DRAWING LESSONS FROM THE BOOM OF TEMPORARY JOBS IN SPAIN*

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We review lessons from Spanish experience of using temporary employment contracts for regular jobs since 1984. We focus on the role of fixed-term contracts with low severance pay, which have substituted for reform of employment protection legislation for permanent contracts. We consider the main findings about this reform on the Spanish labour market in the light of the main theoretical implications derived from models dealing with dual labour markets. We address why the incidence of temporary work has remained highly persistent, around 33% of salaried employment, in the 1990s, despite several reforms aimed at reducing it.

If one looks for a country to test for the different effects of temporary work contracts on the labour market, Spain provides a fascinating case study. Up to the early 1980s, permanent work contracts – open-ended contracts subject to mandatory severance payments (PCs) – represented more than 90% of all contracts, with the remaining temporary contracts being mainly of seasonal nature which employers could only use to hire workers performing non-regular productive activities, for example, in agriculture or in the tourist industry. In 1984, with the unemployment rate at 20.1%, the Spanish government tried to implement a significant change in Employment Protection Legislation (EPL) by liberalising temporary contracts in two main respects. First, their use was extended to hire employees performing regular activities; and, secondly, they entailed much lower dismissal costs than the regular PCs. As a result, the proportion of temporary employees in total (salaried) employment surged in the second half of the 1980s, staying above 30% since 1990 (see Fig. 1). A clear sign that employers took full advantage of the newly available flexibility device is that a large fraction of temporary workers have been hired under fixed-term contracts (FTCs, henceforth) while other types of temporary contracts (probationary, seasonal etc.), which are more representative in other European labour markets, have remained relatively unimportant (see Fig. 2).

During the 1990s, despite a series of countervailing labour market reforms in 1994, 1997 and, more recently, in 2001, which provided a less stringent EPL for PCs and considerable restrictions for the use of FTCs, the share of temporary employees has only marginally declined from 35.4% in 1995 to 32.0% in 2001. Over this period more than 90% of new hires have been signed under temporary contracts, and the duration of employment spells has very much decreased. Thus, in just a decade, a fairly regulated labour market with high dismissal costs and
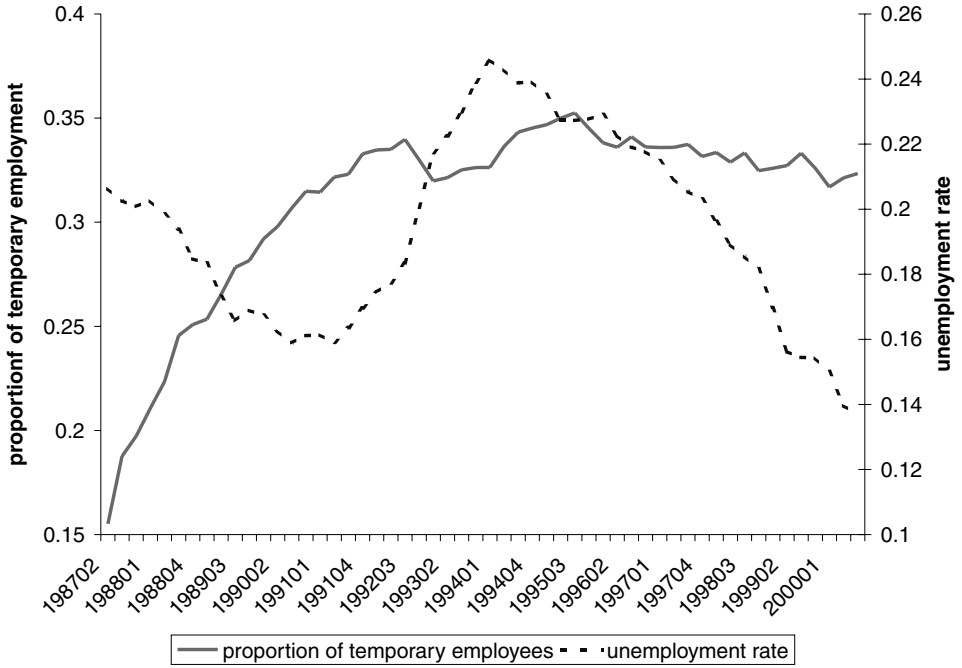
Fig. 1. *Temporary Employment* (as proportion of employees) *and Unemployment Rate. Spain,* 1987–2000
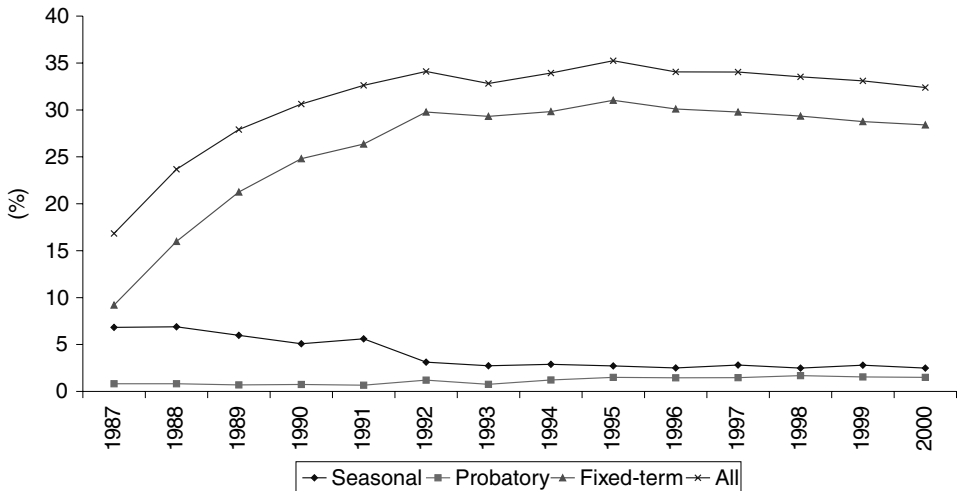

Fig. 2. *Temporary Employment Contracts by Type* (as proportion of employees), *Spain,* 1987–2000

strong unions' bargaining power at wage determination turned into to a very divisive labour market, where around two-thirds of the employees enjoyed PCs subject to a strong EPL, and kept the high bargaining power of the past, while the remaining one-third are workers under FTCs entailing much less favourable employment conditions.

The implications of FTCs for the various dimensions of the labour market (eg, labour turnover, unemployment, wage determination, productivity growth etc.), have been extensively analysed in a large number of theoretical and empirical contributions which rely heavily on the Spanish experience. A general conclusion is that the most natural way to interpret the rapid upsurge of temporary work in Spain from the mid-1980s to the early 1990s is as a quick transition process towards a steady-state composition of employment in which the equilibrium ratio of temporary to permanent employees would be determined, among other parameters, by: (i) the elasticity of substitution between both types of workers, (ii) the relative wage of workers under each of those contracts, (iii) the gap in firing costs between both contracts (taking into account the decisions by labour courts about unfair dismissals), (iv) the difference in hiring costs, including the explicit subsidies to the conversion of temporary contracts into permanent ones, (v) the volatility of labour demand along the business cycle, and (vi) the average growth rate. As will be discussed along the rest of the paper, all of those factors have contributed in different ways to explain the dramatic growth of the incidence of temporary jobs in Spain until the early 1990s, where the steady state seems to have been reached. Later, however, despite exhibiting a small reduction (see Fig. 1), the persistent evolution of that share is less well understood given the above-mentioned sequence of countervailing reforms implemented during the 1990s.

The goal of this paper is twofold. First, we compare the main theoretical predictions obtained in the literature with the available empirical evidence regarding the consequences of a very segmented labour market, like the one in Spain. Our aim is to draw useful lessons for other countries, if they were to follow the same kind of policies, and for the future of the Spanish labour market, if the current state of affairs were to remain unchanged. And secondly, we address the puzzle of why the share of temporary employment remains so high to date, despite the policy reversals aimed at its reduction.

As highlighted in the Introduction to this Symposium, under the general heading of temporary contracts there are different types of contracts and even different regulations of the same contracts across countries. Hence, Section 1 is devoted to describe the institutional peculiarities regarding the use of temporary contracts in Spain. In particular, we review in detail all the legal changes in the regulations that have taken place since 1984, as well as offer a political- economy interpretation of why those reforms were implemented. In Section 2, we review the main theoretical predictions about the effects of dual employment contracts on the functioning of the labour market that have been derived in the literature. Following those predictions, Section 3 takes stock of the main empirical evidence drawn from the Spanish experience. For that, we focus on the effects of the outburst in the share of temporary employment during the 1980s, and its subsequent persistence over the 1990s, on a wide variety of labour market dimensions, inclu-

ding employment volatility, the provision of training, the evolution of labour productivity and the wage distribution. Next, in Section 4 we try to answer the important question of why the share of temporary employment has remained so high after the flexibility-enhancing reforms of PCs vis-á-vis FTCs in the 1990s and 2001. We show that the puzzle can be explained in terms the different patterns followed by the private and the public sectors in their hiring procedures after the 1997 reform. Finally, Section 5 concludes.

1. The Institutional Background

The first democratic governments in Spain after 1978 found it hard to dismantle the system of industrial relations under General Franco's dictatorship, which was based on rigid labour laws and the ban of trade unions in exchange for almost lifetime job stability. The legalisation of trade unions and the restoration of a proper collective bargaining system between employers and workers in the late 1970s gave rise to a strong increase in the bargaining power of the latter at wage setting. Yet, those changes were not accompanied by a parallel significant reduction in employment protection legislation (EPL, henceforth) since it was feared that such a reform could endanger the smooth political transition to democracy. Thus, after the approval of the so-called Workers' Statute (*Ley del Estatuto de los Trabajadores*) in 1980, the two main institutional features which have characterised the Spanish labour market over the last two decades can be summarised as follows[1]:

> (i) A high degree of employment protection both against dismissals and functional and geographical mobility. Under PCs, firing costs depend upon worker's seniority and on the reasons for dismissals, which may be due to: (a) 'objective' causes (worker's incompetence, lack of adaptation to the job post, absenteeism); (b) economic, technological, organisational or productive causes; and, (c) 'disciplinary' causes. Dismissed workers under PCs can appeal to a labour court, and severance payments depend on the judge's decision. Collective dismissals (roughly those affecting more than 10% of the firm's labour force over a period of 90 days) can be justified only on reason b), and require administrative approval.[2]

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[1] See Jimeno and Toharia (1994) for further details on the institutional characteristics of the Spanish labour market.

[2] Judges may declare dismissals 'fair', 'unfair' or 'null'. If a dismissal is justified by either 'objective' or economic, technological, organisational or productive reasons then it is declared 'fair' and the worker receives a severance payment of 20 days' wages per year of seniority with a maximum of 12 months' wages. If the dismissal is declared 'unfair', the employer can choose between the worker's reinstatement and a higher severance payment of 45 days' wages per year of seniority with a maximum of 42 month's wages (33 days' wages per year of seniority with a maximum of 24 month's wages under the new permanent contract introduced in 1997) together with the wages corresponding to the period between the date of the dismissal and the date of the court's decision. If the dismissal is declared 'null', then the worker must be reinstated and the wages corresponding to the period between the date of the dismissal and the date of the court's decision must be paid. Collective dismissals entailed severance payments of 20 days' wages per year of seniority with a maximum of 12 months' wages, although, in practice, to achieve workers' agreement, which eases the administrative approval, severance payments are much higher.

(ii) The predominance of collective bargaining at the provincial/industry level as the means for setting wages, working hours, and other employment conditions, complemented by negotiations at other levels of bargaining (national, firm-level), where wages paid to workers under FTCs ought to be the same as wages paid to workers under PCs in the same occupational category and doing a similar job. Nonetheless, as will be discussed in section 4, there is evidence of wage gaps against temporary workers.[3]

Reforms of the labour legislation introduced in 1980 started as early as 1984. The first reform encouraged the use of FTCs for regular activities and, in contrast with PCs, entailed much lower severance payments and their termination could not be appealed to labour courts. In the 1990s, by contrast, reforms were aimed at undoing the liberalisation of 1984 and reducing the incidence of temporary employment. In 1994, the conditions for 'fair' dismissals of workers under PCs were relaxed, while conditions for the use of FTCs were restricted. In 1997, the employers' confederation (CEOE) and the two major unions (UGT and CC.OO) reached an agreement to reform the system of work contracts and the structure of collective bargaining. The agreement called for the creation of a new PC with lower firing costs in case of 'unfair' dismissals, entailing a mandatory redundancy pay of 33 days' wages per year of seniority with a maximum of 24 months of wages (instead of 45 and 42, respectively, under the regular PCs). This new contract could be used for most new hires, with the exception of workers aged 30–44 years with unemployment spells below one year. Moreover, the government introduced significant rebates of social security contributions for workers under the new PCs. In principle, the 1997 reform envisaged the new contract to be in effect for a period of four years. In 2001, however, when the new PCs were supposed to expire, fearing that their elimination would affect a negative effect on job creation, the government allowed them to be further in effect and extended their use to hire other groups of workers.[4] Furthermore, in a explicit move to reduce the share of temporary contracts, the government also introduced a severance payment of 8 days' wages per year of seniority for workers whose FTCs are not renewed.[5]

Summing up, the Spanish EPL, being one the most rigid EPL in Europe, was first relaxed in 1984 by easing the use of FTCs for non-seasonal productive activities while keeping intact the EPL of PCs. As the proportion of temporary jobs surged, the recent reforms of the 1990s and 2001 have aimed at getting a more

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[3] Workers under FTCs receive wages 10% lower than those received by similar workers under PCs (that is, after controlling for observable characteristics). Something similar happens in other countries (on France, see Blanchard and Landier (2001).

[4] Before March 2001 the eligible groups were young workers aged 18–29, long term unemployed registered at the public employment office for at least twelve months, unemployed aged 45 or more, disabled people and workers whose contracts are transformed from temporary into permanent). After March 2001 the eligible groups are young people aged 16–30, long term unemployed registered at the public employment office for at least six months, unemployed aged 45 or more, disabled people, and unemployed women in sectors where they are under-represented.

[5] Severance payments for dismissals of workers under FTCs *before* the termination of the contract have been similar to those applying to PCs since 1984. However, given that most FTCs have very short duration, these firing costs do not seem relevant.

'balanced' situation between both types of contracts both by restricting the use of FTCs and by reducing mandatory firing costs under new PCs.

The understanding of the political determinants of labour market reforms has recently become one of the key topics of the research on European unemployment (see, Saint-Paul (1996, 2001)). In the specific case of the Spanish EPL reforms, a simple indicator of the 'political support' for those reforms is the ratio between the number of workers under regular PCs entailing '45 days' of redundancy pay and the sum of total employees (permanent and temporary) and the unemployed.[6] A value of this ratio above 0.5 means that workers under regular PCs would be the 'insiders' and that unions would consequently try to protect their interests. Conversely, a ratio below 0.5 signifies that the rest of the workers (the sum of temporary workers plus the ones under the new PCs) and the unemployed will be those dictating the unions' goal. Fig. 3 depicts such a ratio since 1987 (the first year for which data on temporary employment are available). Since it is most likely that the indicator was well above 0.5 in 1984, the introduction of FTCs for regular activities can be rationalised as the only way forward which was politically feasible at that time when unemployment was very high and increasing, employment creation
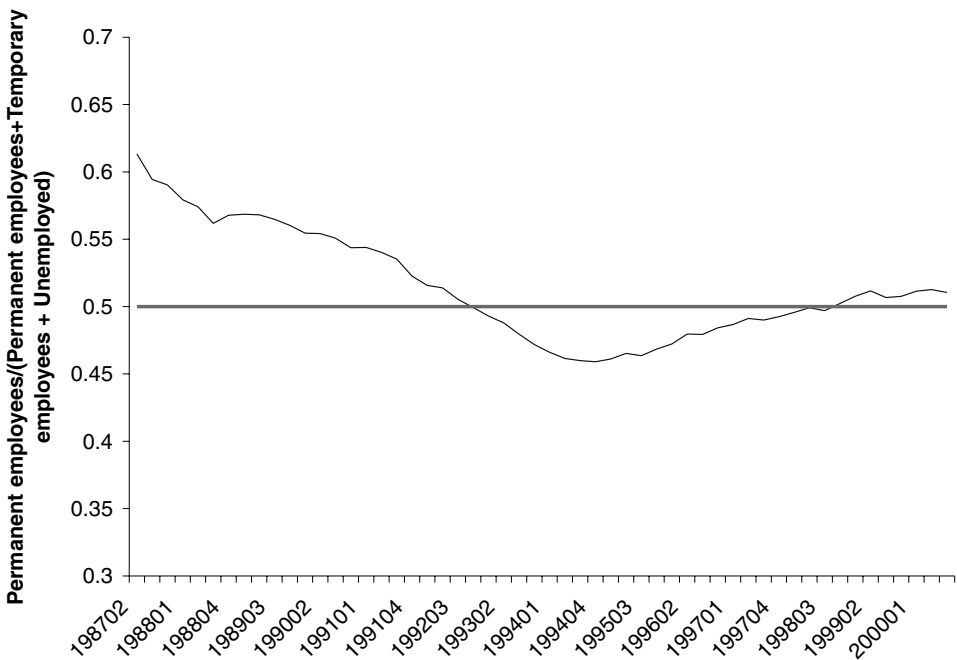
Source: Labour Force Survey

Fig. 3. *An Indicator for 'Political Support' for EPL Reforms*

[6] The use of this indicator is justified under the following assumptions regarding the objectives and the constituency of the unions: (a) that their only goal is to maximise the expected wage (ie, the wage times the probability of employment), (b) that they protect the interest of the median worker, and (c) that their potential constituency is formed by all salaried workers (both permanent and temporary) and the unemployed.

was very low and, hence, there were very few job alternatives for displaced workers. Eventually, with the widespread use of FTCs and a further increase in unemployment, the indicator decreased to the extent that it was clearly below 0.5 by 1993. That suggests the opening of a 'window of opportunity' for the reforms that later took place in 1994, 1997, and 2001, helping to explain why the prevailing interests of the workers under FTCs, new PCs and the unemployed in favour of higher labour market flexibility, led to a less stringent EPL.

2. A Look at the Theory

There are many theoretical approaches to analyse the effects of FTCs on the labour market. Each of them isolates several mechanisms through which the specific characteristics of those contracts (eg determined duration, lower dismissal costs, possibility of renewal etc.) affect the working of the labour market. Here, we will summarise the main features of four of those approaches. First, there are *dynamic models of labour demand with adjustment costs* that provide the basic tools to analyse the determinants of the share of FTCs in dual labour markets where contracts with and without firing costs coexist. Secondly, there are *matching* and *search models* which provide extensions of the equilibrium unemployment theory to the case where there are two kinds of jobs and firms face the trade-off of paying firing costs and having stable workers, or avoiding them and having workers heavily engaged in the search process. Thirdly, there are *efficiency wage models* focusing on the effects of high turnover on productivity and wages. Finally, there are *wage bargaining models* that stress how different turnover costs alter workers' relative bargaining power in the distribution of the generated surplus. However, since, to the best of our knowledge, an integrated framework embedding all these different mechanisms is not yet available we will briefly discuss in the sequel each of them in turn, highlighting some relevant implications drawn from one or two representative contributions in each of the approaches.

2.1. *The Determinants of the Incidence of Fixed-term Employment*

Most of the above-mentioned models depart from a somewhat similar environment where firms face a revenue function (R) which depends on labour (N) being hired under two types of contracts, namely, permanent contracts (N_P) and temporary ones (N_T), and possibly a shift factor (Z) representing either different phases of the business cycle or a steady growth rate. It is further assumed that: (i) output depends on a composite labour input through a production function with a constant elasticity of substitution (σ) between N_P and N_T, (ii) the efficiency of workers may vary depending upon the contract under which they are hired; (iii) there is an iso-elastic demand curve, (iv) the firm may offer both types of contract with wages w_P and w_T, respectively, (v) termination of a permanent contract entails paying the worker a mandatory firing cost, F, whereas termination of temporary contracts involves no firing costs, and (vi) firms are risk neutral and maximise the expected value of future profits taking into account adjustment costs in labour,

denoted by $C(\Delta N)$. Under these assumptions, the revenue function can be written as:

$$R(Z, N_P, N_T) = ZN^{\alpha}, \quad N^{1-1/\sigma} = [N_P^{1-1/\sigma} + (1-m)N_T^{1-1/\sigma}], \quad \sigma > 1 \qquad (1)$$

so that, for a given demand shift factor, Z, and a relative efficiency of permanent workers, $1/(1-m)$, the optimal choice of N_P and N_T implies that the ratio of temporary to permanent workers ($\phi = N_T/N_P$) will be as follows:

$$\phi(Z) = \{(1-m)[w_p + X(Z)]/w_T\}\sigma \qquad (2)$$

which is increasing in: (i) the relative efficiency of permanent workers, $1/(1-m)$, (ii) the relative wage, w_P/w_T, (iii) the elasticity of substitution, σ, and (iv) the difference between the shadow value of a marginal worker and its wage, $X(Z)$. In turn, firing costs, F, will affect the ϕ ratio through its effect on the shadow wage of permanent workers, $w_P + X(Z)$, as will be seen below.

The literature on dynamic labour demand with adjustment costs typically makes two further assumptions. First, that the shift factor, Z, represents two states of the economy: good (Z_G) and bad (Z_B), with $Z_G > Z_B$, and evolves as a symmetric Markov chain with probability p from one state to the other so that in the long run both states have an equal probability of ½. And, secondly, ignoring for simplicity hiring costs in the analysis, that adjustment costs are linear and are given by $C(\Delta N_p) = -(\Delta N_p)F$ when $\Delta N_p < 0$, and zero otherwise. Then, it follows that

$$X(Z_G) = X_G = Fp/(1+r) > 0, \text{ and } X(Z_B) = X_B = -F(p+r)/(1+r) < 0, \qquad (3)$$

where r is the discount rate. As Bertola and Ichino (1995) have pointed out, the intuition for the expressions in (3) is that, in the good state, the firm does not need to fire this period but it will have to fire with probability p next period (ie, $X(Z_G) = 0 + Fp/(1+r)$), whereas, in the bad state, if the firm keeps the permanent worker it saves F this period but then it faces dismissing the worker when the bad state remains next period, an event which occurs with probability $1 - p$ (ie, $X(Z_B) = -F + F(1-p)/(1+r)$). Hence, since the marginal revenue of hiring a permanent worker is below (above) its shadow wage in a bad (good) state, a standard result in this literature is that the existence of firing costs implies fewer job terminations in the bad state and less job creation in the good state, with lower inflows into and outflows from both employment and unemployment. To the extent that temporary jobs entail no redundancy pay, both their creation and destruction rates will be higher than those of permanent jobs in an upturn and a downturn, respectively. Thus, the ratio of temporary to permanent workers, ϕ, will fall in good states and increase in bad states. However, the effects of firing costs on aggregate employment are ambiguous, since employment is moving in opposite direction both across types of contract and states. For example, considering for simplicity the particular case in which there are no temporary contracts, $N_P = N$ ($N_T = 0$) and a linear marginal revenue function, ie, $\delta R_i(\cdot, \cdot)/\delta N_i = Z_i - \beta N_i$, $i = G$, B, one can obtain the well-known conclusion derived by Bentolila and Bertola (1990) that a reduction in firing costs may reduce average employment. This is so since, under the symmetry assumption in the Markov chain, average employment will be given by to ½ $(N_G + N_B)$ and a reduction of one unit in F increases N_G by

$p/\beta(1 + r)$ whilst it decreases N_B by $(r + p)/\beta(1 + r)$. Hence average employment is reduced by $\frac{1}{2} r/\beta(1 + r)$. Obviously, for more general functional forms of the revenue function than the one considered above, the previous result no longer holds and the effects of firing costs on average employment are ambiguous (see Bertola (1992)). An unambiguous result, however, is that lower firing costs increase average profit across states. This can be easily seen from the previous example where profits are given by $ZN_i - 1/2\beta N_i^2 - (w_p + X_i)N_1$, for which it can be easily proved that, when $F > 0$, average profits decrease by $\frac{1}{2}(X_G)^2$ in the good state and by $\frac{1}{2}(X_B)^2$ in the bad state relative to the case where firing costs are null. This implies that when these partial equilibrium models are extended to include investment decisions by the firm, it is often the case that firing costs lead to lower investment which, in turn, decreases labour demand, for a given level of capital stock, inducing an employment reduction (Risager and Sorensen, 1997).

2.2. *Fixed-term Contracts and Unemployment*

The effects of FTCs on unemployment have also been analysed in several extensions of the basic search and matching framework (Pissarides, 1990) to the case of two types of contracts under different assumptions on the use of these contracts. One stream of this literature, assumes that firms can create both PCs and FTCs, the latter being necessarily terminated when they expire, and that the separation rates ($s_i, i = P, T$) for both types of workers are exogenous (typically $s_P < s_T$). Wasmer (1999) provides an interesting model within this class, which focuses on the effects of exogenous productivity growth on labour-market tightness (ie, the ratio between the vacancy and the unemployment rates) and on the share of temporary jobs. The production side is similar to the one described above, except that that both types of labour are assumed to be perfect substitutes (ie, $N = N_T + N_P$), and that Z now represents an index of labour-augmenting technical progress growing at rate g for both kinds of jobs, so that $Z = e^{gt}$ and $R = R(N e^{gt})$. Adding a further assumption about how workers rank vacancies in their job search (workers prefer to start searching for permanent jobs and, only in case of failure, then look for a temporary job) to the standard list of assumptions in this literature[7] it is possible to derive the three basic relations that characterise most matching models, namely, the job creation (JC) and job destruction (JD) schedules, which determine wages and labour-market tightness, and the Beveridge Curve (BC) schedule, that determines the unemployment and vacancy rates for given tightness. In such a set-up, it can be shown there is a threshold growth rate separating two regimes, one in which only permanent jobs exist, and another in which both jobs coexist. The intuition for that interesting result is the so-called *capitalisation effect* whereby a higher growth rate increases future profits, through a lower discount rate, increasing labour tightness and hence enhancing the incentives of firms to offer permanent contracts in order to retain workers. In terms of the JC and JD schedules, a rise in

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[7] Those assumptions are: (i) the existence of a constant-returns matching function relating hires to unemployment and vacancies, (ii) that firms face a flow cost of keeping vacancies unfilled, and (iii) that workers and firms engage in generalised Nash-bargaining over wages.

the growth rate of technical progress, g, shifts both curves upwards (leading to more creation and destruction of jobs) so that wages (as a proportion of the marginal productivity of labour) increase, whereas the effect on tightness is ambiguous. It can be shown that, if workers' bargaining power is not too high, the shift in the JC curve dominates, so that tightness increases with growth. As for the BC schedule, it will shift inwards since a higher rate of technical progress, g, by reducing the ratio of temporary to permanent workers, ϕ, leads to a lower average separation rate. Hence, in the case where labour tightness increases, unemployment (and the duration of unemployment spells) falls while the effect on vacancies is ambiguous. However, if workers' bargaining power is very high, the negative effect on employment of a higher wage pressure can overcome the increase in labour demand stemming from higher growth, implying that growth can increase unemployment. In sum, under the assumption that unions are not too powerful, the basic implication of this model is that in periods of high growth the proportion of temporary jobs will be smaller whilst the unemployment rate will drop for a similar level of vacancies. Conversely, the opposite happens in when unions are very powerful.

Another stream of this literature, along the lines of Mortensen and Pissarides (1994), make model the separation rates, s_i, endogenous by assuming that productivity depends on a match-specific component, x, which comes from a given distribution, $G(x)$, that may change with the duration of the employment spell, so that there is an endogenously determined productivity threshold below which separations are triggered. An interesting illustration of this line of research is Cahuc and Postel-Vinay (2001)[8]. In their model, firms can also open both types of vacancies, but the first period in a permanent contract is taken to be a qualifying or probationary one entailing no severance payment at its termination if the firm decides to destroy the job, while FTCs, which are assumed to require the approval of the government, last for one period and, at their termination, the job is either destroyed or converted into a permanent one at its qualifying stage. Thus, there will be three interdependent productivity thresholds under which jobs are destroyed. In increasing order, those cut-off values correspond to fully-permanent jobs, FTCs and probationary jobs, respectively, leading to three JD schedules, one for each type of contract. The intuition for the previous ordering is that, at a given period, firms will be more reluctant to destroy permanent jobs than the other types of jobs since they have to pay a firing cost immediately, and less reluctant to destroy a probationary job than an FTC since keeping them in the future entails having to pay firing costs next period in case of destruction for the former, whereas the severance pay will only take place two periods later for the latter. In this model, facilitating the use of FTCs, by increasing their rate of approval, increases the three productivity thresholds and the overall tightness in the labour market. However, the higher are firing costs, the larger is the rise in the productivity thresholds of the non-fully-permanent contracts relative to that of full-permanent contracts. Thus, if firing costs are sufficiently high, a less restrictive legislation on FTCs,

[8] Blanchard and Landier (2001) in this volume provide a different model with somewhat similar implications.

despite fostering job creation, might increase job turnover in the non-permanent jobs by so much that it may end up leading to a rise in unemployment. In this respect, one of the main implications of this model is that trying to achieve a more flexible EPL through spreading FTCs without a parallel reduction of high firing costs for permanent employees is bound to be an inefficient policy in terms of fighting unemployment.

2.3. *Fixed-term Employment, Productivity and Wages*

Another relevant issue in the analysis of FTCs is why they are used in jobs where stable labour relations are an important source of efficiency. For instance, this is the case where jobs require specific human capital investment for which the investment decision depends crucially on the expected duration of the job, or in other types of activities where the provision of incentives turns out to be important to increase workers' productivity. Efficiency wage models provide a natural framework to analyse these cases. Güell (2000) provides an interesting application of the shirking efficiency wage model to a labour market where firms can offer PCs and FTCs, which are allowed to be converted into PCs at their termination. In that model, workers under both types of contract decide each period whether to shirk or not to shirk. As is standard in the literature, firms have a monitoring technology allowing them to identify if a worker is shirking or not with a given probability. If found shirking, a permanent worker is dismissed and becomes unemployed whereas a temporary worker does not get his contract renewed. All workers also face an exogenous separation probability, s, which entitles them to receive a severance payment, F, if they are working under PCs and nothing under FTCs. Finally, only permanent workers who have suffered a disciplinary dismissal can sue the employers in court for disagreement and there is a probability, p_u, that the dismissal may be declared unfair. Hence the expected severance payment of a permanent worker caught shirking is p_uF. It is shown that, in the absence of FTCs, if $p_u > s$, firing costs will be detrimental for employment. This is so because the incentive compatible wage is reduced by sF (a *wage moderating* effect)[9], since statutory firing costs compensate the worker being fired for non-disciplinary reasons, while it is increased by the larger amount p_uF (a *wage enhancing* effect), since the firm is forced to pay a higher wage in order to avoid shirking when it faces the possibility that a disciplinary dismissal may be declared unfair by the court. Interestingly, if p_u is not too high, allowing for FTCs can increase employment, as long as the renewal rate is sufficiently high in order to provide temporary workers with an incentive to avoid shirking. Thus, an important implication of this model is that, *ceteris paribus*, those countries where there is a vague distinction among the

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[9] This effect can be somehow interpreted in terms of Lazear's well-known argument (1990) whereby, in a competitive labour market with no frictions, the increase in labour costs for firms induced by statutory severance pay can be undone by a 'voluntary' transfer from the worker to the firm in the form of a private contract whereby the worker will receive a lower wage while working and will be compensated by a higher income when dismissed. The usual problem with this private arrangement against the income risk associated to a job loss is that firms may have incentives to default on its obligations if bringing a defaulting firm to court entails high 'red tape' costs.

different types of dismissal will tend to have lower renewal rates and a higher proportion of FTCs.

Along similar lines, it can be argued that FTCs can have a positive effect on effort if workers perceive that the rehiring probability depends on past performance. Furthermore, if the rate of renewal is low, firms and workers may be less inclined to invest in specific human capital, implying that workers under FTCs will tend to receive less training. Due to this hold-up problem, firms might find appropriate to pay some firing costs, albeit not too high, as a commitment device to maintain a certain degree of job stability (see Saint Paul (1996)).[10]

Finally, the introduction of FTCs may also be relevant for wage determination, affecting the relative wage of permanent and temporary workers, w_P/w_T in different ways. In particular, it can induce an increase of permanent workers' wages, as shown by several papers drawing from the extension of the insider-outsider wage bargaining models. For instance, Bentolila and Dolado (1994) suggest that if unions are dominated by workers under permanent contracts subject to high firing costs, and they set wages for all workers, then the existence of FTCs increases their bargaining power. Thus, insofar as the existence of flexible jobs with no firing costs provides a buffer against the negative effect of wage rises on their employment probability, wages of permanent workers will be higher, the higher the share of FTCs is. However, if firms can pay lower wages for employers under FTCs, then that may compensate for the buffer effect and overall labour costs for the firm may not change or even decrease as the proportion of FTCs increases.

3. A Look at the (Spanish) Evidence

Spain having been a pioneer at introducing 'two-tier' labour market reforms, in the form of the dual system of work contracts discussed above, it is not surprising that it has become a typical case study for the search of empirical support on the main theoretical predictions surveyed in the previous section. In what follows, we summarise the main empirical findings drawn from the Spanish experience.

First, there is overwhelming evidence that FTCs and lower firing costs increase the volatility of employment by rising both the hiring and layoff rates. García-Serrano (1998) estimates temporary workers' and job quarterly flows of 57% and 11%, respectively, against 2.6% and 1.6%, respectively, for permanent workers. Likewise, García-Serrano and Jimeno (1999a, b) find that a rise of one-percentage point in the proportion of FTCs increases the flows of employment to unemployment, unemployment to employment and employment to employment by 0.26, 0.16 and 0.34 percentage points, respectively, and reduces job tenure by 2.3%, namely, by two months in a mean-elapsed job tenure of 9 years.[11]

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[10] In a similar vein, Booth (1997) also makes the point that even in unionised sectors if unions and firms bargain about both wages and redundancy pay, as opposed to just wages, average employment can increase.

[11] On the effects of temporary employment on workers' flows see also Saint-Paul (2000) where it is shown that Spain has relatively small flows out of unemployment (comparable to France) while it has relatively large flows from employment into unemployment (of the same order of magnitude as in the United States).

Secondly, insofar as the use of FTCs implies a rise of the hiring rate, long-term unemployment (LTU)) might have been reduced. Here the evidence is more mixed. On the one hand, the incidence of LTU decreased a lot, from 67% in 1987 to 47% in 1992, during the period in which the share of FTCs exploded from 15% to 33%. Given the very limited use over that period of active labour market policies, the other main determinant of long-term unemployment, it seems sensible to conclude that the outburst of FTCs helped to achieve such a reduction. On the other, however, the incidence of LTU raised from 48% to 56% in the recession of the first half of the 1990s, while it fell back to 45% at the subsequent upturn during the second half of the decade. One possible explanation of that different evolution is that, despite the fact that the availability of FTCs has implied a significant increase in the average outflow rate, the higher employment chances have not been shared equally by all unemployed (Güell, 2001). In particular, those long-term unemployed workers who became unemployed due to the termination of PCs in their previous job seem to have stronger duration dependence after 1984 than before since the frequent shifts from job-to-job by workers holding FTCs may have crowded their employment prospects. To the extent that after the mid-1990s the share of FTCs has stabilised around 33% and that EPL on PCs relative to FTCs has been weaker, that adverse effect on the incidence of LTU seems to have been overcome.

Thirdly, some of the theoretical models discussed in Section 2 imply that the widespread use of FTCs has, in principle, an ambiguous effect on the mean unemployment rate. However, if either wage-setting or the firms' investment rate in physical capital is adversely affected by the existence of a dual labour market, then the unemployment rate might rise. On the one hand, there is empirical evidence regarding the adverse effects of FTCs on wage pressure in Spain, to be discussed below, at least until the early 1990s when the median voter in the unions was a worker with a PC. On the other hand, since the mid-1990s when the relative strictness of EPL regarding PCs and FTCs was reduced, temporary contracts may have probably had a favourable effect on reducing hysteresis which, as pointed out by Dolado and Jimeno (1997), has been a major factor behind the rise and persistence of the Spanish unemployment rate. As for the effects through investment, employment contracts with high firing costs in case of unfair dismissal which can be appealed to labour courts, may induce a higher level of uncertainty and, therefore, contribute to reduce firms' investment on physical capital.[12] That effect can be partially responsible for the fall of the investment-to-GDP ratio, from an average value of 22.5% since the early 1970s to values around 19.7% in the recessions of the 1980s and 1990s. Thus, overall, the decision on whether temporary contracts are good or bad for unemployment seems to be even depending on what period one looks at. However, the introduction in 1997 of the new PCs with lower redundancy pay seems to have helped at reducing the unemployment rate from 20% in 1997 to 13.0 % nowadays, in agreement with the implication drawn from

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[12] The relevance of uncertainty can be grasped by the fact that employers, in order to avoid a lengthy process and large 'red tape' costs associated to the arbitration procedure, tend to avoid dismissal procedures by reaching pre-trial agreements involving higher redundancy payments than those legally established (see Malo (2000)).

Cahuc and Postel-Vinay's (2001) model. Moreover, the small reduction in the share of temporary work after 1997 has taken place in a period of high growth where the bargaining power of the unions seems to have declined, in accord with the implications of Wasmer's (1999) model.

Fourthly, a rise in the turnover rate decreases the probability of investing in specific human capital or receiving specific training in the firms and, therefore, may decrease labour productivity. This is particularly so, if the conversion rate of FTCs into PCs is low, reflecting the fact that employers use those contracts more as a flexible device to adjust employment in the face of adverse shocks than as a screening device under asymmetric information. Güell and Petrongolo (2000) analyse the duration pattern of FTCs and the determinants of the probability of their transformation into PCs, which went down from 18% in 1987 to about 5% in 1996, finding two very pronounced spikes in this probability at one and three years of duration of FTCs, the latter coinciding with the maximum legal duration before 1994. The first spike can be explained by employers' using FTCs as a screening device and applies mostly to skilled workers, whereas the second spike just reflects their use as a more flexible alternative for adjusting employment.

With such a low conversion rate it is not surprising that investment in on-the-job-training seems to be negatively affected by FTCs. Dolado *et al.* (1999) estimate that the probability of receiving free or subsided on-the-job training in 1994 was 22% lower for workers under FTCs than for workers under permanent contracts. The fact that under-investment in specific human capital has strong implications about overall labour productivity is clearly illustrated by the cyclical upturn of the late 1980s, where employment growth was based on the massive use of FTCs and labour productivity hardly reached an annual average growth rate of 1% during the 1986–1990 upturn. Likewise, labour-productivity growth has been low during the 1997–2000 upturn. Finally, the results in Jimeno and Toharia (1996) also suggest that temporary employment increases work accidents, which happen to be three times larger for workers under FTCs than for workers under permanent contracts.

Fifthly, as for the effects on wages, the discussion at the end of Section 2 indicates that an increased dualism in the labour market may imply a higher wage pressure if the unions protect the interests of permanent workers in the wage bargaining. In this respect, Bentolila and Dolado (1994), using a large panel data on firms over the 1984–8 period, find that an increase of one-percentage point in the temporary employment share raises the growth rate of permanent workers' wages by about one-third of one percent. An alternative effect of FTCs on wages arises from the existence of a negative wage differential for workers under these contracts relative to workers under PCs. Although, in principle, wage rates cannot be differentiated by type of contract, some empirical studies find that, after controlling for observed and unobserved heterogeneity in personal and job-related characteristics, permanent workers earn around 10% to 15%, for men, and about 7%, for women (see, for instance, Jimeno and Toharia (1993), and Davia and Hernanz (2000)). The previous evidence also points out that the wage gap is associated with the fact that employers tend to 'under classify' temporary workers in the occupational categories probably in order to cut total labour costs in view of the higher wage-pressure on PCs described above. Therefore, although temporary workers may be

doing a similar job, their wages are lower that those of similar workers with PCs.[13] Insofar as higher-educated workers are more prone to under-classification than lower-educated workers, that process should lead to a widening of the wage (earnings) distribution for the former group of workers. Bover *et al.* (2000) support this conjecture by finding that the ratio between the 75th and the 25th percentiles of the distribution of (log) earnings of workers with tertiary education increased by 8% during the 1980s, whilst the corresponding ratio for lower educated workers hardly changed.

Finally, higher worker turnover leads to larger uncertainty and therefore FTCs may hinder labour mobility and reduce fertility rates. As for labour mobility, absolute net inter-regional migration has almost halved between the 1960s and the 1990s (Bentolila, 1997) and only about 30% of the unemployed would accept a temporary job implying a change of residence. As for demographic effects, both high unemployment and employment instability are found to be two of the most relevant factors behind the decline in the fertility rate which fell from almost 3 in the late 1960s, to around 1.2 nowadays (Ahn and Mira, 2001).

On the whole, the Spanish evidence on the labour market effects of temporary contracts seems to support the following main theoretical predictions: (a) a large increase in workers' turnover; (b) a reduction in LTU when the relative strictness of EPL regarding PCs and FTCs is reduced; (c) a fall in investment on specific human capital and a decrease in labour productivity; (d) a decline in regional migrations and in the fertility rate; (e) a widening of the wage distribution for higher educated workers; and (e) a neutral or slightly positive effect on unemployment, particularly after the 1997 reform.

4. The Resilience of the Proportion of Temporary Jobs

The recent evolution of FTCs in Spain may suggest that once these contracts get entrenched in the labour market, it may become a difficult task to reduce its incidence. As discussed in Section 1, over the 1990s there has been a change of emphasis in the objectives of labour market reforms regarding EPL towards reducing the incidence of FTCs. Probably the most important reform was the one in 1997 when the new PC with lower firing cost was introduced. After four years, this policy reversal seems to have been fairly successful. In combination with an upturn in the business cycle, 1.5 million jobs have been created, out of which 76% correspond to workers under PCs. This evolution contrasts sharply with the one observed at the previous upturn of the late 1980s where most of the employment created at the time was of temporary nature and permanent employment even fell. However, the proportion of workers under FTCs still remains around 32%, albeit with a different evolution across population groups. In effect, the proportion of temporary employment has fallen by 6.4 percentage points for youth workers aged

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[13] Indeed, as pointed out by Booth *et al.* (2000), the theory of 'compensating differentials' would imply that workers of the same characteristics would only prefer a temporary contract to a permanent one if compensated in wage terms for the loss of the option to remain in the job. However, as also pointed out by those authors, the wage of temporary workers might be lower if they have no incentive, given the low renewal rate, to invest heavily on specific human capital.

less than 25, although it remains at 68%, well above 25% for adults. More significantly, the incidence of temporary jobs in the private sector has dropped by 4 percentage points reaching 35.3% in 2000, a reduction which has been partially offset by the rise of the incidence of temporary work in the public sector, where it has reached 19.5%, after increasing by 3.9 percentage points over the period.[14]

Since the evolution of temporary work in the public sector seems to be responsible for the small decline of the overall share since the mid-1990s, it is useful to take even a closer look at the disaggregated data for that sector. Fig. 4 depicts the incidence of temporary workers in the private sector and in the public sector, distinguishing among three levels of administration (central, regional, and local) and public firms. In contrast with the declining trend observed since 1997 in the private sector, the proportion of temporary workers has increased in the public sector, notably in Local Governments and in Public Enterprises.

In order to have a better empirical understanding of the recent evolution of the incidence of temporary jobs in terms of the evolution of its various determinants, we perform two empirical exercises: (i) the estimation of a regression model with sectoral and regional data, and (ii) the estimation of a probit model with individual data. As for the first exercise, we rely upon (2) in Section 2 and estimate a regression model in which the logistic transformations of the proportion of temporary employment in total employment $(l\tau)$,[15] is modelled as a function of industry, regional and time dummies, and a set of industry and regional covariates, as follows:

$$l\tau_{ijt} = \lambda_i + \lambda_j + \mu_t + \beta Z_{ijt} + \varepsilon_{ijt} \tag{4}$$

where $i(= 1, 2 \ldots 17)$ stands for region, $j(= 1, 2 \ldots 17)$ stands for sector, $t(= 1987, \ldots 2000)$ stands for year; λ_i, λ_j and μ_t are, respectively, regional, industry and time fixed effects, Z_{ij} is the set of covariates, and ε_{ijt} is an *iid.* error term. The set of covariates includes: (i) the rate of growth of regional employment to control for the business cycle,[16] (ii) the proportion of young (under 25 years of age) workers in each region/sector, since youth are likely to be more affected by temporary contracts than adult workers, (iii) the proportion of employees in each region/sector with a university degree, (iv) the proportion of employees in each region/sector covered by collective bargaining, (v) the proportion of public employees in each region/sector, to test for the possible lower propensity of the public sector to hire workers under temporary contracts, and (vi) and (vii) the latter two variables interacted with a time dummy variable for the period 1998–2000 in order to check whether there has been a regime shift in the behaviour of those variables after the 1997 reform.[17] Variable (i) is a proxy for business-cycle

[14] Nevertheless, the average number of temporary contracts per job has risen from 2.9 in 1997 to 3.5 in 2000, since most of the temporary contracts converted into permanent ones were those with long duration between 10 and 30 months.

[15] The logistic transformation is used to extend the support of the dependent variable to the whole real line.

[16] Since we introduce time dummies in the regression, regional employment growth captures the deviation of the business cycle across regions.

[17] The total number of observations, after disregarding empty cells, is 4,017 for 288 regional industries. The data set is constructed from information provided by the Labour Force Survey and by the Spanish Ministry of Employment.
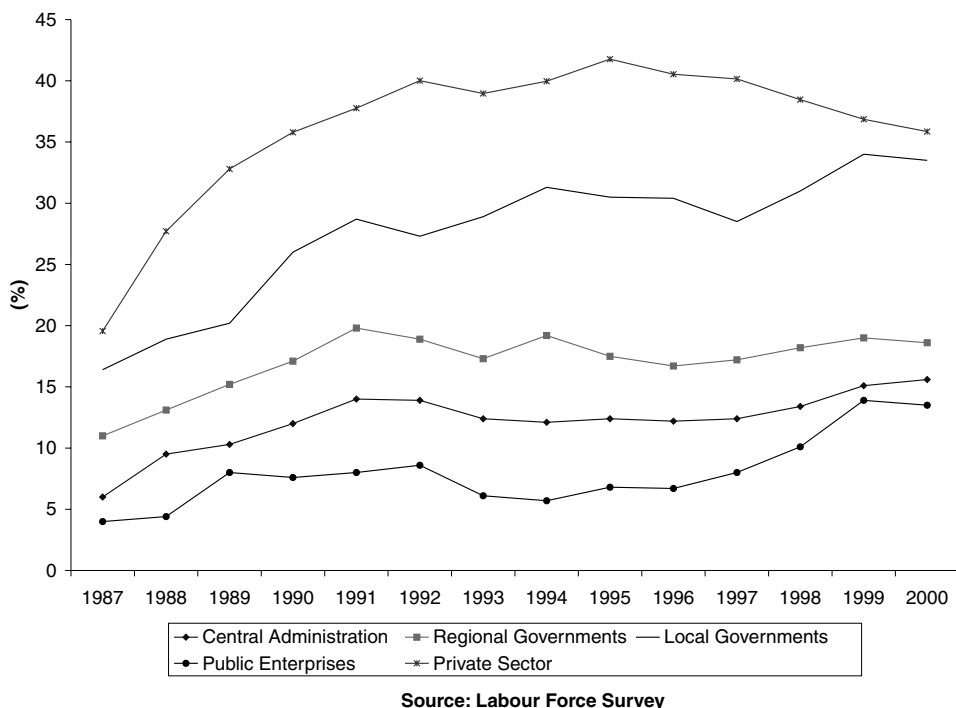
Fig. 4. *Proportion of Temporary Workers in the Private Sector and in the Public Sector by Level of Administration, Spain, 1987–2000*

fluctuations, whilst variables (ii) to (v) are meant to capture the effects of the wage gap between permanent and temporary workers, the elasticity of substitution and the relative efficiency of temporary contracts. On the one hand, we expect the wage gap to be inversely related to the proportion of employees working in the public sector, since they are likely to be less discriminated against. On the other hand, the wage gap is expected to be positively correlated both with the proportions of young and highly educated workers since the possibility of occupational 'under-classification' may be larger for those groups. Finally, variables (vi) and (vii) are included in order to test both for the differential hiring patterns of the public and private sectors and for the role of collective bargaining after the 1997 reform.

Table 1 reports the OLS estimates for two alternative definitions of the dependent variable: the proportion of employees under all types of temporary contracts (column 1) and the proportion of workers under FTCs (column 2). The results are very similar in both cases. Both shares are higher for young workers and lower for public-sector workers, while the proportion of graduates is not significant. The estimated coefficient on the proportion of union coverage is negative indicating that the wage pressure in favour of PCs has provoked a labour adjustment in firms though the termination of temporary contracts in those regions/sectors where unions are more powerful. This effect, however, is weaker after the 1997 reform. Most importantly, the interaction of the 1998–2000 time dummy with

Table 1

Estimates of the Determinants of the Proportion of Temporary and Fixed-term Employment across Sectors and Regions. Spain, 1987–2000

	(1) Dependent variable: Proportion of temporary employees	(2) Dependent variable: Proportion of fixed-term employees
Proportion of public employees	−0.006	−0.005
	(4.52)	(3.62)
Proportion of young employees	0.039	0.034
	(16.94)	(13.07)
Proportion of employees with a university degree	0.003	0.002
	(1.49)	(0.92)
Proportion of employees covered by collective bargaining within the region	0.001	0.001
	(0.55)	(0.99)
Proportion of employees covered by collective bargaining	−0.006	−0.004
	(2.07)	(2.12)
Rate of growth of regional employment	0.010	0.010
	(3.08)	(2.71)
Proportion of employees covered by collective bargaining* dummy 1998–2000	0.002	0.001
	(1.37)	(1.51)
Proportion of public employees * dummy 1998–2000	0.003	0.003
	(3.94)	(4.21)
R-squared	0.70	0.66
N	4,017	4,017

Note: The regression model also contains time, regional and industry fixed effects. Robust unsigned t-statistics in parenthesis.

the share of public employment has a very significant positive effect, indicating that the negative effect of the hiring practices of the public sector on the incidence of temporary work has decreased by 0.3 percentage points since the 1997 reform. This result seemingly confirms our previous conjecture about the key role played by the public sector in explaining the persistence of share of temporary work during the late 1990s.

The second exercise entails the estimation of a model determining the probability of being employed under FTCs in both the private and the public sector over the period 1990–2001. The sample includes all individuals from 16 to 44 years of age who are either employed or unemployed, excluding those out of the labour force.[18] Our specification includes age dummies, gender, educational attainment levels, dummies for occupations and industrial sectors, the rate of growth of regional employment – distinguishing among agriculture, manufacturing, construction, and service sectors- and time dummies, both separately and interacted with the rest of the covariates. We also control for the selectivity bias of being an employee under a FTC in either the private or public sectors through Heckman's lambda method. The selection equations determining employment in each sector include age dummies, gender, educational attainment levels, and household status (breadwinner, spouse, living with parents etc.). For the time dummies we distin-

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[18] The total number of observations is 641,335 and corresponds to a time series of cross-sections drawn from the information contained in the second quarters of the Labour Force Survey.

guish three periods corresponding to the different regimes in the regulation of
FTCs over the last decade: 1990–4, 1995–7, and 1998–2001. The latter dummy
variable is intersected with age, education, sector and type of job since, as in the
previous exercise, our main interest is to estimate how the 1997 reform has af-
fected the probability of being employed under FTCs for various population
groups. The estimated coefficients and their t-statistics are reported in Tables A1
and A2 of the Appendix, while Fig. 5 plots the corresponding estimated proba-
bilities of being employed under a FTC in the private and public sectors for some
specific individual and job characteristics. It should be noted that there is strong
evidence of selectivity bias (ie, the coefficients on Heckmańs lambda are very
significant and positive) indicating that those workers which are more prone to
work in a given sector have a larger propensity to be hired under FTCs in that
sector. The results show a significant reduction of the probability of being em-
ployed under temporary contracts in the private sector (see Table A1) after 1997
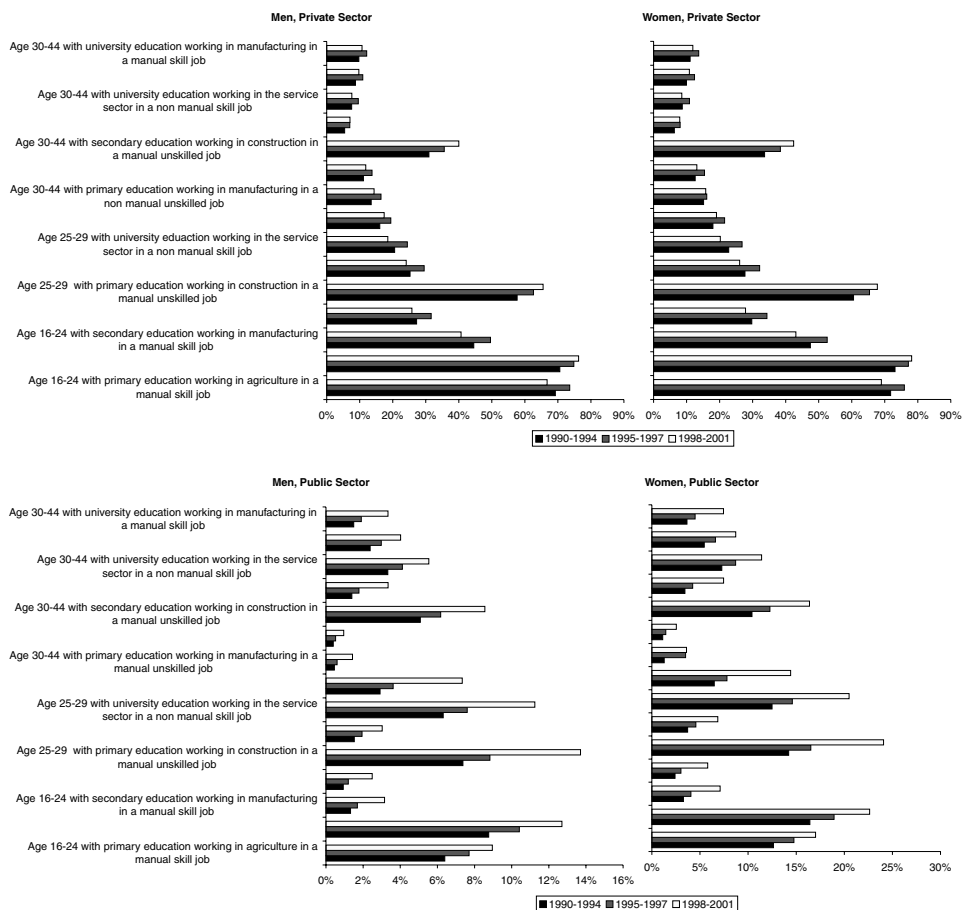for workers in the service sector, with secondary education, and performing

Fig. 5. *Estimated Probabilities of Being Employed Under a Temporary Contract, Spain,*
1990–2001

manual skill jobs. Interestingly, for workers aged 30–44, who were excluded from the reduction of firing costs and the entitlement to employment subsidies, the probability of being employed under temporary contracts increases after 1997. As for the public sector (see Table A2), there is an overall increase in the probability of being hired under temporary contracts, particularly for unskilled workers in manufacturing and service sectors.[19]

As for why the public sector has increased so much the proportion of temporary hires in recent years, there are at last two explanations. First, following the fiscal consolidation pursued by the Spanish government after the Maastricht Treaty and the further restrictions imposed by the Growth and Stability Pact, limits have been imposed to the hiring of permanent workers so that for every four retirements in the Public Administration only one new permanent contract was allowed to be made. This change in the hiring behaviour of the public sector can be explained by the fact hat that the restrictions to workers' mobility and firings are much stricter in the public sector than in the private sector and the effort to reduce the size of the former sector are facilitated by the use of the more flexible temporary contracts. And secondly, a high proportion of the EC Structural Funds received by the Local Administrations for promoting Active Labour Market Policies (ALMPs, henceforth), following the 1997 Amsterdam Summit, have been used to hire workers in targeted groups (youth, female, long-term unemployed etc.) under temporary contracts. Fig. 6 displays the correlation between the (log) temporary employment in the public sector in each of the 16 regions in Spain,[20] as of 2000, and the (log) of the ALMPs funds allocated to each region by the European Social Fund (each normalised by total regional employment). The estimated coefficient in this regression is around 0.2 (t-ratio = 3.4), so that an increase of 1% in those funds increase temporary employment in the public sector by 0.2%. Further, if we eliminate the clear outlier in the graph, which corresponds to Catalonia, the estimated coefficient remains the same while the t-ratio raises to 4.3.[21] A benevolent interpretation of that result is that, insofar as jobs financed by ALMPs funds are mostly created for groups of workers with specific difficulties in the labour market, these temporary contracts, instead of being a pure flexibility device, may act as 'stepping stones' which can improve the 'employability' of those workers in the future.

5. Concluding Remarks

Since 1984 Spain has had the highest incidence of temporary employment in the EU, particularly in terms of FTCs, although since the mid-1990s there has been a policy reversal towards reducing its scope. Recently other EU countries (notoriously Italy and France) seem to have embraced the Spanish strategy of relaxing

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[19] For a complementary piece of evidence on the effects of the recent reform see Hernanz, Kugler and Jimeno (2001) who analyse the flows from unemployment to employment and from temporary employment to permanent employment distinguishing by population groups subject to different firing costs and entitled to dissimilar employment subsides.

[20] The Basque Country is excluded due to lack of data on ALMP funds.

[21] Catalonia represents an outlier because some of the ALMP funds are devoted to occupational training and that region makes an intensive use of them.
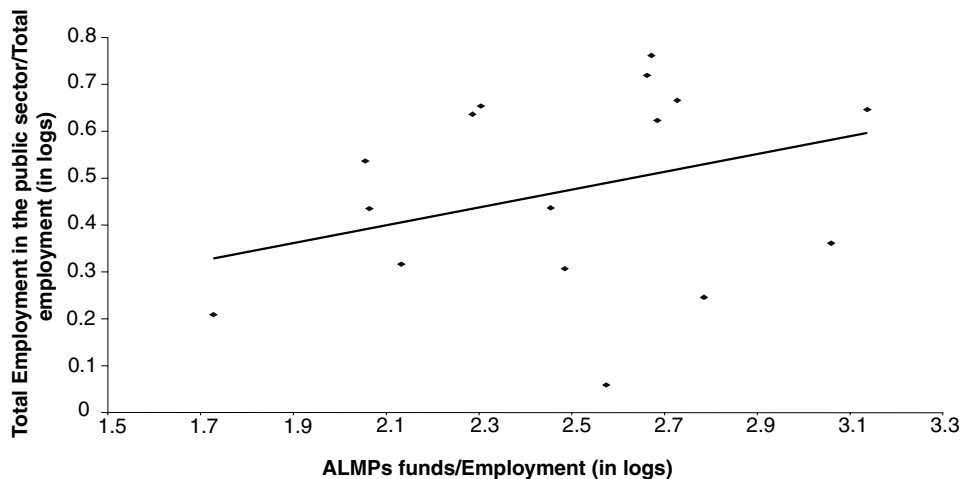
Fig. 6. *Temporary Employment in the Public Sector and ALMPs Funds*

EPL by liberalising and promoting fixed-term employment. According to our re-
view of the Spanish experience, it cannot be taken for granted that this strategy
improves the working of the labour market. Together with the plausible benefits of
higher 'flexibility', there may be perverse effects on both efficiency and equity
grounds. In principle, the most evident effects of the surge of temporary em-
ployment are higher worker and job turnover rates, and lower unemployment
duration for those workers holding FTCs. As regards the unemployment rate, the
evidence is more mixed. On the one hand, the lower firing costs associated to
FTCs seem to have contributed to employment growth. Yet, on the other hand,
there have been some unexpected negative consequences stemming from the
existence of a segmented/dual labour market such as lower investment in human
capital, higher wage pressure, a more unequal distribution of unemployment
duration, lower labour mobility and fertility rates and larger wage dispersion.

   In fact, a symptom on the mixed blessings of temporary employment is the
policy reversal regarding EPL reforms which has taken place in Spain since the
mid-1990s with the aim of reducing the proportion of temporary employment by
lowering firing costs under the permanent contracts and subsidising both hires
under permanent contracts and the conversion of temporary contracts into per-
manent ones by means of rebates of Social Security contributions. The preliminary
evidence presented in Section 4 shows that, as a result of these measures, the
incidence of temporary employment in the private sector has fallen by about 4
percentage points, although the aggregate rate has only dropped by about 1
percentage point because of the increase of temporary employment in the public
sector. Thus, there are two topics that deserve further research. First, the relative
contribution of lower firing costs under PCs and of social security rebates to the
reduction of the proportion of temporary employment in the private sector re-
mains to be estimated. Secondly, the public sector behaviour regarding the use of
temporary employment as a means to provide active labour market policies needs
to be further scrutinised.

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Table A1

Probit Estimation with Sample Selection

Probit model Temporary employee in the private sector = 1			Selection equation Employee in the private sector = 1		
	Coefficient	t-stat.		Coefficient	t-stat.
Constant	0.252	9.5	Constant	0.263	42.5
Age 25–29	−0.468	−46.2	Age 25–29	0.096	19.8
Age 30–44	−1.083	−92.8	Age 30–44	−0.143	−28.7
Female	0.074	10.5	Female	−0.127	−31.5
Secondary education	−0.076	−11.2	Secondary education	0.001	0.4
University education	−0.154	−15.5	University education	−0.245	−53.0
Manufacturing	−0.564	−40.2	Non-married Breadwinner	−0.118	−15.1
Construction	0.120	8.6	Spouse	−0.252	−44.2
Services	−0.394	−29.5	Living with parents	−0.217	−44.8
Non manual unskilled job	0.077	7.6	Other	−0.124	−13.0
Manual skill job	0.308	27.4	N	641,096	
Manual unskilled job	0.347	30.2			
Rate of growth of agricultural employment	1.461	7.9			
Rate of growth of manufacturing employment	0.308	3.5			
Rate of growth of employment in construction	−1.177	−17.8			
Rate of growth of employment in the service sector	1.544	7.1			
Dummy 1995–1997	0.124	12.0			
Dummy 1998–2001	−0.002	−0.1			
Age 25–29 × Dummy 1998–2001	0.055	4.5			
Age 30–44 × Dummy 1998–2001	0.135	12.3			
Female × Dummy 1998–2001	−0.012	−1.3			
Secondary education × Dummy 1998–2001	−0.042	−3.6			
University education × Dummy 1998–2001	−0.023	−1.5			
Manufacturing × Dummy 1998–2001	0.013	0.6			
Construction × Dummy 1998–2001	−0.023	−1.0			
Service sector × Dummy 1998–2001	−0.116	−5.3			
Non manual unskilled job × Dummy 1998–2001	0.057	3.7			
Manual skill job × Dummy 1998–2001	−0.078	−4.7			
Manual unskilled job × Dummy 1998–2001	0.165	9.7			
Lambda	0.780	30.0			
N	641,096				

Sample: Employees, self-employees and unemployed, 30–44 years of age, 1990–2001.

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Table A2

Probit Estimation with Sample Selection

Probit model Temporary employee in the public sector = 1			Selection equation Employee in the public sector = 1		
	Coefficient	t-stat.		Coefficient	t-stat.
Constant	−1.561	−26.4	Constant	−2.157	−225.1
Age 25–29	−0.135	−7.3	Age 25–29	0.273	35.5
Age 30–44	−0.440	−17.7	Age 30–44	0.651	87.0
Female	0.378	37.9	Female	0.148	26.1
Secondary education	0.117	7.1	Secondary education	0.523	82.7
University education	0.605	30.6	University education	1.242	190.0
Manufacturing	−0.814	−17.3	Non-married Breadwinner	0.082	8.8
Construction	0.042	0.9	Breadwinner's spouse	−0.039	−5.4
Services	0.449	11.6	Living with parents	−0.309	−48.9
Non manual unskilled job	−0.146	−11.7	Other household status	−0.150	−11.4
Manual skill job	0.027	1.7	*N*	641,355	
Manual unskilled job	0.194	11.4			
Rate of growth of agricultural employment	0.171	0.6			
Rate of growth of manufacturing employment	−0.715	−4.7			
Rate of growth of employment in construction	0.205	1.8			
Rate of growth of employment in the service sector	−0.668	−1.8			
Dummy 1995–1997	0.134	7.6			
Dummy 1998–2001	0.256	3.2			
Age 25–29 × Dummy 1998–2001	0.032	1.2			
Age 30–44 × Dummy 1998–2001	−0.044	−1.7			
Female × Dummy 1998–2001	0.011	0.7			
Secondary education × Dummy 1998–2001	−0.011	−0.4			
University education × Dummy 1998–2001	0.012	0.4			
Manufacturing × Dummy 1998–2001	0.192	2.3			
Construction × Dummy 1998–2001	0.108	1.2			
Service sector × Dummy 1998–2001	0.166	3.0			
Non manual unskilled job × Dummy 1998–2001	−0.007	−0.3			
Manual skill job × Dummy 1998–2001	−0.028	−1.0			
Manual unskilled job × Dummy 1998–2001	0.008	0.3			
Lambda	1.270	36.1			
N	641,335				

Sample: Employees, self-employees and unemployed, 30–44 years of age, 1990–2001.

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