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**Fixed-Term Employment Contracts in Spain:
Labor Market Flexibility or Segmentation?**

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Abstract

In this article, we provide some insights into the labor market effects of fixed-term contracts in Spain. We use in our study the dual labor market theory and some tenets of efficiency wage models. First, we discuss various relevant implications of the introduction of fixed-term contracts for the Spanish labor market outcomes. Then, we undertake the empirical analysis. This has shown evidence of significant linkages between firms' use of fixed-term contracts and an increasing segmentation of the Spanish labor market. Specifically, firms seem to use the temporary employment relationship to screen workers, elicit greater efforts from them and optimize a core of employees. Our finding, that the use of fixed-term contracts is correlated with lower labor costs, indicates that a more efficient mechanism to recruit and allocate labor may be in place. To produce this outcome, wages need not be discriminated. The reason being that firms can assign heterogeneous workers to perform heterogeneous tasks. Moreover, primary sector jobs (permanent employment) are conveniently rationed by employers to facilitate labor adjustments and provide work incentives.

Key words

Segmentation; dual labor market; fixed-term contracts; primary sector; secondary sector; efficiency wages; screening device.

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1. Introduction

This article addresses how the new rules governing the workplace in Spain might have significantly affected the functioning of the Spanish labor market. We will focus on the introduction of fixed-term employment contracts to the labor law, to show that it has provided incentives for a increased labor market segmentation. We obtain some results which seem to support this hypothesis. On the other hand, we present empirical evidence of reductions in labor costs but not in labor productivity among firms that use fixed-term employment contracts more intensively. It suggests that more flexible employment relations, posed by fixed-term employment contracts, favor higher economic efficiency, at least from a short-run perspective.¹

More particularly, the following questions will be examined: Who are the workers in temporary contracts? Do they earn more or less than permanent workers? Are temporary workers more or less productive than permanent workers? How likely are temporary workers to become permanent? Is what we observe in the labor market greater flexibility or enhanced segmentation? Is there an optimum proportion of temporary workers for each firm? The objective of this article is to take some initial steps to answer these and other questions. They raise important issues concerning the dynamics of the Spanish labor market over the last five years and its future developments.

The fixed-term employment contract was first introduced to Spanish labor law by the Worker Statute of 1980. It has been considered a restricted alternative to the "normal" indefinite contract. In the latter case, the worker is protected against unfair dismissal.² The Worker Statute Amendment of 1984 was intended to encourage new job creation (Employment Promotion Program/EPP), allowing firms to hire workers under fixed-term contracts in more varied circumstances and with few applied restrictions.

¹ A highly segmented labor market may have in the long run adverse effects on economic performance. Persistence of job insecurity can reduce workers' motivation and, therefore, labor productivity. A low committed labor force makes it more difficult to implement new values in firms' personnel practices, as those of labor-management cooperation, team work and higher responsibility in job tasks.

² If the dismissal is fair, the worker has no right to severance compensation. If the dismissal is judicially declared unfair, the worker receives a severance payment of 45 days salary for every year of service, up to a maximum of 42 months.

Based on the principle of promoting employment, firms can hire unemployed workers who are registered in the Employment Office for a minimum period of six months. This fixed-term contract can be renewed up to three years. After a worker has completed three years of employment with the same firm, continued employment implies that the employee automatically becomes permanent. If the fixed-term contract expires and the worker becomes unemployed, he or she receives severance pay of twelve days' salary per year of service. The same worker, whose contract has expired, cannot be employed with the same firm under the Employment Promotion Program until one year has passed. When a worker has been laid-off or unfairly dismissed, the firm cannot replace that worker with a fixed-term employee until after one year from the time of termination. Moreover, the law prohibits a firm from filling a vacancy with a fixed-term worker if the vacancy resulted from another fixed-term contract which expired in the previous year and lasted the allowed maximum duration.

In its spirit, the fixed-term contract offers a legal alternative to the presumed rigidity placed in the employment relationship by the permanent contract. In the midst of massive unemployment,³ fixed-term contracts were meant to ease adjustment costs and foster new hiring. Interestingly, since 1985 the Spanish economy has enjoyed high levels of growth, and the creation of new jobs has been impressive by most standards. Concurrent with this process of employment recovery, the increase in the number of temporary workers (those with a fixed-term contract) has been remarkable. In 1987, 14.4% of wage and salary workers held fixed-term contracts; by 1990 the percentage had climbed to 29.8%. Most workers who have moved into new jobs in the last five years were hired as temporary employees at first instance. As a result, labor turnover has increased substantially too.

As stated earlier, fixed-term contracts were intended to help increase labor market flexibility by facilitating hiring and firing practices, and reducing the costs of dismissals. The reasons for such institutional change were grounded in the necessity to correct what, according to some economists (Dolado and Malo de Molina 1985), was a very rigid labor market.

³ In 1985, about 22% of the labor force was unemployed, showing an increase by as much as 19 percentage points since 1975.

Excessively protective labor laws have been blamed for the lack of new job creation, after an intense labor shedding in the late seventies. About two million jobs were lost from the mid-70s to the mid-80s. Since then, the number of employed workers has steadily increased to reach the employment level of 1975, although the unemployment rate remains high, mainly due to the notable increase of female labor force participation. In 1990, about 30% of wage and salary workers had a fixed-term contract. Yet, despite that stunning figure, we do not know the extent to which a new, less protective labor law, and the consequent growth of temporary employment, may be responsible for the creation of new jobs.

It is evident, however, that the fixed-term contract law of 1984 has profoundly affected the employment relationship in Spain. Job security has notably eroded because firms have overwhelmingly resorted to fixed-term contracts for new employees. As a result, the number of permanent workers has remained steady since 1987, in spite of increased employment. This suggests that firms are converting fixed-term contracts into permanent contracts with the primary purpose of generating or replacing a core of employees. However, firms' favorable response to the new labor legislation indicates that the changes in the institutional framework have been effective in establishing more flexible rules for the employment relationship.⁴

In the following section, we seek to provide the framework that will help us understand the labor market effects of the fixed-term employment contracts institution in Spain. The rest of the article is devoted to provide the empirical evidence.

2. Conceptual Framework

The observations made in the introduction lead us to think of the dual labor market theory as a useful basic framework to better understand the effects of fixed-term contract legislation on recent labor market developments in Spain. The dual labor market theory, complemented by more recent advances in labor economics, will provide us with the appropriate

⁴ The successful implementation of the Employment Promotion Program has been facilitated by other economic factors that are less relevant to our discussion at hand. For example, Spain's integration into the European Economic Community in 1986 and the general good health of the world economy in the period.

tools to examine whether fixed-term contract legislation has indeed brought about more flexibility or higher segmentation to the Spanish labor market. More specifically, we resort to some theoretical tenets of the efficiency wage models of the labor market. We concentrate on the shirking model, which provides a rationale for the existence of dual labor markets.⁶

The dual labor market theory maintains that there are two distinct labor markets: one of low-paid jobs, bad working conditions, unstable employment and little opportunity for advancement (secondary); and other of higher wages, better working conditions, more stable employment and opportunities for advancement (primary). In the secondary sector, the accumulation and returns to human capital are almost nonexistent, compared with the primary sector, where an internal labor market exists (Doeringer and Piore 1971). A crucial tenet of the dual labor market theory is that the primary sector jobs are rationed.

In line with the predictions of the dual labor market theory, we can observe significant differences between jobs pertaining to both sectors of the labor market. However, formal tests for the validation of the theory based on those differences have been difficult (Dickens and Lang 1985). Furthermore, the extent to which primary jobs are rationed becomes a key issue: are there workers who, possessing the adequate qualifications, cannot find a job in the primary sector? The job rationing in the primary sector has not yet been satisfactorily assessed.

In the empirical work, the criteria for assigning workers to either the primary or secondary sectors for analyzing their job characteristics present major problems. This is particularly true when the taxonomy is made according to the occupation or industry where the workers are employed. Workers' choice of occupation and industry might be correlated with unmeasured characteristics. Moreover, workers' selection tends to bias the results toward the predictions of the dual labor market theory.

Suppose we discover an exogenous factor that generates two clusters of workers. By

⁶ The shirking model is based on the principle that monitoring workers is costly. It is profitable for the firm to pay wages in excess of that prevailing in the market to elicit greater effort from workers. Increasing wages raise the cost of losing a job and creates an incentive for workers not to shirk. See Shapiro and Stiglitz 1984 for the shirking model, and Katz 1986 for a thorough survey of efficiency wage models.

analyzing the characteristics associated with each group of workers, we may gauge whether they present significant differences. If they do, we can assume that each group belongs to a different labor market. The next step in the analysis consists of ascertaining whether those two labor markets resemble the dual labor market hypotheses. The enactment of the fixed-term contract legislation constitutes the referred exogenous factor. The kind of contract a worker has may be informative of the characteristics associated with the job he or she performs, thereby providing us with a natural test for the dual labor market theory in Spain.

The fixed-term contract law allows firms to employ workers under two different regimes: permanent employment and temporary employment. Permanent workers can be thought of as employees engaged in long-term employment, enjoying the advantages of promotion ladders and other incentive schemes. Temporary workers under the Employment Promotion Program are usually hired for a short period of time. After a fixed-term contract ends, three outcomes are possible: the worker joins the firm as a permanent employee, the contract is renewed or the worker has to leave the firm to seek work elsewhere after receiving an insignificant severance pay (see note 2).

Two characteristics of fixed-term contracts are salient: first, the firm avoids the cost and potential liability in laying-off employees. Thus, the firm protects itself from onerous litigation and the adverse effect on reputation of frequent firing. Second, the worker is bound to the firm for the employment period stipulated in the contract. This reduces firm's uncertainty with regard to the possibility of workers quitting the job. Clearly, the employment adjustment costs are notably reduced.⁶

The reduced costs in labor force adjustment for the firm have important implications for personnel practices within the firm and the functioning of the labor market.⁷ The massive use of

⁶ That firms are in a position to employ fixed-term workers also implies that they can make greater investments in permanent workers. The reason for this is that there is less uncertainty associated with such investments, particularly when employment adjustments in slumps can be carried out inexpensively through temporary workers.

⁷ From a macroeconomic perspective, we may observe a more responsive labor demand in the business cycle when temporary contracts exist. The effects of employment adjustment costs --

fixed-term contracts in Spain over the past five years indicates that firms may achieve a more advantageous position by increasing the proportion of temporary employees. However, those advantages cannot be solely attributed to adjustment cost reductions.

In an economy, where fixed-term contracts become available by law, there is little incentive for the firm to hire a new employee as permanent. The firm will necessarily adapt its recruiting policies to the new provision for fixed-term contracts. It is evident that fixed-term contracts are going to be used to sort out workers eligible for permanent employment. Thus, temporary contracts become a screening mechanism for the firm to establish long-term employment relationships.⁸

Furthermore, temporary workers' expectations to become permanent employees exert on those workers the effects of a discipline device that prevents them from shirking.⁹ That happens because there are queues for indefinite contracts¹⁰ and only those workers who put forth maximum efforts are likely to obtain a permanent contract. Alternatively, more committed workers are, at least, more likely to be given the option of renewing their fixed-term contracts. Workers who are more adverse to short-term jobs will work harder to gain stable single-firm employment in which they can learn more and be more productive. In the interest of the firm, this is a relatively inexpensive way to screen workers¹¹ and becomes a costless mechanism for

particularly those resulting from hiring and firing-- on the level of employment are not readily apparent (Bentolilla and Bertola 1990 and Bertola 1990).

⁸ In some sectors, by the nature of jobs, temporary employment becomes necessary in the production process.

⁹ The guaranteed contract duration may induce workers to shirk. That can explain why shorter duration contracts are more frequent. We will conclude later that firms will monitor temporary workers more closely than other workers.

¹⁰ Although it may be possible that fixed-term contracts are desirable to some workers.

¹¹ The difference between this method of screening and that based on a probationary period is that a particular fixed-term contract can be extended up to a maximum of three years. The sooner the firm observes the desired characteristics in the worker, the more readily that worker is offered a permanent contract. Sometimes, those desired characteristics are so evident that the worker is employed by permanent contract at first instance. This can also happen if more qualified workers reject fixed-term contracts upon avoiding bad signals for employers when seeking permanent work

eliciting greater efforts from employees.

A relevant question follows: How does the existence of temporary workers affect the performance of permanent employees? If temporary workers experience high turnover, thereby increasing job vacancies, permanent workers are more likely to loaf because the losses from being fired in terms of finding another job are lower.¹² However, the costs associated with separation from long-term employment are high if the returns to increased tenure are high too. If the returns to tenure are correlated with the specific human capital and the job match (Medoff and Abraham 1980 and Jovanovic 1979), the badly matched and with less specific human capital workers are the most likely to end in dismissal or quitting. This is attributable to lower costs of termination for badly matched workers.¹³ Also, it is plausible to expect that the firm is interested in replacing those workers who are relatively less committed and productive.¹⁴

According to above discussion, we can expect that the best workers and those more adverse to job turnover will obtain or stay in a permanent job. The less productive workers, as well as those who draw some benefit from sporadic work, will be found in temporary contracts. Although permanent employment is rationed, the number of permanent employees is not fixed. Also, an efficient procedure for allocating heterogeneous workers among permanent and temporary jobs may be at work.

We can identify the "primary sector" as that composed of permanent jobs and the

in the future (Hall 1972).

¹² For those workers who have a lower alternative wage, availability of unemployment insurance can reduce the opportunity cost of unemployment, making periods of joblessness attractive. That implies that some workers, even with a history of permanent employment, may find incentives in fixed-term contracts.

¹³ If the job match affects workers' satisfaction, those workers in bad job matches are likely to be less satisfied, showing a consequent unwillingness to provide greater work effort. They are also less likely to have accumulated specific human capital, thus being more mobile.

¹⁴ If severance pay is high, less productive workers will be more closely monitored by the firm in order to define clear motives for termination and prevent unfair dismissal appeals. Firms may also tailor a severance package for workers who agree to resign. Another alternative applied by firms consists of fostering early retirement among older workers (Lazear 1981). This latter option enjoys large public support in Spain.

"secondary sector" as that composed of temporary jobs. If the detection of shirkers is difficult in the primary sector and monitoring is costless in the secondary sector (Bulow and Summers 1986), firms will assign temporary workers to secondary jobs and permanent workers to primary jobs. Permanent workers will enjoy an internal labor market and their wages will grow with job tenure. On the other hand, temporary workers will be monitored and their wages will not benefit from continuous employment. The monitoring activity gives valuable information to the employer in selecting the workers for permanent employment.

Thus, the shirking model provides a rationale for identifying a dual labor market that is compatible with a low cost procedure to hire permanent employees. In our case, it stems from the segregation of workers between temporary and permanent employment.¹⁵ An interesting feature the resulting employment structure is that primary and secondary jobs coexist in the same firm, although, of course, their proportions can vary.¹⁶ This is a significant difference with respect to the case presented in the literature by Bulow and Summers. Another distinction is that in the Bulow/Summers' model firms hire primary sector workers only from the pool of the unemployed. In the framework discussed here, firms recruit permanent employees mainly from temporary workers. This means that the existence of some secondary jobs is conditioned on sufficient time duration to screen the workers who hold those jobs.

A potential problem in structuring primary (permanent) and secondary (temporary) jobs in the same firm is that eventual hierarchical differences in pay and working conditions can foster bad relations among workers. Temporary workers (secondary job holders) may choose to file grievance claiming discrimination. Yet the firm is not wholly vulnerable to such complaints given the inherent short-term duration of fixed-term contracts under law. Moreover, fixed-term workers

¹⁵ See Rebitzer and Taylor (1991) for a model of dual labor markets in which, by introducing uncertain product demand in the analysis of the firm's demand for labor, primary and secondary (contingent) workers can coexist in the same enterprise.

¹⁶ Firms can link the nature of the contract the worker is offered to the characteristics of the tasks or occupations to be performed. That may be based exclusively on criteria of efficiency. It is evident that all firms have managerial positions which are vital to their survival. Motivation and commitment are indispensable attributes of the workers who most likely fill those positions under the status of permanent employment.

have the option of becoming permanent employees. Any ensuing conflict not only curtails their permanency, but hastens their unemployment.¹⁷

In the following sections, we examine and compare the characteristics of temporary and permanent workers. Also, we analyze temporary/permanent workers' wage differentials. After that, we offer some evidence of fixed-term contract effects on firms' productivity. Finally, we study the probability of temporary workers in obtaining a permanent job.

3. How Many and Who Are the Temporary Workers?

Since 1987, the Spanish Labor Force Survey (EPA) reports whether the employment contract is permanent or temporary, and distinguishes three different types of fixed-term employment arrangements: (1) training or apprenticeship contracts, (2) seasonal contracts and (3) other contracts which include those under the EPP. This latter distinction is crucial to evaluate the impact of the new labor law on the Spanish labor market. Contract types (1) and (2) were first introduced in Spain by the Worker Statute of 1980. The real institutional change brought about by the Worker Statute reform in 1984 consists of allowing firms to hire workers on a temporary basis, regardless of the nature of the job to be performed. Since such a reform was enacted by the end of 1984 and it enforced that the maximum duration of a fixed-term contract plus its renewals cannot exceed three years, our analysis focuses on workers who have been in their current job for three years or less.

Table 1 contains the distribution of workers by type of contract and job tenure in 1987 and in 1990. Some results should be emphasized: (a) The proportion of workers with other fixed-term contracts has increased over time and the proportion of seasonal and permanent workers has diminished. (b) After the first six months, the proportion of permanent workers rises sharply with job tenure. For instance, in 1990, only 14.8% of workers with less than three months of job tenure enjoyed a permanent employment relationship; the figure climbed to 61%

¹⁷ Almost no firm hires a temporary worker for the maximum period allowed at first instance. Most contracts under the Employment Promotion Program are for the minimum required duration of six months, or three months in the case of training and apprenticeship contracts. This is induced by the same law. See note 3.

for workers who had been in the current job for 24-35 months, although few reach that length of permanency in the firm. The entire increase in the referred fraction of permanent workers stems from temporary workers becoming permanent employees after two years in the same job. As indicated by the number of workers in each job-tenure interval (Table 1), many temporary employment relationships are terminated long before two years of continuous employment. Moreover, note the cohort effect. Namely, the workers who entered employment earlier were more likely to get permanent jobs than those who have been employed more recently.

It is evident that, after the legal provision for fixed-term contracts, very few newly hired workers obtain a permanent job. In 1990, about 90% of workers who had been in the current job for less than one month had a fixed-term contract.¹⁸ Such a trend showed to be similar for males and females, as well as for private and public sector workers.

The former findings point to a high level of turnover among temporary workers, and suggest that most temporary employment relationships terminate long before the maximum duration allowed by law. Most workers who stay with a firm beyond one or two years have achieved a permanent employment status, either upon entry into the firm or at the expiration of their fixed-term contract.

When addressing the question of who the temporary workers are, we must account for duration of the current job. The reason for this is that, as indicated earlier, there is a selection into permanent employment along job tenure tracks. Thus, some workers who are temporary on early stage of their job tenure, later become permanent. That is partly due to firms' use of fixed-term contracts as a screening device. If we are to compare temporary and permanent workers, by considering workers with different job tenures we take into consideration the fact that some

¹⁸ Under the Employment Promotion Program, a worker cannot remain in the same firm under a fixed-term contract for more than three years. The EPA statistics show some temporary workers with over three years of job tenure who are mostly seasonal workers. However, the law permits that after three years of a temporary employment relationship with a firm, a worker can return to the same firm with the same employment status once a year has passed.

workers may have changed their employment arrangements with the same firm.¹⁹

Table 2 shows probit estimates of the likelihood of being a temporary worker in 1987 and in 1990. In each year, two samples are considered, according to current job tenure. It appears that females, nonhousehold heads, less educated employees and workers under thirty years of age are more likely to be hired under a fixed-term contract than other comparable workers.²⁰ These demographic characteristics among workers mesh with those indicated in the literature as generally pertaining to secondary sector workers.

The effects of gender, household status, education and age on the type of employment relationship become more significant as we analyze samples of the most recent year. These results indicate that demographic differences between temporary and permanent employees have been enhanced over time. One explanation for this may be that, in the beginning of the economic recovery, most long-term unemployed workers accepted the first job offer. As the job creation process continued, some temporary workers could improved their job match by settling into permanent employment. As a result, our estimation of the probability of being under a fixed-term contract is affected by the probability of having remained in such type of employment relationship. If this latter probability is higher for females, nonhousehold heads, less educated and younger workers the results we have obtained follow. Unfortunately, we cannot test this further because we do not have individual transition data available. Another explanation could be that firms, in their process of sorting out workers between permanent and temporary employment, have shown less preferences over time for workers with the mentioned characteristics as well as other traits which are not observed but are correlated with those.

¹⁹ Of course, some permanent workers with a specific firm might have been hired under a fixed-term contract by a previous firm. This case raises the issue of inter-firm mobility and job matching in an economy with two regimes of working arrangements, and calls for a more dynamic approach to temporary employment.

²⁰ We estimated the probit specifications contained in Table 2 on samples where temporary workers hired under training/apprenticeship or seasonal contracts basis were excluded and found similar results to those reported.

4. Do Temporary Workers Earn Less than Permanent Workers?

Inquiries into the earning differential between temporary and permanent workers can reveal crucial aspects of the employment relationship in Spain. It is evident that fixed-duration jobs preclude any wage growth that otherwise stems from continuous employment. How does experience and job tenure affect earnings among temporary and permanent workers? Do age-earning profiles differ between them? Among newly hired workers, are those in temporary status compensated for their job instability? In the context of the long-term employment incentive model (Lazear 1981), is compensation of temporary workers more related to productivity than is compensation of permanent workers?

If some unobserved characteristics among workers affect wages and are correlated with the types of contracts they have, we may find it difficult to obtain an efficient estimate of the type-of-contract effect on earnings when running an OLS fully specified wage equation. Our previous analysis suggests that the correlation between workers' unobserved characteristics and the types of contracts under which they are employed is likely to be higher the greater the job tenure is among the sample of workers analyzed. Thus, by considering a sample of very low tenured workers, we might be able to correct for part of the bias in the effect of type-of-contract on earnings.²¹

Graph 1 shows age-earnings profile of permanent and temporary workers. The age-earnings profile of permanent workers has the typical concave shape, whereas the age-earnings profile of temporary workers is almost flat for those aged 20 and over. This result is an indication of the lack of professional career among temporary workers.

²¹ Wages may increase with job tenure for permanent workers but not for temporary workers. Is this a result of unobserved heterogeneity? Firms may provide incentives by increasing wages of permanent workers in order to retain those who have been singled out for best performance. The incentive effect spills over to temporary workers as they find permanent employment more attractive. Thus, the employer can elicit greater effort from temporary workers if they are promised permanent employment upon higher performance. See section II.

Estimation of Earning Equations by Using the EPA

Table 3 contains the results of estimated wage equations for temporary and permanent workers. Columns 1 and 2 indicate that the returns to household status, experience and education are higher among permanent workers. Columns 3, 4 and 5 give simple estimations of the returns to job tenure. Among wage and salary workers in the public sector, the rate of return to job tenure is increasing but is not significantly different from zero by conventional levels of significance. Among wage and salary workers in the private sector, the rate of return to tenure significantly deviates from zero, but only for workers who have been in the job for 12-15 years, in which case the rate of return is 20%; and for those working in the same job for 16-20 years, with a rate of return to tenure of 17%.²² An entire sample size of less than 2,000 workers implies that these estimates are measured with much error and, hence, some of them are not significantly different from zero.

Table 4 provides estimates of the wage differential between temporary (three sub-categories) and permanent workers. When the entire sample of wage and salary workers is considered, controlling for demographic and some job characteristics, temporary workers under a training or apprenticeship contract earn about 24% less than permanent workers. Seasonal workers earn 23% less than permanent workers, and other temporary workers (the majority of those with a fixed-term contract) earn 12% less than permanent workers. The former differentials diminish when lower tenure workers are considered (column 3). An insignificant wage gap is found among workers who have retained their job for less than one year (column 4). When we look at workers aged 30 or less we only find a significant difference in wages between seasonal and permanent workers (column 2).²³

Our results indicate that when we look at less experienced and lower job-tenured workers, the temporary/permanent wage gap disappears, although the lack of precision in these

²² When sector dummies were not included, the returns to tenure were substantially higher.

²³ When workers under 26 years of age were considered, none of the three types of temporary employment contracts shows a significant wage gap with respect to indefinite employment contracts.

estimates is a contributing factor of their insignificance. Moreover, the low rate of returns to tenure, once we control for observed heterogeneity, among worker who have been in the job for fewer than 8 years suggests that the wage differential between temporary and permanent workers is attributable to unobserved heterogeneity rather than to differences in productivity or to wage discrimination. The sources of unobserved heterogeneity can be workers' quality and job characteristics.²⁴

Since job tenure does not seem to be a significant source of wage growth among permanent workers, the hypothesis that a temporary worker should earn less than a comparable permanent worker, even with the same job tenure, seems implausible. None the less, these results on relative wages of temporary to permanent workers have to be taken cautiously, given the sample size.

Estimation of Earning Equations by Using the NCGE

Table 5 reflects the results of estimated wage equations by using a sample of medium and large sized-firms drawn from the survey "La Negociación Colectiva en las Grandes Empresas" NCGE.²⁵ Among this sample of medium and large-sized firms, about 12% of employees were under some kind of temporary employment arrangement as of June 1988. If we consider newly employed workers (all those hired in the previous year, regardless of how long they retained their jobs), the same figure climbs to 70.6%. Both fractions, indicating the stock and the flow of temporary employees, integrate the set of independent variables in our estimated wage equations.²⁶ Also, as another explanatory variable, we include the fraction of newly hired

²⁴ A small sample size and a deficient occupational information dissuaded us from pursuing further in trying to control for detailed job characteristics.

²⁵ The sample is composed of some 600 firms employing 200+ workers. The NCGE survey is carried out annually by the Spanish Ministry of Economy and Finance. See Alba (1991), for more details on this data set.

²⁶ Since the percentage of fixed-term contracts is lower among large-sized firms than the figure for the whole economy, it is often asserted that fixed-term contract growth is a phenomenon taking place within small-sized enterprises. This conclusion is misleading because temporary employment growth is recent and, for obvious reasons, when we look at the relative weight of fixed-term

workers in the previous year.

The results are reported in Table 5. Each specification differs from one another in the definition of the dependent variable, the average wage. In column 1, the firm's average wage is calculated as the firm's wage bill at a point in time (June 1988) divided by the firm's number of employees at that time. In column 2, the average wage is calculated as the total annual wage bill divided by the total annual number of employees. This is obtained by summing the number of employees each month and dividing by twelve. Finally, in column 3, the average wage is calculated as the total annual wage bill divided by the total annual number of hours worked.

The variable fraction of employees with a fixed-term contract appears to have a significant negative effect on average wage regardless of what definition is considered for the latter. Interestingly, in columns 2 and 3 we obtain a positive and significant coefficient for the variable fraction of fixed-term contracts among newly hired employees.²⁷

Our finding that firms with a higher fraction of temporary workers, holding other observed characteristics constant, pay a significantly lower average wage suggests that fixed-term contracts reduce labor costs among medium and large-sized firms in Spain. All else remaining equal, a one standard deviation in the fraction of temporary employees reduces the worker-average wage by 3.2% (column 2 of Table 5) and the hour-average wage by 3.9% (column 3 of Table 5).²⁸ If more intensive temporary employment firms are not less productive, this finding may indicate that an improvement in firms' efficiency is associated with a more

contracts by firms, temporary employment is higher among smaller-sized entities. To have a correct measure of the relationship between the use of temporary employment and firm size, we must consider the fraction of fixed-term contracts among newly hired workers.

²⁷ Since this latter result is obtained only for the case in which the average wage is affected by the firm's labor turnover, it may be due to measurement error. In other words, our variable for the total annual wage bill might be a more accurate measure of the firm's labor cost than our variable for the total annual number of employees is of the firm's labor use. If our measure for the firm's use of labor throughout the year is more downward biased in enterprises where more temporary workers were employed, the result mentioned in the text may be obtained.

²⁸ The mean (standard deviation) is .116 (.14) for the fraction of temporary employees and .704 (.303) for the fraction of temporary employees among newly hired.

intensive use of fixed-term contracts by medium and large-sized firms in Spain.

5. Are Temporary Workers Less Productive?

In the context of the framework we have discussed in section 2, temporary employment status does not necessarily indicate low ability of concerned workers. The reason for this is that some firms use fixed-term contracts as a screening device. Thus, only workers with a history of temporary employment are more likely to be the ones of lower productivity. Had we longitudinal data on wages and job characteristics, we would be able to test this by looking at earnings of individual workers.

Given our data limitations, in order to answer the previous question we have to reformulate it as follows: Is average labor productivity lower among firms with a higher density of temporary employees than among other firms? To be able to answer this question we need a clear measure for such a density. As we did in the above-estimated wage equations, one can use the fraction of temporary employees for that purpose. However, this fraction include heterogeneous labor. Some temporary workers are undergoing screening and they have incentives to put forth more effort to gain permanent employment; meanwhile, other temporary workers have long history of temporary employment and are less likely to work hard.

In general, the proportion of fixed-term contracts that firms maintain may respond to efficiency criteria: heterogeneous labor is assign to perform heterogeneous tasks. The type of contract is a catalyst for labor allocation if the nature of the employment relationship is linked to the job performance. In a cross section of firms, their hiring strategies are likely to differ in response to their production process characteristics. If firms tend to reach their optimum fraction of temporary employees, this variable is not independent of firms' labor productivity.

The results obtained from the wage equation estimated in the previous section can provide additional clues on the productivity effects of fixed-term contracts. In a model of compensating wage differentials, assuming that wages are perfectly correlated with productivity, workers who accept a temporary employment relationship should earn more than comparable newly hired permanent workers if fixed-term contracts are undesirable and there is no

productivity gap between both types of workers. By the contrary, we have found that the wage differential is favorable to permanent workers, saved for workers who have retained their job for less than two years and younger workers. Thus, it seems that temporary workers are less productive than permanent workers or, alternatively, that they are not less productive nor they occupy less desirable jobs.

Our NCGE survey measures for workers' productivity is obtained by dividing annual sales and value added by the average number of employees throughout 1988. To gauge the effect of fixed-term contracts on the firm's average productivity, we consider the following modified Cobb-Douglas production function for each firm:

$$[1] \quad Q = A K^{\alpha} (L_p + cL_t)^{\beta},$$

where Y is output, K is capital, L_p is the number of permanent employees, L_t is the number of temporary employees, α and β are the elasticities of output with respect to capital and labor, respectively, and A is a constant of proportionality. The parameter c reflects differences in productivity between permanent and temporary labor (the ratio of the marginal products of temporary to permanent workers). If c is greater than one, temporary workers are more productive than permanent workers; if c is less than one temporary workers are less productive than permanent workers.

Equation [1] can be written as

$$[2] \quad Q = A K^{\alpha} L^{\beta} (1 + (c-1)P)^{\beta},$$

where $L = L_p + L_t$ is total labor, meaning that permanent and temporary workers are perfect substitutes in production, and $P = L_t/L$ is the fraction of temporary workers. Dividing equation [2] by L and taking natural logarithms, we obtain the equation to be estimated (error term omitted):

$$\ln (Q/L) = \ln A + \alpha \ln K + \beta-1 \ln L + \beta (c-1) P + \gamma X,$$

where X is a vector of other relevant variables that may affect the firm's average productivity.²⁹

Table 6 contains the results of estimating the specified production function. The coefficient of the variable fraction of fixed-term employees always has a negative sign, but it becomes barely significant only when the dependent variable is value added per employee. Moreover, the variable fraction of temporary workers among newly hired employees obtains a positive and significant coefficient. When this latter variable is excluded from the regressions, we observe reductions in the coefficients of the variable fraction of temporary workers and, in neither case, are they significant.

These results provide some empirical evidence regarding firms' increased efficiency as a consequence of using fixed-term contracts. They seem to be consistent with the results obtained in the previous section. One possible way to explain the positive and significant sign for the fraction of temporary workers among newly hired employees can be that this variable is picking up those firms which make a more intensive use of fixed-term contracts as a screening device. An alternative explanation is that, since the fraction of temporary workers among newly hired workers is a flow variable referred to the previous year, it better reflects the labor allocation process which is facilitated by fixed-term contracts.

These results call for a more profound study of firms' hiring strategies in Spain. We need to know more precisely how jobs done by temporary workers compare to those performed by permanent employees. To illuminate the effects of fixed-term contracts on labor allocation and tasks assigning within the firm, we might need a case study-type approach that complements a more theoretical and statistical analysis.

6. How Likely Are Temporary Workers to Get Permanent Employment?

Taking another step forward in our analysis, we seek to respond to the following questions: At what rate do temporary workers become permanent employees? Who gets

²⁹ Brown and Medoff (1978) use this methodology to analyze union/non-union productivity differences.

permanent employment? What are the mechanisms which underlie such employment status transitions? These questions address a crucial aspect in the dual labor market theory: are primary sector jobs rationed?

As in the previous sections, we use two data sets to study the dynamics of the employment relationship in Spain. One is a sample of medium and large-sized firms which report the evolution of all fixed-term contracts created in 1987. We know how many of those contracts ended, were renewed or were converted into permanent contracts as of the years 1987, 1988 and 1989. The other data set is the Encuesta de Población Activa (EPA), which allows longitudinal analysis of individual workers. Since the outgoing fraction of the sample is 1/6, around 83% of the some 60,000 households can be followed from one quarter to another, allowing us to analyze workers' transition between different employment and non-employment status. Thus, we can assess their probabilities of obtaining permanent employment over time.³⁰

Firm-Based Data Set: NCGE

The Collective Bargaining in the Large Firms (NCGE) survey contains information about the duration for which the fixed-term contracts have been extended. The first panel of Table 7 indicates the percentages of employees by duration of their fixed-term contracts in June 1988 and June 1989. Consistent with our previous results, more than 70% of firms' employees have fixed-term contracts with duration that do not exceed one year. For comparison purposes, the second panel of Table 7 shows duration of contracts under the EPP, as reported by the Spanish Institute of Employment (INEM). About 86% of such contracts were extended for a year or less. Since this latter sample includes small firms, the difference between both figures may be explained by the higher propensity to hire temporary workers for shorter periods among smaller enterprises.

It is clear from the two upper panels of Table 7 that fixed-term contracts are extended for a short period of time, although they can be renewed. We are particularly interested in their

³⁰ Unfortunately, the tapes containing individual household information on flows are not available. We have used published tables by the Spanish Institute of Statistics.

evolution. To shed some light on this issue, we can use the NCGE survey, in which firms were asked to indicate the evolution of all the fixed-term contracts created in 1987. The lower panel of Table 7 shows that, in the sample of large firms, 69,805 fixed-term contracts were created in 1987.³¹ The status of those contracts in 1987, 1988 and 1989 is also reported: how many ended their term, were renewed or were converted into permanent contracts.

Some results are to be noted: (1) In 1987, 30.5% of those contracts expired, 23.6% were renewed and 2.6% became permanent contracts. The remaining contracts continued into 1988. This finding is consistent with the previous conclusion that a high number of contracts were extended for very short durations. (2) By the end of 1989, 60% of the regional contracts had expired and the workers separated from their jobs; whereas only 14% of them had been converted into permanent employment relationships. Since 26% of the concerned workers were still under fixed-term contracts as of the end of 1989, we cannot conclude that, among large firms, the conversion rate from temporary to permanent employment is 14%, although the final figure cannot be much higher. Also, note that the hazard rate of conversion into indefinite employment is increasing. That is, the likelihood of getting a permanent contract is higher as the employment relationship continues for a longer period.

Longitudinal Data Set: EPA

The EPA survey is carried out on a quarterly basis and contains information regarding the types of contracts under which workers are employed. The data allow us to study workers' flow in and out of temporary employment. Our analysis proceeds in two stages: First, we consider all workers who reported to be working under a fixed-term contract in quarter t and observe their situation with respect to the labor force in quarter $t + 1$. Second, we focus on those workers who report to be working under a fixed-term contract in quarter $t + 1$, but not in quarter t , then examine their situation with respect to the labor force in quarter t . Since these two samples represent cross sections of temporary workers, we are able to measure their flow rates in and

³¹ All these contracts are newly created ones. However, we do not know whether some of the workers have had a previous temporary employment relationship with the firm.

out of temporary employment by assessing their employment status in various quarters of the year.

Table 8 indicates the number of temporary workers as of the second, third and fourth quarters of 1987 and the first quarter of 1988 together with their status a quarter later in each case. Some findings are noteworthy: (1) The proportion of temporary workers in the second quarter of 1987 who entered permanent employment in the following quarter is 18%. The percentage of temporary workers who reach permanent employment relationships steadily decreases as we consider later quarters. The figure is 12.4% among workers under a fixed-term contract in the first quarter of 1988. (b) The reduction in the rate of quarter t temporary workers who entered permanent employment in quarter $t + 1$ translates to the increased proportion of those who remained with a fixed-term contract. Other relevant alternatives, unemployment and out of the labor force, level off to approximately 15% and 4%, respectively. We do not know whether workers remain employed in the same firm or not. Thus, we cannot say that a temporary contract has been converted into a permanent one. A worker may leave his or her job to obtain permanent employment with other firm.³²

Table 9 shows the number of workers who entered temporary employment as of the third and fourth quarters of 1987 and the first and second quarters of 1988, coupled with their status a quarter earlier in each case. A striking result from this table is that about 38% of workers who entered temporary employment in a particular quarter were employed in non-temporary employment in the previous quarter. These non-temporary workers include permanent wage/salary and self-employed workers. The published data we used do not allow us to distinguish between permanent wage/salary and self-employed workers. Nonetheless, it is likely that most of workers who reported entering temporary employment after losing a permanent job were permanent employees. Moreover, we do not know whether they changed their employment arrangement within the same firm or they lost their permanent job.

How do these results fit a dual labor market model? If the decreased trend in the

³² We hope to be able to make more precise assessments of employment status transitions by using the EPA tapes in future research.

transition from temporary to permanent employment status is confirmed when extending the period of our analysis through the present, this is evidence of the sorting process that the temporary employment legislation is fostering in the Spanish labor market. Since fewer new jobs are being created and the pool of first job seekers has shrunk, the sorting process is likely to affect a more reduced number of workers. Still, firms will continue to replace more costly workers with temporary workers, some of whom will eventually become permanent workers.

Another indication of the sorting effect of the temporary contract law is that an important fraction of workers who entered temporary employment relationships came from permanent employment. Unfortunately, we cannot make further determinations with the published data.

7. Conclusions

In this paper, we have attempted to investigate the labor market effects of fixed-term employment contracts in Spain. The dual labor market theory has been useful in guiding our empirical approach. We stressed firms' use of temporary employment as a screening device. The main hypothesis we have tried to test is that labor market segmentation increases as a result of workers being sorted between permanent and temporary employment status.

Some of the main results that have been obtained are summarized: (1) Temporary workers are more likely to be females, nonhousehold heads, under thirty years of age and lower educated than comparable permanent workers. (2) The returns to experience and to education are lower among temporary workers. Moreover, the latter show to have a flat age-earnings profile as compare to the standard concave age-earnings profile of those under permanent employment relationships. (3) When we looked into the wage differential between temporary and permanent workers, we found that the former earn significantly less than their permanent counterpart. This finding is consistent with the result that firms employing a higher fraction of temporary workers pay a lower average wage. (4) The analysis regarding the effects of temporary employment on firms' average productivity is less conclusive. It appears that the fraction of temporary workers among newly hired workers increases the firm's average

productivity. This result is consistent with the sign that the same variable obtained in the wage equation. (5) The finding of a low and decreasing transition rate from temporary to permanent employment, around 15%, indicates that Spanish firms are very selective with regard to establishing permanent employment relationships. Moreover, the fact that more than a third of current temporary workers held indefinite contracts previously suggests that the sorting mechanism indeed affects the entire labor force.

Although the evidence indicates that a process of enhanced segmentation is taking place in the Spanish labor market, some limitations of our study should be emphasized. First, we have been unable to learn who are the workers that obtain permanent employment. Lack of appropriate data prevented us from analyzing the crucial issue of how fixed-term employment experience affects the likelihood of landing in a permanent job, nor could we assess the degree of permanency associated with that job. Second, we need to know more about the firm's behavior as to the use of fixed-term contracts. That would illuminate the nature of temporary contracts effects on productivity at firm level. Third, it can be argued that we are looking at an incomplete picture. In other words, more time is required for the economy to enter a long-term path in which temporary employment will start to decline. However, seven years have passed since the fixed-term employment contracts legislation was enacted and the percentage of temporary workers has not ceased to rise, in spite of a slow down in the creation of new jobs. A more sluggish economy is unlikely to reverse the trend in the growth of temporary employment, unless it is by reductions in employment because in that case the most affected will be those workers under fixed-term contracts.

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Table 2
Probit Estimates of the Likelihood of Being a Temporary Worker
EPA's Second Quarter of 1987 and of 1990

| | 1987 | | | | 1990 | | | |
|---------------------------|---------------------------------|--------|--------------------------------|-----------|---------------------------------|--------|--------------------------------|--------|
| | < 6 Months of Current Tenure | | < 2 Years of Current Tenure | | < 6 Months of Current Tenure | | < 2 Years of Current Tenure | |
| | Coeff. | Prob. | Coeff. | Prob. | Coeff. | Prob. | Coeff. | Prob. |
| Constant | .6128 (6.38) | | .3172 (4.40) | | .9226 (10.40) | | .7875 (12.83) | |
| Female | .0625 (1.24) | 2.98 | .0612 (1.77) | 2.63 | .0864 (1.89) | 7.70 | .0715 (2.49) | 4.18 |
| Househ. head | -.1170 (-2.01) | - 5.59 | -.1184 (-2.91) | - 5.09 | -.1378 (-2.63) | -12.28 | -.2003 (-6.13) | -11.71 |
| EDUCATION: | | | | | | | | |
| No studies | .2248 (3.29) | 10.74 | .2187 (4.31) | 9.40 | .2184 (3.10) | 19.47 | .2294 (4.92) | 13.41 |
| Primary | | | | (omitted) | | | | |
| Low-second. | -.0400 (-0.75) | - 1.91 | -.0524 (-1.39) | - 2.25 | -.0109 (-0.20) | - 0.97 | -.0184 (-0.56) | - 1.07 |
| Upper-second. | -.1781 (-2.18) | - 8.51 | -.1281 (-2.29) | - 5.50 | -.2700 (-3.64) | -24.07 | -.2735 (-6.01) | -15.99 |
| Vocational 1 | .1377 (1.29) | 6.58 | .0201 (0.28) | 0.86 | .0052 (0.06) | 0.46 | .0450 (0.84) | 2.63 |
| Vocational 2 | -.0349 (-0.32) | - 1.66 | -.0332 (-0.45) | - 1.42 | -.1523 (-1.68) | -13.57 | -.1348 (-2.46) | - 7.88 |
| Univ.1st lev. | .0196 (0.17) | 0.93 | -.0072 (-0.09) | - 0.30 | -.2883 (-3.02) | -25.70 | -.3295 (-5.83) | -19.26 |
| Univ.3 years | -.3615 (-1.50) | -17.27 | -.1583 (-0.95) | - 6.80 | -.3999 (-1.94) | -35.65 | -.2435 (-1.82) | -14.23 |
| Univ. degree (5 years) | -.0046 (-0.03) | - 0.21 | -.0823 (-1.07) | - 3.53 | -.3726 (-3.81) | -33.22 | -.2746 (-4.76) | -16.05 |
| AGE: | | | | | | | | |
| 14_19 | .1274 (1.35) | 6.08 | .2754 (4.16) | 11.83 | .3093 (3.40) | 27.57 | .3550 (6.27) | 20.76 |
| 20_24 | .0869 (1.00) | 4.15 | .1770 (2.91) | 7.60 | .2149 (2.73) | 19.16 | .2467 (5.06) | 14.42 |
| 25_29 | .1279 (1.47) | 6.11 | .2007 (3.32) | 8.62 | .1333 (1.74) | 11.88 | .1496 (3.16) | 8.74 |
| 30_34 | -.0829 (-0.92) | - 3.96 | .0492 (0.77) | 2.11 | -.0020 (-0.02) | - 0.17 | -.0057 (-0.11) | - 0.33 |
| 35_39 | | | | (omitted) | | | | |
| 40_44 | -.0626 (-0.61) | - 2.99 | .0422 (0.58) | 1.81 | .0275 (0.29) | 2.45 | .0050 (0.08) | 0.29 |
| 45_49 | .0432 (0.38) | 2.06 | .0750 (0.95) | 3.22 | -.0690 (-0.67) | - 6.15 | -.0393 (-0.63) | - 2.29 |
| 50_54 | .1575 (1.36) | 7.52 | .1794 (2.20) | 7.71 | -.1487 (-1.37) | -13.25 | -.0088 (-0.12) | - 0.51 |
| 55_59 | .0589 (0.45) | 2.81 | .0850 (0.89) | 3.65 | -.0414 (-0.35) | - 3.69 | .0147 (0.19) | 0.85 |
| 60_64 | -.2491 (-1.55) | -11.90 | -.0629 (-0.50) | - 2.70 | -.2156 (-1.20) | -19.22 | -.0868 (-0.70) | - 5.07 |
| Public Sector | .1786 (2.57) | 8.53 | .1694 (3.51) | 7.28 | -.0466 (-0.70) | - 4.15 | -.0415 (-1.02) | - 2.42 |
| Log likel. | -2974.7 | | -6118.9 | | -3098.3 | | -8372.3 | |
| N | 4,914 | | 9,364 | | 8,039 | | 16,088 | |
| P | .657 | | .520 | | .854 | | .753 | |

Note: Nine sector and 17 region dummies were included.
t-statistics are presented in parentheses

Table 3
Wage Equations for Temporary and Permanent Workers
and Return to Tenure Among Permanent Workers
EPA's Second Quarter of 1990

| | Temporary | | Permanent | | | | Permanent Public Sector | | Permanent Private Sector | |
|----------------|-----------|-------|-----------|--------|---------|--------|-------------------------|-------|--------------------------|-------|
| | Coeff. | t | Coeff. | t | Coeff. | t | Coeff. | t | Coeff. | t |
| Constant | 10.530 | 89.43 | 10.533 | 141.96 | 10.360 | 100.17 | 10.597 | 38.47 | 10.430 | 83.25 |
| Female | -.18035 | -3.44 | -.15046 | -4.00 | -.11507 | -3.04 | -.16030 | -2.95 | -.08283 | -1.60 |
| Househ. head | .12965 | 2.01 | .18734 | 4.80 | .16270 | 4.32 | .12354 | 2.14 | .18625 | 3.79 |
| Public sect. | .17314 | 2.44 | .18232 | 5.76 | .28709 | 7.51 | | | | |
| Experience | .02284 | 3.09 | .02838 | 6.13 | .01905 | 4.05 | .01857 | 2.463 | .01719 | 2.82 |
| Exper.2 | -.00036 | -2.59 | -.00040 | -5.31 | -.00026 | -3.41 | -.00030 | -2.42 | -.00022 | -2.33 |
| Education | .05365 | 5.87 | .06354 | 14.84 | .06065 | 14.05 | .06913 | 11.57 | .04843 | 7.81 |
| Part time | -.71992 | -7.92 | -.63588 | -9.75 | -.57706 | -9.21 | -.57267 | -5.59 | -.54187 | -6.60 |
| TENURE: | | | | | | | | | | |
| (Years) | | | | | | | | | | |
| 1-2 | | | | | .00568 | 0.08 | .03542 | 0.26 | -.00930 | -0.12 |
| 3-4 | | | | | .05396 | 0.83 | .04411 | 0.32 | .08151 | 1.06 |
| 5-7 | | | | | .02580 | 0.39 | .08139 | 0.61 | .02685 | 0.34 |
| 8-11 | | | | | .08854 | 1.40 | .10164 | 0.79 | .09556 | 1.24 |
| 12-15 | | | | | .17448 | 2.71 | .16269 | 1.22 | .20523 | 2.66 |
| 16-20 | | | | | .17102 | 2.66 | .19644 | 1.44 | .17915 | 2.36 |
| >=21 | | | | | .10381 | 1.54 | .21840 | 1.60 | .09961 | 1.22 |
| Adj R-square | .36 | | .46 | | .52 | | .51 | | .46 | |
| N | 358 | | 860 | | 860 | | 275 | | 580 | |

Note: The last three regressions include 9 sector dummies.

Table 4
Permanent/Temporary Workers Wage Differential
EPA's Second Quarter of 1990

| | All Wage and Salary Workers | | 30 or Fewer Years of Age | | Less than 4 Years of Tenure | | Less than 2 Years of Tenure | |
|--------------------------|--------------------------------|--------|-----------------------------|-------|--------------------------------|-------|--------------------------------|-------|
| | Coeff. | t | Coeff. | t | Coeff. | t | Coeff. | t |
| Constant | 10.4744 | 131.52 | 10.1498 | 53.27 | 10.4609 | 84.65 | 10.4081 | 70.97 |
| Female | -.116110 | -3.69 | -.127283 | -2.62 | -.159519 | -3.35 | -.160292 | -2.83 |
| Househ. head | .155879 | 4.81 | .076813 | 1.11 | .12601 | 2.38 | .157261 | 2.43 |
| Experience | .021530 | 5.71 | .055448 | 2.61 | .023276 | 3.72 | .025325 | 3.49 |
| Exper.2 | -.000321 | -5.05 | -.001109 | -1.11 | -.000322 | -2.71 | -.000355 | -2.58 |
| Education | .059356 | 15.04 | .082540 | 8.36 | .065451 | 8.66 | .071864 | 7.32 |
| TYPE OF CONTRACT: | | | | | | | | |
| Training | -.237498 | -2.06 | -.165391 | -1.32 | -.211174 | -1.66 | -.194988 | -1.40 |
| Seasonal | -.228365 | -3.75 | -.193993 | -2.21 | -.166107 | -2.11 | -.138828 | -1.57 |
| Other | -.122401 | -3.54 | -.070687 | -1.32 | -.102218 | -2.36 | -.07069 | -1.33 |
| Public sector | .253934 | 7.25 | .256758 | 3.21 | .252930 | 3.51 | .238174 | 2.53 |
| Tenure | .001143 | 3.34 | .001515 | 0.91 | -.00006 | -0.01 | -.003650 | -0.16 |
| Tenure2 | -1.7e-06 | -2.21 | -5.5e-06 | -0.58 | .000067 | 0.41 | .000308 | 0.18 |
| Part time | -.636293 | -11.75 | -.612164 | -6.34 | -.682770 | -8.52 | -.673144 | -6.56 |
| Adj R-square | .54 | | .44 | | .43 | | .39 | |
| N | 1210 | | 400 | | 532 | | 392 | |

Note: All regressions include 9 sector dummies.

Table 5
Wage Effect of Fixed-Term Contracts at Firm Level
Wage Equation Estimates
NCGE, 1989.

| | (1) | | (2) | | (3) | |
|----------------------------------------|---------|-------|---------|-------|---------|-------|
| | Coeff. | t | Coeff. | t | Coeff. | t |
| Constant | 6.95519 | 66.02 | 7.17173 | 60.44 | 6.68373 | 55.76 |
| Log firm size | .01768 | 2.00 | .02279 | 2.29 | .02915 | 2.91 |
| Log Capital per employee | .04051 | 5.19 | .04742 | 5.44 | .04572 | 5.19 |
| Util. Instalations | .08942 | 1.83 | .14715 | 2.68 | .13549 | 2.44 |
| Foreign | .05524 | 2.43 | .05062 | 1.98 | .04630 | 1.79 |
| Public | .00925 | 0.30 | .03396 | 1.00 | .05625 | 1.64 |
| Fraction of newly hired | -.08562 | -1.95 | -.06294 | -1.27 | -.07764 | -1.55 |
| Fraction temporary employees | -.20596 | -2.55 | -.22752 | -2.50 | -.28188 | -3.07 |
| Fraction temp. empl. among newly hired | .01445 | 0.45 | .07165 | 2.04 | .07005 | 1.97 |
| Fraction high-level managers | .90487 | 10.06 | .98350 | 9.72 | .91772 | 8.98 |
| Fraction medium-lower-level managers | .57699 | 9.27 | .56082 | 8.02 | .54096 | 7.66 |
| Fraction clerical workers | .01430 | 0.14 | -.10273 | -0.93 | -.11380 | -1.02 |
| Fraction sharing profit | .09705 | 3.00 | .05963 | 1.64 | .07233 | 1.97 |
| CCOO majority in bargaining table | -.05165 | -2.76 | -.05879 | -2.79 | -.05767 | -2.71 |
| UGT majority in bargaining table | -.06770 | -3.25 | -.07907 | -3.37 | -.08011 | -3.37 |
| Adj R-square | .53 | | .51 | | .52 | |
| N | 589 | | 594 | | 593 | |

Note: All the regressions include 8 sector dummies.
The dependent variable is defined as follows: in column (1) the firm's wage bill at a point in time divided by the firm's number of employees at that time; in column (2) the firm's total annual wage bill divided by the firm's average number of employees throughout 1988; in column (3) the firm's total annual wage bill divided by the firm's average number of hours worked throughout 1988.

Table 6
Productivity Effect of Fixed-Term Contracts at Firm Level
Production Function Estimates
NCGE, 1989

| Dependent Variable: | Log Sales per Employee | | | | Log Value Added per Employee | | | |
|---------------------------------------|------------------------|-------|----------|-------|------------------------------|-------|----------|-------|
| | Coeff. | t | Coeff. | t | Coeff. | t | Coeff. | t |
| Constant | -4.11312 | -0.96 | -4.12439 | -0.96 | -5.87113 | -1.38 | -5.84383 | -1.36 |
| Log firm size | -.25088 | -6.65 | -.25179 | -6.65 | -.21280 | -5.63 | -.21368 | -5.61 |
| Log Capital | .24491 | 10.36 | .24598 | 10.37 | .23645 | 9.96 | .23778 | 9.94 |
| Log hours worked | 1.47521 | 2.57 | 1.49302 | 2.59 | 1.59583 | 2.78 | 1.61505 | 2.79 |
| Util. Instalations | .26331 | 1.76 | .26135 | 1.74 | .42690 | 2.87 | .42491 | 2.83 |
| Foreign | .17061 | 2.47 | .18550 | 2.68 | .18012 | 2.61 | .20155 | 2.91 |
| Public | -.06689 | -0.72 | -.10536 | -1.15 | -.03570 | -0.38 | -.08991 | -0.97 |
| Fraction exported | .18639 | 1.33 | .20318 | 1.44 | .09666 | 0.69 | .12051 | 0.85 |
| Fraction of newly hired | -.13987 | -1.04 | -.13686 | -1.01 | -.02716 | -0.20 | -.02376 | -0.17 |
| Fraction temporary employees | -.14440 | -0.58 | -.03618 | -0.14 | -.42437 | -1.70 | -.26661 | -1.08 |
| Fraction temp. empl among newly hired | .21090 | 2.22 | | | .30104 | 3.17 | | |
| Fraction high-level managers | 1.17649 | 4.25 | 1.1722 | 4.22 | 1.09275 | 3.80 | 1.08979 | 3.76 |
| Fraction medium-lower-level manager | 1.18848 | 6.23 | 1.15677 | 6.06 | .64505 | 3.34 | .60531 | 3.12 |
| Fraction clerical workers | 1.25134 | 4.18 | 1.28941 | 4.30 | .80689 | 2.66 | .85489 | 2.80 |
| Fraction sharing profit | .05329 | 0.54 | .05751 | 0.58 | .12225 | 1.26 | .12862 | 1.31 |
| CCOO majority in bargaining table | -.06680 | -1.17 | -.06810 | -1.19 | -.08708 | -1.52 | -.08821 | -1.53 |
| UGT majority in bargaining table | -.06737 | -1.06 | -.07525 | -1.18 | -.12305 | -1.93 | -.13425 | -2.09 |
| Adj R-square | .47 | | .46 | | .41 | | .40 | |
| N | 593 | | 593 | | 584 | | 584 | |

Note: All the regressions include 8 sector dummies.

Table 7.a
Distribution of Fixed-Term Contracts by Duration

| | 1988 | 1989 |
|---------------|--------|---------|
| < 6 Months | 35.90 | 31.17 |
| >=6 < 1 Year | 35.36 | 40.80 |
| >=1 < 2 Years | 16.13 | 17.04 |
| >=2 Years | 12.61 | 10.44 |
| Total | 100.00 | 100.00 |
| Number | 83,747 | 105,271 |

Source: NCGE.

| | 1989 |
|-------------|------|
| 3 months | 25.9 |
| 4-6 months | 49.5 |
| 7-12 months | 10.7 |
| >12 months | 13.9 |

Source: MTSS. INEM. (Evaluación de programas).

Table 7.b
Evolution of 69,805 Temporary Contracts Created in 1987

| | 1987 | 1988 | 1989 |
|---------------------------|--------|--------|--------|
| Expired | 21,264 | 15,431 | 5,473 |
| Renewed | 16,507 | 13,484 | 11,557 |
| Converted into indefinite | 1,811 | 3,942 | 3,941 |

Source: NCGE.

Table 8

Current Quarter's Labor Force Status of Temporary Workers in the Previous Quarter
Number in Thousands

| Initial Quarter | TOTAL | | Employed | | Unempl. | Out of L.F. | Other |
|-----------------|--------|-----|----------|---------|---------|-------------|-------|
| | Number | % | Perman. | Tempor. | | | |
| 2/87 | 828.6 | 100 | 18.00 | 59.39 | 15.61 | 3.77 | 3.22 |
| 3/87 | 1042.6 | 100 | 16.06 | 60.86 | 16.53 | 4.17 | 2.39 |
| 4/87 | 1146.1 | 100 | 14.98 | 65.93 | 13.64 | 3.00 | 2.46 |
| 1/88 | 1214.9 | 100 | 12.41 | 68.38 | 13.03 | 4.11 | 2.07 |

Source: EPA. Estadística de Flujos. Madrid: INE, 1989.

Table 9

Previous Quarter's Labor Force Status of Current Temporary Workers
Number in Thousands

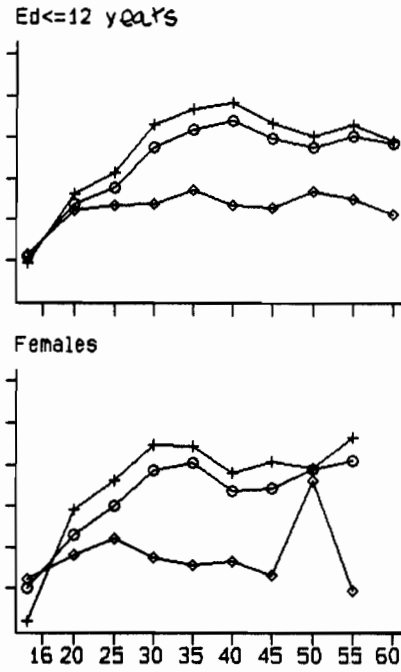
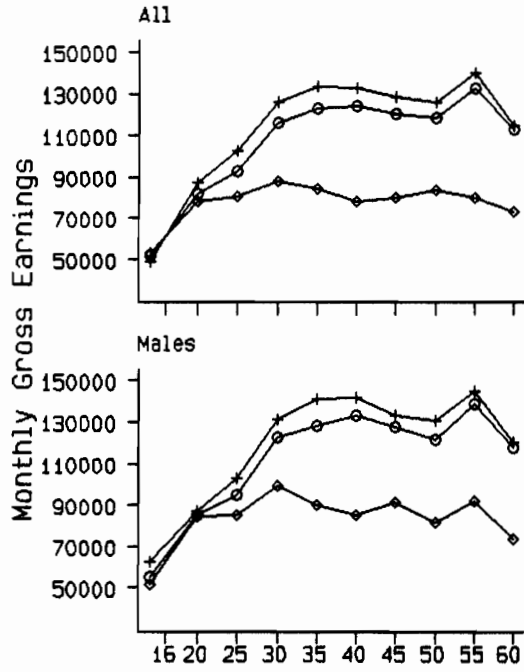
| | 2/87 | 3/87 | 4/87 | 1/88 |
|---------------------------|--------------|--------------|------------|------------|
| Employed Non-Tempor. | 37.24 | 39.22 | 37.79 | 38.45 |
| First Job Seeker | 11.80 | 9.73 | 9.78 | 9.47 |
| Unemployed with Exper. | 33.73 | 34.90 | 35.52 | 39.02 |
| Out of Labor Force | 15.81 | 14.24 | 15.43 | 11.16 |
| Other | 1.41 | 1.92 | 1.48 | 1.90 |
| T O T A L % | 100 | 100 | 100 | 100 |
| Number | 516.5 | 449.2 | 456 | 472 |

Note: Temporary workers in the previous quarter are excluded.

Source: EPA. Estadística de Flujos. Madrid: INE, 1989.

o All Workers
 ♦ Temporary Contract

+ Permanent Contract



Age
 (Age-Earnings Profile EPA-1990)