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DEMAND-SIDE, SUPPLY-SIDE AND INSTITUTIONAL DETERMINANTS OF TEMPORARY EMPLOYMENT: SPAIN IN A COMPARATIVE CONTEXT

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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. The analysis shows that the high levels of temporary employment observed in Spain *cannot* be explained by the characteristics of its productive structure. As an alternative, two types of supply-side factors are tested: crowding-out effects and educational gaps in the workforce. The former seems insignificant 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 centralised coordination 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 high levels of temporary employment in Spain is proposed. This explanation focuses on the interplay of institutional factors at the macro level and employers' optimisation strategies at the micro level.

Introduction[1]

Since the beginning of the 1990s 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 (see Figure 1). Why is the rate of temporary employment so high in Spain? What are the characteristics specific to Spain that can explain this phenomenon? To answer these questions, this study carries out a detailed analysis of temporary employment in a number of advanced economies, paying especial attention to Europe. Conclusions will be drawn from this analysis which can shed light on the determinants of temporary employment in general.

Figure 1. Rate of temporary employment in selected OECD countries, 2000
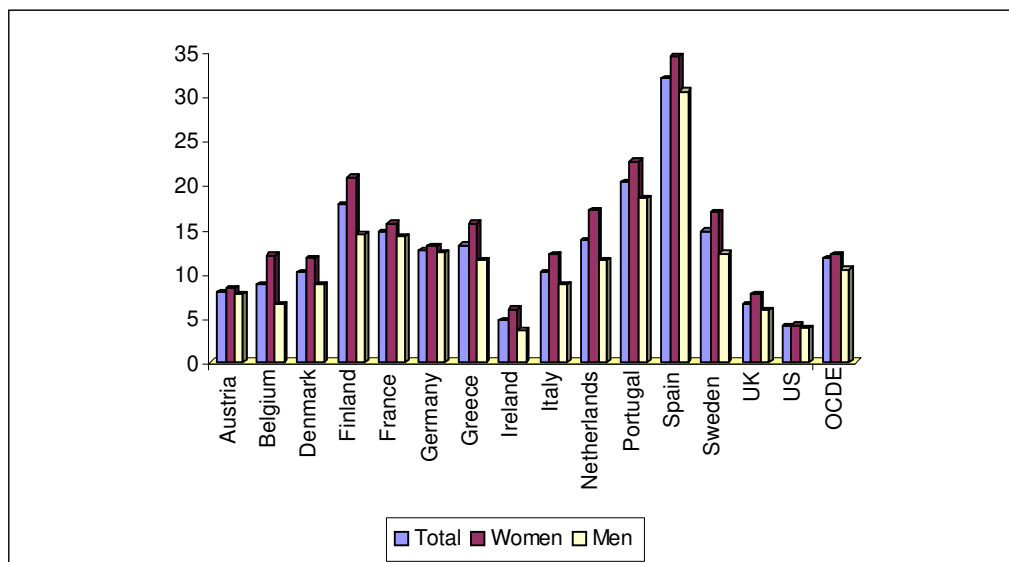
Source: OECD (2002: chap. 3).

The dominant interpretation of the Spanish "anomaly" offered within the camp of the sociological literature focuses mainly on the demand side. Many scholars have interpreted the high incidence of temporary employment in Spain as reflecting the requirements of a particular productive structure, which is heavily oriented towards the volatile component of demand and in which low-skilled jobs — i.e. "bad" jobs— abound[2]. This interpretation is heavily influenced by standard segmentation theories (for a review see Fine 1998) in that it connects the rate of temporary employment to the relative importance that secondary-segment activities and occupations have in the Spanish economy.

Demand-based interpretations of temporary employment are not, however, circumscribed to the sociological camp. In a recent evaluation of the 'pros and cons' of temporary employment in Spain, two of the most prominent Spanish labour economists have argued that the boom of temporary contracts in Spain '*probably responds to specific product market conditions which require more flexible labour market conditions, probably because of their inherent higher stability*' (Toharia and Malo 2000: 326).

In stark contrast to this explicative model, it has been argued that the growth of temporary employment in Spain is due to a particular logic that cannot be captured by demand-based explanations (see Güell-Rotllan 2000; Polavieja 2003a). Criticism of demand-based explanations is based on abundant empirical evidence which shows how, since the employment reform of 1984, the rate of temporary employment in Spain has increased in all sectors of activity and occupations, and always with significant segmentation effects (Polavieja 2005 forthcoming). In other words, there is evidence which shows that temporary employment has grown even in those business, activities and jobs which have no "inherent" inclination towards flexible work. It has also been argued that the process of implementing and extending temporary work in Spanish firms cannot be understood without taking into account the key role that the institutional regulatory framework plays in the processes of labour market stratification (Polavieja 2003b).

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[2] See, for instance: Bilbao (1993); Prieto (1989); Recio (1991; 1997: chap. 14); see also: Alba (1991; 1996); Amuedo-Dorantes (2000); Toharia and Malo (2000).

Nevertheless, all these arguments and analyses have been limited to the isolated study of the case of Spain, whose singularity has been explained "from within", as it were. It is thus surprising that a phenomenon as noteworthy and important as the high rate of temporary employment in Spain has not been tackled using comparative analysis[3]. Such analysis provides a unique opportunity to test the arguments employed in the existing debate between demand-based explanations and those which highlight the importance of the institutional framework, as well as to ascertain the possible impact of other, as yet empirically-untested, supply-side factors —and all with a much greater level of generalisation than any single-case study of Spain could provide.

This paper is divided into four sections. Section One offers an in-depth discussion of the hypotheses arising from segmentation theories and tests them both against aggregate national figures created from OECD and EUROSTAT publications as well as against individual data drawn from the eight wave of the European Community Household Panel (ECHP), relating to 2001. Analysing these two types of information leads to the conclusion that the Spanish anomaly *cannot* be explained by factors related to its productive structure. Section Two compares the impact of two sets of variables: supply shocks and the institutional regulatory framework. The comparative analysis of aggregate national data for 15 OECD countries shows that only the levels of 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 the nature of the institutional framework that has a direct impact upon the distribution of temporary employment in the countries analysed. Based on this evidence, Section Three provides an explanation of the high rate of temporary employment and the consequences thereof in terms of labour segmentation in Spain. The model is centred around 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.

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[3] See, however, Adam and Canziani (1998).

1. Temporary Employment and Productive Structure: What Segmentation Theories Cannot Explain

"Classical" segmentation theories highlight the impact of uncertainty in product markets, technological changes 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 product demand and the technological requirements of companies, including those relating to the organisation and nature of the workforce[4]. Influenced by these theories, a considerable number of sociologists[5] and economists[6] have seen in the high level of temporary work in the Spanish labour market a reflection of the size of its "secondary segment".

According to classical segmentation theories, the secondary segment 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, 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 (see Polavieja 2003a: chap.1). For these reasons, the secondary segment 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].

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[4] 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 y 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.

[5] See, for example, Bilbao (1993), González (1992), Prieto (1989), Recio (1991).

[6] See, for example, Alba (1991; 1996), 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).

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 segment would thus appear to be the natural breeding ground for temporary employment and, therefore, many researchers have attributed the high rate of temporary employment in Spain to the size of its secondary segment.

Nonetheless, a simple bivariate analysis shows that the relationship between the rate of temporary employment and the importance of the secondary segment in a range of developed countries is surprisingly weak, irrespective of the unit of analysis employed to measure such segment. The calculations have been performed on data published by EUROSTAT and the OECD. The indicators tested include the weight of activities targeting the volatile component 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. It should also be noted that in all the analyses performed, Spain appears as an extreme case, with a rate of temporary employment far higher than would be expected given its industrial and occupational structure.

A complementary approach to testing the demand-based arguments in the case of Spain consists in the comparative analysis of the incidence of temporary employment *within* each occupational group, firm size and industrial sector. This simple analysis shows that the incidence of temporary employment in Spain is well above the OECD average, even in large companies, highly-skilled professional jobs and "central" industrial sectors (see Figures 5, 6 and 7).

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[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.

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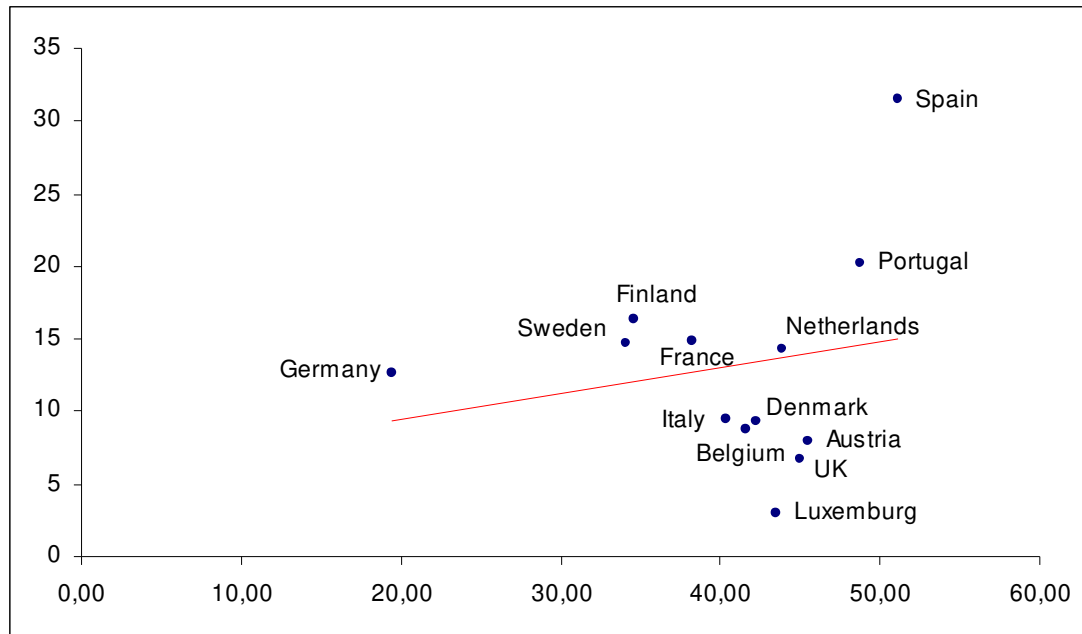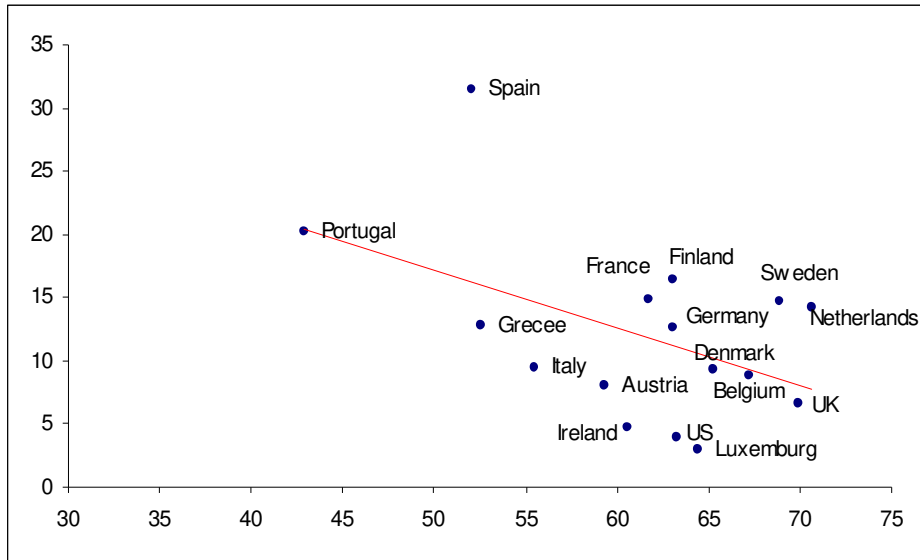

Correlation coefficient = 0.20
Source: Author's calculations based on EUROSTAT (2004a) and OECD data (2002: chap. 3).

Some of the results of these analyses are particularly revealing. Especially noteworthy is, for example, the fact that the rate of temporary employment amongst Spanish professionals is higher than the average rate for low-skilled occupations in the OECD (Figure 5), that the rate of temporary employment in larger Spanish companies is far higher than in the average of the OECD's smallest firms (Figure 6) and that the temporary employment rate in each and every one of the Spanish sectors targeting the most stable component of demand is above the average rate for the volatile sectors of EU-15 economies (see Figure 7).

Hence it does not appear that the high rate of temporary employment in the Spanish labour market can be explained by the importance that activities, occupations and firms traditionally linked to the so-called secondary sector have in the Spanish economy —even if this importance is relatively high. It is nonetheless evident that the indicators employed to account for the secondary sector are relatively imprecise, given the heterogeneity of aggregated data and also the fact that analyses performed to date do not allow one to isolate

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
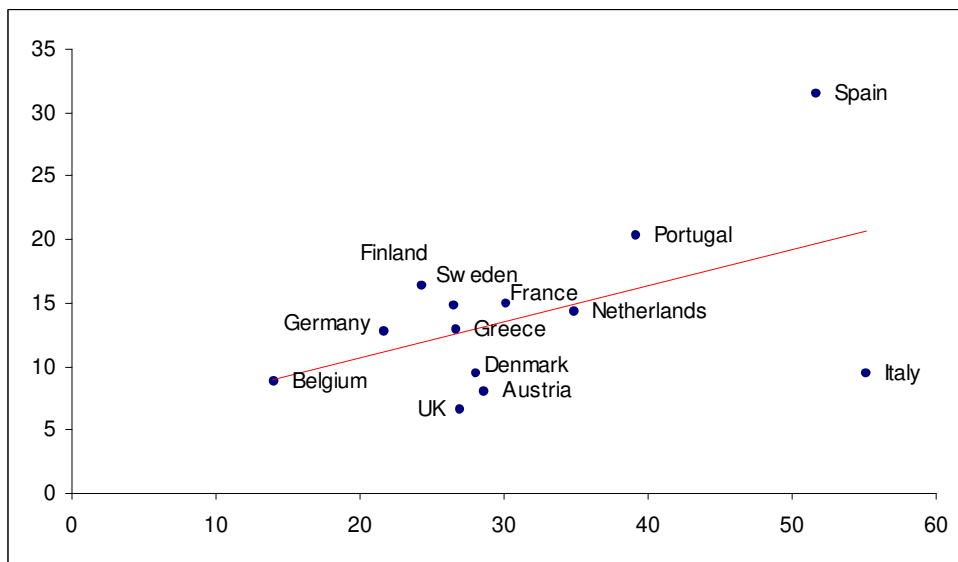*Source*: Author's calculations on OECD data (2000: chap. 3) and OECD (2002: chap.3).

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.3).

the effect of the variables of interest from the remaining factors which may be affecting the relationship tested. It is thus worthwhile carrying out parametric analyses with more precise variables which will clear up any possible doubt on these matters. To this end, individual data from the ECHP's eighth wave for 2001 have been used.

Figure 5. Rate of temporary employment by occupation type in OECD countries (2000)
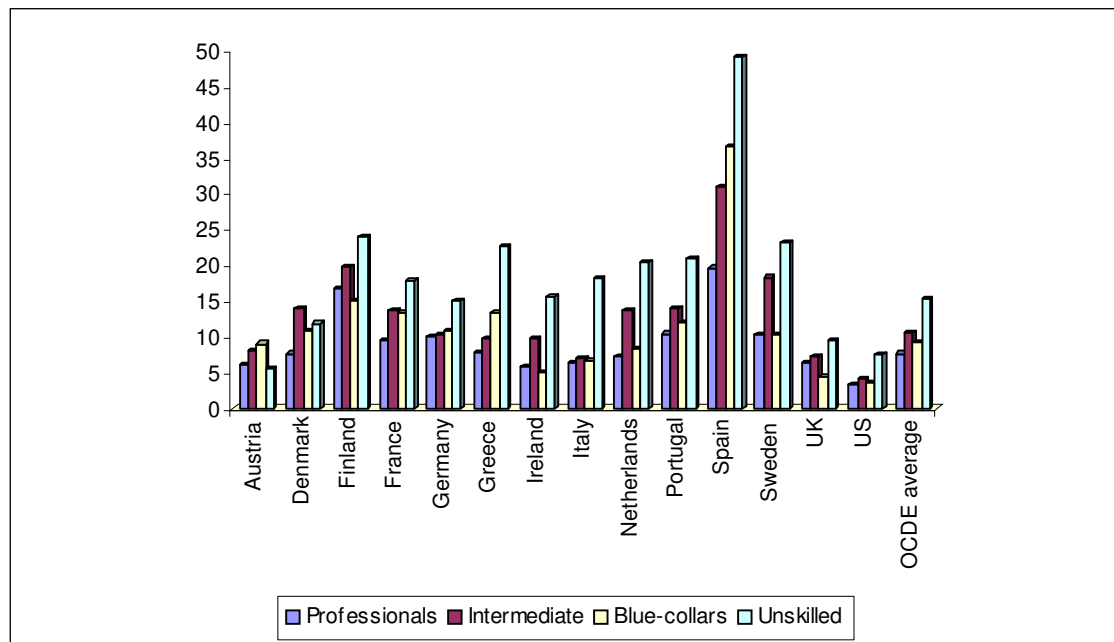
Source: OECD (2002: chap.3).

Figure 6. Rate of temporary employment by company size in OECD countries (2000)
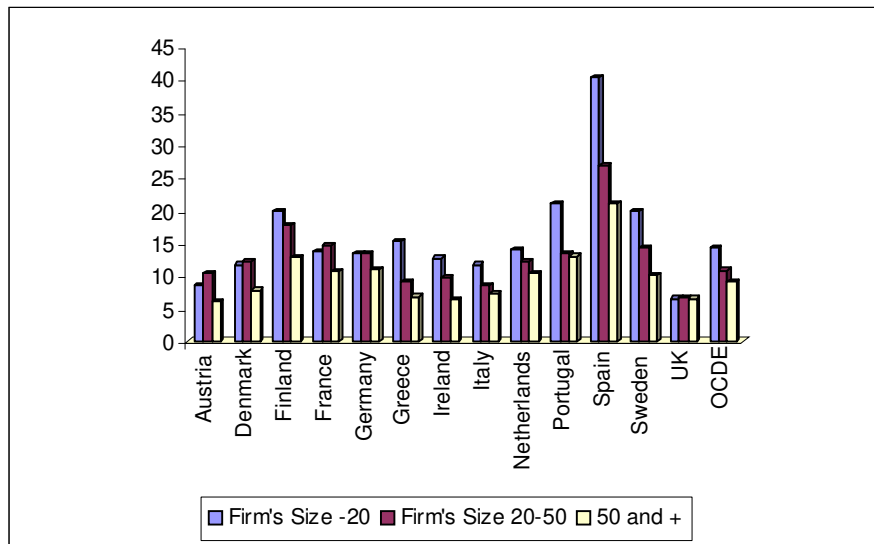
Source: OECD (2002: chap.3).

Figure 7. Rate of temporary employment by company activity in selected EU countries (ECHP, 2001)

Source: Author's calculations based on ECHP data (2001, 8th wave).

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[9]. Model 1 shows the odds 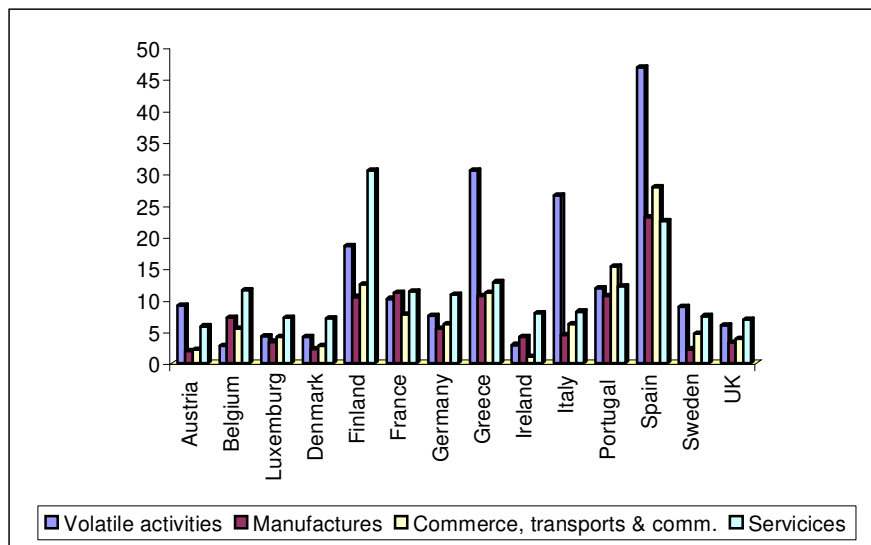ratio probability for Spanish residents of having a temporary employment contract compared to those of other surveyed European countries. Note that the probability of having a temporary contract rather than a permanent one, without taking into account any other type of variable, is four times higher if the salaried worker in question is resident in Spain. This significant difference remains practically unchanged after taking into account the age and gender of those surveyed (Model 2), as well as a whole range of variables which aim to cover both individual and production structure characteristics. This range of variables are the occupational class, level of education, size of firm, the labour activity of the salaried worker 12 months before the interview and the industrial activity of the firm (Model 3). If we compare the value of the odds ratio of the Spain variable in Model 3 with the same value in Model 1, a reduction of only 6% is noted. Introducing into the model variables covering activity sector, firm size, occupation type and workforce education adds little to any explanation of the "Spanish difference".

In view of the information presented in this section, it should be concluded that the high rate of temporary employment observed in the Spanish labour market *cannot* be explained by production structure characteristics. This is, by itself, a valuable discovery, since it questions the validity of explanations which link the high rate of temporary employment in Spain to the size of the country's secondary sector. It appears clear that, if we wish to understand what is happening in Spain, explanations other than those typical of classical segmentation theories must be considered.

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[9] Due to the great divergence between the ECHP temporary employment rates and those calculated by the OECD for the Netherlands and Sweden, these two countries have been excluded from the sample. Given that the OECD uses active population surveys to prepare its reports, its results are much more reliable than those of the ECHP.

Table 1. Logit regressions on the probability of having a temporary employment contract (rather than a permanent one) in 13 EU countries, ECHP 2001 (8th wave)

Parameters	Model 1		Model 2		Model 3	
	Odds ratio	Sig.	Odds ratio	Sig.	Odds ratio	Sig.
Countries[1]: (remainder) Spain	4.26	***	4.16	***	3.98	***
Gender (Male) Female			1.33	***	1.37	***
Age (under 35) Over 35			.35	***	.42	***
Occupation (Professional) Intermediate Skilled					.97	n.s.
manual					1.55	***
Unskilled					1.68	***
Education (University) Secondary					.87	***
Below secondary					1.17	***
Respondent's activity 12 months earlier (working)						
Self-employed					4.33	***
Undergoing education / training					7.45	***
Unemployed					10.40	***
Non-remunerated work					3.85	***
Not applicable or missing					2.88	***
Size of firm (under 50) Over 50					.96	n.s.
Lost values					.90	*
Firm activity sector (Heavy and Light Industry)						
Volatile (construction, agriculture, hotels & restaurants)					1.87	***
Retail, transport and communications					1.16	**
Services					1.77	***
Number of observations =	37312		37312		37312	
Prob > chi2 =	0.0000		0.0000		0.0000	
Pseudo R2 =	0.0441		0.0839		0.1799	
Log likelihood =	-12016.438		-11517.024		-10309.468	

[1] Denmark, Belgium, France, the United Kingdom, Ireland, Italy, Greece, Portugal, Spain, Austria, Finland, Germany and Luxembourg

***significativity ≤ 0.01 ** significativity ≤ 0.05 * significativity ≤ 0.1

Source: Author's calculations based on ECHP data (2001, 8th wave).

2. Why is the Rate of Temporary Employment so High in Spain? Supply-Side and Institutional Factors

2.1. Supply-side factors

If demand-related factors cannot explain the exceptional case of Spain, could the key lie in supply-side characteristics? 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 idea of these models is that, under conditions of imperfect competition, labour markets may become saturated or "crowded out", 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 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.

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 at the time of the labour reforms which 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.

However, 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, according to the analysis of 15 EU countries. The correlation between the demographic weight of this grouping in 1991 and the rate of temporary employment in 2001 is only 0.27 (see Figure 8). The contrast between the cases of Spain and Ireland is especially illustrative, since both countries have a numerous 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 thus loses force.

Figure 8. Relationship between the rate of temporary employment (2001) and the demographic weight of the cohorts born between 1967 and 1976 in EU countries (2001)
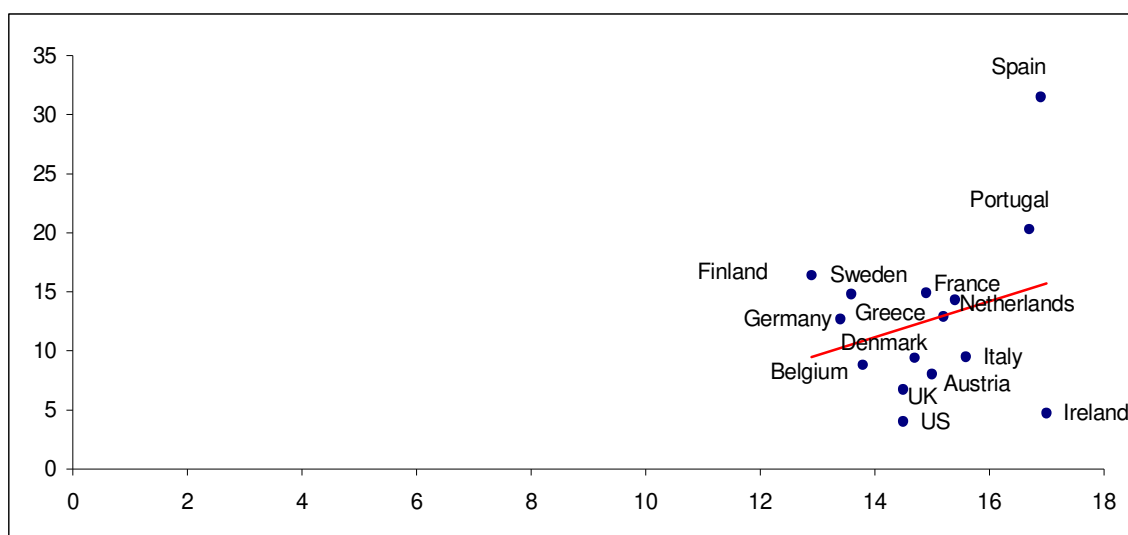
Correlation coefficient = 0.27
Source: Author's calculations based on EUROSTAT (2004c) and OECD (2002: chap. 3) data.

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 Spain's educational system, 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 happens, 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[10]. From this perspective it follows that the danger of crowding out would not depend so much upon the demographic size of entrant cohorts, 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 with a permanent contract, which is the immediate entrance barrier for new cohorts in conditions of limited wage flexibility (see Dolado, Felgueroso and Jimeno 2000; Jimeno and Rodríguez-Palanzuela 2002 and below).

Figure 9 shows the relationship between the rate of temporary employment and 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 and the rate of temporary employment. Note that, now, the contrast between Ireland and Spain is less striking. The figures would thus appear, in principle, to be consistent with this second version of the supply shock hypothesis.

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[10] 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).

Figure 9. 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)
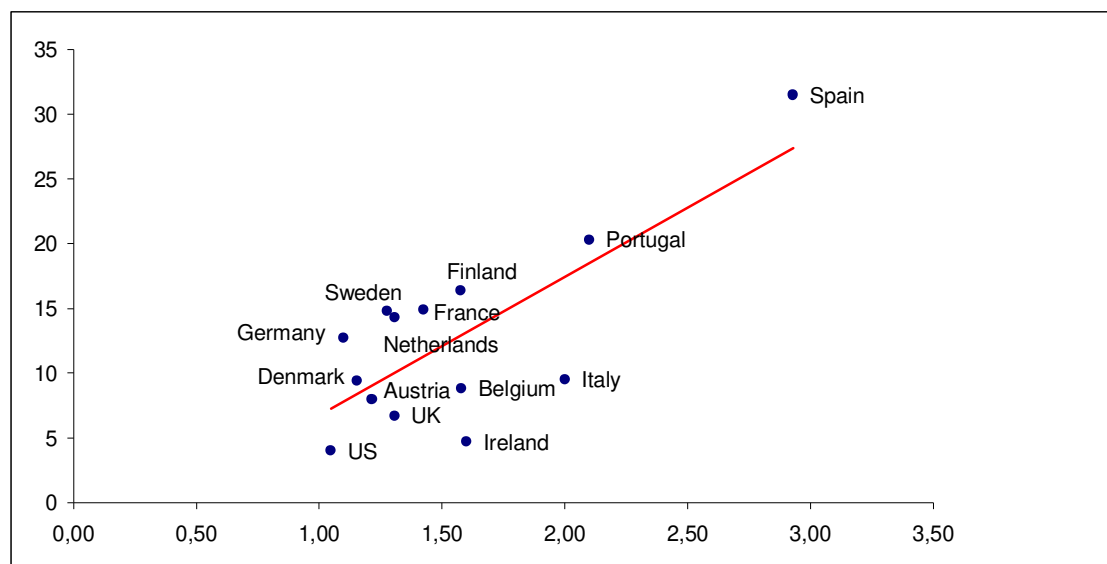
[1] The educational differential is the result of dividing the proportion of individuals with secondary or higher education in the cohort born in 1958-67 between the proportion of highly educated within the cohort born in 1938-47

Correlation coefficient = 0.75
Source: Author's calculations based on US Department of Education (1996) and OECD (2002: chap.3) data.

Additionally, 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 institutional protection of permanent employment[11] in the countries analysed. 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 (as it is shown below). One possible interpretation of this correlation is that the level of protection of permanent 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

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[11] We use the OECD permanent employment protection index for the middle of the 80s, the period when the majority of temporary employment reforms took place.

employment are due to political decisions aimed at protecting low-skilled workers whose employment position would otherwise be threatened by the mass entry onto the market of better-educated candidates. Who are the main actors and what are the main factors behind such policies, and to what extend such policies can be interpreted as stemming from an 'implicit generational pact', as has been argued by Luis Garrido in a number of studies, are questions that lie beyond the scope of this study (see Garrido 1996a; 1996b; García Serrano *et al.* 1999, 38-42).

2.2. Institutional factors

In any case, it is important to note that 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, since 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 permanent 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 another way, which factors may contribute to protecting the position of the more vulnerable employed workers from the effects of competition in a more open market.

Previous studies have emphasised that there are two dimensions within the Spanish institutional framework that are especially important in explaining the country's high level of temporary employment: the level of protection of permanent employment —above all, at the time of the introduction of temporary contracts— and the non-inclusive nature of collective bargaining (see Polavieja 2003a; 2003b).

A simple analysis of correlation between the OECD index of protection of regular (i.e. permanent) employment 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 correlation between both variables[12] (see Figure 10). This correlation between the institutional protection of permanent employment and the temporary employment rate in the 15 countries analysed is the highest found in all the bivariate analyses performed[13]. 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.

It is clear that the more expensive it is to make permanent workers redundant, the more likely employers will be to resort to temporary employment and the more cautious they will be to 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. For a better understanding of how these mechanisms arise, we must review the second institutional factor which may have an impact upon the rate of temporary employment: the collective bargaining system.

Previous studies have highlighted the key role played by an entire range of institutional characteristics of the Spanish collective bargaining system in the process of segmentation by contract type (Polavieja 2003a; 2003b). All these characteristics stem, ultimately, from the system's degree of *inclusiveness*. The idea is that the collective bargaining structure itself, as well as certain characteristics of union representation in Spain, make up an institutional framework conducive to the amplification of the interests of permanent workers when

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[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 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.

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

negotiating collective agreements, which contributes to the blocking of entry into permanent employment for temporary (and unemployed) workers.

Figure 10. Relationship between the level of protection of permanent employment at the end of the 1980s and the rates of temporary employment in 2001
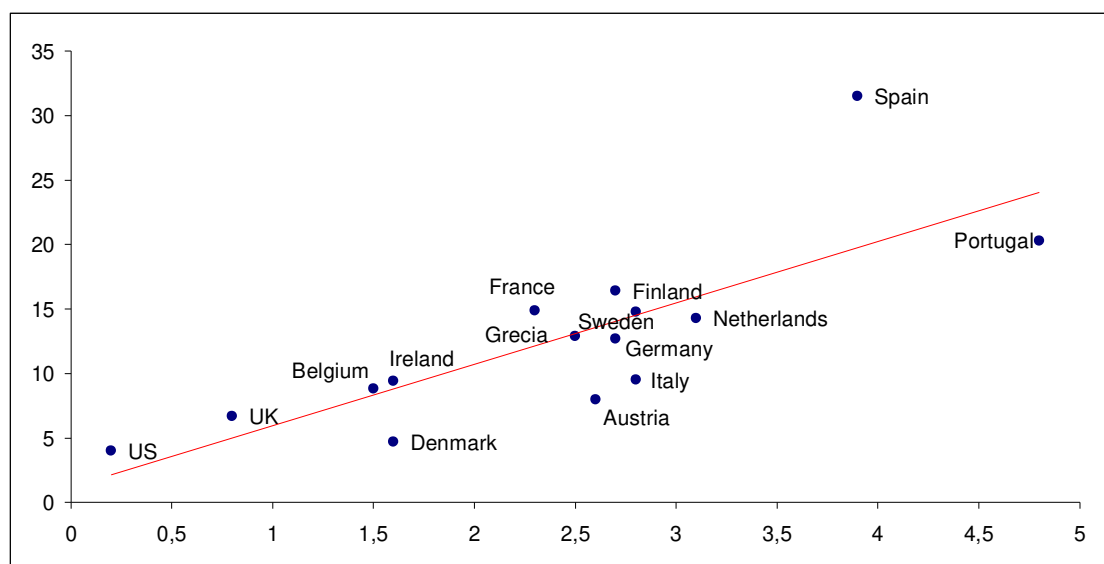
Correlation coefficient = 0.79
Source: Author's calculations based on OECD data (1999: chap.2 and 2002: chap. 3).

This constellation of institutional factors in the field of collective bargaining is difficult to translate into operational indicators (Esping-Andersen 1999: 138). Despite this, an attempt has been made to condense all this complexity into a single index in the aim of testing the relationship between the degree of centralised coordination of collective bargaining and the rate of temporary employment in various OECD countries. 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 the collective bargaining system: 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, like that of Spain, 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 salaries 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. 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 Spain, where two types of contracts with very different levels of job security coexist. Applying this theory 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, particularly, for temporary and unemployed workers' chances of obtaining stable employment. Let us now explain the theoretical bases 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 permanent 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 to 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 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. 2).

Figure 11 shows the relationship between the index of centralised coordination of collective bargaining (ICC), calculated on the basis of the average scores of the centralisation and coordination indices published by the OECD (1997: chap.3), and 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[14] (-0.59).

Figure 11. Relationship between the index of coordination and synchronisation of collective bargaining (ICC) in 1994 and temporary employment rates in 2001
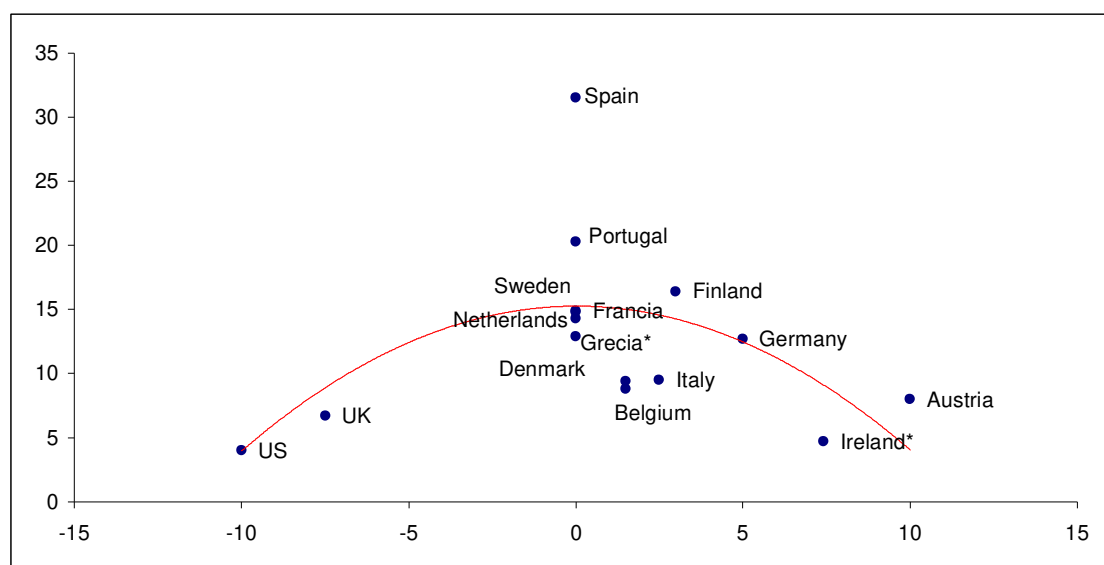
Correlation coefficient between rate of temporary employment and ICC^2= -0.59
NB: The values for Greece and Ireland have been extrapolated following Visser (2000) and refer to 1998
Source: Author's calculations based on data from the OECD (1997: chap.3 and 2002: chap. 3) and Visser (2000, Annex 2).

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

2.3. Parametric analysis

We thus have evidence consistent with the arguments which link the exceptional nature of the case of Spain with specific characteristics of its 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 developed countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Sweden, the United Kingdom, the United States and Spain. 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 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 centralised coordination (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 of permanent 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 58-67 and 38-47 cohorts (see Model 1 in Table 2). Nonetheless, both effects disappear completely after the introduction of institutional variables in the regressions (Models 2 and 3). In fact, only the permanent employment

protection index in the 80s and the index of centralised coordination (squared) retain their significance in a multivariate context. Taken together, the two 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 not proved significant —neither via direct contrasts or interactive terms. In any case, what is clear is that institutional factors are of *key* importance in explaining the distribution of temporary employment in the 15 countries analysed.

Given the above information and arguments, it seems clear 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, even in the case of "primary segment" tasks and activities. The high rate of temporary employment observed in Spain cannot, 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 (see Figure 12). This gap may reflect the methodological limitations of the framework analysis —above all, in terms of the intrinsic variability of temporary employment[15], measurement errors and the scant number of observations—, but there is a limitation which is, in my opinion, even more important, that which is inherent to macro-level analysis when it comes to providing detailed causal explanations. Thanks to

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

comparative analysis, we know that there are two institutional factors which have a significant impact upon the rate of temporary employment, but we do not know exactly *how* they do so: what are the mechanisms or causal processes by means of which the institutional regulatory framework affects the rate of temporary employment? Macro-level comparative analysis cannot provide an answer to this question by its own.

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

***significativity ≤ 0.01 ** significativity ≤ 0.05 * significativity ≤ 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)

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 detailed, accurate causal narrative. In my opinion, this necessarily involves bringing the rational strategies of employers, who are the leading players in the hiring process, to the forefront of the explanation.

Figure 12. Relationship between observed temporary employment values and those predicted by Model 4 in Table 2
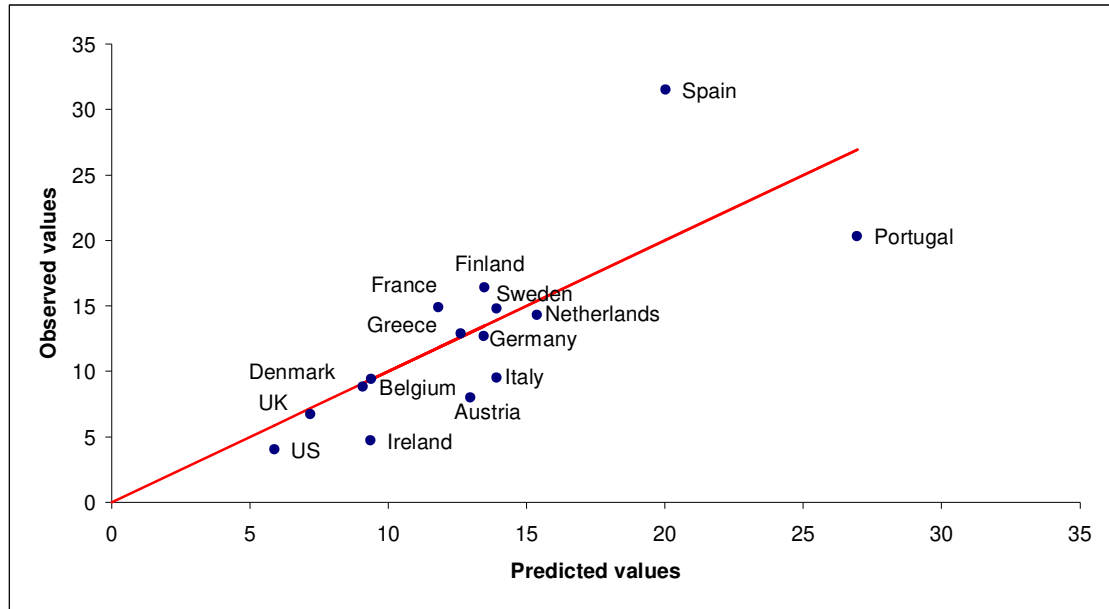
Source: Authors calculations based on Model 4 in Table 2 (LN(y)= 1.71+0.3*IPE80-0.00005*iICC^2)

Macro-level comparative analysis has clearly revealed the explanatory shortcomings of demand-based models. So, rather than highlighting the fact that Spain has a large number of "bad" jobs —which, whilst true, does not explain the extremely high rate of temporary employment—, one should explain why there is also so much temporary employment amongst "good" jobs and what is the role played by the institutional framework in this process. The best way to approach the problem is thus to ask how is it possible that the use of temporary employment has become a sustainable strategy for employers, even for managing highly-qualified jobs, where the advantages of permanent contracts would, in principle, appear clearer. The following section offers an explanatory model that provides a reply to this question. The model focuses upon the interaction between institutional factors, whose macro-level impact has been demonstrated, and employers' rational optimisation strategies (see also: Polavieja 2003b). This model proposes a detailed causal explanation that appears consistent with available empirical evidence.

3. 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 permanent employment contracts that establish some form of incentives for productivity enhancement, than to resort to temporary employment.

Typically, in permanent 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, for example: Goldthorpe 2000: chap. 10; Lazear 1995; Sorensen 2000). The economic rationale behind the use of these permanent employment contracts therefore 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.

However, it is possible that, in Spain, given the aforementioned institutional context, the extensive use of temporary employment has become an efficient resource for extracting effort from all types of tasks, including professional ones. There are two reasons for this. Firstly, because employers can use the possibility of converting a temporary employment contract into a permanent one as a powerful tool for eliciting worker effort —especially where there is a real, immediate risk of unemployment and where permanent job security is high. 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 the temporary workforce, even with the loss of investment in specific human capital that this implies, than to resort to permanent incentive systems[16], which become more costly the greater the employment protection of permanent contracts. Even more so, and this is the second reason why Spain's institutional context might have been especially propitious for the expansion of temporary employment, 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.

It is clear that, greater job security yields greater bargaining power to workers. Thus, given that, under the same conditions, temporary workers will always be the first to lose their jobs should employers need to shed labour, it is obvious that the larger the number of temporary workers in the firm, the greater the job security for their permanently-employed counterparts and, therefore, the greater their bargaining power will be. This 'buffer' effect of temporary employment will, logically, be greater the greater the difference in redundancy costs between employment contract types and the less inclusive the collective bargaining system is (Bentolila and Dolado 1994; Polavieja 2003b). 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.

It should be noted that if this kind of buffer effect is activated, accessing permanent employment will become even more attractive to the temporary workforce. This, in turn, will automatically increase employers' ability to extract productive effort from their temporary workers using the conversion rate as an incentive device. In other words, the buffer effect increases the efficiency of the incentive effect. Increased efficiency in the incentive

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

mechanism means that employers may reduce the rate of conversion without losing output from their temporary workforce (see Güell-Rotllan 2000).

Testable hypothesis can be derived from this explanatory model. Using both data from the Spanish active population surveys for the period 1987 to 1997, as well as data on wages from a variety of statistical sources, such hypotheses have been tested in a number of studies (see Polavieja 2003a; 2003b; 2005 forthcoming). The results obtained have been highly consistent with the existence of incentive and buffer effects of temporary employment in Spain. On the one hand, it has been shown how the conversion rate of temporary contracts into permanent ones halved between 1987 and the early 1990s in all occupational groups. This drop is particularly significant given that it took place during an economic boom. Similarly, it has been observed an increase in the empirical job security of permanent workers (vis-à-vis temporary ones) in parallel with the increase in the rate of temporary employment, a phenomenon fully consistent with the existence of a buffer effect. Such buffer effect has also been detected in wage formation processes. Available evidence shows the existence of non-monotonic wage gains amongst permanent workers associated with the proportion of temporary employees in their companies (see also: Bentolila and Dolado 1994; Rodríguez Gutiérrez 1996). All these 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 2005 forthcoming).

There is thus sufficient empirical evidence to suggest that incentive and buffer effects, activated by the introduction of temporary employment contracts in a context of high levels of permanent employment protection and non-inclusive bargaining, are behind the sharp increase in temporary employment observed in Spain between 1984 and 1997. The logic of this process is by no means subsumable to the nature of the productive and occupational structure of the Spanish economy. This explanatory model is, furthermore, consistent with 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

centralised coordination of the collective bargaining system have on the incidence of temporary employment in a range of OECD countries.

4. Conclusions

Since the beginning of the 90s, the rate of temporary employment in Spain has been double the OECD average. An idea that is fairly deep-rooted in specialist (particularly sociological) literature is that the high rate of temporary employment in Spain must reflect the nature of a productive structure characterised by the strong predominance of small companies which target the volatile component of demand and which have a high number of low-skilled jobs. Yet comparative analysis of a range of statistical sources, with both aggregate and individual data, on a number of developed countries, shows a very weak relationship between the size of the "secondary segment" and the rate of temporary employment. What is more, the rate of temporary employment in Spain is above the OECD average across all sectors, company sizes and occupation types. The "Spanish difference" cannot, therefore, be explained in light of its productive structure. Parametric analysis with individual data simply confirms this conclusion.

Rather than the productive structure, it seems that what lies behind the incidence of temporary employment is actually institutional factors. Without completely ruling out the possibility that the irruption on the labour market of cohorts with much greater levels of 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 permanent workers in the 80s and the degree of coordination and centralisation of collective bargaining systems are the two main factors behind the distribution of temporary employment, as can be deduced from the original analyses of aggregated data for 15 OECD countries. In the light of these findings, the latter part of this study has offered a possible explanation for the high rate of temporary employment in Spain. The proposed model focuses on the interaction between the

institutional framework and the rational strategies of employers to extract productive effort from their workforces.

The introduction of temporary employment contracts against a backdrop of high unemployment and within an institutional framework marked by a high level of protection for permanent employment and the scant inclusiveness of the collective bargaining system may have led to the unleashing of intense mechanisms of segmentation by contract type across all areas and industrial activities. These mechanisms may have made it 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. The immediate benefits of this incentive effect could be greater than those associated with a strategy backing permanent employment relations, even in the case of professional tasks, especially if short-term calculations predominate. There is abundant empirical evidence which is consistent with this explanation (see Polavieja 2003a; 2003b; 2005 forthcoming).

It is clear that, in the long run, this kind of effort extraction mechanisms give rise to an important externality: that of the scant level of investment in specific human capital in the company[17]. The labour segmentation caused by 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 an equilibrium of bad jobs.

It should nonetheless be noted 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 employers' personnel management strategies. Quite the contrary, it is highly possible that, once they take root, such

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

strategies may endure, even if the conditions that made them profitable at one time change[18]. This could explain the scant impact of the 1997 labour market reform on the rate of temporary employment in Spain, this being an issue that should deserve special attention in future research.

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[18] 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.

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.

II. The index of centralised coordination (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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