanation, two types of supply-side factors are tested: crowding-out effects and educational gaps in the workforce. Both seem ill suited to explain the distribution of temporary work in the analysed economies. Institutional factors do, however, seem to play an important role. Multivariate analysis shows that the level of institutional protection in standard employment during the 1980s, together with the degree of coordinated centralization of the collective bargaining system, seem to have a significant impact on the distribution of temporary employment in the countries examined. Yet these institutional variables alone still fail to account for the Spanish difference. The Spanish puzzle seems, however, explicable when an interaction between employment protection in standard contracts and unemployment shocks is accounted for. This interaction is expected from a theoretical standpoint and proves consistent with both country-specific and comparative evidence.

Introduction

Over the last couple of decades many European labour markets have experienced an increase in the proportion of workers employed on temporary contracts. Yet international differences in the share of temporary employment are large (see Figure 1). Since the beginning of the 1990s, the Spanish labour market stands out for having by far the highest rates of temporary employment of all the OECD countries. Despite a serious attempt to reduce this rate in 1997, Spain entered the new millennium with as much as 32 per cent of wage earners employed on temporary contracts. This figure more than doubles the average for the OECD, which stands at around 12% of the salaried population.

A vast literature has mushroomed in the last two decades, both in the fields of sociology and economics, that

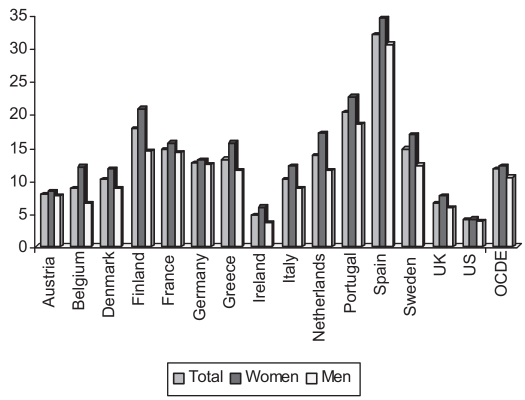

Figure 1 Rate of temporary employment in selected OECD countries, 2000. Source: OECD (2002: ch. III)

aims to provide an explanation for the magnitude of this phenomenon in Spain (for a review see Polavieja, 2001: ch. I and below). The Spanish experience has been presented as an empirical example from which lessons can be drawn (see Dolado *et al.*, 2002). Yet a particular shortcoming of this literature is that it has largely disregarded cross-country comparative analysis,[1] a limitation that I believe has diminished the explanatory value of the existing analyses and which has little methodological justification. Indeed, comparative research seems the most appropriate playground for the testing of the existing explanations of the Spanish 'anomaly', above all if general lessons need be drawn.

Mounting concern with temporary employment has by no means been confined to the Spanish public. Quite to the contrary, the analysis of the causes (and consequences) of temporary employment has attracted growing interest from both researchers, policy makers and the general public in many European countries (see, e.g., Natti, 1993; Holmlund and Storrie, 2002; OECD, 2002: chap. III; Remery *et al.*, 2002; Forrier and Sels, 2003; Giesecke and Gross, 2003). There certainly seems to be a demand for general lessons to be drawn.

What are the factors behind the observed distribution of temporary employment in advanced economies? Why is the rate of temporary employment so high in Spain and so low in, say, Ireland, Austria or the UK? What are the characteristics specific to Spain that can explain it being an outlier with respect to this type of employment? To answer these questions, this paper studies the distribution of temporary employment in a number of developed countries, paying particular attention to the EU-15. By testing different hypotheses originally formulated for the Spanish case, the paper aims to assess the accuracy of the leading interpretations of the Spanish 'anomaly' and, in so doing, contribute to further our general understanding of temporary employment.[2]

In searching for a plausible explanation of the boom of temporary employment in Spain, sociologists have generally focused on the demand-side. Demand-side interpretations of temporary employment are grounded in classical segmentation theories and establish a link between the rate of temporary employment and the size of the so-called 'secondary sector' of the economy. Yet labour market outcomes are not only defined by demand factors, but also by factors pertaining to the supply side, by the institutional regulatory framework as well as by the general economic context. All these factors influence both employers and employees strategies in the labour market, including, crucially, the type of contract that the former choose to offer to the latter. Therefore, after discussing and testing the empirical validity of demand-side factors, the paper moves on to discuss and test supply-side, institutional and economic factors in search for a satisfactory explanation of both the distribution of temporary employment across 15 selected OECD countries and of the very high rates of temporary employment observed in the Spanish case.

The paper is organised into six sections. The first section briefly presents the data sources and the analytical methodology applied. In the second section demand-based hypotheses are discussed and tested both against aggregate national data and individual-level data. The evidence does not support the predictions of demand-based models. The third section explores the impact of supply shocks on the rate of temporary employment and also finds unsupportive results. The impact of institutional factors is discussed and tested in the fourth section of the paper. Comparative analysis of aggregate national data for 15 OECD advanced economies shows that the levels of institutional protection for permanent employment in the 1980s and the degree of coordinated collective bargaining do have an effect on the rate of temporary employment in a multivariate context. However, in the institutional models fitted to the aggregated data, Spain continues to appear as an outlier, whose rate of temporary employment is way above the predicted values. In order to achieve a more satisfactory explanation of the distribution of temporary employment that includes the Spanish 'anomaly', the fifth section presents a theoretical model that focuses on the interaction between institutional and economic factors at the macro level, and the optimization strategies of both employers and employees at the micro level. This model explains why, under certain institutional and economic circumstances, it can be beneficial for employers to resort to temporary employment, even in the case of highly skilled tasks. Some implications of this model can be tested with aggregated data. Such tests yield supportive results. The study ends with a discussion of its principal conclusions.

Data and Methodology

The analysis that follows draws on different sources. Data on various country-level characteristics have been obtained from published statistics from both the OECD and EUROSTAT databases. These data have been complemented when necessary with further country-level information obtained from Visser (2000), Hardiman (2000) and the US Department of Education (1996). Drawing on these data, a matrix of country-level indicators has been constructed for the multivariate analysis of the distribution of temporary employment in 15 selected advanced economies presented in the fifth section of the paper. Aggregate data has been complemented with the use of individual data corresponding to the country files of the eighth wave of the European Community Household Panel, which provides detailed and comparable information for individuals of EU-15 countries in 2001 (n = 121,122). Due to data inconsistencies with respect to the dependent variable in two countries,[3] the final individual-level analysis has been restricted to individuals belonging to 13 EU states (n = 103,223). Macro-level variables and indexes used in the analysis are described in detail in the Appendix.

Temporary Employment and the Productive Structure: Does the Size of the Secondary Sector Matter?

'Classical' segmentation theories highlight the impact of uncertainty in product markets, technological change and dualizing trends in industry upon the segmentation of labour markets. A key idea in these arguments is that there is a causal relationship between the demand for goods and services and the technological requirements of companies, including those relating to the organization and nature of the workforce (for a review see, e.g., Fine, 1998; Polavieja, 2001: ch. I).[4]

Influenced by these theories, a considerable number of sociologists[5] and economists[6] have interpreted the high rate of temporary work observed in Spain as a reflection of the size of its 'secondary sector'. According to classical segmentation theories, the secondary sector is defined both by specific industrial activities targeting the volatile component of demand and by specific occupational 'tasks' characterized by their low human capital requirements. Both facets are interrelated in the theory, since it is activities targeted at volatile demand that require the least intensive capital investments. Secondary activities and occupations are also linked to firm size, since meeting the volatile component of demand implies high variable costs that eliminate the economies of scale associated with organizational size. For these reasons, the secondary sector has, on occasions, been 'measured' in terms of firms' activity, on others of their size and yet on others in terms of occupational groups.[7]

In sum, standard segmentation theories would lead us to expect that, in the case of activities dependent upon demand that is volatile (and, therefore, unpredictable) and for low-skilled tasks, in which workers are easily replaceable, employers will not hobble themselves and will opt for the use of 'flexible' contracts. The secondary sector would thus appear to be the natural breeding ground for temporary employment, and this is why many authors have attributed the high incidence of this type of employment in Spain to the characteristics of this country's productive structure, which is heavily oriented to the volatile component of demand and in which low-skilled jobs abound.

A simple bivariate analysis shows, however, that the relationship between the rate of temporary employment and the importance of the secondary sector of production in a range of advanced economies is rather weak, irrespective of the unit of analysis employed to measure the sector. The calculations have been performed on data published by EUROSTAT and the OECD. The indicators tested include the weight of activities targeting the volatile or seasonal components of demand in each country's economy, the proportion of the workforce employed in small enterprises, and the weight of skilled 'white-collar' jobs.[8] The correlations obtained between these indicators and the rate of temporary employment are always low: 0.2 for volatile activities, 0.46 for the employment incidence of small firms and 0.48 for the employment weight of primary sector occupations (the latter shown in Figure 2). Moreover, irrespective of the definition adopted, Spain always appears as an outlier, with a rate of temporary employment far higher than would be expected given its industrial and occupational structure. This simple descriptive evidence thus raises doubts as to the explanatory power of demand-based accounts (see also Polavieja, 2005). It is nonetheless

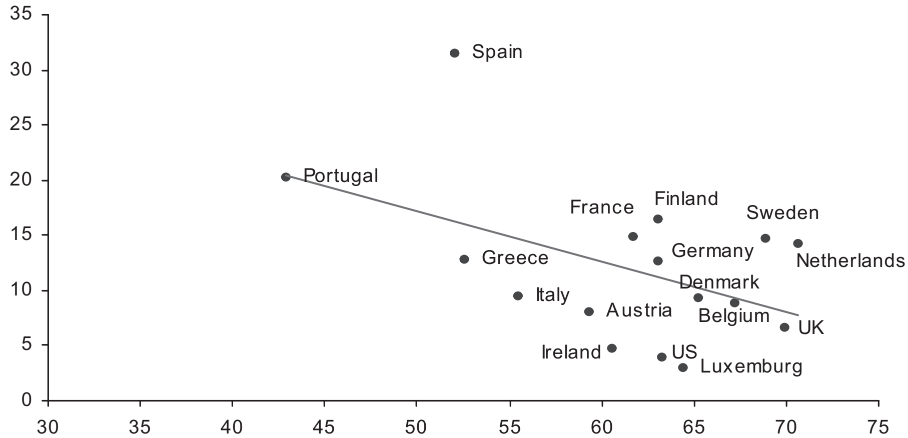

Figure 2 Relationship between the rate of temporary employment (2001) and the importance in employment terms of white-collar jobs in selected OECD countries (1998). Correlation coefficient = –0.48. Source: Author's calculations on OECD data (2000: ch. 3) and OECD (2002: ch. III)

evident that the aggregate-level indicators employed are relatively imprecise and that parametric analysis is needed to further investigate these preliminary findings.

Table 1 shows the results of adjusting a series of logistic regression models on the type of employment held by surveyed residents of 13 EU countries using individual data drawn from the European Community Household Panel. In the first part of the table, deviation logit coefficients are shown for residents in each of the analysed countries. Deviation coefficients show the difference in the probability of holding a temporary contract for respondents in each of the countries with respect to the mean probability.[9] Note that this difference for (respondents living in) Spain as shown by the deviant coefficient remains largely unaltered with respect to the mean, even after controlling for respondent's age and gender (Model 2), occupational class and educational qualifications (Model 3), the size of respondent's firms (Model 4) and their sector of economic activity (Model 5). Comparing the deviant coefficient for Spain in Model 4 to that of Model 1, a reduction of only 7% is noted. Introducing indicators covering firms' economic activity, firm's size, employees' occupation and their level of formal education hardly adds anything to the explanation of the Spanish 'difference'.

Note also that the Spanish coefficient is no exception in Table 1, as the vast majority of country coefficients also remain largely unaltered as the model building strategy employed to test for demand-based factors progresses. There are, however, two exceptions to this rule that are worth noting. First, the country coefficient of France increases notably with the introduction of productive structure variables. This finding suggests that, in the hypothetical event that the productive structures of all the analysed countries were equal, the rate of temporary employment in France would be higher than currently observed. This finding seems to go against demand-based predictions as it suggests not lesser but greater variance net of productive-structure characteristics in the analysed countries. Secondly, the coefficient of Portugal, a high-temporary-employment country, progressively loses its significance as new variables are entered in the equations. This is the only case that behaves in accordance to demand-based expectations, suggesting that Portugal's high levels of temporary employment could actually be linked to the characteristics of its productive structure (i.e. the size of its secondary sector). Yet, as we shall see, comparative analyses with aggregate national data seem to lend support to alternative explanations for the Portuguese case.

In sum, demand-based interpretations seem *on the whole* rather limited as a means to explain the overall distribution of the phenomenon and, most particularly, the incidence that it has in the Spanish case. It appears clear that explanations other than those typical of classical segmentation theories must be considered.

Alternative Explanations: Quantity and Quality Supply-Side Factors

Easterlin (1978, 1987) originally developed a demographic theory of the groups' cohort-size, according to

Table 1 Logit regressions on the probability of holding a temporary employment contract (rather than a standard contract) in 13 EU countries, ECHP 2001 (eighth wave); deviation coefficients shown for country effects

Parameters	**Model 1 Deviation coefficient**	**Model 2 Deviation coefficient**	**Model 3 Deviation coefficient**	**Model 4 Deviation coefficient**	**Model 5 Deviation coefficient**
Denmark	–0.63***	–0.48***	–0.39***	–0.38***	–0.36***
Belgium	0.03 (n.s.)	0.18**	0.24***	0.19**	0.13 (n.s.)
France	0.18***	0.25***	0.21***	0.79***	0.87***
Ireland	–0.62***	–0.86***	–0.79***	–0.85***	–0.89***
Italy	0.03 (n.s.)	0.11**	0.18***	0.11*	0.04 (n.s.)
Greece	0.54***	0.61***	0.67***	0.61***	0.55***
Spain	1.40***	1.42***	1.38***	1.32***	1.30***
Portugal	0.36***	0.23***	0.16***	0.10*	0.02 (n.s.)
Austria	–0.71***	–0.85***	–0.73***	–0.78***	–0.85***
Finland	0.53***	0.57***	0.16**	0.10 (n.s.)	0.43***
Germany	–0.10*	0.01 (n.s.)	0.05 (n.s.)	–0.01 (n.s.)	0.004 (n.s.)
Luxemburg	–0.48***	–0.49***	–0.48***	–0.49***	–0.52***
United Kingdom	–0.55***	–0.71***	–0.65***	–0.70***	–0.71***
		Logit Coefficient	Logit Coefficient	Logit Coefficient	Logit Coefficient
Gender (ref. male) female		0.30***	0.36***	0.37***	0.31***
Age groups (ref. <25)					
25–35		–1.14***	–1.12***	–1.10***	–1.13***
36–45		–1.79***	–1.74***	–1.72***	–1.79***
46–55		–2.16***	–2.16***	–2.13***	–2.23***
56–64		–2.05***	–2.08***	–2.05***	–2.18***
>64		–1.93***	–2.16***	–2.15***	–2.51***
Occupation (ref. professional)					
Intermediate			–0.04 (n.s.)	–0.05 (n.s.)	0.03 (n.s.)
Skilled manual			0.17**	0.16***	0.40***
Unskilled			0.62***	0.62***	0.64***
Education (ref. university)					
Secondary			–0.27***	–0.27***	–0.23***
Less than Secondary			–0.05 (n.s.)	–0.05 (n.s.)	–0.03 (n.s.)
Firm size (ref. <50 employees)					
>50				–0.10**	–0.02 (n.s.)
Missing data				–0.80***	–0.90***
Industry (ref. extractive, water & gas)					
Agriculture & Fishing					1.03***
Heavy Industry					–0.19 (n.s.)
Light Industry & Others					–0.02 (n.s.)
Construction					0.52 ***
Commerce & Retail					0.10 (n.s.)
Hotels & Restaurants					0.86***
Transport & Communications					0.12 (n.s.)
Finance					–0.28 (n.s.)
Real Estate & Firm's Services					0.35*
Public Services					0.77***
Other Services					0.52***

continued

Table 1 *(continued)*

No. observations	40936	40936	39070	39070	39070
LR chi^2 (12)	1569.39	3457.43	3299.23	3349.16	3655.61
Prob. > chi^2	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.0560	0.1235	0.1273	0.1292	0.1454
Log likelihood	−13215.386	−12271.365	−11313.014	−11288.047	−10743.398

****Significance ≤ 0.01; **significance ≤ 0.05; *significance ≤ 0.1; n.s., not significant.*
Source: Author's calculations based on European Community Household Panel data (2001, eighth wave).

which individuals born into a large cohort will face more competition in labour markets and hence will experience higher unemployment rates and lower salaries than their predecessors. Moreover, he argued that changes in the demographic structure could have a pervasive impact beyond the pure economic sphere, affecting a wide range of social and political phenomena – including fertility patterns, marriage, divorce, suicide and crime rates, and even political alienation. His was, therefore, a theory of the role that cohort size can play in the entire life of a country.

Similar arguments, although much more modest in scope, have recently been made in the field of labour economics, where a growing body of literature has underlined the impact that the size (and composition) of the supply of work might have on both the level and the structure of unemployment (see, e.g., Blanchard and Wolfers, 2000; Korenman and Neumark, 2000; Bertola *et al.*, 2002; Jimeno and Rodríguez-Palenzuela, 2002). The main thrust of these models is that, under conditions of imperfect competition, labour markets may become saturated, such that excess supply at a specific point in time may hinder employment access for new jobseekers (principally the young and women).

Transferring these arguments to the study of temporary employment, it could be expected that supply shocks be one of the factors that explain the amount of temporary work found in a given labour market, above all in 'rigid' institutional contexts where excess supply cannot be absorbed by increasing wage inequality – this institutional condition is, as we shall see, vital. If markets are rigid and become rapidly crowded out for demographic reasons, long job queues will be formed at the doors of standard employment. If temporary contracts are at hand, those waiting in the line are likely to be kept on these contracts until standard vacancies become available.[10]

This crowding-out hypothesis appears especially pertinent in the case of Spain, since the incorporation into the labour market of the so-called baby-boom generation, which happened somewhat later than in other developed countries, occurred just at the time of the labour market reforms that extended the use of temporary contracts. The coincidence in time of a strong upswing in supply and an institutional context that combines high protection for permanent employment and flexible temporary contracts (i.e. a context of partial flexibilization) could thus provide an explanation of the high rates of temporary employment observed in this country.

Yet it does not appear (at least at first glance) that the relative weight of the youngest cohorts (those born between 1967 and 1976) is directly related to the rate of temporary employment in advanced economies, according to the analysis of 15 selected OECD countries. The correlation between the demographic weight of the 1967–1976 cohort in 1991 and the rate of temporary employment in 2001 is only 0.27 (see Figure 3). The hypothesis that demographic crowding-out is a *direct* cause of temporary employment seems, therefore, inconsistent with this evidence.

Yet it should be noted that the possible effect of the supply shock might not be unrelated to its composition in terms of general human capital. The impact upon the labour market of a populous supply could be all the greater if, additionally, this supply is comparatively better prepared than preceding cohorts (García Serrano *et al.*, 1999). If this is the case, and if already-employed workers are institutionally protected and therefore not easily replaceable, the effect of a supply shock could be that of crowding-out at entry and, given the institutional conditions of partial flexibilization, an increase in temporary employment in all occupational groups, including those requiring high levels of human capital.[11] High incidence of temporary employment across the occupational board should logically result in high national figures. From this perspective it follows that the danger of crowding out would not depend so much upon the demographic size of entrant cohorts *per se*, but rather on

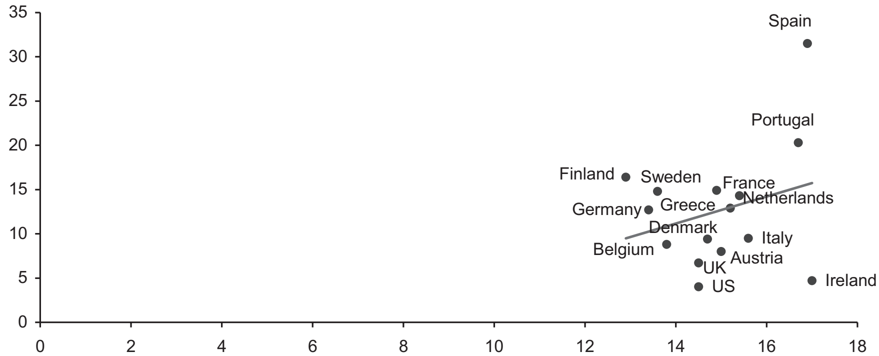

Figure 3 Relationship between the rate of temporary employment (2001) and the demographic weight of the cohorts born between 1967 and 1976 in selected OECD countries (2001). Correlation coefficient = 0.27. Source: Author's calculations based on EUROSTAT (2004c) and OECD (2002: ch. III) data

their comparative advantage in educational terms. That is, it would be the 'quality' of supply rather than the 'quantity' that matters (see also Easterling, 1978: 413).

Figure 4 plots the rate of temporary employment against the educational differential between those cohorts born between 1958 and 1967 and those born between 1938 and 1947 in 15 OECD countries. The correlation between the two variables appears as both high (0.7) and positive. Yet this finding can be misleading, as the correlation is in reality entirely driven by the exceptional position of the Spanish case. If this is removed from the analysis, the Pearson coefficient drops to only 0.4. This suggests that, contrary to what a hasty reading of Figure 4 would lead us to interpret, quality shocks do not provide a satisfactory explanation of the distribution of temporary employment in the analysed countries *as a whole*. The possibility that such shocks be linked to the Spanish 'anomaly' cannot, however, be ruled out.

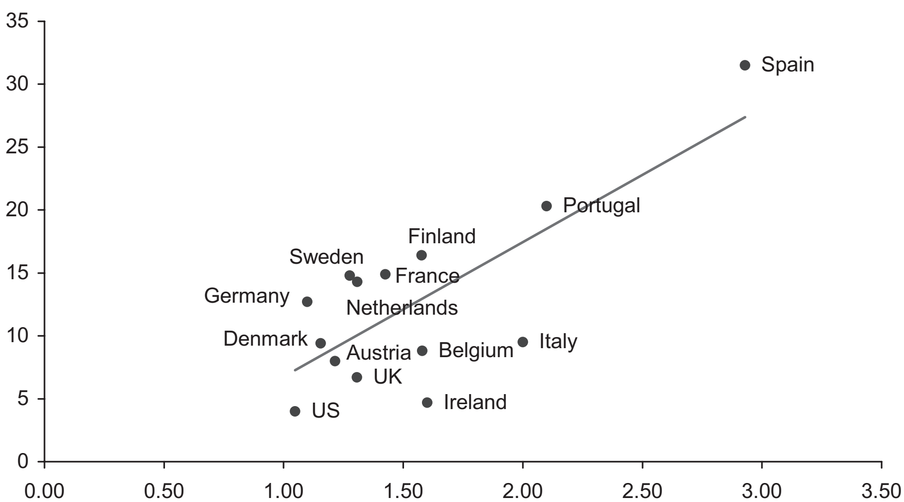

Figure 4 Relationship between rate of temporary employment (2001) and educational differential between the cohort born in 1958–1967 and that born in 1938–1947 in selected OECD countries (2001). NB: The educational differential is the result of dividing the proportion of individuals with secondary or higher education in the cohort born in 1958–1967 between the proportion of highly educated within the cohort born in 1938–1947. Correlation coefficient = 0.75. Source: Author's calculations based on US Department of Education (1996) and OECD (2002: ch. III) data

Yet it must be stressed that, even if such a link could be established in Spain, the impact of quality supply shocks on the rate of temporary work could only be an *indirect* one. This is because for quality shocks to influence the rate of temporary employment it is required that workers on standard contracts enjoy high levels of employment protection, since employment protection is the immediate entrance barrier for new cohorts in conditions of limited wage flexibility (see e.g. Jimeno and Rodríguez-Palanzuela, 2002 and below).

Quality shocks in Spain could have themselves influenced the degree of protection in standard employment. It has indeed been argued that high employment protection for permanent contracts in Spain was the result of political decisions aimed at shielding low-skilled workers from the threat of substitution posed by the mass entry onto the market of better-educated candidates (García Serrano *et al.,* 1999). But note that, even under this light, the quality-supply-shock hypothesis can only be seen as influencing the political economy of employment protection, rather than the rate of temporary work *directly*.

Institutional Factors: Dismissal Costs and the Collective Bargaining System

It seems, therefore, reasonable to expect that the rate of temporary work in a given economy depends on the degree of accessibility into standard employment. Institutionally imposed costs might hinder access into permanent contracts and hence increase the stock of temporary work. The most important of such costs is the costs of dismissal for standard employment. It is clear that the more expensive it is to make workers on standard contracts redundant, the more likely employers will be to resort to temporary work and the more cautiously they will offer open-ended contracts to their workforce. Additionally, if the differences in contract termination costs are substantial, the bulk of any job cuts will fall upon those workers with less legal protection, which will further hinder access into standard employment (Bentolila and Dolado, 1994; Blanchard and Landier, 2002).

A simple analysis of correlation between the OECD index of employment protection in standard (i.e. permanent) contracts at the end of the 1980s – which is when most reforms allowing for temporary employment were implemented in Europe – and the rate of temporary employment in 2001 suggests the existence of a strong association between both variables[12] (see Figure 5). This correlation is the highest found in all the bivariate contrasts carried out (0.8) and does not disappear, but is actually somewhat enhanced, if the Spanish case is removed from the sample.[13] Multivariate analysis confirms the significant impact of employment protection in standard contracts on the observed distribution of temporary work (see below).

There might be, however, other institutional factors besides the degree of employment protection in standard employment that could also influence the rate of

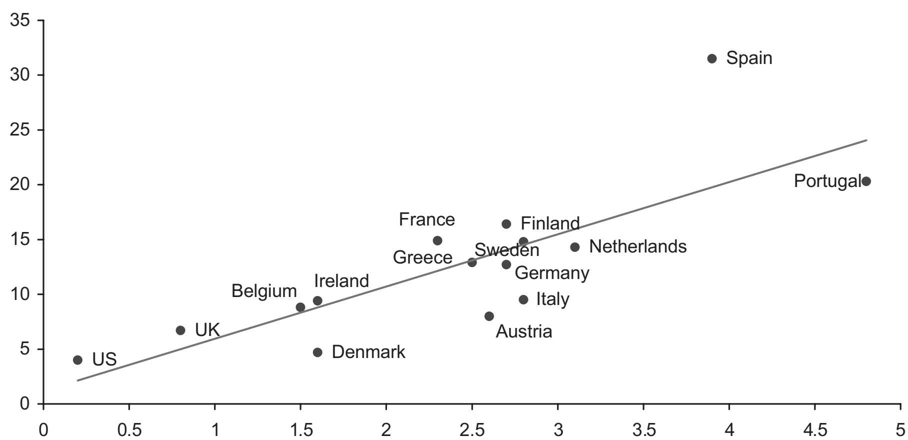

Figure 5 Relationship between the level of protection of permanent employment at the end of the 1980s and the rates of temporary employment in 2001. Correlation coefficient = 0.79. Source: Author's calculations based on OECD data (1999: ch.2; 2002: ch. III)

temporary work. Previous studies of the Spanish case have highlighted a second institutional dimension that is thought to play an important role in explaining the country's high rate of temporary work, namely, the non-inclusive nature of its collective bargaining system. It has been argued that the Spanish collective bargaining system is particularly conducive to the amplification of the interests of permanent employees when negotiating collective agreements, which could also contribute to the blocking of entry into standard employment for temporary (and unemployed) workers (Bentolila and Dolado, 1994; Polavieja, 2001, 2003, 2005).

The constellation of institutional factors that affect the degree of inclusiveness of collective bargaining is, admittedly, difficult to translate into operational indicators (Esping-Andersen, 1999: 138), despite which an attempt has been made to condense all this complexity into a single index. This index, whose construction is explained in detail in the Appendix, focuses on only two of the many possible dimensions which may contribute to the non-inclusive nature of collective bargaining: its degree of centralization and its degree of coordination.

There are two reasons to expect that opportunities for an inclusive representation of interests will diminish in contexts in which industry-level uncoordinated bargaining predominates. The first is related to the limited scope of the negotiations' agenda – more specifically, to the predominant role that wages play in it to the detriment of matters related to the hiring of staff – in cases where industry-level bargaining is the norm (Miguélez and Rebollo, 1999). The heterogeneity of confluent interests and the high number of units represented in industry-level bargaining induce negotiations to concentrate on the lowest common denominator, i.e. wages. The second reason for expecting lower levels of inclusiveness in industry-level bargaining and, therefore, greater contractual segmentation, can be inferred from applying Calmfors and Driffill's (1988) well-known theory on the relationship between bargaining structure and economic performance to the case of temporary employment. Calmfors and Driffill's model leads to the inference that industry-level uncoordinated bargaining may be especially conducive to the generation of wage increases above market rates for permanent workers, the effects of which would be pernicious for the economy as a whole and, in particular, for temporary and unemployed workers' chances of obtaining stable employment.

According to Calmfors and Driffill's theory, when bargaining takes place at the industry level, employers are more likely to accede to the demands of their (insider) workforce because they can more easily divert salary increases to consumers via product prices. The reason for this is that, when an entire industry agrees upon price increases, consumers have few replacement products at hand and consequently the market loses correction capacity. Industrial companies act in this way as a kind of cartel in the negotiation process. As explained in Polavieja (2003), excessive wage pressure from permanent employees may have the direct effect of reducing the job security of temporary workers (see below). This type of externality, together with others such as unemployment or inflation, will be difficult to internalize if negotiations focus upon the wages in each industry, above all when there is scant coordination between industries and bargaining levels – and it is precisely for this reason that coordination is important. The potentially perverse effects in terms of segmentation, inflation and excessive wage pressure from permanent workers would nonetheless be far more easily recognizable for trade unions if bargaining were centralized and coordinated and more easily correctible by market forces if negotiation took place at the company level (see Calmfors and Driffill, 1988; OECD, 1997: 64–65; OECD, 1999: ch. II).

Figure 6 plots the index of coordinated centralization of collective bargaining (ICC), calculated on the basis of the average scores of the centralization and coordination indices published by the OECD (1997: ch. III), against the rate of temporary employment in 15 OECD countries (see Appendix). It should be noted that, despite the crudeness of the indicator and the limited number of observations, the relationship observed is consistent with the argument made above, although the correlation coefficient between the rate of temporary employment and the square of the index is modest (–0.6). However, if Spain is removed from the matrix, the correlation coefficient increases to –0.8, which obviously reinforces the general validity of the findings.

Parametric Analyses

We thus have preliminary evidence consistent with the arguments which link the incidence of temporary employment with specific characteristics of the institutional framework. To subject these arguments to more rigorous testing, a data matrix has been built from statistical information contained in a number of OECD and EUROSTAT publications. This information includes temporary employment rates (for 2001) together with a

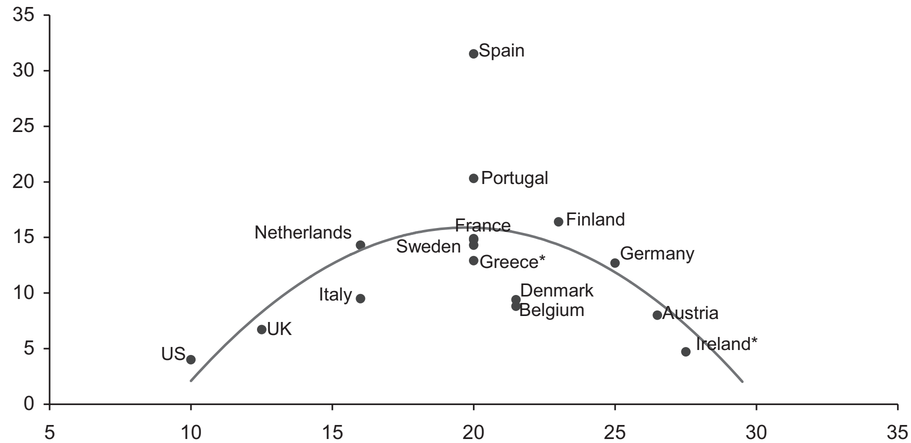

Figure 6 Relationship between the index of coordinated centralization of collective bargaining (ICC) in 1994 and temporary employment rates in 2001. Correlation coefficient between rate of temporary employment and $(ICC)^2 = -0.64$. NB: The values for Greece and Ireland have been extrapolated following Visser (2000) and refer to 1998. Source: Author's calculations based on data from the OECD (1997: ch.3; 2002: ch. III) and Visser (2000: Annex 2)

range of characteristics of the labour markets and the regulatory frameworks of the following 15 advanced economies: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, the United Kingdom and the USA. Different regression models with heteroscedasticity-robust estimators have been fitted to this aggregate national data in the aim of testing possible determinants of the rate of temporary employment in a multivariate context. Amongst the variables tested are the proportion of workers employed in skilled white-collar jobs in each country, the importance of volatile sectors (also in terms of proportion of employees), the number of employees in small firms, an interaction between volatile sectors and small enterprises, the proportion of people of working age with higher-education degrees, the degree of vocational specificity provided by each educational system,[14] average unemployment over the decade, the demographic weight of the cohort born between 1967 and 1976, the educational differential between the 1958–1967 and the 1938–1947 cohorts and, lastly, the OECD permanent employment protection index in the 1980s and the ICC commented upon above. To test the possible convex effect of the ICC upon the rate of temporary employment, this index has been centred and squared (see Appendix). Additionally, a possible interaction between the educational-cohort differential and the degree of protection in standard employment and the rate of temporary employment has been tested.

Of all the non-institutional variables tested, only two show a significant relationship (and in the expected direction) with the rate of temporary employment: the weight of white-collar skilled jobs (i.e. those in the primary segment, to use segmentation theory terminology) and the educational differential between the 1958–1967 and 1938–1947 cohorts (see Model 1 in Table 2). Yet both effects disappear completely after the introduction of institutional variables in the regression equations (Models 2 and 3). In fact, only the index of protection in permanent employment in the 1980s and the $(ICC)^2$ retain their significance in a multivariate context.[15] Taken together, these two variables explain 60–80 per cent of the variance in the temporary employment rates in the 15 countries analysed, depending upon whether the regression is calculated on the gross national temporary employment rate (not shown in the table) or its logarithm (Model 4 in Table 2).

It is highly probable that more refined indicators of workforce characteristics and productive structure would improve the results of the non-institutional variables analysed, whose impact has proved not significant – both via direct contrasts and interactive terms. In any case, what seems clear is that institutional factors are of *crucial* importance in explaining the distribution of temporary employment in the 15 countries analysed.

On the basis of the above analyses, it can be concluded that the introduction of temporary employment in an institutional framework characterized by high dismissal

Table 2 Regressions with heteroscedasticity-robust estimators on the logarithm of the rates of temporary employment in 15 OECD countries (2001)

Parameters	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient
Proportion of white-collar jobs	−0.87*	−0.38 (n.s.)	−0.01 (n.s.)	
Educational differential between 1958–1967 and 1938–1947 cohorts	0.87***	0.27 (n.s.)	0.20 (n.s.)	
Permanent employment protection index in the mid 1980s (IEP80)		0.33***	0.20*	0.25***
$(ICC)^2$			−0.008*	−0.008***
Constant	1.91***	1.55***	1.86***	1.95***
N	15	15	15	15
Prob. > F	0.0048	0.0001	0.0005	0.0000
R^2	0.465	0.748	0.839	0.822

****Significance ≤ 0.01; **significance ≤ 0.05; *significance ≤ 0.1; n.s., not significant. ICC, index of coordinated centralization.*
Source: Author's calculations based on OECD and EUROSTAT data (various years).

costs for permanent workers and a collective bargaining system poorly suited to the inclusive representation of interests form a regulatory context especially favourable to the growth of this type of employment. It seems that neither the distribution of temporary employment in the analysed countries nor the high rate of temporary employment observed in Spain can, therefore, be explained *without* taking into account these two crucial institutional variables.

Yet it should also be noted that Spain continues to appear as an outlier in the comparative regression analyses shown in Table 3. In fact, Model 4 predicts a rate of temporary employment for Spain of 20%, that is, 12 points below the rate actually observed in 2001 (see Figure 7). It seems, therefore, that institutional factors alone *cannot* explain the Spanish difference. Something seems to be missing.

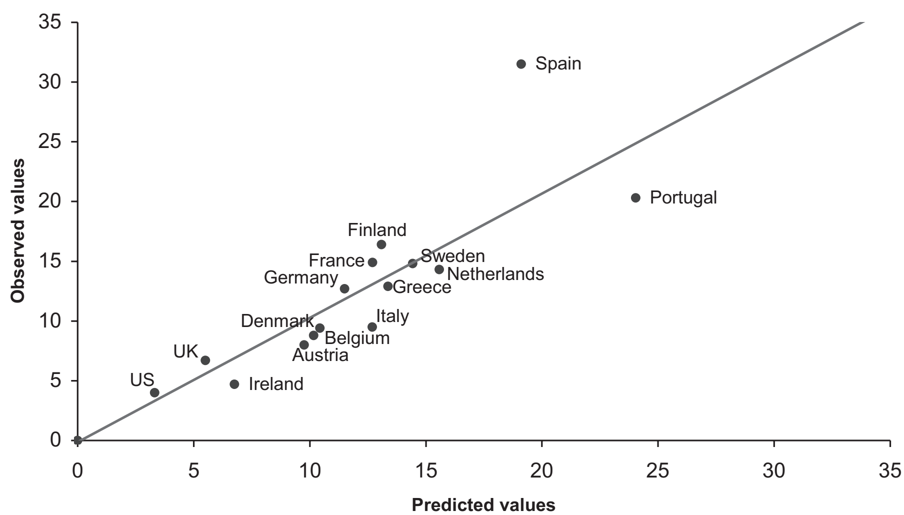

Figure 7 Relationship between observed temporary employment values and those predicted by Model 4 in Table 2. Source: Author's calculations based on Model 4 in Table 2 [$LN(y) = 1.95 + 0.2 \times IEP80 - 0.008 \times ICC^2$]

Explaining away the Spanish Puzzle: Institutions, Economic Uncertainty and Micro-level Strategies

I believe that what is actually missing from a purely institutional explanation is the crucial link between macro-level factors and individual decisions at the micro level. If institutional factors matter it is because they influence the hiring and firing decisions of individual employers, as well as the rent-seeking strategies of employees (Polavieja, 2003). Once our attention is drawn to micro-level strategies, it becomes apparent that such strategies are not only influenced by institutional factors, but also by the economic context and, in particular, by how labour markets react to the business cycle (see, e.g., Gangl, 2002).

The economic context is expected to play a crucial role in determining micro-level strategies through its impact on uncertainty (see, e.g., Holmlund and Storrie, 2002). In labour markets that experience a rapid deterioration, growing economic uncertainty will make employers less willing to engage in long-term employment relationships, particularly if the institutional framework imposes high dismissal costs for standard contracts. Economic uncertainty can also influence employees' micro-level strategies, at least in two crucial ways. First, by increasing the chances that they accept temporary jobs against their preferences for stable employment; and, secondly, by increasing the so-called *incentive effect* of temporary contracts.

The incentive effect of temporary employment refers to employers' capacity to extract output from their temporary workforce by using strategically their prerogative to convert temporary contracts into permanent ones (Güell-Rotllan, 2000). In contexts of high economic uncertainty and high employment protection for permanent contracts, temporary workers will have strong incentives to work hard in order to achieve permanent status in their firms and hence escape the pressing risk of unemployment. The greater the perceived risks of unemployment are for employees, and the safer the protection offered by standard contracts, the greater the incentive potential of temporary work.

The incentive properties of temporary employment can be further enhanced if the proportion of temporary workers in a given firm (or a given economy) reaches the point of boosting permanent workers' bargaining power through the so-called *buffer effect*. The buffer effect refers to the faculty of temporary work to act as a shield that protects permanent employees from the risk of unemployment, thereby enhancing their bargaining position. The ultimate origin of this effect is again the difference in termination costs by type of contract, which makes it more likely that job reductions are borne by temporary employees. Buffer effects enhance the incentive properties of temporary employment because they increase, at the same time, temporary workers' uncertainty regarding their future in the firm and the prize of achieving permanent status. This will allow employers to extract further output from their temporary workforce at a lower cost (Bentolila and Dolado, 1994; Polavieja, 2003).

The incentive properties that temporary contracts might acquire under particular institutional and economic conditions have been used to explain why temporary employment has permeated all types of jobs in Spain, including those requiring high levels of human capital. The spread of temporary work across all types of occupations has been considered a key characteristic of the Spanish 'difference' (Polavieja, 2005). Incentive and buffer effects have been tested in a number of studies with supportive and consistent results (see Bentolila and Dolado, 1994; Rodríguez Gutiérrez, 1996; Güell-Rotllan and Petrongolo, 2000; Polavieja, 2001, 2003, 2005). To the existing evidence for the Spanish case, we can now add a further comparative test using our matrix of aggregate national data.

The incentive potential of temporary work, and hence the probability that it becomes widespread in a given economy, is expected to be all the greater in countries that combine high employment protection for standard contracts with high economic uncertainty, which should abound in contexts of rapid labour market deterioration. This general prediction can be tested via an interaction between the index of employment protection in the late 1980s and a dummy variable representing the countries that have experienced severe unemployment shocks in the period studied.

Severe unemployment shocks have been defined as those producing an increase in the unemployment rate in either of the two downswings that occurred in the analysed period that is greater than the average impact for the sample. Four of the analysed countries have experienced such shocks: Spain, Ireland, Sweden and Finland. All of them saw their rates of unemployment increase by more than 8 percentage points in only 4 years (data from OECD, 2005). No doubt, such shocks must have increased economic uncertainty for both employers and employees.

Table 3 shows the results of fitting two further models to our matrix of aggregate national data. In order to facilitate the reading of the results, Table 3 shows again the institutional additive model (Model 4). Model 5 adds a 15-value variable that measures the size of the largest unemployment gains recorded in the analysed countries in either of

Table 3 Regressions with heteroscedasticity-robust estimators on the logarithm of the rates of temporary employment in 15 OECD countries (2001), testing the effect of unemployment shocks

Parameters	Model 4 Coefficient	Model 5 Coefficient	Model 6 Coefficient
Permanent employment protection index in the mid 1980s (IEP80)	0.25***	0.26***	0.19***
$(ICC)^2$	−0.008***	−0.007***	−0.007***
Unemployment shocks[a]		0.026 (n.s.)	
Severe-shock countries[b]			−1.08***
Severe-shock countries × IEP80			0.45***
Constant	1.95***	1.77***	2.03***
N	15	15	15
Prob. > F	0.0000	0.0000	0.0000
R^2	0.822	0.843	0.946
Likelihood ratio test (assumption = Model 4 nested in Model 6)		LR chi^2 (2) = 17.91 Prob. > chi^2 = 0.0001	

****Significance ≤ 0.01 **significance ≤ 0.05 *significance ≤ 0.1; n.s., not significant. ICC, index of coordinated centralization.*

[a]*Measured as the highest growth in percentage points of the rate of unemployment in any of the two observed economic downturns occurred in the analysed countries in the period 1980–1995.*

[b]*Countries where the growth of unemployment in any of the two recessions occurred in the observation window is higher than the average for the sample (i.e. higher than 6 percentage points).*

Source: Author's calculations based on OECD and EUROSTAT data (various years).

the two recessions that occurred in the observation window. Model 5 shows that the impact of unemployment shocks has no significant effect on the rate of temporary employment net of institutional variables. Yet what is actually expected is that the rate of temporary employment is boosted precisely in those instances where economic uncertainty is combined with high institutional rigidities – in particular, high protection in standard employment. Model 6 tests for this expected interaction and obtains very supportive results, which are now fully consistent with the hypothesized relationship between institutions, economic uncertainty and hiring strategies.[16] The predicted values produced by Model 6 are impressively close to the observed ones, including those for Spain (see Figure 8).

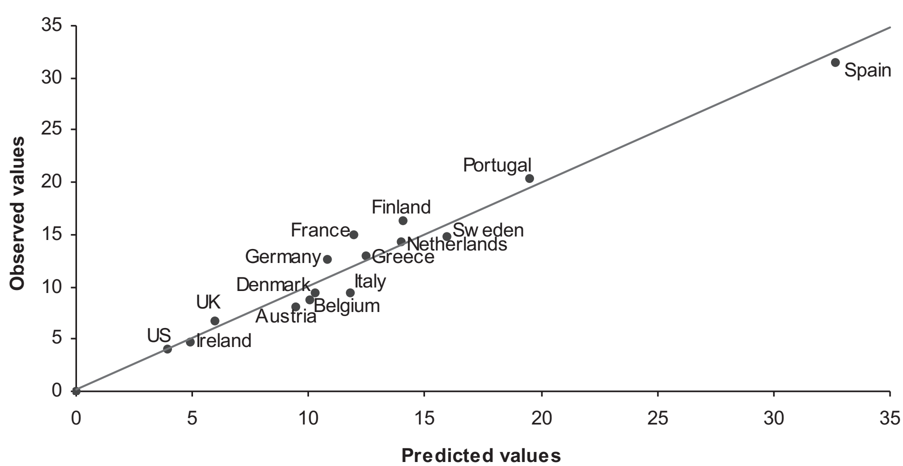

Figure 8 Relationship between observed temporary employment values and those predicted by Model 6 in Table 3. Source: Author's calculations based on Model 6 in Table 3 [LN(y)= 2.03 + 0.2 × IEP80 – 0.007 × ICC^2 – 1.08 × shock + 0.45 × shock × IEP80]

The interaction tested in Model 6 seems, therefore, able to explain away the Spanish 'difference'.

On the basis of this evidence, it is now possible to argue that the reason why Spain shows such a spectacular rate of temporary employment is probably due to the rather unique and unfortunate combination of institutional and economic factors. The introduction of temporary contracts in a rigid institutional context and at times of great economic turmoil could have provoked a particularly favourable microclimate for the boost of temporary work. No other country met the requirements for this boost to the extent than Spain did. Ireland, Sweden and Finland, for instance, experienced similarly important unemployment shocks in the period studied but none of them granted similar levels of employment protection to their permanent workforce. Portugal, on the other hand, did grant similar levels of employment protection to workers on standard contracts, yet Portugal did not suffer as severe an unemployment shock as Spain did. The unique combination of economic uncertainty and institutional rigidities found in Spain at the time of the introduction of temporary contracts could have unleashed exceptionally intense micro-level incentive and buffer effects, thus pushing the rate of temporary work up to record levels.

Summary and Conclusions

Throughout the last two decades many European countries have witnessed the increase of temporary employment, although at various paces and intensities. The most spectacular growth of this type of employment has occurred in Spain.

In this study, the main explanations provided for the Spanish case have been tested comparatively with the intention of providing a plausible explanation both of the factors behind the distribution of temporary employment in advanced economies, as well as of the reasons for the Spanish 'anomaly'.

Analysis of a range of statistical sources, with both aggregate and individual data, suggests that neither the distribution of temporary employment across the analysed countries nor the Spanish anomaly can be explained by productive structure variables. Demand-side theories do not seem to stand up to comparative test. Nor can supply-side factors account for the distribution of temporary employment in the analysed sample, although there is some indication that 'quality' supply-shocks could be *indirectly* linked to the incidence of temporary work in the Spanish case via their relation to employment protection legislation.

Institutional factors matter. The levels of employment protection in standard contracts during the 1980s, together with the degree of coordinated centralization of collective bargaining systems, are generally good predictors of the distribution of temporary work in the analysed economies, although they alone fail to account for the Spanish 'anomaly'.

This anomaly can only be explained by fitting an interaction between employment protection in standard employment and severe unemployment shocks. Such an interaction has been interpreted as capturing the expected relationship between institutional influences, economic uncertainty and the micro-level strategies of employers and employees, which follows from a theoretical model previously proposed and tested for the Spanish case.

This micro–macro model provides an explanation as to why, under certain conditions, temporary contracts might acquire important incentive properties, even in the case of highly skilled tasks. In contexts that combine high institutional rigidities with high economic uncertainty, employers might choose to renounce the benefits associated with long-term investments in specific human capital in exchange for the great incentive qualities of temporary work. When this happens, temporary contracts spread across different occupations and, as a result, the rate of temporary employment increases. The comparative evidence provided in this study seems, therefore, consistent both with this explanation, as well as with the individual-level findings gathered for the Spanish case (see Polavieja, 2003, 2005).

More research is, however, needed to further validate these findings. The main limitation of this paper is the cross-sectional nature of the analyses. Future research should focus on dynamic models using individual level data, as well as on macro-level analysis of time-series. Our understanding of temporary employment should also benefit considerably if future work is devoted to the study of the flows rather than the stock of temporary work in selected countries. Alternative definitions of non-standard employment should also be tested in future research, as the actual form of atypical work might vary considerably and in consequential ways across OECD countries. Finally, the number of observations for macro-level research should preferably be increased, provided that such an increase is not achieved at the expense of comparability of the analysed indicators.

Notes

1. See, however, Adam and Canziani (1998).
2. Temporary contracts were introduced in Spain in 1984. They may be signed for very short periods and can be renewed for a maximum duration of 3 years. The maximum severance pay for temporary contracts is 12 days per year of service, although many forms of temporary employment in Spain do not entail severance compensation (Polavieja, 2001: 74–77). Yet it is important to stress that the legal characteristics of temporary contracts in Spain are not particularly 'flexible' when compared to other countries, either in terms of the conditions they imply or the fringe benefits they entitle (OECD, 2002: 146, 176). This rules out the possibility that the Spanish anomaly responds to the intrinsic features of temporary contracts in this country.
3. A great divergence is observed in the case of the Netherlands and Sweden between the rates of temporary employment emerging from the ECHP and those reported by the OECD. Given that the OECD figures are calculated using national labour force survey data, its results are much more reliable than those of the ECHP. Given this lack of reliability in the dependent variable both countries have been excluded from the ECHP sample.
4. Two schools of thought can be distinguished within classical segmentation theories: firstly, the so-called 'dual labour market' theory (Doeringer and Piore, 1971; Piore, 1975) and, secondly, the neo-Marxist segmentation school (Edwards *et al.*, 1975; Edwards, 1979; Gordon *et al.*, 1982). It is probably the latter which has had greater influence upon Spanish labour sociology.
5. See, for example: Prieto (1989); Recio (1997: ch. XIV).
6. See, for example, Alba (1991), Amuedo-Dorantes (2000) and Toharia and Malo (2000).
7. There is a certain amount of confusion (and debate) amongst segmentation theorists themselves as to which is the best unit of analysis to test the theory's arguments (see Fine, 1998).
8. Figure 2 tests the relationship between the size of the 'primary segment' (measured as the weight of white-collar jobs) and the rate of temporary employment. If the relationship between the proportion of unskilled jobs and the temporary employment rate is tested, a correlation of only 0.15 is obtained (full details are available on request). I chose to use the proportion of white-collar workers since this is an indicator whose operationalization is much more consistent in comparative terms.
9. Note that the remaining coefficients shown in Table 1 are standard logit coefficients which should therefore be interpreted in relation to the reference categories of each given variable.
10. This process could be conceived as an extension of standard vacancy models to different contract types (see Thurow, 1975; Sorensen and Kalleberg, 1981).
11. Additional symptoms of this process would include high youth unemployment and the over-education of the youngest workers, as well as disinvestments in specific human capital in a context of high labour turnover and rigid institutions (see Dolado *et al.*, 2002).
12. Nonetheless, the correlation between protection of permanent employment and the rate of temporary employment lessens significantly if the level of protection at the end of the 1990s is considered (dropping from 0.8 to 0.6). This suggests that there is hysteresis in the rate of temporary employment. In other words, that this rate could develop a tendency to remain at high levels, even after substantial reductions occur in the levels of protection for permanent contracts. This hypothesis could be especially relevant when studying the (scant) impact of the labour reform of 1997 in Spain.
13. If Spain is excluded from the matrix, the Pearson coefficient rises from 0.79 to 0.85.
14. This variable has been tested under the assumption that countries that provide individuals with specific training should allow them a comparably smoother (re-)entry into the labour market, which should yield a lower rate of temporary employment (see, e.g., Blossfeld and Stockmann, 1999; Gangl, 2000). Due to space limitations, this institutional variable has not been discussed in the paper. Results, which are available for the interested reader, have been unsupportive.
15. Introducing the (centred) ICC yields no significant coefficients. Adding $(ICC)^2$ does not change the effect of ICC, although $(ICC)^2$ is clearly significant. ICC has consequently been removed from the equation and only its squared transformation has been used.
16. A likelihood ratio tests between Model 6 and Model 4 shows that the former provides a significantly improved description of the data structure.

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Appendix

The weight of white-collar workers (Figure 2) has been calculated on the basis of data published by the OECD (2000: 85) for 1998 and includes the first five occupational groups of the single-digit version of ISCO-88 (i.e. legislators, senior officials and managers, professionals, technicians and associate professionals, clerks, service workers and shop and market sales workers).

The demographic weight of the cohorts born between 1967 and 1976 (Figure 3) has been calculated using data published by EUROSTAT (2004) and OECD (2002: ch. III).

Educational differentials between the 1958–1967 and the 1938–1947 cohorts have been calculated using data published by the US Department of Education (1996) and the OECD (2002: ch. III).

The index of employment protection for standard contracts in the late 1980s (IEP80) has been obtained from OECD (1999: 66). The ICC has been computed from the average scores of the centralization and coordination indices published by the OECD (1997: 71) for 1994. The correlation coefficient between the centralization and coordination indices for 19 OECD countries is 0.6. If we limit the sample to the 15 countries analysed in Table 3, the correlation changes to 0.8. For the regression models in Table 2, the ICC has been centred (recoding it so that the central value stands at 0) and squared. The scores for Greece and Ireland have been extrapolated using data from Visser (2000: 16) for 1998. Since 1987, Ireland can be considered a highly centralized country (see Hardiman, 2000). Greece has been taken as a country with an intermediate level of centralization. Table A1 shows the values of the IEP80 and the ICC for each of the countries of our sample.

Table A1 Scores of the institutional variables used in the comparative analyses

	IEP80	ICC
Austria	2.6	26.5
Belgium	1.5	21.5
Denmark	1.6	21.5
Finland	2.7	23
France	2.3	20
Germany	2.7	25
Greece	2.5	20
Ireland	1.6	27.5
Italy	2.8	16
Netherlands	3.1	20
Portugal	4.8	20
Spain	3.9	20
Sweden	2.8	20
United Kingdom	0.8	12.5
USA	0.2	10

IEP80, index of employment protection (late 1980s); ICC, index of coordinated centralization.