



**An Phríomh-Oifig Staidrimh**  
Central Statistics Office

## **CSO Research Paper**

### **Econometric analysis of the public/private sector pay differential**

**2011 to 2014**



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## Executive Summary

This research paper presents an econometric analysis of the public/private sector pay differential for the period 2011 to 2014 and has been prepared in response to user needs to inform discussions relating to the composition of earnings.

The methodology employed in this analysis is different to those previously used by the Central Statistics Office. In the past, analysis of the public/private sector pay differential was based on data from the structure of earnings survey, namely the National Employment Survey (NES). However this survey was discontinued in 2009.

In the absence of a structural survey, alternative approaches were investigated and the CSO identified that the most suitable approach was to match a combination of available survey data and administrative data sources. The sources used are the CSO's Quarterly National Household Survey (QNHS) and the Revenue Commissioners P35 file. The QNHS data provides a continuous source of employee data (e.g. age, education, occupation, public/private sector employer, etc.) on an annual basis in the absence of a structure of earnings survey.

The methods used in these analyses are: Ordinary Least Squares Regression (OLS); and Quantile/Percentile Regression. For each of these methods, results based on a range of specifications are presented.

Results from the OLS Regression model show a public/private sector pay differential ranging from 9.2% in 2011 to 5.05% in 2014, for the model which includes size of enterprise as a determining factor. Results for the OLS model which deducts the pension levy and excludes size shows a pay differential ranging from 3.21% to -0.036%. See Table 1. The pay differential is greater for women than for men.

Summary results from the Quantile Regression model show a public/private sector pay differential in 2014 ranging from 11.2% at the 10<sup>th</sup> percentile to -12.5% at the 90<sup>th</sup> percentile for the model which deducts the pension levy and includes size of enterprise as a determining factor. See Figure 2.1 and Table D.8. The corresponding model which makes no adjustment for the pension levy and excludes size shows a pay differential in 2014 ranging from 20% at the 10<sup>th</sup> percentile to -7.4% at the 90<sup>th</sup> percentile. See Table D.4. Again, the pay differential is greater for women than for men.

A selection of the results from the regression models are presented in this paper to demonstrate the range of results obtained from the different model specifications. Further analyses are available for various specifications of the models, on request.

## 1. Introduction

This research paper has been prepared in response to user needs to inform discussions relating to the composition of earnings and presents analysis in relation to the public/private sector pay differential.

The analysis is similar to previous work carried out by the CSO on the Public/Private sector pay differential<sup>1,2,3</sup> where the statistical analysis takes into account the differences in characteristics of employees and their employment in both sectors. The attributes of the employees (e.g. educational attainment, experience, hours worked etc.) and the characteristics of their employer (e.g. size of organisation etc.) were used to further explore the wage differential between the two sectors. In common with previous publications this analysis does not compare similar jobs between the public and private sectors. For example, An Garda Síochána and Defence Forces personnel are found exclusively within the public sector, while persons engaged in the Accommodation and Food Services, Manufacturing and Construction are found exclusively in the private sector.

Estimates of the wage differential are sensitive to the choice of model specification and to the methodology applied<sup>3</sup>. For this reason, rather than attempting to estimate one single definitive answer, this paper presents a range of different results. Models including and excluding size of enterprise (at the local unit level) as a wage determining characteristic are presented and gross weekly earnings as well as weekly earnings after the deduction of the pension levy are considered. In line with Kelly et al (2009a and b) and Murphy and Ernst & Young (2007), we restrict the sample of employees considered here to a cohort consisting of permanent, full-time employees, aged 25-59 years. Separate analyses are also presented for males and females.

The methods used in these analyses are: Ordinary Least Squares Regression (OLS); and Quantile/Percentile Regression. For each of these methods, a range of specifications are also presented: size of an enterprise at local unit level as a wage determining characteristic included and excluded, weekly gross earnings and earnings after the deduction of the public sector pension levy. The result of all these analyses is a range of public/private sector pay differentials. A summary of the models used is detailed in Section 6.

The full range of estimates of the public/private sector pay differential for all employees (males and females) and separately for males and females, are presented in this paper.

Traditionally econometric analysis of the public/private sector pay differential would be based on data from a structural survey of earnings. However due to budgetary pressures no such survey has been carried out since 2009. In the absence of structural earnings data, the CSO investigated alternative approaches to allow for a detailed econometrics analysis.

The approach taken in developing the methodology for this analysis was to use a combination of survey data and administrative sources based on the individual characteristics of employments available from the CSO's Quarterly National Household Survey (QNHS) and matching it with earnings data for corresponding individual employments from the Revenue Commissioners P35 file for the period 2011 to 2014.

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<sup>1</sup> CSO(2012) Specific Analysis of the Public/Private Sector Pay Differential for National Employment Survey 2009 & 2010 Data.

<sup>2</sup> CSO (2012), National Employment Survey 2009 and 2010 Supplementary Analysis

<sup>3</sup> Foley, P. & F. O'Callaghan (2009), "Investigating the Public-Private Wage Gap in Ireland using Data from the National Employment Survey", *Journal of the Statistical and Social Inquiry Society of Ireland*, Vol. XXXIX, pp 23-52.

## **1.1 Specifications included in the analysis**

The analysis presented in this paper looks at the impact of both the inclusion and the exclusion of the Pension Levy with respect to Public Sector pay.

The analysis provides breakdowns on the basis of gender using the classifications Male, Female and All (Males & Females).

The results presented have categorised commercial semi-state organisations as private sector. Employees in commercial semi-state organisations are not required to pay the public sector pension levy.

Models including and excluding size of enterprise as an explanatory variable are presented. It should be noted that the size of enterprise used in the NES analysis was the size of the parent unit whereas the size of enterprise used here is the size of the local unit as collected in the QNHS. Also, the NES analysis classified companies with less than 250 employees as “small” and greater than or equal to 250 employees as “large” whereas this analysis uses a cut-off of 100 employees to distinguish between small and large.

## **2. Summary of issues surrounding the comparison of pay in the Public and Private sectors**

Comparing pay in the public and private sectors is not a straightforward task. A range of different results can be derived depending on the methodology or model specification used to estimate pay differentials. Complexity also arises as the composition of the two sectors are heterogeneous, comprising of a variety of different industries, occupations and workers who themselves come with a variety of education, experience and skill sets.

Using the simple mean (or median) hourly or weekly pay to compare earnings across the public and private sectors will therefore, most likely, be misleading. For example, pay differentials may arise from a range of structural differences: skill levels required for a particular job; experience; qualifications; or location. Typically the relative distribution of men and women also has an impact. For these reasons CSO have employed a number of multivariate statistical techniques in an attempt to standardize these effects and present comparable data.

The methods used in this report build on the peer reviewed methods used in previous CSO analysis of the public/private pay differential. Expert opinion varies regarding a number of key issues, such as, whether to take size of enterprise into account as an explanatory variable or even which model to use. Thus, on a number of technical issues no unanimity exists within the international literature. These differences in approach can result in significantly different results.

This report follows on from previously published CSO information using data from the NES to analyse the wage differential between the public and private sectors in Ireland. In order to present balanced, comprehensive and objective analyses, and reflecting the lack of international agreement as to the best measure of calculating public/private wage differentials, a comprehensive spectrum of results are presented in this report. Consequently, several estimates of the wage differential are presented.

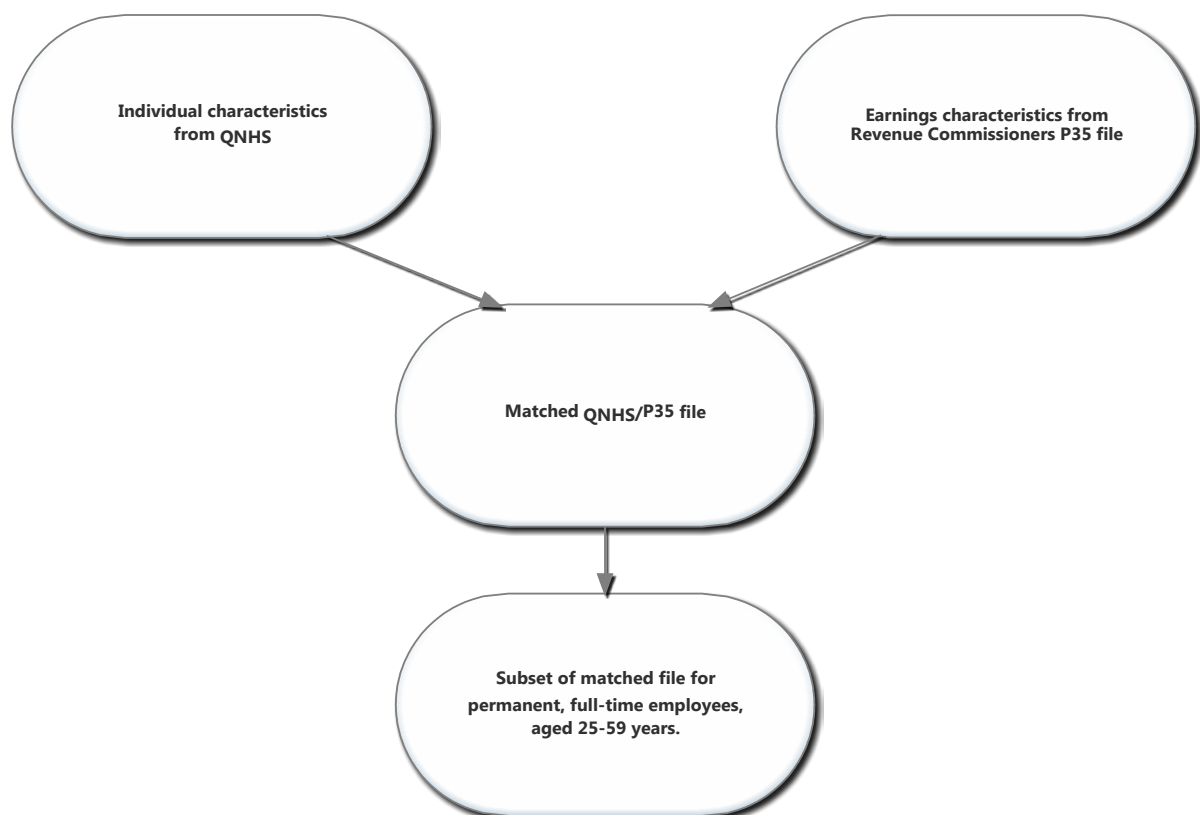
While this presents a wide range of information and choices for analysis it is important that readers understand there is no single, best measure of the public/private wage gap. Thus any attempt to present a single, definitive, public/private pay differential would be subjective and prone to over simplification.

### 3. Methodology adopted

The analysis in this research paper is based on matching the individual characteristics of respondents to the CSO's QNHS with corresponding earnings data from the Revenue Commissioners P35 file.

This approach was taken in the absence of the NES survey, as the CSO sought an alternative source of data which would provide information on the earnings of employees in both the public and private sectors. The QNHS provided a consistent source of information on the individual attributes of the employees surveyed, and it was linked to the P35 revenue income data to provide information on earnings for each individual employee.

#### *Summary of methodology used*



## 4. Data Sources

### 4.1 Revenue Commissioners P35 Earnings Data

Earnings data was taken from the P35 data used to compile the CSO's publication Earnings Analysis from Administrative Data Sources (EAADS)<sup>4</sup> which provides analysis of earnings data for PAYE individuals for the period 2011 to 2014. The relevant variables used are:

- CSOPPSN<sup>5</sup>
- Gross Annual Earnings
- Weeks worked
- Weekly Earnings
- Public/Private sector status
- NACE Principal Business Activity

When creating the EAADS dataset a number of records were removed from the analysis file based on the criteria below:

- Instances where individual employments earned less than €500 per annum
- Employments where the duration was less than two weeks in the year
- Instances of employments with extremely high earnings<sup>6</sup>
- Employments with missing employer and employee reference numbers
- Employments with activity in NACE sectors A (Agriculture), T (Household Activities) and U (Activities of Extra Territorial Organisations)

As some individuals had multiple employments across more than one sector/occupation, it was necessary to identify their principal employment – this was done by selecting the employment with the highest annual earnings on the EAADS file. The impact of this is that in the matching process for 2011, for example, a total of approximately 115,000 secondary employments were dropped from the P35 revenue file (1.97 million employments). These secondary employments were mainly in the Wholesale & Retail sector and the Health sector (approximately 17,000 and 16,000 employments respectively). Also, approximately 10,000 secondary employments were dropped from the Education sector representing instances where employees in this sector receive small additional incomes in the course of teaching duties.

### 4.2 QNHS Data

Quarterly data from the QNHS was combined to create an annual pooled dataset for each year for the period 2011 to 2014. The dataset only contains persons who are in employment and have no missing values for the variables listed below. Only one record of employment per person is taken.

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<sup>4</sup> <http://www.cso.ie/en/releasesandpublications/er/eaads/earningsanalysisusingadministrativedatasources2011-2014/>

<sup>5</sup> CSOPPSN is a number which is unique for each person but which protects the anonymity of the person. This number is used by the CSO to ensure confidentiality when carrying out statistical analysis of personal administrative data.

<sup>6</sup> Outliers were identified as values lying outside of the range[ 25<sup>th</sup> percentile - 3\*IQR, 75<sup>th</sup> percentile +3\*IQR]



The following variables were used in order to create a file containing the relevant employee characteristics for matching with the EAADS data:

- CSOPPSN
- Gender
- Nationality
- Age
- Full-time/Part-time status
- Supervisor status
- Temporary/Permanent status
- Shift work status
- Usual Hours worked
- Overtime Hours
- Length of service with current employer
- Union Membership Status
- Occupation (UK SOC 10) Highest level of education
- Firm Size class (1-99 & 100 +) – based on local unit
- Grossing Factor

#### 4.3 Matching process

The CSOPPSN was used as the common identifier between both the QNHS and EAADS data. The matched QNHS dataset contains the following variables:

CSOPPSN	EAADS/QNHS
Gender	QNHS
Public/Private sector status	EAADS
NACE Principal Business Activity	EAADS
Age	QNHS
Nationality	QNHS
Gross Annual Earnings	EAADS
Weeks Worked	EAADS
Weekly Earnings	EAADS
Supervisor status	QNHS
Full-time/Part-time status	QNHS
Temporary/Permanent status	QNHS
Shift work status	QNHS
Usual Hours worked - adjusted	QNHS
Overtime Hours	QNHS
Length of service with current employer	QNHS
Union Membership Status	QNHS
Occupation (UK SOC 10)	QNHS
Grossing Factor	QNHS
Highest level of education	QNHS
Firm Size class (1-99 & 100 +)	QNHS

## 4.4 Grossing & Calibration

The QNHS grossing factor was calibrated to the EAADS population using parameters for both:

- Gender, Public/Private sector status and Age class
- Gender and NACE Sector

## 5. Public Sector Pension Levy Deducted from Gross Pay - Quantitative Analysis

The public sector pension-related deduction (known as the *pension levy*) was introduced with effect from 1st March 2009 via the *Financial Emergency Measures in the Public Interest Act 2009*<sup>7</sup>, which was originally enacted by the Oireachtas in February 2009. The rates and bands were adjusted to reduce the proportion of the levy on low earners, effective from 1st May 2009, when the Act was amended in Part 4 of the *Social Welfare and Pensions Act 2009*.

The pension levy rates are given in Figure 1 below. The general rate from 2011 onwards is that employees earning up to €15,000 are exempt from the levy.

The results of these analyses contained in this report are presented with and without the public sector pension levy.

### 2011- 2014 Pension Levy Rates

**Fig. 1: Rates for 2011 - 2014**

Amount of Remuneration	Rate of deduction %	Rate of deduction %
€	2011-2013	2014
Up to €15,000	Exempt	Exempt
Any excess over €15,000 but not over €20,000	5%	2.5%
Any excess over €20,000 but not over €60,000	10%	10%
Any amount over €60,000	10.5%	10.5%

<sup>7</sup> The purpose of this Act was to introduce a number of financial emergency measures in the public interest.

## 6. Methods used for analysis

The two methods used in this analysis are:

- a) Ordinary least squares regression (OLS)
- b) Quantile regression

In keeping with other published analysis examining the public/private pay differential (including previous analysis of NES data), the models used in this analysis concentrate on permanent, full-time employees aged between 25 and 59.

### (a) OLS regression

An ordinary least squares (OLS) regression was used to model the natural log of weekly earnings on a set of explanatory variables that account for some of the variation in earnings. This standard OLS model is widely used in the analysis of gender and public/private wage gaps in both the national and international literature. The approach adopted in this report is similar to that used in Belman and Heywood (2004) and used the following explanatory variables:

- Occupation,
- Educational attainment,
- Gender,
- Public or Private sector,
- Nationality,
- Membership of a trade union,
- Age,
- Age-squared<sup>8</sup>,
- Size of local unit,
- Length of service with current employer,
- Log of overtime hours worked,
- Log of hours worked,
- Shift work and
- Supervisory status.

The approach is sometimes referred to as a hybrid approach (Belman and Heywood (1996), Bender and Elliott (2002)) in that it accounts both for differences in the characteristics of the employees in the two sectors, and for differences in the characteristics of the workplace. Models both including and excluding size of the local unit as an explanatory variable were considered in this analysis.

### (b) Quantile Regression

OLS regression is limited in the information that it can provide about earnings as it only estimates average earnings corresponding to the various explanatory variables. Quantile regression is used when an estimate at various points in the distribution is required (quantiles or percentiles) rather than simply estimating the mean. It is widely used in the literature on the public/private sector wage gap as it allows us to examine how the public sector differential varies across the earnings distribution.

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<sup>8</sup> Age-squared was used as an explanatory variable to capture the non-linear relationship between earnings and age.

## 7. Results of the Analysis

### 7.1 Ordinary Least Squares Regression (OLS)

The OLS regression results for the period 2011 to 2014 are presented in Table 1 below. These results show the estimated public sector pay differential taking account of when the pension levy is included and deducted from gross weekly earnings and when the size of an organisation is also included in and excluded from the model.

Only the estimated public sector wage gaps are presented in the tables. More detailed results for other explanatory variables are available in Appendix C.

**Table 1 OLS Regression estimates of the Public Sector Wage gap 2011 – 2014 for Permanent, Full-time employees aged 25-29 years - Males and Females**

		2011	2012	2013	2014
		%			
Gross weekly earnings, including size	Males & Females	9.21	8.32	6.34	5.05
	Males	3.01	3.91	0.24	-0.71
	Females	15.35	13.72	13.31	12.18
Gross weekly earnings, excluding size	Males & Females	9.52	8.41	6.32	5.35
	Males	3.25	3.75	-0.40	-0.96
	Females	16.24	14.30	14.05	13.53
Pension levy deducted from Gross weekly earnings, including size	Males & Females	2.92	2.06	0.19	-0.65
	Males	-3.36	-2.54	-6.01	-6.42
	Females	9.17	7.60	7.23	6.46
Pension levy deducted from Gross weekly earnings, excluding size	Males & Females	3.21	2.14	0.17	-0.36
	Males	-3.14	-2.70	-6.60	-6.65
	Females	10.02	8.15	7.94	7.75

### Key Findings

- The trend shows that the pay differential between the public and private sector is steadily declining in the period 2011 to 2014.
- The scale of the pay differential in the public sector was higher for females than for males with the difference in premium between females and males in the public sector ranging from 9.81% to 14.54%.
- When comparing the public and private sector, the pay differential for male employees in the public sector ranged from a premium of 3.91% to a discount of -6.65% depending on the specification used.
- The corresponding differential for females showed that female workers in the public sector had a differential ranging from 6.46% to 16.24% depending on the model applied when compared to their counterparts in the private sector.
- If the size of the organisation was included as an explanatory variable, it had the effect of increasing the estimated public sector pay differential in most instances.

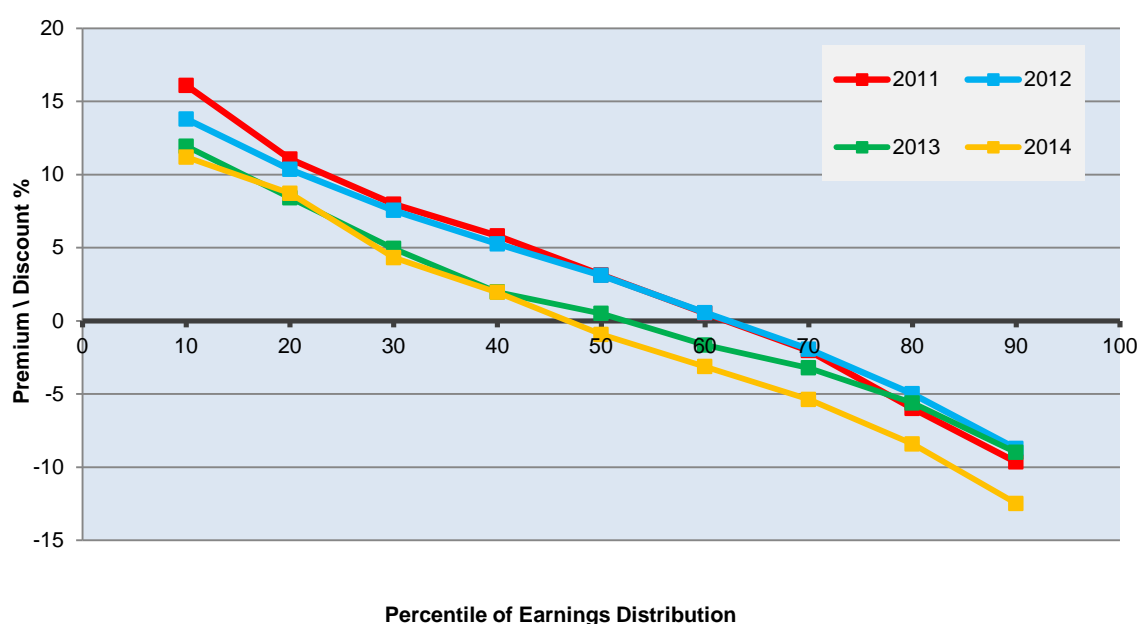
## 7.2 Quantile Regression Results

The following graphs summarise the results of a series of quantile regression analyses for permanent full-time employees aged 25-59. Regression models including and excluding size of enterprise were performed and these models were run on earnings after the pension levy was deducted as well as on gross earnings.

The graphs presented here are based primarily on gross weekly earnings after the pension levy is deducted. Further analysis using different specifications are available on request.

Figure 2.1 shows the premia at various points throughout the earnings distribution (after the deduction of the pension levy from gross weekly earnings) for 2011 to 2014. It is clear that the public sector premium was highest for those at the lower end of the earnings distribution. The pay gap decreased consistently as earnings increased for all four years. There was very little difference in the size of the premia at each decile between 2011 and 2012 – at the 50<sup>th</sup> percentile the pay gap was 3.14% in 2011 and 3.11% in 2012 and the percentile at which the pay gap became a discount was the 62<sup>nd</sup> percentile in 2011 and the 64<sup>th</sup> percentile in 2012.

**Fig 2.1 Public Sector wage gap (%) distribution - weekly earnings for permanent full-time employees (Male & Female) aged 25 - 59 years - including size as an explanatory variable (weighted, PL removed) 2011 - 2014**



Between 2012 and 2013 the pay gap decreased across each decile and particularly at the lower end of the earnings distribution, with the difference narrowing above the 50<sup>th</sup> percentile. In 2014 the pay gap was very similar to that in 2013 up to the 40<sup>th</sup> percentile of earnings, with the difference between the two years increasing beyond that point. In 2013 the pay gap became a discount at the 54<sup>th</sup> percentile and in 2014 at the 47<sup>th</sup> percentile.

Figure 2.2 shows the premia for males only for each of the four years. In 2011 the pay gap became a discount at the 45<sup>th</sup> percentile. This dropped to the 42<sup>nd</sup> in 2012, the 28<sup>th</sup> in 2013 and the 25<sup>th</sup> in 2014.

**Fig 2.2 Public Sector wage gap (%) distribution - weekly earnings for permanent full-time employees (Male only) aged 25 - 59 years - including size as an explanatory variable (weighted, PL removed) 2011 - 2014**

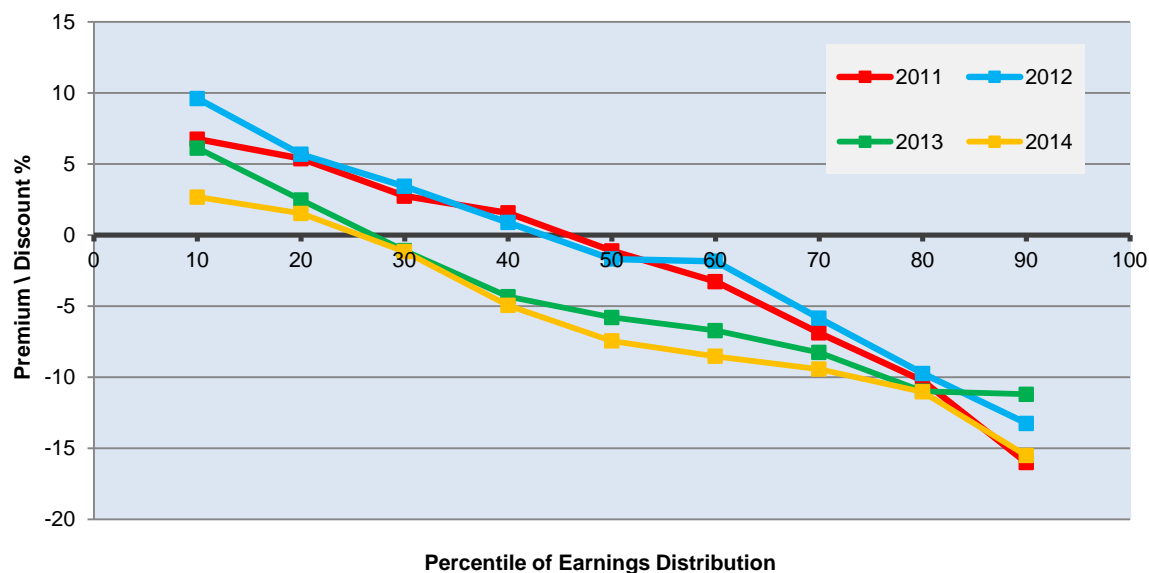


Figure 2.3 shows the premia for females for the same time period. The size of the pay gap at each decile has not changed as much for females between the four years as it did for males. In 2011 the pay gap became a discount at the 78<sup>th</sup> percentile. This dropped to the 75<sup>th</sup> percentile in 2012, the 77<sup>th</sup> percentile in 2013 and the 71<sup>st</sup> percentile in 2014.

**Fig 2.3 Public Sector wage gap (%) distribution - weekly earnings for permanent full-time employees (Female only) aged 25 - 59 years - including size as an explanatory variable (weighted, PL removed) 2011 - 2014**

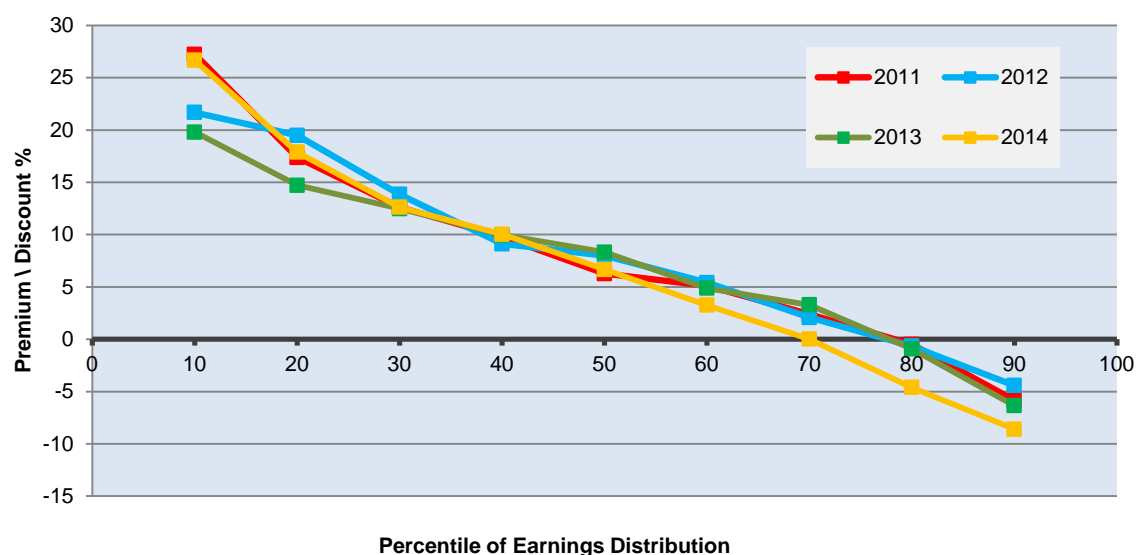


Figure 2.4 shows the premia across the earnings distribution separately for males and females for 2014. While the premium is higher for females than for males at every point throughout the earnings distribution, the difference between the two narrows at the higher end of the distribution.

**Fig 2.4 Public Sector wage gap (%) distribution - weekly earnings for permanent full-time employees aged 25 - 59 years - including size as an explanatory variable (weighted, PL removed) 2014**

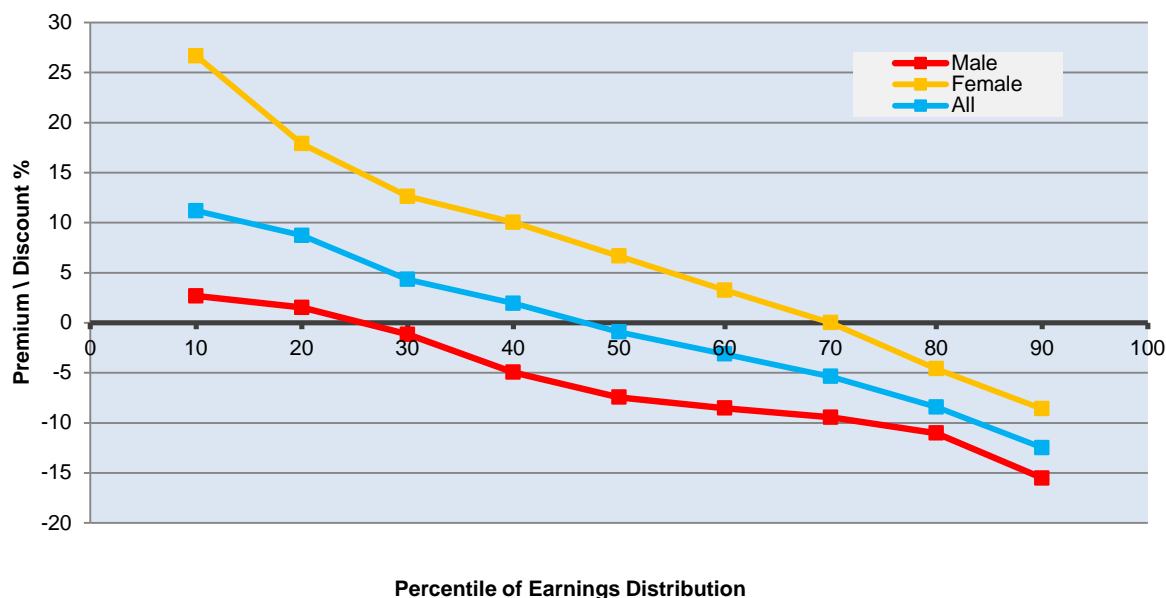
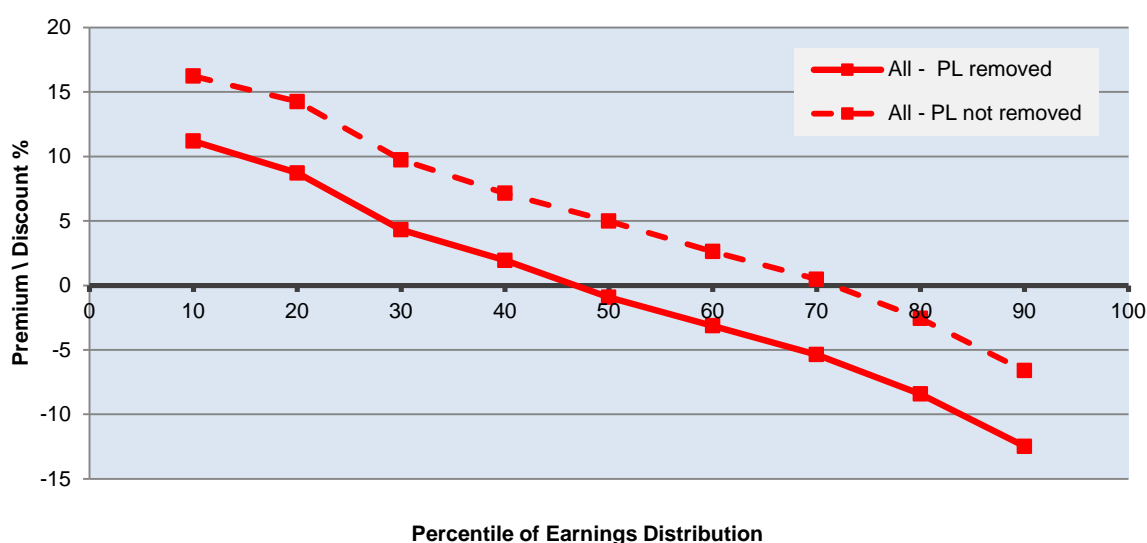
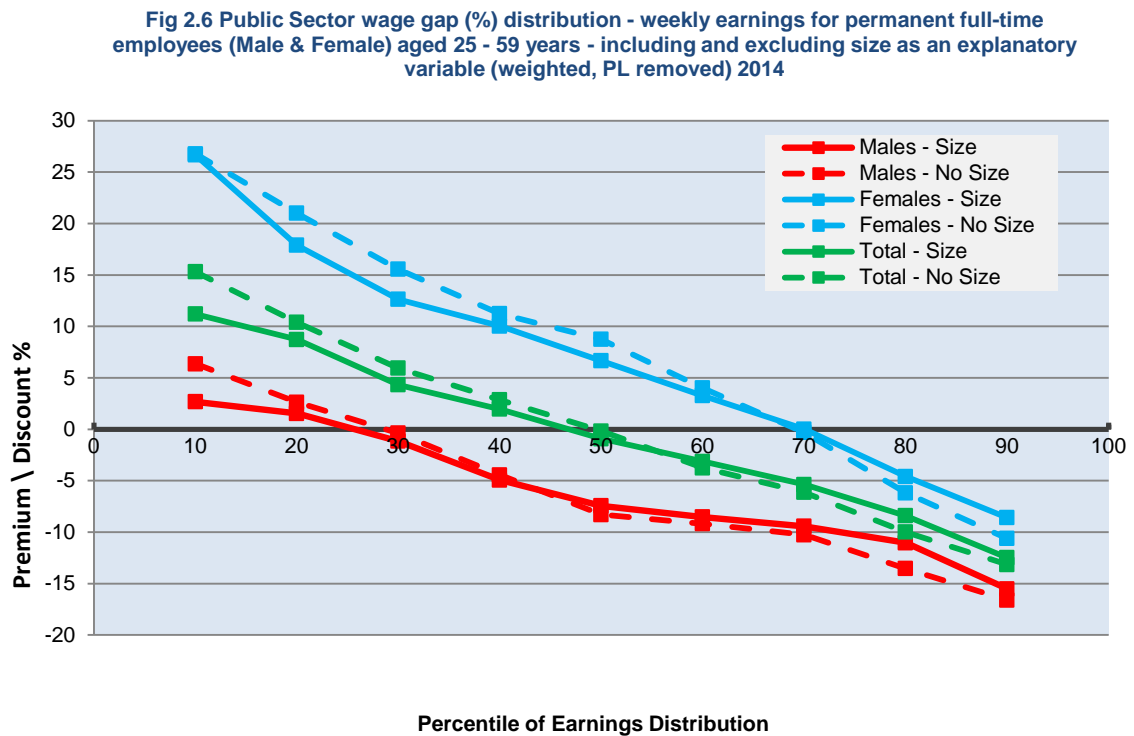


Figure 2.5 allows us to compare the magnitude of the pay gap across the earnings distribution for gross earnings and for earnings when the pension levy is removed. On average there is a decrease of approximately 5 percentage points in the size of the premium when the pension levy is deducted from earnings. The point on the distribution at which the pay gap becomes a discount is the 72<sup>nd</sup> percentile for gross earnings and the 47<sup>th</sup> percentile when the pension levy is deducted.

**Fig 2.5 Public Sector wage gap (%) distribution - weekly earnings for permanent full-time employees (Male & Female) aged 25 - 59 years - including and excluding Pension Levy in Weekly earnings (weighted, Size included) 2014**



In order to evaluate the impact the inclusion of the size of enterprise as an explanatory variable on the resulting premium, Figure 2.6 shows the premia broken down by gender for models with size of enterprise included and excluded for 2014.



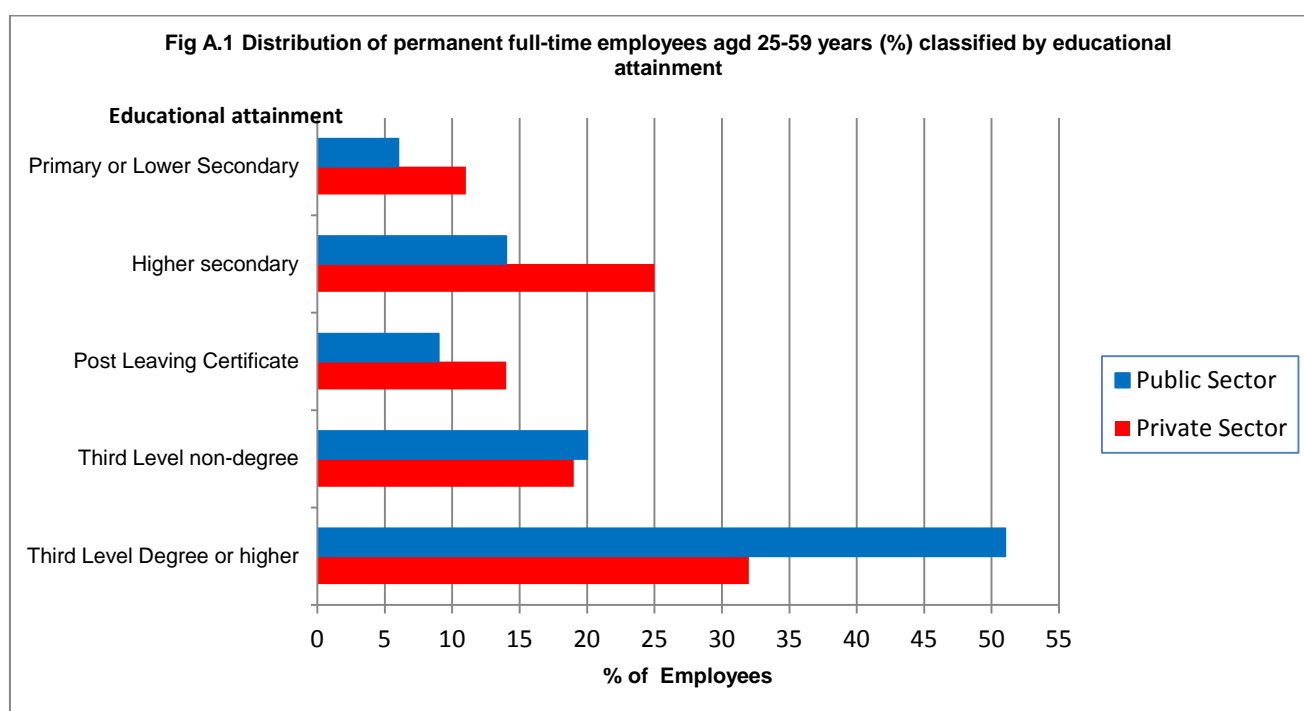
It is interesting to note that at the lower end of the earnings distribution, excluding the size of enterprise variable from the model has the effect of increasing the premium slightly, but at the higher end of the earnings distribution it has the opposite effect.



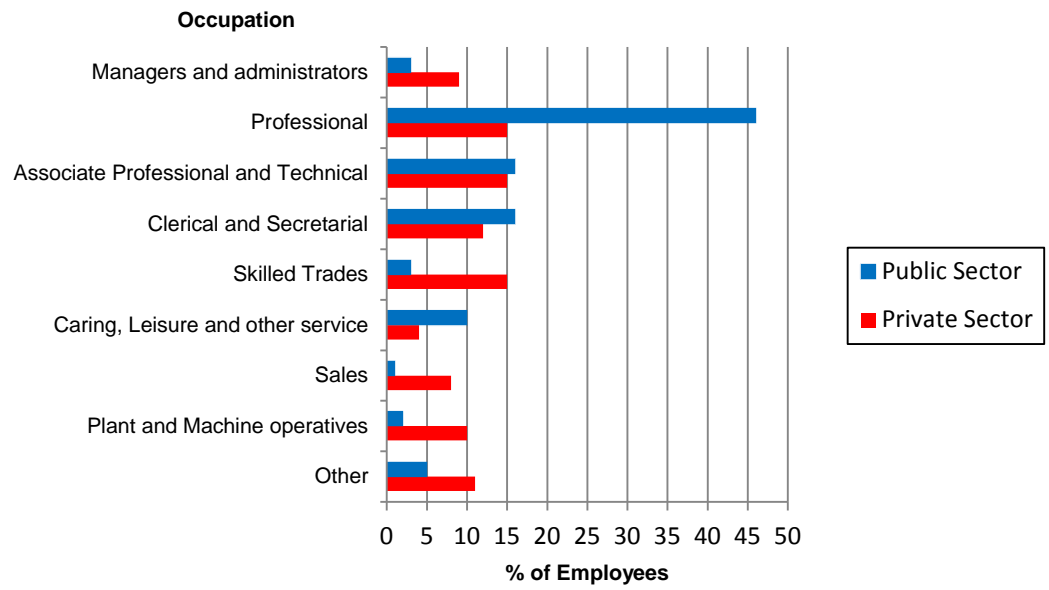
## Appendix A: Summary Statistics

**Table A.1 Descriptive Statistics- 2014 - Permanent, full time employees aged 25-29 years ( Weighted data)**  
**Summary Data - Means**

	Male			Female			Total		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
Earnings per Week (€)	984.13	870.38	888.27	864.98	709.18	760.07	910.65	808.75	832.31
Age (Years)	43.59	39.16	39.85	41.93	37.81	39.15	42.57	38.64	39.55
Length of Service with Current employer (Years)	16.29	9.64	10.69	14.01	8.88	10.56	14.88	9.35	10.63
Hours worked ( Usual )	39.32	40.6	40.4	36.02	38.04	37.38	37.28	39.62	39.08
Union	77%	20%	29%	81%	18%	38%	79%	19%	33%
Shift	25%	18%	19%	17%	13%	14%	20%	16%	17%
Supervisor	42%	36%	37%	34%	37%	36%	37%	36%	36%



**Fig A.2 Distribution of permanent full-time employees agd 25-59 years (%) classified by occupation**



## Appendix B: Definitions of variables used & Interpretation of results

### Definitions of variables used:

**Public Sector:** The Public Sector includes:

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

For the purposes of this analysis commercial semi-state organisations have been categorised to the private sector.

**Nace Rev 2:** The economic sector classification (NACE) is aligned to the CSO's Earnings Hours and Employment Costs Survey (EHECS). The economic sector classification used for the EHECS is based on the '[Statistical Classification of Economic Activities in the European Community \(NACE Rev.2\)](#)' which can be accessed on the Eurostat website. The NACE code of each enterprise included in the survey was determined from the predominant activity of the enterprise, based on information provided to the CSO.

**Gross Annual Earnings:** Total annual earnings represent the total gross annual amount (before deduction of tax, PRSI and superannuation) payable by the enterprise to its employees. This information is obtained from the Revenue Commissioner's P35L dataset. It includes bonuses and benefit in kind (BIK). It excludes pension payments and severance payments. In the small number of cases where an employee has been made redundant in the course of the year the employee's income excludes statutory redundancy payments but includes non-statutory redundancy payments.

**Weekly Earnings:** Weekly earnings represent the gross weekly amount (before deduction of tax, PRSI and superannuation) payable by the organisation to its employees. It includes normal wages, salaries and overtime, taxable allowances e.g. BIK, bonuses and commissions, holiday or sick pay averaged over the year. It excludes employer's PRSI and redundancy payments. In the small number of cases where an employee has been made redundant in the course of the year the employee's income excludes statutory redundancy payments but includes non-statutory redundancy payments. Weekly earnings are calculated by dividing the gross annual earnings by the number of weeks worked as declared on the P35L file.

**Usual hours worked:** Number of hours per week usually worked

**Size class of the local unit:** Number of persons working at the local unit (1-99 & 100+)

### Nationality Groups:

- Irish - Republic of Ireland
- United Kingdom - Great Britain and Northern Ireland.

- EU27 excluding Ireland & UK - Austria, Belgium, Denmark, Finland, France, Germany, Greece, Netherlands, Italy, Luxembourg, Portugal, Spain, Sweden, Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia. Croatia joined the EU on 1<sup>st</sup> July 2013 and is in the category EU28.
- Other Nationalities - All other nationalities not included in the above three groupings as well as those who could not be coded.

Further information and descriptions on the QNHS variables are available in the background notes to the QNHS release (<http://www.cso.ie/en/qnhs/>).

## **Explanatory Variables**

The tables in Appendices C and D present the detailed results of the various models described earlier. The dependent variable for all models was the natural log of weekly earnings, and the explanatory variables were:

- Occupation
- Educational attainment
- Gender
- Public or private sector
- Nationality
- Membership of a trade union
- Age (years)
- Age-squared
- Size of local unit (greater or smaller than 100 employees)
- Length of service with current employer (years)
- Log of overtime hours worked
- Shift work
- Supervisory status

The models analysed are presented both including and excluding size of the local unit as an explanatory variable.

## **Interpretation of the regression results**

The columns labelled “Estimate” in the following regression results tables contain the estimated parameters (i.e.  $\beta$  coefficients) from the regression equations. For the continuous explanatory variables (e.g. length of service with current employer), these estimated parameters can be interpreted as the percentage change in weekly earnings per unit change of the explanatory variable. For example, in Table C.1, the estimated regression coefficient for “length of service with current employer” is 0.009. This value may be interpreted as follows: holding all other variables constant, average weekly earnings increase by 0.9% for every additional year’s service with the current employer.

The estimated models contain two explanatory variables which were analysed on the log-scale (log of over-time hours and log of hours). These coefficients can be interpreted as the percentage change in

weekly earnings as a result of the percentage change in the relevant explanatory variable holding all other variables constant. For example, in Table C.1, the coefficient for “Ln Hours” is 0.614. This value may be interpreted as follows: holding all other variables constant, for a 1% increase in hours worked per week, average weekly earnings increases by 0.614%.

For the dummy explanatory variables (e.g. sector of employment), interpretation of the estimated parameters is more complicated. For example, in Table C.1, the coefficient for “public sector” is 0.088. Generally, in the literature, this figure would be interpreted as an 8.8% premium for public sector employees. However, the strict interpretation is that the estimated coefficient measures the premium in terms of log weekly earnings rather than weekly earnings. To estimate the premium in terms of average weekly earnings we need to get the anti-log of the estimated coefficient and subtract 1. For this example we find the antilog of  $0.088 \approx 1.0921$ . Subtracting 1 from this we obtain 0.0921 or 9.21%; the public sector premium is 9.21%.

The estimated coefficients for the categorical variables in the regression models compare average weekly earnings for each of the categories in comparison to the reference category. For example the reference category for nationality is “Irish”, therefore this is used as the base comparison group for each of the other nationality classes. For example, in the first column of Table C.1, the coefficient for “EU excluding IE and UK” is -0.166. This value may be interpreted as follows: holding all other variables constant, an employee from “EU excluding IE and UK” would be expected to receive approximately  $\exp(-0.166) - 1 = -0.153$  or 15.3% less in weekly earnings than an “Irish” employee.

The reference categories used in the regression analyses for the categorical variables are as follows:

- Occupation = Elementary Occupations
- Education attained = Primary or Lower Secondary
- Gender = Female
- Public/Private Sector = Private
- Nationality = Irish
- Trade Union Membership = Not a trade union member
- Size of local unit = 100 or more employees
- Shift work = No shift work
- Supervision of staff = Does not supervise staff

## Appendix C: OLS Regression Results

Table C.1 - Weighted OLS Regression of log weekly earnings, including size of enterprise for permanent, full-time employees aged 25-29, 2011

Table C.2 - Weighted OLS Regression of log weekly earnings, excluding size of enterprise for permanent, full-time employees aged 25-29, 2011

Table C.3 - Weighted OLS Regression of log weekly earnings minus pension levy, including size of enterprise for permanent, full-time employees aged 25-29, 2011

Table C.4 – Weighted OLS Regression of log weekly earnings minus pension levy, excluding size of enterprise for permanent, full-time employees aged 25-29, 2011

Table C.5 - Weighted OLS Regression of log weekly earnings, including size of enterprise for permanent, full-time employees aged 25-29, 2012

Table C.6 - Weighted OLS Regression of log weekly earnings, excluding size of enterprise for permanent, full-time employees aged 25-29, 2012

Table C.7 - Weighted OLS Regression of log weekly earnings minus pension levy, including size of enterprise for permanent, full-time employees aged 25-29, 2012

Table C.8 – Weighted OLS Regression of log weekly earnings minus pension levy, excluding size of enterprise for permanent, full-time employees aged 25-29, 2012

Table C.9 - Weighted OLS Regression of log weekly earnings, including size of enterprise for permanent, full-time employees aged 25-29, 2013

Table C.10 - Weighted OLS Regression of log weekly earnings, excluding size of enterprise for permanent, full-time employees aged 25-29, 2013

Table C.11 - Weighted OLS Regression of log weekly earnings minus pension levy, including size of enterprise for permanent, full-time employees aged 25-29, 2013

Table C.12 – Weighted OLS Regression of log weekly earnings minus pension levy, excluding size of enterprise for permanent, full-time employees aged 25-29, 2013

Table C.13 - Weighted OLS Regression of log weekly earnings, including size of enterprise for permanent, full-time employees aged 25-29, 2014

Table C.14 - Weighted OLS Regression of log weekly earnings, excluding size of enterprise for permanent, full-time employees aged 25-29, 2014

Table C.15 - Weighted OLS Regression of log weekly earnings minus pension levy, including size of enterprise for permanent, full-time employees aged 25-29, 2014

Table C.16 – Weighted OLS Regression of log weekly earnings minus pension levy, excluding size of enterprise for permanent, full-time employees aged 25-29, 2014

**Table C.1 OLS model estimates on log weekly earnings - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2011**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.443	25.88	2.427	18.05	2.634	19.59
<b>Occupation</b>						
Managers, directors and senior officials	0.353	20.43	0.326	15.22	0.402	13.24
Professional	0.402	26.65	0.362	18.40	0.463	18.33
Associate professional and technical	0.303	20.49	0.288	15.68	0.359	13.85
Administrative and secretarial	0.147	9.82	0.143	6.35	0.194	8.17
Skilled trades	0.168	11.37	0.149	8.77	0.152	4.02
Caring, leisure and other service	0.037	2.12	-0.022	-0.69	0.092	3.64
Sales and customer service	0.039	2.32	0.017	0.70	0.090	3.47
Process, plant and machine operatives	0.102	6.79	0.074	4.28	0.167	5.27
<b>Education attained</b>						
Third level degree or higher	0.356	26.62	0.369	21.57	0.326	14.28
Third level non-degree	0.184	13.86	0.173	10.17	0.179	7.96
Post leaving certificate	0.100	7.07	0.124	6.86	0.056	2.33
Higher secondary	0.102	8.48	0.103	6.98	0.097	4.46
<b>Male</b>	0.127	17.18				
<b>Public sector<sup>*</sup></b>	<b>0.088</b>	<b>9.23</b>	<b>0.030</b>	<b>2.11</b>	<b>0.143</b>	<b>10.91</b>
<b>Nationality</b>						
UK	0.007	0.34	0.025	0.88	-0.027	-0.82
EU excluding IE and UK	-0.166	-14.24	-0.170	-11.15	-0.149	-8.24
Other	-0.195	-11.88	-0.261	-11.87	-0.087	-3.50
<b>Trade union member</b>	0.110	13.42	0.119	10.62	0.085	7.11
<b>Age</b>	0.062	19.31	0.070	16.07	0.052	11.04
<b>Age<sup>2</sup></b>	-0.650	-16.65	-0.727	-13.68	-0.561	-9.77
<b>Less than 100 employees</b>	-0.160	-23.30	-0.183	-19.29	-0.131	-13.12
<b>Length of service with current employer</b>	0.009	18.33	0.008	13.10	0.009	12.69
<b>Ln Overtime hours</b>	0.011	4.19	0.011	3.31	0.014	2.72
<b>Ln hours</b>	0.614	32.23	0.608	21.14	0.610	24.23
<b>Shift work</b>	0.000	0.00	0.011	0.97	-0.024	-1.83
<b>Supervisor</b>	0.111	14.83	0.125	11.99	0.096	9.06
<b>n</b>	14,171		7,788		6,383	
<b>R-Square</b>	0.504		0.502		0.503	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.2 OLS model estimates on log weekly earnings - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2011**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.028	21.47	1.983	14.62	2.290	17.13
<b>Occupation</b>						
Managers, directors and senior officials	0.354	20.12	0.330	15.05	0.400	13.00
Professional	0.415	27.03	0.392	19.54	0.460	17.98
Associate professional and technical	0.323	21.47	0.311	16.59	0.372	14.18
Administrative and secretarial	0.169	11.12	0.185	8.10	0.199	8.30
Skilled trades	0.167	11.05	0.152	8.71	0.149	3.90
Caring, leisure and other service	0.028	1.54	-0.026	-0.78	0.074	2.88
Sales and customer service	0.039	2.28	0.016	0.65	0.085	3.24
Process, plant and machine operatives	0.124	8.14	0.096	5.41	0.205	6.42
<b>Education attained</b>						
Third level degree or higher	0.375	27.58	0.400	22.94	0.326	14.11
Third level non-degree	0.193	14.26	0.187	10.71	0.176	7.74
Post leaving certificate	0.099	6.87	0.127	6.87	0.046	1.90
Higher secondary	0.107	8.65	0.110	7.27	0.093	4.22
<b>Male</b>	0.127	16.75				
<b>Public sector<sup>*</sup></b>	<b>0.091</b>	<b>9.35</b>	<b>0.032</b>	<b>2.22</b>	<b>0.150</b>	<b>11.36</b>
<b>Nationality</b>						
UK	0.016	0.73	0.032	1.10	-0.017	-0.51
EU excluding IE and UK	-0.161	-13.59	-0.159	-10.22	-0.153	-8.35
Other	-0.186	-11.12	-0.253	-11.25	-0.078	-3.10
<b>Trade union member</b>	0.130	15.66	0.144	12.59	0.101	8.31
<b>Age</b>	0.066	20.27	0.075	16.76	0.056	11.74
<b>Age<sup>2</sup></b>	-0.700	-17.62	-0.778	-14.32	-0.611	-10.52
<b>Length of service with current employer</b>	0.009	18.66	0.009	13.58	0.010	12.61
<b>Ln Overtime hours</b>	0.014	4.87	0.013	3.92	0.016	3.12
<b>Ln hours</b>	0.667	34.65	0.658	22.42	0.659	26.15
<b>Shift work</b>	0.023	2.74	0.040	3.63	-0.007	-0.55
<b>Supervisor</b>	0.114	14.97	0.124	11.57	0.101	9.47
<b>n</b>	14,171		7,788		6,383	
<b>R-Square</b>	0.485		0.478		0.490	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above



**Table C.3 OLS model estimates on log weekly earnings minus pension levy - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2011**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.463	26.23	2.440	18.20	2.659	19.94
<b>Occupation</b>						
Managers, directors and senior officials	0.352	20.48	0.325	15.23	0.401	13.32
Professional	0.398	26.53	0.360	18.34	0.457	18.24
Associate professional and technical	0.301	20.46	0.286	15.65	0.357	13.89
Administrative and secretarial	0.148	9.95	0.144	6.42	0.195	8.29
Skilled trades	0.168	11.36	0.148	8.74	0.151	4.03
Caring, leisure and other service	0.042	2.36	-0.020	-0.63	0.096	3.82
Sales and customer service	0.038	2.23	0.015	0.64	0.088	3.44
Process, plant and machine operatives	0.101	6.78	0.074	4.25	0.166	5.28
<b>Education attained</b>						
Third level degree or higher	0.353	26.49	0.366	21.46	0.322	14.23
Third level non-degree	0.182	13.77	0.171	10.07	0.177	7.93
Post leaving certificate	0.099	7.04	0.123	6.81	0.055	2.32
Higher secondary	0.101	8.42	0.102	6.91	0.096	4.44
<b>Male</b>	0.127	17.17				
<b>Public sector<sup>*</sup></b>	<b>0.029</b>	<b>3.03</b>	<b>-0.034</b>	<b>-2.45</b>	<b>0.088</b>	<b>6.76</b>
<b>Nationality</b>						
UK	0.008	0.36	0.026	0.91	-0.028	-0.83
EU excluding IE and UK	-0.167	-14.41	-0.171	-11.24	-0.150	-8.37
Other	-0.196	-11.97	-0.261	-11.90	-0.088	-3.58
<b>Trade union member</b>	0.109	13.34	0.118	10.59	0.084	7.04
<b>Age</b>	0.062	19.40	0.070	16.07	0.052	11.17
<b>Age<sup>2</sup></b>	-0.651	-16.75	-0.726	-13.70	-0.563	-9.89
<b>Less than 100 employees</b>	-0.161	-23.55	-0.183	-19.40	-0.132	-13.37
<b>Length of service with current employer</b>	0.009	18.15	0.008	13.05	0.009	12.46
<b>Ln Overtime hours</b>	0.011	4.12	0.010	3.25	0.014	2.69
<b>Ln hours</b>	0.610	32.20	0.607	21.17	0.604	24.20
<b>Shift work</b>	-0.002	-0.19	0.010	0.88	-0.025	-1.98
<b>Supervisor</b>	0.110	14.77	0.124	11.93	0.095	9.07
<b>n</b>	14,171		7,788		6,383	
<b>R-Square</b>	0.492		0.492		0.486	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.4 OLS model estimates on log weekly earnings minus pension levy - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2011**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.046	21.76	1.994	14.75	2.312	17.43
<b>Occupation</b>						
Managers, directors and senior officials	0.354	20.16	0.329	15.06	0.400	13.07
Professional	0.411	26.91	0.390	19.48	0.455	17.89
Associate professional and technical	0.321	21.44	0.310	16.56	0.371	14.23
Administrative and secretarial	0.170	11.26	0.187	8.17	0.201	8.41
Skilled trades	0.166	11.04	0.151	8.67	0.148	3.90
Caring, leisure and other service	0.032	1.77	-0.024	-0.73	0.078	3.05
Sales and customer service	0.038	2.19	0.015	0.60	0.083	3.21
Process, plant and machine operatives	0.123	8.14	0.095	5.38	0.205	6.45
<b>Education attained</b>						
Third level degree or higher	0.372	27.46	0.398	22.83	0.323	14.05
Third level non-degree	0.191	14.17	0.184	10.62	0.174	7.70
Post leaving certificate	0.098	6.84	0.126	6.82	0.046	1.88
Higher secondary	0.105	8.59	0.109	7.20	0.092	4.19
<b>Male</b>	0.126	16.74				
<b>Public sector*</b>	<b>0.032</b>	<b>3.26</b>	<b>-0.032</b>	<b>-2.23</b>	<b>0.095</b>	<b>7.26</b>
<b>Nationality</b>						
UK	0.017	0.76	0.032	1.12	-0.017	-0.52
EU excluding IE and UK	-0.162	-13.75	-0.160	-10.30	-0.155	-8.48
Other	-0.187	-11.20	-0.253	-11.27	-0.079	-3.17
<b>Trade union member</b>	0.129	15.61	0.143	12.57	0.099	8.26
<b>Age</b>	0.066	20.36	0.074	16.77	0.056	11.87
<b>Age<sup>2</sup></b>	-0.701	-17.72	-0.777	-14.34	-0.614	-10.65
<b>Length of service with current employer</b>	0.009	18.47	0.009	13.53	0.009	12.38
<b>Ln Overtime hours</b>	0.013	4.80	0.013	3.86	0.016	3.09
<b>Ln hours</b>	0.664	34.63	0.657	22.45	0.654	26.14
<b>Shift work</b>	0.022	2.58	0.039	3.55	-0.009	-0.67
<b>Supervisor</b>	0.113	14.91	0.123	11.51	0.101	9.48
<b>n</b>	14,171		7,788		6,383	
<b>R-Square</b>	0.472		0.468		0.472	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.5 OLS model estimates on log weekly earnings - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2012**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.250	23.17	2.204	15.65	2.425	17.98
<b>Occupation</b>						
Managers, directors and senior officials	0.384	22.40	0.360	17.05	0.437	14.34
Professional	0.428	28.50	0.410	20.84	0.469	18.46
Associate professional and technical	0.302	20.79	0.285	15.94	0.360	13.78
Administrative and secretarial	0.157	10.54	0.156	6.88	0.193	7.99
Skilled trades	0.168	11.47	0.164	9.76	0.141	3.93
Caring, leisure and other service	0.051	2.86	-0.051	-1.58	0.099	3.86
Sales and customer service	0.010	0.56	0.030	1.24	0.022	0.84
Process, plant and machine operatives	0.130	8.52	0.109	6.17	0.187	5.75
<b>Education attained</b>						
Third level degree or higher	0.356	26.42	0.344	19.96	0.366	16.06
Third level non-degree	0.171	12.89	0.153	8.92	0.196	8.75
Post leaving certificate	0.101	7.15	0.106	5.91	0.097	4.05
Higher secondary	0.095	7.76	0.091	6.05	0.111	5.07
<b>Male</b>	0.122	16.51				
<b>Public sector<sup>*</sup></b>	<b>0.080</b>	<b>8.30</b>	<b>0.038</b>	<b>2.70</b>	<b>0.129</b>	<b>9.80</b>
<b>Nationality</b>						
UK	0.003	0.15	-0.026	-0.92	0.040	1.17
EU excluding IE and UK	-0.170	-14.73	-0.182	-11.87	-0.149	-8.36
Other	-0.149	-8.69	-0.207	-8.75	-0.064	-2.60
<b>Trade union member</b>	0.101	12.06	0.117	10.15	0.070	5.74
<b>Age</b>	0.068	21.29	0.081	18.19	0.056	12.12
<b>Age<sup>2</sup></b>	-0.720	-18.41	-0.847	-15.68	-0.596	-10.59
<b>Less than 100 employees</b>	-0.162	-23.68	-0.204	-21.59	-0.110	-11.12
<b>Length of service with current employer</b>	0.009	18.50	0.008	12.51	0.010	13.42
<b>Ln Overtime hours</b>	0.020	7.18	0.019	5.79	0.017	3.46
<b>Ln hours</b>	0.621	31.46	0.603	20.28	0.627	24.11
<b>Shift work</b>	-0.007	-0.81	-0.002	-0.16	-0.020	-1.49
<b>Supervisor</b>	0.114	15.36	0.138	13.22	0.090	8.58
<b>n</b>	14,152		7,676		6,476	
<b>R-Square</b>	0.519		0.516		0.524	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.6: OLS model estimates on log weekly earnings - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2012**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	1.884	19.27	1.802	12.54	2.153	16.08
<b>Occupation</b>						
Managers, directors and senior officials	0.377	21.61	0.352	16.16	0.433	14.10
Professional	0.435	28.43	0.427	21.12	0.469	18.28
Associate professional and technical	0.317	21.40	0.302	16.41	0.370	14.04
Administrative and secretarial	0.172	11.36	0.188	8.06	0.197	8.08
Skilled trades	0.161	10.80	0.158	9.12	0.134	3.70
Caring, leisure and other service	0.036	1.98	-0.054	-1.61	0.082	3.18
Sales and customer service	0.002	0.14	0.020	0.83	0.015	0.56
Process, plant and machine operatives	0.153	9.84	0.129	7.10	0.227	6.94
<b>Education attained</b>						
Third level degree or higher	0.374	27.32	0.378	21.40	0.368	16.00
Third level non-degree	0.179	13.19	0.164	9.27	0.196	8.70
Post leaving certificate	0.098	6.84	0.105	5.70	0.092	3.80
Higher secondary	0.095	7.62	0.091	5.87	0.109	4.92
<b>Male</b>	0.122	16.16				
<b>Public sector*</b>	<b>0.081</b>	<b>8.22</b>	<b>0.037</b>	<b>2.51</b>	<b>0.134</b>	<b>10.10</b>
<b>Nationality</b>						
UK	0.004	0.19	-0.021	-0.74	0.037	1.07
EU excluding IE and UK	-0.170	-14.41	-0.178	-11.28	-0.153	-8.52
Other	-0.136	-7.77	-0.193	-7.93	-0.054	-2.16
<b>Trade union member</b>	0.119	13.95	0.143	12.12	0.080	6.50
<b>Age</b>	0.071	21.59	0.083	18.12	0.058	12.48
<b>Age<sup>2</sup></b>	-0.746	-18.71	-0.869	-15.61	-0.622	-10.97
<b>Length of service with current employer</b>	0.009	18.59	0.008	12.83	0.010	13.24
<b>Ln Overtime hours</b>	0.022	7.95	0.023	6.54	0.019	3.83
<b>Ln hours</b>	0.672	33.64	0.653	21.41	0.669	25.77
<b>Shift work</b>	0.015	1.78	0.031	2.67	-0.008	-0.60
<b>Supervisor</b>	0.120	15.91	0.140	13.07	0.097	9.20
<b>n</b>	14,152		7,676		6,476	
<b>R-Square</b>	0.500		0.487		0.515	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.7 OLS model estimates on log weekly earnings minus pension levy - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2012**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.273	23.52	2.216	15.79	2.458	18.37
<b>Occupation</b>						
Managers, directors and senior officials	0.382	22.43	0.359	17.03	0.435	14.42
Professional	0.424	28.36	0.407	20.75	0.462	18.36
Associate professional and technical	0.300	20.74	0.283	15.89	0.357	13.80
Administrative and secretarial	0.158	10.66	0.157	6.94	0.193	8.08
Skilled trades	0.167	11.45	0.163	9.71	0.140	3.95
Caring, leisure and other service	0.055	3.10	-0.049	-1.50	0.102	4.01
Sales and customer service	0.008	0.47	0.028	1.19	0.020	0.78
Process, plant and machine operatives	0.129	8.50	0.108	6.13	0.186	5.75
<b>Education attained</b>						
Third level degree or higher	0.352	26.31	0.341	19.87	0.362	15.99
Third level non-degree	0.170	12.81	0.151	8.85	0.193	8.70
Post leaving certificate	0.100	7.11	0.105	5.87	0.095	4.01
Higher secondary	0.094	7.69	0.090	5.99	0.109	5.01
<b>Male</b>	0.122	16.49				
<b>Public sector*</b>	<b>0.020</b>	<b>2.13</b>	<b>-0.026</b>	<b>-1.82</b>	<b>0.073</b>	<b>5.63</b>
<b>Nationality</b>						
UK	0.004	0.18	-0.025	-0.90	0.040	1.18
EU excluding IE and UK	-0.172	-14.91	-0.183	-11.98	-0.151	-8.52
Other	-0.150	-8.80	-0.208	-8.80	-0.066	-2.69
<b>Trade union member</b>	0.100	12.02	0.116	10.11	0.069	5.72
<b>Age</b>	0.068	21.35	0.081	18.20	0.056	12.18
<b>Age<sup>2</sup></b>	-0.719	-18.47	-0.845	-15.69	-0.594	-10.66
<b>Less than 100 employees</b>	-0.163	-23.95	-0.205	-21.71	-0.112	-11.38
<b>Length of service with current employer</b>	0.009	18.31	0.008	12.46	0.009	13.21
<b>Ln Overtime hours</b>	0.020	7.13	0.019	5.77	0.017	3.37
<b>Ln hours</b>	0.617	31.44	0.602	20.31	0.622	24.10
<b>Shift work</b>	-0.008	-0.99	-0.003	-0.25	-0.022	-1.64
<b>Supervisor</b>	0.113	15.28	0.136	13.14	0.089	8.56
<b>n</b>	14,152		7,676		6,476	
<b>R-Square</b>	0.508		0.507		0.508	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.8 OLS model estimates on log weekly earnings minus pension levy - excluding size of enterprise as an explanatory variable**

Permanent Full-time employees aged 25-59, 2012

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	1.905	19.57	1.813	12.65	2.182	16.42
<b>Occupation</b>						
Managers, directors and senior officials	0.376	21.63	0.350	16.13	0.432	14.17
Professional	0.431	28.28	0.425	21.03	0.462	18.18
Associate professional and technical	0.315	21.35	0.300	16.36	0.367	14.06
Administrative and secretarial	0.173	11.48	0.189	8.13	0.197	8.17
Skilled trades	0.160	10.78	0.157	9.06	0.133	3.71
Caring, leisure and other service	0.040	2.20	-0.051	-1.53	0.085	3.31
Sales and customer service	0.001	0.04	0.019	0.78	0.013	0.49
Process, plant and machine operatives	0.152	9.83	0.128	7.06	0.226	6.97
<b>Education attained</b>						
Third level degree or higher	0.371	27.22	0.375	21.31	0.364	15.93
Third level non-degree	0.177	13.12	0.162	9.21	0.194	8.65
Post leaving certificate	0.097	6.80	0.104	5.65	0.090	3.76
Higher secondary	0.094	7.54	0.090	5.81	0.106	4.86
<b>Male</b>	0.121	16.13				
<b>Public sector*</b>	<b>0.021</b>	<b>2.17</b>	<b>-0.027</b>	<b>-1.88</b>	<b>0.078</b>	<b>5.97</b>
<b>Nationality</b>						
UK	0.005	0.22	-0.020	-0.71	0.036	1.07
EU excluding IE and UK	-0.171	-14.59	-0.179	-11.37	-0.155	-8.68
Other	-0.137	-7.87	-0.194	-7.97	-0.055	-2.23
<b>Trade union member</b>	0.118	13.93	0.142	12.09	0.079	6.49
<b>Age</b>	0.071	21.64	0.083	18.13	0.058	12.54
<b>Age<sup>2</sup></b>	-0.745	-18.77	-0.867	-15.62	-0.621	-11.04
<b>Length of service with current employer</b>	0.009	18.40	0.008	12.77	0.009	13.02
<b>Ln Overtime hours</b>	0.022	7.90	0.022	6.52	0.019	3.76
<b>Ln hours</b>	0.669	33.64	0.652	21.44	0.665	25.78
<b>Shift work</b>	0.014	1.63	0.030	2.60	-0.010	-0.73
<b>Supervisor</b>	0.119	15.83	0.139	12.99	0.096	9.19
<b>n</b>	14,152		7,676		6,476	
<b>R-Square</b>	0.488		0.476		0.498	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.9 OLS model estimates on log weekly earnings - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2013**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.342	21.82	2.097	12.95	2.645	18.16
<b>Occupation</b>						
Managers, directors and senior officials	0.376	20.52	0.357	15.59	0.422	13.22
Professional	0.423	26.06	0.431	20.18	0.433	15.85
Associate professional and technical	0.306	19.50	0.294	15.23	0.353	12.51
Administrative and secretarial	0.135	8.37	0.133	5.40	0.169	6.49
Skilled trades	0.137	8.62	0.136	7.51	0.086	2.05
Caring, leisure and other service	0.040	2.09	0.022	0.61	0.061	2.20
Sales and customer service	-0.001	-0.06	0.017	0.66	0.019	0.66
Process, plant and machine operatives	0.114	6.89	0.085	4.44	0.189	5.36
<b>Education attained</b>						
Third level degree or higher	0.350	23.77	0.309	16.60	0.421	16.34
Third level non-degree	0.182	12.57	0.156	8.45	0.242	9.60
Post leaving certificate	0.119	7.68	0.104	5.38	0.163	5.98
Higher secondary	0.097	7.21	0.086	5.18	0.145	5.86
<b>Male</b>	0.131	16.37				
<b>Public sector*</b>	<b>0.061</b>	<b>5.84</b>	<b>0.002</b>	<b>0.15</b>	<b>0.125</b>	<b>8.84</b>
<b>Nationality</b>						
UK	-0.010	-0.43	-0.044	-1.51	0.040	1.01
EU excluding IE and UK	-0.170	-13.71	-0.162	-9.98	-0.176	-9.10
Other	-0.129	-6.61	-0.186	-6.07	-0.079	-3.19
<b>Trade union member</b>	0.108	11.80	0.135	10.59	0.065	4.97
<b>Age</b>	0.068	19.29	0.078	16.15	0.054	10.76
<b>Age<sup>2</sup></b>	-0.710	-16.66	-0.818	-13.93	-0.568	-9.24
<b>Less than 100 employees</b>	-0.178	-24.11	-0.210	-20.71	-0.137	-12.81
<b>Length of service with current employer</b>	0.009	16.55	0.008	11.62	0.009	11.50
<b>Ln Overtime hours</b>	0.010	3.29	0.010	2.93	0.006	1.19
<b>Ln hours</b>	0.605	27.60	0.654	18.35	0.572	20.92
<b>Shift work</b>	-0.027	-2.82	-0.019	-1.50	-0.034	-2.35
<b>Supervisor</b>	0.096	12.10	0.113	10.10	0.080	7.18
<b>n</b>	11,565		6,252		5,313	
<b>R-Square</b>	0.518		0.510		0.528	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.10 OLS model estimates on log weekly earnings - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2013**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	1.923	17.71	1.703	10.24	2.272	15.68
<b>Occupation</b>						
Managers, directors and senior officials	0.369	19.65	0.351	14.80	0.415	12.78
Professional	0.428	25.74	0.447	20.26	0.429	15.48
Associate professional and technical	0.319	19.87	0.313	15.66	0.360	12.58
Administrative and secretarial	0.156	9.47	0.163	6.44	0.179	6.79
Skilled trades	0.125	7.68	0.125	6.66	0.075	1.76
Caring, leisure and other service	0.021	1.07	0.008	0.22	0.040	1.42
Sales and customer service	-0.013	-0.71	0.004	0.15	0.007	0.23
Process, plant and machine operatives	0.138	8.10	0.103	5.21	0.237	6.66
<b>Education attained</b>						
Third level degree or higher	0.374	24.89	0.345	17.95	0.431	16.48
Third level non-degree	0.193	13.04	0.169	8.85	0.246	9.63
Post leaving certificate	0.118	7.46	0.102	5.13	0.160	5.79
Higher secondary	0.105	7.61	0.094	5.52	0.148	5.89
<b>Male</b>	0.135	16.38				
<b>Public sector*</b>	<b>0.061</b>	<b>5.68</b>	<b>-0.004</b>	<b>-0.24</b>	<b>0.131</b>	<b>9.17</b>
<b>Nationality</b>						
UK	-0.014	-0.59	-0.052	-1.70	0.042	1.04
EU excluding IE and UK	-0.167	-13.11	-0.152	-9.08	-0.181	-9.22
Other	-0.125	-6.26	-0.175	-5.52	-0.080	-3.17
<b>Trade union member</b>	0.125	13.42	0.163	12.45	0.074	5.55
<b>Age</b>	0.070	19.57	0.080	16.00	0.058	11.25
<b>Age<sup>2</sup></b>	-0.740	-16.97	-0.839	-13.82	-0.607	-9.74
<b>Length of service with current employer</b>	0.009	16.61	0.008	11.80	0.009	11.38
<b>Ln Overtime hours</b>	0.010	3.36	0.010	2.71	0.009	1.63
<b>Ln hours</b>	0.666	29.85	0.704	19.16	0.630	22.99
<b>Shift work</b>	-0.004	-0.40	0.009	0.70	-0.016	-1.14
<b>Supervisor</b>	0.102	12.54	0.117	10.11	0.087	7.66
<b>n</b>	11,565		6,252		5,313	
<b>R-Square</b>	0.493		0.476		0.513	

\*The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above



**Table C.11 OLS model estimates on log weekly earnings minus pension levy - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59**

<b>Parameter</b>	<b>Males &amp; Females</b>		<b>Males</b>		<b>Females</b>	
	<b>Estimate</b>	<b>t Value</b>	<b>Estimate</b>	<b>t Value</b>	<b>Estimate</b>	<b>t Value</b>
<b>Intercept</b>	2.366	22.15	2.112	13.09	2.679	18.54
<b>Occupation</b>						
Managers, directors and senior officials	0.375	20.54	0.356	15.57	0.421	13.28
Professional	0.418	25.93	0.429	20.14	0.426	15.72
Associate professional and technical	0.303	19.45	0.293	15.20	0.351	12.52
Administrative and secretarial	0.136	8.48	0.134	5.46	0.169	6.56
Skilled trades	0.136	8.62	0.135	7.49	0.085	2.05
Caring, leisure and other service	0.045	2.35	0.025	0.70	0.065	2.36
Sales and customer service	-0.003	-0.14	0.016	0.62	0.017	0.60
Process, plant and machine operatives	0.114	6.88	0.085	4.41	0.187	5.36
<b>Education attained</b>						
Third level degree or higher	0.347	23.69	0.307	16.52	0.417	16.30
Third level non-degree	0.180	12.50	0.154	8.37	0.239	9.57
Post leaving certificate	0.117	7.62	0.102	5.31	0.161	5.96
Higher secondary	0.096	7.12	0.084	5.10	0.142	5.81
<b>Male</b>	0.131	16.35				
<b>Public sector*</b>	<b>0.002</b>	<b>0.18</b>	<b>-0.062</b>	<b>-3.95</b>	<b>0.070</b>	<b>4.98</b>
<b>Nationality</b>						
UK	-0.009	-0.40	-0.044	-1.50	0.041	1.06
EU excluding IE and UK	-0.171	-13.87	-0.163	-10.07	-0.177	-9.23
Other	-0.130	-6.72	-0.187	-6.12	-0.081	-3.29
<b>Trade union member</b>	0.107	11.75	0.134	10.57	0.064	4.92
<b>Age</b>	0.068	19.36	0.078	16.18	0.054	10.80
<b>Age<sup>2</sup></b>	-0.710	-16.74	-0.817	-13.97	-0.566	-9.28
<b>Less than 100 employees</b>	-0.179	-24.35	-0.210	-20.81	-0.139	-13.07
<b>Length of service with current employer</b>	0.008	16.40	0.008	11.58	0.009	11.33
<b>Ln Overtime hours</b>	0.010	3.26	0.010	2.90	0.006	1.18
<b>Ln hours</b>	0.601	27.55	0.652	18.35	0.567	20.89
<b>Shift work</b>	-0.028	-3.00	-0.020	-1.60	-0.035	-2.48
<b>Supervisor</b>	0.096	12.09	0.113	10.09	0.079	7.18
<b>n</b>	11,565		6,252		5,313	
<b>R-Square</b>	0.507		0.501		0.512	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.12 OLS model estimates on log weekly earnings minus pension levy - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2013**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	1.945	17.99	1.718	10.36	2.302	16.00
<b>Occupation</b>						
Managers, directors and senior officials	0.368	19.66	0.349	14.78	0.413	12.83
Professional	0.424	25.60	0.445	20.22	0.423	15.35
Associate professional and technical	0.317	19.82	0.311	15.62	0.358	12.58
Administrative and secretarial	0.157	9.58	0.164	6.50	0.180	6.86
Skilled trades	0.124	7.67	0.124	6.63	0.074	1.76
Caring, leisure and other service	0.026	1.31	0.011	0.30	0.044	1.56
Sales and customer service	-0.015	-0.79	0.003	0.11	0.005	0.16
Process, plant and machine operatives	0.137	8.10	0.103	5.18	0.236	6.68
<b>Education attained</b>						
Third level degree or higher	0.371	24.81	0.342	17.88	0.427	16.44
Third level non-degree	0.191	12.97	0.167	8.77	0.244	9.59
Post leaving certificate	0.116	7.39	0.101	5.06	0.159	5.77
Higher secondary	0.104	7.53	0.093	5.45	0.145	5.84
<b>Male</b>	0.134	16.36				
<b>Public sector*</b>	<b>0.002</b>	<b>0.16</b>	<b>-0.068</b>	<b>-4.22</b>	<b>0.076</b>	<b>5.37</b>
<b>Nationality</b>						
UK	-0.013	-0.56	-0.051	-1.69	0.043	1.08
EU excluding IE and UK	-0.168	-13.25	-0.153	-9.17	-0.183	-9.36
Other	-0.126	-6.36	-0.175	-5.56	-0.081	-3.27
<b>Trade union member</b>	0.125	13.39	0.162	12.44	0.073	5.51
<b>Age</b>	0.070	19.63	0.080	16.04	0.057	11.30
<b>Age<sup>2</sup></b>	-0.740	-17.04	-0.839	-13.86	-0.606	-9.80
<b>Length of service with current employer</b>	0.009	16.46	0.008	11.76	0.009	11.20
<b>Ln Overtime hours</b>	0.010	3.34	0.010	2.68	0.009	1.62
<b>Ln hours</b>	0.662	29.82	0.702	19.16	0.625	22.98
<b>Shift work</b>	-0.005	-0.56	0.008	0.61	-0.018	-1.25
<b>Supervisor</b>	0.102	12.53	0.117	10.10	0.086	7.67
<b>n</b>	11,565		6,252		5,313	
<b>R-Square</b>	0.481		0.467		0.496	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.13 OLS model estimates on log weekly earnings - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2014**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.138	18.69	2.123	11.96	2.306	15.14
<b>Occupation</b>						
Managers, directors and senior officials	0.384	19.83	0.366	14.66	0.410	12.86
Professional	0.406	23.75	0.392	17.15	0.435	15.93
Associate professional and technical	0.307	18.58	0.280	13.33	0.371	13.26
Administrative and secretarial	0.150	8.72	0.124	4.52	0.186	7.21
Skilled trades	0.156	9.39	0.161	8.22	0.013	0.32
Caring, leisure and other service	0.049	2.35	-0.001	-0.03	0.083	2.94
Sales and customer service	0.024	1.27	0.023	0.86	0.053	1.85
Process, plant and machine operatives	0.118	6.72	0.107	5.17	0.133	3.66
<b>Education attained</b>						
Third level degree or higher	0.349	22.00	0.344	17.03	0.360	12.70
Third level non-degree	0.188	11.97	0.178	8.85	0.208	7.46
Post leaving certificate	0.103	6.29	0.104	5.04	0.101	3.45
Higher secondary	0.084	5.76	0.078	4.38	0.106	3.93
<b>Male</b>	0.126	14.84				
<b>Public sector*</b>	<b>0.049</b>	<b>4.40</b>	<b>-0.007</b>	<b>-0.42</b>	<b>0.115</b>	<b>7.65</b>
<b>Nationality</b>						
UK	0.036	1.55	0.036	1.19	0.029	0.80
EU excluding IE and UK	-0.160	-11.92	-0.144	-8.12	-0.170	-8.27
Other	-0.137	-6.80	-0.160	-5.56	-0.101	-3.66
<b>Trade union member</b>	0.096	9.83	0.122	8.96	0.053	3.82
<b>Age</b>	0.072	19.43	0.077	14.99	0.064	12.20
<b>Age<sup>2</sup></b>	-0.756	-16.92	-0.815	-13.05	-0.675	-10.64
<b>Less than 100 employees</b>	-0.186	-23.92	-0.204	-18.75	-0.165	-14.88
<b>Length of service with current employer</b>	0.009	16.15	0.009	12.34	0.008	10.19
<b>Ln Overtime hours</b>	0.008	2.71	0.005	1.38	0.013	2.26
<b>Ln hours</b>	0.639	27.32	0.645	16.13	0.629	22.45
<b>Shift work</b>	-0.020	-1.90	-0.008	-0.61	-0.035	-2.25
<b>Supervisor</b>	0.110	13.13	0.137	11.38	0.086	7.40
<b>n</b>	10,940		5,872		5,068	
<b>R-Square</b>	0.502		0.494		0.511	

\* The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.14 OLS model estimates on log weekly earnings - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2014**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	1.706	14.72	1.744	9.61	1.867	12.23
<b>Occupation</b>						
Managers, directors and senior officials	0.380	19.16	0.364	14.18	0.404	12.40
Professional	0.412	23.51	0.409	17.36	0.432	15.47
Associate professional and technical	0.322	19.01	0.298	13.83	0.380	13.30
Administrative and secretarial	0.163	9.28	0.147	5.22	0.188	7.15
Skilled trades	0.138	8.10	0.146	7.26	-0.008	-0.19
Caring, leisure and other service	0.023	1.11	-0.016	-0.40	0.049	1.70
Sales and customer service	0.018	0.93	0.019	0.70	0.039	1.35
Process, plant and machine operatives	0.139	7.73	0.124	5.82	0.182	4.94
<b>Education attained</b>						
Third level degree or higher	0.380	23.43	0.389	18.83	0.367	12.67
Third level non-degree	0.206	12.82	0.199	9.63	0.212	7.44
Post leaving certificate	0.114	6.79	0.114	5.34	0.106	3.55
Higher secondary	0.094	6.30	0.091	4.94	0.105	3.79
<b>Male</b>	0.130	14.96				
<b>Public sector<sup>*</sup></b>	<b>0.052</b>	<b>4.54</b>	<b>-0.010</b>	<b>-0.55</b>	<b>0.127</b>	<b>8.28</b>
<b>Nationality</b>						
UK	0.044	1.86	0.046	1.48	0.035	0.94
EU excluding IE and UK	-0.155	-11.24	-0.140	-7.65	-0.164	-7.81
Other	-0.127	-6.16	-0.148	-4.98	-0.097	-3.42
<b>Trade union member</b>	0.111	11.08	0.148	10.58	0.058	4.08
<b>Age</b>	0.075	19.77	0.080	14.97	0.069	12.87
<b>Age<sup>2</sup></b>	-0.792	-17.30	-0.840	-13.07	-0.734	-11.34
<b>Length of service with current employer</b>	0.009	16.41	0.010	12.68	0.008	10.13
<b>Ln Overtime hours</b>	0.010	3.29	0.007	1.85	0.016	2.74
<b>Ln hours</b>	0.698	29.27	0.690	16.79	0.692	24.46
<b>Shift work</b>	0.007	0.65	0.019	1.38	-0.010	-0.62
<b>Supervisor</b>	0.115	13.30	0.137	11.07	0.093	7.84
<b>n</b>	10,940		5,872		5,068	
<b>R-Square</b>	0.476		0.464		0.490	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.15 OLS model estimates on log weekly earnings minus pension levy - including size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2014**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	2.169	19.04	2.151	12.15	2.344	15.49
<b>Occupation</b>						
Managers, directors and senior officials	0.383	19.87	0.365	14.66	0.409	12.92
Professional	0.403	23.64	0.390	17.08	0.430	15.85
Associate professional and technical	0.305	18.52	0.277	13.27	0.369	13.28
Administrative and secretarial	0.150	8.79	0.124	4.52	0.186	7.29
Skilled trades	0.155	9.38	0.159	8.17	0.014	0.35
Caring, leisure and other service	0.053	2.60	0.004	0.11	0.087	3.10
Sales and customer service	0.022	1.19	0.021	0.80	0.051	1.81
Process, plant and machine operatives	0.117	6.70	0.106	5.14	0.131	3.64
<b>Education attained</b>						
Third level degree or higher	0.347	21.91	0.342	16.98	0.355	12.63
Third level non-degree	0.186	11.90	0.177	8.81	0.205	7.40
Post leaving certificate	0.102	6.26	0.104	5.01	0.099	3.41
Higher secondary	0.082	5.71	0.077	4.34	0.105	3.89
<b>Male</b>	0.126	14.89				
<b>Public sector<sup>*</sup></b>	<b>-0.006</b>	<b>-0.58</b>	<b>-0.066</b>	<b>-3.95</b>	<b>0.063</b>	<b>4.19</b>
<b>Nationality</b>						
UK	0.036	1.56	0.035	1.17	0.030	0.83
EU excluding IE and UK	-0.161	-12.04	-0.145	-8.19	-0.171	-8.37
Other	-0.137	-6.86	-0.160	-5.59	-0.102	-3.71
<b>Trade union member</b>	0.095	9.79	0.122	8.93	0.053	3.79
<b>Age</b>	0.071	19.48	0.077	15.01	0.064	12.23
<b>Age<sup>2</sup></b>	-0.755	-16.98	-0.814	-13.07	-0.674	-10.68
<b>Less than 100 employees</b>	-0.187	-24.13	-0.204	-18.81	-0.167	-15.13
<b>Length of service with current employer</b>	0.009	15.95	0.009	12.25	0.008	9.99
<b>Ln Overtime hours</b>	0.008	2.67	0.005	1.34	0.013	2.24
<b>Ln hours</b>	0.633	27.18	0.640	16.04	0.622	22.35
<b>Shift work</b>	-0.021	-2.07	-0.010	-0.73	-0.037	-2.37
<b>Supervisor</b>	0.109	13.05	0.136	11.34	0.085	7.34
<b>n</b>	10,940		5,872		5,068	
<b>R-Square</b>	0.492		0.486		0.496	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

**Table C.16 OLS model estimates on log weekly earnings minus pension levy - excluding size of enterprise as an explanatory variable**

**Permanent Full-time employees aged 25-59, 2014**

Parameter	Males & Females		Males		Females	
	Estimate	t Value	Estimate	t Value	Estimate	t Value
<b>Intercept</b>	1.735	15.03	1.772	9.78	1.900	12.52
<b>Occupation</b>						
Managers, directors and senior officials	0.380	19.20	0.363	14.18	0.403	12.45
Professional	0.409	23.40	0.406	17.30	0.427	15.37
Associate professional and technical	0.320	18.95	0.296	13.76	0.378	13.32
Administrative and secretarial	0.164	9.35	0.147	5.23	0.189	7.22
Skilled trades	0.137	8.07	0.145	7.21	-0.007	-0.17
Caring, leisure and other service	0.028	1.33	-0.011	-0.27	0.052	1.83
Sales and customer service	0.016	0.84	0.018	0.64	0.037	1.30
Process, plant and machine operatives	0.138	7.72	0.124	5.80	0.181	4.94
<b>Education attained</b>						
Third level degree or higher	0.378	23.35	0.387	18.78	0.362	12.60
Third level non-degree	0.204	12.76	0.198	9.60	0.209	7.39
Post leaving certificate	0.113	6.76	0.113	5.31	0.105	3.51
Higher secondary	0.093	6.25	0.090	4.90	0.103	3.76
<b>Male</b>	0.130	15.01				
<b>Public sector<sup>*</sup></b>	<b>-0.004</b>	<b>-0.31</b>	<b>-0.069</b>	<b>-3.98</b>	<b>0.075</b>	<b>4.90</b>
<b>Nationality</b>						
UK	0.044	1.87	0.045	1.47	0.036	0.98
EU excluding IE and UK	-0.156	-11.35	-0.141	-7.72	-0.165	-7.89
Other	-0.128	-6.22	-0.148	-5.01	-0.097	-3.46
<b>Trade union member</b>	0.110	11.04	0.147	10.56	0.058	4.05
<b>Age</b>	0.075	19.81	0.079	14.99	0.068	12.91
<b>Age<sup>2</sup></b>	-0.792	-17.35	-0.839	-13.09	-0.733	-11.39
<b>Length of service with current employer</b>	0.009	16.22	0.009	12.59	0.008	9.93
<b>Ln Overtime hours</b>	0.010	3.25	0.007	1.81	0.016	2.72
<b>Ln hours</b>	0.693	29.14	0.685	16.70	0.686	24.38
<b>Shift work</b>	0.005	0.50	0.018	1.27	-0.011	-0.71
<b>Supervisor</b>	0.114	13.22	0.136	11.03	0.092	7.78
<b>n</b>	10,940		5,872		5,068	
<b>R-Square</b>	0.465		0.455		0.473	

<sup>\*</sup> The estimated premium is calculated taking  $\exp(\beta)-1$ , where  $\beta$  is the estimated coefficient above

## Appendix D: Quantile Regression Results

### Public Sector Pay Differentials

**Table D.1 Quantile Regression Model: Gross weekly earnings  
Permanent Full-Time employees aged 25-59 years, 2011**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	12.23	32.46	21.45	17.76	34.69	25.11
20th	11.05	22.40	16.51	12.51	24.61	17.84
30th	8.74	18.26	14.11	11.32	20.35	14.35
40th	7.87	15.88	11.92	7.95	16.35	12.51
50th	5.57	12.30	9.54	5.32	13.33	10.00
60th	3.38	11.48	6.83	2.53	11.19	7.12
70th	-0.04	8.82	4.62	-0.98	8.36	2.99
80th	-3.82	5.89	0.59	-5.29	5.34	0.39
90th	-10.87	0.20	-3.13	-10.81	2.52	-3.34

**Table D.2: Quantile Regression Model: Gross weekly earnings  
Permanent Full-Time employees aged 25-59 years, 2012**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	15.17	26.48	18.71	15.94	30.50	21.80
20th	12.05	24.71	16.07	14.01	26.63	18.67
30th	9.61	19.79	13.46	10.48	20.01	13.70
40th	7.32	15.43	11.46	7.43	16.78	10.67
50th	4.92	14.64	9.48	4.58	14.24	9.23
60th	4.66	11.63	6.96	2.18	11.64	6.90
70th	0.92	8.52	4.49	0.16	8.99	4.30
80th	-2.82	6.05	1.55	-2.69	5.36	1.49
90th	-6.24	2.21	-2.39	-8.18	2.47	-3.11

**Table D.3: Quantile Regression Model: Gross weekly earnings  
Permanent Full-Time employees aged 25-59 years, 2013**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	11.88	22.72	16.89	11.61	24.86	18.77
20th	8.34	19.60	13.64	9.35	21.08	15.15
30th	5.35	18.10	10.77	5.12	18.32	11.80
40th	2.73	16.17	7.83	3.25	16.51	9.31
50th	0.31	14.96	7.24	-0.29	14.32	6.79
60th	-0.42	11.53	5.10	-1.55	12.90	5.15
70th	-2.05	9.98	3.06	-4.04	9.09	2.19
80th	-4.58	5.79	0.34	-6.14	4.17	-0.17
90th	-4.92	-1.05	-3.19	-9.04	-1.81	-5.49

**Table D.4 Quantile Regression Model: Gross weekly earnings  
Permanent Full-Time employees aged 25-59 years, 2014**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	6.76	28.81	16.23	11.42	31.90	19.95
20th	6.81	23.00	14.26	8.55	26.04	15.57
30th	4.67	18.10	9.75	5.00	20.86	12.02
40th	0.25	16.03	7.14	0.70	16.67	8.94
50th	-2.22	13.05	4.99	-2.84	14.80	5.47
60th	-2.87	8.60	2.63	-3.41	10.21	2.07
70th	-3.48	5.76	0.48	-4.49	5.45	-0.86
80th	-5.09	0.95	-2.56	-7.60	-0.88	-4.23
90th	-10.45	-2.95	-6.60	-11.11	-4.76	-7.42

**Table D.5 Quantile Regression Model: Weekly earnings less pension levy  
Permanent Full-Time employees aged 25-59 years , 2011**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	6.76	27.24	16.09	12.24	29.18	19.52
20th	5.38	17.37	11.06	5.84	19.20	11.87
30th	2.75	12.61	7.97	5.22	14.59	8.73
40th	1.56	9.80	5.81	1.50	10.20	6.07
50th	-1.10	6.27	3.14	-0.89	6.81	3.38
60th	-3.27	5.11	0.52	-4.19	5.03	0.65
70th	-6.89	2.38	-2.04	-7.76	1.87	-3.45
80th	-10.26	-0.50	-5.98	-11.77	-0.73	-5.89
90th	-16.01	-5.83	-9.65	-16.96	-4.32	-9.65

**Table D.6 Quantile Regression Model: Weekly earnings less pension levy  
Permanent Full-Time employees aged 25-59 years, 2012**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	9.61	21.69	13.79	10.16	25.82	16.26
20th	5.69	19.49	10.35	7.65	21.24	12.89
30th	3.44	13.85	7.55	4.46	13.86	7.78
40th	0.88	9.11	5.26	1.15	10.51	4.48
50th	-1.69	8.00	3.11	-1.68	7.92	2.88
60th	-1.84	5.41	0.56	-4.30	5.36	0.67
70th	-5.85	2.08	-1.94	-6.56	3.09	-2.11
80th	-9.73	-0.66	-4.99	-9.14	-1.34	-4.99
90th	-13.26	-4.42	-8.73	-14.59	-4.50	-9.41



**Table D.7 Quantile Regression Model: Weekly earnings less pension levy**  
**Permanent Full-Time employees aged 25-59 years, 2013**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	6.12	19.81	11.93	6.44	19.70	13.20
20th	2.47	14.72	8.42	3.06	15.56	9.50
30th	-1.09	12.48	4.95	-0.62	13.03	5.35
40th	-4.32	9.98	1.97	-3.64	10.36	2.86
50th	-5.80	8.32	0.50	-6.43	7.63	0.49
60th	-6.71	4.89	-1.65	-7.92	6.13	-1.27
70th	-8.26	3.28	-3.22	-9.91	2.94	-4.51
80th	-10.99	-0.92	-5.61	-12.64	-1.40	-6.46
90th	-11.20	-6.36	-8.99	-15.65	-7.97	-11.01

**Table D.8 Quantile Regression Model: Weekly earnings less pension levy**  
**Permanent Full-Time employees aged 25-59 years, 2014**

Percentile	Including Size			Excluding Size		
	Male	Female	Total	Male	Female	Total
10th	2.68	26.67	11.19	6.35	26.77	15.30
20th	1.53	17.89	8.72	2.62	21.00	10.40
30th	-1.16	12.63	4.32	-0.38	15.56	5.94
40th	-4.94	10.03	1.95	-4.44	11.23	2.86
50th	-7.45	6.66	-0.93	-8.30	8.74	-0.17
60th	-8.53	3.26	-3.13	-9.18	4.01	-3.76
70th	-9.43	0.01	-5.37	-10.26	-0.32	-6.13
80th	-11.03	-4.60	-8.41	-13.55	-6.19	-9.99
90th	-15.52	-8.60	-12.48	-16.61	-10.61	-13.16

## Appendix E: Gross Earnings by Decile

**Table E.1 Distribution of annual gross earnings  
Permanent Full-time Employees aged 25-59**

Percentile	2011	2012	2013	2014
10th	€16,208	€15,600	€16,381	€15,580
20th	€21,810	€21,196	€21,894	€21,380
30th	€26,566	€26,104	€26,499	€26,190
40th	€30,832	€30,596	€30,952	€30,650
50th	€35,541	€35,507	€35,846	€35,440
60th	€41,103	€41,064	€41,372	€40,870
70th	€47,677	€47,821	€48,130	€47,819
80th	€57,224	€57,009	€57,048	€56,391
90th	€71,113	€71,370	€71,195	€70,744

**Table E.2 Distribution of annual gross earnings  
Male Permanent Full-time Employees aged 25-59**

Percentile	2011	2012	2013	2014
10th	€17,085	€16,759	€17,305	€16,617
20th	€22,743	€22,492	€23,333	€22,766
30th	€27,642	€27,188	€27,608	€27,301
40th	€32,083	€31,707	€31,999	€31,910
50th	€36,965	€36,924	€37,464	€36,808
60th	€42,878	€42,661	€43,157	€42,399
70th	€50,549	€50,421	€50,785	€50,000
80th	€61,054	€60,286	€60,793	€59,766
90th	€77,504	€77,541	€77,322	€77,584

**Table E.3 Distribution of annual gross earnings  
Female Permanent Full-time Employees aged 25-59**

Percentile	2011	2012	2013	2014
10th	€15,004	€14,606	€15,173	€14,615
20th	€20,701	€19,912	€20,419	€19,890
30th	€25,202	€24,713	€25,298	€24,688
40th	€29,387	€29,012	€29,653	€29,152
50th	€33,832	€33,605	€34,089	€33,759
60th	€39,016	€38,938	€38,896	€38,880
70th	€44,906	€45,392	€45,356	€45,306
80th	€52,955	€53,464	€53,163	€53,213
90th	€63,787	€64,393	€64,215	€63,363

**Table E.4 Distribution of annual gross earnings  
Public Sector Permanent Full-time Employees aged 25-59**

Percentile	2011	2012	2013	2014
10th	€27,980	€27,964	€28,550	€28,196
20th	€33,011	€33,769	€33,809	€33,391
30th	€37,402	€37,964	€38,064	€37,213
40th	€42,348	€42,742	€42,953	€41,727
50th	€46,955	€47,526	€47,871	€46,530
60th	€52,861	€52,587	€52,749	€51,728
70th	€58,499	€57,781	€57,278	€56,274
80th	€64,931	€63,949	€63,554	€61,605
90th	€73,993	€73,772	€72,327	€70,266

**Table E.5 Distribution of annual gross earnings  
Private Sector Permanent Full-time Employees aged 25-59**

Percentile	2011	2012	2013	2014
10th	€14,448	€13,935	€14,931	€14,009
20th	€19,874	€19,248	€19,866	€19,266
30th	€23,886	€23,295	€24,000	€23,582
40th	€27,729	€27,108	€27,659	€27,500
50th	€31,895	€31,283	€31,656	€31,851
60th	€36,778	€36,245	€36,876	€36,764
70th	€43,081	€42,709	€43,018	€43,077
80th	€52,042	€52,112	€52,538	€52,819
90th	€68,942	€69,425	€70,575	€71,221

**Table E.6 Distribution of annual gross earnings minus Pension Levy  
Public Sector Permanent Full-time Employees aged 25-59**

Percentile	2011	2012	2013	2014
10th	€26,932	€26,917	€27,445	€27,251
20th	€31,460	€32,142	€32,178	€31,927
30th	€35,412	€35,918	€36,008	€35,367
40th	€39,863	€40,218	€40,408	€39,429
50th	€44,009	€44,523	€44,834	€43,752
60th	€49,325	€49,079	€49,224	€48,430
70th	€54,399	€53,753	€53,300	€52,522
80th	€60,163	€59,284	€58,931	€57,311
90th	€68,273	€68,076	€66,783	€65,063

## **Appendix F: Differences between this report and previous analyses of the public/private pay differential**

1. Previously, analysis of the public/private sector pay differential was carried out based on the National Employment Survey (NES) data (2007 to 2010).
2. The NES survey comprised a sample of 60,000 to 65,000 employees surveyed from enterprises. The sample was selected based on the proportion of companies in each economic sector (NACE Rev 1.1 two digit sector) and in each of a number of class sizes. The employers then selected a systematic sample of employees from their payrolls. Because the sample was selected to be representative of the employee population in terms of NACE sector and public/private, the issue of using sampling weights in the regression analysis was not clear-cut, see Fazio, Lam and Ritchie (2006), Gelman (2007), Winship and Radbill (1994). For this reason, the econometric analysis of the public/private sector wage gap for the NES provided both weighted and unweighted results.
3. The analysis in this research paper is based on the Quarterly National Household Survey (QNHS) which is a large-scale, nationwide survey of households in Ireland. It is designed to produce quarterly labour force estimates that include the official measure of employment and unemployment in the state (International Labour Organisation - ILO basis) as well as on persons outside the labour force.

The QNHS survey weights were calibrated to the P35L file by public/private, sex, age group and NACE. These calibrated survey weights are necessary to be representative of the population of employees so only weighted results are presented in this paper.

The data source for this analysis is based on QNHS data matched to the P35L file. Earnings data was taken from the P35L file of annual earnings for individual employments. The matched dataset comprises of a pooled sample of 11,000 to 14,000 employees in the period 2011 to 2014.

4. The focus of the P35L is on individual employments and is different from the NES which focuses on employees. An individual may have multiple employments on the P35L file.
5. The size of enterprise used in the NES analysis was the size of the parent unit whereas the size of enterprise used here is the size of the local unit. The NES classified companies with less than 250 employees as “small” and greater than or equal to 250 employees as “large” whereas this analysis uses a cut-off of 100 employees to distinguish between small and large.
6. Previous econometric analysis of the NES included two extra explanatory variables that were not available using the QNHS. These are “Total time in all paid employment” and “Membership of a professional body”.
7. Previous analysis based on the NES was done on the basis of weekly contracted hours. The analyses in this research paper have been carried out on the basis of weekly ‘usual hours worked’ as reported by the QNHS Survey.

It should be noted that there are some differences between ‘usual hours worked’ when compared with ‘contracted hours’ (the former is generally slightly higher). Typically these cases arise in occupations that require employees to be flexible, such as in the educational sector or occupations with shift-work or where ‘stand-by’ or ‘emergency call out’ is an integral condition of the job.

8. These results included in this analysis are presented with the public service pension levy, which was introduced in 2009, factored both in and out.
9. Commercial semi state organisations have been categorised to the private sector.
10. This data is for 2011 to 2014 only. No analysis has been carried out for 2015 as the data sources for 2015 are not yet complete.

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