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Pay Determination in the Spanish Public Sector¹

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Abstract

In the last two decades public employment in Spain has increased from 10% of aggregate employment to 18%, while employment in the private sector has decreased at an average annual rate of 0.25%, and the Spanish unemployment rate soared from 3.5% in 1975 to about 20% nowadays. This paper contains a comprehensive description of the changes in the public sector labour market which took place throughout this period. We first rely on aggregate data to report on the evolution and the change in the composition of public employment, and compare average wages and wage dispersion between the public and the private sector. Secondly, using microeconomic data from three different surveys, we estimate cross-section earnings and wage equations to disentangle the sources of pay differentials between public and private sector employees. For 1994, the last year for which survey data are available, we find that are earnings and wage differentials in favour of public sector employees not due to the differences in employees' characteristics between both sectors: after controlling for individual characteristics, public sector employees earn about 10%, in the case of males and 25%, for females. After further controlling for hours worked, the differentials are larger: around 20%, for males, and 30% for females. These differentials seem to be slightly lower in 1994 than in 1990.

JEL Codes: J45, H11, H55.

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1 Introduction

Twenty years ago the Spanish unemployment rate was below 5%, public employment was less than 10% of national employment, the compensation of public sector employees' were 7.3% of GDP, public consumption was 10% of GDP, and total public expenditure amounted to 25% of GDP. At that time, the Spanish public sector was, not only underdeveloped, but also heavily centralised, and the criteria for the selection and the promotion of public sector employees were mostly political, rather than economic. Nowadays, the unemployment rate is over 20%, public employment is roughly 18% of aggregate employment, the compensation of public sector employees' represents about 11.6% of GDP, public consumption is about 16% of GDP, and total public expenditure is roughly 45% of GDP. Thus, in twenty years, Spain has developed a public sector of similar size to that of the average European country. The Spanish public sector has also changed in other respects: it is more and more decentralised, and human resource management relies more on economic than on political criteria, although there is much to be improved in this field.¹

The growth of employment over the last two decades shows the nature of the changes in the private and the public sector of the Spanish labour market: Total employment is at present roughly the same as twenty years ago (in fact, it has decreased at an average annual rate of 0.14%), but non-agricultural employment has grown moderately at an average annual rate of 0.61%. Employment growth in the public sector (average annual rate of 2.7%) has partially offset employment destruction in the non-agricultural, private sector (average annual rate of -0.25%).

These changes in the sectoral composition of employment have taken place simultaneously with reforms in the institutional framework of the labour market. The institutional framework of the private sector labour market has evolved towards a situation in which the main characteristics are high firing costs, employment segmentation between permanent and temporary employees, and predominance of collective bargaining at the sectoral level. In the public sector, there are three types of public employees: civil servants (*funcionarios*), whose employment conditions are determined by State's legislation², public employees hired under the labour legislation applied to private employees (*personal laboral*), and employees of public corporations. The employment conditions of civil servants are determined by the central govern-

¹For a discussion of the deficiencies of human resource management in the Spanish public sector, see López-i-Casasnovas (1993) and Onrubia (1996).

²The status of civil servant also applies to university professors, teachers, health service personnel, police and army personnel.

ment, although there is informal collective bargaining between government and civil servants' representatives. Recently, there has been a strong drive for political decentralisation which has resulted in territorial differences between the employment conditions of central administrations' employees and the employees of regional and local governments. The employment conditions of public employees, who are not civil servants, are determined by formal collective bargaining which takes place at administrative units, being the coverage rate of formal collective bargaining for this group of employees of around 50% in central administration, and 40% in regional and local governments. As for wage growth, the collective agreements for public employees who are not civil servants often follow the wage growth for civil servants established by the government. Finally, the employment conditions of public corporations' employees are determined by formal collective bargaining at the firm level, being the coverage rate close to 100%, and bargained wage growth similar to that in private sector collective agreements. Currently, the composition of public employment by these three types is roughly 70% civil servants, 18% non-civil servants, and 12% employees of public corporations.³ We will refer to the first two groups of public employees as Public Administrations' employees.⁴

The purposes of this paper are to provide an account of pay determination in the Spanish public sector, and estimate the sources of pay differences between public and private employees. Surprisingly, there are few studies on the Spanish public sector labour market. This scarcity of studies is due to the scarcity of statistical sources on wages and employment conditions in the public sector. In fact, registered data on public sector employees' earnings were not available until 1991, and there are few micro-based surveys with sufficient information on employees' characteristics and their pay, suitable for estimating the sources of pay differences between public sector and private sector employees.⁵ Aggregate data allow us, to some extent, to distinguish the evolution of pay of the three types of public employees distinguished above, but, unfortunately, survey data do not always distinguish among them, so that we cannot separate the three types of public employees, when estimating the effects of individual characteristics on pay differentials.

The structure of the paper is as follows. First, in section 2, we rely on

³The proportion of non-civil servants is higher in the local government (around 50%) than in the central administration and regional governments (around 15%).

⁴Thus, the term "Public Administrations" stands for the public sector excluding public corporations. For more details on the scope and on the institutional framework of the Spanish public sector, see the appendix.

⁵Examples of recent studies which estimate pay differentials between the public and the private sector in Spain are Albert and Moreno (1996) and Ullibarri (1996).

aggregate data to report on the evolution of public employment and public sector employees' average pay during the last decade. We also compare pay dispersion between both sectors. In section 3, we use microeconomic data from three different surveys to estimate human capital earnings and wage equations and, thus, to identify the sources of the differences between pay in the private and the public sectors. We find that, after controlling for employees' characteristics (age, sex, and educational attainment), public employees' earnings are about 10% higher, for males, and 20% for females, while public employees' wages are around 20% higher, for males, and 30% higher, for females. These differentials seem to be slightly lower in 1994 than in 1990, suggesting the existence of a trend towards the reduction of the gap between private and public sector pay. Finally, in an appendix we present a detailed description of the institutional features of wage determination in the Spanish public sector.

2 Employment and earnings in the public sector

2.1 Public employment

There are two main data sources on the evolution of public employment. The first one is the *Labour Force Survey (LFS)* which provides information on a wide range of employees' individual and job characteristics. Homogenous series from the LFS have been available since the third quarter of 1976. Although the information provided by the LFS is copious and gives a good indication of public employment trends, there are some reasons to believe that the LFS underestimates the employment level of the Spanish economy, and, in particular, the employment level in the public sector.⁶

The second source of data are administrative registers, which provide a more accurate picture of the number of Public Administration employees, but information on employees' individual and jobs' characteristics is less than that provided by the LFS. Unfortunately, the range of available series from administrative registers is much shorter. Only after the basic legislation on the status of public employees (law 30/1984) was passed, is it compulsory for the State to keep a register of public employees. This register was not operative until 1986, and reliable series on public employment and its composition started in 1989. As for employment in public corporations, there is

⁶The main reason being deficiencies in the design of the LFS sample. For more details, see Toharia (1995).

a yearly report by the Ministry of Economy and Finance (published with a delay of about three years) which also provides some figures.

The information provided by these statistical sources on public employment is summarised in Tables 1 to 3. As seen in Table 1, public employment has increased by almost 65% since 1977. This increase has mainly taken place in Public Administrations, as employment in public corporations has decreased since the mid-eighties. Nowadays, public employment represent about 13.5% of the labour force and more than 20% of total employees (total employment excluding self-employees). In 1995, the number of public employees in Public Administrations from administrative registers is higher than the estimation provided by the LFS (by about two hundred thousands)⁷. However, both sources show an increasing trend in the number of public employees for the 1989-96 period.

[INSERT TABLE 1 ABOUT HERE]

The rapid rise in the size of the public sector labour market has also been accompanied by an intense change in the composition of public employment by educational levels. As shown in Table 2, the proportion of public employees who have university studies is nowadays about 40%, having increased by 15 points in the last two decades. This proportion is much higher than in the private sector (where only 10% of employees have a university degree), although the trend in the former has been also increasing. This change in the distribution of employees by educational levels must be taken into account when analyzing the evolution of wages in both sectors, as composition effects are bound to be relevant.

[INSERT TABLE 2 ABOUT HERE]

Table 3 provides the distribution of employment across the different branches of Public Administrations, as reported by administrative registers. For the analysis of the evolution of average earnings in the following section, it is relevant to note that there have been significant changes in this distribution. First, the decentralisation of government has significantly increased the number of public employees in regional and local governments (by 26.5% and 36.2%, respectively, in the 1989-96 period), but the number of public employees in Central Administrations has not decreased commensurately (only by 2.9% in the same period). As result, about 53% of public employees are nowadays in regional and local government, up from 46% in 1989. Were data

⁷The reason being that, because of some technical problems, the LFS underestimates employment (see Toharia, 1995).

available for a longer period, they would show that this increasing trend began in the early 1980s. This is the source of another composition effect in average earnings as public employees' pay show some regional variation (see below). Secondly, even within Central Administrations, there have been significant changes in the distribution of public employees. The biggest increase in the number of public employees occurred in the branches of Central Administrations where average earnings are above the average: Universities, Justice Administration, Social Security Administration. On the contrary, the number of public employees who are not civil servants, whose earnings are below the average, has decreased by 25.8% in the 1989-96 period. The main reason for this reduction is the promotion of non-civil servants to the status of civil servants.

[INSERT TABLE 3 ABOUT HERE]

2.2 Average wages in Public Administrations

Depending on the definition, there are several statistical sources to analyse the evolution of wages in the Spanish economy. In what follows, we report the evolution of average compensation per employee (National Accounts' definition), wage rates (guaranteed wages determined by collective bargaining) and employees' earnings. All these different measures show that average pay is higher in the public sector. However, they also show that the gap between average pay in both sector has been, if anything, declining in the last decade.

As for employees' compensations, Spanish National Accounts are available since 1964 and compiled by the National Statistics Institute (*Instituto Nacional de Estadística, INE*). Additionally, the Bank of Spain also compiles a detailed version (with special considerations of financial institutions) of Spanish National Accounts, with information about the compensation of Public Administrations' employees. According to this source, the compensation of Public Administrations' employees is at present about 25% higher than the compensation of employees in the business sector (private and public corporations). As seen in Figure 1, the average compensation of employees in the private sector relative to the average public employees' compensation decreased through the second half of the sixties, and increased in the 1970-88 period, to remain more or less constant since then.

[INSERT FIGURE 1 ABOUT HERE]

This evolution of workers' compensation in Public Administrations relative to private and public corporations, and the fact that the inflation rate in

the service sector has been much higher than the inflation rate of manufacturing goods since the mid-1980s, have motivated some studies on the transmission between public employees' and private sector wages, and between wages and prices in both the public and the private sector. An example of this type of studies is by Alvarez, Jareño, and Sebastián (1993) who find that private wages are the main source of nominal volatility in the Spanish economy, and that public wages seem to have an independent behaviour, so that it hardly affects private wages and prices, although its variance is almost completely explained by private wages. Thus, there seems to be a transmission effect of wage shocks in the private sector to public employees' wages, while wage shocks in the public sector do not seem to have an effect on private employees' wages.

As for wage rates, in the case of civil servants the guaranteed component of wages is established annually by the Government's Budget, and in the case of non civil servants and employees of public and private corporations, is mostly determined by formal collective bargaining.⁸ On the latter, the main statistical source is the Collective Bargaining Statistics (*Estadística de Convenios Colectivos*) compiled by the Ministry of Labour and Social Security on the basis of the information provided by a register of collective agreements. In principle and as said above, this register covers all the agreements in the private sector, public corporations and those applied to Public Administrations' employees who are not civil servants. Wage rates for Public Administration employees (base wage, posting complement, specific complement and seniority complement) appear in the annual Government's Budget Law.

Using these sources, Figure 2 plots the annual growth rates of wage rates and the consumption price index (CPI) in the 1981-96 period.⁹ As seen in this Figure, the growth rates of wage rates for Public Administration employees have been consistently below the growth rates of the consumption price index and of private employees' wage rates.¹⁰ In 1994 and 1997, wage rates for Public Administration employees were kept constant in nominal terms. Throughout the 1981-1996 period, the consumption price index and

⁸About 75% of employees are covered by collective bargaining. For more information on collective bargaining coverage rates and collective bargaining structure in Spain, see Jimeno (1992) and Jimeno and Toharia (1994), chapter 3.

⁹Data for 1996, regarding the "private sector" (which includes public corporations and public employees who are not civil servants), are provisional.

¹⁰In the 1989-92 period, Public Administrations' employees were awarded cost-of-living allowances which closed the gap between the growth rates of wages and prices, and which are not included in the corresponding series plotted in Figure 9. The series on private sector wage rates does include cost-of-living allowances.

private employees' wage rates increased more or less the same (about 270%) while the wage rates for Public Administrations' employees increased by less (roughly 213%).

[INSERT FIGURE 2 ABOUT HERE]

As for earnings, the main statistical source is the Earnings Survey (*Encuesta de Salarios en la Industria y en los Servicios*) compiled by the Statistical Institute (INE). It covers workers' earnings in establishments with five or more employees in manufacturing and (part of) the service sectors, including public corporations but excluding Public Administrations' employees. There is no regular statistical source on the earnings of Public Administration employees and we have to rely on scattered information provided by administrative registers.¹¹ Recently, the Spanish Statistical Office (INE) has performed a new earnings survey (covering only establishments with ten and more employees) which provides the distribution of workers' earnings by educational attainments levels -*Encuesta de Estructura Salarial* -available, so far, only for 1995. The information on workers' earnings provided by these three statistical sources is reported in Table 4. According to this information, average earnings of Public Administration employees is about 20% higher than those of private and public corporations' employees. However, this difference is much lower between Public Administration employees and business sector employees working in establishments with ten or more employees. In fact, in these establishments, employees earn more than in Public Administrations for each educational level (about 15-20% more, except for workers with primary studies where the gap is only about 3%). The fact that average earnings are about 5% higher in Public Administrations arises from composition effects (highly educated employees represent a much higher proportion of employment in Public Administrations than in private and public corporations). Finally, as for recent trends (not shown in the table), the earnings of public and private corporation employees have recently grown at rates above those of Public Administration employees (around 22.5% vs. 17.5% throughout the 1991-95 period). This nominal growth rates translate into average annual real growth rates of -0.5% for Public Administrations' employees and 0.5% for employees in private and public corporations in the first half of the nineties.

[INSERT TABLE 4 ABOUT HERE]

¹¹This information, available only since 1991, was kindly provided to us by the *Unidad de Estudios de Retribuciones (Dirección General de Costes de Personal y Retribuciones)*, from the Ministry of Economy and Finance.

Summing up, different measures of workers' compensations show that average (annual) earnings in Public Administrations are about 20% higher than those in private and public corporations. However, in recent years the difference between earnings in these two sectors has been decreasing. Recent data from a new survey on wage structure (*Encuesta sobre Estructura Salarial*, INE) show that the difference in average earnings between Public Administration employees and employees of public and private corporations arises mainly from two facts:

- The lower earnings received by employees in small establishments (less than ten employees) in the private sector, and¹²
- Employment composition effects, as highly educated workers with higher earnings represent a much higher proportion of employment in Public Administrations than in the business sector (private and public corporations).

The relevance of these composition effects in average public and private sector wages motivates us to estimate wage and earnings regressions to decompose wage and earnings differentials in two parts, that related to the different characteristics of workers in each sector, and the part arising from the different remuneration to employees with similar characteristics. This is done in section 3.

2.3 Pay dispersion

Pay dispersion is usually lower in Public Administrations than in the business sector. The concern of public administrators for pay equality is even reflected in legislation.¹³ Available data confirms this assertion. Figure 3 plots the ratio of pay of employees with a university degree to the pay of employees with incomplete primary studies in several years, both in the business sector (private and public corporations, as reported by the Labour Costs Survey) and in Public Administrations.¹⁴ The Figure shows that this ratio in 1995

¹²Firms with five employees or less and with six to ten employees represent about 90% and 5% of Spanish firms, respectively. In terms of employees, approximately 10% of employees are in firms with five employees or less, and 8% are in firms with six to ten employees. Notice, however, that given the distribution of employment by establishment size, the information in the last two columns of table 4 is inconsistent.

¹³As, for instance, in Spain where the base wage of the highest-level occupation is limited to three times the base wage of the lowest-occupation (see the appendix).

¹⁴This ratio is often used in recent studies about the rising wage inequality in the US and the UK (see, for instance, Katz and Murphy, 1992).

was about 35% higher in the business sector than in Public Administrations. While pay inequality has been recently increasing in Public Administrations, there is no significant trend in pay dispersion in the business sector in the 1988-95 period. However, the increase in pay inequality in Public Administrations may be exclusively the result of a composition effect.¹⁵

[INSERT FIGURE 3 ABOUT HERE]

We now consider the variation of average pay in Public Administrations by regions and levels of government (central, regional, local). The decentralisation of government, which has taken place in Spain since the early eighties, has allowed for some flexibility in the determination of pay in Public Administrations' at the regional and local levels. Regional and local governments must classify their employees within the same occupational levels as the central government, and pay them according to the same rates established by the Government's Budget Law. However, they have some flexibility at establishing the "posting and specific components" of pay within each occupational level (which, as commented in the appendix, amount to about 30% of the total wage). The only available statistical source which provides information on the regional variation of earnings of Public Administration employees is from the Institute for Fiscal Studies (*Instituto de Estudios Fiscales*), which have used data from an administrative register of income tax declarations to analyse the labour income distribution in different institutions (private corporations, public corporations, Public Administrations, etc.)¹⁶ We summarise information provided by this statistical source in Table 5. As seen in this table, in 1994 the average labour income of Public Administration employees ranged between 3,15 million pts. in the Canary Islands' regional government and 0.81 million pts. in local governments in Extremadura. The dispersion of labour income is higher across regional and local governments than in central government employees across regions. Thus, average labour income in Public Administrations ranged between 113.8% and 75.7% of average labour income in Madrid and Extremadura, respectively. The average labour income of central government employees ranged between 116% and

¹⁵It turns out that this measure of pay inequality is higher in those Public Administrations branches where average pay is higher, which are also the branches whose employment weights have increased in the last years.

¹⁶This statistical source has some drawbacks when comparing pay across sectors, as data do not provide information on the number of months worked during the year. However, within Public Administrations, it is likely that the distribution of months worked during the years is similar in central, regional, and local governments, so that comparisons of average labour income may be informative about relative average pay in the different regional and local branches of Public Administrations.

92.3% of average labour income in Public Administrations in Madrid and Galicia, respectively. The average labour income of regional government employees ranged between 127.5% and 80.53% of average labour income in Public Administrations in Canary Islands and Extremadura, respectively. Finally, the average labour income of local government employees ranged between 106.1% and 32.9% of average labour income in Public Administrations in Madrid and Extremadura, respectively. Employment composition effects are likely to explain a relevant part of these differences of average labour income across different branches of Public Administrations and across regions.

[INSERT TABLE 5 ABOUT HERE]

3 The sources of pay differentials between the public and the private sector

3.1 Preliminaries

In the previous section we have described the evolution of public employment, and Public Administrations employees' average pay as compared to employees' average pay in the business sector. We have come to the conclusion that, nowadays, average pay seems to be about 20% higher in Public Administrations than in the business sector, despite a decreasing trend during the first half of the nineties. However, a significant part of this difference in average pay arises from a different composition of employment in both sectors. Thus, to compare pay across sectors, we need to eliminate the effects of individual characteristics, that is, we need to compare the pay of similar employees in both sectors.

Pay differentials between the public and the private sectors have been traditionally measured by estimating earnings and wage equations (see Mincer, 1974) using microeconomic databases.¹⁷ Here, we follow the traditional approach. Let w_{it} be the (logarithm of the) wage/earnings of individual i at time t . Let X_{it} be a vector of observed personal and job characteristics (like educational levels, seniority, occupational levels, and non-pecuniary benefits derived from the job position). We postulate the following wage/earnings equations:

$$w_{it}^P = \beta_t^P X_{it}^P + \varepsilon_{it}^P \quad (1)$$

¹⁷Thus, this estimation strategy is not conceptually different to the traditional estimation strategy in the literature on sex, race or union wage differentials.

$$w_{it}^{NP} = \beta_t^{NP} X_{it}^{NP} + \varepsilon_{it}^{NP} \quad (2)$$

where the index P denotes the subsample of public sector employees (the index NP denotes private sector employee), the β 's are time-varying parameters, which represent the remuneration of the personal and job characteristics in each segment of the market, and the ε 's are statistical errors, which may be correlated. Thus, data availability permitting, it is possible to estimate the wage/earnings structure between both sectors. In order to compare both structures, notice that taking averages in equations (1) and (2), and subtracting, we obtain:¹⁸

$$\bar{w}_t^P - \bar{w}_t^{NP} = \beta_t^P \bar{X}_t^P - \beta_t^{NP} \bar{X}_t^{NP} = \quad (3)$$

$$= (\beta_t^P - \beta_t^{NP}) \bar{X}_t^{NP} + \beta_t^P (\bar{X}_t^P - \bar{X}_t^{NP}) = \quad (4)$$

$$= (\beta_t^P - \beta_t^{NP}) \bar{X}_t^P + \beta_t^{NP} (\bar{X}_t^P - \bar{X}_t^{NP}) = \quad (5)$$

$$= \frac{1}{2} (\beta_t^P - \beta_t^{NP}) (\bar{X}_t^P + \bar{X}_t^{NP}) + \frac{1}{2} (\beta_t^P + \beta_t^{NP}) (\bar{X}_t^P - \bar{X}_t^{NP}) \quad (6)$$

The previous equation shows three decompositions of the difference between average wages/earnings in both sector, depending on which wage/earning structure is chosen as the baseline -the private sector structure in (4), the public sector structure in (5), and the mean of both structures in (6). In any of the three cases, the first term represents the difference in the returns to employees with similar characteristics, while the second term represents the difference in average wages/earnings arising from the difference in the individual characteristics of employees in both sectors. Which of these decompositions is most appropriate is controversial. In fact, there infinite decompositions of this sort, any with its own shortcomings. In what follows, we report the decomposition presented in equation (6).

Our estimation of wage/earnings equations is somehow restricted by data availability. Since some individual and job characteristics are not observed, an omitted variable bias is likely to be present in the estimates of β 's, unless panel data, which allows researchers to specify unobserved variables as fixed effects, are available. (Unfortunately, in Spain, so far there are not micro-based surveys providing data on wages and individual and personal and job characteristics with a panel structure). Another bias which can arise in the estimation of wage/earnings equations is the well-known self-selection bias, arising from the fact that the employment status of a given individual

¹⁸This is traditionally known as the Oaxaca-Blinder decomposition (see Oaxaca, 1973, and Blinder, 1973).

(working in the public sector or in the private sector) and, thus, the probability that this individual is in the sample to be used for estimation, depends on variables which also affect wages/earnings. To eliminate the selectivity bias, we follow the traditional approach. We specify the probability of an individual being in a certain employment status and in a certain segment of the labour market as a function of individual characteristics:

$$\begin{aligned} I_{it}^P &= 1 \text{ if } \gamma_t Z_{it} \geq \xi_{it} \\ I_{it}^P &= 0 \text{ if } \gamma_t Z_{it} \leq \xi_{it} \end{aligned} \quad (7)$$

where I_i^P is a dummy variable taking a value of one if individual i has a job in the public sector, and zero otherwise, and ξ is a statistical error correlated with ε^P and ε^{NP} . Equations (1), (2) and (7) constitute what is known as a Switching Regression Model (SRM) which can be estimated either by a maximum likelihood method or by the Heckman's (1979) two-stage method (see Maddala, 1983).

3.2 Previous results

As commented above, in Spain there have not been many studies on wage differentials mainly because there are not good quality micro-based surveys providing adequate data on wages. Regular surveys on labour market issues like the Labour Force Survey and the Earnings Survey are not suitable for this task: the Labour Force Survey does not include questions about wages, and the Earnings Survey is addressed to firms which provide information on average earnings by group of workers with very few controls on personal and job characteristics. Thus, Spanish research on wage differentials has had to rely on surveys designed with some other goals than to provide high-quality information on employees' earnings. For instance, Alba and San Segundo (1995) estimate the returns to education in Spain distinguishing by sex, age, and private/public sector of employment, using a sample of about 1,200 employees from an experimental labour force survey including questions on wages (*Encuesta Piloto sobre Ganancias y Subempleo*, 1990). They found that the average wage is higher in the public sector than in the private sector, even after controlling for educational levels and that the wage differential is almost constant for each age group except for workers of ages 60 to 64 years. Ugidos (1992), using a sample from the same survey, finds that the returns to education are higher in the public sector for both men and women, and that wage differentials between men and women are higher after controlling for the selectivity bias.

Most recently, research based on estimation of cross-sectional wage equations is relying on a sociological survey on "Social Biography and Class Struc-

ture" (*Encuesta de Conciencia y Biografía de Clase*, 1991). This survey is part of an international project on Social Class Structure, Consciousness and Social Biography. Its sample size is 6,629 individuals, and offers wide-reaching information on the personal and labour market characteristics of the interviewees. Two recent papers on wage differentials have used data from this survey: Albert and Moreno (1996) and Ullibarri (1996). Both studies use the SRM, but while Albert and Moreno estimate the model by Heckman's two stage method, Ullibarri (1996) estimates it by a maximum likelihood procedure. Albert and Moreno (1996) use a sample of 1,880 employees from the sociological survey described above to estimate wage differentials between the public employees (including public corporation employees) and the private sector. Ullibarri (1996) also estimates wage differentials between Public Administrations and private employees in a sample of 1,860 individual from the same survey. Both studies find similar qualitative results: there are wage differentials in favour of public sector employees, which are higher for females and for low-skilled employees than for males and high skilled employees, and the returns on education are higher in the public sector but the returns to experience are higher in the private sector.

3.3 Estimates of pay differentials in the public sector

In this section, we use three different datasets to estimate wage/earnings differentials between public sector employees (civil servants, non civil servants and public corporations' employees) and private sector employees.¹⁹ We are compelled to use three different datasets as we want to measure both earnings and wage differentials, to decompose them into the part arising from different returns and the part arising from different individual characteristics, and to analyse their evolutions during the early nineties (from 1990-91 to 1994 the years for which there are available data). These datasets to be used are:

1. A Household Budget Survey (HBS, *Encuesta de Presupuestos Familiares*) compiled by the Spanish Statistical Office in 1990). This survey obtains information on earnings, but not on working hours, so that we are limited to estimating human capital earnings equations (see Mincer, 1974). Its main advantage is its sample size (about 16,000 employees working 13 hours per week or more).
2. The sociological survey (SS), which provides data on hourly wages in 1991, and has been used by other researchers (see above). It contains

¹⁹Unfortunately, the datasets do not distinguish between the three types of public employees.

more information on employment conditions and individual and job characteristics than the HBS. However, its size is small (about 2,300 employees) which severely restrict the number of regressors which we can be used to obtain robust estimates.

3. The first (and only available) wave of a Household Panel (HPS, developed under EUROSTAT guidelines) which provides data for 1994. It provides information on earnings and hourly wages of about 5,000 employees working 15 hours per week or more. Wage and earnings differentials obtained from these datasets are to be compared to those obtained with the HBS and the SS, so that we can conclude on how they have evolved through time.²⁰

Table 6 (panels a to d) presents some descriptive statistics of the three datasets. As can be seen in this table, according to the three surveys there are wage/earnings differentials of around 30-40% in favour of public sector employees. These differentials are higher for women and low-skilled employees (those with low levels of education). Across regions, the range of variation of wages/earnings is higher in the private sector than in the public sector.

[INSERT TABLES 6a-6d ABOUT HERE]

With these datasets, we estimate wage/earnings equations by the Heckman's two stage procedure which corrects for the sample selection bias arising by non-random classification of employees in the public and the private sector.²¹ We estimate four equations for both the public and the private sector: two earnings equations (for 1990 using the HBS, and for 1994 using the HPS) and two wage equations (for 1991 using the SS and for 1994 using the HPS) for both the public and the private sector. The specification of the selection function and of the wage/earnings equations are the same in the four cases. The regressors in the selection function are sex, age dummies, educational

²⁰It goes without saying that this comparison has to be taken with caution, as the different surveys are elaborated with different methodologies which are likely to produce differences in their measures of wages and earnings.

²¹Some recent studies on public/private wage differentials which have followed this econometric approach are, for instance, Van der Gaag and Vijverberg (1988), for the public sector labour market in the Republic of Ivory Coast, Van Ophem (1993), who estimates wage differentials between public and private sector employees in the Netherlands, Lachaud (1995), who tests the hypothesis that wages in the public sector are too high compared to those of the private sector, in the framework of structural adjustment programs implemented in Africa, and Elliott, Murphy and Blackaby (1996), who estimate hourly earnings differentials between the public and the private sector in the UK using data from the General Household Survey (GHS).

levels (which correspond to the classification used in the public sector to classify job occupations), interactions between age dummies and educational levels, regional dummies, household size dummies, and number of kids in the household. The regressors in the wage/earnings equations are sex, age and age squared, educational levels, and regional dummies. We do not estimate separate wage/earnings equations for males and females, but we introduce interactions between the sex dummy and most of the other regressors.

The results are presented in Table 7 (panels a to d). According to the results of the probit regressions, the probability of having a job in the public sector increases with age and with the educational level. For women with low educational levels (levels C, D and E), the probability of having a job in the public sector is lower than for males, but it is higher in the case of women with a university degree (levels A and B). The increase in the probability of having a job in the public sector with age is also higher in the case of women.²²

As for the wage/earnings equations, our results seem to confirm the findings of previous papers on this topic (see section 3.2), although some coefficients are poorly estimated (specially when using the SS dataset due to the small sample size). A brief summary of the four set of results is the following: first, we find that pay differentials between men and women are higher in the private sector than in the public sector; secondly, we also find that, for males, the return on education is rather similar in both sectors; finally, our results confirm that the return on education, for females, is higher in the public sector than in the private sector.

[INSERT TABLES 7a-7d ABOUT HERE]

The decomposition of wage/earnings differentials (as shown in equation 6) is reported in Table 8 (panels a to c). As for earnings, we find that the difference in returns between the public and the private sector (the earning differential after controlling for the differences in individual characteristics) is around 14%, both in 1990 and 17% in 1994, while for hourly wages, the difference in returns is higher: around 40% in 1991 and around 25% in 1994.²³ Thus, in the case of earnings there is no sign of a reduction in the gap between public and private sector employees, despite the reduction in the earnings of the average public sector employee versus the average private sector employee.

²²The probit estimation with the SS dataset yields large standard errors because of the small sample size.

²³The results for 1991 are to be taken with caution since, as already mentioned, the small sample size of the SS dataset yields estimates with large standard errors.

In any case, the returns to be employed in the public sector, not only are different for men than for women, but also seem to have followed different evolutions. As for earnings, the returns seem to have increased slightly (from around 5% in 1990 to around 10% in 1994) in the case of males, while, for women, have decreased substantially (from around 50% in 1990 to around 25% in 1994). As for wages, the reduction in returns has affected to both males and women, but more intensively to the latter: while the returns to men have decreased from around 28% to around 22%, for females fell down from around 60% to around 30%).

[INSERT TABLES 8a-8d ABOUT HERE]

4 Concluding remarks

This paper contains an analysis of the evolution of employment and wages in the Spanish public-sector labour market with a comparative perspective to the private-sector labour market. It also present some decompositions of public and private employees' pay differentials into the returns to similar characteristics and the composition effects caused by the different individual characteristics of employees in both sectors. The available data on average wages suggest that the gap between public employees (defining public sector in a restricted sense, excluding public corporations employees) and private employees may be around 20/25% (but, on the other hand, may be only 5% when the private sector is restricted to establishments with more than 10 employees). However, since employment composition effects may have been very relevant, particularly in the public sector, the comparison of average wages has to be made with some caution. The decomposition of pay differentials between public and private sector employees into differences in returns to the same individual characteristics and differences in characteristics requires the estimation of earnings and wage regressions, which, in Spain, is hindered by the inexistence of good-quality micro-based surveys. We have estimated earnings equations for 1990 and 1994 and wage equations for 1991 and 1994 controlling for the selection bias by applying the Heckman's two stage procedure. For 1994, the last year for which survey data are available, we find that there are earnings and wage differentials in favour of public sector employees not due to the differences in employees' characteristics between both sectors: after controlling for individual characteristics, public sector employees earn about 10%, in the case of men, and 25% for women. After further controlling for hours worked, the differentials are larger: around 20%, for men, and 30% for women. The comparison of these differences with those estimated for

1990 and 1991, suggests that there is a trend towards the reduction in the pay premium of public sector employees.

APPENDIX: The institutional framework

A.1. The scope of the Spanish public sector

To establish the borders of the Spanish public sector is not an easy task. Under an economic approach, the public sector is composed of all entities which either “depend on or are controlled by” the government.²⁴ On the other hand, under the Spanish administrative legislation regulating the employment conditions of public employees, the public sector is restricted to Public Administrations (including autonomous bodies such as Social Security Administration and other government agencies), and to Constitutional Bodies (entities regulated by the Constitution such as the Parliament, Kingdom’s agencies, the Constitutional Court, etc.). The complexity of the Spanish public sector is increased by the intense process of decentralisation which has taken place since the beginning of the 1980s, with transfers of administrative agencies from the central government to regional and local governments, and by the ongoing privatisation process of public corporations and other public entities.

Since the specificities in the employment status of public employees are introduced by administrative legislation, for the objectives of this paper the relevant definition of public sector is the restricted one, namely, the agencies within Public Administrations in both the central government and regional and local governments. Nevertheless, data availability permitting, we refer to the public sector in a wide sense, that is, including administrative agencies and public corporations whose workers’ employment conditions are not determined by administrative legislation.

²⁴This is, for instance, the definition used by the National Accounts, following guidelines from the European System of Integrated Economic Accounts.

A.2. The determination of employment conditions in the public sector

The reform of the legal framework with regard to public employment started in 1984 with the approval of basic legislation which established the current foundations of the legal status of public employees (*Ley 30/1984 de Medidas para la Reforma de la Función Pública*). Since then, other legislation has regulated the employment conditions of public employees, such as selection procedures, work organization, representation and participation rights, working hours, pensions, etc. After all this legislation, the status of public employees can be briefly sketched as follows:

- There are three types of public employees: i) civil servants (*funcionarios*), whose employment conditions are determined by administrative legislation, ii) non civil servants, whose employment conditions are not determined by administrative legislation as in the case of civil servants, but by the same labour legislation which applies to workers in public and private corporations (*personal laboral*), and iii) public corporations' employees. Civil servants are selected on the basis of public and open examinations. There are some special procedures for promoting public employees hired with non-civil servant status, to civil servants. As a general rule, the determination of wages and employment conditions of civil servants is by legislation (although, there are consultations between the government and civil servants' representatives). The determination of wages and employment conditions of public employees who are not civil servants, is by formal collective bargaining at administrative units. Public corporations' employees are covered by collective agreements at the firm level..
- Within the class of civil servants, there are two different groups with regard to administrative legislation applied to them:
 1. Civil servants of the General Administration of the State,
 2. Civil servants with special regimes, such as military personnel, civil servants in Justice Administration, civil servants in the Parliament, and civil servants in regional and local governments.
- Civil servants' wages have five components:
 1. The base wage (guaranteed) which depends on occupational levels. There are five occupational levels (A, B, C, D, E) which correspond to the educational levels required for the access to jobs' positions

(A: University 2nd degree, B: University 1st. degree, C: High-school, D: Primary Studies, E: Incomplete primary studies). By legislation, the base wage of the occupation A cannot exceed by more than three times the base wage of occupation E. Employees can be promoted if they hold the required educational level and pass an examination, which, in many occasions, is restricted to public employees.

2. An extra posting payment (guaranteed), which depends on job positions classified into 30 different levels.
3. A specific complement (guaranteed), designed to compensate for particular positions requiring special dedication, responsibility, ability, or implying special risks, classified into about 150 different levels.
4. A seniority complement (guaranteed), granted for every three years of seniority by an amount which depends on the employee's occupational level.
5. A productivity complement (variable), which remunerates special performances and extraordinary activities. This complement cannot exceed a certain proportion of the total labour costs of each administrative unit, which is established each year by the Government's Budget. It is distributed by the person responsible in each unit, and, in practice, is devoted mostly to remunerating ordinary tasks during overtime hours.
6. Other components (variable) like compensations for extraordinary services in overtime hours.

Each of these components of civil servants' wages are established annually by the Government's Budget. On average, the base wage represents about 55% of the wage, the seniority complement represents about 10%, and the other guaranteed components (the destiny and the specific complement) represent about 30% of the wage. The variable components (productivity and others) amount to roughly 5% of the wage. This is in contrast to the situation in public and private corporations where the variable components of wages represent around 15% of total wages.²⁵

- There is some scope for regional and local dispersion of civil servants' wages as some components of the wage (for instance, the posting, the

²⁵As reported by *La Negociación Colectiva en las Grandes Empresas*, Ministry of Economy and Finance (several years).

specific and the productivity complements) depend on job characteristics, and regional and local governments may decide which wage complements to apply to different jobs.

- As for pensions, civil servants are covered either by a special system (*clases pasivas*) or by the general Social Security System which also covers most employees in the private sector. Both the special public system and the Social Security system are designed under a “pay-as-you-go” principle. The difference between the two systems is only in the determination of contributions and benefits (and, therefore, about the rate of return which they provide to contributors). In the general Social Security System, contributions are defined as a proportion of the wage, while in the special public system contributions are a fixed amount depending on the employee’s occupational level. In the general Social Security systems, pension benefits are granted depending on the contributions during the last eight years prior to retirement and the number of years of contribution. In the special system, pension benefits are granted by a fixed amount which depends on the employee’s occupational group and the number of contributing years. The average retirement pension in the special public system is about 1.75 times the average retirement pension in the general Social Security regime, and the growth rate of the average pension has been similar in both regimes during the 1989-95 period,. However, comparisons between average pensions from both systems do not yield any conclusion about the “generosity” of each pension system: Since public employees’ wages are higher, their contributions are also higher, and thus, pension benefits should be higher in the special public system. Comparisons between both systems have to be made on the basis of the implicit rate of returns (the interest rate that makes the present discounted value of contributions equal to the present discounted value of expected pensions benefits). On this basis, and according to the computations by Monasterio et al. (1995), the implicit rate of return of the special public system is about 0.8 percentage points above that of the general Social Security regime. This difference, however, is the result of a very rapid increase in pension benefits from the special public system, as ten years ago the implicit rate of return of the former was one percentage point below the latter.

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Table 1. Employment in the Public Sector

	Thousands				As % of total employees				As % of labour force			
	1977	1985	1990	1995	1977	1985	1990	1995	1977	1985	1990	1995
<i>Data from LFS:</i>												
Public Administrations	957.2	1283.7	1683.3	1785.7	11.09	17.51	18.15	19.97	7.21	9.27	11.21	11.43
Public Corporations	343.3	452.3	422.8	335.8	3.98	6.17	4.56	3.75	2.59	3.27	2.81	2.15
Public Sector (total)	1300.5	1736	2106.1	2121.5	15.07	23.68	22.71	23.72	9.79	12.54	14.02	13.58
<i>Data from Administrative Registers:</i>												
Public Administrations	n.a.	n.a.	1784.1	1979.8	n.a.	n.a.	19.24	22.14	n.a.	n.a.	11.88	12.67
Public Corporations	n.a.	309.5	376.8	254.3*	n.a.	4.22	4.06	2.92*	n.a.	2.24	2.51	1.66*
Public Sector (total)	n.a.	n.a.	2160.9	n.a.	n.a.	n.a.	23.30	n.a.	n.a.	n.a.	14.39	n.a.

Source: Labour Force Survey, Ministry of Public Administrations and Ministry of Economy and Finance.

Notes: Total employees excludes self-employment; n.a.: not available. *Data correspond to 1993.

2. Table Composition of employment by educational levels
(as % of total employees in the corresponding sector)

	Private Sector		Public Sector	
	University Studies	Primary Studies	University Studies	Primary Studies
1977	3.7	89.5	24.32	61.5
1982	4.8	86.7	28.21	59.0
1990	8.1	77.4	30.1	49.6
1995	10.0	66.4	41.0	33.2

Source: *Labour Force Survey*.

Note: The proportion of employees with secondary studies is not shown in the table

Table 3. Registered employment is Spanish Administrations
(in thousand)

	1989	1990	1991	1992	1993	1994	1995	1996	$\Delta_{1996-1989}$ (%)
Civil servants	206.8 (12.05)	208.6	209.3	211.4	204.5	206.3	212.3	209.3 (10.53)	1.2
Non civil-servants	105.6 (6.16)	110.2	110.0	100.8	98.4	94.1	86.4	81.6 (4.10)	-25.8
Teachers (excluding Universities)	126.7 (7.39)	129.9	125.6	133.6	131.1	140.3	141.0	144.6 (7.27)	13.3
Justice Administration	27.5 (1.60)	33.2	35.5	35.0	37.3	37.8	40.2	33.3 (1.68)	19.1
Police	116.9 (6.82)	113.4	113.1	118.7	115.4	120.2	122.6	122.6 (6.17)	4.8
Health Service	118.8 (6.93)	149.8	128.1	125.9	137.8	137.8	131.8	133.2 (6.70)	11.44
Army: Military Personnel		64.4	63.3	74.7	70.6	71.4	80.5	81.1 (4.08)	25.95 ($\Delta_{1996-1990}$)
Civil workers in the Army	39.6 (2.31)	37.3	37.4	36.9	37.9	36.6	36.5	36.4 (1.83)	-8.5
Total Central Administration	867.0 (50.55)	846.9	822.3	837.0	832.9	844.5	851.3	842.1 (42.36)	-2.9
Universities	58.4 (3.41)	63.3	66.4	70.4	73.1	77.1	81.0	83.8 (4.21)	36.2
Regional Government	488.3 (28.47)	525.5	565.5	593.5	612.4	601.0	621.6	636.6 (32.02)	26.5
Local Government	301.5 (17.58)	348.4	374.1	366.9	367.0	367.0	425.9	425.5 (21.40)	34.4
TOTAL	1715.1	1784.1	1828.3	1867.7	1885.4	1891.5	1979.8	1987.9	14.76
(as % total employees)	19.3	19.2	19.5	21.5	20.6	21.8	23.0	22.2	

Source: Registro Central de las Administraciones Públicas, Ministry of Public Administrations.

Note: In parenthesis, as proportion (%) of total employment in public Administrations.

Table 4. Average earnings in 1995 (as % of average earnings in Public Administrations)

	Public Administrations (Central Government) ¹	Private and Public Corporations Establishments over 10 employees ²	Establishments over 5 employees ³
Average	100	94.8	81.3
Level A	161.9	186.7	n.a.
Level B	119.3	146.8	n.a.
Level C	89.4	109.1	n.a.
Level D	69.0	71.4	n.a.
Level E	65.3	80.7	n.a.
Non civil servants	66.1	—	—

Notes: Average earnings in Public Administrations: 2.942 million pts; n.a.: not available.

A: University 2nd degree, B: University 1st degree, C: Secondary studies, D: Primary studies, E: Incomplete Primary studies.

Sources: ¹ : Ministry of Economy and Finance. ² : *Encuesta de Estructura Salarial*, INE. ³ : Earnings Survey, INE.

Table 5. Average annual labour income, 1994 (as % of total average annual labour income)

	Public Administrations	Central Government	Regional Government	Local Government
Andalucía	91.3	101.7	116.0	48.4
Asturias	101.0	106.5	96.6	82.4
Aragón	95.3	104.6	87.3	62.4
Baleares	107.3	112.6	106.9	91.5
Canary Islands	101.3	93.1	127.5	77.3
Cantabria	95.2	99.0	110.9	71.1
Castilla-La Mancha	88.8	103.6	106.5	52.1
Castilla y León	97.4	104.0	105.2	68.9
Catalonia	111.6	95.4	124.0	98.2
Valencia	100.7	92.9	116.2	75.4
Extremadura	75.7	104.6	80.5	32.9
Galicia	98.7	92.3	114.9	69.6
Madrid	113.8	116.0	103.6	106.1
Murcia	101.1	110.5	103.2	64.5
La Rioja	106.1	106.1	95.5	72.5
Total	100.0	105.8	115.8	68.5

Source: *Empleo Salarios y Pensiones en las Fuentes Tributarias, 1994*. Instituto de Estudios Fiscales.

Average annual labour income 2,473.3 thousands pts. (=100)

Table 6a. Household Budget Survey (HBS), 1990. (log) Average annual earnings by employees' characteristics.

	All	Public Sector	Private Sector
	Annual average earnings (in logs)	Annual average earnings (in logs)	Annual average earnings (in logs)
	N	N	N
All	13.82	14.11	13.74
	16,146	4,274	11,872
Male	13.93	14.18	13.85
	10,268	1,612	8,656
Female	13.53	14.00	13.30
	5,878	2,662	3,216
University 2nd. degree (A)	14.42	14.50	14.28
	1,121	721	400
University 1st. degree (B)	14.30	14.33	14.25
	1,433	864	569
Secondary studies (C)	13.88	14.02	13.83
	3,705	1,089	2,616
Primary studies (D)	13.59	13.89	13.54
	3,889	645	3,244
Incomplete primary studies (E)	13.67	13.88	13.63
	5,998	955	5,043
<i>Regions</i>			
Madrid	13.95	14.17	13.88
	765	208	557
Andalusia	13.65	14.06	13.49
	2,689	794	1,895
Aragon	13.89	14.14	13.79
	882	268	614
Asturias	13.88	14.26	13.69
	1,016	102	914
Baleares	13.79	14.12	13.72
	386	75	311
Canary Islands	13.78	14.08	13.69
	646	162	484
Cantabria	13.92	14.12	13.88
	281	60	221
Catalonia	13.93	14.17	13.89
	1,471	274	1,197
Castilla y Leon	13.89	14.11	13.78
	2,062	704	1,358
Castilla-La Mancha	13.77	14.08	13.65
	1,223	361	862
Valencian Community	13.68	14.06	13.61
	1,435	252	1,183
Extremadura	13.63	13.99	13.47
	524	173	351
Galicia	13.78	14.16	13.65
	1,208	332	876
Murcia	13.64	14.16	13.46
	418	110	308
Navarra	14.00	14.19	13.96
	346	75	271
Basque Country	13.96	14.16	13.92
	1,201	257	944
La Rioja	13.85	14.23	13.76
	313	67	246

Note: Excluding employees who work less than 13 hours per week.

Table 6b. Sociological Survey (ECBC), 1991. (log) Average net hourly wage by employees' characteristics.

	All		Public Sector		Private Sector	
	Annual average earnings (in logs)	N	Annual average earnings (in logs)	N	Annual average earnings (in logs)	N
All	6.47	2,312	6.76	904	6.28	1,408
Male	6.52	1,399	6.80	492	6.38	907
Female	6.39	913	6.72	412	6.12	501
University 2nd. degree (A)	6.89	477	7.01	284	6.73	193
University 1st. degree (B)	6.75	438	6.83	291	6.57	147
Secondary studies (C)	6.37	711	6.56	217	6.28	494
Primary studies (D)	6.13	197	6.33	35	6.09	162
Incomplete primary studies (E)	6.10	489	6.34	77	6.05	412
<i>Regions</i>						
Madrid	6.56	654	6.80	250	6.41	404
Andalusia	6.41	301	6.50	146	6.26	155
Aragon	6.45	91	6.46	34	6.45	57
Asturias	6.44	56	6.61	30	6.12	26
Baleares	6.38	30	6.46	9	6.38	21
Canary Islands	6.42	61	6.41	27	6.39	34
Cantabria	6.43	26	6.46	7	6.47	19
Catalonia	6.31	75	6.34	33	6.24	42
Castilla y Leon	6.35	100	6.40	43	6.28	57
Castilla-La Mancha	6.50	285	6.61	84	6.50	201
Valencian Community	6.36	206	6.45	61	6.36	145
Extremadura	6.16	61	6.26	28	6.03	33
Galicia	6.39	133	6.57	59	6.20	74
Murcia	6.44	43	6.67	24	6.01	19
Navarra	6.71	38	6.57	17	6.79	21
Basque Country	6.69	129	6.64	43	6.74	86
La Rioja	6.51	23	6.56	9	6.47	14

Table 6c. Household Panel Survey, 1994. (log) Average net monthly earnings by employees' characteristics.

	All	Public Sector		Private Sector	
	Annual average earnings (in logs)	N	Annual average earnings (in logs)	N	Annual average earnings (in logs)
All	11.71	5,045	11.96	1,381	11.64
Male	11.80	3,351	11.98	824	11.75
Female	11.53	1,694	11.92	557	11.37
University 2nd. degree (A)	12.27	491	12.30	289	12.25
University 1st. degree (B)	12.04	495	12.14	284	12.02
Secondary studies (C)	11.76	1,112	11.86	333	11.72
Primary studies (D)	11.58	1,237	11.75	235	11.54
Incomplete primary studies (E)	11.50	1,710	11.63	239	11.48
<i>Regions</i>					
Madrid	11.69	476	11.95	123	11.62
Andalusia	11.70	606	11.93	188	11.67
Aragon	11.63	162	11.87	50	11.58
Asturias	11.51	213	11.74	49	11.34
Baleares	11.68	146	12.01	44	11.40
Canary Islands	11.67	279	11.91	83	11.61
Cantabria	11.83	214	11.94	47	11.78
Catalonia	11.66	344	12.00	68	11.63
Castilla y Leon	11.55	221	11.84	52	11.37
Castilla-La Mancha	11.77	529	12.07	184	11.76
Valencian Community	11.74	409	12.09	105	11.73
Extremadura	11.72	223	11.89	33	11.65
Galicia	11.72	305	11.93	97	11.46
Murcia	11.81	241	11.85	81	11.71
Navarra	11.79	187	12.06	54	11.71
Basque Country	11.70	315	11.90	80	11.68
La Rioja	11.78	175	11.86	43	11.90

Note: Excluding employees who work less than 15 hours per week.

Table 6d. Household Panel Survey, 1994. (log) Average net hourly wage by employees' characteristics.

	All Annual average earnings (in logs)	N	Public Sector Annual average earnings (in logs)	N	Private Sector Annual average earnings (in logs)	N
All	6.52	5,042	6.79	1,381	6.41	3,661
Male	6.54	3,348	6.79	824	6.46	2,524
Female	6.47	1,694	6.79	557	6.28	1,137
University 2nd. degree (A)	7.08	491	7.16	289	6.99	202
University 1st. degree (B)	6.93	495	7.04	284	6.77	207
Secondary studies (C)	6.53	1,111	6.63	333	6.48	778
Primary studies (D)	6.33	1,236	6.57	235	6.29	1,001
Incomplete primary studies (E)	6.30	1,709	6.45	239	6.27	1,470
Regions						
Madrid	6.49	476	6.77	123	6.37	353
Andalusia	6.51	604	6.73	188	6.40	416
Aragon	6.42	162	6.71	50	6.30	304
Asturias	6.20	213	6.54	49	6.06	190
Baleares	6.30	146	6.83	44	6.18	208
Canary Islands	6.42	279	6.64	83	6.32	160
Cantabria	6.62	214	6.79	47	6.57	133
Catalonia	6.51	344	6.83	68	6.41	235
Castilla y Leon	6.30	221	6.67	52	6.23	132
Castilla-La Mancha	6.69	528	6.96	184	6.50	112
Valencian Community	6.55	409	7.03	105	6.44	164
Extremadura	6.55	223	6.82	33	6.50	102
Galicia	6.43	305	6.77	97	6.34	196
Murcia	6.54	241	6.62	81	6.48	167
Navarra	6.61	187	6.94	54	6.41	276
Basque Country	6.52	315	6.75	80	6.43	169
La Rioja	6.68	175	6.71	43	6.67	344

Note: Excluding employees who work less than 15 hours per week.

Table 7a. Estimates on pay differentials. Dependent variable: (log) Gross annual earnings (HBS, 1990).

	Probit (Public =1)	Public Sector	Private Sector
	Coefficient	Coefficient	Coefficient
	Std. error	Std. error	Std. error
Constant	-1.74	11.96	11.46
Female			
Age	-.33	.19	.28
Age ² (/100)	-	.10	.11
Age 25-34	.20	-.10	-.11
Age 35-44	.46	-	-
Age 45-54	.47	-	-
Age 55-64	.70	-	-
Female x Age			
Female x Age ² (/100)		-.03	-.04
Female x Age 25-34	.26	.03	.02
Female x Age 35-44	.32	-	-
Female x Age 45-54	.61	-	-
Female x Age 55-64	.45	-	-
University 2nd. degree (A)	1.32	.48	.45
University 1st. degree (B)	1.20	.42	.43
Secondary studies (C)	.41	.28	.25
Primary studies (D)	-.10	.13	.11
Female x Level A	.46	.22	.01
Female x Level B	.53	.23	-.00
Female x Level C	.28	.08	.16
Female x Level D	.26	.09	.11
Lambda	-	-.18	.38
Regional Dummies	YES	YES	YES
Household size dummies	YES	NO	NO
Female x Household size dummies	YES	NO	NO
Kids	.02	-	-
% Correctly predicted	78.21	-	-
R ² -Adjusted	-	.35	.38
N	16,146	3,960	10,264

Note: The probit regression also includes interactions between the age dummies and the educational levels dummies as regressors (not shown in the table)

Table 7b. Estimates on pay differentials. Dependent variable: (log) Net hourly wage (ECBC, 1991).

	Probit (Public =1)		Public Sector		Private Sector	
	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Constant	-2.99	.89	6.00	.43	5.48	.24
Female	4.91	1.11	.05	.49	-.24	.45
Age	-	-	.04	.02	.03	.01
Age ² (/100)	-	-	-.04	.02	-.04	.02
Age 25-34	.15	.23	-	-	-	-
Age 35-44	.08	.22	-	-	-	-
Age 45-54	-.34	.22	-	-	-	-
Age 55-64	.13	.25	-	-	-	-
Female x Age			-.01	.02	.01	.03
Female x Age ² (/100)			n.s.		-.03	.04
Female x Age 25-34	.08	.20	-	-	-	-
Female x Age 35-44	-.16	.21	-	-	-	-
Female x Age 45-54	.05	.25	-	-	-	-
Female x Age 55-64	.69	.33	-	-	-	-
University 2nd. degree (A)	-.15	.39	.29	.12	.19	.13
University 1st. degree (B)	.02	.37	.20	.11	.20	.10
Secondary studies (C)	.22	.23	.09	.07	.04	.06
Primary studies (D)	.18	.27	-.03	.08	.05	.06
Female x Level A	-.30	.24	.09	.12	-.15	.12
Female x Level B	-1.00	.24	-.03	.14	-.38	.15
Female x Level C	-.48	.18	-.05	.13	-.02	.10
Female x Level D	-.04	.24	.20	.22	-.04	.12
Lambda	-	-	-.42	.13	.79	.18
Regional Dummies	YES		YES		YES	
Household size dummies	YES		NO		NO	
Female x Household size dummies	YES		NO		NO	
Kids	.26	.17	-	-	-	-
% Correctly predicted	73.57		-		-	
R ² -Adjusted	-		.41		.26	
N	2,312		904		1,408	

Note: The probit regression also includes interactions between the age dummies and the educational levels dummies as regressors (not shown in the table)

Table 7c. Estimates on pay differentials. Dependent variable: (log) Net monthly earnings (HPS, 1994).

	Probit (Public =1)		Public Sector		Private Sector	
	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Constant	-2.61	.32	11.49	.15	11.02	.08
Female	.26	.24	-.11	.10	-.19	.14
Age	-	-	.04	.06	.04	.005
Age ² (/100)	-	-	-.07	.01	-.05	.01
Age 25-34	1.34	.30	-	-	-	-
Age 35-44	1.40	.32	-	-	-	-
Age 45-54	1.41	.33	-	-	-	-
Age 55-64	1.66	.36	-	-	-	-
Female x Age			-.01	.008	n.s.	
Female x Age ² (/100)			n.s.		n.s.	
Female x Age 25-34	-.50	.23	-	-	-	-
Female x Age 35-44	.16	.27	-	-	-	-
Female x Age 45-54	-.29	.39	-	-	-	-
Female x Age 55-64	-.06	.16	-	-	-	-
University 2nd. degree (A)	.86	.76	.66	.08	.81	.11
University 1st. degree (B)	.34	.58	.39	.09	.62	.09
Secondary studies (C)	1.25	.32	.12	.07	.31	.07
Primary studies (D)	1.03	.31	.03	.06	.11	.04
Female x Level A	.48	.17	n.s.	n.s.	-.09	.20
Female x Level B	.75	.18	.18	.09	-.27	.14
Female x Level C	.07	.15	.18	.08	-.09	.14
Female x Level D	-.67	.15	.11	.09	-.01	.11
Lambda	-	-	-.13	.06	.17	.12
Regional Dummies	YES		YES		YES	
Household size dummies	YES		NO		NO	
Female x Household size dummies	YES		NO		NO	
Kids	-.07	.06	-	-	-	-
% Correctly predicted	75.12		-		-	-
R ² -Adjusted	-		.61		.47	
N	4,909		1,351		3,558	

Note: The probit regression also includes interactions between the age dummies and the educational levels dummies as regressors (not shown in the table)

Table 7d. Estimates on pay differentials. Dependent variable: (log) Net hourly wage (HPS, 1994).

	Probit (Public =1)		Public Sector		Private Sector	
	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Constant	-2.61	.32	6.23	.19	5.81	.07
Female	.26	.24	.004	.13	-.11	.11
Age	-	-	.04	.01	.03	.005
Age ² (/100)	-	-	-.07	.01	-.04	.01
Age 25-34	1.34	.30	-	-	-	-
Age 35-44	1.40	.32	-	-	-	-
Age 45-54	1.41	.33	-	-	-	-
Age 55-64	1.66	.36	-	-	-	-
Female x Age			n.s.		.01	.01
Female x Age ² (/100)			n.s.		-.04	.02
Female x Age 25-34	-.50	.23	-	-	-	-
Female x Age 35-44	.16	.27	-	-	-	-
Female x Age 45-54	-.29	.39	-	-	-	-
Female x Age 55-64	-.06	.16	-	-	-	-
University 2nd. degree (A)	.86	.76	.76	.11	.73	.11
University 1st. degree (B)	.34	.58	.49	.11	.55	.08
Secondary studies (C)	1.25	.32	.09	.10	.27	.06
Primary studies (D)	1.03	.31	.08	.07	.08	.05
Female x Level A	.48	.17	-.17	.11	-.12	.17
Female x Level B	.75	.18	.13	.11	-.27	.12
Female x Level C	.07	.15	.17	.09	-.10	.11
Female x Level D	-.67	.15	.07	.10	-.01	.08
Lambda	-	-	-.14	.07	.23	.12
Regional Dummies	YES		YES		YES	
Household size dummies	YES		NO		NO	
Female x Household size dummies	YES		NO		NO	
Kids	-.07	.06	-	-	-	-
% Correctly predicted	75.12		-	-	-	-
R ² -Adjusted	-		.56		.39	
N	4,903		1,351		3,552	

Note: The probit regression also includes interactions between the age dummies and the educational levels dummies as regressors (not shown in the table)

Table 8a. Decomposition of earnings/wage differentials between public and private sector employees

Dataset	Variable	Year	Characteristics	Returns	Total
Household Budget Survey	Annual earnings	1990	21.92	14.06	35.98
Sociological Survey	Hourly wage	1991	11.56	40.96	52.52
Household Panel Survey	Monthly earnings	1994	13.85	17.67	31.53
Household Panel Survey	Hourly wage	1994	15.32	24.64	39.97

Table 8b. Decomposition of earnings/wage differentials between public and private sector employees. Males

Dataset	Variable	Year	Characteristics	Returns	Total
Household Budget Survey	Annual earnings	1990	27.79	4.75	32.53
Sociological Survey	Hourly wage	1991	17.55	27.98	45.53
Household Panel Survey	Monthly earnings	1994	18.76	9.56	28.32
Household Panel Survey	Hourly wage	1994	19.19	21.99	41.19

Table 8c. Decomposition of earnings/wage differentials between public and private sector employees. Females

Dataset	Variable	Year	Characteristics	Returns	Total
Household Budget Survey	Annual earnings	1990	22.18	53.42	75.61
Sociological Survey	Hourly wage	1991	8.83	62.69	71.52
Household Panel Survey	Monthly earnings	1994	21.43	24.56	45.99
Household Panel Survey	Hourly wage	1994	20.00	29.34	49.34

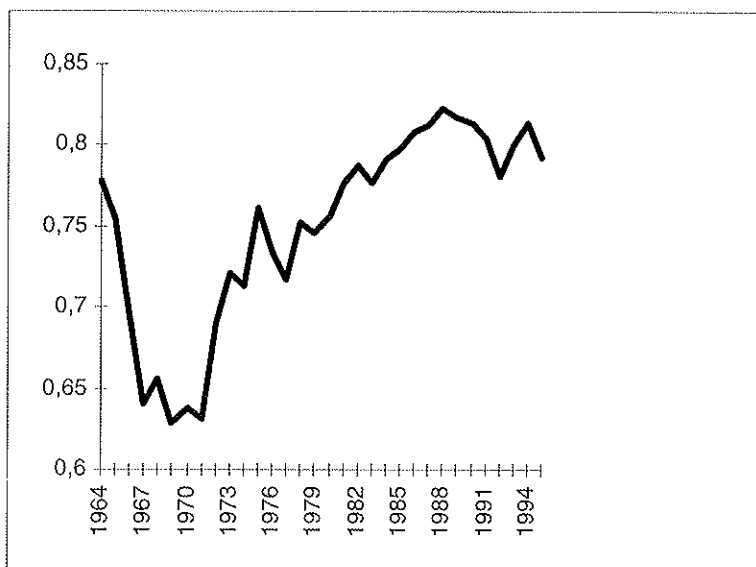


Figure 1. Compensations per employee (private/public)

Source: Bank of Spain.

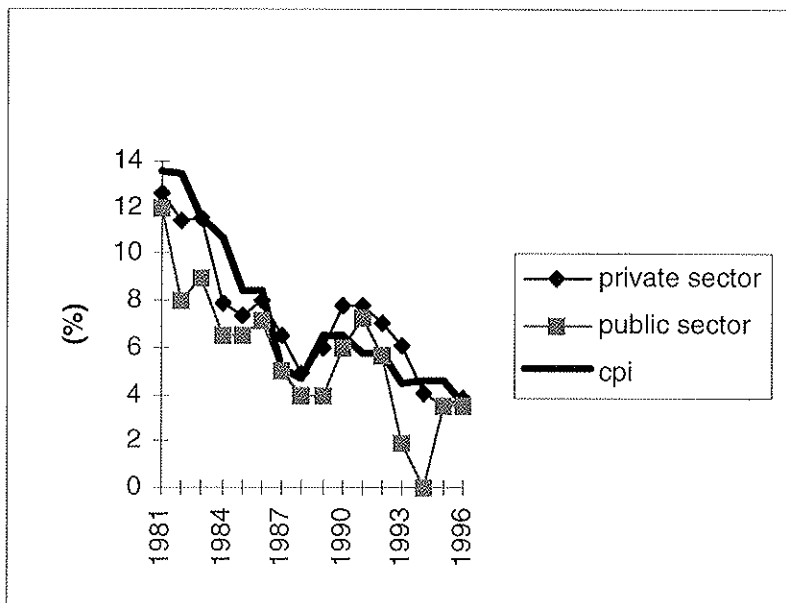


Figure 2. Annual growth rates of wages and prices

Source: Ministry of Economy and Finance.

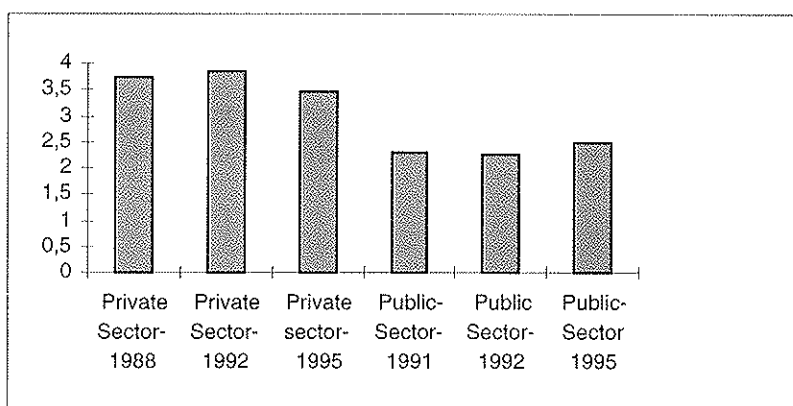


Figure 3. Wage dispersion in public and private sectors

Source: Ministry of Economy and Finance (for public sector) and surveys on wage structure (for the private sector, which includes public firms).

Notes: Ratios of A-occupation employees' earnings to those of E-occupations employees.

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