Temporary Contracts and Labour Market Segmentation in Spain: An Employment-Rent Approach

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Abstract¹

Deregulation through temporary employment has generated important inequalities in the Spanish labour market. The paper presents a theoretical model as well as empirical evidence to explain this process. The main thrust of the model is seeing labour market structures as always being the result of micro-level strategies of employers and employees over employment rents. The employment-rent approach defended in the paper focuses on the impact of deregulation through temporary employment on the employment-rent optimisation strategies of both employers and employees at the micro-level. Drawing on recent developments in labour economics, the paper identifies two main micro-level effects of deregulation, the so-called 'incentive' and 'buffer' mechanisms. These two mechanisms are expected to reinforce each other until an equilibrium state in the segmentation process is reached. The employment-rent model is tested using data from the Survey on Class Structure, Class Consciousness and Class Biography (1991). The evidence proves consistent with the predictions of the model. The Spanish experience illustrates the extent to which institutional (de)regulation can have a crucial impact on labour market structures in contemporary capitalism.

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Introduction

In the last fifteen years, temporary contracts have grown considerably in all European countries. Within the European Union, Spain stands out as having the highest rate of temporary employment. Since the early 1990s, the rate of temporary employment in Spain has been almost three times the European average. Temporary contracts were introduced² in Spain in 1984 in a bid to reduce unemployment - which had just risen to over 20 per cent of the active population - by making the labour market more flexible.

The flexibilisation strategy implemented in 1984 is a paradigmatic example of what Esping-Andersen (1998a; 1998b) has called two-tier selective labour market policies. Two-tier selective policies deregulate conditions for some workers, but not for others. In the Spanish case, flexibilisation through temporary employment was exclusively applied to new entrants in the labour market, while workers on permanent contracts continued to enjoy the privileges of rigid employment security legislation (inherited from the pre-democratic era), which imposes very high dismissal costs for permanent workers. In very sharp contrast to the costs of dismissal for permanent employment, temporary contracts introduced in 1984 entailed very low termination costs. Moreover, most of them included a termination date, after which the employer was legally obliged either to convert the temporary contract into a permanent one or to put an end to the employment relationship.

By 1997, as much as one-third of the employed Spanish workforce held temporary contracts and yet Spain showed the same levels of unemployment as in 1984. Deregulation through temporary employment failed to achieve its goal of reducing the unemployment rate on a long-term basis because it failed to generate stable employment. Instead, it gave rise to important inequalities among equivalent-productivity workers. The failure of the Spanish 'experiment' goes, therefore, hand in hand with its unanticipated segmenting consequences³. This paper presents an explanatory model that can help us understand the segmenting impact of two-tier deregulation in Spain. It also provides empirical evidence that proves consistent with the causal mechanisms proposed in the model.

The explanatory model defended in the paper is based on two main ideas. First, that the analysis of labour market structures in contemporary capitalism must take the regulatory context very seriously (Esping-Andersen 1999) and second, that the impact of deregulation on macro-level outcomes (i.e. labour market structures) should be explained through - or at least with reference to - micro-level behaviour (Coleman 1986; Hedström and Swedberg 1998). The main contribution of the paper is in combining both ideas in an explanation of the segmenting consequences of deregulation through temporary employment in Spain.

The model draws on Aage Sorensen's theorisation of employment rents as well as on various contributions in the field of labour economics. It rests on three basic propositions. First, that labour market segmentation can be usefully thought of as the

² More accurately, the 1984 reform removed all the hitherto existing barriers for the use of temporary contracts, which prior to the reform only existed for very limited activities of a seasonal nature.

³ For a more positive evaluation of the flexibilisation 'experiment' see Toharia and Malo (2000). A general overview can also be found in Dolado, García-Serrano and Jimeno (2001).

process that creates structured patterns in the distribution of individual labour market opportunities (LMOs) of similar-productivity workers. Second, that in order to identify and understand the mechanisms that produce labour market segments better it is useful to consider the employment rents that are generated in employment relationships. Third and finally, that the analysis of the impact of regulatory change on LMOs - and therefore the analysis of the segmenting consequences of temporary employment in Spain - should focus on the effects that this change has had on the employment-rent optimisation strategies of both employers and employees.

The paper is divided into three sections. The first section presents the theoretical model - what I call the employment-rent approach. The second section presents the results of testing the employment-rent model using data from the Spanish Labour Force Survey (LFS) for the period 1987-97, as well as data on wages drawn from the Survey on Class Structure, Class Consciousness and Class Biography (CSCCCB) carried out in 1991⁴ (N=6000) (see Cabaña *et al.* 1993). The paper concludes with a discussion of the main virtues of the employment-rent model as a means of explaining the segmenting consequences of two-tier deregulation in Spain.

The model: Labour Market Opportunities, Segmentation and Employment Rents

Preliminary definitions

Inequalities among employees originating in the labour market are understood here as persistent patterns (or structures) in the distribution of individual labour market opportunities (LMOs). Two types of inequalities can be distinguished: 'vertical' and 'horizontal' inequalities. Vertical inequalities are due to differences in workers' productivity. Vertical inequalities are generated by the very functioning of demand and supply forces in the labour market - i.e., it is the market mechanism that generates vertical differentiation of LMOs. Vertical inequalities are not considered as part of the segmentation concept in this model⁵. Segmentation, as defined here, refers only to the process(es) that generate(s) horizontal inequalities in the distribution of LMOs, that is, inequalities among workers who have similar levels of productivity. Structured patterns of inequality in the distribution of LMOs of similar-productivity workers can be referred to as 'segments' at the aggregate level. Segmentation is, therefore, defined here as the labour market process whereby particular causal mechanisms provoke a persistent differentiation in the LMOs of similar-productivity workers (i.e. horizontal inequalities).

In this paper two types of labour market opportunities are considered: (1) employment chances and (2) wages per effort. Employment chances depend in turn on two kinds of

⁴ The evidence presented in the second section is a summary of the analysis carried out in greater detail in Polavieja (2001).

⁵ In the orthodox neoclassical market, LMOs depend exclusively on workers' productivity and markets always being clear. The orthodox market generates inequalities in rewards by the very logic of demand and supply (as explained in the theory of marginal productivity) but it is not, according to the definition presented here, a segmented market. Structured inequalities in the acquisition of general skills and credentials can perpetuate vertical inequalities in the distribution of LMOs over time. Crucial as they are, these inequalities do not concern us here, as they are generated 'outside' the labour market. The elements that define the concept of LMOs can themselves account for the differentiation of opportunities for job-specific skill development.

opportunities: (a) opportunities for access into employment and (b) opportunities for control over the termination of one's employment relationship (i.e. job security). It seems clear that workers will be better off the greater their chances of finding a job (if they are unemployed) and the smaller the chances of involuntarily losing it (if they are employed). Also, employees will be better off the greater the wages they can obtain for the same amount of effort. Employment chances and wages (per effort) thus define the fundamental aspects of LMOs, which are the immediate source of personal wealth obtained in the labour market⁶.

Employment rents

The main thrust of the employment-rent approach is to view segmentation (i.e. horizontal inequalities generated in the labour market) as always being the result of the micro-level strategies of employers and employees over employment rents. The concept of employment rents is, therefore, crucial in the model.

Rents can be defined as "advantages provided by assets that produce a payment that exceeds the amount needed to bring the asset into employment" (Sorensen 1994, p. 509; 1992). A useful way of conceptualising employment rents (ER) for employees is to see them as the difference between the actual value employees receive for their labour effort, in particular employment relationships (Va), and the value they would obtain in the perfectly competitive labour market depicted by the orthodox neo-classical model $(Vc)^7$. Hence: ER= Va-Vc (Sorensen 2000).

It is obvious that employed workers will maximise their LMOs the higher the employment rents they are capable of obtaining within their employment relationship. Conversely, employers will maximise their profit in the employment relationship if they can reduce employees' rents so as to make the actual value workers receive for their labour effort as close as it is possible to the competitive value. Employers and employees have, in this sense, clear conflicting interests over employment rents. It should be noted, however, that employed workers' rent-optimisation strategies can also collide with unemployed workers' opportunities for access into employment. This is the central idea behind insider-outsider models, which see involuntary unemployment primarily "as a conflict of interest between the insiders and the outsiders" (Lindbeck

⁶ Job security is a pre-condition for promotion opportunities within firms since in-firm promotion usually occurs in the context of long-term employment relationships. Job security also has important career implications in that it enables workers to move to a different job only when better jobs are available, thereby enhancing individuals' ability to take advantage of opportunities over their entire careers (Sorensen 1977; 1998, p. 19; 2000, p. 1551). Job security is also directly linked to the opportunities for skill development. Unstable labour market trajectories can generate a skills deficit and lead to a spiral of deskilling (Gallie 2000a, p. 12; Gallie 1991; Gallie *et al.* 1998, ch. II). Similarly, employment accessibility and wage levels have a clear impact on working conditions, since poor working conditions may be offset by high wages or simply avoided if jobs that offer better conditions are available (i.e. easily accessible) (see Sorensen 2000, p.1530; Simon 1957). Hence the two dimensions of the definition of LMOs, employment chances and wages, in fact cover the fundamental aspects of individuals' opportunities in the labour market.

⁷ In the orthodox market, labour is assumed to be a commodity like any other, whose attributes are well known and transferable through market exchange (Gallie 1988; Sorensen 1994; Toharia 1983; 1986). The market has a price (wages), which in the absence of obstacles, acts as the basic mechanism of equilibrium. Wages depend exclusively on workers' productivity according to the marginal-productivity theory. In the long run, identical-productivity workers obtain identical wages and markets always clear.

and Snower 1986, p. 235; 1988; Solow 1985). This conflict of interests will be greatly intensified in particular institutional contexts (Polavieja 2001, pp. 56-68) (see below).

But how can employees maximise their employment rents? It is useful to distinguish between three main sources of employment-rent generation for employees: (1) task specificity, which is the most immediate source of employment rents for employees and the one which has greatest organisational ramifications; (2) workers' collective action, which generates monopoly rents for workers⁸; and (3) institutional regulation, which can generate new rents for employees as well as improve their rent-optimisation capacity. The three sources of rent generation are in reality interwoven. Actual employment rents are always the combination of task specificity, collective action and regulatory factors, although the relative importance of each of these factors might be extremely difficult to assess in practice. Accounting for the different sources of rent generation is, however, analytically pertinent. Each of these sources of rent-generation has implications for the distribution of LMOs and hence for segmentation as defined above⁹.

Task specificity is an endogenous source of rent generation, since rents due to taskspecificity are generated 'naturally' as a result of "unconstrained voluntary exchanges between rationally utility maximising individuals or collective agents" (Buechtemann 1993, p. 45, ft.47). Task specificity rents would therefore exist even in unregulated markets. There are two analytically-distinguishable dimensions (or sources) of taskspecificity rents: asset specificity and monitoring costs. Asset specificity refers to that specific human capital which is required in order to perform a particular task in a given firm and which has considerably lower value in a different organisational context. High asset specificity tasks involve irreversible investments in the employment relationship for both employers and employees as it implies that both parties have to invest in the transformation of employees' general human capital into an organisation-and-taskspecific one¹⁰. These investments can be thought of as transaction costs (Williamson 1994; 1996). The existence of high transaction costs creates incentives for both parties to 'close' the employment relationship from outside competition (since dissolving the relationship would imply the loss of the organisation-and-task-specific-skill investments made by both parties). Usually high asset-specificity tasks are also tasks where monitoring costs are high. The more specific the human capital required for the performance of a particular task, the more costly it will be for the employer to monitor it. Once the employment relationship has been closed to outside competition, rational employers will seek to induce high productivity by designing an incentive structure that links future rewards to current performance so as to reduce work-life rents for their employees without incurring uneconomical productivity-measuring costs. Taskspecificity thus has important organisational ramifications (Goldthorpe 2000; Lazear 1995, ch. IV; Marsden 1999; Sorensen 1994; 2000; Williamson 1985). Goldthorpe, for instance, has recently argued that employers' rational strategies to optimise on asset-

⁸ Wright (2000) prefers to call these rents "solidarity rents" (it is understood that he means solidarity among the employed since high monopoly rents in employment hinder the opportunities for access to employment of the unemployed).

⁹ Each of the sources of employment-rent generation are discussed in detail in Polavieja (2001, ch. II).

¹⁰ Rents generated by asset specificity are called 'composite rents' by Sorensen (2000).

specificity and productivity-measurement costs provide the rational basis for the classdifferentiation of employees¹¹ (see: Goldthorpe 2000, ch. X).

Employees can also obtain rents without a basis in task-specificity through the collective control of the labour supply. Rents on workers' collective action have an endogenous component and an exogenous one. The endogenous component of collective-action rents reflects employees' unconstrained employment-rent optimisation strategies. Workers' endogenous bargaining would take place even in unregulated contexts¹² (i.e. contexts without trade unions or institutionalised bargaining rules). In regulated markets, however, workers' bargaining power - and therefore their rentoptimisation capacity - is institutionally dependent. The exogenous component of collective-action captures this institutional dimension of collective bargaining. Particular institutional features of the collective bargaining system can have a crucial impact on employees' capacity to obtain rents through collective action. In the Spanish case, the structure, scope, depth, content, coordination and synchronisation of the bargaining system, as well as the characteristics of union competition, form a constellation of institutional factors which are highly prone to enhance insider-outsider tendencies in the labour market (Polavieja 2001, ch. II). The Spanish bargaining system is a non-inclusive one, that is, a system that tends to over-represent the interests of permanent workers. Non-inclusive representation of interests is likely to amplify the segmenting impact of deregulation through temporary employment (see below).

State regulation can also generate direct rents for workers without a basis in either asset specificity or bargaining power. These regulatory rents are completely exogenous. Minimum wages, equal work for equal pay laws, regulation on working conditions and, crucially, dismissal costs are examples of exogenous regulation that can generate direct employment rents for workers. In the Spanish case dismissal costs are a crucial source of employment rents for permanent workers, the origin of which cannot be attributed to the endogenous economic factors that give rise to composite rents. Nor can we attribute - at least directly - high dismissal costs to workers' collective action, since high dismissal costs for permanent workers were imposed unilaterally by a dictatorial regime that heavily repressed free unions. Up until 1997, Spain had the second most restrictive dismissal protection regulation of all OECD countries (Polavieja 2001, p. 70).

The implications of this discussion for the analysis of the segmenting effects of two-tier deregulation in Spain are straightforward: The implementation of deregulation through temporary employment in an institutional context characterised by non-inclusive bargaining and high dismissal costs for permanent workers constitutes a particularly 'explosive' combination. In such an institutional context, the introduction of temporary contracts will intensify segmentation. Let us now propose a micro-level explanation as to how this might happen.

¹¹ For a critique of Goldthorpe (2000, ch. X) see Polavieja (2001, ch. VIII).

¹² Note that in perfectly unregulated markets the ultimate source of bargaining power for individual workers is task-specificity (Polavieja 2001, ch. II). It is, therefore, the 'exogenous' component of collective action that matters for the purposes of this argument.

The mechanisms of type-of-contract segmentation

The previous discussion allows us to formulate the research question on the segmenting impact of deregulation in Spain as follows: How does regulatory change (at the macro-level) affect the micro-level strategies of employers and employees over employment rents? In order to answer this question, and drawing fundamentally on labour economics literature (Bentolila and Dolado 1994; Güell-Rotllan 2000), I propose a dynamic micro-model based on two main mechanisms: (1) the 'incentive' effect and (2) the 'buffer' effect. These mechanisms interact with each other providing the dynamics of the segmentation process. Let us explain this process in detail.

Deregulation through temporary employment allows employers to reduce temporary workers' employment-rents. In a context characterised by high dismissal costs for permanent employees and high unemployment, employers can use the possibility of conversion of temporary contracts into permanent ones as an efficient effort-eliciting tool¹³ - an alternative to efficiency wages in the classic model of Shapiro and Stiglitz (1984). Lacking the employment security levels that dismissal costs grant for permanent workers, temporary workers are forced to work harder in order to get their contracts renewed or converted into permanent ones, that is, in order to avoid unemployment. This is the incentive effect of temporary employment.

The incentive effect is, therefore, a simple carrot-and-stick mechanism: the possibility of conversion of a temporary contract into a permanent one acts as the 'carrot', whilst the threat of unemployment acts as the 'stick'. Of course, the higher the firm-specific investments in particular workers and the higher the monitoring costs, the less efficient this mechanism will be relative to those provided by closed employment relationships¹⁴. Yet it must be noted than even in those instances where task-specificity is high, employers might choose to resort to this sort of incentive mechanism rather than investing in long-term employment relationships and their usual incentive schemes as long as an appropriate rate of conversion into permanent employment succeeds in eliciting greater average output than the incentive costs the firm. In other words, the incentive effect of temporary employment in a context of high dismissal costs and high unemployment can be a perfectly efficient incentive mechanism in short-duration employment relationships even for tasks where asset specificity and productivity-measurement costs are high.

The buffer effect mechanism focuses on the effect of the introduction of temporary contracts on the rent-optimisation capacity of workers on permanent contracts. As standard collective bargaining models explain, workers' bargaining power depends on their probability of survival in the firm (see e.g. Layard, Nickel and Jackman 1991, ch. II). The idea of the buffer effect is simple: in any given firm, temporary workers act as

¹³ Recently, Güell-Rotllan (2000) has developed a formalised efficient wage model in a two-tier system (i.e. a system with permanent and temporary contracts). Incentives in Güell-Rotllan's model are provided by a combination of a non-zero renewal rate into permanent employment and a non-zero rent paid in permanent employment. Using this model, the author shows that "employment [in a two-tier system] is not necessarily higher than in a system with only permanent contracts while the labour market becomes segmented" (2000, p. 21).

¹⁴ Hence it follows that the rate of conversion into permanent contracts will be higher in employment relationships where monitoring and asset-specificity costs are high (i.e. in Goldthorpe's 'service' class) and lower in employment relations where these costs are low (i.e. in Goldthorpe's 'labour' class).

a shield that protects permanent workers from the risk of unemployment. Given the disparity in termination costs by type of contract, if things go wrong in the firm, temporary workers will be the first to be fired (or simply not-renewed). Temporary workers thus provide permanent workers with a buffer. This buffer gives insiders (i.e. permanent workers) a greater bargaining power (i.e. it augments their rent-optimisation capacity). From this it follows that the larger the proportion of temporary workers employed in the firm, the greater the rents for insiders will be - particularly, if temporary workers' interests are not properly represented in the collective bargaining process (see Bentolila and Dolado 1994). Non-inclusive bargaining and high dismissal costs for permanent workers are thus the institutional preconditions for the existence of intense buffer effects.

It must be noted that the buffer effect increases the efficiency of the incentive effect. The greater the rents for workers on permanent contracts, the more difficult it will be to dismiss them, which further lowers the survival probability of temporary workers in the firm (thus augmenting the risk of unemployment for temporary workers). Therefore, the greater the buffer effect, the greater will be the price of achieving a permanent contract for temporary workers (i.e. the bigger the buffer, the bigger the 'carrot'). This reinforcement mechanism will allow employers to extract the same output from temporary workers with a lower conversion rate. Therefore, buffer effects further increase employers' capacities to reduce temporary workers' rents.

Note, however, that this reinforcement effect must end at some point. There are two different reasons for this. On the one hand, the rate of conversion into permanent contracts must be high enough to be credible for temporary workers, otherwise the incentive effect disappears. There is, in other words, a minimum conversion rate below which there are no more incentives for temporary workers to work hard. On the other hand, the insiders' mark-up as a result of the buffer effect cannot increase in a linear fashion. At a certain threshold, a further increase in the proportion of workers on temporary contracts in a given firm might actually start debilitating rather than strengthening permanent workers' bargaining power. The buffer effect is expected to be non-monotonic¹⁵. There are, therefore, micro-level reasons to expect a stabilisation of the segmentation process, or what could be called an equilibrium effect.

Incentive and buffer mechanisms are thus expected to reinforce each other until an equilibrium state in the segmentation process is reached. These interactive mechanisms can, therefore, explain how the process of segmentation is triggered, what the logic of its own motion is and, crucially, how the process stabilises (that is why the reinforcement effect ends). This micro-model can, therefore, provide a 'dynamic' explanation of the segmentation process (i.e. its cogs and wheels). An explanation that links macro changes to micro behaviour and sees, in short, causation as a generative process¹⁶ (see Goldthorpe 2000, ch. VII) (see Figure 1).

¹⁵ This latter consideration has interesting implications for the discussion of the institutional features of the collective bargaining system (see Polavieja 2001, ch. VIII).

¹⁶ The view of causation as a generative process has been recently advocated by Goldthorpe (2000, ch. VII).



Figure 1: The employment-rent model as a macro-micro-macro approach

The explanation provided by this micro-model is consistent with a rich range of original empirical evidence drawn from various statistical sources for the period 1987-97, as well as with various findings reported by labour economists over the last decade¹⁷. The next section presents a summary of these findings.

Testing the model: empirical evidence from the Spanish labour market

Effects on employment

Using Spanish Labour Force Survey (LFS) data for the period 1987-97, it is possible to analyse the impact of deregulation on the processes of employment-adjustment in the Spanish labour market¹⁸. This allows us to test the predictions of the employment-rent model with respect to the impact of deregulation on employment chances, the first dimension of our concept of labour market opportunities (LMOs).

¹⁷ This evidence is reported in detail in Polavieja (2001, ch. III and IV).

¹⁸ The LFS is carried out every quarter by the Spanish National Institute of Statistics (INE) among a sample of approximately 60,000 households. The sample is designed to be representative of the working-age Spanish population. Although temporary contracts were introduced in 1984, it was not until 1987 that the LFS included information regarding the type of contract of respondents. 1987 is, therefore, the first year of the analysed series. In 1997 the recently elected conservative government implemented a new labour market reform, which introduced a new type of permanent employment with significantly lower termination costs. Given the very distinctive nature of the 1997 reform, the analysis of the segmenting impact of two-tier deregulation must end at this year. This defines a ten year period, long enough to test the predictions of the employment-rent model.

Temporary contracts soon became the principal means of entry into employment after the 1984 reform. By 1987 the proportion of new entrants in the labour market holding a temporary contract was $59\%^{19}$. This figure rose to 84% in 1991, and further to 88% in 1997 (second quarters). This meant a spectacular increase in the total proportion of the Spanish workforce on temporary contracts. Between 1987 and 1991, the rate of temporary work in Spain doubled from 15% to $32\%^{20}$. Thereafter, the rate of temporary work further increased to surpass 34% by 1995 (see Figure 2).

Temporary contracts also became the principal means of exit from employment into unemployment. Already in 1987, 61% of the newly unemployed wage earners were without work due to the termination of their temporary contracts. This proportion increased to reach 83% in 1993, where it remained thereafter²¹. We observe, therefore, a non-monotonic increase in the proportion of temporary contracts both among new entries into employment and among new exits from employment into unemployment (see Figure 2).

This non-monotonic increase goes hand in hand with the evolution of the overall rate of temporary employment (see Figure 3). In other words, the data show the expansion of a flexible segment in the Spanish labour market (an expansion greatly favoured by the economic boom experienced in the second half of the 1980s²²). Figures 2 and 3 thus describe a dynamic process that seems to stabilise in the early 1990s. This evidence cannot, however, be interpreted in itself as confirming the predictions of the employment-rent micro-model. Note, for instance, that the observed increase in the proportion of wage earners on temporary contracts that become unemployed every year (plotted in Figure 2) could simply reflect the increase in the proportion of temporary contracts among the employed population (Figure 3), without necessarily implying a decrease in their job security relative to permanent workers. Yet what we need for the empirical confirmation of the model is evidence that temporary workers' job security relative to permanent workers decreased with the expansion of the flexible segment or, in other words, evidence that the expansion of the flexible segment enhanced permanent workers' employment security relative to temporary workers. Only evidence of this type could be interpreted as confirming the existence of a buffer effect.

¹⁹ New entrants into employment are those who were not in employment a year before the survey was carried out.

²⁰ See also Bentolila, Segura and Toharia (1991,pp. 237-8); Jimeno and Toharia (1994, ch. I and IV).

²¹ Despite the massive destruction of employment that took place during the economic crisis of 1992 and 1994 - in which more than 1 million jobs were lost -, only 17% of those who became unemployed in 1993 came from permanent employment (see Polavieja 2001, ch. III).

²² See: Polavieja (2001 ch. III).

Figure 2:

Percentage of temporary contracts among the newly employed and the newly unemployed (LFS) Figure 3:



Rates of temporary employment and unemployment by year (LFS)

Source: LFS (second quarters), smoothed (calculated by the author)

In order to test for the existence of a buffer effect at the level of employment, I have constructed an indicator that accounts for the relative weights of each type of contract among the employed population. This indicator (represented by the symbol Ω_a) is a measure of permanent workers' job security *vis-à-vis* temporary workers. It is obtained by applying the following formula:

$$\Omega_{a} = 1 - \left[\frac{PNU^{PC_{in t}}}{PPC_{in t-1}} \right] \times 100$$

where $PNU^{PC_{in} t}$ is the proportion of newly unemployed workers observed in year t that come from permanent employment and $PPC_{in t-1}$ is the proportion of employed workers on permanent contracts in the previous year²³. We are only considering wage earners and hence there are only two types of contracts. Therefore, $PNU^{PC_{in} t}$ equals one minus the proportion of newly unemployed workers observed in year t that come from

 $^{^{23}}$ To some extent, using the proportion of permanent workers the previous year is arbitrary since many of the job losses among the newly unemployed could actually have occurred within the year the survey was carried out. Results are, however, consistent either way. For simplicity, when calculating the Ω_a indicators for different classes (shown in Figures 8 and 9 below) I used the formula: $\Omega_a = 1 - [^{\% \ \text{NUPC in t}} / \text{}_{\% \ \text{PC in t}}] \ x100$ for each class.

temporary employment and PPC_{*in t-1*} equals one minus the proportion of temporary workers on permanent contracts the previous year. Ω_a can, therefore, be taken as an indicator of the gap between the job security levels of workers on different contracts²⁴.



Sources: Figure 4: LFS (second quarters), smoothed (calculated by the author). Figure 5: LFS matched files (second quarters), smoothed (Toharia 1996 and 2002, personal communication)

Figure 4 shows the evolution of the Ω_a indicator over time. Note that Figure 4 provides clear evidence in favour of the existence of a buffer effect. Permanent workers' employment security relative to temporary workers increases sharply until 1991 and then stabilises, following the same trend observed in the evolution of the overall rate of temporary employment. This suggests that some sort of equilibrium in the segmentation process could have been reached around 1991-1993, a point after which no further enhancement of insiders' survival probability in employment is observed. The overall trend is, therefore, fully consistent with the predictions of our micro-model: an increasing buffer effect and then equilibrium.

These predictions find further support in the evolution of the conversion rate of temporary contracts into permanent ones over time. All the existing evidence on the

²⁴ The Ω_a indicator represents this distance in percentage points. A value of 0% would indicate no differences in unemployment risks by type of contract (i.e. both types of workers will be equally represented in employment and in unemployment), whereas a value of 100% would indicate maximum contractual differences in unemployment risks (i.e. not a single permanent worker would become unemployed). Hence, Ω_a indicates how much more job security permanent workers enjoy relative to temporary workers. Two other Ω indicators are calculated and tested in Polavieja (2001, p. 369). Results are equivalent regardless of the chosen indicator.

evolution of transition rates into permanent employment have shown that this rate (which has always been very low in Spain in comparative terms²⁵) decreased sharply in the 1987-1993 period, and then flattened out to remain more or less constant thereafter (see Alba 1997, pp. 13-9; Güell-Rotllan and Petrongolo 1998, pp. 13; Toharia 1996, pp. 51). According to these analyses, the transition rate between 1987 and 1988, the highest ever recorded in Spain, was around 20% (i.e. 20% of the temporary workers employed in 1987 had achieved a permanent contract in 1988). This rate declined rapidly thereafter so that between 1992 and 1993 it was only around 10%. This observed decline in the conversion rate took place in the face of very high levels of economic growth in the second half of the 1980s, which makes the findings even more meaningful. After 1992-1993 the decrease came to a halt as the conversion rate stabilised around the 10% level for the rest of the period analysed in this paper. The data, therefore, suggest a non-monotonic decline in conversion rates which is fully consistent with the predictions of the micro-model proposed in the previous section. Figure 5 shows the evolution of the conversion rate as calculated by Toharia²⁶ (1996).

If we observe Figures 4 and 5 together, we see that, as workers on permanent contracts increased their employment security over temporary workers, the proportion of the latter becoming permanent each year decreased. Greater job security in the core of permanent employment seems causally related to greater job insecurity in the periphery of temporary employment. Figures 6 and 7 provide further evidence of this process, as they show how average tenure increased over the analysed period for permanent workers, but decreased for temporary workers. The data show, therefore, that as the flexible segment of temporary work increased in size it also increased in internal instability, while the opposite phenomenon is true for the core of permanent employment, which became smaller, more secure and more impenetrable. This process seems to have reached an equilibrium state in the early 1990s. All this evidence is consistent with the idea that the buffer effect increases the efficiency of the incentive effect, hence allowing employers to extract the same output with a lower conversion rate, until equilibrium is reached. These are the main stylised facts regarding the employment dynamics of the segmentation process at the aggregate level (for further evidence of this process see Polavieja 2001, ch. III).

²⁵ Notice that the transition rate from temporary employment into permanent employment for the British case is approximately 45% (Gallie 2000b, p. 301), while for the U.S. it is more than 50% (Segal and Sullivan 1995; Amuedo-Dorantes 2000, p. 315).

²⁶ The proportion of workers on permanent contracts in the second quarter of 1997 that held a temporary contract in the second quarter of 1996 was not reported in Toharia (1996). This datum has been kindly shared by Toharia (2002, personal communication), for which the author is most grateful.

Figure 6: Average job tenure (in months) for workers on permanent contracts by year (LFS) Figure 7: Average job tenure (in months) for workers on temporary contracts by year (LFS)



Sources: LFS (second quarters), smoothed (calculated by the author)

There is further evidence which suggests that the segmentation process described so far for the whole of the Spanish workforce took place also - although with different intensities - within occupations that entailed very different levels of task-specificity. For instance, Güell-Rotllan and Petrongolo (1998) have shown that the observed decline in the conversion rates of temporary contracts into permanent ones cannot be attributed to either personal characteristics, household characteristics, firm characteristics or to changes in the business-cycle since the non-monotonic downward trend is confirmed after controlling for all these factors. Similarly, my own findings suggest that the overall trends observed in the evolution of the different indicators that account for the segmentation process also seem to be observable within each of the different classes distinguished in standard class schema (Polavieja 2001, ch. III). To illustrate this point, Figures 8 and 9 respectively show the evolution of permanent workers' job security relative to temporary workers (i.e. the evolution of the Ω_a indicator) and the evolution of the difference in average tenure by type of contract for both workers belonging to the 'service' class (i.e. classes I and II of the Goldthorpe class schema) as well as for those belonging to the 'labour' class (classes VI and VII)²⁷.

As Goldthorpe (2000, ch. X) explains, the service employment relationship is characterised by high asset specificity and productivity measurement costs, whereas these costs are low in labour employment relationships. Yet, regardless of these task-

²⁷ A change in the system of coding of occupations in the LFS took place in 1994. This change alters the construction of the class categories and prevents fully reliable comparisons between the data gathered before and after this date (see Polavieja 2001, ch. III). This methodological break is noted in the figures presented by dotted lines between 1993 and 1997. For the construction of the class variables in the Spanish LFS see Polavieja (1998).

specificity factors, we observe the same trends for each class as those commented above for the total workforce.



Source: LFS (second quarters), smoothed (Polavieja 2001)

These findings showing that the process of segmentation has taken place in all classes of jobs are further corroborated by new original multivariate analysis of the yearly inflows into permanent employment. Using data obtained by pooling together the second-quarter Spanish labour force surveys for the years 1987, 1989, 1991, 1993, 1995 and 1997, I have fitted two logit models on the probability that new entrants into employment have a permanent contract (rather than a temporary one). The response variable in these models measures, therefore, the type of contract of all inflows into employment recorded every year. Entries into permanent employment include both transitions from temporary employment and transitions from any other labour market situation.

The first logit model fitted to the data assumes no interactions between the independent variables. According to this model the chances of entering into permanent employment depend on sex, (non-monotonically on) age, class, respondents' education, firms' ownership, industry, province of residence and, crucially, on time. Time is coded as a continuous variable that ranges from value 1 for the first year of the pool (i.e. 1987) to value 6 for the last (i.e. 1997). Non-linearity in the time-effect is tested by introducing a quadratic term (time²) (see Agresti and Finlay 1997, p. 547). The main-effect model shows that the effect of time on the chances of entering into permanent employment is, as expected, negative and non-monotonic. Entering the core of permanent employment became increasingly difficult between 1987 and 1993, a point after which we observe stabilisation.

Figure 10: Predicted probabilities of having a permanent contract for new entrants into employment for different years according to the main-effect model (Predicted values for a 30-to-34-year-old male in the private sector) Figure 11: Predicted probabilities of having a permanent contract for new entrants into employment for different years according to the interaction model (Predicted values for a 30-to-34-year-old male in the private sector)





MAIN-EFFECT MODEL: Log $(P_{PC}/1-P_{PC})$ = female + age + age² + class + education + firms' ownership + industry + province of residence + time + time²

N= 91,556 LR $chi^2(77)=10267.37$ Prob > $chi^2=0.0000$ Pseudo R²= 0.1026

INTERACTION MODEL: Log ($P_{PC}/1-P_{PC}$)= female + age + age² + education + firms' ownership + industry + province of residence + class*time + class* time²

N=91,556 LR $chi^{2}(87)=10429.81$ Prob. > $chi^{2}=0.0000$ Pseudo R²= 0.1042

Likelihood Ratio Test: Interaction model against Main-Effects model: Chi²(10)=162.44; Prob > Chi² = 0.0000

Sources: Pooled Sample of LFS (second quarters), smoothed (calculated by the author)

The second logit model tested on the pooled LFS data accounts for an interaction between the non-monotonic effect of time and class on the chances of entering into permanent employment. This interaction should be expected if one assumes different intensities in the segmentation process by class. The interaction model seems to provide a significantly better fit to the data than the previous main-effect model as revealed by the results of a likelihood-ratio test carried out between the two models. Yet the predictions in terms of probabilities of entering into permanent employment for different classes and different years obtained using the interaction model are only marginally dissimilar to those obtained using the main-effect model. Figure 10 shows graphically the change in the predicted probabilities of entering into permanent employment (rather than into temporary employment) by class and year as calculated by the main-effect model for a 30-34-year-old male employed in the private sector. Figure 11 shows the same predictions as calculated by the interaction model. Both models are shown in greater detail in Table 1^{28} .

It must be noted that the proportion of variance explained by the models presented in Table 1 is very modest. In fact, the models perform rather poorly when it comes to predicting positive outcomes (i.e. entries into permanent employment). This suggests either that there are important structured properties in the yearly inflows into permanent employment which are not properly captured by the parameters of the models or, alternatively, that there is a great deal of intrinsic random variance in these inflows. Note, however, that if individual employers are using permanent contracts as an effort-eliciting device at the firm level, attempting to explain the structure of the yearly inflows into permanent employment by reference to workers' individual characteristics can only yield modest results.

What is important to stress, in any event, is that the logit models presented in Table 1 (and in Figures 10 and 11) are indeed consistent with the predictions of the employment-rent approach. They show that the downward non-monotonic trend observed over time in the yearly inflows into permanent employment for the whole of the Spanish workforce persists even after controlling for age, sex, class, education, firms' ownership, industry and province of residence (the latter not shown in the table due to lack of space). The segmentation process that this trend describes seems to have taken place in occupations implying very different levels of task-specificity. That is why we observe very similar trends in the evolution of the yearly inflows into permanent employment both within professionals of the so-called service class (I/II) as within labourers of the manual class (VI/VIIa). In the light of the existing evidence there can, therefore, be little doubt that entering into the permanent core became increasingly difficult for all workers regardless of the type of tasks they were employed to perform. This suggests that the process of segmentation triggered by labour market deregulation in Spain has a logic of its own, one that cannot easily be subsumed within the logic of standard class models (see Polavieja 2001, ch. VIII).

 $^{^{28}}$ The models shown in Table 1 are fitted to a randomly selected sub-sample (N=8,214) drawn from the total pooled sample, whereas the predicted probabilities have been calculated using the whole pool (N=91,556). Using a randomly selected sub-sample reduces the problem of having excessive levels of statistical significance caused by very large sample sizes. Using the whole pool for calculating the predicted probabilities increases the precision of the predicted values. Results are, in any event, very similar regardless of the chosen approach.

		Ма	del 1	Model 2			
Paramotors		Logit	Sig.	Logit Sig.			
1 urumeters		Coeff.	~.8.	Coeff.	~ .8.		
Constant		-1.249		-1.84			
Female		28	****	28	****		
Age		.10	****	.10	****		
Age ²		001	****	001	****		
Class (LFSCS1) \rightarrow Profession	als (ref.)						
White collars		045	n.s.				
Supervisors & Low Techni	cians	36	n.s.	(see			
Blue Collars		60	****	below)			
Unskilled Service workers		23	**				
Agricultural Labourers		-1.38	****				
Education (CASMIN) \rightarrow Incom	mplete (ref.)						
General Elementary		.57	****	.56	****		
Basic & Inter. Vocational		.57	****	.56	***		
Intermediate General		.84	****	.83	****		
Other Intermediate		.83	****	.82	****		
Lower Tertiary		.46	**	.45	**		
Higher Tertiary		.57	***	.54	***		
Firms' Ownership→ Private (ref.)						
Public	2)	.22	**	.21	**		
Industry→ Heavy Industry (rei	t.)	1.4		1.5			
Farming and Fishing		.14	n.s.	.15	n.s.		
Energy and Water		.90	**	.85	**		
Minerals		.28	n.s.	.26	n.s.		
Light Industry		.17	n.s.	.16	n.s.		
Construction	54	* * * *	56	***			
Commerce & Catering	.05	n.s.	.04	n.s.			
Transports & Comm.	.24	n.s.	.23	n.s.			
Finances	.18	n.s.	.17	n.s.			
Other Services	.37		.30				
Time		1 10	****	(500			
Time ²		-1.19	****	(See			
MAIN EFFECT OF CLASS	.15		Delow)				
$Class (LESCS1) \rightarrow Profession$	als (rof)						
White collars	als (Iel.)			74	ne		
Supervisors & Low Techni	ciane			.1.27	n.s.		
Blue Collars	icians			-1.27	n.s.		
Service Proletariate				58	n.s.		
A gricultural L abourers				- 88	n.s.		
MAIN FEFECTS OF Time				- 85	****		
Time ²				09	***		
INTERACTION Class*Time	White collars*tin	me		- 45	ns		
	Supervisors & I	low Techni	cians*Time	1.04	n.s.		
	Blue Collars*Ti	ime		- 37	n.s.		
	Unskilled Servi	ce Workers	*Time	- 53	**		
	Agricultural La	bourers*Tin	ne	- 40	ns		
INTERACTION Class*Time ²	White collars* 7	Time ²		.05	n.s.		
	Supervisors & I	owTechnic	ans*Time ²	- 16	n s		
	Blue Collars* T	ime ²		.04	n.s.		
	Unskilled Servi	ce Workers	*Time ²	.07	*		
	Agricultural La	bourers*Tin	ne ²	.06	n.s.		
Likelihood Ratio Test:		N=8.214		N=8.214			
Model 2 against model 1: Chi ² (1	10) = 20.46	LR chi ² (7	7) = 1064.55	$LR chi^{2}(87) = 1082.26$			
Prob	> Chi ² = 0.0252	Prob >chi	$^{2}=0.0000$	$Prob. > chi^2 = 0.0000$			
		Pseudo R	$^{2}=0.1169$	Pseudo R	$^{2}=0.1188$		

Table 1: Pooled Logit Regressions on the Chances of Having a Permanent Contract for New Entrants in the Labour Market (Tenure Less than or Equal to 12 months)

Note: Models are controlling for province of residence.

****significance ≤ 0.001 ***significance ≤ 0.01 **significance ≤ 0.05

Source: Random Sub-sample of Pooled Sample of LFSs, second quarters (1987, 1989, 1991, 1993, 1995 and 1997) (calculated by the author)

As a result of the segmentation process summarised in this section, the Spanish labour market showed by 1997 a very intense differentiation of opportunities for stable employment by type of contract. That year, 34% of the employed wage-earners in Spain had a temporary contract, whilst the unemployment rate was 21%, exactly the same figure that 13 years earlier had led the Socialist government to implement two-tier deregulation. Approximately 90% of all entries into employment as well as of all exits from employment into unemployment that took place in 1997 occurred in the flexible segment of temporary contracts. The average tenure of temporary workers was only 12 months, a figure that stood in sharp contrast to the average tenure in employment rate in 1997 was 34% for temporary workers, yet only 5% among permanent ones. The two segments had little permeability as shown by an annual transition rate between temporary and permanent employment of only around 11%. As these data for 1997 show, the employment consequences of two-tier deregulation have been severe in Spain (see Table 2). What about its effects on wages?

OCCUPA- TIONAL CLASSES (LFSCS2/EGP)	RATE OF TEMPO- RARY EMPLO- YMENT	UNEM (For in previous	UNEMPLOYMENT RATE (For individuals with previous job experience)		EMPLOYED RESPONDENTS' AVERAGE TENURE (Mean duration in months)		UNEMPLOYED RESPONDENTS' AVERAGE TENURE (Mean duration in months of last job)		FEELINGS OF JOB INSECURITY (% of respondents who consider it likely or very likely that they will lose their jobs within 12 months)	
		Total	By c	type of ontract	Total	By type of contract	Total	By type of contract	Total	By type of contract
			PC	2 3%		159		124		4 1%
Professionals	18.9%	7.2%	TC	27.5%	129	11	39	12	13.4%	33.3%
			PC	4.9%		142		76		5.0%
Intermediate	31.4%	18.6%	TC	35.5%	101	6	28	13	12.2%	30.4%
			PC	6.1%		164		162		9.7%
Skilled Manual	39.4%	14.4%	TC	23.6%	102	6	53	14	29.9%	62.2%
			PC	14 4%		139		97		9.6%
Unskilled Manual	65.4%	39.8%	TC	47.8%	56	4	18	7	33.6%	56.6%
			РС	4.9%		153		113		6.4%
Total	33.5%	16.5%	TC	33.6%	107	6	32	11	21.3%	46.6%

 Table 2: Unemployment, Job Tenure and Subjective Insecurity Figures by Class and

 Type of Contract for the Year 1997

Notes:

PC= Permanent contract; TC= Temporary contract.

The first four indicators are obtained from a random sub-sample of the 1997 LFS, while the indicator regarding feelings of job insecurity is obtained from the 1997 survey on *Attitudes towards Employment and Work* (ATEW) carried out in 1997 by the Spanish Centre for Sociological Research) of a representative sample of 2,500 respondents. The class variable used for LFS data is the so-called LFSCS2, whereas the Goldthorpe class schema (EGP) is used for the ATEW (last column). The LFSCS2 is the closest operationalisation of the EGP that can be made using LFS data (see Polavieja 1998; 2001, ch. III).

Sources: Randomly selected subsample of LFS (1997, 2nd quarter, weighted) and ATEW (1997). (Polavieja 2001, ch. III)

The effects of two-tier deregulation on wages

According to the incentive mechanism, temporary workers' insecurity in employment can be used by employers as a means to reduce temporary workers' rents. Using the possibility of conversion into permanent employment as an effort-eliciting alternative to efficiency wages, employers will be able to extract the same amount of output from temporary workers at a lower cost for the firm (i.e. they will be able to reduce temporary workers' employment rents). It thus follows that employers will pay less to temporary workers than to permanent employees with similar characteristics. Wage discrimination is, therefore, the first expected wage effect of two-tier reform as predicted by the incentive mechanism²⁹.

Table 3 presents three nested heteroskedasticity-robust linear regressions on the (logged) net wages per hour worked fitted on the data provided by the Survey on Class Structure Class Consciousness and Class Biography (CSCCCB), carried out in 1991. The CSCCCB sample (N=6,600) includes 2,933 employed wage-earners, 775 of whom are temporary workers. Model 1 shows that wages depend on age, sex, occupation, firms' ownership, tenure, size of the firm, industry and education (which is considered to capture human capital). Ceteris paribus, men receive higher wages than women, older workers earn higher wages than younger ones, and the more educated more than the least educated. Model 1 also shows that wages increase with tenure as well as with firm's size³⁰, and also that professionals earn higher wages than intermediate-class employees, supervisors, blue-collar workers and unskilled service workers (and much higher than unskilled agricultural workers). At first sight, these occupational differences may not seem very spectacular, but it should be noted that the model is already controlling for education, which is taken as a proxy for general productivity. Hence these occupational differences are interpreted here as reflecting only the different rent-optimisation opportunities that different tasks imply. Finally, Model 1 shows that workers employed in the public sector do receive higher wages than private sector workers and also that wages are higher for workers employed in particular industries (such as heavy manufacturing and energy). These two latter findings most probably reflect exogenous product-market factors³¹.

²⁹ Wage discrimination is illegal in Spain as the Workers' Statute (*Estatuto de los Trabajadores*) establishes the principle of equal work for equal pay (Jimeno and Toharia 1992, p. 21; 1994). Yet it should be noted that the 1984 reform did not allow for an appeal against the termination of temporary contracts in labour courts. The combination of high job insecurity and scant legal protection reduces the capacity of temporary workers to resist arbitrary measures on the part of employers.

³⁰ There is abundant empirical evidence showing that big firms pay (and promote) more than small firms (see, for example Baron 1984; Baron and Bielby 1980; Bessy 1987, p. 44; Buechtemann 1993, p. 20; Choffel and Garnier 1988; Daniel and Stilgoe 1978; Hashimoto 1990; Rebitzer 1986).

³¹ Firms that have greater control over their product markets will also have a greater capacity to offer internal labour markets and incentive schemes to their workforces. An oligopolistic position in the product-markets increases profitability and hence firms' ability to pay. Equally, greater certainty in product-markets allows higher wages to be absorbed in product pricing. Certainty will depend on business cycle factors, but also on which of the components of the demand for product markets firms seek to target, as the dual labour market models argue (see Polavieja 2001, ch. I). Certainty will also depend on firms' relationship with the state and foreign markets and on corporate growth (Baron 1984). Any of these factors could explain the observed effects of industry and sector of activity.

ParametersCoeff.Sig.Coeff.Sig.Coeff.	Sig.		
Constant 6.41 6.54 5.74			
Age .0002 n.s001 n.s04	***		
Age ² 0005	***		
Female08 ****07 ****07	****		
Class (LFSCS1) \rightarrow Professionals (ref.)			
White collars27 ****28 ****26	****		
Supervisors & Low Technicians27 ****24 ****26	****		
Blue Collars38 ****36 ****34	****		
Unskilled Service Workers35 ****31 ****30	****		
Agricultural Labourers67 ***59 ***56	**		
Firms' Ownership			
\rightarrow Private (ref.)			
Public .16 **** .14 *** .15	***		
Tenure (in months) .0009 **** .0007 *** .0008	****		
Size			
\rightarrow Less than 50 workers (ref.)			
More than 50 workers .13 **** .12 *** .12	***		
Industry			
→ Heavy Industry (ref.)			
Farming and Fishing58 ***62 **65	***		
Extractive04 n.s03 n.s04	n.s.		
Light Industry15 ****14 ****14	****		
Construction04 n.s01 n.s005	n.s.		
Hotels & Commerce18 ***17 ***15	**		
Transports & Communications02 n.s02 n.s03	n.s.		
Services09 *05 n.s03	n.s.		
Education (CASMIN)			
\rightarrow Incomplete (ref.)			
General Elementary .18 n.s16 n.s13	n.s.		
Basic & Intermediate Vocational .27 * .26 n.s24	n.s.		
Intermediate General .34 ** .30 * .26	n.s.		
Other Intermediate05 n.s05 n.s07	n.s.		
Lower lettary .46 *** .43 *** .38	**		
Higher Tertiary .62 **** .62 **** .58	****		
Type of contract			
\rightarrow Permanent (ref.) Temporary16 ***12	***		
N=1402 N=1358 N=1358			
$R^2 = 4065$ $R^2 = 4181$ $R^2 = 4976$	$R^2 = .4976$		
F(36,1365)=24.76 F(37,1320)=25.76 F(38,1319)=	F(38,1319)=27.84		
Root MSE=.5053 Root MSE=.50283 Root MSE=.	Root MSE=.4305		

Table 3: Robust Regressions on Log Net Earnings per Hour usually Worked according to the CSCCCB (1991)

Note: Models are controlling for autonomous community of residence. ****significance ≤ 0.001 ***significance ≤ 0.01 **significance ≤ 0.05 *significance ≤ 0.10 (significance level in brackets).

Source: CSCCCB (1991) (calculated by the author)

Model 2 is the result of adding type of contract to the equation represented in Model 1. It shows that temporary workers earn around 16% less per hour worked than permanent workers with the same characteristics³². Model 3 incorporates a qualification to model 2 consisting of the introduction of an age-quadratic term. This seems to be a more accurate account of earning distributions since it captures the well-known age-earnings relationship (see Lazear 1981; 1995). The decrease in the coefficient of the temporary variable produced when accounting for a non-monotonic effect of ageing on earnings suggests that part of what Model 2 attributed to type of contract could in fact be due to different age-earnings profiles³³. Model 3 is a better description of the data structure than previous models. According to this model, temporary workers earn around 12% less than their permanently employed counterparts³⁴.

Interaction effects between sex, sector, size, industry and class have been tested and rejected. This suggests that the discrimination effect is largely homogeneous for all of these variables. In short, the evidence on wage discrimination is consistent with the expectations of the employment-rent model. Unfortunately, we lack series of data with which to test also whether the evolution of the observed wage discrimination followed the expected pattern (intensification until the early 1990s and then stabilisation).

The second expected effect of two-tier deregulation on wages that follows from the employment rent model is, of course, a buffer effect. There exist only a few analyses of the buffer effect of temporary employment on wages in Spain. The most widely cited is the work of Bentolila and Dolado (1992; 1994) (see also Rodríguez Gutiérrez 1996). In accordance with the insider-outsider literature, Bentolila and Dolado (1992; 1994) describe the wage bargaining process as one of rent sharing between firms and their insider workers (defined as workers on permanent contracts), under the assumption that temporary workers' interests are largely disregarded by workers' representatives. This description can be represented by the mark-up of permanent workers' wages over temporary workers' wages. According to the authors, this mark-up will depend on the following three factors: (1) the firms' market power, since the greater the firm's market power, the greater the overall rent to be shared; (2) union power, which determines workers' rent seeking capacity; and (3) insiders' survival probability, which is defined by the ratio of the union's employment target to permanent employment (Bentolila and Dolado 1994, pp. 72-5). As explained above, when the proportion of temporary employment to total employment rises, the survival probability of insiders rises accordingly, and unions, as insiders' representatives, demand higher wages. This is the mark-up effect of the temporary workers' buffer (Bentolila and Dolado 1994, pp. 72-5).

³² In all the statistical analyses, temporary workers on training and apprenticeship contracts (which account for approximately 4% of all temporary workers) have been removed from the type of contract variable since these contracts stipulate lower wages for their bearers. Observed effects cannot, therefore, be due to the influence of this particular type of temporary contracts.

³³ In fact, this interpretation is corroborated by Alba's study of the difference in the age-earning profiles by type of contract. Analysing the Labour Force Pilot Survey on Earnings (1990) Alba (1996, p. 11) found that "the age-earnings profile of permanent workers has the typical concave shape, whereas the age-earnings profile of temporary workers is almost flat for those aged 20 and over".

³⁴ These results on wage discrimination are consistent with those found by Jimeno and Toharia (1992) in their study of the wage and productivity effects of temporary contracts in Spain. In this study the authors used the Labour Force Pilot Survey on Earnings (LFPSE) carried out by the Spanish Statistical Office as part of the 1990 LFS.

The mark-up hypothesis implies, therefore, that the proportion of temporary workers in total employment is one of the firm factors that determine insider wages.

Bentolila and Dolado (1994) tested the insider-outsider model of wage determination drawing on data from the balance sheet records kept at the Bank of Spain (the Spanish central bank). Their sample provided information on 1,167 manufacturing, non-energy, mainly large, private firms over the period 1983-1988, which represented 13.5% of total manufacturing employment in Spain in that period. The data included the number of temporary and permanent workers employed in each firm over the period, as well as indicators of firms' profits and productivity, of the type of manufacturing activity firms were involved in and of the skill-composition of their workforces. Applying panel data techniques for dynamic models to this sample, Bentolila and Dolado showed that an increase (over time) in the proportion of temporary workers employed in any given firm did indeed increase the wages received by permanent workers. Their wage equation estimates that this buffer effect has a value of 0.36, which implies that an increase of one percentage point in the proportion of temporary workers, raises the growth rate of permanent workers' wages by about one-third of a percentage point. Therefore, Bentolila and Dolado's analysis provided empirical evidence confirming a full buffer effect in the Spanish manufacturing sector³⁵.

It is possible to test the existence of a buffer effect in the Spanish wage bargaining process at the individual-level further using the CSCCCB (1991). This test is the first analysis of buffer mechanisms carried out with individual data for the Spanish case. The analysis is based on the premise that, if the buffer exists, permanent workers employed in firms with a higher proportion of temporary employees should *ceteris paribus* earn higher wages than permanent workers who do not benefit from this buffer (following the notation used by Bentolila and Dolado (1994) this proportion is represented by the Greek letter ϕ). Hence, the individual-level modelling substitutes the expectation that, with the increase in the buffer effect, individual insiders might obtain a mark-up over time, with the expectation that identical insiders employed in similar firms with different proportions of temporary workers (i.e. different buffer) should differ in their earnings. It is on this premise that the exercise makes methodological sense. Yet it should be noted that this premise implies that unobserved differences in what are considered to be 'identical' insiders could introduce statistical noise in the wage models (and even lead to spurious results)³⁶.

³⁵ Rodríguez Gutiérrez's analysis of the wage determination process at the firm level in Asturias in the period 1990-94 also shows how permanent workers' wages grow as a result of the increase in the proportion of temporary workers employed in their firms. The evidence of Bentolila and Dolado (1994) and Rodríguez Gutiérrez (1996) is also consistent with the findings of Jimeno and Toharia (1992) as explained in detail in Polavieja (2001, ch. III).

³⁶ The rate of non-response to the survey question on the exact number of temporary workers employed in respondents' firm is very high, rising to 56% among wage earners in the CSCCCB. This is an important limitation, which advises us to be very cautious in the interpretation of the results. In order to maximise the number of observations, I have assumed an average presence of temporary workers in non-respondents' firms as given by the overall rate of temporary work. It is under this assumption that the buffer indicator presented in Table 4 has been computed. The models presented in Table 4 have also been fitted without imputing responses to the missing values on the question regarding the proportion of temporary workers employed in permanent workers' firms (i.e. using the actual number of responses to that question). This reduces the number of observations significantly but yields results which are fully consistent with those presented in Table 4. Consistency in the findings increases the reliability of the buffer-effect models presented in Table 4.

Table 4:	The Buffer	Effect of	n Wages:	Robust	Regressions	on	Permanent	Workers'	Log
Net Earn	ings per Ho	ur usually	y Worked	l accordi	ing to the CS	CC	CB (1991)		

	Model 1		Model 2		Model 3		Model 4	
Parameters	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
Constant	5.6		5.6		5.6		5.51	
Age	.04	****	.04	****	.04	****	.04	****
Age ²		****	0004	****	0004	****	0004	****
Female	.0005	****	05	****	05	****	05	****
Class (LFSCS1) \rightarrow Professionals (ref.)	05	****	20	****	20	****	27	****
White Collars	27	***	28	****	28	****	27	***
Supervisors & Low Technicians	27	****	25	****	24	****	22	****
Blue Collars	23	****	40	****	40	****	39	****
Unskilled Service workers	39	**	30	*(0()	29	***	28	*(0()
Agricultural Labourers	30	* *	43	*(.06)	4/	**	40	*(.06)
Firms Ownersnip - Private (rel.)	45	***	12	***	10	**	10	**
Public Tanuna (in mantha)	12	***	.12	***	.10	***	.10	***
Size AL ass than 50 workers (ref.)	.15		.0000		.0003		.0003	
Size TLess than 50 workers (Iel.)	.0003	****	11	****	10	****	(522)	halow)
Industry A Haavy Industry (raf)	10		.11		.10		(see	below)
Farming and Fishing	.12	****	38	****	35	****	30	****
Extractive	24	n a	38	n a	33	n a	39	n a
Light Industry	54	11.5. ***	00	11.5. ***	00	11.5. ***	04	11.5. ***
Construction	05	ne	13	ne	13	ne	11	ne
Hotels & Commerce	12	11.5. **	05	11.5. ***	04	11.5. ***	05	11.5. **
Transports & Communications	02	ne	20	ne	20	ne	18	ne
Services	19	11.5. **	- 12	11.5. **	- 13	11.5. ***	007	11.5. **
Education (CASMIN) \rightarrow Incomplete (ref.)	- 12		12		15		11	
General Elementary	12	ne	20	ne	20	ne	21	ne
Basic Vocational	20	*	34	*	33	*	35	**
Intermediate Vocational	33	*	31	*	31	*	33	*
Intermediate General	30	ns	17	ns	16	ns	19	ns
Lower Tertiary	17	**	45	**	44	**	46	***
Higher Tertiary	45	****	65	****	65	****	.40	****
Ingher Fernary	65		.05		.00		.00	
Proportion of Temporary Workers in Firm (a)	.00		0016	*	005	***		
ϕ^2					00005	**		
Ψ								
Interaction: Size*Non-monotonic A								
Main effect size (Effect of big size when $\phi=0$)							.20	****
Main effect ϕ (Effect of ϕ on small firms)							.008	****
Main effect ϕ^2 (Effect of ϕ^2 on small firms)							0001	****
Size* ϕ (Differential effect of ϕ in hig firme)							008	***
Size ψ (Differential effect of ψ in org firms)							008	***
Size* ϕ (Differential effect of ϕ in big firms)							.0001	
	N-007		N=997 $R^2=.4726$		N=997 $R^2=.476$		NI_007	
	N=99/ $D^2=460$	r					N=997 $R^2=.4811$ E(41.055)=22.02	
	K = .469	∠))–25.92						
	F(37,939)=23.82		F(38,958)=24.76		F(39,957)=24.03		F(41,955)=22.93	
	MSE- 2	0/15	MSE- 20244		MSF = 30235		MSE = 3008	
	WISE3943		IVISE39.	MSE=.39344		MSE=.39235		200

MBE=.3945MBE=.39344MBE=.39235MBE=.3908Note: Models are controlling for Autonomous Community of residence.****significance ≤ 0.001 **significance ≤ 0.01 **significance ≤ 0.05 *significance ≤ 0.10 (significance level in brackets).Source: CSCCCB (1991) (calculated by the author)

Table 4 shows the results of three wage equations on the (log) net wages per hour usually worked calculated for workers on permanent contracts using the CSCCCB (1991). Model 1 tests the hypothesis that wage differentials amongst permanent workers depend on sex, (non-monotonically) on age, occupation, tenure, education, firms' ownership, firms' size, firms' industry and region of residence (the latter not shown in the table due to lack of space). Model 2 tests the hypothesis that, apart from all these factors, a further determinant of insiders' wages could be the proportion of temporary workers employed in the respondents' firm (as measured through the indicator ϕ). Model 2 indeed suggests the existence of an impact of the temporary buffer on insiders' wages. According to the coefficient obtained for the parameter in question, a 10% increase in the temporary buffer (ϕ) will lead to an increase of insiders wages of 1.6 percentage points. This impact is however, strictly speaking, nonsignificant at a 95% level of confidence. Model 3 further tests the possibility of a nonmonotonic effect of ϕ on insiders' wages. This is in fact what we should expect if the buffer effect had a ceiling beyond which a further increase in the proportion of outsiders debilitated rather than strengthened insiders' bargaining position. Note that the quadratic term of ϕ yields a negative and significant result in Model 3. This is consistent with the existence of a non-monotonic buffer effect. Model 3 estimates the ceiling level of the buffer effect around the 50% threshold (as calculated by dividing the coefficient of ϕ by twice the coefficient of ϕ^2 , see Agresti and Finlay 1997, p. 547). This seems a reasonable figure although the very high levels of non-responses regarding ϕ mean that it should be taken with caution. Figure 12 illustrates the buffer effect captured by model 3.

Figure 12: The buffer effect on wages as predicted by model 3 of Table 4 (illustration)



Interactions between the non-monotonic effect of the ϕ indicators and firms' ownership and industry have been tested and rejected. An interaction between firms' size and a non-monotonic buffer effect has also been tested. This interaction is presented in Model 4. The results of this interaction suggest that the buffer effect could actually be taking place in firms with fewer than 50 workers, which are the majority of firms in Spain, and in which unions are not present³⁷. This would seem to support the view that insideroutsider effects depend considerably on the regulatory features of the collective bargaining system. In fact, it would seem to suggest that the buffer mechanism is more the result of unions' weak presence in Spanish firms than of their strength. Elsewhere I have argued that strong centralised unions in coordinated bargaining could actually display inclusive strategies that bridge the representational gap between insiders and outsiders (Polavieja 2001, ch. II). In Spain only firms employing more than 50 workers can engage in firm-level bargaining. The results of the interaction effect seem, therefore, to be supportive of this 'institutional' argument. Yet it must be noted that methodological considerations imply that we should take these results cautiously³⁸.

Conclusions drawn from the individual-level evidence presented in Table 4 must, therefore, be regarded as tentative. Yet it is quite noticeable that the findings reported in this table are highly consistent with the predictions of the employment-rent micromodel, as they suggest the existence of a non-monotonic buffer effect in the wage setting process. This evidence is also fully in line with the firm-level findings of labour economists (Bentolila and Dolado 1994; Rodríguez Gutiérrez 1996; Jimeno and Toharia 1992). Taken together, firm-level and individual-level findings strongly suggest not only that temporary workers are discriminated against in the wage setting process, but also that permanent workers might have benefited economically from the buffer effect provided by outsiders. The buffer effect has enhanced insiders' bargaining position vis- \hat{a} -vis the employer, as a result of which insiders might have obtained wage gains (i.e. rents) which do not correspond with the employment situation in the Spanish labour market. Discrimination and buffer effects are the two observable consequences of segmentation by type of contract at the level of wages. The analysis of the wage-effects of two-tier deregulation has, therefore, allowed us to complete the picture of the segmentation process.

Conclusions

Segmentation triggered by the introduction of temporary contracts in Spain is a dynamic process that can be divided into two phases. In the first phase, which lasts until the early 1990s, there seems to be a mutually reinforcing inverse causal relationship between the employment-rent optimisation capacity of workers on temporary contracts and that of permanent workers: as the former decreases, the latter increases (and *vice versa*). This interpretation linking temporary workers' disadvantages in the labour

³⁷ Model 4 also suggests that the buffer effect in small firms could reach its maximum at a value of ϕ equal to 40%. That is, when the proportion of temporary workers surpasses the 40% threshold in small firms, a further increase in ϕ would reduce rather than increase insiders' wages.

³⁸ In fact, Model 4 seems too supportive a finding for the institutional argument, as it suggests that there are no buffer effects at the firm level. We know, however, that there are buffer effects at the firm level, as shown by the studies of Bentolila and Dolado (1994) and Rodríguez Gutiérrez (1996). This apparent contradiction must, however, be observed in the light of the methodological caveats of the CSCCCB data. Results are, therefore, not fully conclusive regarding this point, as these methodological limitations advise us to be very cautious in the interpretation of Model 4.

market to permanent workers' advantages is consistent with the existing evidence, summarised in this paper, which shows how the flexible segment of temporary employment became increasingly precarious as it grew in size, whilst the permanent core became increasingly secure and impenetrable as it shrank. This mutually reinforcing process seems to have come to a halt around 1991-93, a point at which, I have argued, an equilibrium state was reached. This was high-segmentation equilibrium, with more than one-third of the employed population on temporary contracts and still a very high unemployment rate. The mechanisms proposed by the employment-rent model can explain how this process of segmentation was triggered, what the logic of its motion was and why it stabilised. That is, they can provide a 'dynamic' explanation of the segmentation process.

The model proposed in this paper has offered a macro-to-micro-to-macro explanation of social change of the kind advocated by Coleman (1986). This type of explanation shows how changes at the macro-level influence the behaviour of individual actors at the micro-level, and how these actions in turn generate new macro states at a later time. The employment-rent model shows how institutional change at the macro-level (i.e. two-tier deregulation) altered the structure of opportunities within which individual actors carried out their rational optimisation strategies (i.e. strategies over the generation/reduction of employment rents) and how, as a result of this alteration, new labour market inequalities were generated at the macro-level. These inequalities have been defined as structured patterns in the distribution of individual labour market opportunities among workers of equivalent productivity. Explaining the generation of labour market structures of inequality with reference to individual optimisation strategies is fully in line with the plea for a mechanism-based sociological theory made by various sociologists for more than a decade³⁹, as well as with the (I believe related) view of causation as a generative process, defended by Goldthorpe (2000, ch. VII). The analytical perspective adopted in this paper is also in line with various arguments in favour of a more interdisciplinary approach in the social sciences combining economic and sociological theories (see, for example Sorensen 1990, p. 312; Swedberg, 1990). Yet the greatest advantage of the approach defended in this paper is simply that it pays in terms of explaining the phenomenon under investigation.

The employment-rent approach pays because it provides a much more detailed, complete and, in this sense, more accurate explanation of the phenomenon under investigation than those provided by competing models. By proposing a more explicit causal narrative, the employment-rent approach also becomes easier to falsify. This is, no doubt, a particularly appealing feature of the model. In Polavieja (2001, ch. I) I have argued at length that neither dual labour market nor segmentation theories, flexible-firm models, functionalist perspectives on youth-labour-market integration, or standard class models can provide as satisfactory an explanation of the segmenting impact of two-tier deregulation in Spain as the one provided by the employment-rent model presented here. Most of these alternative models tend to work with macro-level associations - Goldthorpe's class model being the only exception - and all of them are particularly insensitive to the crucial role that institutions play in the generation and amelioration of labour market inequalities in contemporary capitalism. The Spanish experience poses a challenge to all these alternative models because it illustrates the extent to which

³⁹ See, for example, Boudon (1987); Coleman (1986); Edling (1998); Elster (1989); Gambetta (1987) and the various contributions in Hedström and Swedberg (1998).

institutional (de)regulation can have a crucial impact on labour market structures. Accounting for the structuring impact of institutional (de)regulation sheds light on the nature of inequality in advanced capitalism.

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