A model for the temporary help services industry in the presence of unemployment. Theoretical and empirical analysis for Spain

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February 2013

Abstract

Since the late 1990s, the temporary work agencies (TWA) industry experienced an impressive growth, representing about 15% of total temporary hiring in Spain. Most interestingly, the TWA business in Spain exhibits a remarkable regional disparity. We develop a very general theoretical model in which we analyse this phenomenon in the presence of unemployment. The paper examines further the Spanish case identifying the fixed hiring cost as a major factor to explain regional discrepancies. The employment composition by sectors of activity, in each province and period, emerges as a crucial factor to determine the proportion of temporary contracts made through temporary work agencies.

Key Words: Temporary employment. Hiring costs. Temporary work agencies.

JEL-Code: J22, J23, J32, J41.

Acknowledgements

We would like to thank: David Autor, Barry McCormick, Luis A Gil-Alana, Francisco Galera, Javier Gomez Biscarri, Francesc Pujol, Tito Ruiz, and Javier Hualde for their helpful comments. All remaining errors lie within the authors.

1. Motivation

The Temporary agency work (TWA) industry experienced, in almost all OECE countries, an astonishing growth throughout the 1990s, a feature that was particularly remarkable in Spain. The increasing success of TWA has attracted the interest of economists. Studies on this topic have typically examined the growth of the TWA industry in different markets, while searching for explanations of its increasing success.[1]

Among the arguments proposed to explain the rapid diffusion of the TWA phenomenon, Neugart and Storrie (2006) highlight the role of TWA agencies as matching intermediaries to meet the needs of client companies and workers. They consider that the TWA expansion is due to their efficiency at the recruitment and assignment process, which was sustained by improvements in reputation and coordination with the client firm.

Other papers, like Segal and Sullivan (1997), stress the role of TWA to save hiring costs, pointing at economies of scale (in training workers), as well as reduced recruitment and screening costs, as the most plausible explanations of the rapid growth of the TWA industry. In the past, the task of TWA had been interpreted as a way to save transactions costs. The issue is related to the flexibility in hiring and to the acknowledgment of labor as a quasi-fixed factor, an idea proposed in the seminal paper by Oi (1965). In line with this argument, Mangum et al (1985) stress the competitive advantage of TWA, achieved by reducing the cost the employer would incur in searching for, screening, hiring and training temporary workers. More recently, Autor (2001b) points out that the potential increase in matching efficiency obtained through computerized technologies can only be fully effective with the help of intermediaries such as the TWA agencies.

The case of Spain has also inspired the effort of researchers. Some papers describe the growth of the TWA sector, proposing diverse explanations of its expansion.[2] Among them, Muñoz-

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[1] See for instance: Laird and Williams (1996), Polivka (1996) or Segal and Sullivan (1997); and more recently: Neugart and Storrie (2006), Böheim and Zweimüller (2013), Forde (2001), or Burgess et *al* (2005). According to the former paper, temporary agency work has more than doubled in every country of the European Union during the 1990s and has increased at least five-fold in places like Spain, Scandinavia, Austria and Italy.

[2] The issue of temporary employment in Spain is approached in Bentolila and Dolado (1994). The role and

Bullón and Rodes (2004) explain the TWA expansion on the basis of the economies that TWA firms generate: time savings, human resources management, organization, etc.[3]

This paper provides a theoretical framework to illustrate how the TWA perform their task in labour markets with unemployment. In developing the model, which analyses the probability of hiring temporary workers through TWA (instead of directly), a principal role is given to the fixed cost of direct hiring, following the line of previous studies.

The TWA business in Spain accounts for about 15% of temporary hiring, displaying large regional disparities (in some provinces the proportion is above 30%). Our theoretical framework builds upon the hypothesis that the fixed cost of hiring is the key feature to explain the success of the TWA industry as well as the regional discrepancies. This hypothesis is then tested through proxy variables.

The empirical analysis is based on data of 50 Spanish provinces, from January 1996 to August 2000. The chosen period corresponds to the expansionary period of the industry, which permits extracting information from the temporal dimension of the data while taking into account the regional variability too. (This feature is important especially when dealing with dynamic panel-data techniques). Our empirical analysis permits the conclusion to be drawnthat the success of TWA grows along with the size of the fixed cost of hiring, since the larger the proportion of allocations in the industry and services sectors, the more often do the client firms resort to TWA.

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development of TWA industry in Spain is examined, among other papers, by: Albert and Garcia Ruiz (1995), Garcia-del-Barrio (2001), Muñoz-Bullón (2004), Amuedo-Dorantes et *al* (2008).

[3] From the viewpoint of workers, the expansion of the TWA sector has originated an interesting policy debate where the empirical evidence is contradictory. Some results suggest that TWA assignments decrease the probability of finding a stable job, while others (typically for Europe) reach opposite conclusions. (Cf.: Ichino et *al*, 2008 and Amuedo-Dorantes et *al*, 2008). A description of the debate on the nature of TWA in the UK is made by Forde and Slater (2005).

The idea of "signaling" in labour markets may also be considered, as to grant individuals with additional incentives to look for employment through TWA agencies. Further discussion on workers who use TWA agencies for developing their career perspectives in Shimizu (2009). The importance of not sending negative signals is stressed by McCormick (1990), whose arguments alert of the danger of remaining unemployed for long spells. By finding job allocations to their workers and avoiding unemployment, the TWA help workers also in the long-run career development. As regards the role played by unions, Böheim and Zweimüller (2013) find no empirical evidence in the UK to support that trade unions may oppose the hiring of agency workers. In this regard, the study of TWA workers' productivity may also be relevant, as stressed by Hirsch and Mueller (2012).

The TWA industry exhibited a huge growth rate in Spain once the institutional barriers were removed in 1994. Before that year, TWA were prohibited by Article 3 of the *Estatuto de los Trabajadores*, as they were thought to neglect the interests of workers. TWA business found support in the legislation when *Ley 14/1994, de 1 de junio* was promulgated. The proportion of contracts formalized by TWA experienced a continuous increase up to 1998. From that year the proportion has been stable around 15% of the temporary hiring. *Table 1* reports the number of permanent and temporary contracts in Spain along with some information on the TWA growth.

(Insert Table 1)

Previous related literature highlights that the fixed cost of hiring is a crucial feature to explain the growth and regional disparity of the TWA business. Our theoretical framework is constructed to account for this fact, whose validity is tentatively tested in Section 3.

2. A Basic Model with Unemployment

The intermediation role of TWA (matching job-buyers -the client firms- with job-sellers -the workers-) has its own peculiar characteristics. In doing their task, TWA generate revenues by charging fees, while incurring some matching costs (ϑ). As both the client firm and the worker benefit from the TWA intermediation task, they both have to pay for the cost of the service. Accordingly, we assume part of the fee being paid by the client firm (α) and the other part afforded by the workers (β). The latter can be considered as a mark-up subtracted from the wage bill that workers receive. The prevailing wage, for each particular type of contract, is assumed to be determined exogenously. Our theoretical model is developed upon assumptions that are consistent with labor markets where some unemployment exists:

(1) There is uncertainty about the worker's success in the job-searching process. By using a TWA, the individual finds the job with probability *p'*. If the worker searches directly, the probability of success is *p*.[4] Obviously, it must always be the case that: $0 < p, p' < 1$.

[4] It may also be assumed, with no loses of generality, that TWA increases the probability of success in the job-searching process. It implies that: $0 < p < p' < 1$.

(2) The prevailing per-contract wage (w) is settled by collective bargaining.

(3) From (1) and (2), it follows that workers may experience spells of unemployment, in which case they receive the unemployment benefit payment (s).

(4) There are 'i' regional labor markets and 'm' types of client companies.

(5) Workers are homogeneous and TWA do not know the amount that each worker is willing to pay as a fee, implying that $\beta_i = \beta, \forall i$. The analysis implicitly assumes a particular kind of contract with specific characteristics, such as duration, qualification requirements, etc. There are 'j' types of contracts to which identical arguments apply.

(6) The cost endured by the worker, when directly searching for a job, is the same across all the regional labor markets. (This hypothesis may be defended, at least theoretically, on the basis of perfect labor force mobility). In other words, it holds that: $c_i = c, \forall i$.

(7) The TWA are specialist in matching and operate all over the country. Hence:

(7.a) They experience similar matching costs: $\vartheta_i = \vartheta, \forall i$.

(7.b) Regardless of the local labor market, they charge the same fee to the client firm, implying that: $\alpha_i = \alpha, \forall i$.

(8) Client firms are not specialized in matching. The per-contract fixed cost of direct hiring differs for each contract. Hiring costs include, among others, recruiting, training and screening costs. However, for the sake of simplicity, this cost is characterized according to the type of client firm 'm' and the local market 'i', implying that the fixed hiring cost is defined by K_{im}.

2.1. The decision problem of the client firm

Consider the case in which the client firm has already decided to establish a temporary contract, so that it faces a twofold decision: either hiring through a TWA or doing it directly. Other possibilities (like a client firm running its own temporary agency) are not considered here, since the legal system in Spain does not allow any business, other than the TWA, to provide temporary labor force to client companies.

When hiring through a TWA, the client company has to pay a fee to the TWA. This fee typically takes the form of a mark-up over the worker wage bill, thereby resulting a total cost of:

$w + \alpha \cdot w$. We assume that in this case the TWA guarantees the success of the matching. (Since the model has been framed in a context of unemployment, the client firm finds the required worker with probability p, different from zero. In any case, the TWA never fails to provide labor force, even if they may have to sub-contract this service to other TWAs). If the other alternative prevails and direct hiring is chosen, the client firm has to afford the wage plus the fixed costs of hiring. The second alternative leads to the following cost:

(2.1) $$C^D = w + K_{im}$$

(*Appendix 1* shows that the meaning of K_{im} doesn't essentially change by introducing uncertainty on the probability of having success in the matching process). In accordance with that, the decision problem of the client firm consists of choosing the most profitable alternative between the cost of directly hiring, as defined in (2.1), and the cost of hiring with TWA as stated by:

(2.2) $$C^{THS} = w + \alpha \cdot w, \qquad \text{for } \alpha \geq 0$$

As a result, the condition for the client firm to use a TWA is simply that the fee charged by the TWA must be lower than the cost of direct hiring (k_{im}) expressed in relative terms of the wage:

(2.3) $$\alpha \cdot w \leq K_{im} \qquad \text{or:} \qquad \alpha \leq \frac{K_{im}}{w} = k_{im}$$

Condition (2.3) must hold in each and every contract made through TWA. We assume here that the wage does not change all through the country, for each type of contract. Similarly, the fee charged by the TWA from the client firm, α, does not differ across regions, which is a sensible assumption as far as many TWA operate all over the country. Our analysis is then applied to a particular type of contract 'j', which is the label denoting contract category and will be omitted thereafter). In summary, the client firm prefers hiring through a TWA if and only if condition (2.3) is fully verified.

2.2. Decision problem of the worker

In labor markets with unemployment, individuals have certain risk of failing in the job-search process. The work-seeker faces two alternatives, with different probabilities of success: either to

hire through a TWA or to deal directly with the client firm. Yet, these two options must not be considered as incompatible alternatives, since they often take place together: the worker who signs with a TWA may simultaneously look for a job directly.

The basic assumptions have now been described. There is a probability *p* of finding a job directly; and another probability *p'* whenever the worker contact a TWA. It is also assumed that individuals who find no job receive the unemployment benefits *s*. Thus, the expected revenue of a worker who does not register with a TWA is given by:

$$G^D = p \cdot (w - c) + (1 - p) \cdot (s - c), \qquad \text{for } 0 < p < 1 \tag{2.4}$$

Expression (2.4) states that the worker must afford cost *c* regardless of the result of the job-searching process. It is implicitly assumed the constraint that *w* has to be greater than *s*, unless the government wants to perpetuate situations of unemployment. The expected revenue of directly searching for a job can be expressed as well by:

$$G^D = s - c + p \cdot (w - s), \qquad \text{for } 0 < p < 1 \tag{2.4'}$$

Equation (2.4') informs that any individual gets paid at least *s* and, regardless of the outcome of the searching process, spends amount *c* in looking for a job. Above that, the individual gets a job with probability p, which brings forth the additional amount given by the difference between *w* and *s*.

The other alternative to be considered is that of using a TWA and, simultaneously, looking directly for a temporary job. Such behavior is sensible in markets with unemployment, since the uncertainty makes people employ all the available means. Thus, signing a contract with a TWA is conceived as one, among others, procedures. The expected revenue of the mixed search (G^M) is:

$$\begin{aligned} G^M = {} & p' \cdot (1 - p) \cdot (w - \beta \cdot w - c) + (1 - p') \cdot p \cdot (w - c) + \\ & + (1 - p') \cdot (1 - p) \cdot (s - c) + p' \cdot p \cdot (w - c) \end{aligned} \tag{2.5}$$

According to (2.5), the expected revenue of the mixed procedure involves four terms, which correspond to the four possible outcomes. The first term accounts for the worker who finds a job through the TWA, but does not succeed when searching directly. The probability of both events to happen together is *p'* multiplied by *(1 – p)*. In this case, the individual must subtract the fee charged

by the TWA as well as the cost generated by the direct searching. The second term describes the opposite case: the worker finds a job directly, but does not with the TWA, implying that only *c* has to be subtracted from the expected wage. The third element corresponds to the case where no job is found by whatever procedure, thereby delivering expected revenue by amount *s* after having deduced *c*. Finally, it may be that two jobs are obtained, in which case we expect the worker to accept the one found directly, since the TWA would otherwise charge an extra fee.[5] The expected revenue reported in (2.5) permits as well a reduced form:

(2.5') $$G^M = s - c + p \cdot (w - s) + (p' - p' \cdot p) \cdot (w - s - \beta \cdot w)$$

The previous expression discloses a more intuitive interpretation: the individual earns at least the amount *s* while incurring necessarily cost *c*. On top of that, the expected revenue includes the additional amount achieved in case of getting a job directly (3rd term), plus the additional amount generated if signing through a TWA but not directly (4th term).

In equilibrium, there are strong reasons to believe that equation (2.4) must be equal to (2.5). In fact, it is often the case that, within the same labor market and among homogeneous workers, some individuals sign with the TWA while seeking directly, whereas other individuals search exclusively on their own account. It doesn't seem plausible (and hence is not going to be studied) that individuals who truly wish to find a job, constraint their search efforts to the TWA, while they neglect absolutely the direct searching. The expected revenue generated by the two strategies must be eventually the same, since –otherwise- one of the groups would abandon its position to choose the solution which yields greater earnings. In this way, any equilibrium situation in which certain workers prefer the direct searching procedure while others choose the mixed strategy requires the following condition to be true:

(2.6) $$G^D \equiv G^M$$

From the previous equality, the equilibrium value of β is immediately obtained:

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[5] The sum of all the probabilities must be equal to 1: $p' \cdot (1-p) + (1-p') \cdot p + (1-p') \cdot (1-p) + p' \cdot p = 1$.

(2.7) $$\hat{\beta} = \frac{w - s}{w}$$

Note first that the expected revenue of a worker adopting the mixed searching procedure, when the fee β takes its equilibrium value, is exactly the same as the expected revenue of direct searching:

(2.8) $$E\left(G^M \;\middle|\; \hat{\beta} = \frac{w - s}{w}\right) = s - c + p \cdot (w - s)$$

This finding means, precisely, that the equilibrium is achieved only when the individuals are indifferent between the two strategies and no incentives to move from one to the other exist. Besides, at any equilibrium, the option of looking for a job must be at least as appealing as the outcome of doing nothing and hence receiving just *s*. Hence, the participation constraint is:

(2.9) $$s - c + p \cdot (w - s) \geq s \qquad \text{or: } p \cdot (w - s) \geq c \qquad \text{or: } w \geq s + \frac{c}{p}$$

The last expressions indicate that, for any value of β smaller than (2.7), the workers certainly prefer the mixed strategy, thereby resorting to TWA. Similarly, if the value of β is greater than expression (2.7), resorting to TWA is ruled out and the direct searching procedure is chosen.

A singular case takes place if $w = s$, but it cannot reflect an equilibrium situation, since under this circumstance, workers would make no search effort at all. Another particular situation emerges if $s = 0$. In this case, the individuals always prefer the mixed strategy; or, to be more precise, they choose the TWA contract as far as β is smaller than one. The reason behind this is clear: in labor markets without unemployment benefit, workers find themselves unprotected and willing to use all available means to find a job. (For $\beta = 1$, the worker receives an effective wage equal to zero, which is not a realistic situation and, hence, is not going to be considered).

2.3. Profits of the TWA

For a TWA business to survive within a competitive market, it must obtain extraordinary profits or, at least, non negative profits. The revenues of the TWA come from two sources: the fee that the client firm pays ($\alpha \cdot w$) and the proportion of the wage that the worker renounces ($\beta \cdot w$). Notice

that the client firm, besides paying the fee $\alpha \cdot w$ to the TWA, assigns the amount *w* for rewarding the workers. From the amount *w* paid to the TWA, the TWA retains $\beta \cdot w$, which is thus another source of revenues. The cost of the TWA depends basically on the matching cost of establishing a new temporary contract: θ, which can be also expressed as a proportion of the wage: $\vartheta \cdot w$.

Given that the TWA are specialist intermediaries, that perform their task in an efficient manner, the matching cost is supposed to be the same all over the country. Besides, as far as the TWA operates simultaneously in several regional markets, it may be assumed that they share the matching costs. It implies that, *de facto*, ϑ might be considered identical across provinces. Hence, the profit of the TWA can be defined by:

(2.10) $$\pi = (\alpha + \beta) \cdot w - \theta \; ; \qquad \text{or also:} \qquad \pi = (\alpha + \beta) \cdot w - \vartheta \cdot w$$

The last expression states that TWA are interested to establish a new contract as far as its expected profit is greater than or equal to zero, which may be considered as the participation constraint:

(2.11) $$(\alpha + \beta - \vartheta) \cdot w \geq 0$$

Given that $w > 0$, expression (2.11) implies:

(2.12) $$\alpha + \beta \geq \vartheta$$

That is to say, the TWA business will be profitable – and, hence, lasting – insofar as the matching cost of the TWA (ϑ) is smaller than the worker's hiring cost plus the hiring cost of the client firm. Otherwise, the market mechanism would automatically expell the TWA out of the market.

The assumption of perfect competition permits defining a tighter restriction. Effectively, in competitive markets, the free entrance of firms ensures zero extraordinary profits. Therefore, at least in the long run, the expression (2.12) must hold in the form of strict equality:

(2.13) $$\alpha + \beta = \vartheta$$

In summary, a situation of competitive equilibrium requires that the sum of the fees charged by the TWA (α and β) must be equal to the matching cost.

2.4. Characterization of the equilibrium

According to previous theoretical developments, three are the conditions defining equilibrium:

1. Client firms decide resorting to a TWA if and only if condition (2.3) is satisfied.

2. The fee that TWA charge the workers, at equilibrium, takes the value given by (2.7).

3. The TWA get no extraordinary profits in the long run, implying that condition (2.13) must hold.

These three statements allow us to determine the equilibrium value of the fees charged by the TWA. Once the equilibrium value of β is calculated as indicated in (2.7), one can immediately obtain the equilibrium value of α by using (2.13):

$$\hat{\alpha} = \frac{\theta - (w - s)}{w} = \vartheta - \frac{w - s}{w} \tag{2.14}$$

Hence, the equilibrium values for the two commissions are defined by:

$$\left(\hat{\alpha}, \hat{\beta}\right) = \left(\vartheta - \frac{w - s}{w}, \frac{w - s}{w}\right) \tag{2.15}$$

Since the TWA market is supposed to be competitive, the *walrasian* metaphor of the auctioneer fits well with the way how the fees are determined. At any equilibrium, the price clears the market. The TWA sell their services and, as long as there are individuals willing to pay, the TWA increase the price up to the value where the fee takes the highest level. At the end of this process, there are no unsatisfied agents in the market; neither the worker, nor the TWA, nor the client firm.

Having described the equilibrium process, and for the given value of α at equilibrium, the decision problem of the client firm can be more precisely defined. The problem consist of verifying whether condition (2.3) holds true or not for the particular value of fee α. Following the result expressed at (2.3), the client firm will resort to a TWA if and only if the cost of hiring directly is greater than the value of $\hat{\alpha}$.

2.5. Graphical representation of the problem

The problem faced by the client firm has a probabilistic nature and consists of a twofold choice. Hence, for the case of a qualitative variable, applying the Probit or Logit model is appropriate.

Nevertheless, due to data availability, the decision trade-off is going to be empirically tested by means of aggregated data.

In face of aggregated data (by provinces), condition (2.3) can be interpreted in a different manner: the dependent variable (instead of taking the values of 0 and 1) is the proportion of the temporal contracts made by TWA in each period and province; this is to say, the relative frequency that client firms resort to TWA. In this context, the dependent variable can be seen as the estimated probability that a temporary work contract is established by TWA. Thus, the proportion of TWA contracts in a particular market responds to the probability that expression (2.3) holds. In other words, we postulate that the empirical study may be elaborated on the base of the relationship:

$$\frac{H_i^{ett}}{H_i^{ett} + H_i^{D}} = \hat{p}_i = prob\left(\hat{\alpha} \leq \frac{K_{im}}{w}\right) = prob\left(\hat{\alpha} \leq k_{im}\right), \tag{2.16}$$

where H_i^{ett} is the number of contracts with TWA, and H_i^{D} the temporal contracts made directly.

This choice problem can be addressed by means of density functions. For that purpose, we simply assume that, in each labor market, the distribution of the direct hiring costs can be described by the very same density function, whose mean is different across the provinces. In some places, due to specific regional characteristics, or to the types of client firms settled in that market, the density function is placed farther to the right than in the others. Similarly, in labor markets with lower hiring costs, the density function is closer to the origin. The graphical interpretation of this problem is illustrated in *Figure 1*, where condition (2.13) is depicted together with the equilibrium values of α and β, as defined in (2.15).

(Insert Figure 1)

In this diagram, the different regional labor markets are characterized (as regards the fixed costs of direct hiring) through different density functions. Depending on the distribution of these costs, in each place and time period, smaller or greater probability of using TWA should be expected. The bigger the mean of the fixed cost of direct hiring in one province and period, $E(k_{it})$, the greater the area found to the right of $\hat{\alpha}$, and so, the higher the probability of resorting to TWA in this

market ($\hat{p}_{it}$). In other words, the relative frequency of the temporal hiring run by TWA (with respect to the total temporal hiring), is interpreted as the estimated probability that the cost of direct hiring exceeds commission α. Furthermore, given that $\hat{\alpha}$ takes a single value all over the territory, and assuming the same probability distribution function in all the markets, a functional dependence is established between the proportion of temporal contracts by TWA and the distributional mean of the fixed direct hiring costs in each province.

Our empirical analysis is then applied to expression (2.17), where subscript 'm' disappears, for having calculated the mean of the costs, and to which the subscript 't' is added to take into account the temporal dimension of the data:

$$\hat{p}_{it} = f\left(E\left(\frac{K_{it}}{w} \right) \right) = f\left(E(k_{it}) \right) \tag{2.17}$$

The last expression presumes that the existing disparity between density functions (of the fixed hiring costs for each province and time period) can be summarized in the relative position of the distribution mean with respect to the origin. This value is obtained from the costs associated to each type of client firm type 'm' and to the number of firms of each type settled in the respective market. The specification of the functional relation of expression (2.17), and represented in *Figure 1.b*, is going to become explicit in Section 3.

There is one issue which still remains unclear. In accordance to (2.7), it may be the case that the value of β reaches a point such as point A' in *Figure 2*. In this case, α has to be equal to zero (since it cannot take a negative value) implying that equation (2.13) is not fulfilled. Such a situation can be conceived just as a short term equilibrium: the workers pay the fee (β) which not only covers the costs endured by the TWA (ϑ) but also leaves some remainder; the TWA have extraordinary profits and the client companies do not pay any commission ($\alpha = 0$).

It is clear that such a situation cannot last. Given that the TWA have extraordinary profits, some new firms will enter the sector. The competition between TWA provokes the workers' commissions to fall, a process which continues up to $\hat{\beta} = \vartheta$ (point A in *Figure 2*). Note that a

situation where $\beta < \frac{w-s}{w}$ is the same as: $G^M > G^D$. In other words, the option of the mixed search is preferred to the option of direct search and then all the workers enroll TWA.

(Insert Figure 2)

Another extreme case is the one where $\hat{\alpha} = \vartheta$ and $\hat{\beta} = 0$ (point B, in *Figure 2*). In this situation, as in the previous one, all the workers enroll to TWA. Notice, however, that $\hat{\beta} = 0$, together with $G^M = G^D$, implies that $w = s$, which violates the participation constraint expressed in (2.9). Therefore, the only possibility for equilibrium to happen with $\hat{\beta} = 0$ would be if $G^M > G^D$.

Consider now the two possible corner solutions, where all the costs of TWA are assigned to the workers ($\hat{\alpha} = 0$, $\hat{\beta} = \vartheta$) or to the client firms ($\hat{\alpha} = \vartheta$, $\hat{\beta} = 0$). In both cases, expression (2.6) does not hold anymore, implying that all the workers enroll the TWA. In the first case, this happens because the workers are ready and willing to pay high fees (possibly because of high salaries) and this would cover all the costs of the TWA. In the second case, it occurs due to the readiness of client firms to take on the total cost. In such a situation, workers do not need to pay any fee, and all of them will certainly resort to intermediation tasks which are provided for free.

In summary, to carry out the empirical analysis, we advocate the existence of a functional dependence between the mean of the direct hiring costs, for each province and period, and the frequency with which client firms resort to TWA. The identification of the most adequate functional form is made in Section 3. The expected sign of the relation between hiring costs and the proportion of temporal contracts run by TWA is, of course, positive.

3. Empirical study of the TWA's sector in Spain

This section is not meant to be a thorough test of the topic under consideration. It aims, rather, to provide some evidence of the relevance of our model. Besides, given the impossibility of measuring exactly the mean of the direct hiring cost in each province and period, the issue is going to be approximated by means of proxy variables.

In particular, the heterogeneity across regions in the share of workers hired under a TWA contract is interpreted here as heterogeneity across industries and firm types in the cost of direct hiring. Our hypothesis is then tested by examining the empirical correlation between the share of temporary workers hired through a TWA arrangement and the proxies for the cost of direct hiring (in different provinces and time periods in Spain).

3.1. Other methodological issues

To check empirically the relation (2.17), we have first to specify the underlying functional form. If we assume a linear relationship, between the dependent and the explanatory variables, the model is:

$$\hat{p}_{it} = \beta_0 + \beta_1 \cdot E(k_{it}) + \varepsilon_{it} \tag{3.1}$$

Alternatively, a non-linear relation between the dependent and the explanatory variables may be presumed. If we assume that the implicit function in (2.17) is the normal cumulative probability function, a Probit model is chosen. But also the Logit model, associated to the logistic cumulative probability function, can be adopted to accurately address the problem in accordance with its inner probabilistic nature. Between the Probit and the Logit model, the latter is preferred, which in this context takes the form:

$$\hat{p}_{it} = F(Z_{it}) = F\left(\beta_0 + \beta_1 \cdot E(k_{it})\right) = \frac{1}{1+e^{-Z_{it}}} \tag{3.2}$$

where Z_{it} is some continuous underlying index determined by explanatory variables. This function is not linear and hence OLS cannot be applied directly. Yet, some transformations lead us to:

$$Z_{it} = \log\left(\frac{\hat{p}_{it}}{1-\hat{p}_{it}}\right) = \beta_0 + \beta_1 \cdot E(k_{it}) \tag{3.3}$$

To estimate the models, our dependent variable is the ratio between the number of TWA contracts and the total number of temporary contracts ($\hat{p}_{it}$: relative frequency). Yet, the dependent variable in expression (3.3) is the logarithm of the *odds*. This functional form is particularly appealing, as it avoids the limitations usually associated to the linear probability model. Besides, it permits applying OLS easily, by doing a grouping procedure of the individual data to estimate the

probability p_{it}. In our case, this is straightforward, since we know exactly the value of the estimated probability ($\hat{p}_{it}$) for each province and time period.

Even if we might have assumed the linear model and applied OLS to equation (3.1), the theoretical nature of the problem, as well as the results in the diagnosis of the residuals, lead us to discard this alternative in favor of the Logit specification. (Choosing as dependent variable the logarithm of the *odds*, is equivalent to assume a non-linear relation between p_{it} and the set of regressors).

3. 2. Description of the Data and Sources

Firstly, we want to identify a proxy variable to measure the mean of fixed hiring costs, in each province and period. The theory predicts a larger share of TWA contracts in a labor market where hiring costs are higher. This idea has been invoked in the literature, based on the fact that the TWA task is more relevant in markets that concentrate activities with expensive hiring processes. In contrast, if the type of economic activities predominant in the market allows the client firms to fill vacant posts in a cheap and easy way, the collaboration of TWA is less necessary.[6]

In summary, we expect that the concentration of TWA depends on the type of client firms settled in the market. Some client firms, due to their specific characteristics or activities they perform, fall systematically into greater fixed hiring costs than others. In local markets where the former type of firms predominates, TWA will have bigger presence, inasmuch as the savings in the hiring costs they procure are more significant. This is precisely the argument invoked by Albert and Garcia (1995) and Cohany (1996).

Ultimately, the choice of our proxy variable is based on the fact that hiring cost becomes greater as the number of business of industrial and services activities grows bigger. This is because, in these sectors, the clients firms face generally much larger fixed hiring costs, as *Table 2* discloses. Actually, in Spain, the fixed costs of hiring (including recruiting, training and firing costs) are

[6] See, for instance, Muñoz-Bullón (1999) or Garcia-del-Barrio and Cardenal (2000). The analysis by Katz and Krueger (1999) build upon the acceptance of TWA being able to lower hiring costs and, hence, to improve matching in labour markets. The issue is also related to the training costs, as stressed by Acemoglu and Pischke (1999) and Autor (2001a).

dramatically greater in the industry and services sectors than in construction. It is clearly the case either in absolute values or expressed as a percentage of the gross labor costs.

(Insert Table 2)

According to the data from the Spanish survey on labor costs, the hiring costs are about three or four times bigger in the industry than in construction. Similarly, they are twice or three times larger in services than in construction. A more detailed description of this evidence is reported in *Appendix 2*.[7] In agreement with this, the regional composition of the structure by sectors is related to the market quota of TWA. Thus, in order to evaluate the mean of the direct hiring costs, we propose an index of concentration of the industry and services sectors. More specifically, our chosen proxy variable (indser) is the proportion of job allocations in industry and services, with respect to the total volume of job allocations.

Regarding the dependent variable, $\hat{p}_{it}$ has been defined as the ratio between the number of contracts made by TWA and the temporary contracts as a whole. All the information regarding these variables was obtained from the Spanish National Institute of Employment (INEM).

3.3. Interpretation of the Results

The empirical analysis is carried out with panel data methodology on 2.800 monthly observations: 56 periods (from January-1996 to August-2000) and 50 provinces. The size of the data set allows us to benefit from the statistical properties commonly associated to large samples. Besides, panel data analysis permits taking into account the impact of the individual heterogeneity components.

The estimations shown herein correspond to the Logit model specification, since the linear model presented worse statistical properties and lack of normality in the residuals. Firstly, in column (1) of Table 3, the results of the pooled Ordinary Leasts Squares (OLS) model are shown. To control

[7] To evaluate the fixed hiring costs, we have included: "Prestaciones sociales directas", "Indemnizaciones por despido" and "Gastos en formación profesional". "Otros gastos" was not added, since it includes the costs incur by the client firm when directly searching, as well as the payments to recruiting agencies and TWA. "Cotizaciones voluntarias" could have been included without changing the basic conclusions shown in Table 2, but some of its components cannot be considered as fixed costs.

for the temporal dimension, the regressions include four dummy variables for the years and other 11 to account for the months (being January-1996 the reference period).

(Insert Table 3)

The estimated coefficient of the main explanatory variable, denoted by (indser), is positive and significant, indicating that TWA establish a higher proportion of contracts in the provinces and periods with larger concentration of activities in the industry and services sectors. The Adjusted-R^2 (equal to 0.639) is very high for studies of this type. Nevertheless, the behavior of the residuals alerts us about problems of heteroscedasticity [8] and serial correlation.[9] One procedure prescribed to deal with serial correlation consists of using dynamic specifications of the model, which can be implemented by adding lagged values of the dependent variable as regressors. The fact that one or more lagged dependent variable should be included or whether to compute the lag with respect to the preceding month or 12 months earlier, etc., responds to the nature of the data (monthly, yearly, etc.) In our case, after having examined the results of the different specifications, just one lag of the dependent variable (corresponding to the previous month) was incorporated. In our case, the theoretic nature of the problem also demands a dynamic form in order for the model to be correctly specified. The estimations of Model (1) in Table 3 suffer as well of heteroscedasticity.

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[8] To check for heteroscedasticity, the test of Cook and Weisberg (1983) was computed. The value of the statistic, which follows chi-square distribution with one degree of freedom, is equal to 184.38. Because this value is greater than the critical value (3.8 for 95%; and 6.6 for 99% confidence level), the null hypothesis of homoscedasticity is rejected.

[9] The Durbin-Watson test is neither valid if the alternative hypothesis includes more general specifications from the autoregressive first order model; nor when the model includes some lagged variables. Thus, the Breusch-Godfrey test is implemented to check the existence of correlation of order higher than one, as it works well when lagged variables are added as regressors. The Breusch-Godfrey test is obtained by running the regression of the model residuals against the successive lagged residuals, as well as against the explicative variables of the original model. If the R-squared of this regression is very high, it means that the current residuals depend strongly on the past, indicating the presence of serial correlation. Specifically, this test contrasts ($N \cdot T \cdot R^2$) with the tables of the chi-square distribution with so many degrees of freedom as many retarded residuals were introduced in the regression. In agreement with this, the null hypothesis of no autocorrelation is not rejected if the product of ($N \cdot T \cdot R^2$) is smaller than the corresponding critical value. (At 95% confidence level, this critical value is 3.84 with one lag in the residuals; 5.99 when second lag is introduced; 7.81 with three and 9.48 for a AR (4) process). The goodness of fit of the corresponding regression is 0.62 and hence, it is clear that the product of the number of observations times the Adjusted- R^2 exceeds the critical value with one degree of freedom. The first order autocorrelation in the residuals of the model is unquestionable, which disqualifies the validity of the hypothesis about the significance of the estimated coefficients.

To address jointly the autocorrelation and heteroscedasticity problems, we estimate, by Generalised Least Squares (GLS), dynamic specifications of the model. The preferred model includes as regressor just the first lag of the dependent variable (TWA_lag), since other attempts produced less satisfactory results with respect to the significance of the variables and the residuals diagnosis. Model (2), in Table 3, reports the results of this regression (run with 2,750 observations, as the lagged variable implied a loss of 50 data), accounting also for the fact that panels might be correlated between themselves.

Having applied GLS estimation implies that we do not need to worry about the risk of heteroscedasticity. As for serial correlation, the Breusch-Godfrey test shows that the problem is no longer present when applying a dynamic structure.[10] The coefficient of (indser) is again positive and very significant, indicating that the presence of TWA is remarkably bigger in labour markets where activities in the industry and services sectors are concentrated. These are precisely the markets in which clients firms face the largest hiring costs, which corroborates our hypothesis.

The coefficients of the other explanatory variables, with the exception of the time dummy for October, are positive and significant as well. Furthermore, the estimated coefficient of the lagged dependent variable (TWA_lag) is highly significant, which speaks in favor of the dynamic specification of the model. The last results reveal the strong inertia that affects the dependent variable to keep the level it had in preceding periods.

Yet, the information contained in our data has not yet been fully exploited: further conclusions can be achieved by applying the fixed or random effects models. Either approach permits isolating the influence on the dependent variable of peculiar characteristics associated to each province. Then, we explore next dynamic versions of the model, since they incorporate individual components to account for the hypothetical individual heterogeneity that could be behind the large regional disparities of the TWA Spanish industry. The presence of the unobservable individual heterogeneity component, in each province, can be introduced into the

[10] The regression of the residuals from the dynamic model (with respect to one lag of the residuals) delivers a much smaller R^2 (with value 0.07), than the $R^2 = 0.70$, from the regression of the residuals of the non-dynamic model.

analysis considering as if it were a fixed effect (fixed effects model) or supposing it has a random nature (random effects model). Both methods avoid that the estimations are distorted by peculiar characteristics of the province that were not captured through the other explanatory variables.

Again, due to the autocorrelation problem, the estimations with individual components ought to be done for the dynamic model, since the non-dynamic specifications have problems with the diagnosis.[11] Moreover, as regards random and fixed effects models, the dynamic specification cannot be applied directly, given that the individual heterogeneity element does not change over the periods. (Hence, the fact of introducing lags of the dependent variable as regressors provokes inevitably correlation between them; the multicollinearity problem).

To experiment with dynamic specifications, while avoiding the multicollinearity, we use instrumental variables methodology applied upon the lagged variable (TWA_lag). Typically, one must look for instrumental variables that are strongly correlated with the lagged dependent variable, but are not correlated with the individual heterogeneity component. For simplicity, the lagged dependent variable was instrumented by means of the value of its change rate with respect to the previous period, denoted by (ΔTWA_lag). The number of the observations is now 2.700, as 50 observations were lost to obtain the period-to-period increase of the dependent variable.

Between the fixed and random effects models, the latter estimations were preferred, since the former didn't solve the autocorrelation issue.[12] The results of the random effects model are highly satisfactory, as shown in column (3) of Table 3. The estimated coefficients are significant, with the only exception of the dummy November and, to less extent, July. Besides, the instrumental variables approach (as a procedure to introduce dynamics while avoiding correlation between the

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[11] Again, the Breusch-Godfrey test warns of autocorrelation, as the R^2 from the residuals regression is very high. The successive regressions of the residuals with respect to the regressors of original model and successive groups of the lagged residuals were estimated. With one lag, the R^2 was 0.72 for the fixed effects model; and 0.71 for the random effects model. Autocorrelation may imply bias and inefficiency in the estimators.

[12] The estimations of the random effects model are consistent and efficient. The Hausman test, for the non-dynamic specification, implied preferring the random effects rather than the fixed effect model, since it provides consistent and asymptotically efficient estimators. Yet, the Hausman test cannot be applied to the dynamic version of the model (with instrumental variables), since the estimations of the fixed effects model are tainted by autocorrelation.

regressors and the disturbance) appears to be satisfactory, as long as the corresponding estimated coefficient is also significant.

The last results can be considered conclusive, since the autocorrelation has been drastically reduced. (The R^2 is equal to 0.074 with one lag in residuals, and not surpasses 0.25 when including up to four lags). The instrument applied (ΔTWA_lag) is typically recommended for the random effect model and in fact works well. The last estimations reinforce our previous results. The positive sign of (indser) teaches us that the proportion of the temporal contracts by TWA is bigger where the activities of the industry and services sectors predominate. By incorporating individual heterogeneity elements, our findings are valid even when unobservable characteristics of the provinces are taken into account. The estimators of (indser), positive and very significant in all the cases, prove that TWA arrange a higher proportion of temporal contracts in the markets in which the presence of the industrial and service sectors is greater.

4. Conclusions

Unprecedented unemployment rates in Europe, especially in Spain, have forced policy-makers to modify certain institutional features in labor markets. The necessary transformations have resulted in temporary workers becoming a permanent fixture in many workplaces. In this context, the TWA industry has experienced astonishing growth throughout the 1990s, which has proved to be particularly remarkable in countries like the UK, the US and especially Spain. Temporary contracts characterize in a large extent the reality of the Spanish labor market. The TWA business has represented in the last years about 15% of the temporary hiring in Spain. In addition to that, there are enormous discrepancies across Spanish provinces; a fact deserving explications.

The main achievement of this paper is to provide an equilibrium model for the TWA industry in the presence of unemployment. A tentative empirical examination of the theoretical hypothesis has been carried out too. The paper concludes that the fixed hiring cost is the crucial factor explaining the large discrepancies in the success of the TWA across provinces. This conclusion is reached from the fact that the biggest hiring costs are founded in the places and periods where the biggest concentration of industrial and service activities exists.

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Table 1. Temporary and permanent contracts in Spain.

	Share of contracts		Total number of contracts		
	Temporary (2)/(1+2)	By TWA (3)/(2)	Permanent (1)	Temporary (2)	TWA * (3)
1995	94.99	5.43	367,047	6,963,000	378,739
1996	95.89	9.78	354,372	8,273,175	809,139
1997	92.99	13.94	707,481	9,386,084	1,309,021
1998	91.67	16.87	970,964	10,692,315	1,803,547
1999	90.87	16.65	1,208,416	12,026,911	2,002,039
2000	91.37	15.87	1,192,962	12,635,957	2,005,132
2001	90.83	14.89	1,288,438	12,768,046	1,901,352
2002	91.01	14.33	1,274,608	12,904,640	1,849,453
2003	91.90	14.76	1,180,272	13,398,295	1,977,780
2004	91.91	14.80	1,314,121	14,931,066	2,209,477
2005	91.53	15.26	1,445,206	15,622,127	2,384,045
2006	88.24	15.64	2,177,245	16,349,527	2,557,097
2007	88.07	16.49	2,220,384	16,401,724	2,705,043
2008	88.80	14.62	1,853,556	14,698,632	2,149,517
2009	90.64	13.18	1,312,414	12,713,981	1,675,830

* Contracts established between the client and the TWA (contratos de puesta a disposición).

SOURCES: "Anuario de Estadísticas Labourales" and "Boletín de Estadísticas Laborales": INEM and MTAS.

Figure 1

Figure 1.a

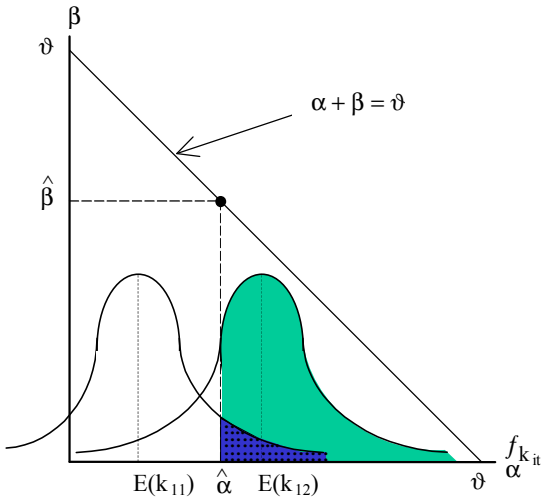

Figure 1.b

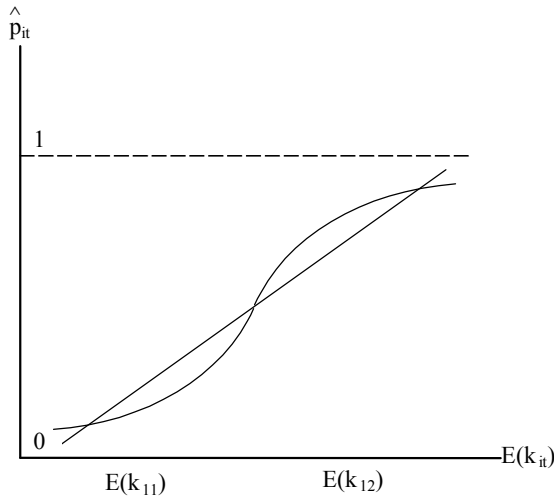

Figure 2

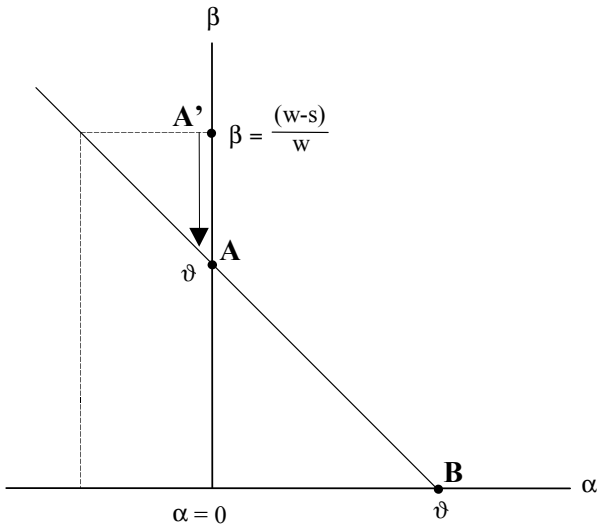

Table 2. Total and fixed labor cost in Spain: Euros per worker per year.

	Gross Labour Cost				Fixed Cost			
	Total	Industry (1)	Construction (2)	Services (3)	Total	Industry (4)	Construction (5)	Services (6)
1996*	22911.16	25226.29	20327.73	21728.69	1118.85	1300.12	529.41	1102.04
2000	23183.45	26331.93	20537.86	22321.92	839.24	1086.22	464.60	800.62
2001	22493.21	25456.02	20773.07	21769.15	589.01	763.45	201.02	605.62
2002	23365.49	26666.52	21521.21	22608.92	654.12	857.24	256.97	667.11
2003	24304.19	27926.75	22728.82	23420.50	662.46	969.94	212.55	653.91
	Fixed Cost / Gross Labour Cost (%)				Fixed Cost / Fixed Cost Construction			
	Total	Industry (4)/(1)	Construction (5)/(2)	Services (6)/(3)		Industry (4)/(5)	Construction (5)/(5)	Services (6)/(5)
1996*	4.88	5.15	2.60	5.07		2.46	1	2.08
2000	3.62	4.13	2.26	3.59		2.34	1	1.72
2001	2.62	3.00	0.97	2.78		3.80	1	3.01
2002	2.80	3.21	1.19	2.95		3.34	1	2.60
2003	2.73	3.47	0.94	2.79		4.56	1	3.08

* Conversion has been done from 1996 Spanish Pesetas to Euros.

SOURCES: INE, *Instituto Nacional de Estadística.* Spain. Encuesta de Coste Laboral: 1996 and 2000; and Encuesta Anual de Coste Laboral: 2001, 2002 and 2003.

To evaluate the fixed hiring costs, we have included: "Prestaciones sociales directas", "Indemnizaciones por despido" and "Gastos en formación profesional". "Otros gastos" was not added, since it embraces the costs incur by the client firm when directly searching as well as the payments made to recruiting agencies and TWA. "Cotizaciones voluntarias" may have been included without modifying the implications of Table 2, but some of its components are not fixed costs.

Table 3. Estimation of the different models

(1) $$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_0 + \beta_1 \cdot indser_{it} + \sum_{t=97}^{00} \sigma_t \cdot D_t + \sum_{m=2}^{12} \sigma_m \cdot M_m + \varepsilon_{it}$$

(2) $$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_0 + \beta_1 \cdot oddslag_{it-1} + \beta_2 \cdot indser_{it} + \sum_{t=97}^{00} \sigma_t \cdot D_t + \sum_{m=2}^{12} \sigma_m \cdot M_m + \varepsilon_{it}$$

(3) $$\log\left(\frac{p_{it}}{1-p_{it}}\right) = \beta_0 + \beta_1 \cdot (TWA\_lag_{it-1} = TWAlag_{it-1}) + \beta_2 \cdot indser_{it} + \sum_{t=97}^{00} \sigma_t \cdot D_t + \sum_{m=2}^{12} \sigma_m \cdot M_m + \gamma_i + \varepsilon_{it}$$

	Pooled OLS		**FGLS regression ***		**EC2SLS Random-effects†**	
	Coefficient	t-statistic	Coefficient	z-statistic	Coefficient	z-statistic
Model	**(1)**		**(2)**		**(3)**	
TWA_lag			0.7888	(140.26)	0.5185	(18.93)
indser	4.2291	(61.98)	0.9199	(36.01)	2.0479	(16.99)
year_1997	0.5733	(17.80)	0.0831	(8.35)	0.2030	(7.92)
year_1998	0.7925	(24.60)	0.1146	(10.99)	0.2999	(10.05)
year_1999	0.6906	(21.41)	0.0653	(6.37)	0.2314	(8.07)
year_2000	0.6236	(16.88)	0.0546	(4.75)	0.1995	(6.77)
February	0.0848	(1.70)	0.1544	(9.98)	0.1599	(4.66)
March	0.2024	(4.06)	0.3115	(20.03)	0.2383	(7.13)
April	0.1853	(3.71)	0.2512	(16.15)	0.1867	(5.65)
May	0.2409	(4.83)	0.2668	(17.19)	0.2161	(6.58)
June	0.2678	(5.36)	0.2496	(16.05)	0.2153	(6.58)
July	0.0622	(1.24)	0.0751	(4.80)	0.0269	(0.82)
August	0.2702	(5.41)	0.3362	(21.56)	0.2683	(8.11)
September	0.2419	(4.54)	0.0834	(5.08)	0.0938	(2.70)
October	0.1328	(2.49)	0.0265	(1.61)	0.0159	(0.46)
November	0.2587	(4.85)	0.3101	(18.78)	0.2498	(7.12)
December	0.2900	(5.44)	0.2967	(18.01)	0.2531	(7.25)
_cons	-5.9523	(-95.21)	-1.3714	(-40.07)	-2.8561	(-18.07)
R-squared	0.6409					
Adj R-squared	0.6389					
R^2 within					0.6340	
R^2 between					0.9428	
R^2 overall					0.8562	
Log likelihood			1,286.16			
F(16. 2783)	310.47					
Prob > F	0.0000					
Wald chi2(17)			226,782.4		11,897.6	
Prob > chi2			0.0000		0.0000	
No observations	2,800		2,750		2,700	
No of groups	50		50		50	
No time Periods	56		55		54	
Instruments:	no		no		indser ΔTWA_lag Dummies	

(t-statistic) in brackets.

* Panels: heteroskedastic with cross-sectional correlation.

† In the estimation of the random effects model, the GLS estimator was that proposed by Baltagi (ec2sls), instead of the one derived by Balestra and Varadharajan-Krishnakumar (g2sls). For technical details about the differences between both estimators, Cf.: STATA version 7.0 (2001), pp. 367-8 and 375-6.

Appendix 1.

Consider the case in which the matching fails with a certain probability, due for instance to the fact that the worker quits before the end of the contract. The client firm endures such event as an additional fixed hiring cost, since the vacant must be filled again. This cost is assumed fixed and denoted by λ. The probability of quitting (or, more generally, the probability of matching failure), for each labor market and depending on the type of client firm, is denoted by q_{im}. Consequently, the probability of success is given by $(1 - q_{im})$ and the total hiring cost, corresponding to expression (2.1), might be defined as:

$$C^D = w + (1-q_{im}) \cdot \lambda + q \cdot (1-q_{im}) \cdot 2 \cdot \lambda + q^2 \cdot (1-q_{im}) \cdot 3 \cdot \lambda + ...$$

or also as:
$$C^D = w + \sum_{n=0}^{\infty} q_{im}^n \cdot (1-q_{im}) \cdot (n+1) \cdot \lambda$$

whose solution is given by:
$$C^D = w + \frac{\lambda}{1-q_{im}} = w + K_{im}$$

Hence, the last expression can in fact be interpreted exactly as expression (2.1).

Appendix 2. Components of the labour costs by sectors

	Euros worker/year	Coste total bruto	Sueldos salarios	Cotizac. obligatorias	Cotizac. voluntarias	Prestac. sociales directas	Indemniz. despido	Gastos en formación profesional	Gastos en transporte	Gasto carácter social	Otros gastos
1996*	**Total**	3817.0	2836.2	764.2	29.6	57.1	82.2	17.5	7.3	16.0	6.9
	Industry	4202.7	3077.9	867.9	28.6	65.7	99.4	22.9	12.1	20.0	8.2
	Construction	3386.6	2559.9	712.6	4.3	20.9	58.4	4.6	11.5	9.1	5.2
	Services	3620.0	2714.0	698.6	35.2	58.0	74.3	16.1	3.0	14.5	6.2
2000	**Total**	23183.5	17158.6	4984.5	160.8	302.5	280.6	95.4	19.8	99.2	82.2
	Industry	26331.9	19278.4	5743.1	193.9	378.4	407.6	106.4	47.6	76.3	100.3
	Construction	20537.9	14909.5	4858.5	53.8	115.7	266.5	28.7	18.9	232.1	53.9
	Services	22321.9	16659.6	4688.3	165.5	303.0	229.8	102.3	8.2	85.8	79.4
2001	**Total**	22493.2	16471.2	5101.4	143.1	220.8	149.1	76.0	16.9	17.8	296.9
	Industry	25456.0	18506.3	5870.1	200.3	226.8	238.3	98.1	43.2	40.9	232.1
	Construction	20773.1	14822.8	5179.2	56.8	76.7	46.7	20.9	15.0	5.2	549.9
	Services	21769.2	16063.2	4808.9	141.5	247.2	137.1	79.9	8.3	12.6	270.5
2002	**Total**	23365.5	17118.4	5338.7	166.1	240.3	178.4	69.4	17.5	16.1	220.7
	Industry	26666.5	19386.6	6160.9	228.2	291.7	241.3	96.1	50.8	36.6	174.4
	Construction	21521.2	15438.0	5437.8	65.2	100.7	64.4	26.7	16.9	4.2	367.3
	Services	22608.9	16679.4	5035.7	166.5	251.4	179.8	69.4	6.6	11.7	208.4
2003	**Total**	24304.2	17779.9	5562.3	169.9	239.2	172.3	81.2	17.6	27.4	254.6
	Industry	27926.8	20228.2	6421.3	260.1	300.9	305.6	103.5	48.7	53.2	205.4
	Construction	22728.8	16215.1	5789.5	67.5	91.8	29.4	23.9	21.2	6.1	484.3
	Services	23420.5	17277.5	5230.6	162.7	248.9	156.4	86.0	7.1	23.7	227.7

* The information for the year 1996 is measured in Spanish Pesetas (in thousands).

SOURCES: INE, Instituto Nacional de Estadística. Spain. Encuesta de Coste Laboural: 1996 and 2000. Encuesta Anual de Coste Laboural: 2001, 2002 and 2003. (http://www.ine.es/inebase/menu3_soc.htm)