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Temporary Employment in Advanced Economies: Drawing Lessons from Spain

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Abstract

This study analyses the determinants of the rate of temporary employment in various OECD countries using both macro-level data drawn from the OECD and EUROSTAT databases, as well as micro-level data drawn from the 8th 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 advanced economies 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. The former seems non significant, whilst the effects of the latter disappear after controlling for the levels of institutional protection in standard employment during the 1980s. Multivariate analysis shows that only this latter institutional variable, together with the degree of coordinated centralisation of the collective bargaining system, seem to have a significant impact on the distribution of temporary employment in the countries examined. On the basis of this observation, an explanation of the very high levels of temporary employment observed in Spain is proposed. This explanation is consistent with both country-specific and comparative evidence.

Keywords

Acknowledgements

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 90s, the Spanish labour market stands out for having by far the highest rates of temporary employment in the OECD. 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.

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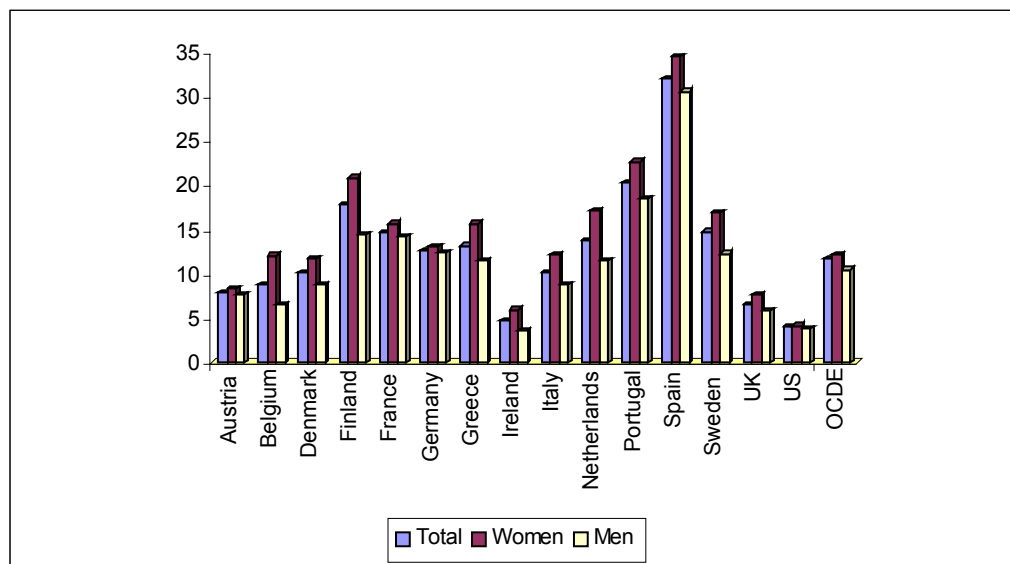
Source: OECD (2002: chap. III).

A vast literature has mushroomed in the last two decades, both in the fields of sociology and economics, that aims to provide an explanation of the magnitude of this phenomenon in Spain (for a review see Polavieja, 2001: chap. 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 eg.: Forrier and Sels, 2003; Giesecke and Gross, 2003; Hoque and Kirkpatrick, 2003; Korpi and Levin, 2001; Natti, 1993; OECD, 2002: chap. III; Remery *et al.*, 2002).

What are the factors behind the observed distribution of temporary employment in the EU? Why is the rate of temporary employment so high in Spain and so low, say, in Ireland, Luxemburg 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 advanced economies, 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.

The paper is organised in six sections including this introduction. The second section briefly presents the data sources and the analytical methodology applied. The third section discusses the hypotheses arising from classical segmentation theories, which have been particular influential in the existing debates on the Spanish 'anomaly', and tests them both against aggregate national data and individual-level data. The evidence suggests that the distribution of temporary employment in the analysed countries cannot be explained by factors related to their productive structure, although such factors seem to play a crucial role in the case of Portugal. These findings also show that, contrary to what segmentation models would lead us to expect, the Spanish 'anomaly' seems largely unrelated to demand-based factors. The fourth section tests the impact of both supply shocks and the institutional regulatory framework. The comparative analysis of aggregate national data for 15 OECD countries shows that only the levels of

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institutional protection for permanent employment in the 1980s and the degree of coordinated collective bargaining continue to have an effect on the rate of temporary employment in a multivariate context. It would, therefore, appear that it is not supply shocks but rather the nature of the institutional framework that has a direct impact upon the distribution of temporary employment in the countries analysed. On the basis of this evidence, the fifth section provides an explanation of the high rate of temporary employment observed in Spain. The model focuses on the interaction between the institutional regulatory context and micro-level economic optimisation strategies and explains why it can be beneficial for employers to resort to temporary employment, even in the case of highly skilled tasks. The study concludes 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 8th 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[2], the final individual-level analysis has been restricted to individuals belonging to 13 EU states (N=103,223). Different logit models on the individual probability of holding a temporary contract have been fitted to these data. All the macro-level variables and indexes used in the analysis are described in detail in Appendix 1 at the end of the paper.

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 dualising 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 organisation and nature of the workforce[3].

Influenced by these theories, a considerable number of sociologists[4] and economists[5] have interpreted the high rate of temporary work observed in Spain as a reflection of the size 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" characterised 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 which eliminate the economies of scale associated with organisational 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[6].

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[7]. 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.

Figure 2. Relationship between the rate of temporary employment and the weight in employment terms of sectors targeting volatile demand in EU countries (2001)
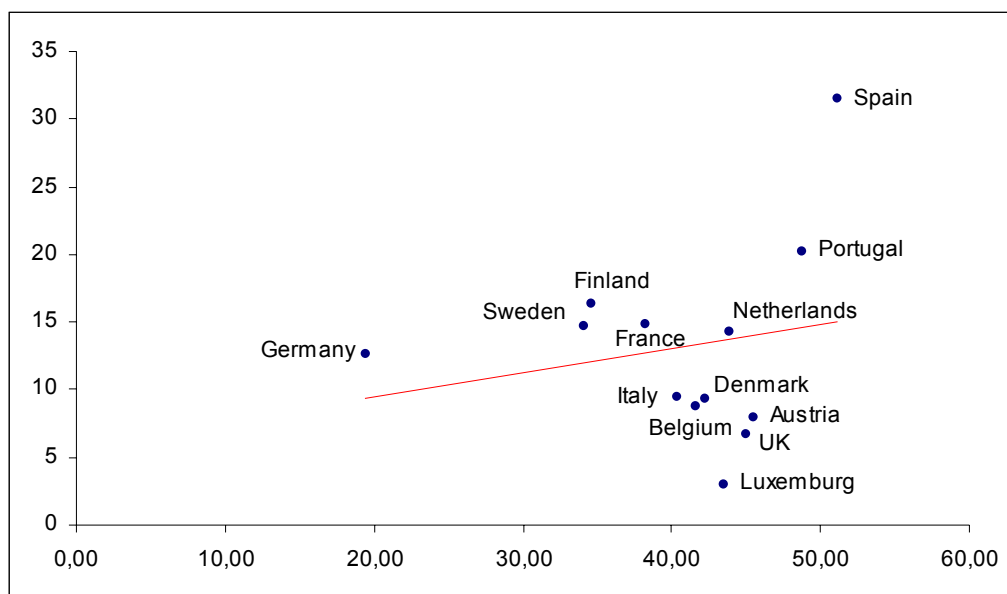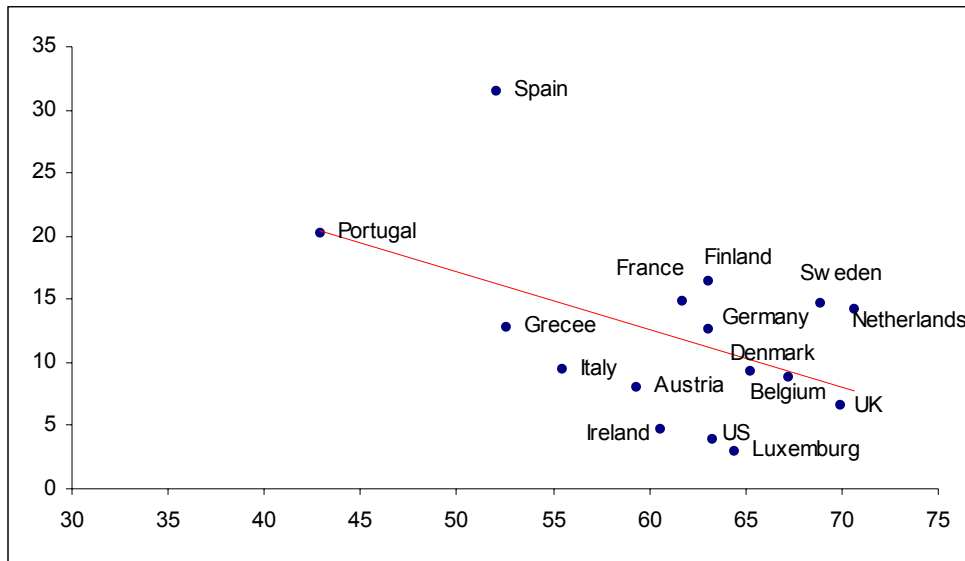

Correlation coefficient = 0.20
Source: Author's calculations based on EUROSTAT (2004a) and OECD data (2002: chap. III).

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 such 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 (see Figure 2), the weight of skilled "white collar" jobs[8] (see Figure 3) and the proportion of small enterprises (see Figure 4). The correlations obtained between these indicators, whose operationalisation is discussed in Appendix 1, and the rate of temporary employment are always below 0.5, the highest correlation being found when an occupational definition of the secondary sector/segment is used. It should also be noted that in all the plots, Spain appears as an extreme case, 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-base accounts. It is nonetheless evident that the aggregate-level indicators employed are relatively imprecise and that parametric analysis is needed to further investigate these preliminary findings.

Figure 3. 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: chap. 3) and OECD (2002: chap. III).

Figure 4. Relationship between the rate of temporary employment (2001) and the importance in employment terms of companies with less than 50 employees in EU countries (1998)
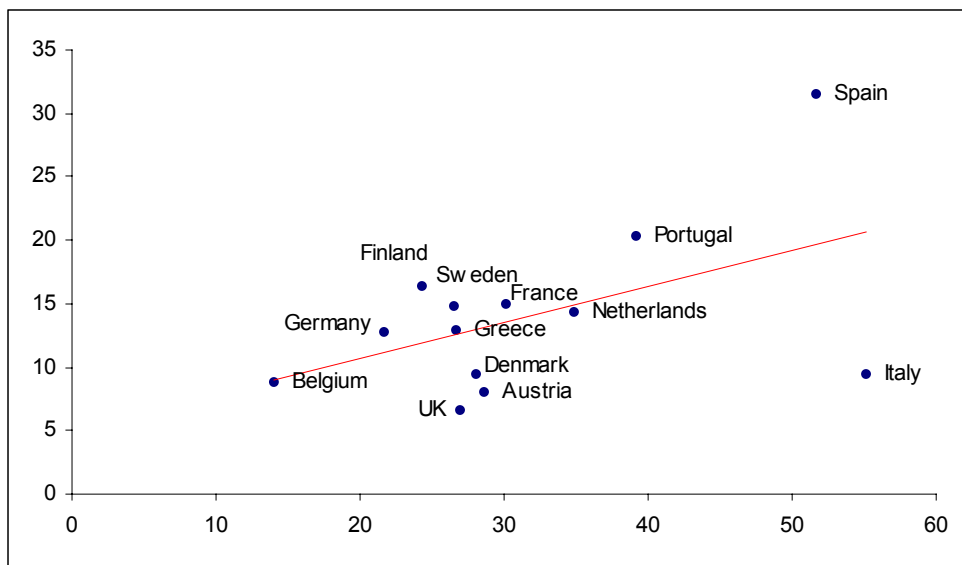
Correlation coefficient = 0.46
Source: Author's calculations on EUROSTAT (2004b) and OECD (2002: chap. III).

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 ECHP data. 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 types of exceptions to this rule that are worth noting. First, the country coefficients of France and Ireland increase 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 and that of Ireland would be (even) lower. These findings seem to go against demand-based predictions as they suggest 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 indeed be linked to the characteristics of its productive structure (i.e. the size of its secondary sector). These findings are both interesting and puzzling as they suggests that temporary employment could respond to different mechanisms in different countries, which does indeed pose a problem for macro-level comparative research.

Table 1. Logit regressions on the probability of holding a temporary employment contract (rather than a standard contract) in 13 EU countries, ECHP 2001 (8th wave); Deviation coefficients shown for country effects

Parameters	Model 1 Dev. Coeff.	Sig.	Model 2 Dev. Coeff.	Sig.	Model 3 Dev. Coeff.	Sig.	Model 4 Dev. Coeff.	Sig.	Model 5 Dev. Coeff.	Sig.
Countries:										
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	***
			Coeff.		Coeff.		Coeff.		Coeff.	
Gender (Male)→ Female			0,30	***	0,36	***	0,37	***	0,31	***
Age groups (under 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	***
More than 64			-1,93	***	-2,16	***	-2,15	***	-2,51	***
Occupation (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 (University)										
Secondary					-0,27	***	-0,27	***	-0,23	***
Less than secondary					-0,05	n.s.	-0,05	n.s.	-0,03	n.s.
Firm's size (less than 50)										
More than 50 employees							-0,10	**	-0,02	n.s.
Missing values							-0,80	***	-0,90	***
Industry										
→(Extractive, water & Gas)									1,03	***
Agriculture & Fishing									-0,19	n.s.
Heavy industry									-0,02	n.s.
Light industry & others									0,52	***
Construction									0,10	n.s.
Commerce & Retail									0,86	***
Hotels & restaurants									0,12	n.s.
Transports & comm.									-0,28	n.s.
Finances										
Real Estate & firm's services									0,35	*
Public services									0,77	***
Other services									0,52	***
Number of obs =	40936		40936		39070		39070		39070	
LR chi2(12) =	1569.39		3457.43		3299.23		3349.16		3655.61	
Prob > chi2 =	0.0000		0.0000		0.0000		0.0000		0.0000	
Pseudo R2 =	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
Source: Author's calculations based on ECHP data (2001, 8th wave).

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: Supply-Side and Institutional Factors

Supply-side factors

In recent years, a growing body of literature within labour economics has underlined the impact that the size and composition of the supply of work might have on the level and structure of unemployment (see, for example, Bertola *et al.*, 2002; Blanchard and Wolfers, 2000; Jimeno and Rodríguez-Palenzuela, 2002; Korenman and Neumark, 2000). The main thrust of these models is that, under conditions of imperfect competition, labour markets may become saturated, such that an excess in supply at a specific point in time may hinder employment access for new jobseekers (principally the young and women).

Transferring this type of argument to the study of temporary employment, it can be argued that supply 'shocks' might be one of the factors that helps explain the amount of temporary work found in a specific labour market, above all in "rigid" institutional contexts where the market cannot absorb excess supply 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].

The 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 highly flexible temporary contracts (i.e. a context of partial flexibilisation) could thus provide an explanation of the high rates of temporary employment observed in Spain.

Figure 5. 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)
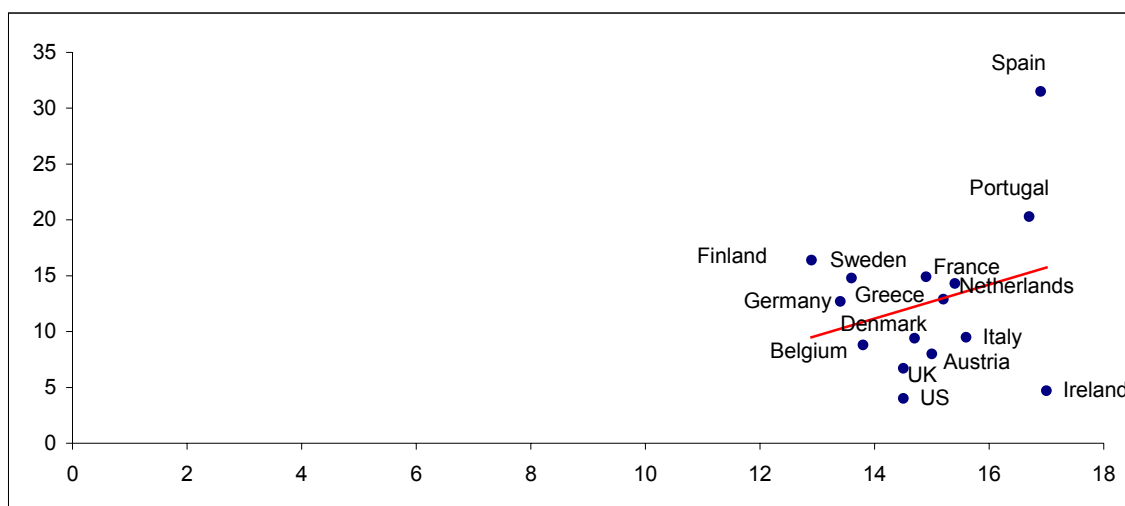
Correlation coefficient = 0.27

Source: Author's calculations based on EUROSTAT (2004c) and OECD (2002: chap. III) data.

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 1967-76 cohort in 1991 and the rate of temporary employment in 2001 is only 0.27 (see Figure 5). The contrast between the cases of Spain and Ireland is especially illustrative, since both countries have a highly populated cohort of late baby-boomers and yet find themselves almost at opposite extremes in terms of their respective temporary employment rates. The hypothesis that demographic crowding-out is a *direct* cause of temporary employment is, therefore, inconsistent with this evidence.

Yet it should be noted that the relative size of the cohort born between 1967 and 1976 may not be the best indicator of the effects of an excess in supply since, given the rapid

growth of the educational systems experienced in some EU countries, a high proportion of this cohort could delay their entry into the labour market by prolonging their studies, thereby attenuating the effects of the demographic shock (see Espina, 1986; García Serrano *et al.,* 1999). It should also be borne in mind that the possible effect of the supply shock is by no means 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 (see 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 flexibilisation, an increase in temporary employment in all occupational groups[11]. 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 their comparative advantage in educational terms. Note, however, that the key condition for this type of supply shock to occur is institutional in nature, since it is fundamentally related to the level of employment protection of workers on standard contracts, which is the immediate entrance barrier for new cohorts in conditions of limited wage flexibility (see also: Dolado, Felgueroso and Jimeno, 2000; Jimeno and Rodríguez-Palanzuela, 2002 and below).

Figure 6 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 is both high (0.75) and positive, with there being a coincidence between the countries in which the educational difference is more favourable towards the youngest cohort and the rate of temporary employment. Note that, now, the contrast between Ireland and Spain is much less striking, since the educational gap amongst generations is the greatest in Spain but much less pronounced in Ireland. These figures would thus appear, in principle, to be consistent with this second version of the supply-shock hypothesis.

In addition to these findings, it has been observed the existence of a positive and significant empirical correlation between the educational differential between the young and the older cohorts and the levels of institutional protection in standard employment

in the selected countries analysed[12]. The Pearson coefficient between the two factors is 0.58. This correlation is consistent with the idea that the relationship between the rapid expansion of education and the incidence of temporary employment is, in reality, dependent upon the institutional framework. Multivariate analysis supports this conclusion (see below). One possible interpretation of this correlation is that the level of protection of standard employment is linked to the degree of threat of generational replacement in the labour market, with this relationship being the result of a policy that deliberately aims to preserve the employment position of older workers. It is therefore possible that high levels of protection for permanent employment are due to political decisions or trade-union strategies aimed at protecting low-skilled workers, whose employment position would otherwise be threatened by the mass entry onto the market of better-educated candidates (see Garrido, 1996a; 1996b; García Serrano *et al.,* 1999: 38-42).

Figure 6. Relationship between rate of temporary employment (2001) and educational differential[1] between the cohort born 1958-1967 and that born 1938-47 in selected
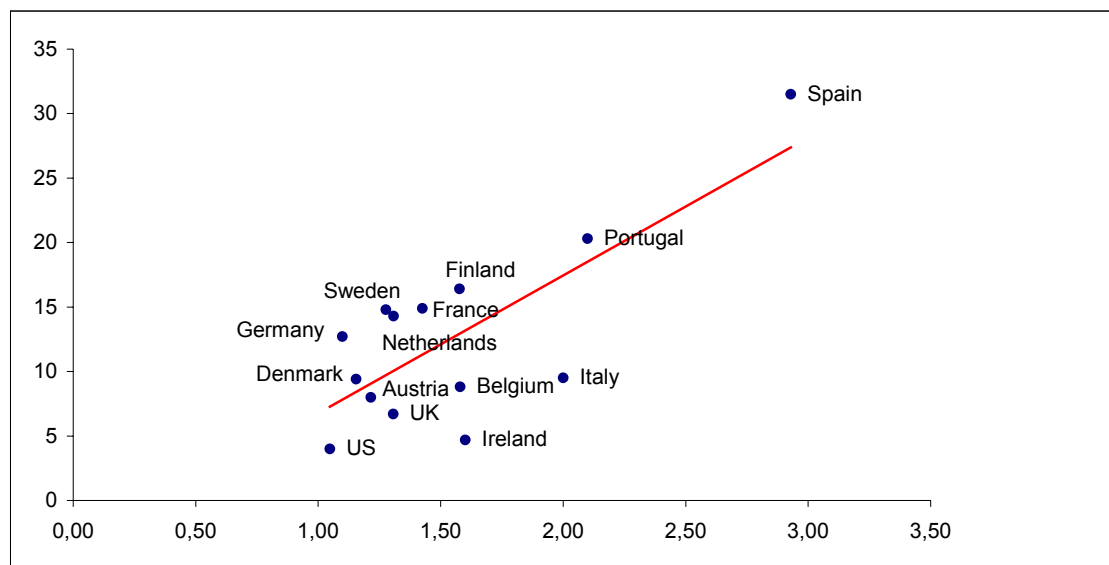
OECD countries (2001)

[1] The educational differential is the result of dividing the proportion of individuals with secondary or higher education in the cohort born in 1958-67 between the proportion of highly educated within the cohort born in 1938-47

Correlation coefficient = 0.75

Source: Author's calculations based on US Department of Education (1996) and OECD (2002: chap. III) data.

Institutional factors

Note, therefore, that there is always an institutional explanation implicit in supply-shock hypotheses. This is because supply shocks will only have an impact upon the rate of temporary employment (and upon relative unemployment) if there are regulatory impediments to the replacement of some workers by others. In other words, the more "flexible" the labour market, the greater the capacity of employers to replace their workforces following exclusively productivity considerations. What is really important, therefore, is to understand which institutional factors may impede the entry into standard employment of workers with a high level of human capital and, in this way, increase the rate of temporary employment in all market "segments". Or, put in other terms, which are the factors that may contribute to protecting the position of the more vulnerable employed workers from the effects of competition in a more open market.

Again, we can draw on the existing analyses of the Spanish case to obtain testable hypotheses on the importance of the institutional framework for the distribution of temporary employment. Previous studies of this case have highlighted two dimensions within the Spanish institutional framework that might be especially important in explaining the country's high rate of temporary employment: 1) the high level of institutional protection of standard employment —above all, at the time of the introduction of temporary contracts— and 2) the non-inclusive nature of collective bargaining (see Bentolila and Dolado, 1994; Polavieja, 2001; 2003).

A simple analysis of correlation between the OECD index of employment protection in standard (i.e. permanent) contracts at the end of the 80s —which is when most reforms allowing for temporary employment were carried out in Europe— and the rate of temporary employment in 2001 suggests the existence of a strong association between both variables[13] (see Figure 7). This correlation between the institutional protection of permanent employment and the rate of temporary employment in the 15 countries analysed is the highest found in all the bivariate contrasts carried out[14] (0,79). Moreover, as we shall see, the degree of protection of permanent employment

completely absorbs the effect of the cohort-educational differential when all variables are tested simultaneously using multiple regression techniques (see below).

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 employment and the more cautiously they will offer open-ended contracts to their workforce. Additionally, if the differences in contract termination costs are very great, the bulk of any job cuts will fall upon those workers with less legal protection (Bentolila and Dolado, 1994; Blanchard and Landier, 2002). Furthermore, as it will be explained in the next section, the legal difference in termination costs may give rise to micro-level segmentation mechanisms which can help further bolster the position of those with permanent contracts to the detriment of those with temporary ones. This process can be favoured by particular characteristics of the collective bargaining system.

Figure 7. Relationship between the level of protection of permanent employment at the
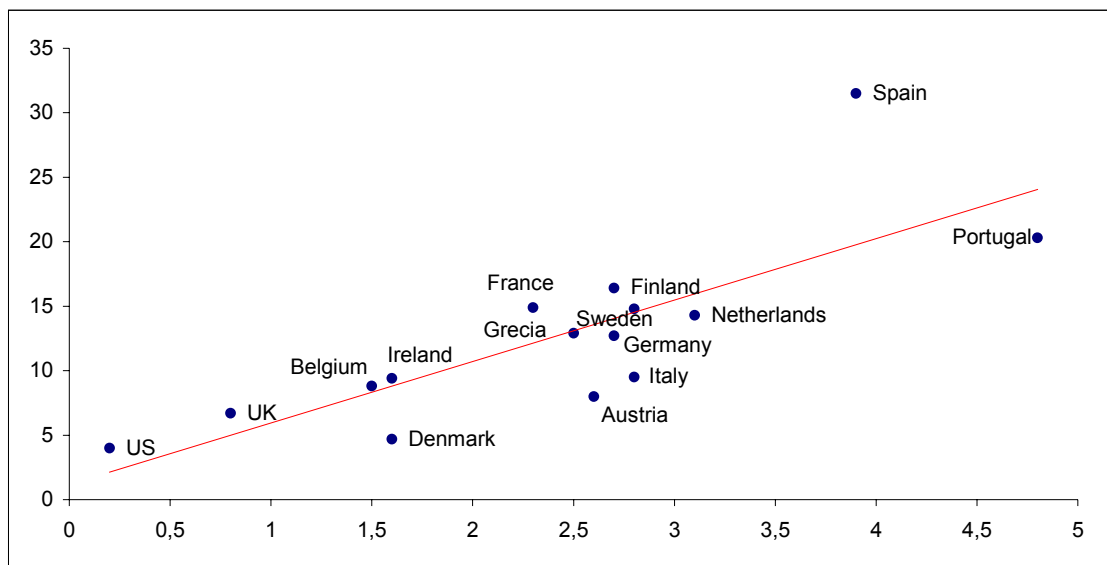
end of the 1980s and the rates of temporary employment in 2001

Correlation coefficient = 0.79

Source: Author's calculations based on OECD data (1999: chap.2 and 2002: chap. III).

It has been argued that the collective bargaining structure itself, as well as certain features of union representation in Spain, make up an institutional framework conducive

to the amplification of the interests of permanent employees when negotiating collective agreements, which contributes to the blocking of entry into standard employment for temporary (and unemployed) workers. All these institutional characteristics ultimately refer to the degree of *inclusiveness* of the bargaining system (see Polavieja, 2003; 2005a).

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 of which an attempt has been made to condense all this complexity into a single index. This index, whose construction is explained in detail in Appendix 1, focuses on only two of the many possible dimensions which may contribute to the non-inclusive nature of collective bargaining: its degree of centralisation 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 leading role played by wage negotiations in industry-level bargaining can be explained, amongst other reasons, by the heterogeneity of confluent interests and the high number of units represented. Both factors 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. Let us now explain the theoretical underpinnings of this hypothesis in greater detail.

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. Industry companies act in this way as a kind of cartel in the negotiation process. As explained in the following section, excessive wage pressure from permanent employees may have the direct effect of reducing the job security of temporary workers. This type of externality, together with others such as unemployment or inflation, will be difficult to internalise 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 recognisable for trade unions if bargaining were centralised 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: chap. II).

Figure 8 plots the index of coordinated centralisation of collective bargaining (ICC), calculated on the basis of the average scores of the centralisation and coordination indices published by the OECD (1997: chap. III), against the rate of temporary employment in 15 OECD countries (see Appendix 1). 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[15] (-0.59).

Figure 8. Relationship between the index of coordinated centralisation of collective bargaining (ICC) in 1994 and temporary employment rates in 2001
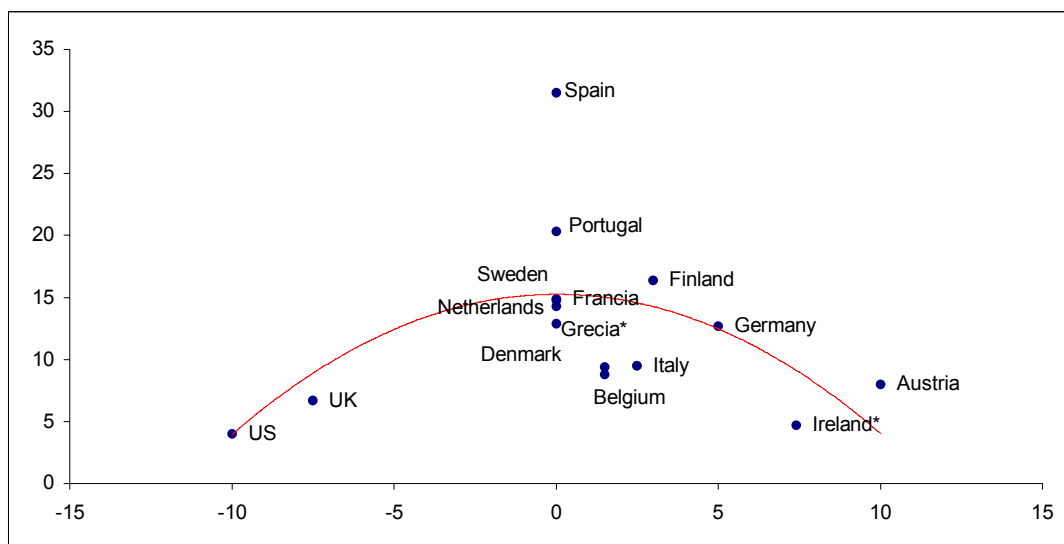
Correlation coefficient between rate of temporary employment and ICC^2= -0.59

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: chap.3 and 2002: chap. III) and Visser (2000: Annex 2).

Parametric analysis

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 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 United States. 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, average unemployment over the decade, the

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demographic weight of the cohort born between 1967 and 1976, the educational differential between the 1958-67 and the 1938-47 cohorts and, lastly, the OECD permanent employment protection index in the 80s and the index of coordinated centralisation (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 1). 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.

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

	Model 1	Model 2	Model 3	Model 4
Parameters	Coef. [Sig]	Coef. [Sig]	Coef. [Sig]	Coef. [Sig]
Proportion of white-collar jobs	-0.79 *	-0.36 [n.s.]	-0.12 [n.s.]	
Educational differential between 58-67 and 38-47 cohorts	.89 ***	.296 [n.s.]	.15 [n.s.]	
Permanent employment protection index in the mid 80s (IPE80)		.33 ***	.30 ***	.33***
(Index of centralised coordination, ICC)^2			-.00004 ***	-.00005***
Constant	1.78 ***	1.50 ***	1.65 ***	1.71***
N =	14	14	14	15
Prob > F =	0.0032	0.0001	0.0002	0.0000
R-squared =	0.487	0.751	0.8013	0.7954

***significance ≤ 0.01 ** significance ≤ 0.05 * significance ≤ 0.1

NB: given the lack of data on the educational differential for Greece, the first three models do not include this country.

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

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 58-67 and 38-47 cohorts (see Model 1 in Table 2). Yet both effects disappear completely after the introduction of institutional variables in the regressions (Models 2 and 3). In fact, only the index of

protection in permanent employment in the 80s and the index of coordinated centralisation (squared) retain their significance in a multivariate context. Taken together, these two variables explain 60 to 80% 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). No significant interactions have been observed in the variables tested.

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 characterised by high dismissal costs for permanent workers and a collective bargaining system poorly suited to the inclusive representation of interests form a 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.

It should nonetheless be noted that Spain continues to appear as an extreme case in comparative regression analyses. In fact, the model that provides the best fit to the data predicts a rate of temporary employment for Spain of 20%, that is, 12 points below the rate actually observed in 2001 (see Figure 9). This gap may reflect the methodological limitations of the analysis applied —above all, in terms of the intrinsic variance of temporary employment[16], measurement errors and the scant number of observations—; but there is a different type of limitation that seems perhaps even more important, that which is inherent to macro-level analysis when it comes to providing detailed causal explanations. Macro-level data suggest that institutional factors matter, but it tells us

rather little as to *how* they do matter —i.e. what are the actual mechanisms or causal processes by means of which the institutional regulatory framework affects the rate of temporary employment.

There is thus a need for an explanatory model which is both sensitive to the regulatory framework —that is, consistent with the comparative evidence— and capable of providing a more fine-grained causal narrative that can explain why Spain is a deviant case. This, I believe, necessarily involves bringing the micro-level rational strategies of employers, who are the leading players in the hiring process, to the forefront of the explanation.

Figure 9. Relationship between observed temporary employment values and those predicted by Model 4 in Table 2
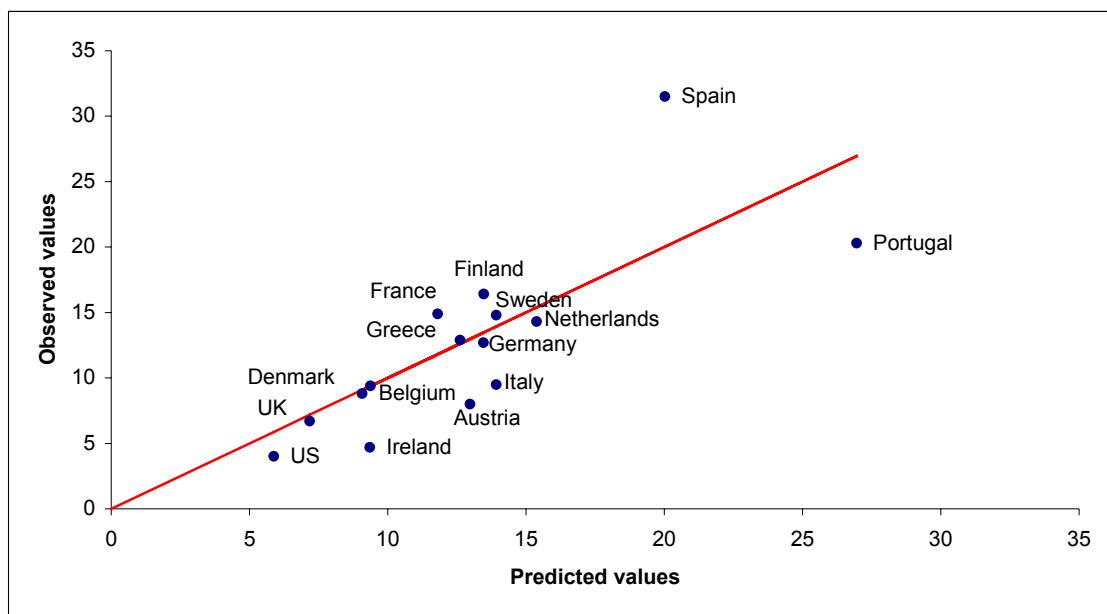
Source: Authors calculations based on Model 4 in Table 2 (LN(y)= 1.71+0.3*IPE80-0.00005*iICC^2)

Micro-foundations of the Diffusion of Temporary Employment in Spain: an Explanatory Model

Professional tasks ("good" jobs) are characterised by high search and recruitment costs and by requiring high levels of investment in specific human capital on the part of both employers and employees. Furthermore, worker productivity in this type of tasks tends to be expensive to measure for employers. Most theories on employment contracts explain why, once an employer finds a suitable worker for this type of capital-intensive task, it is more efficient to use open-ended contracts that establish some form of incentives for productivity enhancement, than to resort to temporary employment.

Typically, in open-ended employment, these incentive systems are based on salary increases linked to time of service. Seniority wages provide incentives for workers to exert productive effort without the need to resort to high measurement costs (see e.g. Goldthorpe, 2000: chap. X; Lazear, 1995; Sorensen, 2000). The economic rationale behind the use of these open-ended contracts lies in the fact that they promote high worker performance in tasks for which productivity is expensive to measure and, at the same time, guarantee the returns to investments in specific human capital by keeping the worker in the company. Therefore, the use of temporary employment contracts does not appear, *in principle*, the most suitable system for extracting productivity from professional tasks.

Yet we know that the rate of temporary employment amongst Spanish professionals reaches 20%, a figure that is higher than the OECD average for unskilled jobs (see Polavieja, 2005a; 2005b: 6). In other words, temporary employment has permeated all types of tasks and this, I believe, is the key for understanding the Spanish "difference". In this light, the crucial question becomes why should employers offer temporary contracts to their professional workforce?

The simplest answer is because it is efficient (see Polavieja, 2003; 2005a). And this for the following two reasons: First, because, when employment security under standard contracts is very high, employers can use the possibility of converting a temporary contract into a permanent one as a powerful tool for eliciting worker effort —especially if there is a real, immediate risk of unemployment—. In an economic and institutional context of this type, employers can obtain high output from their temporary workforce

with a very low rate of conversion into permanent employment. In fact, this rate will tend to be the lowest that is compatible with incentives —that is, as low as to permit that the possibility of conversion remains credible for temporary workers (see Güell-Rotllan, 2000). Depending upon the degree of success attained with this incentive system, it may be more beneficial for employers to have a high turnover rate amongst their temporary workforce, even with the loss of investment in specific human capital that this entails, than to resort to permanent incentive systems[17], which become more costly the greater the employment protection of permanent contracts. Even more so, and this is the second reason why temporary contracts might be efficient even for professional tasks, if the existence of a high proportion of temporary workers has reached the point of boosting permanent workers' wage-bargaining capacity —and, therefore, of increasing the cost to employers of permanent employment relationships. But how can temporary workers enhance permanent workers bargaining power?

Greater job security yields greater bargaining power to workers. Also it is clear that, everything else equal, temporary workers will always be the first made redundant should employers need to shed labour. Consequently, it follows that the larger the number of temporary workers in the firm, the greater the job security for their permanently-employed counterparts. This 'buffer' effect of temporary employment will, logically, be larger the greater the difference in redundancy costs between employment contract types and the less inclusive the collective bargaining system is. Therefore, the existence of temporary employment in a firm —or in the economy as a whole— may, in fact, boost the wage bargaining capacity of permanent workers by means of an increase in their job security (see Bentolila and Dolado, 1994; Polavieja, 2003).

When this buffer effect is activated, accessing permanent employment becomes even more attractive to the temporary workforce. This, in turn, automatically increases employers' ability to extract productive effort from their temporary workers using the conversion rate as an incentive device (see Güell-Rotllan, 2000). Increased efficiency in the incentive mechanism means that employers may reduce the rate of conversion without losing output from their temporary staff.

Testable hypothesis can be derived from this explanatory model. Using both data from the Spanish labour force surveys, as well as data on wages from a variety of statistical sources, such hypotheses have been tested in a number of studies and the results obtained have been highly consistent with the existence of incentive and buffer effects of temporary employment in Spain (see Bentolila and Dolado, 1994; Güell-Rotllan and Petrongolo, 2000; Polavieja, 2001; 2003; 2005a; Rodríguez Gutiérrez 1996). Buffer and incentive effects have been observed by means of econometric models that control for the demographic characteristics of the workforce and of their companies. The empirical results are not, therefore, limited to a specific "segment" of the labour market, but instead appear to have occurred across all activities and occupational tasks (see Polavieja, 2005a).

In sum, there is sufficient empirical evidence to suggest that incentive and buffer effects, activated by the introduction of temporary contracts in a context of high dismissal costs for standard employment and non-inclusive bargaining, are behind the sharp increase in temporary employment observed in Spain in the ten years following their introduction. To the existing country-specific evidence in support of this explanatory model we can now add the results of the comparative analyses presented above, since such analyses highlight the causal impact that both the level of job protection in permanent employment and the degree of coordinated centralisation of the collective bargaining system have on the incidence of temporary employment in a range of OECD countries.

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. Lessons can be drawn from the Spanish experience that help us understand better the determinants of temporary employment in the EU. 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'.

An idea that is fairly deep-rooted in specialist (particularly sociological) literature on the Spanish case is that the high rate of temporary employment observed in this country must reflect the nature of a productive structure characterised by the strong predominance of small companies which target the volatile or seasonal component of demand and which have a high number of low-skilled jobs. This interpretation does not stand up to comparative test. Analysis of a range of statistical sources, with both aggregate and individual data, on a number of advanced economies, shows a rather weak relationship between the size of the "secondary sector" and the observed distribution of temporary work. Only in the case of Portugal parametric analysis suggests demand-side factors could be playing a significant role. Yet the "Spanish difference" does not seem to be explicable in light of its productive structure.

Rather than the productive structure, it seems that what lies behind the varying incidence of temporary employment across the analysed countries is institutional factors. Without completely ruling out the possibility that the irruption on the labour market of cohorts with much greater levels of general human capital than their predecessors might also have played an indirect role in the process, it would appear that the levels of employment protection of workers on standard contracts in the 80s and the degree of coordination and centralisation of collective bargaining systems are the two main variables driving the distribution of temporary employment in advanced economies, as can be deduced from the original analyses of aggregated data for 15 OECD countries.

Comparative analysis thus sheds light on the determinants of temporary employment, although it has been shown that the Spanish case still remains an outlier in the country-level parametric models. This suggests that there are more dynamic micro-level processes operating in Spain that cannot be captured by aggregate macro-level data. The latter part of this study has offered a possible explanation for the Spanish 'difference' that is compatible with the comparative evidence. The proposed model focuses on the interaction between the institutional framework and the rational strategies of employers to extract productive effort from their workforces. This model explains why it might be perfectly rational for employers to renounce to the benefits associated with the

investment in specific human capital in exchange for the great capacity of providing incentives that temporary employment has in the Spanish institutional and economic context.

It is, however, clear that, in the long run, this incentive strategy can give rise to an important externality: that of the scant level of investment in firm-specific human capital[18]. The introduction of temporary contracts in a particularly rigid context may, in this way, lead to a progressive deskilling of the workforce and cause the distribution of jobs to slide towards what Acemoglu (2001) has called equilibrium of bad jobs. This obvious risk seems also a lesson to be drawn from the Spanish experience.

Note that only a change in the timescale used by employers when performing their optimisation calculations could cause a change in their strategies favouring the extensive use of temporary employment. However, there is no reason to expect any trends that would favour a change in the temporal outlook of Spanish employers' personnel management strategies. Quite the contrary, it is highly possible that, once they take root, such strategies may endure, even if the conditions that made them profitable at one time change[19]. This could explain the scant impact of the 1997 labour market reform implemented in Spain on the rate of temporary employment, this being an issue that should deserve special attention in future research.

Future research should also focus on dynamic models using individual level data, as well as on macro-level analysis of the flows rather than the stock of temporary work in selected countries. The number of observations for macro-level research should also be increased, provided that such an increase is not achieved at the expense of comparability of the analysed indicators.

APPENDIX 1

I. Variables included in the analyses in Section 1.

The weight of the sectors targeting the volatile component of demand in the analysis contained in Figure 2 has been calculated on the basis of EUROSTAT (2004a) data for 2001, as the percentage of workers in the construction, retail, hotel and restaurant sectors. For the analysis of the rate of temporary work by activity sector, presented in Figure 7 on the basis of ECHP (2001, 8th wave), the volatile sectors include agriculture, construction, hotels and restaurants.

The weight of white-collar workers (Figure 3) 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 weight of small firms in the economy (Figure 4) has been calculated as the percentage of workers in firms with less than 50 employees, from data published by EUROSTAT (2004b) for the year 1998.

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

II: The index of coordinated centralisation (ICC)

The ICC has been calculated from the average scores of the centralisation and coordination indices published by the OECD (1997: 71) for 1994. The correlation coefficient between both indices for 19 OECD countries is 0.60. If we limit the sample to the 15 countries analysed in Table 3, the correlation changes to 0.79. 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 centralised country (see Hardiman 2000). Greece has been taken as a country with an intermediate level of centralisation.

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Notes

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[1] See, however, Adam and Canziani (1998) and Ruiz-Quintanilla and Claes (1996).

[2] 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 analysed sample.

[3] Two schools of thought can be distinguished within classical segmentation theories: firstly, the so-called "dual labour market" theory (see Doeringer and Piore, 1971; Piore, 1975; 1978; 1983; Rebitzer and Taylor, 1991) and, secondly, the neo-Marxist segmentation school (see Edwards, 1979; Edwards, Reich and Gordon, 1975; Gordon, 1972; Gordon, Edwards and Reich, 1982; Storper and Walker, 1983). It is probably the latter which has had greater influence upon Spanish labour sociology. Piore and Sabel's (1984) flexible specialisation theory is a separate model whose suppositions are nonetheless particularly difficult to test against the existing data.

[4] See, for instance: Bilbao (1993); González (1992); Prieto (1989); Recio (1991; 1997: chap. XIV).

[5] See, for example, Alba (1991; 1996), Amuedo-Dorantes (2000) and Toharia and Malo (2000).

[6] 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).

[7] For a more detailed treatment of segmentation theories applied to the study of temporary employment see Polavieja (2001: chap. I).

[8] Figure 3 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 operationalisation 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 extention of Thurow's model for different contract types.

[11] Additional symptoms of this process would include high youth unemployment and the over-education of the youngest workers, as well as disinvestment in specific human capital in a context of high labour turnover and rigid institutions (see Dolado, Jansen and Jimeno, 2002).

[12] I have used the OECD permanent employment protection index for the middle of the 80s, the period when the majority of temporary employment reforms took place.

[13] 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 90s is considered (dropping from 0.79 to 0.64). 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.

[14] If Spain is excluded from the matrix, the Pearson coefficient rises from 0.79 to 0.85.

[15] If Spain is excluded from the correlation matrix, the Pearson coefficient increases to 0.7.

[16] The actual legal characteristics of temporary employment contracts vary from country to country, this being the most important source of intrinsic variance in the indicator (see OECD, 2002: 170-179).

[17] Even more so if the temporary workforce has more general human capital than the permanent workforce, as we have seen occurring in Spain.

[18] See Dolado, Felgueroso and Jimeno (1999); Dolado, García Serrano and Jimeno (2002); OECD (2002:157).

[19] In fact, the implementation of a system of employment relations based on the intensive use of temporary work could, by itself, boost the importance of short-term calculations in employers' strategies.