

Report to:

Public Service Benchmarking Body

An Econometric Study of Earnings

Based on National Employment Survey 2003 Data

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In association with:

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1 Executive Summary

1.1 Principal Findings

We have prepared estimates of the public service premium based on, after accounting for the impact of individual and industry characteristics, a number of econometric procedures. The overall summary position is:

Table 1.1 - Various Estimates of the Public Service Premia in Log Weekly Earnings using Unweighted NES Data for March 2003

Procedure	Males & Females	Males	Females
All Employees			
(i) OLS Regressions with Public Service Variable	+0.08 (0.005)	+0.05 (0.008)	+0.10 (0.006)
(ii) Blinder-Oaxaca Decomposition	+0.10 (0.006)	+0.07 (0.009)	+0.13 (0.009)
(iii) Propensity Score Matching	+0.10 (0.017)	+0.06 (0.019)	+0.12 (0.024)
Full Time, Permanent Employees Aged 25 to 59			
(i) OLS Regressions with Public Service Variable	+0.06 (0.006)	+0.02 (0.008)	+0.10 (0.008)
(ii) Blinder-Oaxaca Decomposition	+0.10 (0.008)	+0.05 (0.009)	+0.15 (0.013)
(iii) Propensity Score Matching	+0.09 (0.016)	+0.06 (0.019)	+0.13 (0.028)

Notes: See notes to Table 4.1a.

This table is interpreted as follows - employees (the "All Employees" category) in the public service earn in the order of 8% to 10% more in weekly earnings than those in the private sector having accounted for the impact of job holder and industry characteristics (e.g. age, sex, education, occupation, hours). The public service premia is in the range of 5% to 7% for males and 10% to 13% for females¹. Therefore, there are key differences in the public service earnings premium by sex.

We have also provided estimates for a second category "Full-time, Permanent Employees, Aged 25-59". The estimates are almost identical in the case of procedure (ii) and (iii) for males and females combined, but the premia is larger for females (in the order of 10% to 15%) and less for males (in the order of 2% to 6%) vis-à-vis the estimates for the "All Employees" category. It may be

¹ The results in Table 1 refer to the natural log of weekly earnings (which is the standard measure in the earnings literature) so a premium of 0.05, 0.10 and 0.15 in log earnings equate to a percentage premium of 5.1%, 10.5% or 16.2% respectively in earnings. All the estimated public service premia or discounts in this report are for the natural log of earnings.

more appropriate for the Public Sector Benchmarking Body to consider the results for “Full-time, Permanent Employees, Aged 25-59” as a benchmark.

The “Blinder-Oaxaca decomposition” results are the preferred ones and are widely reported in the international economics literature on earnings. The estimated public service premia based on weighted NES 2003 data (i.e. data grossed up using the grossing factors employed by the CSO) are generally a little higher. See Table 4.1b.

1.2 Other Findings

Our analysis shows that earnings premia varies by occupation and at different points along the earnings distribution. Model specification also has an impact.

1.2.1 Occupation

The public service premium (discount) varies by occupation (see section 4.2.3). Some occupations do not command a public service premium (or have an inconsequential premium or discount) i.e. SOC3 – Associate Professional and Technical and SOC5 – Craft and Related Occupations. The largest public service premium (weekly earnings) is recorded in SOC2 – Professional and SOC6 - Personal and Protective Services.

1.2.2 Quantile Regressions and the Earnings Distribution

Estimates from quantile regressions indicate whether there is variation in the public service premium across the earnings distribution. The premium declines at or about the 70% earnings percentile (higher end of earnings distribution) and turns into a discount in all cases with the exception of the “All Employees – Female” category. See section 4.2.4 and Appendix 2, Table 3. Excluding females, the discount for “Full-time, Permanent Employees, Aged 25 to 59”, in the public service which applies at the upper end of the earnings distribution is larger than the discount which applies to “All Employees” in the public service. See Figures 4.2 (a) and (b).

1.2.3 Model Specification

In one case, model specification, specifically the choice of explanatory variables, has an impact on the results. The inclusion of firm size as an explanatory variable is the one variable which has a considerable impact on the size of the estimated public service premium, particularly for the “All Employees”, but less so for the “Full-time, Permanent Employees, Aged 25 to 59” category.

The weekly premium disappears in most cases for “All Employees – Males” and is reduced in all other cases. See Appendix 2, Tables 1, 5a and 5c. This result says that there is little or no public service earnings premium if you compare the earnings of public service employees with the earnings of similar private sector employees in large establishments (i.e. establishments with 250 or more employees). However, establishments with 250 or more employees only account for about 26% of total private service employment.

2 Terms of Reference

2.1 Terms of Reference

The proposed study will use the CSO-National Employment Survey (NES) micro dataset of 50,200 responses for March 2003, which contains an array of variables on each job-holder (age, gender, education etc) and the general features of his/her job (firm size, sector, broad description of occupation etc).

This study analyzes the relevant elements of the NES data to elucidate the effects of sector of employment on earnings. This study applies appropriate methodologies to separate differences in earnings between sectors into (i) the components that can be explained by differences in jobholders' characteristics combined with differences in the composition of the workforces in different sectors including the factors referred to below and (ii) any remaining component attributable to differences between sectors. The analysis of the distribution should distinguish between employees in different sub-sectors of the public service coming within the terms of reference of the PSBB.

In considering the differences between the public service and the private sector, the analysis will make full allowance for the following factors in reaching its conclusions:

- different compositions of the workforces in the public service and the private sector
- differences between the two workforces in age, education and length of service
- differences in the response rate to the survey in the two sectors, including the response rates at higher management levels in the public service and the private sector
- differences attributable to gender
- inclusion or non-inclusion of annual bonus payments or other factors identifiable in the dataset.

We have not examined any of the following²:

- Job security
- Pension values
- Number of days worked/holidays.

Access to the NES micro dataset for use in this study was provided on CSO premises to Dr. Anthony Murphy, under the provisions of Section 20(c) of the Statistics Act 1993.

² The impact of wage round or benchmarking increases applied subsequent to March 2003 - the salary data in this report is based on CSO data for March 2003.

3 National Employment Survey

3.1 Overview

3.1.1 Survey Overview

The NES is a major workplace survey conducted by the CSO. First results published in May 2006, it relates to hourly and weekly earnings across the economy in the reference period March 2003. The survey covers both the public and private sectors using the same methodology. The only excluded sectors are agriculture, forestry and fishing. The NES replaces the four yearly Structure of Earnings Survey which was last conducted in respect of 1996.

The purpose of the NES is to provide more detailed structural information than before on workplace issues, including earnings and factors influencing earnings. The NES is being carried out again in 2006 and will become an annual survey thereafter. It has been designed as an integrated survey that addresses issues of national interest, while simultaneously fulfilling requirements under EU law.

3.1.2 Data Collection and Definitions

A detailed background note on the methodological approach is set out in Appendix 1.1. A short summary is presented in this section.

DATA COLLECTION

There are two parts to the data collection process:

- i) Employer Questionnaire: This was distributed to a sample of employers. It requested information on earnings, hours worked and occupational details for a sample of employees. Some information relating to business structure, ownership and other employer details was also requested.

About 6,500 private sector employers and 300 public sector bodies were surveyed across the economy. Only employers with more than three employees were surveyed and the data was collected at enterprise level. Employers were required to have been trading in the reference month of March in 2003.

- ii) Employee Questionnaire: This was distributed to a sample of employees. The number of employees sampled in each enterprise was based on the size of enterprise. The employees were asked to supply information such as age, gender, educational attainment, family status, length of time in paid employment, time taken to travel to work as well as other job-related characteristics. Therefore, information in relation to employees was provided by both the employee and the employer. A sample of 60,000 employees and 29,000 employees were included from the private and public sectors, respectively.

Table 3.1 - Enterprise Size & Employee Sample

Size of Enterprise	No. of Employees Sampled
3 – 9	All
10 – 19	All
20 – 49	20 – 25
50 – 249	26 – 80
250 – 499	81 – 125
500+	126 - 200

DEFINITIONS

The arithmetic mean is the average. It is calculated by summing the values of an item for all observations in a category of data and then dividing the total by the number of observations in the category.

The median is the 'middle value' in an ordered sequence of data. Approximately 50% of the observations lie above the median and 50% below. The median is unaffected by extreme observations. For example, the size of an extremely large value will not affect the position of the median whereas it will affect the mean. The median may be considered a more robust measure in this sense.

Earnings represent the gross monthly amount (before deduction of tax, PRSI, superannuation) payable by the organisation to its employees. It includes normal wages, salaries and overtime; taxable allowances, regular bonuses and commissions; holiday or sick pay for the period in question. It excludes employer's PRSI, redundancy payments and back pay.

Estimates of average hourly earnings are derived by dividing estimates of the gross monthly earnings by estimates of the total hours paid in the month at the level of the individual employee.

Public service employees include:

- Civil Service
- Defence Forces
- Garda Síochána
- Local Authorities
- Education (excluding private institutions)
- Regional Bodies
- Health (excluding private institutions).

Semi-State sponsored bodies are a separate category and are excluded from our analysis.

3.2 Summary Tables

Below, we present some summary tables. These tables are based on the underlying raw data.

Table 3.2 - Summary Data (Mean)³

Sex	Private Sector or Public Service	Age (Years)	Total Experience (Years)	Experience - Current Employer (Years)	Average Hours Worked per Week (Hours)	Hourly Earnings (€)	Average Weekly Earnings (€)	Union Membership %
Male	Private	35.3	15.7	8.1	38.3	16.61	634.53	30.4
	Public	42.3	21.7	15.2	37.7	23.61	783.86	67.1
	Total	36.2	16.5	9.1	38.2	17.55	654.44	35.3
Female	Private	34.4	12.4	6.2	31.6	13.08	419.97	18.8
	Public	40.4	16.0	10.2	29.0	20.09	551.45	65.7
	Total	35.9	13.3	7.3	30.9	14.84	453.04	30.7
Total	Private	34.9	14.2	7.3	35.3	15.03	538.58	25.2
	Public	41.1	18.1	12.0	32.2	21.36	635.44	66.2
	Total	36.1	15.0	8.2	34.7	16.24	557.03	33.1

Table 3.3 - Summary Data (Median)

Sex	Private Sector or Public Service	Age (Years)	Total Experience (Years)	Experience - Current Employer (Years)	Average Hours Worked per Week (Hours)	Hourly Earnings (€)	Average Weekly Earnings (€)
Male	Private	33	13	5	39	13.45	539.64
	Public	43	23	14	39	18.50	743.96
	Total	34	14	5	39	14.10	564.01
Female	Private	32	10	4	35.6	10.66	365.00
	Public	40	15	6	30	16.81	530.42
	Total	34	11	4	35	11.51	392.91
Total	Private	33	11	4	37.5	12.02	453.78
	Public	41	18	8	33	17.53	603.71
	Total	34	12	5	37.4	12.80	478.96

Notes

1. Median earnings – half of the employees earn more than this amount and half less.
2. Public service excludes semi-State companies.

³ Some results may look odd at first glance. For example, the public-private sector difference or gap in male hours is 0.6 hours, the female hours gap is 2.6 hours whereas the hours gap for males and females combined is approximately 3.1 hours, as opposed to some weighted average of the male and female hours gaps. The reason for this is that the share of female employment in the two sectors is very different – approximately 64% in the public service and 45% in the private sector. Thus, public service hours = 0.36 * male public service hours + 0.64 * female public service hours whereas private sector hours = 0.55 * male private sector hours + 0.45 * female private hours.

The following commentary is based on the mean data. Conclusions, based on the median, are similar.

Earnings

Public service is paid more

- The public service weekly (hourly) earnings are 18% (42.1%) higher than the private sector. The male premium is 24% for weekly earnings and 42% for hourly earnings. The female premium is 31% for weekly earnings and 54% for hourly earnings.

Males are paid more than females

- The hourly (weekly) earnings for males and females is €17.55 (€654.44) and €14.84 (€453.04), respectively. The gender gap is less in the public service i.e. female hourly earnings as a proportion of male hourly earnings are 85.1% in the public service against 78.7% in the private sector.

Hours of Work

Public service employees work fewer hours

- The average working week in the public service is 32.2 hours and 35.3 hours in the private sector. The difference in hours is 0.6 hours for males and 2.6 hours for females.

Males work more hours than females

- The average working week for males is 38.2 hours and 30.9 hours for females.

Age

Public service employees are older

- The average age in the public service is 41.1 while it is 34.9 in the private sector.

Experience

Public service employees have more experience

- Public (private) service (sector) employees have spent an average of 12.0 (7.3) years in their current employment and have 18.1 (14.2) years in all jobs (total experience).

Union Membership

There are more union members in the public service

66.2% of employees in the public service are members of a union vis-à-vis 25.2% in the private sector.

A more complete set of tables is set out in Appendix 1. In Appendix 1.2, base data is presented. In Appendix 1.3, the base data is cross tabulated by sex and service/sector (i.e. public/private). In Appendix 1.4, we present average weekly earnings by sex and private/public cross tabulated by three

other variables – occupation, age band and highest level of education. Mean and median figures are presented.

The analysis in Appendix 1.4 indicates that:

- Occupation - weekly average (mean) earnings are highest for managers at €936.78 and lowest for those in sales at €339.18, with an average of €557.03 overall for all occupations.
- Age - weekly average (mean) earnings increase up to age band 40-49 years and decline thereafter. The largest percentage increase is for the age band 25-29 years.
- Highest level of education - weekly (median) earnings increase with level of education.
- Public service employees have higher levels of education than private sector employees.
- Overall, public service jobs are more highly skilled than private sector jobs using the SOC classification of occupations.

3.2.1 Earnings & Public Service Premium

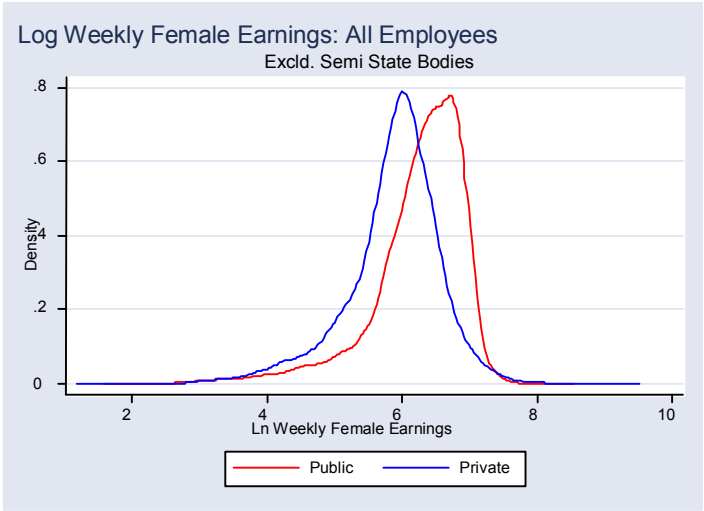
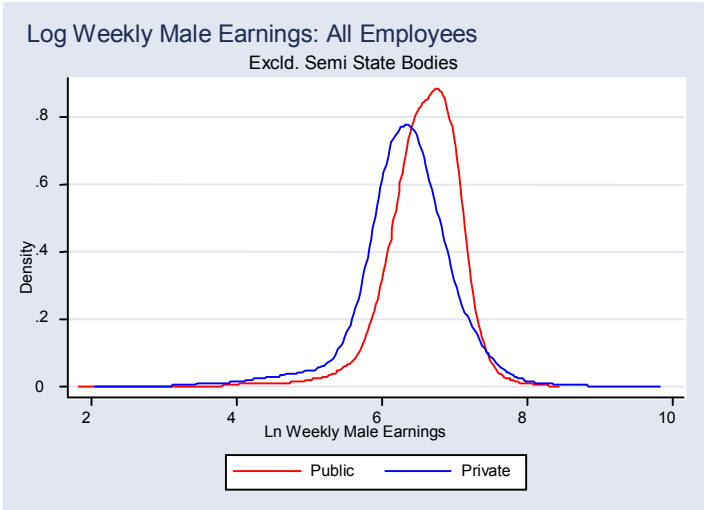
Table 3.4 shows, for the (raw) earnings data, the amount and point on the earnings distribution at which a "zero public sector premium" applies (i.e. where the public sector no longer commands a premium). This means, for example, in the case of "All Employees" that private sector employees earning more than €950 per week, which occurs somewhere between the 85th and 90th percentile on the earnings distribution, command a premium. Similarly, for "Full-time, Permanent Employees Aged 25 to 59", a premium is commanded by private sector employees earning more than €925 per week (between the 75th and 80th percentile on the earnings distribution). In summary, the public service premium is eliminated when average earnings reach €925-€950 per week. The level of earnings is higher for men (€940-€990) than for women (€895-€935).

The results in Table 3.4 are based on log-linear interpolation of unconditional quantile regression results obtained using the RIF-OLS procedure in Firpo, Fortin and Lemieux (2007).

	All Employees			Full-time, Permanent Employees Aged 25 to 59		
	Total	Male	Female	Total	Male	Female
Weekly Earnings (€)	950	990	935	925	940	895
Earning Distribution Percentile Between:-	85 th and 90 th percentiles	80 th and 85 th percentiles	90 th and 95 th percentiles	75 th and 80 th percentiles	75 th and 80 th percentiles	80 th and 85 th percentiles

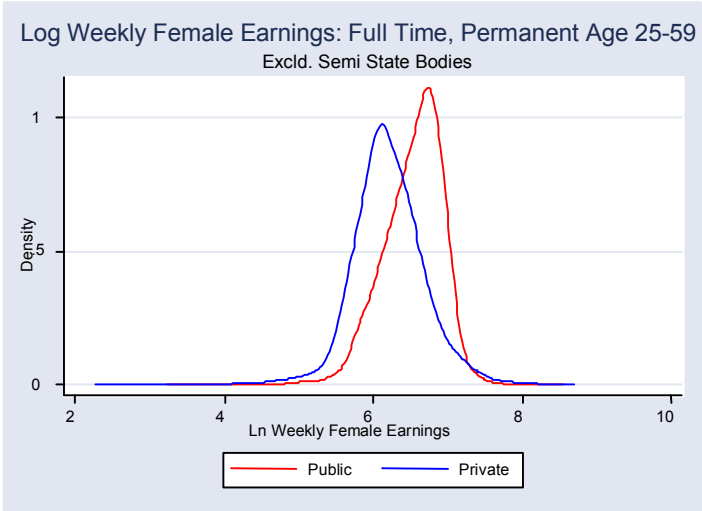
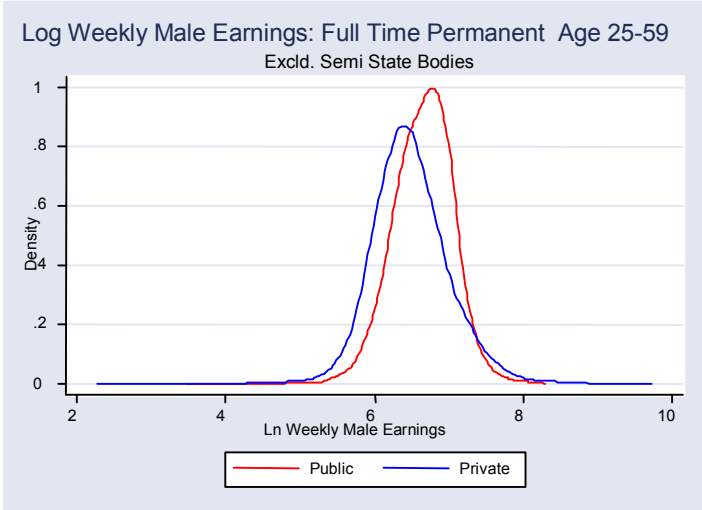
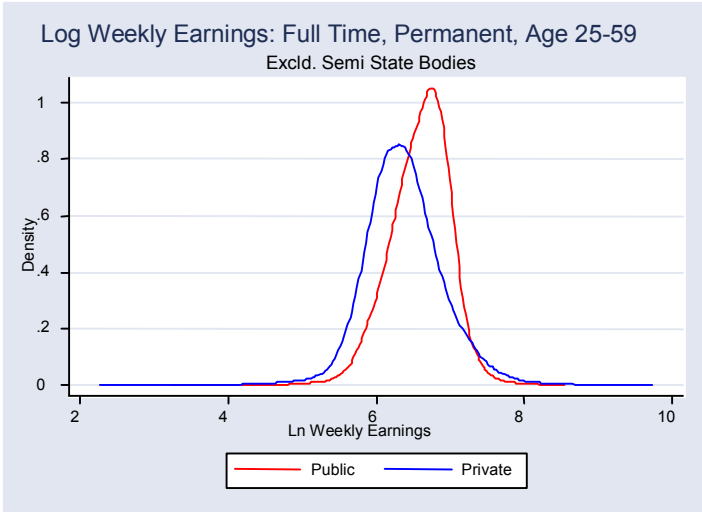
Figures 3.1 and 3.2 shows the estimated distribution of log weekly earnings in the public and private sectors. Figures are presented for both males and females employees, and for all employees and full time, permanent employees aged 25 to 59. The figures confirm the existence of a public service earnings premium – the distribution of public service log earnings is to the right of (i.e. higher than) private sector earnings.

Figure 3.1 – The Distribution of Log Weekly Earnings in the Private Sector and Public Service (Excluding Semi State Bodies)



Source: NES 2003.

Figure 3.2 – The Distribution of Log Weekly Earnings of Full Time, Permanent Adults Aged 25 to 59 in the Private Sector and Public Service (Excluding Semi State Bodies)



Source: NES 2003.

4 Econometric Analysis

4.1 Description of Econometric Models

The earnings of individuals in the public sector may be higher (or lower) than the earnings of other individuals in the private sector for a whole host of reasons. Simple comparisons of raw earnings (as per Section 3) do not take account of differences in the composition of the public and private sector workforces by experience, sex, educational level etc. since it is well known that earnings tend to increase with experience and schooling and tend to be lower for women than men.

Therefore, we have estimated a number of econometric models.

(a) Basic Earnings Regression Equation

When examining the public sector earnings differential, one is interested in the “ceteris paribus” effect of being employed in the public sector, controlling for relevant factors such as age, sex and educational level. The simplest method involves running an ordinary least squares (OLS) regression of the natural log of earnings ($\ln w_i$ where the subscript i stands for individual i) on a set of K relevant explanatory variables (denoted by x_{ij} where j ranges from 1 to K) and a dummy variable⁴ (denoted by d_i) for working in the public sector. This is a standard Mincer type (Mincer (1974), Chiswick (2003)) or hedonic earnings equation.⁵ It may be represented by the following equation:

$$\ln w_i = \alpha + \sum_j \beta_j x_{ij} + \gamma d_i + u_i$$

The explanatory or x variables typically include individual characteristics of the workers and their job and firm characteristics. Generally, adding additional, sensible explanatory variables reduce the size of the estimated public sector premium or discount.

In this equation, alpha is the constant or intercept term. The beta’s and gamma are coefficients which measure the “return” or contribution to log earnings of the various explanatory variables (experience, sex, educational level etc.) and working in the public sector. For example, an estimated beta coefficient of -0.07 on being female suggest that women earn approximately 7% less than men other things being equal. An estimated beta coefficient of 0.16 on having a degree suggests that degree holder’s earn over 16% more than those with no qualifications (assuming that this is the base or reference educational category). The u_i term is a random error term which captures a range of omitted, unmeasured factors and measurement error in earnings (assuming a correctly specified model).

⁴ A dummy variable is a variable which is coded as 0 or 1 which indicates the presence or absence of some characteristic such as being male or working in the public sector.

⁵ Mincer type hedonic earnings equations are described in almost all labour economics textbooks (e.g. Borjas (2004), Cahuc and Zyleberberg (2004), Ehrenberg and Smith (2003), Polachek and Siebert (1993)) and most econometrics textbooks (e.g. Wooldridge (2002, 2003), Stock and Watson (2003)). They are very widely used. Irish applications include Barrett, Callan and Nolan (1999a, 1999b), Barrett, Fitzgerald and Nolan (2002), Boyle, McElligott and O’Leary (2004), Callan (1991), Callan and Reilly (1993), Callan and Harmon (1999), Denny and Harmon (2001), Gannon and Nolan (2004) and O’Connell and Russell (2006).

In this simple earnings equation, the estimated gamma coefficient is an estimate of the public sector premium (or discount). However, as it stands, the model is too simple. It assumes that the betas or returns to the various personal characteristics are the same in the public and private sectors. The international literature suggests that this is not the case.

(b) A More General Model of Earnings in the Two Sectors

The more general model consists of two earnings equations, one for the public sector (denoted by the superscript pub) and one for the private sector (superscript pri):

$$\ln w_i^{pub} = \alpha^{pub} + \sum_j \beta_j^{pub} x_{ij}^{pub} + u_i^{pub}$$

$$\ln w_i^{pri} = \alpha^{pri} + \sum_j \beta_j^{pri} x_{ij}^{pri} + u_i^{pri}$$

This model nests the previous model as a special case.

It is important to check the specification of this model and that it provides a good fit to the data. We have estimated separate equations for males and females, the common practise in the literature, and checked the specification of the model thoroughly.

(c) The Blinder-Oaxaca Decomposition of Earnings Differentials

The two equations can be estimated by OLS and the results may be used to decompose the difference in log average earnings into two components - (i) the part due to differences in the average characteristics of the workforce in the public and private sectors and (ii) the remainder due to differences in the returns to the various characteristics in the two sectors. (Blinder (1973), Oaxaca (1973)). The public sector premium or discount consists of the latter component.

The equation for the Blinder-Oaxaca decomposition is:

$$\ln \bar{w}^{pub} - \ln \bar{w}^{pri} = \sum_j \hat{\beta}_j^{pub} (\bar{x}_j^{pub} - \bar{x}_j^{pri})$$

$$+ (\hat{\alpha}^{pub} - \hat{\alpha}^{pri}) + \sum_j (\hat{\beta}_j^{pub} - \hat{\beta}_j^{pri}) \bar{x}_j^{pri}$$

Assuming we treat the public sector as the reference group. In this equation, the bars denote average and the estimated coefficients are denoted by a hat.⁶ The term on the right hand side of the first line of this equation is the difference in log of average earnings which is explained by the difference in the composition (i.e. personal, job and firm characteristics) of the public and private workforces. The term on the second line is the net public sector premium or discount which is discussed in the literature.⁷

⁶ There are residual terms in the standard Blinder-Oaxaca decomposition since the average of the OLS residuals are always zero.

⁷ The Blinder-Oaxaca decomposition is not unique. If the private sector is treated as the reference group, the first

component in the Blinder-Oaxaca decomposition is $\sum_j \hat{\beta}_j^{pub} (\bar{x}_j^{pub} - \bar{x}_j^{pri})$ as opposed to $\sum_j \hat{\beta}_j^{pub} (\bar{x}_j^{pub} - \bar{x}_j^{pri})$.

See Neumark (1988) and Oaxaca and Ransom (1994, 1998). In addition, the contribution of the individual explanatory variables, as opposed to the group of related explanatory variables, is not invariant to the choice of reference group in the case of groups of categorical explanatory variables such as highest education attained and occupation. See Oaxaca and Ransom (1999), Gardeazabal and Ugidos (2004) and Yun (2005).

We have estimated earnings equations similar to the ones outlined above and used the results to calculate Blinder-Oaxaca type decompositions of the public-private sector earnings differential.

It is important that we compare like with like individuals (in terms of the explanatory variables) in the public and private sectors when decomposing the earnings differential. Technically, we want the two groups to have a “common support”. This is achieved by matching individuals on the basis of their propensity score (i.e. the estimated probability of being employed in the public sector) and discarding sub-samples with little common support. We have checked our results using matched sub-samples. Propensity score matching is also used to deal with selection issues. See (e) below.

(d) Quantile Regressions

Using quantile regressions, it is possible to look at the conditional distribution of earnings at points other than the mean e.g. the median or the 95% percentile (Koenker and Hallock, 2001). Quantile regressions are useful when discussing the relative earnings of top public servants. We have checked our results using quantile regressions.

(e) Selection and Other Issues

There is a large, rather involved literature dealing with issues of treatment effects and selection bias (as well as other issues such as endogeneity) in wage equations - see Lee (2005) and Wooldridge (2003, Chapter 18) for example. Selectivity bias may occur when the choice of sector of employment is non-random.

Although some researchers present estimated public-private sector earnings equations that take account of selection bias, it is not obvious that one is interested in ex-ante public-private sector earnings differential i.e. the differential netting out selection effects. One is generally interested in the ex-post earnings differential i.e. the differential including any selection effects. In any case, we could not obtain any sensible or statistically significant selection effects when we estimated earnings equations with Heckman (1979) selection effects. This is not surprising since it is hard to find explanatory variables that affect selection and not earnings.

We have also used propensity score matching, an econometric techniques which allow a comparison of public and private sector employees using a set of explanatory or control variables (Morgan and Harding, 2006). For example, if we can identify a sample of public sector employees and a sample of private sector employees with the same or very similar characteristics (i.e. control variables – age, age squared, experience, etc.), then the average earnings differential between the two samples is an estimate of the public sector earnings premium or discount.

4.2 Econometric Results & Analysis

4.2.1 Public service Premia – Overall Summary

The following table provides various estimates of public service premia for gross weekly earnings using unweighted data from the 2003 National Employment Survey. There are key differences by both sector (public/private) and sex. Based on the selected model (see overleaf for details of the model specification), the public service premium ranges from 8% to 10% overall (the percentage depends on the econometric procedure employed). In other words, controlling for differences in individual and industry characteristics, public service workers are paid approximately 8% to 10% more on average than private sector workers, based on detailed regression analysis. The public service premia for males and females is in the range 5% to 7% for males and 10% and 13% for females.

We have also provided estimates for a second category “Full-time, Permanent Employees, Aged 25-59”. The estimates are almost identical in the case of procedure (ii) and (iii) for males and females combined, but the premia is larger for females (in the order of 10% to 15%) and less for males (in the order of 2% to 6%) vis-à-vis the estimates for the “All Employees” category.

Table 4.1a - Various Estimates of the Public service Premia in Log Weekly Earnings using Unweighted NES Data for March 2003)

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(iii) Propensity Score Matching	+0.09 (0.016)	+0.06 (0.019)	+0.13 (0.028)

Notes:

1. A number of different econometric techniques have been employed and reported. The results are consistent (which provides added confidence to the results) and allow us to define a relevant range for the public service premium.
2. Some regression results are set out in section 4.2 with all relevant supporting detail in Appendix 2. The OLS regression public service dummy variable regression results (i) are set out in Appendix 2, Table 1a. The Blinder-Oaxaca results (ii) are the basic specification results in Appendix 2, Table 5a and 5c. The propensity score matching results (iii) are set out in Appendix 2, Table 7.
3. Standard errors in parentheses.

Table 4.1b - Various Estimates of the Public service Premia in Log Weekly Earnings using Weighted NES Data for March 2003)

Procedure	Males & Females	Males	Females
All Employees			
(i) OLS Regressions with Public service Variable	+0.11 (0.006)	+0.09 (0.009)	+0.13 (0.007)
(ii) Blinder-Oaxaca Decomposition	+0.12 (0.007)	+0.11 (0.009)	+0.14 (0.011)
(iii) Propensity Score Matching	NA	NA	NA
Full Time, Permanent Employees Aged 25 to 59			
(i) OLS Regressions with Public service Variable	+0.11 (0.006)	+0.07 (0.008)	+0.13 (0.008)
(ii) Blinder-Oaxaca Decomposition	+0.13 (0.009)	+0.09 (0.009)	+0.15 (0.014)
(iii) Propensity Score Matching	NA	NA	NA

Table 4.1b presents estimates of the public service premium based on weighted / grossed up data from the 2003 National Employment Survey.⁸ The weighted results produce slightly higher estimates of the public service premium – approximately 9% to 11% for males and 13% to 14% for females; approximately 7% to 9% for full time, permanent male employees aged 25 to 59 and 13% to 15% for their female counterparts.

The Blinder-Oaxaca results are the preferred ones. The results produced by the two other procedures (OLS with a public service explanatory variable and the propensity score matching, where available) are pretty similar.

The estimated public service premium in weekly earnings is substantially smaller than the raw or headline premium in both hourly and weekly earnings, which is widely reported. The raw premium ignores differences in (i) the characteristics (e.g. age, experience and education) of public service and private sector employees and (ii) the structure of employment (mainly occupation) within the two sectors. Consider the weekly earnings of male employees. The raw public service premium in log weekly earnings is 0.29 (i.e. over 29%), but the premium adjusted for differences in composition and characteristics is only 0.11. Thus 0.18 of the 0.29 premium is explained by the fact that public service employees are older, more experienced and better educated than private sector employees etc. and the occupational pattern of employment in the public service involves better remunerated occupations. (See the weighted Blinder-Oaxaca decomposition results in Table 5d in Appendix 2).

⁸ The grossing up or weighting procedure controls for non-random differences in responses to the NES survey. The data are reweighted so that the grossed up data matches control totals (for sex, age group, occupation etc.) obtained from the Quarterly National Household Survey.

4.2.2 Base Model – OLS Regression with Public service Variable

Below, the base model (OLS) is presented. This model estimates a public service premium for weekly earnings of 8% overall, and 5% and 10% for males and females, respectively.

Table 4.2 - Public Service Premia based on OLS Regression with Public service Variable (NES 2003)

Dependent Variable = ln(Earnings)	Weekly Earnings			Hourly Earnings
	All	Males	Females	All
	(1)	(2)	(3)	(4)
Constant	1.26	1.08	1.54	0.90
Male	0.15	-	-	0.12
Public service (d)	0.08	0.05	0.10	0.07
Age	0.05	0.06	0.04	0.04
Age squared/1000	-0.54	-0.62	-0.44	-0.49
Experience /100	0.95	0.82	0.98	0.91
<i>Educational attainment:</i>				
- Lower secondary (d)	0.07	0.09	0.06	0.08
- Higher secondary (d)	0.16	0.17	0.15	0.17
- Post leaving cert (d)	0.18	0.20	0.14	0.18
- Third level non degree (d)	0.27	0.27	0.26	0.28
- Degree or higher (d)	0.46	0.48	0.43	0.51
<i>Occupation (SOC):</i>				
1 Managers and administration (d)	0.51	0.50	0.51	0.52
2 Professional (d)	0.42	0.38	0.49	0.48
3 Assoc Professional & Technical (d)	0.22	0.22	0.25	0.24
4 Clerical and secretarial (d)	0.14	0.07	0.19	0.16
5 Craft and related (d)	0.19	0.18	0.03*	0.17
6 Personal and protective services (d)	0.08	0.09	0.08	0.05
7 Sales (d)	0.04	0.07	0.04	0.06
8 Plant and machine operatives (d)	0.06	0.05	0.06	0.03
Full time (d)	0.33	0.38	0.31	0.18
Permanent (d)	0.08	0.10	0.06	0.06
Ln hours	0.86	0.89	0.84	
Ln 38+ hours *100	-0.04	-0.04	-0.04	
Sample size (000's)	46.4	22.8	23.5	46.4
Adjusted R ²	0.71	0.61	0.75	0.51
Standard error	0.38	0.40	0.36	0.39

Notes:

1. The regression results are unweighted ordinary least squares (OLS) and median or least absolute deviation (LAD) regression results based on the 2003 National Employment Survey. The weighted results are similar.
2. Dummy 0/1 indicator variables are denoted by "(d)".
3. The omitted education and occupation categories are "Primary or No Formal Education" and "Soc 9, Other Manual Occupations" respectively.
4. Coefficient estimates, which are insignificant at the 1% level, are denoted by the superscript "X".
5. The weighted public service coefficients (using the CSO grossing factors) are as follows:-

	All	Males	Females	All
	Weekly	Weekly	Weekly	Hourly
	(1)	(2)	(3)	(4)
Public service – Unweighted OLS	0.08	0.05	0.10	0.07
Public service – Weighted OLS	0.11	0.09	0.13	0.10

The explanatory variables have the correct sign and are statistically significant (see Appendix 2, Table 2).⁹ These variables are sex, public/private sector, age, years of experience, level of educational attainment, occupational, full-time employee, permanent employee, hours of work, level (hours) of overtime. Some of these are dummy variables (denoted by (d)). The overall sample size is 46,400 and the model fit (as measured by the R²) is excellent for this type of model.

Earnings are positively correlated with age, education attainment, experience and hours of work. Permanent employees (other things being equal) are paid more than non permanent, similarly for full-time employees (vis-à-vis non full-time). Age has been included also as age squared as it is known that earnings may fall as one approaches the end of a career i.e. age and earnings is not necessarily a linear relationship.

In terms of educational attainment, the results indicate weekly earnings (March 2003) for those with degree or higher qualifications are over 46% more (all other things equal) than those with less than lower secondary (primary school level), those with third level non-degree earn over 27% more than the base case etc.

The results for occupational category is similarly interpreted i.e. managers and administrators are paid over 51% more (weekly earnings March 2003) than the base category (unskilled workers), and so on for each of the other occupation categories.

Other Analysis/Alternative Model Specification

A range of other models have been estimated and presented (see Appendix 2 - Table 1). In these models we have identified the impact of a number of other variables such as whether the employee:

- Works a shift
- Is a supervisor
- Is a trade union member
- Is a member of a professional body
- Works in a company with less than 250 employees vis-à-vis a company with 250 or more employees.

The results show a positive correlation for all of these variables with the exception of (1) shift work (which in one model is insignificant statistically) and (2) company size. Employees are paid about 11% less on average (all other things being equal) in companies with less than 250 employees vis-à-vis companies with 250 or more employees. (See Table 1a, column 2 in Appendix 2).

We have also estimated a median regression (LAD) with very similar results to the OLS equivalent (see section 4.1 for description). This is a useful check on the robustness of the OLS results.

⁹ The negative coefficient estimate on overtime hours (log 38+ hours) captures the fact that many employees are not paid for overtime hours. The estimated coefficients on hours imply that weekly earnings rise with hours but not one for one, especially in the case of overtime hours.

4.2.3 Blinder-Oaxaca Decompositions

We have applied the Blinder-Oaxaca decomposition technique to our selected model and a number of alternative model specifications. See Appendix 2 (Table 4) for OLS regressions for males and females which form the basis for the Blinder-Oaxaca decompositions.

The estimated public service premium for males is 7% to 11% for males and 13% to 14% for females. Overall, the estimated public service premium is 10% to 12% for weekly earnings and 9% to 12% for hourly earnings.

Results are also reported for “Full-time, Permanent Employees, Aged 25 to 59” years.

**Table 4.3 - Estimated Public Service Log Earnings Premia or Discounts (NES 2003)
All Employees and Full-time Permanent Adult Employees Aged 25 to 59**

	All Employees				Full-time, Permanent Employees Aged 25 to 59			
	Weekly Earnings	Hourly Earnings	Male Weekly Earnings	Female Weekly Earnings	Weekly Earnings	Hourly Earnings	Male Weekly Earnings	Female Weekly Earnings
Unweighted	+0.10 (0.006)	+0.09 (0.006)	+0.07 (0.009)	+0.13 (0.009)	+0.10 (0.008)	+0.08 (0.006)	+0.05 (0.009)	+0.15 (0.013)
Weighted	+0.12 (0.007)	+0.12 (0.008)	+0.11 (0.009)	+0.14 (0.011)	+0.13 (0.009)	+0.12 (0.009)	+0.09 (0.009)	+0.16 (0.014)

Notes:

1. The results are based on Blinder-Oaxaca decompositions using private sector returns to calculate the public service premium or discount.
2. The results are based on models with the following explanatory / control variables: gender, age, age squared, experience, highest educational level attained, occupation, full time employee, permanent employee, and, in the case of weekly earnings, hours of work (both hours and hours >= 38 to measure the impact of overtime).
3. Bootstrapped standard errors are shown in parentheses. Bootstrapped standard errors are obtained by resampling the data with replacement. They are used when it is difficult or impossible to obtain analytic standard errors. See Efron and Tibshirami (1993).

Alternative Model Specifications

We have examined a number of alternative models. Some results are presented in Appendix 2 (unweighted results in Tables 5a and weighted results in 5c). The results indicate that alternative model specifications have an impact on the estimated premium/discount. When the public service is compared to the larger private sector companies (i.e. 250 or more employees), there is a very small premium or even a discount in certain circumstances (e.g. the unweighted results suggest that male weekly earnings are higher in the private sector by about 3%; the weighted results show an inconsequential premium or discount)¹⁰. The other specifications do not have as significant an impact as the inclusion of firm size as an explanatory variable.

¹⁰ This effect is captured using a dummy variable to note when the number of employees is less than 250.

Public Service Weekly Earnings Premia or Discounts by Occupation

The overall public service premium masks variations by occupation group.

Figure 4.1 (a) – Public Service Premia/Discounts by Occupation

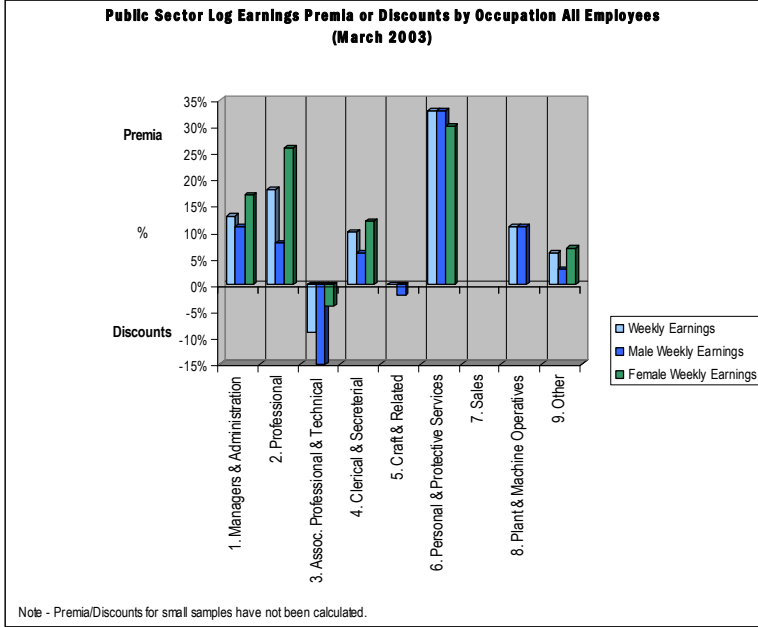
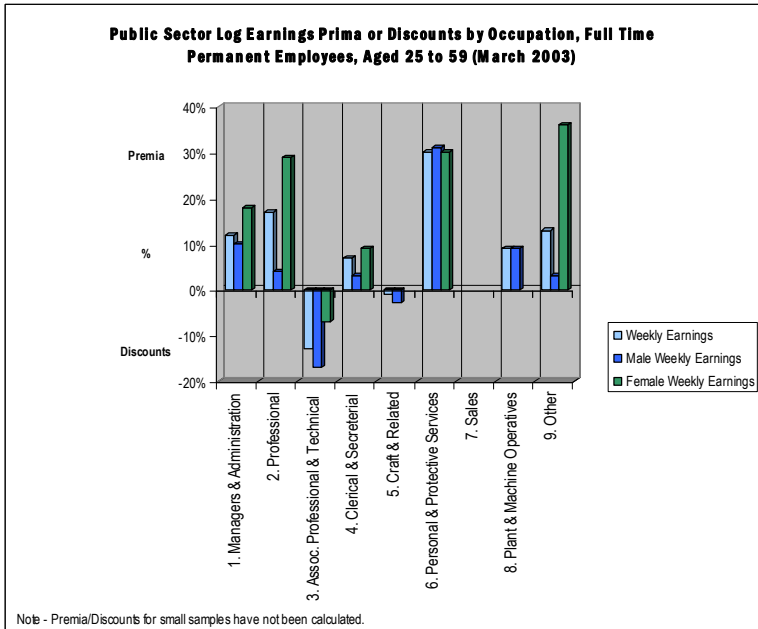


Figure 4.1 (b) - Public Service Premia/Discounts by Occupation



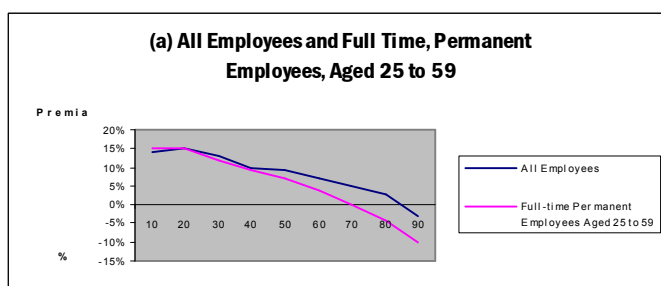
The results for “All Employees” indicate a public service premia for all occupations with the exception of “associated professional and technical” workers where a discount of 9% applies. The discount is 4% for females and 15% for males. The size of public service premia for full time permanent employees, age 25 to 59 is generally smaller than for “All Employees”. See Appendix 2 (Table 6) for the underlying data. An estimate of the premia/discount by occupation is also presented for hourly earnings for “All Employees”, which are generally of a similar order of magnitude to the estimates for weekly earnings.

4.2.4 Quantile Regressions – Earnings Distribution

It is possible to examine the distribution of earnings at points other than the mean i.e. at various percentiles to establish if a public service premium or discount varies across the earnings distribution. Results have also been presented for:

1. “All Employees” (irrespective of age or type of employment - permanent or otherwise), “All Employees” - males and “All Employees” - females, separately, and,
2. “Full-time, Permanent Employees, Age 25 to 59” for males and females combined, and males and females separately.

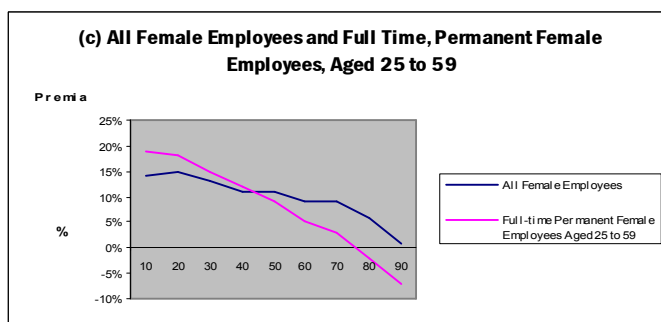
Figure 4.2 - Public Service Premium/Discount across Weekly Earnings Distribution (March 2003)



In general, the results confirm that the least well off in the public service benefit from the largest premium – in particular see Figures 4.2 (a) and (b).



A public service discount generally applies at the top end of the earnings distribution, more so for males e.g. all male employees at 70 % percentile – Figure 4.2 (b); “All Employees” at 90% percentile; “Full-time, Permanent Employees, Aged 25-59” at about the 70% percentile – Figure 4.2 (a). However, a public service premium still applies in the case of females (all female employees) but not in the case of “Full-time, Permanent Employees (females), Aged 25 to 59” – see Figure 4.2 (c).



The discount for “Full-time, Permanent Employees, Aged 25 to 59”, in the public service which applies at the upper end of the earnings distribution is larger than the discount which applies to “All Employees” - in particular see Figures 4.2 (a) and (b).

See Appendix 2 (Table 3) for underlying data.

4.2.5 Matching Estimates

We have applied a matching technique - see Appendix 2 (Table 7) for more detail. The results are similar to those estimated using the other relevant techniques.

Table 4.4 - The Estimated Public Service Premia in Log Weekly Earnings, Propensity Matching Score Matching (NES 2003)

	Public Service Premium	
	Estimate	Standard Error
All Employees		
- Males & Females	+0.10	0.02
- Males	+0.06	0.02
- Females	+0.12	0.02
Full-time, Permanent Employees, Aged 25 to 59		
- Males & Females	+0.09	0.02
- Males	+0.06	0.02
- Females	+0.13	0.03

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Appendices

- 1 NATIONAL EMPLOYMENT SURVEY 2003
 - 1.1 Background Notes to the National Employment Survey 2003
 - 1.2 Data Base
 - 1.3 Cross Tabulations of Base Data by Sex and Public/Private Sector
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 - Commentary
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 - Table 6 - Blinder-Oaxaca results by occupation
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- 3 REVIEW OF IRISH LITERATURE

Appendix 1.1 - Background Notes to the National Employment Survey 2003

In **Appendix 1.1**, the following note is an extract from “Background Notes” drawn from pages 36 to 39 of the National Employment Survey 2003, published by the CSO, May 2006.

Appendix 1.1 - Background Notes to the National Employment Survey 2003

Survey Strategy

The information required was divided into that most suitable to collect from employers (e.g. earnings, hours worked) and information best supplied by individual employees (educational attainment, duration in employment, etc). A sample of employees was selected initially and then, in a second stage, a sample of employees was selected from within the selected enterprises. Employers facilitated this approach by selecting a systematic sample from their payrolls, using set criteria, and forwarding the selection to the CSO. This two-stage strategy was used for practical purposes to optimise the quality of the information collected. It also had the desirable effect of spreading the burden of response between employers and employees.

Employer Questionnaire: This was distributed to a sample of employers. It requested information on earnings, hours worked and occupational details, for a sample of employees. Some information relating to business structure, ownership and other employer details was also requested.

Employee Questionnaire: This was distributed to the sample of employees chosen in the second stage of the sampling process. The employees were asked to supply information such as age, gender, educational attainment, family status, length of time in paid employment, time taken to travel to work as well as other job-related characteristics.

Coverage

About 6,500 private sector employers and 300 public sector bodies were surveyed across the economy. Only employers with more than three employees were surveyed and the data was collected at enterprise level. Employers were required to have been trading in the reference month of March in 2003.

Sample Design

The NES sample of employers was selected from the CSO Central Business Register (CBR). The sample was selected based on the proportion of companies in each economic sector and in each size class. The employers were asked to select a systematic sample of employees from their payrolls. The table below outlines the number of employees sampled for each size group of business unit. To reduce the burden on larger employers a smaller proportion of their employees was requested.

The respondent employers forwarded a list of the names of sampled employees to the CSO, together with the employee PPS number. The names and PPS numbers were then pre-printed on the employee questionnaires and distributed via the employer address or by other means where this was the most appropriate approach. A total sample size of 60,000 employees was included from the private sector and 29,000 employees from the public sector.

Size of Enterprise	No. Employees sampled
3 – 9	All
10 – 19	All
20 – 49	20 – 25
50 – 249	26 – 80
250 – 499	81 – 125
500 +	126 - 200

Appendix 1.1 - Background Notes to the National Employment Survey 2003

Response Rates

Response rates for business units and employees are given in the tables below.

Response Rate for National Employment Survey 2003	
<u>Private Sector</u>	
Employers Questionnaire	
Effective sample	6,497
Respondent enterprises	4,198
Non-respondent enterprises	2,299
Response Rate	65%
Employees Questionnaire	
Effective sample	54,933
Number of returns	34,923
Non-respondent employees	20,010
Response Rate	64%
<u>Public Sector</u>	
Employers Questionnaire	
Effective sample	320
Respondent enterprises	231
Non-respondent enterprises	89
Response Rate	72%
Employees Questionnaire	
Effective sample	22,165
Number of returns	15,310
Non-respondent employees	6,855
Response Rate	69%

Appendix 1.1 - Background Notes to the National Employment Survey 2003

Survey Grossing

Survey responses to the NES were weighted to the population of employees recorded by the Quarterly National Household Survey (QNHS). The weights were calculated by calibrating the survey responses to the totals from QNHS by sector, occupation, full/part time status, age group and sex. The weight is the product of a design-weight based on the stratification at the time of sample selection and a calibration-weight based on the post-stratification resulting from the survey responses. This approach takes into account as fully as possible the characteristics of the sample observations in terms of auxiliary variables and their known totals.

Appendix 1.1 - Background Notes to the National Employment Survey 2003

The employee total and calibration totals are those as measure by the QNHS in quarter 2 of 2003 as illustrated in the following table:

Persons in Employment (ILO) aged 15 years and over for NACE 2 digit classified by Employment Status, QNHS q2 2003			
NACE Economic sector	QNHS Total (000s)	Employees only (incl. schemes) (000s)	Employee Totals within scope of NES (000s)
A-B Agriculture, Forestry, Fishing	116.6	22.1	
C-E Other Production Industries	306.1	281.4	281.4
F Construction	191.4	136.8	136.8
G Wholesale and Retail	251.6	211.3	211.3
H Hotels and Restaurants	114.4	99.1	99.1
I Transport, Storage, Communication	112.1	90.6	90.6
J-K Financial and Other Services	227.1	194.8	194.8
L Public Administration; Defence	92.4	92.2	92.2
M Education	116.1	111.7	111.7
N Health	169.9	160.8	160.8
O-Q Other	95.7	75.6	61.7
Total in employment	1,793.4	1,476.4	1,440.4
Total Unemployed	82.1		
Total Labour Force	1,875.5		
Not in Labour Force	1,269.6		
Population 15 years or over	3,145.1		

Notes:

- Data may be subject to future revision.
- Data may be subject to sampling or other survey errors, which are greater in respect of smaller values or estimates of change.

Reference period: q2=Mar-May

Source: Quarterly National Household Survey, Central Statistics Office

Appendix 1.2 - Base Data

In **Appendix 1.2**, raw data are presented for all key variables with the exception of earnings (see Appendix 1.4). All employment figures have been rounded to the nearest hundred.

Appendix 1.2 - Base Data

Years	Ageband		
	Employees	Percent	Cumulative Percent
15-24	270,300 ¹¹	19.7	19.7
25-29	228,400	16.6	36.3
30-39	369,500	26.9	63.3
40-49	279,300	20.4	83.6
50-59	177,400	12.9	96.6
60+	47,100	3.4	100.0
Total	1,372,100	100.0	

	Public Service & Private Sector ¹²		
	Employees	Percent	Cumulative Percent
Private	1,110,700	81.0	81.0
Public	261,400	19.0	100.0
Total	1,372,100	100.0	

	Sex		
	Employees	Percent	Cumulative Percent
Male	708,500	51.6	51.6
Female	663,700	48.4	100.0
Total	1,372,100	100.0	

	Level of Education		
	Employees	Percent	Cumulative Percent
Primary or Below	111,100	8.1	8.1
Lower Secondary	228,500	16.7	24.8
Higher Secondary	404,000	29.4	54.2
Post Leaving Certificate (Technical/Vocational)	174,900	12.7	66.9
Third Level Degree or Above	280,200	20.4	87.4
Third Level Non Degree (Certificate/Diploma)	173,400	12.6	100.0
Total	1,372,100	100.0	

¹¹ All figures have been rounded to the near one hundred.

¹² Semi State employees have been excluded from the definition of public service employees.

Appendix 1.2 - Base Data

Industry			
	Employees	Percent	Cumulative Percent
CD Industry ¹³	267,200	19.5	19.5
E Elec Gas Water	2400	.2	19.6
F Construction	136,800	10.0	29.6
G Wholesale & Retail	211,300	15.4	45.0
H Hotels & Restaurants	99,100	7.2	52.2
I Trans Storage & Comm	48,200	3.5	55.8
J Financial Intermed	68,300	5.0	60.7
K Business Serv	124,700	9.1	69.8
L Pub Admin & Defence	81,400	5.9	75.8
M Education	111,300	8.1	83.9
N Health & Soc Work	160,800	11.7	95.6
O O/Services	60,600	4.4	100.0
Total	1,372,100	100.0	

Occupation			
	Employees	Percent	Cumulative Percent
Manage & Admin	152,900	11.1	11.1
Professional	167,500	12.2	23.4
Assoc Prof & Tech	133,900	9.8	33.1
Clerical	193,900	14.1	47.2
Craft Etc	173,800	12.7	59.9
Personal & Protect Serv	155,700	11.3	71.3
Sales	136,600	10.0	81.2
Plant Etc Operators	139,800	10.2	91.4
Other	117,900	8.6	100.0
Total	1,372,100	100.0	

Size of Enterprise			
	Employees	Percent	Cumulative Percent
3-9	163,300	11.9	11.9
10-49	365,300	26.6	38.5
50-249	301,200	22.0	60.5
250-499	112,400	8.2	68.7
500-999	101,600	7.4	76.1
1000+	328,300	23.9	100.0
Total	1,372,100	100.0	

¹³ NACE is the General Industrial Classification of Economic Activities in the European Community. It is used to classify activities to sectors as shown.

Appendix 1.2 - Base Data

Banded Hours			
	Employees	Percent	Cumulative Percent
0-15 Hrs	108,205	7.9	7.9
16-23 Hrs	129,087	9.4	17.3
24-31 Hrs	121,485	8.9	26.1
32-39 Hrs	629,548	45.9	72
40-47 Hrs	296,755	21.6	93.7
48-55Hrs	56,918	4.1	97.8
56-63 Hrs	17,218	1.3	99.1
64+ Hrs	12,891	.9	100.0
Total	1,372,108	100.0	

Full or Part Time			
	Employees	Percent	Cumulative Percent
Full Time	1,118,200	81.5	81.5
Part Time	253,900	18.5	100.0
Total	1,372,100	100.0	

Type of Contract			
	Employees	Percent	Cumulative Percent
Permanent	1,167,300	85.1	86.3
Fixed Term	83,900	6.1	92.5
Apprentice/Trainee	28,700	2.1	94.7
Other	72,000	5.2	100.0
Total	1,351,900	98.5	
Missing	20,200	1.5	
Total	1,372,100	100.0	

Member of a Trade Union (%)			
Membership	Employees	Percent	Cumulative Percent
Yes	452,800	33.1	33.1

Member of Professional Body (%)			
Membership	Employees	Percent	Cumulative Percent
Yes	165,500	12.1	12.1

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

In **Appendix 1.3**, the base/raw data is cross tabulated by sex and public service/private sector.

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Sex: Private or Public Cross Tabulation			
% within Private or Public			
Sex	Private	Public	Total
Male	55.3%	36.1%	51.6%
Female	44.7%	63.9%	48.4%
Total	100.0%	100.0%	100.0%

Age Band: Private or Public Cross Tabulation			
% within Private or Public			
Age Band	Private	Public	Total
15-24	22.5%	7.7%	19.7%
25-29	17.9%	11.1%	16.6%
30-39	27.2%	25.6%	26.9%
40-49	17.9%	30.9%	20.4%
50-59	11.3%	19.8%	12.9%
60+	3.1%	5.0%	3.4%
Total	100.0%	100.0%	100.0%

Male Age Band			
	Private	Public	Total
15-24	22.1%	6.2%	20.0%
25-29	17.2%	9.1%	16.1%
30-39	27.4%	25.3%	27.1%
40-49	17.8%	30.9%	19.6%
50-59	11.8%	22.3%	13.2%
60+	3.5%	6.2%	3.9%
Total	100.0%	100.0%	100.0%

Female Age Band			
	Private	Public	Total
15-24	23.0%	8.5%	19.4%
25-29	18.8%	12.3%	17.2%
30-39	27.0%	25.8%	26.7%
40-49	17.9%	30.8%	21.2%
50-59	10.7%	18.4%	12.6%
60+	2.5%	4.3%	3.0%
Total	100.0%	100.0%	100.0%

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Highest Education: Private or Public Cross Tabulation			
% within Private or Public			
	Private	Public	Total
Primary or Below	8.3%	7.3%	8.1%
Lower Secondary	18.2%	10.2%	16.7%
Higher Secondary	31.3%	21.7%	29.4%
Post Leaving Certificate (Technical/Vocational)	14.0%	7.3%	12.7%
Third Level Degree or Above	15.7%	40.3%	20.4%
Third Level Non Degree (Certificate/Diploma)	12.5%	13.1%	12.6%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
Primary or Below	9.5%	8.1%	9.3%
Lower Secondary	19.6%	10.8%	18.4%
Higher Secondary	29.1%	23.0%	28.3%
Post Leaving Certificate (Technical/Vocational)	16.9%	8.1%	15.7%
Third Level Degree or Above	15.3%	39.0%	18.4%
Third Level Non Degree (Certificate/Diploma)	9.7%	11.1%	9.9%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
Primary or Below	6.8%	6.9%	6.8%
Lower Secondary	16.4%	10.0%	14.8%
Higher Secondary	33.9%	21.0%	30.6%
Post Leaving Certificate (Technical/Vocational)	10.5%	6.8%	9.6%
Third Level Degree or Above	16.3%	41.1%	22.5%
Third Level Non Degree (Certificate/Diploma)	16.0%	14.3%	15.6%
Total	100.0%	100.0%	100.0%

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Industry Nace: Private or Public Cross Tabulation			
% within Private or Public			
	Private	Public	Total
CD Industry	24.1%		19.5%
E Electricity Gas Water	0.2%		0.2%
F Construction	12.3%		10.0%
G Wholesale & Retail	19.0%		15.4%
H Hotels & Restaurants	8.9%		7.2%
I Trans Storage & Communications	4.3%	*	3.5%
J Financial Intermed	6.1%		5.0%
K Business Services	11.2%		9.1%
L Pub Admin & Defence		31.2%	5.9%
M Education	1.9%	34.4%	8.1%
N Health & Soc Work	6.5%	34.1%	11.7%
O O/Services	5.5%		4.4%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
CD Industry	30.0%		26.0%
E Electricity Gas Water	0.3%		0.3%
F Construction	21.0%		18.2%
G Wholesale & Retail	15.7%		13.6%
H Hotels & Restaurants	6.5%		5.6%
I Trans Storage & Communications	4.7%	*	4.2%
J Financial Intermed	4.5%		3.9%
K Business Services	10.3%		8.9%
L Pub Admin & Defence		50.3%	6.7%
M Education	0.4%	32.5%	4.7%
N Health & Soc Work	2.2%	16.5%	4.1%
O O/Services	4.2%		3.7%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
CD Industry	16.7%		12.5%
E Electricity Gas Water	*		*
F Construction	1.6%		1.2%
G Wholesale & Retail	23.1%		17.3%
H Hotels & Restaurants	11.9%		8.9%
I Trans Storage & Communications	3.7%	*	2.8%
J Financial Intermed	8.2%		6.1%
K Business Services	12.4%		9.3%
L Pub Admin & Defence		20.3%	5.1%
M Education	3.8%	35.5%	11.7%
N Health & Soc Work	11.7%	44.0%	19.8%
O O/Services	7.0%		5.2%
Total	100.0%	100.0%	100.0%

* - Sample occurrence too small for estimation.

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Occupation Code: Private or Public Cross Tabulation % within Private or Public			
	Private	Public	Total
1 Manage & Admin	13.2%	2.5%	11.1%
2 Professional	5.6%	40.2%	12.2%
3 Assoc Prof & Tech	6.5%	23.7%	9.8%
4 Clerical	15.9%	6.7%	14.1%
5 Craft Etc	15.1%	2.3%	12.7%
6 Personal & Protect Services	10.9%	13.4%	11.3%
7 Sales	12.3%	*	10.0%
8 Plant Etc Operators	12.3%	1.2%	10.2%
9 Other	8.2%	10.1%	8.6%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
1 Manage & Admin	13.8%	2.7%	12.3%
2 Professional	6.8%	44.4%	11.8%
3 Assoc Prof & Tech	5.5%	16.0%	6.9%
4 Clerical	6.7%	2.6%	6.2%
5 Craft Etc	25.6%	4.9%	22.9%
6 Personal & Protect Services	6.7%	18.8%	8.3%
7 Sales	7.8%		6.7%
8 Plant Etc Operators	16.8%	2.9%	14.9%
9 Other	10.3%	7.7%	9.9%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
1 Manage & Admin	12.4%	2.4%	9.9%
2 Professional	4.2%	37.8%	12.7%
3 Assoc Prof & Tech	7.7%	28.0%	12.8%
4 Clerical	27.2%	9.0%	22.6%
5 Craft Etc	2.1%	.8%	1.8%
6 Personal & Protect Services	16.0%	10.3%	14.6%
7 Sales	17.9%	*	13.4%
8 Plant Etc Operators	6.8%	*	5.1%
9 Other	5.7%	11.5%	7.2%
Total	100.0%	100.0%	100.0%

* Sample numbers too small for estimation.

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Size of Enterprise: Private or Public Cross Tabulation % within Private or Public			
	Private	Public	Total
3-9	14.7%	*	11.9%
10-49	32.7%	.6%	26.6%
50-249	26.6%	2.0%	22.0%
250-499	8.8%	5.8%	8.2%
500-999	8.0%	5.1%	7.4%
1000+	9.2%	86.5%	23.9%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
3-9	13.3%	*	11.5%
10-49	33.1%	*	28.8%
50-249	28.7%	2.7%	25.2%
250-499	9.4%	6.7%	9.0%
500-999	7.8%	6.1%	7.6%
1000+	7.8%	83.4%	17.9%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
3-9	16.5%		12.3%
10-49	32.3%	*	24.3%
50-249	24.1%	1.7%	18.4%
250-499	8.0%	5.3%	7.3%
500-999	8.2%	4.4%	7.2%
1000+	11.0%	88.2%	30.4%
Total	100.0%	100.0%	100.0%

* - Sample occurrence too small for estimation.

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Banded Hours: Private or Public Cross Tabulation			
% within Private or Public			
	Private	Public	Total
0-15 Hrs	7.4%	10.1%	7.9%
16-23 Hrs	7.2%	19%	9.4%
24-31 Hrs	6.6%	18.4%	8.9%
32-39 Hrs	49.5%	30.7%	45.9%
40-47 Hrs	23.2%	14.8%	21.6%
48-55 Hrs	4.7%	1.7%	4.1%
56-63 Hrs	1.1%	2%	1.3%
64+ Hrs	.4%	3.3%	.9%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
0-15 Hrs	4.3%	4.4%	4.3%
16-23 Hrs	2.6%	15.1%	4.3%
24-31 Hrs	4.2%	12.4%	5.3%
32-39 Hrs	48.6%	30.6%	46.2%
40-47 Hrs	30.3%	22.4%	29.2%
48-55 Hrs	7.5%	3.4%	7%
56-63 Hrs	1.8%	4.2%	2.1%
64+ Hrs	.6%	7.5%	1.5%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
0-15 Hrs	11.1%	13.3%	11.7%
16-23 Hrs	12.7%	21.2%	14.9%
24-31 Hrs	9.6%	21.8%	12.6%
32-39 Hrs	50.5%	30.8%	45.5%
40-47 Hrs	14.3%	10.6%	13.5%
48-55 Hrs	1.3%	.8%	1.2%
56-63 Hrs	*	.7%	.3%
64+ Hrs	*	.9%	.3%
Total	100.0%	100.0%	100.0%

* - Sample occurrence too small for estimation.

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Full or Part Time: Private or Public Cross Tabulation % within Private or Public			
	Private	Public	Total
Full Time	82.2%	78.6%	81.5%
Part Time	17.8%	21.4%	18.5%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
Full Time	92.8%	94.8%	93.1%
Part Time	7.2%	5.2%	6.9%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
Full Time	69.0%	69.4%	93.1%
Part Time	31.0%	30.6%	6.9%
Total	100.0%	100.0%	100.0%

Type of Contract: Private or Public Cross Tabulation % within Private or Public			
	Private	Public	Total
Permanent	87.1%	83.3%	86.3%
Fixed Term	6.0%	7.2%	6.2%
Apprentice/Trainee	2.6%	*	2.1%
Other	4.3%	9.5%	5.3%
Total	100.0%	100.0%	100.0%
Male			
	Private	Public	Total
Permanent	87.4%	87.9%	87.5%
Fixed Term	5.5%	7.4%	5.8%
Apprentice/Trainee	3.4%	*	3.0%
Other	3.6%	4.5%	3.7%
Total	100.0%	100.0%	100.0%
Female			
	Private	Public	Total
Permanent	86.7%	80.7%	85.1%
Fixed Term	6.5%	7.0%	6.6%
Apprentice/Trainee	1.6%	*	1.2%
Other	5.2%	12.3%	7.0%
Total	100.0%	100.0%	100.0%

* - Sample occurrence too small for estimation.

Appendix 1.3 - Cross Tabulations of Base Data by Sex and Public Service & Private Sector

Member of a Trade Union (%): Private or Public Cross Tabulation % within Private or Public			
Sex	Private	Public	Total
Male	30.4	67.1	35.3
Female	18.8	65.7	30.7
Total	25.2	66.2	33.1

Member of Professional Body (%): Private or Public Cross Tabulation % within Private or Public			
Sex	Private	Public	Total
Male	11.0	22.2	12.5
Female	9.0	19.4	11.7
Total	10.1	20.4	12.1

Appendix 1.4 - Earnings Data

In **Appendix 1.4**, we present average weekly earnings by sex and by private sector and public service for three variables – occupation, ageband and highest level of education. Mean and median figures are presented.

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Mean) by Occupation (March 2003)				
Occupation code	Private or Public	Sex	Earning (€) Mean	N
1 Manage & Admin	Private	Male	1049.54	84,600
		Female	765.39	61,800
		Total	929.64	146,400
	Public	Male	1285.58	2,600
		Female	976.00	4,000
		Total	1097.52	6,500
	Total	Male	1056.45	87,200
		Female	778.06	65,700
		Total	936.78	152,900
2 Professional	Private	Male	861.48	41,500
		Female	635.83	21,000
		Total	785.70	62,500
	Public	Male	836.82	42,000
		Female	717.10	63,100
		Total	764.93	105,000
	Total	Male	849.09	83,500
		Female	696.81	84,100
		Total	772.68	167,500
3 Assoc Prof & Tech	Private	Male	762.89	33,900
		Female	533.15	38,100
		Total	641.34	72,000
	Public	Male	688.46	15,100
		Female	464.82	46,800
		Total	519.52	62,000
	Total	Male	739.90	49,000
		Female	495.48	84,900
		Total	584.99	133,900
4 Clerical	Private	Male	545.54	41,400
		Female	419.45	135,000
		Total	449.06	176,400
	Public	Male	599.06	2,400
		Female	468.21	15,000
		Total	486.37	17,400
	Total	Male	548.49	43,900
		Female	424.33	150,000
		Total	452.41	193,900
5 Craft Etc	Private	Male	599.30	157,500
		Female	343.34	10,400
		Total	583.41	167,900
	Public	Male	566.32	4,600
		Female	465.16	1,300
		Total	544.70	5,900
	Total	Male	598.35	162,100
		Female	356.46	11,700
		Total	582.10	173,800
6 Personal & Protective Services	Private	Male	379.13	41,200
		Female	279.13	79,500
		Total	313.27	120,700
	Public	Male	902.21	17,800
		Female	482.39	17,200
		Total	695.42	35,000
	Total	Male	536.56	59,000

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Mean) by Occupation (March 2003)				
Occupation code	Private or Public	Sex	Earning (€) Mean	N
7 Sales	Private	Female	315.33	96,700
		Total	399.12	155,700
		Male	447.98	47,800
		Female	280.62	88,700
	Public	Total	339.23	136,600
		Female	*	*
		Total	*	*
		Male	447.98	47,800
		Female	280.60	88,800
		Total	339.18	136,600
8 Plant Etc Operators	Private	Male	542.09	103,000
		Female	377.47	33,700
		Total	501.52	136,700
	Public	Male	553.19	2,800
		Female	483.19	*
		Total	545.31	3,100
	Total	Male	542.38	105,800
		Female	378.56	34,000
		Total	502.50	139,800
	9 Other	Private	Male	464.91
Female			268.59	28,500
Total			403.72	91,500
Public		Male	497.94	7,200
		Female	265.84	19,200
		Total	329.42	26,400
Total		Male	468.32	70,200
		Female	267.48	47,700
		Total	387.07	117,900
Total		Private	Male	634.54
	Female		419.97	496,700
	Total		538.58	1,110,700
	Public	Male	783.86	94,500
		Female	551.45	166,900
		Total	635.44	261,400
	Total	Male	654.44	708,500
		Female	453.04	663,700
		Total	557.03	1,372,100

* - Sample occurrence too small for estimation.

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Median) by Occupation (March 2003)				
Occupation code	Private or Public	Sex	Earning (€) Median	N
1 Manage & Admin	Private	Male	867.90	84,600
		Female	634.08	61,800
		Total	753.81	146,400
	Public	Male	1220.79	2,600
		Female	850.12	4,000
		Total	947.66	6,500
	Total	Male	879.68	87,200
		Female	643.88	65,700
		Total	765.59	152,900
2 Professional	Private	Male	781.37	41,500
		Female	588.75	21,000
		Total	712.09	62,500
	Public	Male	830.14	42,000
		Female	749.19	63,100
		Total	771.00	105,000
	Total	Male	803.06	83,500
		Female	697.56	84,100
		Total	749.19	167,500
3 Assoc Prof & Tech	Private	Male	684.53	33,900
		Female	488.74	38,100
		Total	582.22	72,000
	Public	Male	655.14	15,100
		Female	434.24	46,800
		Total	497.57	62,000
	Total	Male	674.94	49,000
		Female	463.42	84,900
		Total	542.25	133,900
4 Clerical	Private	Male	491.74	41,400
		Female	401.90	135,000
		Total	414.39	176,400
	Public	Male	566.56	2,400
		Female	452.48	15,000
		Total	465.51	17,400
	Total	Male	496.94	43,900
		Female	403.62	150,000
		Total	415.39	193,900
5 Craft Etc	Private	Male	543.25	157,500
		Female	310.00	10,400
		Total	529.70	167,900
	Public	Male	527.97	4,600
		Female	393.93	1,300
		Total	516.00	5,900
	Total	Male	543.25	162,100
		Female	314.50	11,700
		Total	527.80	173,800
6 Personal & Protective Services	Private	Male	351.75	41,200
		Female	250.00	79,500
		Total	277.83	120,700
	Public	Male	910.73	17,800
		Female	445.88	17,200
		Total	723.54	35,000
	Total	Male	470.95	59,000
		Female	264.59	96,700
		Total	325.00	155,700

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Median) by Occupation (March 2003)				
Occupation code	Private or Public	Sex	Earning (€) Median	N
7 Sales	Private	Male	391.18	47,800
		Female	256.50	88,700
		Total	294.00	136,600
	Public	Female	274.37	*
		Total	274.37	*
	Total	Male	391.18	47,800
		Female	256.50	88,800
		Total	294.00	136,600
	8 Plant Etc Operators	Private	Male	496.80
Female			355.75	33,700
Total			454.89	136,700
Public		Male	503.81	2,800
		Female	432.13	*
		Total	496.06	3,100
Total		Male	496.95	105,800
		Female	355.75	34,000
		Total	457.00	139,800
9 Other	Private	Male	427.50	63,000
		Female	232.44	28,500
		Total	372.42	91,500
	Public	Male	470.75	7,200
		Female	199.80	19,200
		Total	299.60	26,400
	Total	Male	437.25	70,200
		Female	220.08	47,700
		Total	363.50	117,900
Total	Private	Male	539.64	614,000
		Female	365.00	496,700
		Total	453.78	1,110,700
	Public	Male	743.96	94,500
		Female	530.42	166,900
		Total	603.71	261,400
	Total	Male	564.01	708,500
		Female	392.91	663,700
		Total	478.96	1,372,100

* - Sample occurrence too small for estimation.

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Mean) by Age Band, Sex and Sector (March 2003)				
Age Band (Years)	Private or Public	Sex	Earning (€) Mean	N
15-24	Private	Male	368.88	136,000
		Female	294.99	114,400
		Total	335.12	250,300
	Public	Male	472.12	5,900
		Female	453.83	14,100
		Total	459.21	20,000
	Total	Male	373.18	141,800
		Female	312.48	128,500
		Total	344.32	270,300
25-29	Private	Male	579.79	105,800
		Female	473.36	93,500
		Total	529.85	199,300
	Public	Male	601.78	8,600
		Female	554.04	20,500
		Total	568.16	29,000
	Total	Male	581.44	114,400
		Female	487.84	114,000
		Total	534.72	228,400
30-39	Private	Male	744.50	168,400
		Female	501.12	134,200
		Total	636.55	302,600
	Public	Male	760.17	23,900
		Female	547.50	43,000
		Total	623.34	66,900
	Total	Male	746.44	192,300
		Female	512.38	177,300
		Total	634.15	369,500
40-49	Private	Male	791.54	109,600
		Female	431.21	89,100
		Total	629.88	198,700
	Public	Male	846.54	29,200
		Female	578.52	51,500
		Total	675.44	80,600
	Total	Male	803.10	138,700
		Female	485.14	140,600
		Total	643.03	279,300
50-59	Private	Male	733.24	72,700
		Female	400.80	52,900
		Total	593.21	125,600
	Public	Male	883.37	21,100
		Female	571.53	30,700
		Total	698.53	51,800
	Total	Male	766.99	93,800
		Female	463.46	83,600
		Total	623.95	177,400
60+	Private	Male	588.71	21,600
		Female	294.13	12,600
		Total	480.50	34,200
	Public	Male	791.36	5,900
		Female	479.45	7,100
		Total	620.41	13,000
	Total	Male	631.91	27,500
		Female	361.11	19,700
		Total	518.98	47,100

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Mean) by Age Band, Sex and Sector (March 2003)				
Age Band (Years)	Private or Public	Sex	Earning (€) Mean	N
Total	Private	Male	634.54	614,000
		Female	419.97	496,700
		Total	538.58	1,110,700
	Public	Male	783.86	94,500
		Female	551.45	166,900
		Total	635.44	261,400
	Total	Male	654.44	708,500
		Female	453.04	663,700
		Total	557.03	1,372,100

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Median) by Age Band (March 2003)				
Age Band (Years)	Private or Public	Sex	Earning (€) Median	N
15-24	Private	Male	348.83	136,000
		Female	296.17	114,400
		Total	323.33	250,300
	Public	Male	500.09	5,900
		Female	467.90	14,100
		Total	477.95	20,000
	Total	Male	355.25	141,800
		Female	314.84	128,500
		Total	333.00	270,300
25-29	Private	Male	533.22	105,800
		Female	433.03	93,500
		Total	488.53	199,300
	Public	Male	611.58	8,600
		Female	555.67	20,500
		Total	572.08	29,000
	Total	Male	539.72	114,400
		Female	451.75	114,000
		Total	499.34	228,400
30-39	Private	Male	632.00	168,400
		Female	418.94	134,200
		Total	538.67	302,600
	Public	Male	711.93	23,900
		Female	541.92	43,000
		Total	618.83	66,900
	Total	Male	643.25	192,300
		Female	444.57	177,300
		Total	552.19	369,500
40-49	Private	Male	662.69	109,600
		Female	349.84	89,100
		Total	507.82	198,700
	Public	Male	846.21	29,200
		Female	542.80	51,500
		Total	655.85	80,600
	Total	Male	696.29	138,700
		Female	400.63	140,600
		Total	544.59	279,300
50-59	Private	Male	620.83	72,700
		Female	324.50	52,900
		Total	496.00	125,600
	Public	Male	899.18	21,100
		Female	511.00	30,700
		Total	701.89	51,800
	Total	Male	672.36	93,800
		Female	370.60	83,600
		Total	530.00	177,400

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Median) by Age Band (March 2003)					
Age Band (Years)	Private or Public	Sex	Earning (€) Median	N	
60+	Private	Male	524.58	21,600	
		Female	253.63	12,600	
		Total	417.00	34,200	
	Public	Male	820.49	5,900	
		Female	407.65	7,100	
		Total	572.00	13,000	
	Total	Male	551.37	27,500	
		Female	270.80	19,700	
		Total	443.04	47,100	
	Total	Private	Male	539.64	614,000
			Female	365.00	496,700
			Total	453.78	1,110,700
Public		Male	743.96	94,500	
		Female	530.42	166,900	
		Total	603.71	261,400	
Total		Male	564.01	708,500	
		Female	392.91	663,700	
		Total	478.96	1,372,100	

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Mean) by Highest Education (March 2003)				
Highest Education	Private or Public	Sex	Earning (€) Mean	N
Primary or Below	Private	Male	548.87	58,200
		Female	269.67	33,800
		Total	446.36	92,000
	Public	Male	552.02	7,600
		Female	239.65	11,500
		Total	364.22	19,100
	Total	Male	549.24	65,900
		Female	262.05	45,300
		Total	432.24	111,100
Lower Secondary	Private	Male	514.00	120,100
		Female	310.72	81,600
		Total	431.76	201,700
	Public	Male	604.98	10,200
		Female	304.54	16,600
		Total	418.50	26,800
	Total	Male	521.10	130,200
		Female	309.67	98,200
		Total	430.20	228,500
Higher Secondary	Private	Male	551.37	179,000
		Female	373.45	168,300
		Total	465.13	347,300
	Public	Male	754.41	21,700
		Female	444.05	35,000
		Total	562.88	56,700
	Total	Male	573.33	200,700
		Female	385.60	203,300
		Total	478.85	404,000
Post Leaving Certificate (Technical/Vocational)	Private	Male	663.59	103,500
		Female	391.77	52,300
		Total	572.34	155,800
	Public	Male	716.99	7,600
		Female	439.61	11,400
		Total	550.55	19,000
	Total	Male	667.25	111,100
		Female	400.35	63,700
		Total	569.97	174,900
Third Level Degree or Above	Private	Male	929.31	93,700
		Female	665.20	81,100
		Total	806.78	174,900
	Public	Male	921.33	36,900
		Female	740.25	68,500
		Total	803.59	105,400
	Total	Male	927.06	130,600
		Female	699.56	149,700
		Total	805.58	280,200

Appendix 1.4 - Earnings Data

Average Weekly Earnings (Mean) by Highest Education (March 2003)				
Highest Education	Private or Public	Sex	Earning (€) Mean	N
Third Level Non Degree (Certificate/Diploma)	Private	Male	696.93	59,500
		Female	462.78	79,600
		Total	562.91	139,000
	Public	Male	751.92	10,500
		Female	542.43	23,900
		Total	606.40	34,400
	Total	Male	705.18	70,000
		Female	481.16	103,400
		Total	571.53	173,400
Total	Private	Male	634.54	614,000
		Female	419.97	496,700
		Total	538.58	1,110,700
	Public	Male	783.86	94,500
		Female	551.45	166,900
		Total	635.44	261,400
	Total	Male	654.44	708,500
		Female	453.04	663,700
		Total	557.03	1,372,100

Appendix 1.4 - Earnings Data

Average weekly earnings (Median) by Level of Education (March 2003)				
Highest Education	Private or Public	Sex	Earning (€) Median	N
Primary or Below	Private	Male	496.00	58,200
		Female	220.08	33,800
		Total	392.61	92,000
	Public	Male	535.25	7,600
		Female	161.94	11,500
		Total	365.99	19,100
	Total	Male	500.00	65,900
		Female	209.97	45,300
		Total	389.59	111,100
Lower Secondary	Private	Male	480.00	120,100
		Female	267.25	81,600
		Total	400.00	201,700
	Public	Male	583.89	10,200
		Female	261.81	16,600
		Total	404.83	26,800
	Total	Male	490.76	130,200
		Female	267.03	98,200
		Total	400.31	228,500
Higher Secondary	Private	Male	462.78	179,000
		Female	349.25	168,300
		Total	400.00	347,300
	Public	Male	721.88	21,700
		Female	403.20	35,000
		Total	521.57	56,700
	Total	Male	488.53	200,700
		Female	358.56	203,300
		Total	410.75	404,000
Post Leaving Certificate (Technical/Vocational)	Private	Male	613.86	103,500
		Female	357.27	52,300
		Total	520.30	155,800
	Public	Male	679.57	7,600
		Female	429.81	11,400
		Total	525.15	19,000
	Total	Male	618.16	111,100
		Female	368.00	63,700
		Total	520.55	174,900
Third Level Degree or Above	Private	Male	777.14	93,700
		Female	572.36	81,100
		Total	673.08	174,900
	Public	Male	940.50	36,900
		Female	747.81	68,500
		Total	801.12	105,400
	Total	Male	830.85	130,600
		Female	643.62	149,700
		Total	726.39	280,200

Appendix 1.4 - Earnings Data

Average weekly earnings (Median) by Level of Education (March 2003)				
Highest Education	Private or Public	Sex	Earning (€) Median	N
Third Level Non Degree (Certificate/Diploma)	Private	Male	605.77	59,500
		Female	424.96	79,600
		Total	482.00	139,000
	Public	Male	753.43	10,500
		Female	508.79	23,900
		Total	598.39	34,400
	Total	Male	630.75	70,000
		Female	439.84	103,400
		Total	499.77	173,400
Total	Private	Male	539.64	614,000
		Female	365.00	496,700
		Total	453.78	1,110,700
	Public	Male	743.96	94,500
		Female	530.42	166,900
		Total	603.71	261,400
	Total	Male	564.01	708,500
		Female	392.91	663,700
		Total	478.96	1,372,100

Appendix 2 - Detailed Econometric Results

Detailed results are presented for all models described and summarised in Section 4.

Appendix 2 - Detailed Econometric Results

In this Appendix, we set out and describe some of the detailed econometric results which underlie the summary results in the main report. The results are based on four different procedures:-

- Ordinary least squares (OLS) and LAD (median) regression results for earnings equations with a public service dummy variable and other explanatory variables or controls (Tables 1 and 2).
- Quantile regressions of earnings equations with a public service dummy variable (Table 3).
- Blinder-Oaxaca regressions and decompositions of public service and private sector earnings (Tables 4, 5 and 6).
- Propensity score matching results (Table 7).

These results are illustrative. The Blinder-Oaxaca results are more general and therefore preferable to the public service dummy variable results. The propensity score results are a check on the Blinder-Oaxaca results.

Table 1

Some illustrate OLS and LAD earnings equations for all employees are set out in Table 1(a). The OLS results show that the estimated public service premium or discount (i.e. the estimated public service coefficient) varies with the choice of explanatory variables or controls, starting from a base specification consisting of the following:

- Sex;
- Age and age squared (to capture nonlinearities);
- Experience;
- Highest education attained (5 included categories);
- Occupation (8 included SOC groups);
- Permanent;
- Full time;
- Hours (and 38 plus hours to capture overtime effects, in the case of weekly earnings).

and then sequentially adding the following:

- Shift work, supervisor and professional body member;
- Union member;
- Establishment with less than 250 employees.

The explanatory variables are similar to those used to examine the public-private sector earnings differential in Ireland (Boyle et. al, 2003) and in the UK (Chaterji and Mumford (2007) and Makepiece and Marcenaro-Guitierrez (2007)). The two UK studies do not include establishment size or union membership as an explanatory variable.¹⁴

The firm size data in Boyle et al. (2003) are very different from the establishment size data in the 2003 National Employment Survey.¹⁵ This is the main reason why we obtain very different results from Boyle et al. (2003) when we include firm size as an explanatory variable. In addition, the estimated public sector earnings premium in table 1(a) is a few percentage points lower than in Boyle et al. (2003). Otherwise, the results are similar.

¹⁴ Union membership and earnings are likely to be simultaneously determined so that causation goes in both directions.

¹⁵ For example, only 14% of the sample in Boyle et al (2003) worked in units with 100 or more employees as opposed to 31% in the NES 2003.

Appendix 2 - Detailed Econometric Results

Industry is not included as an explanatory variable since NACE industry L – Public Administration and Defence is exclusively public service and NACE industry M – Education is largely public service.

The results in Table 1(b) show the estimated public service premium varies by earnings measure (weekly or hourly), gender and employment status (all employees versus full time, permanent employees aged 20 to 59) and the use of weighting factors.

One way to capture the effect of “low pay” industries on the public private sector earnings premium, is to include the aggregate employment shares of each SOC occupation (by NACE industry) as an explanatory variable in the earnings equations.¹⁶ However, when one does this, the estimated public service premia are very similar to those in Table 1(b). This suggests that this sort of “low pay” effect is captured by the existing explanatory variables in the models.

Table 2

The detailed results in Table 2 are typical. They are included to show the high statistical significance of almost all of the econometric results.

Table 3

The quantile regression results in Table 3 show how the public service earnings premium, adjusted for the effect of the explanatory variables or controls, varies across the earnings distribution. The quantile regression results differ from the results one would obtain if you ran ten separate OLS regressions using ten sub-samples based on the deciles of log earnings. As Koenker and Hallock (2001, p147) note:

“We have occasionally encountered the faulty notion that something like quantile regression could be achieved by segmenting the response variable into subsets according to its unconditional distribution and then doing least squares fitting on these subsets. Clearly, this form of “truncation on the dependent variable” would yield disastrous results in the present example. In general, such strategies are doomed to failure for all the reasons so carefully laid out in Heckman’s (1979) work on sample selection.”

Table 4

Table 4 presents some illustrative sets of Blinder Oaxaca OLS regressions. The differences in size of the estimated coefficients between sexes and sectors are very apparent. In most cases, these differences are highly statistically significant.

Table 5

Weighted and unweighted Blinder-Oaxaca results for various groups of public service employees are set out in Tables 5a to 5d. Tables 5b and 5d decomposes the raw public service versus private sector differential in log earnings into an explained component and an unexplained or residual component. The explained component is attributable to (i) differences in the characteristics of employees in the two sectors (e.g. age, experience, education) and (ii) differences in the structure of employment (e.g. occupation) in the two sectors. The estimated contributions of the various sets of explanatory variables – gender, age and experience, education, occupation etc. – are also presented.

¹⁶ Using micro data from the 2003 Quarterly National Household Survey.

Appendix 2 - Detailed Econometric Results

Table 6

The separate Blinder-Oaxaca results for each SOC (occupation) group in Table 6 show how the public service log weekly earnings premium / discount varies by sex and occupation.

Table 7

The propensity score matching results are set out in Table 7. The matching procedure controls for selection on observables (explanatory variables) in a very flexible way. The matching results serve as a useful check on the results in Tables 1 and 5.

Appendix 2 - Detailed Econometric Results

Table 1a - Basic Earnings Equations for All Employees
(Private Sector & Public Service)

Dependent Variable = ln(Earnings)	Weekly Earnings						Hourly Earnings
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	LAD (6)	OLS (7)
Constant	5.89	1.49	1.38	1.35	1.27	1.19	1.26
Public Service (d)	0.31	-0.02	0.05	0.10	0.08	0.09	0.08
Male (d)	0.42	0.14	0.15	0.14	0.15	0.15	0.15
Age	-	0.04	0.04	0.04	0.05	0.04	0.05
Age Squared * 1000	-	-0.50	-0.50	-0.51	-0.54	-0.5	-0.54
Experience * 100	-	0.81	0.81	0.88	0.95	1.01	0.95
<i>Educational Attainment</i>							
- Lower Secondary (d)	-	0.07	0.07	0.07	0.07	0.08	0.07
- Higher Secondary (d)	-	0.15	0.15	0.15	0.16	0.18	0.16
- Post Leaving Cert (d)	-	0.17	0.17	0.17	0.18	0.20	0.18
- Third Level Non Degree (d)	-	0.24	0.24	0.24	0.27	0.29	0.27
- Degree or Higher (d)	-	0.40	0.41	0.41	0.46	0.49	0.46
<i>Occupation (SOC)</i>							
- 1 Managers & Administrators (d)	-	0.45	0.45	0.43	0.51	0.49	0.51
- 2 Professional (d)	-	0.39	0.40	0.39	0.42	0.42	0.42
- 3 Assoc. Professional & Technical (d)	-	0.19	0.20	0.20	0.22	0.21	0.22
- 4 Clerical & Secretarial (d)	-	0.14	0.15	0.14	0.14	0.14	0.14
- 5 Craft & Related (d)	-	0.18	0.17	0.19	0.19	0.20	0.19
- 6 Personal & Protective Services (d)	-	0.09	0.09	0.07	0.08	0.11	0.08
- 7 Sales (d)	-	0.05	0.05	0.04	0.04	0.04	0.04
- 8 Plant & Machine Operatives (d)	-	0.05	0.06	0.07	0.06	0.06	0.06

Table continued overleaf.

Appendix 2 - Detailed Econometric Results

Table 1a (Continued)

	Weekly Earnings						Hourly Earnings
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	LAD (6)	OLS (7)
Full Time (d)	-	0.31	0.32	0.32	0.33	0.33	0.33
Permanent (d)	-	0.06	0.07	0.08	0.08	0.07	0.08
Shift (d)	-	-0.03	-0.02	-0.01 ^x	-	-	-
Supervisor (d)	-	0.12	0.11	0.11	-	-	-
Trade Union Member (d)	-	0.09	0.10	-	-	-	-
Professional Body Member (d)	-	0.11	0.11	0.11	-	-	-
Ln Hours	-	0.85	0.85	0.85	0.86	0.89	-0.14
Ln 38+ Hours * 100	-	-0.04	-0.04	-0.04	-0.04	-0.05	0.04
Less Than 250 Employees (d)	-	-0.11	-	-	-	-	-
Sample Size (000's)	47.0	46.3	46.3	46.3	46.4	46.4	46.4
Adjusted R ²	0.12	0.73	0.72	0.72	0.71	0.71	0.53
Standard Error	0.67	0.37	0.37	0.38	0.38	0.38	0.38

Notes:

- The regression results are unweighted ordinary least squares (OLS) and median or least absolute deviation (LAD) regression results based on the 2003 National Employment Survey.
- Dummy 0/1 indicator variables are denoted by "(d)".
- The omitted education and occupation categories are "Primary or No Formal Education" and "Soc 9, Other Manual Occupations" respectively.
- Coefficient estimates, which are insignificant at the 1% level, are denoted by the superscript "X".
- The weighted results for the public service coefficients are as follows:

	Log Weekly Earnings						Hourly
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	LAD (6)	OLS (7)
Public service – Unweighted	0.31	-0.02	0.05	0.10	0.08	0.09	0.08
Public service – Weighted	0.29	0.01 ^x	0.06	0.12	0.11	n/a	0.11

Appendix 2 - Detailed Econometric Results

Table 1b - Summary of Estimated Public Service Premia
OLS Regression with Public Service Dummy Variable Results using Baseline Model

	Weekly Earnings			Hourly Earnings
	Males & Females	Males	Females	
All Employees				
Unweighted	0.08 (0.005)	0.05 (0.008)	0.10 (0.006)	0.07 (0.005)
Weighted	0.11 (0.006)	0.09 (0.009)	0.13 (0.007)	0.10 (0.005)
Full Time Permanent Employees Aged 25 to 59				
Unweighted	0.06 (0.006)	0.02 (0.008)	0.10 (0.008)	0.04 (0.006)
Weighted	0.11 (0.007)	0.07 (0.010)	0.13 (0.009)	0.09 (0.007)

Note: OLS heteroscedastic robust standard errors in parentheses.

Appendix 2 - Detailed Econometric Results

Table 2 - Estimates of Basic Model in Column (5) of Table 1a

Dependent Variable = ln(Weekly Earnings)	OLS Estimates		
	Coeff	Std. Error	t Stat
Constant	1.27	0.03	41.1
Public service	0.08	0.01	16.1
Male	0.15	<.01	36.3
Age	0.05	<.01	43.2
Age Squared / 1000	-0.54	0.01	-40.4
Experience / 100	0.95	0.03	31.0
Education - Lower Secondary	0.07	0.01	8.5
Education - Higher Secondary	0.16	0.01	19.8
Education - Post Leaving Cert	0.18	0.01	20.1
Education - Third Level Non Degree	0.27	0.01	30.0
Education - Degree or Higher	0.46	0.01	48.8
SOC 1 Managers & Administrators	0.51	0.01	47.5
SOC 2 Professional	0.42	0.01	50.1
SOC 3 Assoc. Professional & Technical	0.22	0.01	28.2
SOC 4 Clerical & Secretarial	0.14	0.01	19.8
SOC 5 Craft & Related	0.19	0.01	20.5
SOC 6 Personal & Protective Services	0.08	0.01	8.9
SOC 7 Sales	0.04	0.01	5.1
SOC 8 Plant & Machine Operatives	0.06	0.01	7.5
Full Time	0.33	0.01	43.8
Permanent	0.08	0.01	13.3
Ln Hours	0.86	0.01	103.3
Ln 38+ Hours * 100	-0.04	<.01	-33.4

Adjusted R² = 0.71, Std Error = 0.38. Heteroscedastic consistent standard errors are reported.

Appendix 2 - Detailed Econometric Results

Table 3 - Quantile Regression Results
Variations in the Estimated Public Service Log Weekly Earnings Premium or Discount
across the Earnings Distribution

	Percentile								
	10%	20%	30%	40%	50%	60%	70%	80%	90%
	All Employees								
Males & Females	+0.14 (0.02)	+0.15 (0.01)	+0.13 (0.01)	+0.10 (< 0.01)	+0.09 (< 0.01)	+0.07 (< 0.01)	+0.05 (0.01)	+0.03 (0.01)	-0.03 ^x (0.02)
Males	+0.14 (0.03)	+0.13 (0.01)	+0.10 (0.01)	+0.08 (0.01)	+0.05 (0.01)	+0.03 (0.01)	+0.01 ^x (0.01)	-0.04 (0.01)	-0.10 (0.03)
Females	+0.14 (0.02)	+0.15 (0.01)	+0.13 (0.01)	+0.11 (0.01)	+0.11 (< 0.01)	+0.09 (0.01)	+0.09 (0.01)	+0.06 (0.01)	+0.01 ^x (0.02)
	Full-time, Permanent Employees, Aged 25 to 59								
Males & Females	+0.15 (0.02)	+0.15 (0.01)	+0.12 (0.01)	+0.09 (0.01)	+0.07 (< 0.01)	+0.04 (0.01)	-0.00 ^x (0.01)	-0.04 (0.01)	-0.10 (0.02)
Males	+0.12 (0.03)	+0.11 (0.02)	+0.08 (0.01)	+0.05 (0.01)	+0.02 (0.01)	-0.00 ^x (0.01)	-0.04 (0.01)	-0.08 (0.02)	-0.14 (0.03)
Females	+0.19 (0.03)	+0.18 (0.02)	+0.15 (0.01)	+0.12 (0.01)	+0.09 (0.01)	+0.05 (0.01)	+0.03 (0.01)	-0.02 ^x (0.02)	-0.07 (0.03)

Notes:

- The estimated premium or discounts are the estimated public service coefficients in a set of quantile regression of $\ln(\text{weekly earnings})$ on the following explanatory variables: (sex), age, age squared, experience, highest educational level attained, SOC occupation, (full time employee), (permanent employee), and hours of work (\ln hours and \ln hours if hours ≥ 38).
- Approximate standard errors are shown in parentheses below the coefficient estimates. Insignificant estimates are denoted by a superscript "X".
- The sample consists of public and private sector employees only. Employees of semi-state bodies are excluded.
- The results are unweighted.

Appendix 2 - Detailed Econometric Results

Table 4 - Separate OLS Earnings Equations for Male and Female Employees
Private Sector and Public Service Only

Dependent Variable = ln(Earnings)	Weekly Male Earnings		Weekly Female Earnings	
	Public	Private	Public	Private
Constant	1.79	.86	2.1	1.34
Age	0.05	0.06	0.03	0.42
Age Squared / 1000	-0.42	-0.68	-0.30	-0.51
Experience / 100	0.56	0.87	1.44	0.77
<i>Educational Attainment</i>				
- Lower Secondary (d)	0.11	0.06	0.11	0.03
- Higher Secondary (d)	0.18	0.14	0.21	0.12
- Post Leaving Cert (d)	0.21	0.17	0.21	0.10
- Third Level Non Degree (d)	0.25	0.23	0.33	0.20
- Degree or Higher (d)	0.50	0.40	0.54	0.34
<i>Occupation (SOC)</i>				
- 1 Managers & Administrators (d)	0.57	0.52	0.54	0.53
- 2 Professional (d)	0.36	0.42	0.44	0.48
- 3 Assoc Professional & Technical (d)	0.17	0.30	0.19	0.34
- 4 Clerical & Secretarial (d)	0.09	0.09	0.18	0.20
- 5 Craft & Related (d)	0.12	0.18	-	0.00 ^x
- 6 Personal & Protective Services (d)	0.37	-0.06	0.30	0.05
- 7 Sales (d)	-	0.08	-	0.04
- 8 Plant & Machine Operatives (d)	0.08	0.03	-	0.05
Full Time (d)	0.33	0.34	0.40	0.25
Permanent (d)	0.10	0.12	0.06	0.06
Ln Hours	0.75	0.96	0.72	0.91
Ln 38+ Hours * 100	-0.07	-0.04	-0.06	-0.03
Sample Size (000's)	5.2	17.6	6.8	16.7
Adjusted R ²	0.64	0.62	0.75	0.74
Standard Error	0.31	0.41	0.34	0.36

Notes:

- See Notes to Table 1. The results are unweighted.
- No coefficients are estimated for some SOC groups where the sample numbers are small e.g. public service males in SOC 7 and public service females in SOCs 5, 7 and 8.

Appendix 2 - Detailed Econometric Results

Table 5a - Estimated Public Service Premia or Discounts in Log Earnings with Different Sets of Explanatory Variables in the Regression Models

Unweighted Blinder-Oaxaca Decompositions

Explanatory Variables in Models	Weekly Earnings	Hourly Earnings	Male Weekly Earnings	Female Weekly Earnings
All Employees				
(I) Basic Specification	+0.10 (0.006)	+0.09 (0.006)	+0.07 (0.009)	+0.13 (0.009)
(II) = (I) Plus Shift, Supervise & Professional Body Member	+0.12	+0.12	+0.09	+0.16
(III) = (II) Plus Union Member	+0.06	+0.05	+0.02	+0.11
(IV) = (III) Plus No. of Employees < 250	-0.01	-0.02	-0.03	+0.03
Full-Time, Permanent Employees, Aged 25 to 59				
(I) Basic Specification	+0.10 (0.008)	+0.08 (0.006)	+0.05 (0.009)	+0.15 (0.013)
(II) = (I) Plus Shift, Supervise & Professional Body Member	+0.12	+0.11	+0.07	+0.20
(III) = (II) Plus Union Member	+0.06	+0.05	+0.01	+0.15
(IV) = (III) Plus No. of Employees < 250	-0.00	-0.02	-0.04	+0.06

Notes:

- Results based on Blinder-Oaxaca decompositions using private sector returns to calculate the public service premium (+) or discount (-) in log earnings.
- The explanatory variables in the basic regression specification for “All Employees” are male, age, age squared, experience, highest educational level attained, SOC occupation, full time employee, permanent employee, hours of work (ln hours and ln hours if hours >= 38).
- The basic specification was augmented with the following explanatory variables - (II) shift work, supervising staff, member of professional body, (III) union member and (IV) number of employees less than 250.
- Some bootstrapped standard errors are presented in parentheses.

Appendix 2 - Detailed Econometric Results

**Table 5b - Components of the Blinder-Oaxaca Decompositions
Unweighted Results in Table 5a**

	Log Weekly Earnings	Log Hourly Earnings	Log Male Weekly Earnings	Log Female Weekly Earnings
All Employees				
- Sex	-0.01	-0.01	-	-
- Age & Experience	0.07	0.07	0.08	0.06
- Education	0.06	0.06	0.04	0.07
- Occupation	0.12	0.13	0.06	0.16
- Full Time & Permanent	0.01	0.00	0.01	0.01
- Hours	-0.06	-	-0.03	-0.06
Explained Premium	0.18	0.25	0.16	0.24
Unexplained / Residual	0.10	0.09	0.07	0.13
Public service Premium	0.28	0.34	0.24	0.37
Full Time, Permanent Employees Aged 25 to 59				
- Sex	-0.02	-0.02	-	-
- Age & Experience	0.05	0.05	0.05	0.04
- Education	0.07	0.07	0.04	0.09
- Occupation	0.11	0.12	0.05	0.16
- Full Time & Permanent	-	-	-	-
- Hours	-0.08	-	-0.03	-0.11
Explained Premium	0.12	0.22	0.11	0.18
Unexplained / Residual	0.10	0.08	0.05	0.15
Public service Premium	0.22	0.30	0.17	0.33

Note:

- The explanatory variables in the base models are gender, age, age squared, experience, highest educational level attained, SOC occupation, full time employee, permanent employee, and hours of work (ln hours and ln hours if hours >= 38).

Appendix 2 - Detailed Econometric Results

Table 5c - Estimated Public Service Premia or Discounts in Log Earnings with Different Sets of Explanatory Variables in the Regression Models

Weighted Blinder-Oaxaca Decompositions

Explanatory Variables in Models	Weekly Earnings	Hourly Earnings	Male Weekly Earnings	Female Weekly Earnings
All Employees				
(I) Basic Specification	0.12 (0.007)	0.12 (0.008)	0.11 (0.009)	0.14 (0.011)
(II) = (I) Plus Shift, Supervise & Professional Body Member	0.14	0.14	0.12	0.17
(III) = (II) Plus Union Member	0.07	0.07	0.06	0.11
(IV) = (III) Plus No. of Employees < 250	0.01	0.01	0.01	0.02
Full-Time, Permanent Employees, Aged 25 to 59				
(I) Basic Specification	0.13 (0.009)	0.12 (0.009)	0.09 (0.009)	0.16 (0.014)
(II) = (I) Plus Shift, Supervise & Professional Body Member	0.15	0.14	0.11	0.20
(III) = (II) Plus Union Member	0.08	0.07	0.04	0.15
(IV) = (III) Plus No. of Employees < 250	0.03	0.01	-0.01	0.07

Notes:

- See Table 5(a).
- The CSO grossing factors are used to weight the OLS regressions and Blinder-Oaxaca results.
- Bootstrapped standard errors are show in parentheses.

Appendix 2 - Detailed Econometric Results

**Table 5d - Components of the Blinder-Oaxaca Decompositions
Weighted Results in Table 5c**

	Log Weekly Earnings	Log Hourly Earnings	Log Male Weekly Earnings	Log Female Weekly Earnings
All Employees				
- Sex	-0.03	-0.03	-	-
- Age & Experience	0.08	0.08	0.11	0.06
- Education	0.07	0.07	0.07	0.06
- Occupation	0.09	0.10	0.06	0.11
- Full Time & Permanent	-0.01	-0.01	0.01	0.00
- Hours	-0.12	-	-0.06	-0.09
Explained Premium	0.08	0.21	0.18	0.14
Unexplained/Residual	0.12	0.12	0.11	0.14
Public service Premium	0.20	0.33	0.29	0.28
Full Time, Permanent Employees Aged 25 to 59				
- Sex	-0.04	-0.03	-	-
- Age & Experience	0.04	0.04	0.05	0.04
- Education	0.08	0.09	0.06	0.09
- Occupation	0.07	0.09	0.03	0.11
- Full Time & Permanent	-	-	-	-
- Hours	-0.09	-	-0.05	-0.11
Explained Premium	0.06	0.19	0.09	0.13
Unexplained/Residual	0.13	0.12	0.09	0.16
Public service Premium	0.19	0.31	0.19	0.29

Notes:

- The explanatory variables in the base models are gender, age, age squared, experience, highest educational level attained, SOC occupation, full time employee, permanent employee, and hours of work (ln hours and ln hours if hours >= 38).
- The underlying OLS models and results are grossed up using the CSO weighting factors.

Appendix 2 - Detailed Econometric Results

**Table 6 - Public Service Premia or Discounts in Log Earnings by Occupation
Blinder-Oaxaca Decompositions**

Occupation (SOC)	All Employees				Full-time, Permanent Employees, Aged 25 to 59			
	Weekly Earnings	Hourly Earnings	Male Weekly Earnings	Female Weekly Earnings	Weekly Earnings	Hourly Earnings	Male Weekly Earnings	Female Weekly Earnings
1. Managers & Administrators	+0.13	+0.07	+0.11	+0.17	+0.12	+0.04	+0.10	+0.18
2. Professional	+0.18	+0.20	+0.08	+0.26	+0.17	+0.18	+0.04	+0.29
3. Assoc. Professional & Technical	-0.09	-0.14	-0.15	-0.04	-0.13	-0.20	-0.17	-0.07
4. Clerical & Secretarial	+0.10	+0.11	+0.06	+0.12	+0.07	+0.07	+0.03	+0.09
5. Craft & Related	+0.00	+0.01	-0.02	-	-0.01	-0.00	-0.03	-
6. Personal & Protective Services	+0.33	+0.27	+0.33	+0.30	+0.30	+0.26	+0.31	+0.30
7. Sales	-	-	-	-	-	-	-	-
8. Plant & Machine Operatives	+0.11	+0.11	+0.11	-	+0.09	+0.09	+0.09	-
9. Other	+0.06	+0.06	+0.03	+0.07	+0.13	+0.12	+0.03	+0.36

Notes:

- Results based on Blinder-Oaxaca decompositions for each SOC group and separate OLS regressions for the public service and private sectors.
- The results are based on the unweighted 2003 NES data and exclude employees of semi-state bodies.
- The explanatory variables in the regressions are age, age squared, experience, highest educational level attained, full time employee, permanent employee, shift work, supervising staff, member of professional body, hours of work (ln hours and ln hours if hours >= 38).
- The Blinder-Oaxaca decomposition has not been calculated for cells with small samples numbers.
- The results are unweighted.

Appendix 2 - Detailed Econometric Results

**Table 7 - The Estimated Public Service Premia in Log Weekly Earnings
Propensity Score Matching Results**

	Sample Nos (000's)		Public Service Log Earnings Premium	
	Public Service	Matched Private Sector Controls	Estimate	Std. Error
All Employees				
- Males & Females	12.0	6.0	+0.10	0.02
- Males	5.2	2.7	+0.06	0.02
- Females	6.8	3.1	+0.12	0.02
Full-Time, Permanent Employees, Aged 25 to 59				
- Males & Females	8.2	3.6	+0.09	0.02
- Males	4.1	2.0	+0.06	0.02
- Females	4.1	1.6	+0.13	0.03

Notes:

- The matched estimates are based on the nearest neighbour, propensity score matching procedure and software described in Becker and Ichino (2002). Similar results were obtained using other variants of the propensity score matching algorithms (nearest five neighbours and kernel matching).
- The results are based on the unweighted 2003 data.
- The sample consists of public service and private sector employees only. Male employees in SOC 7 and female employees in SOCs 5, 7 and 8 are excluded from the analysis since there were very few public service employees in these SOCs in the NES sample.
- The matching used the following control variables: age, age squared, experience, highest educational level attained, SOC occupation, (full time employee), (permanent employee), and hours of work (ln hours and ln hours if hours >= 38).

Appendix 3 - Literature Review

A number of recent papers have examined the public-private sector wage differential in Ireland. These are summarised and reviewed below.¹⁷

(a) Casey (2004)

Casey (2004) uses macroeconomic earnings data for full time employees to construct aggregate and sectoral hourly earnings indicators for the period 1998 Q1 to 2003 Q3. Inter alia, he finds that the public sector (excluding health) had the largest earnings premium over the State average - over 30%. However, over this period, earnings grew proportionally faster (about 1.5% p.a.) in the private sector which led to a reduction in the public sectors earnings premium over the State average. Casey's results are for hourly earnings only and do not control for important differences in the composition (e.g. age, sex and education) of the workforce by sector.

(b) Boyle, McElligott and O'Leary (2004)

Boyle, McElligott and O'Leary estimate a range of Mincer type earnings equations to analyse earnings differentials between the public and private sectors in Ireland over the period 1994 to 2001. They present estimates based on:

- Ordinary least squares (OLS);
- OLS with interaction effects between the public sector dummy variable and some of the other explanatory variables;
- Quantile regressions (used to examine the public sector premium at various points in the earnings distribution).

The OLS based results are very consistent.¹⁸

Boyle et al.'s analysis is based on Irish component of the European Community Household Panel (ECHP). There are advantages and disadvantages in using the ECHP. It is a panel so the same individuals are followed over time which, in principle, allows you to control for unobserved individual effects etc. In practise, since the ECHP data set is relatively small, this may be hard to do. For example, the number of individuals switching from the private to the public sector or vice versa is relatively small. In addition, attrition bias (loss of individuals over time from the sample) may be important. Boyle et al. (2004) analyse the earnings of 3,246 individuals in 1994 and only 1,494 of the same individuals in 2001.

Boyle et al. find that Irish public sector employees are on average much better-paid than their private sector counterparts. In 2001 the margin was 46 per cent when measured in terms of gross monthly earnings. This reflects the fact that public sector workers are typically better endowed with the kind of attributes that attract higher pay - they tend to be older, more experienced and better educated. They also tend to work in more highly-skilled jobs and in bigger establishments.

¹⁷ There is a large international literature on this topic. For example, Allington and Morgan (2003) review fourteen studies for the UK, carried out over the three decades. Gregory and Borland (1999) review the international literature

¹⁸ In an earlier version of their paper, Boyle et al. present some additional results - OLS with matched samples to control for selection on observable explanatory variables; fixed effects regressions to control for unobservable personal and other characteristics which may be correlated with the included explanatory variables; fixed effects with an instrumental variable (IV) to control for endogeneity (joint determination) of the public sector dummy variable. Unfortunately, the fixed effects samples are restricted to the sub-sample of individuals who switched sector. In addition, we do not know how relevant (ie good) the instrument used in the fixed effects - instrumental variable procedure is.

Appendix 3 - Literature Review

However, even when such differences are accounted for, employees earn more in the public sector than the private sector. Boyle et al. estimate that the public sector premium was 13% in 2001. Their results suggest that the premium did not change significantly between 1994 and 2001, a finding which is at odds with the widespread perception that public servants 'fell behind' over this period.

Boyle et al. suggest that the public sector premium for Ireland is substantially larger than estimates derived by other researchers (and based on similar methodology) for other countries. They suggest that recent research indicates that public sector premiums in the late 1990's were in the range 4%-6% in France, Italy and the UK (Lucifora and Meurs, 2006). However, there are a range of estimates in the literature. For example, Disney and Gosling (2003) report estimated public sector wage differentials of 4.6% for males and 17.2% for females in the UK in the 1990's.

(c) O'Connell and Russell (2006)

O'Connell and Russell compared the wages of recent third level graduates working in the public and private sectors in Ireland. They used data for 2,800 individuals from a follow up survey with a quite low response rate of 29%. They find that, on average, recent graduates in the public sector earn 30% more per hour than those in the private sector. This public sector premium falls to 20% when a wide range of factors that influence wages (e.g. sex, level and field of qualification and occupation) are controlled for.¹⁹ Of course, these results may be distorted by the low average hours in teaching so it is probably better to look at monthly earnings.

Among graduates working full time, O'Connell and Russell find that public sector workers earn an average of 14% more per month. After controlling for compositional factors, the monthly public sector premium falls to 9%. Bonus payments are more common in the private sector. When these are taken into account, the monthly earnings gap narrows further to 7%. These results are lower than the ones Boyle et al. (2004) report. However, the two sets of researchers are looking at different samples so the estimates of the public sector premium are not directly comparable.

¹⁹ O'Connell and Russell estimate a Mincer type wage equation for both males and females combined using OLS and a public sector dummy. The public sector dummy is not interacted with the other explanatory variables. They also estimate a model with an insignificant Heckman's lambda term to control for selection on unobservables.