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The public-private sector pay gap in Ireland: What lies beneath?

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The Public-Private Sector Pay Gap in Ireland: What Lies Beneath?

Elish Kelly, Seamus McGuinness, Philip O'Connell

Abstract: This paper provides a sub-sectoral analysis of changes in the public-private sector pay gap in Ireland between 2003 and 2006. We find that between March 2003 and October 2006 the public sector pay premium increased from 14 to 26 per cent and that there was substantial variation between subsectors of the public service. Within the public service the premium in 2006 was highest in Education and Security Services and lowest in the Civil Service and Local Authorities. In the private sector the pay penalty in 2006, relative to the public sector, was most severe in Hotels & Restaurants and in Wholesale & Retail and least severe in Financial Intermediation and Construction. The paper tests for the sensitivity of the pay gap estimates using a matching framework, which provides a stronger emphasis on job content, and finds the results to be broadly comparable to OLS. Finally, the study highlights the problems associated with controlling for organisational size in any study of the public-private pay gap in Ireland.

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The Public-Private Sector Pay Gap in Ireland: What Lies Beneath?

1.0 Introduction

The public sector pay premium has become a central issue within the public policy debate in Ireland. The existence of a large public sector pay premium is an important issue for analysis as it can have serious implications for economic performance and growth, not to mention the public finances and the labour market. Most importantly, as argued by both Kelly *et al.*, (2009) and the International Monetary Fund in its 2009 assessment of the Irish economy, it has the potential to erode international competitiveness by putting wage pressure on other sectors of the economy as they compete for labour.

This paper examines the change in the distribution and relative magnitude of public-private sector wage differentials in Ireland between March 2003 and October 2006. The research seeks to build on recently published work by Kelly *et al.*, (2009) by assessing the differential between various sub-divisions of the public sector relative to the private sector and vice versa. The paper also attempts to overcome some of the empirical criticisms levelled at OLS-based approaches to measurement of the pay premium, by implementing Propensity Score Matching (PSM). The PSM approach overcomes problems of distribution and specification and, arguably, due to the specifications we employ, can provide an estimate that places a heavier emphasis on job characteristics relative to OLS which places higher weight on human capital characteristics.

2.0 Issues of Model Specification and Estimation

One of the key challenges in assessing pay differentials between groups is to ensure a “like-with-like” comparison. Thus, we know that public sector workers are more likely to have higher levels of education, to work in professional occupations and to have longer work experience. Kelly *et al.*, (2009) specified a wide range of variables in their OLS models to take account of these differences, including, gender, experience, educational

attainment, occupation, membership of a professional body, supervisory role, weekly hours, overtime hours and shift work. These are standard control variables typically included in international research on pay differentials.

There has been some debate as to whether organisation size should be included in any model of the public-private pay gap on the grounds that public sector workers are more likely to be employed in large organisations and that this should be reflected in higher pay levels in a similar fashion to that generally observed in the private sector. It should be noted that the private sector firm size effect is generally taken to reflect a pay-off to productivity-led economies of scale and will, at least in the Irish context, be heavily related to employment in Multinational Enterprises (MNE's). We argue on the basis of both logic and theory that the inclusion of an organisation size variable here, or in any other models of the public sector pay premium, is not appropriate within an Irish context.

The issue of organisation size is far from a trivial issue given that recently published estimates demonstrate that the inclusion of such a variable has a large impact on the magnitude of the estimated premium (Central Statistics Office (CSO) 2009, Ernst & Young and Murphy, 2007). The principal reason for this large impact relates to the fact that virtually all public sector workers in Ireland are employed in large organisations. These previous studies (CSO 2009, Ernst & Young and Murphy, 2007) also use data from the National Employment Survey (NES) and report estimates that include an organisation size variable relating to 250 or more employees¹. The principal problem with this approach relates to the fact that almost all public sector workers in the sample are employed within organisations of more than 250 persons. For instance, in the October 2006 NES sample of full-time permanent employees used in this study here, 97.5 per cent are employed within large organisations compared to just over 30 per cent of private sector employees. This leads us to our objection based on logic. We do not believe that there exists any basis for applying a private sector based high productivity premium,

¹ It should be noted that Ernst & Young and Murphy (2009) did not include the organisational size variable in their final specification.

typically in the region of 10 per cent, to virtually all public sector employees, irrespective of grade or function².

Our concerns relating to theoretical soundness of the inclusion of an organisation size variable also stem from the fact that the size distributions of employment differ substantially between the public and private sectors.

The Handbook of Labour Economics (Ashenfelter and Card, 1999), a key reference source for labour economists, provides some guidance on the issue of organisational size. Gregory & Borland (1999) suggest that one should only include controls for occupation or organisation size in studies of the public-private sector pay gap if it can be confidently established that these factors represent fixed characteristics that will remain constant as workers move between the public and private sectors. While a clear argument can be made with respect to the permanence of occupation, the situation is certainly less clear cut for organisation size. Relating back specifically to Irish models that contain the organisational size control, if we consider that almost all public sector workers are employed in organisations of more than 250 persons, compared to 30 per cent in the private sector, this suggests that for 70 per cent of private sector workers organisation size would, necessarily, change in the event of a job relocation to the public sector. Public sector workers relocating to the private sector are also more likely to relocate to a smaller organisation, again based on the distribution of employment. Clearly, the extreme asymmetry between the public and private sector employment distributions in Ireland demonstrates that we cannot consider organisation size to represent a fixed characteristic and, therefore, it should not be included in the model. Consequently, as in our previous study on the public-private sector pay gap in Ireland (Kelly *et al.*, 2009) organisation size is once again excluded from our specification. Furthermore, we would contend that any future estimates based on a model that includes such a control should provide a strong justification for doing so.

² When wage models are estimated separately for the public and private sectors a positive and significant coefficient on the firm size dummy variable is only observed within the private sector equation.

With respect to estimation strategy, the public sector pay premium is usually assessed within the OLS framework which measures each individual's expected wage, controlling for human capital characteristics, which are widely accepted within economics and the international literature as the principal determinants of an individual workers earning capacity (Becker, 1964). As such, we believe that the OLS approach represents the most appropriate framework for assessing the extent of the wage gap. The OLS specification can be written as follows

$$W_i = \beta X_i + \gamma \text{sector}_i + \varepsilon_i \quad (1)$$

where W_i is the log weekly earnings of employee i , X_i is a set of controls for productivity-related and job characteristics of employee i (e.g. education, experience, occupation, etc), β measures the return to each of the characteristic controls, sector_i is a dummy variable that captures the employee's work sector and γ measures the return to the employee's sector of employment, that is, the public sector premium/discount.

Nevertheless, it has been suggested that the OLS framework is flawed as it does not take sufficient account of the fact that public sector workers occupations differ substantially from those of their private sector counterparts and, thus, OLS does not provide for a "like-with-like" comparison. In order to assess the extent to which our results are sensitive to a change of emphasis from human capital to occupation-related variables, we also estimate the 2006 public sector premia using propensity score matching (PSM) models that include detailed occupational information.

PSM is a non-parametric technique designed to overcome the problem of non-random selection in treatment groups and it has been widely applied in evaluations of labour market programs. Intuitively, the PSM method follows a two-step procedure whereby in step one each individual's probability (or propensity score) of receiving the treatment is assessed conditional on a set of explanatory variables. Individuals in the treatment and control groups are then matched on the basis of their propensity scores, which is

equivalent to matching on the key characteristics of the treatment group. The outcome variable, typically the wage, of the treatment and control groups are then compared.

The propensity score is defined in a seminal work by Rosenbaum and Rubin (1983) as the conditional probability of receiving a treatment given certain determining characteristics:

$$p(X) = \Pr\{D=1 / X\} = E\{D / X\} \quad (2)$$

where D is a binary term indicating exposure to the treatment (T) and X is a vector of determining characteristics. For any individual in a given population denoted by i , the propensity score $p(X_i)$, known the Average effect of Treatment on the Treated (ATT), can be estimated as follows:

$$T = E\{Y1_i - Y0_i / D_i = 1\} \quad (3)$$

$$T = E\{E\{Y1_i - Y0_i / D_i = 1, p(X_i)\}\} \quad (4)$$

$$T = E\{E\{Y1_i / D_i = 1, p(X_i)\} - E\{Y0_i / D_i = 0, p(X_i)\} / D_i = 1\} \quad (5)$$

where the outer expectation is over the distribution of $(p(X_i)|D_i = 1)$, and $Y1_i$ and $Y0_i$ are the potential outcomes in the two counterfactual situations of the treatment and non-treatment respectively. Effective PSM estimation requires a rich data set that contains sufficient control variables that allow the propensity score to be efficiently modelled and matching to be performed.

In this paper, the treatment group consists of public sector workers and the control group of private sector equivalents holding similar attributes. We include two-digit occupational codes as controls within the first stage of the model in order to ensure that, in instances where the occupational structure of the public sector component differs substantially

from the private sector, occupation will be given a higher weight in the computation of the propensity score. Consequently, the matching process will ensure that, in such instances, public sector workers will be matched with private sector equivalents in similar occupations. This will ensure that in circumstances where the occupational structure of the public sector workforce differs markedly from that of the private sector that this will be reflected in the matching process, thus helping to ensure a “like-with-like” comparison.

Obviously, in many instances the public sector occupational structure will be endogenous with respect to public sector employment. However, this is not problematic since we are not measuring causality, but merely using the PSM approach to identify the areas where important occupational differences exist between the public and private sectors. By specifying our model in this manner we are deliberately giving higher weight to occupational differences in order to better control for differences in job-type across both sectors.

An added advantage of the PSM approach is that its non-parametric nature enables us to reintroduce into the analysis variables, such as trade union membership, which were previously excluded from our OLS models due to concerns relating to colinearity bias. Finally, due to the fact that the public sector accounts for only a third of our sample and that many private sector occupations will not be observed within the public sector population in sufficient numbers to allow for proper balancing, it is not feasible to generate PSM estimates for the private sector in this study. Therefore, the PSM sensitivity analysis will be restricted to the public sector estimates only.

The remainder of the paper is structured as follows. Section 3 provides an overview of the data and descriptive information on the structure of employment across the public and private sectors. Section 4 uses the OLS framework to assess the extent of changes in the public-private sector pay gap between March 2003 and October 2006, first the overall gap and then looking at specific components of the public sector relative to the private sector base and vice versa. Section 5 measures the 2006 public service organisation

premiums under the PSM framework and assesses the sensitivity of our results to this approach. Finally, Section 6 provides a summary and conclusion.

3.0 Data

The data used in this study come from the March 2003 and October 2006 National Employment Surveys. The National Employment Survey (NES) is a workplace survey, covering both the public and private sectors, which is carried out by the Central Statistics Office (CSO). The employer sample is drawn from the CSO's Central Business Register. Selected firms are then asked to extract a systematic sample of employees from their payrolls³. Approximately 89,000 employees were included in the March 2003 NES and 68,427 in the October 2006 survey. The analyses conducted in this paper are based on a sample of full-time, permanent employees who are aged between 25 and 59, which is in line with our previous public-private sector pay gap study (Kelly *et al.*, 2009). However, one modification to our previous work is that we now include semi-state body employees, which is due to the sub-sectoral focus of the paper. Consequently, the March 2003 OLS pay gap results presented in Section 4 will differ slightly from those in our previous study (Kelly *et al.*, 2009). After imposing our sample restrictions, the final 2003 NES sample consisted of 31,604 employees, while the October 2006 sample was 32,950. Given that the NES population is representative of the distribution of organisations in Ireland and not the distribution of employees in employment, the use of unweighted NES data would generate biased estimates of the pay gap. Thus, we apply cross-sectional weights to our data to ensure that our results are not biased by a skewed sample but are representative of the population of working age employees.

In addition to the NES containing information on earnings, hours worked (including overtime) and sector (public or private), the survey also contains a rich range of controls that are needed to estimate the standard sorts of earnings models that are employed in

³ Only employers with more than three employees are surveyed and the data are collected at the enterprise level. While the NESs are of enterprises with 3 plus employees, the results are calibrated to the Quarterly National Household Survey (QNHS) employment data for employees (excluding agriculture, forestry and fishing), which covers all employees.

studies of the public-private sector wage gap. This includes data on educational attainment, gender, work experience and occupation, along with detailed job (supervisory responsibilities, professional body membership, shift-work) and organisational (public sector, trade union membership) information. The March 2003 NES only contains one-digit occupation information, however, the October 2006 survey includes more detailed two-digit data on 26 occupations (ISCO-88) ⁴, which are listed in Table A1 in the Appendix. In order to control more accurately for differences in the occupational structure across the public and private sectors, and thus to derive more robust estimates of any pay premia, we use this comprehensive occupation information in one of our 2006 specifications. This two-digit occupation data is also a key variable in our PSM sensitivity tests. In addition to occupation, we also control for gender, experience, educational attainment, membership of professional bodies, supervisory roles, shift-work, working hours and overtime in our specifications. Trade union membership is also included in our PSM models.

One of the main advantages of the NES data is that both the public service and private sectors can be broken out into their various sub-components, which is what enables us to examine pay differentials between the various sub-divisions of the public sector relative to the private sector and vice versa. The public service sub-sectors are i) Civil Service, ii) Education, iii) Health, iv) Security Services (Guards, Prison Officers and Defence Forces), v) Non-commercial Semi-states, vi) Commercial Semi-states, vii) Local Authority and viii) Marine, while the private sector sub-divisions are i) Manufacturing, ii) Construction, iii) Wholesale & Retail, iv) Hotels & Restaurants, v) Private Electricity, vi) Transport & Communication, vii) Financial Intermediation, viii) Business Services, ix) Private Education, x) Private Health and xi) Other Service. Due to confidentiality constraints, the Marine sector and Private Electricity sector results are not reported.

⁴ The International Standard Classification of Occupations (ISCO), which was developed by the International Labour Organisation (ILO), is a tool for organising jobs into clearly defined sets of groups according to the tasks and duties undertaken in the job. ISCO-88 is the third version of the ISCO (see <http://www.ilo.org/public/english/bureau/stat/isco/isco88/index.htm> for more details on ISCO-88).

The earnings information collected in the NES represents the gross monthly amount payable by the organisation to its employees, and relates to the month of March in 2003 and October 2006. This includes normal wages, salaries and overtime; taxable allowances, regular bonuses and commissions⁵; and holiday or sick pay for the period in question. It does not include employer's Pay Related Social Insurance (PRSI), redundancy payments and back pay. Our dependent variable is the log of gross weekly earnings.

Table 1 gives a breakdown of employment by sector, based on the October 2006 NES data. Manufacturing emerges as being the biggest employer in the economy, with almost one-fifth of prime-aged, permanent, full-time employees employed in this sector. This is followed by the Construction (13 per cent), Wholesale & Retail (12 per cent) and Business Services (9 per cent) sectors. The two largest employers after this are in the public sector, Health (7.5 per cent) and Education (7.3 per cent).

<Insert Table 1 Here>

From Table 2 we can see that public service workers weekly earnings grew by 22 per cent between March 2003 and October 2006, while private sector employees' weekly wages increased by 13 per cent. In relation to the wage gap in weekly earnings between both sectors, this increased from 16 per cent in March 2003 to 25 per cent in October 2006. However, this is the raw pay gap, which does not take account of differences in human capital and job characteristics between both sectors. As can be seen from Table A2 in the Appendix, which presents descriptive information on the characteristics of both sectors, a higher proportion of public service workers have third-level qualifications (55 per cent compared to 32 per cent of private sector employees), are employed in Professional and Associate Professional occupations (51 per cent compared to 19 per cent of private sector workers) and have higher levels of experience. All these characteristics are associated with higher earnings. Private sector were found to work longer hours

⁵ It is likely that the peak of commission remuneration received by private sector workers over the last few years is captured by the data used in this study.

(almost 40 hours per week compared to 36 hours in the public sector), were more likely to be male (67 per cent compared to 43 per cent in the public sector) and undertook more supervisory responsibilities.

<Insert Table 2 Here>

With respect to weekly wages in the individual sub-sectors (Table 2), the main findings were as follows. Between 2003 and 2006, the largest growth in wages in the public service was observed in the Civil Service (33 per cent) and Health (32 per cent). In 2006, average weekly earnings were highest within the Security Services (€1, 045) and Non-commercial semi-state (€1,019) sectors. With respect to the private sector, earnings growth over the period was highest within Private Health (23 per cent) and Private Education (22 per cent). Finally, in 2006 average weekly earnings were highest in Financial Intermediation (€964) and Construction (€866).

In terms of the employment structure in the public service (Table A3), the Education sector contained the highest proportion of graduates (84 per cent), while Commercial semi-states and Security Services contained the lowest (13 and 15 per cent respectively). While the Teaching Profession dominated the Education sector, Associate Professional and Office Clerks were more important within the Civil Service, while Life Science Professionals' dominated the Health sector. Regarding the private sector (Table A4), Private Education and Financial Intermediation employed the largest amount of graduates (41 and 40 per cent respectively), while Wholesale & Retail, Transport & Communication and Construction contained the biggest proportion of employees with second-level qualifications. Employees in the Manufacturing and Construction sectors worked the longest hours (41 hours per week), while Private Education employees worked the least (34 hours per week). Trade union membership was lowest in the Hotel & Restaurants (16 per cent) and Business Services (18 per cent) sectors, and highest in Private Health (42 per cent), Manufacturing (40 per cent) and Financial Intermediation (39 per cent).

4.0 OLS Estimation

Table 3 reports the OLS results using our standard model from 2003 and 2006. As indicated in Section 3, the model results will differ slightly from those of Kelly *et al*, (2009) due to the fact that semi-state bodies have now been included in the public sector base. While there is some debate as to the extent to whether or not this component should be included as public sector, given that it fell outside the benchmarking process, we include semi-state employees within the public sector sample simply because we are interested in its relative position within the more disaggregated framework. However, given the high concentration of relatively highly paid workers within semi-state bodies, the inclusion of this component will increase the estimated public sector premium somewhat, particularly for males.

The results from our initial models indicate that the public sector pay premium increased between March 2003 and October 2006 from 14.1 per cent to 25.9 per cent for all workers, with the corresponding figures for males (females) standing at 12.8 and 25.4 per cent (14.9 and 26.1 per cent) respectively. In terms of the other covariates in the model, earnings were heavily dependant on educational attainment and experience levels, and also increasing with hours worked and supervisory responsibilities.

The models reported in Table 3 control for the occupations undertaken by employees but only at a relatively crude one-digit level, specifically 9 occupations. However, as stated in Section 3, the 2006 NES data contains more detailed two-digit information on the 26 occupations (see Table A1 in the Appendix) and by including this information in our models we should be better able to control for differences in the occupational structure across the public and private sectors, thus improving the robustness of our estimates. Nevertheless, we find that inclusion of the more detailed occupational variables (Table 4) has very little impact on the estimated premiums and, if anything, the public sector pay advantage increased only slightly.

< Insert Table 3 Here >

< **Insert Table 4 Here** >

The principal contribution of this study lies in the fact that it breaks out individual components of the public sector in order to assess the extent to which the wage premium varies across different components of the public sector and the degree to which this pattern has changed over time. The results from the 2003 and 2006 models with basic one-digit occupational controls are reported in Table 5. It is obvious that the premium varies substantially, for instance, in 2003 employees in the Civil Service earned 16.7 per cent less than their private sector equivalents, while workers in the Education and Commercial Semi-state bodies earned premiums of 25 per cent and above. However, by 2006 the situation had changed dramatically with employees in all public service sub-sectors earning a premium relative to the private sector. Nevertheless, substantial levels of variation within the public service remained in 2006 with Civil Service employees again earning the lowest premium, along with Local Authority workers, while employees in the Education and Security Services sub-sectors enjoyed the largest differentials. Over the 2003 to 2006 period the largest increases in the positive premiums were observed in the Security Services sector, which increased from 11.8 to 40.6 per cent.

With respect to gender, the patterns generally align with those of the overall labour market; however, some differences were apparent. Within the Security Services sector, in 2003 female employees earned a premium of 37.9 per cent over their private sector equivalents increasing to 57.7 per cent in 2006. This was in contrast to male Security Service workers who saw their differential increase from 7.3 to 35.5 per cent over the same period. Finally Table 6 again tests the sensitivity of our results to the inclusion of the more detailed two-digit occupational controls in our model. The premiums again increase slightly when more disaggregated job information is included, with the impacts largest for males employed in the Civil Service, Education, Security Services and Local Authority sectors. It is important to note that even within sub-sectors important variations exist. The high premium in the Education result is driven primarily by very high premiums in the Institutes of Technology and University Sectors. In Security Services,

while workers in the Garda and Prison Officers sectors earned high premiums, Army workers actually earned less than their private sector equivalents.

< Insert Table 5 Here >

< Insert Table 6 Here >

The results for the more detailed private sector components relative to the public sector base are reported in Table 7. Although a pay penalty was experienced in most components of the private sector in 2003 relative to the public sector base, a high degree of variation was again detected at the sub-sector level. In 2003, the private sector pay penalty was highest in the Hotels & Restaurants and Private Education sectors at 40.1 and 35.7 per cent respectively. Perhaps not surprisingly, at less than 1 per cent, the private sector pay penalty was lowest within the Construction industry and, in fact, we cannot reject the hypothesis that the difference was zero. Employees in Financial Intermediation earned at 12.5 per cent premium in 2003 relative to the public sector base, the only sector to do so. By 2006 all relevant coefficients were both negative and significant with the magnitude of the pay penalty increasing significantly over the period. In 2006, the private sector pay penalty ranged from 5.5 per cent in Financial Intermediation to 52.3 per cent in the Hotels & Restaurant sector. With the exception of Construction, within which female earnings lagged their public sector counterparts to a more considerable degree, the results were broadly similar when the data was broken down according to gender.

Finally, when the 2006 private sector pay was estimated in a model containing the more detailed two-digit occupational controls (Table 8) some changes were apparent, suggesting that the private sector results were more sensitive to the inclusion of more detailed job type information. Specifically, the 2006 pay penalty in Financial Intermediate fell from 5.5 to 2.1 per cent, while that observed in Construction increased from 11.9 to 14 per cent.

< Insert Table 7 Here >

< Insert Table 8 Here >

5.0 PSM Sensitivity Checks

We next estimate the 2006 pay public sector pay premiums using a nearest neighbour PSM algorithm incorporating the detailed two-digit occupational information. The thinking behind this approach is that the stage one probit, on which the individual propensity scores are calculated, will identify the over-riding factors that distinguish a public sector worker from those in the private sector, whether those factors relate to human capital, job characteristics or both. As such, PSM constitutes a sufficiently flexible framework that will allow us to match predominantly on job function, as proxied by our occupational variables, in instances where this attribute represents the most important factor in the characteristic profile of a public sector worker, thus ensuring a more comprehensive “like-with-like” comparison.

Table 9 reports the results from the stage one probit model in respect of all public sector workers, and also for males and females separately. The overall model indicates that public sector employees are more likely to have higher levels of experience, possess upper secondary or third level qualifications, work overtime, work shifts, have trade union membership and be Life Science/Health Professionals, Teaching Professionals or Teaching Associate Professionals. Public sector workers were likely to work fewer hours in a given week, less likely to have supervisory responsibilities and have a lower probability of belonging to any profession outside Life Sciences, Health or Teaching. Some differences were apparent when the models were broken down by gender and, specifically, occupational differences were less apparent within the female model.

The PSM framework draws a control group from the population of private sector workers that will be matched, as much as possible, to the public sector treatment group, in terms of both their human capital and occupational profile, and compares the weekly earnings

of both groups. The results of the PSM exercise are given in Table 10 along with the previously reported OLS estimates. The PSM results are closely aligned suggesting that, at least at the aggregate level, detailed occupational differences between the public and private sectors have little bearing on the magnitude of the public sector premium. We also checked the PSM estimates sensitivity to unobserved heterogeneity by applying post-estimation Rosenbaum bounds at various levels e^{γ} . The bounds allow us to assess the extent to which an unobserved variable must influence the selection process in order to render the matching estimates unreliable. The test again suggests that our results are likely to be robust to such effects. For instance, at $e^{\gamma} = 2$ our overall estimate of 25.9 per cent was still reliable at a 99 per cent level of confidence. Intuitively, this implies that even in the event of an unobserved factor increasing the likelihood of public sector employment by a factor in excess of 100 per cent, our estimate of a wage premium remains reliable. The results seem particularly strong given that sensitivity analysis on the Card and Krueger (1995) minimum wage study found that results become unreliable between e^{γ} values of 1.34 to 1.5 (Rosenbaum, 2002).

< Insert Table 9 Here >

< Insert Table 10 Here >

The probit models for the individual components of the public sector reveal that occupational differences are not always a distinguishing factor (Table 11). For instance, while the differences in occupational structure were both obvious and stark within the Education and Health sectors, occupational differences were much less apparent within sub-sectors such as Non-commercial Semi-states and Local Authorities. In addition to matching on key human capital characteristics, on the basis of the models in Table 11, the following sub-sectors will also be heavily matched with the private sector on the following occupations:

- **Civil Service:** Office Clerks, Other Professionals, Skilled Agriculture and Fishery Workers.
- **Education:** Teaching Professionals, Teaching Associate Professionals.
- **Health:** Life Science & Health Professionals, Life Science & Health Associate Professionals, Other Associate Professionals.
- **Security Services:** Legislators and Senior Officials, Other Associate Professionals, Personal & Protective Service Workers.
- **Non-Commercial Semi-States:** No particularly distinct occupational effects detected.
- **Commercial Semi-States:** Personal & protective Service Workers, Office Clerks, Drivers and Mobile Plant Operators.
- **Local Authority:** Agriculture, Fishery & related Labourers

Table 12 reports the PSM wage estimates and again compares them with the earlier reported OLS estimates. The results are broadly similar; however, some important differences do exist. The PSM estimate for the Education sector is somewhat higher while it was lower in the Security Services and Non-commercial Semi-states. Nevertheless, for the majority of sub-sectors the PSM and OLS results align closely. While sample restrictions and balancing concerns rendered a more detailed sub-sector breakdown (e.g. Security Services broken down into Guards, Prison Officers and Defence Forces) impractical in some cases, it is important to note that major levels of variation were also found within some sub-sectors. For instance, the 52.6 per cent premium in Education is primarily driven by the Institutes of Technology and Universities where premiums in excess of 80 and 50 per cent were found. Similarly, within Security Services, while large premiums were found for both the Guards and Prison Officers, the Defence Forces (i.e. army personnel) were found to earn less than their private sector counterparts⁶.

< Insert Table 11 Here >

⁶ Results available from the authors.

< Insert Table 12 Here >

6.0 Summary and Conclusions

This paper seeks to build on the earlier work of Kelly *et al*, (2009) by estimating the wage differentials for sub-sectors of the public sector relative to the private sector and vice versa. The paper also addresses criticisms that OLS does not allow for “like-with-like” comparisons across jobs by re-estimating the public sector premiums using propensity score methods (PSM) that include detailed two-digit controls for occupation. Thus, where important occupational differences exist within a particular component of the public sector, this will be accounted for within the PSM framework and a “like-with-like” comparison will be made.

The results confirm that the overall public sector premium in 2006 was in the region of 26 per cent for both males and females, with both the OLS and PSM estimation methods generating almost identical results. Given the succession of wage agreements that have been introduced since October 2006, and the further tightening of the labour market in 2007, it is unlikely that the public sector pay premium that has been estimated here will have been substantially reduced prior to the introduction of the public sector pension levy in March 2009.

Both the OLS and PSM frameworks confirm that there was substantial variation in the pay premium across the public sector. Focusing on the PSM estimates, the premium was found to be lowest in the Civil Service and Local Authorities (9.6 and 11.8 per cent) and highest in Education and Security Services (52.6 and 30.7). It is important to note that even within sub-sectors important variations exist. For instance, the Education result is driven primarily by very high premiums in the Institutes of Technology and University Sectors. In Security Services, while Guards and Prison Officers earned high premia, Army workers actually earned less than their private sector equivalents.

With respect to methodology, the paper makes two points. First, the PSM estimates align very closely with those from the OLS models in the majority of cases. However, some differences were observed, specifically PSM generated somewhat higher (lower) estimates for Education (Security Services) suggesting that occupational differences relative to the private sector are important factors in these public service sub-sectors. Second, the analysis shows that the organisational size distributions of the public and private sectors in Ireland are highly asymmetrical, which has serious implications for including a control for organisational size within models of this type. Some recent estimates of the public sector premium have included organisation size as a control which effectively applies a premium, typically in excess of 10 per cent, to virtually all public sector workers irrespective of grade or function by simple virtue of the fact that they work in a large organisation. Obviously, this has the effect of reducing the estimated premium by a similar degree. We stress that estimation strategies must be consistent with both logic and theory and, within the Irish context; the organisation size control should not be included within any model of the public-private pay gap in the absence of a very strong justification for doing so.

Tables

Table 1: Employment Breakdown by Sector (October 2006)¹

Sector	Employment Share (%)
<i>Private Sector Organisations:</i>	73.2
Manufacturing	18.7
Construction	12.8
Wholesale & Retail	11.7
Hotels & Restaurants	4.8
Private Electricity	0.1
Transport & Communication	4.0
Financial Intermediation	6.0
Business Services	8.9
Private Education	0.5
Private Health	2.0
Other Services	3.7
<i>Public Service Organisations:</i>	26.6
Civil Service	2.5
Education	7.3
Health	7.5
Security Services	3.0
Non-commercial Semi-states	0.5
Commercial Semi-states	4.3
Local Authority	1.4
Marine	0.1
Total	100.0

Note: ¹ Permanent, full-time employees aged between 25 and 59.

Source: Constructed using data from the Central Statistics Office's October 2006 National Employment Survey.

Table 2: Change in Mean Weekly Earnings Between March 2003 and October 2006¹

	2003 (March)	2006 (October)	Percentage Change
<i>Permanent, Full-time Employees</i>			
Total:	701.38	810.57	15.6
Public Service ²	780.29	951.14	21.9
Private Sector	674.49	759.07	12.5
Raw Public Private Sector Wage Gap:	15.7	25.3	
<i>Public Service Organisations:</i>			
Civil Service	624.36	832.94	33.4
Education	865.28	1010.09	16.7
Health	683.78	904.72	32.3
Security Services	868.50	1044.80	20.3
Non-commercial Semi-states	789.69	1019.42	29.1
Commercial Semi-states	821.11	980.83	19.5
Local Authority	626.00	792.43	26.6
Marine	-	-	-
<i>Private Sector Organisations:</i>			
Manufacturing	669.45	748.46	11.8
Construction	760.60	865.81	13.8
Wholesale & Retail	579.45	692.96	19.6
Hotels & Restaurants	463.70	499.13	7.6
Private Electricity	-	-	-
Transport & Communication	662.75	788.20	18.9
Financial Intermediation	1008.26	964.19	-4.4
Business Services	748.92	782.82	4.5
Private Education	486.62	593.00	21.9
Private Health	549.20	674.66	22.8
Other Services	618.45	636.96	3.0

Note: ¹ Earnings information based on permanent, full-time employees aged between 25 and 59. Marine and Private Electricity not reported due to confidentiality constraints.

² Includes semi-state companies.

Source: Constructed using data from the Central Statistics Office's National Employment Surveys, March 2003 and October 2006

Table 3: Weekly Wage OLS Models

	2003 All	2006 All	2003 Males	2006 Males	2003 Females	2006 Females
Constant	3.016*** (0.038)	3.186*** (0.033)	3.283*** (0.061)	3.333*** (0.047)	3.069*** (0.051)	3.240*** (0.046)
Male	0.165*** (0.005)	0.198*** (0.005)	- -	- -	- -	- -
Public Sector	<i>0.141*** (0.006)</i>	0.259*** (0.006)	<i>0.128*** (0.008)</i>	0.254*** (0.008)	<i>0.149*** (0.009)</i>	0.261*** (0.007)
Experience	0.027*** (0.001)	0.021*** (0.001)	0.031*** (0.001)	0.024*** (0.001)	0.019*** (0.001)	0.019*** (0.001)
Experience Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education Level (Ref=Primary or Less)						
Lower Secondary	0.057*** (0.010)	0.069*** (0.009)	0.047*** (0.011)	0.076*** (0.011)	0.067*** (0.019)	0.048*** (0.016)
Higher Secondary	0.128*** (0.009)	0.150*** (0.008)	0.117*** (0.011)	0.142*** (0.011)	0.145*** (0.018)	0.169*** (0.014)
Post Secondary	0.177*** (0.010)	0.142*** (0.010)	0.176*** (0.012)	0.154*** (0.012)	0.154*** (0.019)	0.104*** (0.016)
Third-level Non-Degree	0.231*** (0.011)	0.211*** (0.010)	0.224*** (0.014)	0.186*** (0.013)	0.232*** (0.018)	0.241*** (0.015)
Third-level Degree	0.451*** (0.011)	0.357*** (0.009)	0.435*** (0.013)	0.330*** (0.013)	0.452*** (0.019)	0.389*** (0.015)
Supervisory Responsibilities	0.096*** (0.005)	0.084*** (0.005)	0.098*** (0.006)	0.092*** (0.007)	0.102*** (0.007)	0.073*** (0.007)
Professional Body Member	0.149*** (0.007)	0.080*** (0.006)	0.133*** (0.009)	0.089*** (0.009)	0.174*** (0.010)	0.071*** (0.009)
Shift-work	0.008 (0.006)	-0.036*** (0.005)	0.022*** (0.007)	-0.025*** (0.007)	-0.014 (0.009)	-0.045*** (0.008)
Weekly Hours (ln)	0.686*** (0.010)	0.705*** (0.009)	0.684*** (0.016)	0.711*** (0.013)	0.696*** (0.013)	0.694*** (0.012)
Overtime Hours (ln)	0.012*** (0.003)	-0.004 (0.003)	0.017*** (0.004)	0.003 (0.004)	-0.016*** (0.005)	-0.021*** (0.004)
Observations	31,604	32,950	18,545	18,783	13,059	14,167
R-squared	0.4767	0.4548	0.4131	0.4115	0.5220	0.4901
F statistic	1308	1248	620.8	624.6	678.0	647.5

Note: Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

One-digit occupation controls included (9 categories).

Table 4: 2006 Weekly Wage OLS Models Using One-Digit and Two-Digit Occupation Controls

	2006 All 1-Digit	2006 All 2-Digit	2006 Male 1-Digit	2006 Male 2-Digit	2006 Female 1-Digit	2006 Female 2-Digit
Constant	3.186*** (0.033)	3.300*** (0.045)	3.333*** (0.047)	3.357*** (0.066)	3.240*** (0.046)	2.944*** (0.119)
Male	0.198*** (0.005)	0.183*** (0.005)	- -		- -	
Public Sector	0.259*** (0.006)	0.266*** (0.006)	0.254*** (0.008)	0.266*** (0.009)	0.261*** (0.007)	0.265*** (0.008)
Experience	0.021*** (0.001)	0.021*** (0.001)	0.024*** (0.001)	0.024*** (0.001)	0.019*** (0.001)	0.018*** (0.001)
Experience Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education Level (Ref=Primary or Less)						
Lower Secondary	0.069*** (0.009)	0.069*** (0.009)	0.076*** (0.011)	0.077*** (0.011)	0.048*** (0.016)	0.048*** (0.016)
Higher Secondary	0.150*** (0.008)	0.149*** (0.008)	0.142*** (0.011)	0.141*** (0.010)	0.169*** (0.014)	0.167*** (0.014)
Post Secondary	0.142*** (0.010)	0.136*** (0.009)	0.154*** (0.012)	0.148*** (0.012)	0.104*** (0.016)	0.102*** (0.016)
Third-level Non-Degree	0.211*** (0.010)	0.210*** (0.010)	0.186*** (0.013)	0.186*** (0.013)	0.241*** (0.015)	0.238*** (0.015)
Third-level Degree	0.357*** (0.009)	0.346*** (0.009)	0.330*** (0.013)	0.326*** (0.013)	0.389*** (0.015)	0.370*** (0.015)
Supervisory Responsibilities	0.084*** (0.005)	0.092*** (0.005)	0.092*** (0.007)	0.098*** (0.006)	0.073*** (0.007)	0.082*** (0.007)
Professional Body Member	0.080*** (0.006)	0.083*** (0.006)	0.089*** (0.009)	0.088*** (0.009)	0.071*** (0.009)	0.080*** (0.009)
Shift-work	-0.036*** (0.005)	-0.023*** (0.005)	-0.025*** (0.007)	-0.015*** (0.007)	-0.045*** (0.008)	-0.025*** (0.008)
Weekly Hours (ln)	0.705*** (0.009)	0.717*** (0.009)	0.711*** (0.013)	0.718*** (0.013)	0.694*** (0.012)	0.711*** (0.012)
Overtime Hours (ln)	-0.004 (0.003)	-0.004 (0.003)	0.003 (0.004)	0.001 (0.004)	-0.021*** (0.004)	-0.017*** (0.004)
Observations	32,950	32,950	18,783	18,783	14,167	14,167
R-squared	0.4548	0.4733	0.4115	0.4113	0.4901	0.4704
F statistic	1248	0.4683	624.6	0.4294	647.5	0.4991

Note: Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Weekly Wage OLS Models: Public Service Organisations

	2003 All	2006 All	2003 Males	2006 Males	2003 Females	2006 Females
Constant	2.890*** (0.039)	3.140*** (0.033)	3.110*** (0.063)	3.292*** (0.048)	3.006*** (0.051)	3.194*** (0.046)
Male	0.157*** (0.005)	0.188*** (0.005)	- -	- -	- -	- -
Civil Service	-0.167*** (0.014)	0.125*** (0.014)	-0.194*** (0.022)	0.145*** (0.027)	-0.123*** (0.018)	0.124*** (0.015)
Education	0.273*** (0.011)	0.354*** (0.010)	0.235*** (0.017)	0.342*** (0.018)	0.285*** (0.014)	0.364*** (0.013)
Health	0.100*** (0.010)	0.207*** (0.009)	0.039** (0.019)	0.137*** (0.018)	0.126*** (0.012)	0.234*** (0.010)
Security Services	0.118*** (0.014)	0.406*** (0.014)	0.073*** (0.016)	0.355*** (0.017)	0.379*** (0.032)	0.577*** (0.023)
Non-commercial Semi-states	0.165*** (0.019)	0.205*** (0.029)	0.153*** (0.027)	0.247*** (0.052)	0.165*** (0.025)	0.176*** (0.032)
Commercial Semi-states	0.249*** (0.010)	0.282*** (0.011)	0.236*** (0.011)	0.275*** (0.013)	0.282*** (0.026)	0.320*** (0.021)
Local Authority	0.017 (0.018)	0.125*** (0.018)	-0.010 (0.022)	0.106*** (0.025)	0.068** (0.031)	0.130*** (0.025)
Marine ¹	- -	- -	- -	- -	- -	- -
Experience	0.027*** (0.001)	0.021*** (0.001)	0.031*** (0.001)	0.024*** (0.001)	0.019*** (0.001)	0.018*** (0.001)
Experience Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education Level (Ref=Primary or Less)						
Lower Secondary	0.055*** (0.009)	0.064*** (0.009)	0.043*** (0.011)	0.073*** (0.011)	0.065*** (0.018)	0.039** (0.015)
Higher Secondary	0.134*** (0.009)	0.143*** (0.008)	0.123*** (0.011)	0.137*** (0.011)	0.147*** (0.017)	0.153*** (0.014)
Post Secondary	0.171*** (0.010)	0.136*** (0.009)	0.169*** (0.012)	0.151*** (0.012)	0.148*** (0.019)	0.090*** (0.016)
Third-level Non-Degree	0.225*** (0.010)	0.201*** (0.010)	0.226*** (0.014)	0.182*** (0.013)	0.214*** (0.018)	0.216*** (0.015)
Third-level Degree	0.425*** (0.011)	0.339*** (0.009)	0.422*** (0.014)	0.323*** (0.013)	0.414*** (0.018)	0.351*** (0.014)
Supervisory Responsibilities	0.106*** (0.005)	0.093*** (0.005)	0.106*** (0.006)	0.096*** (0.007)	0.114*** (0.007)	0.090*** (0.007)
Professional Body Member	0.150*** (0.007)	0.083*** (0.006)	0.132*** (0.009)	0.092*** (0.009)	0.175*** (0.009)	0.075*** (0.008)

Table 5: continued

	2003 All	2006 All	2003 Males	2006 Males	2003 Females	2006 Females
Shift-work	0.001 (0.006)	-0.043*** (0.005)	0.017** (0.007)	-0.031*** (0.007)	-0.029*** (0.009)	-0.053*** (0.008)
Weekly Hours (ln)	0.726*** (0.010)	0.725*** (0.009)	0.730*** (0.017)	0.728*** (0.013)	0.719*** (0.013)	0.713*** (0.012)
Overtime Hours (ln)	0.012*** (0.003)	-0.005** (0.003)	0.015*** (0.004)	0.002 (0.004)	-0.011** (0.006)	-0.024*** (0.004)
Observations	31,604	32,950	18,545	18,783	13,059	14,167
R-squared	0.4918	0.4622	0.4277	0.4168	0.5389	0.5054
F statistic	1054	975.4	494.3	478.7	543.9	516.0

Note: ¹ Not reported due to confidentiality constraints.

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

One-digit occupation controls included (9 categories).

Table 6: 2006 Weekly Wage OLS Models for Public Service Organisations Using One-Digit and Two-Digit Occupation Controls

	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Females
Constant	3.140*** (0.033)	3.235*** (0.046)	3.292*** (0.048)	3.441*** (0.067)	3.194*** (0.046)	3.013*** (0.119)
Male	0.188*** (0.005)	0.173*** (0.005)	- -	- -	- -	- -
Civil Service	0.125*** (0.014)	0.138*** (0.014)	0.145*** (0.027)	0.174*** (0.027)	0.124*** (0.015)	0.123*** (0.015)
Education	0.354*** (0.010)	0.378*** (0.016)	0.342*** (0.018)	0.391*** (0.028)	0.364*** (0.013)	0.361*** (0.018)
Health	0.207*** (0.009)	0.233*** (0.010)	0.137*** (0.018)	0.133*** (0.022)	0.234*** (0.010)	0.257*** (0.011)
Security Services	0.406*** (0.014)	0.418*** (0.014)	0.355*** (0.017)	0.388*** (0.018)	0.577*** (0.023)	0.573*** (0.023)
Non-commercial Semi-states	0.205*** (0.029)	0.207*** (0.028)	0.247*** (0.052)	0.254*** (0.051)	0.176*** (0.032)	0.173*** (0.032)
Commercial Semi-states	0.282*** (0.011)	0.287*** (0.011)	0.275*** (0.013)	0.280*** (0.013)	0.320*** (0.021)	0.305*** (0.022)
Local Authority	0.125*** (0.018)	0.144*** (0.018)	0.106*** (0.025)	0.143*** (0.025)	0.130*** (0.025)	0.130*** (0.025)
Marine ¹	- -	- -	- -	- -	- -	- -
Experience	0.021*** (0.001)	0.021*** (0.001)	0.024*** (0.001)	0.023*** (0.001)	0.018*** (0.001)	0.018*** (0.001)
Experience Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education Level (Ref=Primary or Less)						
Lower Secondary	0.064*** (0.009)	0.064*** (0.009)	0.073*** (0.011)	0.074*** (0.011)	0.039** (0.015)	0.039** (0.015)
Higher Secondary	0.143*** (0.008)	0.143*** (0.008)	0.137*** (0.011)	0.136*** (0.010)	0.153*** (0.014)	0.153*** (0.014)
Post Secondary	0.136*** (0.009)	0.131*** (0.009)	0.151*** (0.012)	0.145*** (0.012)	0.090*** (0.016)	0.090*** (0.016)
Third-level Non-Degree	0.201*** (0.010)	0.201*** (0.010)	0.182*** (0.013)	0.181*** (0.013)	0.216*** (0.015)	0.214*** (0.015)
Third-level Degree	0.339*** (0.009)	0.335*** (0.009)	0.323*** (0.013)	0.322*** (0.013)	0.351*** (0.014)	0.343*** (0.014)
Supervisory Responsibilities	0.093*** (0.005)	0.096*** (0.005)	0.096*** (0.007)	0.099*** (0.006)	0.090*** (0.007)	0.094*** (0.007)
Professional Body Member	0.083***	0.082***	0.092***	0.089***	0.075***	0.077***

Table 6: continued

	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Females
	(0.006)	(0.006)	(0.009)	(0.009)	(0.008)	(0.008)
Shift-work	-0.043***	-0.034***	-0.031***	-0.024***	-0.053***	-0.043***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.008)	(0.008)
Weekly Hours (ln)	0.725***	0.719***	0.728***	0.722***	0.713***	0.712***
	(0.009)	(0.009)	(0.013)	(0.013)	(0.012)	(0.012)
Overtime Hours (ln)	-0.005**	-0.005*	0.002	0.000	-0.024***	-0.020***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	32,950	32,950	18,783	18,783	14,167	14,167
R-squared	0.4622	644.3	0.4168	319.5	0.5054	328.3
F statistic	975.4	0.4739	478.7	0.4342	516.0	0.5113

Note: ¹ Not reported due to confidentiality constraints.

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Weekly Wage OLS Models: Private Sector Organisations

	2003 All	2006 All	2003 Males	2006 Males	2003 Females	2006 Females
Constant	3.248*** (0.037)	3.539*** (0.032)	3.462*** (0.059)	3.636*** (0.047)	3.296*** (0.049)	3.622*** (0.045)
Male	0.139*** (0.005)	0.174*** (0.005)	- -	- -	- -	- -
Manufacturing	-0.117*** (0.007)	-0.228*** (0.007)	-0.109*** (0.009)	-0.231*** (0.010)	-0.102*** (0.012)	-0.221*** (0.011)
Construction	-0.008 (0.009)	-0.119*** (0.009)	-0.006 (0.011)	-0.109*** (0.011)	-0.069** (0.029)	-0.276*** (0.024)
Wholesale & Retail	-0.224*** (0.009)	-0.331*** (0.009)	-0.208*** (0.011)	-0.332*** (0.012)	-0.240*** (0.013)	-0.314*** (0.013)
Hotels & Restaurants	-0.401*** (0.011)	-0.523*** (0.011)	-0.415*** (0.016)	-0.519*** (0.017)	-0.377*** (0.014)	-0.517*** (0.014)
Electricity (Private) ¹	- -	- -	- -	- -	- -	- -
Transport & Communication	-0.140*** (0.012)	-0.236*** (0.011)	-0.143*** (0.015)	-0.247*** (0.015)	-0.132*** (0.018)	-0.206*** (0.018)
Financial Intermediation	0.125*** (0.010)	-0.055*** (0.010)	0.151*** (0.015)	-0.019 (0.016)	0.108*** (0.014)	-0.080*** (0.012)
Business Services	-0.118*** (0.008)	-0.278*** (0.008)	-0.123*** (0.011)	-0.284*** (0.012)	-0.097*** (0.012)	-0.261*** (0.012)
Education (Private)	-0.357*** (0.021)	-0.416*** (0.028)	-0.464*** (0.052)	-0.484*** (0.060)	-0.337*** (0.022)	-0.409*** (0.029)
Health (Private)	-0.206*** (0.011)	-0.325*** (0.015)	-0.235*** (0.021)	-0.342*** (0.034)	-0.196*** (0.013)	-0.316*** (0.016)
Other Services	-0.251*** (0.012)	-0.354*** (0.012)	-0.282*** (0.018)	-0.386*** (0.017)	-0.209*** (0.017)	-0.306*** (0.016)
Experience	0.026*** (0.001)	0.021*** (0.001)	0.029*** (0.001)	0.024*** (0.001)	0.019*** (0.001)	0.018*** (0.001)
Experience Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education Level (Ref=Primary or Less)						
Lower Secondary	0.061*** (0.009)	0.073*** (0.009)	0.052*** (0.011)	0.084*** (0.011)	0.062*** (0.018)	0.042*** (0.015)
Higher Secondary	0.122*** (0.009)	0.141*** (0.008)	0.113*** (0.011)	0.137*** (0.010)	0.126*** (0.017)	0.149*** (0.014)
Post Secondary	0.169*** (0.010)	0.144*** (0.009)	0.169*** (0.011)	0.160*** (0.012)	0.140*** (0.019)	0.102*** (0.016)
Third-level Non-Degree	0.230*** (0.010)	0.207*** (0.009)	0.226*** (0.013)	0.189*** (0.013)	0.220*** (0.018)	0.224*** (0.015)
Third-level Degree	0.432*** (0.010)	0.355*** (0.009)	0.423*** (0.013)	0.340*** (0.012)	0.417*** (0.018)	0.366*** (0.014)

Table 7: continued

	2003 All	2006 All	2003 Males	2006 Males	2003 Females	2006 Females
Supervisory Responsibilities	<i>0.113***</i> (0.005)	<i>0.099***</i> (0.005)	<i>0.116***</i> (0.006)	<i>0.102***</i> (0.006)	<i>0.121***</i> (0.007)	<i>0.093***</i> (0.007)
Professional Body Member	<i>0.115***</i> (0.006)	<i>0.060***</i> (0.006)	<i>0.097***</i> (0.009)	<i>0.069***</i> (0.009)	<i>0.141***</i> (0.009)	<i>0.052***</i> (0.008)
Shift-work	<i>0.033***</i> (0.006)	<i>-0.013***</i> (0.005)	<i>0.047***</i> (0.007)	<i>0.005</i> (0.007)	<i>0.009</i> (0.009)	<i>-0.035***</i> (0.008)
Weekly Hours (ln)	<i>0.671***</i> (0.010)	<i>0.680***</i> (0.009)	<i>0.667***</i> (0.016)	<i>0.690***</i> (0.013)	<i>0.683***</i> (0.012)	<i>0.666***</i> (0.012)
Overtime Hours (ln)	<i>0.006**</i> (0.003)	<i>0.001</i> (0.003)	<i>0.010***</i> (0.004)	<i>0.005</i> (0.004)	<i>-0.012**</i> (0.005)	<i>-0.010**</i> (0.004)
Observations	31,604	32,950	18,545	18,783	13,059	14,167
R-squared	0.5117	0.4828	0.4516	0.4439	0.5572	0.5151
F statistic	1034	960.3	491.7	482.8	528.8	484.4

Note: ¹ Not reported due to confidentiality constraints.
Standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
One-digit occupation controls included (9 categories).

**Table 8: 2006 Weekly Wage OLS Models for Private Sector Organisations
Using One-Digit and Two-Digit Occupation Controls**

	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Two-Digit
Constant	3.539*** (0.032)	3.482*** (0.043)	3.636*** (0.047)	3.680*** (0.065)	3.622*** (0.045)	3.289*** (0.116)
Male	0.174*** (0.005)	0.170*** (0.005)	- -	- -	- -	- -
Manufacturing	-0.228*** (0.007)	-0.226*** (0.008)	-0.231*** (0.010)	-0.233*** (0.011)	-0.221*** (0.011)	-0.202*** (0.013)
Construction	-0.119*** (0.009)	-0.140*** (0.010)	-0.109*** (0.011)	-0.132*** (0.012)	-0.276*** (0.024)	-0.282*** (0.024)
Wholesale & Retail	-0.331*** (0.009)	-0.308*** (0.009)	-0.332*** (0.012)	-0.307*** (0.012)	-0.314*** (0.013)	-0.300*** (0.013)
Hotels & Restaurants	-0.523*** (0.011)	-0.502*** (0.011)	-0.519*** (0.017)	-0.496*** (0.017)	-0.517*** (0.014)	-0.504*** (0.014)
Electricity (Private) ¹	- -	- -	- -	- -	- -	- -
Transport & Communication	-0.236*** (0.011)	-0.233*** (0.012)	-0.247*** (0.015)	-0.252*** (0.015)	-0.206*** (0.018)	-0.191*** (0.018)
Financial Intermediation	-0.055*** (0.010)	-0.021* (0.011)	-0.019 (0.016)	0.014 (0.017)	-0.080*** (0.012)	-0.047*** (0.013)
Business Services	-0.278*** (0.008)	-0.263*** (0.009)	-0.284*** (0.012)	-0.269*** (0.012)	-0.261*** (0.012)	-0.249*** (0.012)
Education (Private)	-0.416*** (0.028)	-0.410*** (0.028)	-0.484*** (0.060)	-0.486*** (0.060)	-0.409*** (0.029)	-0.401*** (0.030)
Health (Private)	-0.325*** (0.015)	-0.305*** (0.015)	-0.342*** (0.034)	-0.325*** (0.035)	-0.316*** (0.016)	-0.301*** (0.016)
Other Services	-0.354*** (0.012)	-0.336*** (0.012)	-0.386*** (0.017)	-0.369*** (0.017)	-0.306*** (0.016)	-0.294*** (0.016)
Experience	0.021*** (0.001)	0.021*** (0.001)	0.024*** (0.001)	0.024*** (0.001)	0.018*** (0.001)	0.018*** (0.001)
Experience Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Education Level (Ref=Primary or Less)						
Lower Secondary	0.073*** (0.009)	0.071*** (0.009)	0.084*** (0.011)	0.083*** (0.011)	0.042*** (0.015)	0.041*** (0.015)
Higher Secondary	0.141*** (0.008)	0.140*** (0.008)	0.137*** (0.010)	0.135*** (0.010)	0.149*** (0.014)	0.148*** (0.013)
Post Secondary	0.144*** (0.009)	0.138*** (0.009)	0.160*** (0.012)	0.153*** (0.011)	0.102*** (0.016)	0.099*** (0.016)
Third-level Non-Degree	0.207*** (0.009)	0.205*** (0.009)	0.189*** (0.013)	0.185*** (0.013)	0.224*** (0.015)	0.220*** (0.014)
Third-level Degree	0.355*** (0.009)	0.337*** (0.009)	0.340*** (0.012)	0.325*** (0.012)	0.366*** (0.014)	0.344*** (0.014)

Table 8: continued

	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Two-Digit	2006 One-Digit	2006 Two-Digit
Supervisory Responsibilities	0.099***	0.107***	0.102***	0.108***	0.093***	0.104***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)
Professional Body Member	0.060***	0.062***	0.069***	0.065***	0.052***	0.058***
	(0.006)	(0.006)	(0.009)	(0.009)	(0.008)	(0.008)
Shift-work	-0.013***	-0.002	0.005	0.012*	-0.035***	-0.013*
	(0.005)	(0.005)	(0.007)	(0.007)	(0.008)	(0.008)
Weekly Hours (ln)	0.680***	0.699***	0.690***	0.704***	0.666***	0.691***
	(0.009)	(0.009)	(0.013)	(0.013)	(0.012)	(0.012)
Overtime Hours (ln)	0.001	0.001	0.005	0.004	-0.010**	-0.007*
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	32,950	32,950	18,783	18,783	14,167	14,167
R-squared	0.4828	649.8	0.4439	325.4	0.5151	323.9
F statistic	960.3	0.4918	482.8	0.4546	484.4	0.5241

Note: ¹ Not reported due to confidentiality constraints.

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9: 2006 PSM Model of Public Sector Employment: Overall and By Gender¹

	2006 - All		2006 - Males		2006 - Females	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Constant	-0.588***	(0.203)	-0.593*	(0.337)	-0.509	(0.505)
Male	0.027	(0.024)	-	-	-	-
Experience	0.038***	(0.004)	0.052***	(0.006)	0.025***	(0.006)
Experience Squared	0.000***	(0.000)	-0.001***	(0.000)	0.000	(0.000)
Lower Secondary	-0.003	(0.053)	0.033	(0.064)	-0.109	(0.101)
Upper Secondary	0.160***	(0.050)	0.137**	(0.061)	0.177*	(0.091)
Post Secondary	-0.059	(0.055)	-0.112*	(0.067)	0.014	(0.101)
Third-level Non-Degree	0.311***	(0.052)	0.322***	(0.066)	0.302***	(0.092)
Third-level Degree	0.654***	(0.052)	0.647***	(0.066)	0.655***	(0.092)
Supervisory Responsibilities	-0.078***	(0.022)	-0.052*	(0.030)	-0.113***	(0.034)
Professional Body Member	-0.173***	(0.026)	-0.172***	(0.036)	-0.172***	(0.039)
Shift-work	0.103***	(0.025)	0.155***	(0.033)	-0.014	(0.041)
Weekly Hours (ln)	-0.203***	(0.043)	-0.182***	(0.070)	-0.234***	(0.056)
Over-time Hours (ln)	0.033**	(0.013)	0.048***	(0.017)	-0.003	(0.020)
Trade Union Membership	1.394***	(0.022)	1.279***	(0.030)	1.539***	(0.031)
Occupation:²						
Legislators & Senior Officials	-0.561***	(0.154)	-0.758***	(0.241)	-0.534	(0.501)
Corporate Managers	-1.405***	(0.135)	-1.736***	(0.228)	-0.973**	(0.462)
Managers of Small Enterprise	-1.989***	(0.145)	-2.256***	(0.239)	-1.716***	(0.469)
Engineering & Science Professionals	-1.433***	(0.135)	-1.694***	(0.227)	-0.955**	(0.467)
Life Science & Health Professionals	0.282**	(0.133)	-0.096	(0.237)	0.536	(0.458)
Teaching Professionals	0.693***	(0.133)	0.519**	(0.235)	0.834*	(0.458)
Other Professionals	-1.043***	(0.130)	-1.259***	(0.225)	-0.846*	(0.458)
Engineering & Science Associate Professionals	-1.383***	(0.136)	-1.559***	(0.227)	-1.239***	(0.470)
Life Science & Health Associate Professionals	-0.142	(0.142)	-0.444*	(0.262)	0.071	(0.461)
Teaching Associate Professionals	-	-	-	-	0.037	(0.481)
Other Associate Professionals	-0.161***	(0.130)	-0.173	(0.225)	-0.253	(0.457)
Office Clerks	-0.567***	(0.128)	-0.848***	(0.225)	-0.383	(0.455)
Customer Service Clerks	-2.025**	(0.144)	-1.876***	(0.246)	-2.099***	(0.464)
Personal & Protective Services Workers	-0.260***	(0.131)	-0.349	(0.225)	-0.254	(0.458)
Models, Salespersons & Demonstrators	-2.269***	(0.157)	-2.606***	(0.262)	-1.956***	(0.472)
Skilled Agricultural & Fishery Workers	-0.582***	(0.168)	-0.722***	(0.249)	-1.000	(0.645)
Extraction & Building Trades Workers	-2.071***	(0.150)	-2.237***	(0.235)	-1.755**	(0.790)
Metal, Machinery & Related Trades Workers	-1.945***	(0.161)	-2.216***	(0.244)	-	-
Precision, Handicraft & Related Trades Workers	-1.599***	(0.203)	-1.702***	(0.274)	D	D
Other Craft & Related Trades Workers	-1.232***	(0.148)	-1.413***	(0.234)	-0.947*	(0.552)
Stationary Plant & Related Operators	-1.675***	(0.165)	-1.897***	(0.249)	-1.264**	(0.531)
Machine Operators & Assemblers	-3.249***	(0.175)	-3.486***	(0.264)	-2.937***	(0.503)
Drivers & Mobile Plant Operators	-1.135***	(0.138)	-1.382***	(0.228)	0.266	(0.542)

Table 9: continued

	2006 - All		2006 - Males		2006 - Females	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Sales & Services Elementary Occupations	-0.934***	(0.136)	-1.165***	(0.229)	-0.678	(0.461)
Agricultural, Fishery & Related Labourers	-0.785***	(0.186)	-1.079***	(0.265)	0.267	(0.606)
Mining, Construction, Manufacturing & Transport Labourers	-2.062***	(0.144)	-2.206***	(0.232)	-2.161***	(0.504)
Observations	33,126		18,783		14,314	

Note: ¹ Coef. and Std. Err. are abbreviations for coefficient and standard error respectively.

² The occupation reference category in the overall and male models is 'teaching associate professionals' and 'metal, machinery & related trades' in the female model. 'D' indicates an occupation that has been dropped because of a lack of variation in one or other sectors. Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 10: 2006 OLS and PSM Models of Public-Private Sector Pay Gap: Overall and By Gender

	2006 All OLS	2006 All PSM	2006 Male OLS	2006 Male PSM	2006 Female OLS	2006 Female PSM
Public Sector	0.266*** (0.006)	<i>0.259***</i> <i>(0.023)</i>	0.266*** (0.009)	<i>0.225***</i> <i>(0.026)</i>	0.265*** (0.008)	<i>0.252***</i> <i>(0.037)</i>

Table 11: 2006 PSM Models of Employment in Various Public Service Organisations¹

	Civil Service		Education		Health		Security Services		Non-Commercial Semi-States		Commercial Semi-States		Local Authority	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Constant	-4.355***	(0.638)	1.172***	(0.310)	-2.773***	(0.431)	-5.449***	(0.665)	-5.469***	(0.837)	-2.734***	(0.350)	-1.775***	(0.489)
Male	-0.085*	(0.045)	-0.142***	(0.055)	-0.542***	(0.041)	0.653***	(0.060)	-0.220***	(0.060)	0.259***	(0.046)	-0.005	(0.053)
Experience	0.048***	(0.009)	0.009	(0.009)	0.023***	(0.007)	0.059***	(0.010)	0.035***	(0.011)	0.030***	(0.008)	0.026***	(0.009)
Experience Squared	-0.001***	(0.000)	0.000	(0.000)	0.000	(0.000)	-0.001***	(0.000)	0.000	(0.000)	0.000	(0.000)	0.000*	(0.000)
Lower Secondary	0.124	(0.137)	0.068	(0.162)	-0.087	(0.090)	0.220*	(0.125)	-0.049	(0.237)	0.071	(0.091)	-0.236***	(0.088)
Upper Secondary	0.540***	(0.127)	0.045	(0.151)	-0.102	(0.084)	0.362***	(0.117)	-0.065	(0.220)	0.244***	(0.086)	-0.312***	(0.087)
Post Secondary	0.222	(0.138)	0.209	(0.157)	-0.149	(0.093)	-0.010	(0.129)	0.123	(0.227)	0.057	(0.094)	-0.278***	(0.094)
Third-level Non-Degree	0.398***	(0.132)	0.413***	(0.149)	0.105	(0.086)	0.373***	(0.123)	0.605***	(0.215)	0.435***	(0.092)	-0.036	(0.093)
Third-level Degree	0.820***	(0.132)	1.097***	(0.144)	0.333***	(0.086)	0.273**	(0.127)	1.095***	(0.215)	0.658***	(0.094)	0.101	(0.095)
Supervisory Responsibilities	0.204***	(0.044)	0.088	(0.054)	-0.282***	(0.040)	-0.219***	(0.054)	0.085	(0.059)	-0.055	(0.043)	0.201***	(0.047)
Professional Body Member	-0.403***	(0.058)	0.058	(0.058)	0.005	(0.043)	-0.259***	(0.068)	-0.275***	(0.066)	-0.322***	(0.054)	-0.126**	(0.060)
Shift-work	-0.666***	(0.068)	-0.751***	(0.083)	0.159***	(0.041)	1.077***	(0.056)	-0.974***	(0.123)	0.269***	(0.043)	-0.550***	(0.062)
Weekly Hours (ln)	-0.074	(0.108)	-0.661***	(0.069)	0.035	(0.068)	0.217	(0.150)	0.555***	(0.196)	-0.210**	(0.082)	-0.374***	(0.075)
Over-time Hours (ln)	0.253***	(0.028)	-0.255***	(0.038)	-0.113***	(0.021)	0.166***	(0.035)	-0.181***	(0.030)	-0.010	(0.023)	0.049*	(0.026)
Trade Union Membership	1.596***	(0.043)	1.229***	(0.051)	1.293***	(0.038)	0.405***	(0.053)	1.391***	(0.060)	1.540***	(0.047)	1.271***	(0.048)
Occupation:²														
Legislators & Senior Officials	1.218**	(0.510)	-2.305***	(0.285)	0.473	(0.386)	1.919***	(0.422)	-0.357	(0.463)	D	D	-0.119	(0.480)
Corporate Managers	0.465	(0.499)	-3.012***	(0.232)	0.361	(0.350)	-0.560	(0.473)	-0.030	(0.398)	-0.190	(0.187)	-0.042	(0.414)
Managers of Small Enterprise	D	D	-2.948***	(0.247)	-0.318	(0.364)	-1.027*	(0.545)	-0.254	(0.404)	-0.906***	(0.225)	-0.608	(0.441)
Engineering & Science Professionals	-0.089	(0.517)	-2.274***	(0.174)	-0.496	(0.377)	D	D	-0.052	(0.398)	-0.149	(0.185)	0.556	(0.406)
Life Science & Health Professionals	0.614	(0.512)	-2.517***	(0.228)	2.295***	(0.347)	D	D	0.198	(0.407)	-0.885***	(0.260)	0.345	(0.423)
Teaching Professionals	D	D	0.545***	(0.143)	0.859**	(0.355)	D	D	-0.623	(0.480)	-1.345***	(0.427)	D	D
Other Professionals	1.246**	(0.494)	-2.346***	(0.157)	-0.040	(0.351)	0.440	(0.420)	0.161	(0.393)	0.125	(0.175)	0.190	(0.408)
Engineering & Science Associate Professionals	0.135	(0.505)	-1.776***	(0.164)	-0.402	(0.366)	-0.732	(0.454)	-0.132	(0.405)	0.004	(0.181)	0.252	(0.411)
Life Science & Health Associate Professionals	D	D	-2.976***	(0.397)	1.811***	(0.350)	0.680	(0.466)	-0.357	(0.464)	-	-	D	D
Teaching Associate Professionals	D	D	-	-	0.127	(0.483)	D	D	-	-	D	D	D	D
Other Associate Professionals	1.850***	(0.493)	-1.961***	(0.169)	0.718**	(0.348)	2.030***	(0.409)	-0.022	(0.403)	0.131	(0.186)	0.538	(0.410)

Table 11: continued

	Civil Service		Education		Health		Security Services		Non-Commercial Semi-States		Commercial Semi-States		Local Authority	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Office Clerks	1.736***	(0.492)	-1.691***	(0.143)	0.455	(0.345)	0.262	(0.420)	0.169	(0.392)	0.344**	(0.171)	0.702*	(0.404)
Customer Service Clerks	-0.990*	(0.596)	-3.046***	(0.244)	-1.337***	(0.400)	-0.180	(0.455)	-0.981**	(0.425)	-0.265	(0.185)	-0.867*	(0.463)
Personal & Protective Services Workers	-0.017	(0.516)	-1.888***	(0.178)	0.813**	(0.346)	1.648***	(0.407)	-1.144**	(0.523)	0.631***	(0.175)	0.479	(0.408)
Models, Salespersons & Demonstrators	D	D	D	D	-0.772**	(0.378)	-0.260	(0.444)	-1.175**	(0.514)	-0.588***	(0.204)	D	D
Skilled Agricultural & Fishery Workers	2.056***	(0.507)	D	D	-	-	-0.202	(0.614)	D	D	D	D	-	-
Extraction & Building Trades Workers	-0.265	(0.514)	D	D	-0.067	(0.360)	-0.235	(0.429)	-1.248**	(0.562)	-1.080***	(0.226)	-0.571	(0.439)
Metal, Machinery & Related Trades Workers	D	D	D	D	D	D	D	D	-0.659	(0.487)	-0.169	(0.198)	-0.670	(0.487)
Precision, Handicraft & Related Trades Workers	D	D	-2.050***	(0.383)	D	D	-0.428	(0.587)	-0.012	(0.501)	D	D	0.650	(0.439)
Other Craft & Related Trades Workers	0.389	(0.518)	-1.358***	(0.190)	-0.588	(0.435)	0.077	(0.438)	-0.426	(0.483)	-0.829***	(0.256)	0.882**	(0.410)
Stationary Plant & Related Operators	-0.368	(0.614)	-2.308***	(0.418)	D	D	-1.023*	(0.524)	-0.628	(0.590)	-0.071	(0.206)	0.131	(0.447)
Machine Operators & Assemblers	-0.690	(0.526)	D	D	-1.371***	(0.384)	-1.445***	(0.456)	D	D	D	D	D	D
Drivers & Mobile Plant Operators	-0.052	(0.513)	-2.572***	(0.360)	-0.553	(0.389)	D	D	-1.063*	(0.564)	0.566***	(0.179)	0.528	(0.409)
Sales & Services	0.823*	(0.499)	-1.769***	(0.185)	0.779**	(0.347)	-0.266	(0.439)	-0.741	(0.487)	-0.218	(0.194)	0.826**	(0.406)
Elementary Occupations	-	-	-1.366***	(0.327)	D	D	-	-	0.647	(0.494)	D	D	1.382***	(0.427)
Agricultural, Fishery & Related Labourers	-	-	-1.366***	(0.327)	D	D	-	-	0.647	(0.494)	D	D	1.382***	(0.427)
Mining, Construction, Manufacturing & Transport Labourers	D	D	D	D	-0.719*	(0.371)	-1.384***	(0.515)	D	D	-1.586***	(0.264)	0.447	(0.405)
Observations	19,806		20,602		25,262		21,423		21,344		22,665		20,905	

Note: ¹ Coef. and Std. Err. are abbreviations for coefficient and standard error respectively.

² The occupation reference category for each public service organisation is marked with a '-' in the results column, e.g. 'agricultural, fishery & related labourers' in the civil service model. 'D' indicates an occupation that has been dropped because of a lack of variation in one or other sectors. Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12: 2006 OLS and PSM Models of the Pay Gap Between Public Service Organisations' and the Private Sector

	2006 OLS	2006 PSM
Civil Service	0.125*** (0.014)	<i>0.096*** (0.029)</i>
Education	0.354*** (0.010)	<i>0.526*** (0.151)</i>
Health	0.207*** (0.009)	<i>0.203*** (0.027)</i>
Security Services	0.406*** (0.014)	<i>0.307*** (0.031)</i>
Non-commercial Semi-states	0.205*** (0.029)	<i>0.126*** (0.035)</i>
Commercial Semi-states	0.282*** (0.011)	<i>0.241*** (0.025)</i>
Local Authority	0.125*** (0.018)	<i>0.118*** (0.029)</i>
Marine ¹	- -	- -

Note: ¹ Not reported due to confidentiality constraints.

Standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Two-digit occupation controls included in OLS Models (26 categories).

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Appendix

Table A1: Two-Digit Occupation Controls (ISCO-88)

Code	Occupation
1	Managers and Senior Officials
11	Legislators & senior officials
12	Corporate managers
13	Managers of small enterprises
2	Professionals
21	Engineering & science professionals
22	Life science & health professionals
23	Teaching professionals
24	Other professionals
3	Technicians & Associate Professionals
31	Engineering & science associate professionals
32	Life science & health associate professionals
33	Teaching associate professionals
34	Other associate professionals
4	Clerical Workers
41	Office clerks
42	Customer service clerks
5	Service & Sales Workers
51	Personal & protective services workers
52	Models, salespersons & demonstrators
6	Skilled Agricultural & Fishery Workers
61	Skilled agricultural & fishery workers
7	Craft & Related Trades Workers
71	Extraction & building trades workers
72	Metal, machinery & related trades workers
73	Precision, handicraft & related trades workers
74	Other craft & related trades workers
8	Plant and Machine Operators & Assemblers
81	Stationary plant & related operators
82	Machine operators & assemblers
83	Drivers & mobile plant operators
9	Other Manual Occupations
91	Sales & services elementary occupations
92	Agricultural, fishery & related labourers
93	Mining, construction, manufacturing & transport labourers

**Table A2: Structure of Employment in Public Service and Private Sector
(October 2006 NES Data)¹**

	Public Service	Private Sector
Male	0.426	0.667
Experience	20.50	17.50
Experience Squared	528.87	408.01
Lower Secondary	0.094	0.153
Upper Secondary	0.219	0.285
Post Secondary	0.064	0.134
Third-level Non-Degree	0.134	0.123
Third-level Degree	0.417	0.198
Supervisory Responsibilities	0.338	0.413
Professional Body Member	0.246	0.138
Shift-work	0.318	0.253
Weekly Hours	36.30	39.47
Overtime Hours	5.17	4.32
Trade Union Membership	0.789	0.297
Legislators & Senior Officials	0.008	0.006
Corporate Managers	0.020	0.074
Managers of Small Enterprise	0.005	0.079
Engineering & Science Professionals	0.010	0.037
Life Science & Health Professionals	0.084	0.005
Teaching Professionals	0.221	0.004
Other Professionals	0.024	0.033
Engineering & Science Associate Professionals	0.020	0.035
Life Science & Health Associate Professionals	0.044	0.006
Teaching Associate Professionals	0.011	0.002
Other Associate Professionals	0.091	0.037
Office Clerks	0.162	0.083
Customer Service Clerks	0.006	0.045
Personal & Protective Services Workers	0.156	0.078
Models, Salespersons & Demonstrators	0.005	0.080
Skilled Agricultural & Fishery Workers	0.004	0.005
Extraction & Building Trades Workers	0.007	0.090
Metal, Machinery & Related Trades Workers	0.010	0.031
Precision, Handicraft & Related Trades Workers	0.002	0.009
Other Craft & Related Trades Workers	0.012	0.028
Stationary Plant & Related Operators	0.004	0.014
Machine Operators & Assemblers	0.001	0.076
Drivers & Mobile Plant Operators	0.046	0.036
Sales & Services Elementary Occupations	0.037	0.040
Agricultural, Fishery & Related Labourers	0.003	0.006
Mining, Construction, Manufacturing & Transport Labourers	0.006	0.062

Note: ¹ Descriptive statistics presented in table are based on permanent, full-time employees aged between 25 and 59.

Table A3: Structure of Employment in Public Service Organisations Compared to Private Sector (October 2006 NES Data)¹

	Civil	Education	Health	Security Services	Non-Commercial Semi-states	Commercial Semi-states	Local Authority	Private Sector
Male	0.282	0.305	0.214	0.741	0.348	0.815	0.587	0.667
Experience	22.34	18.58	19.19	20.18	20.94	24.68	21.79	17.50
Experience Squared	589.37	450.51	472.59	508.16	542.82	717.96	582.14	408.01
Lower Secondary	0.083	0.019	0.094	0.113	0.063	0.196	0.152	0.153
Upper Secondary	0.493	0.032	0.189	0.408	0.121	0.309	0.205	0.285
Post Secondary	0.070	0.023	0.066	0.066	0.067	0.110	0.099	0.134
Third-level Non-Degree	0.142	0.064	0.160	0.223	0.235	0.122	0.150	0.123
Third-level Degree	0.176	0.842	0.393	0.147	0.492	0.132	0.196	0.198
Supervisory Responsibilities	0.417	0.246	0.404	0.318	0.439	0.302	0.418	0.413
Professional Body Member	0.089	0.323	0.352	0.147	0.188	0.133	0.133	0.138
Shift-work	0.074	0.035	0.428	0.817	0.038	0.484	0.158	0.253
Weekly Hours	39.47	27.93	37.58	42.67	38.40	40.84	38.68	39.47
Overtime Hours	5.14	3.602	3.97	5.50	3.10	6.83	6.76	4.32
Trade Union Membership	0.817	0.830	0.804	0.413	0.779	0.926	0.820	0.297
Legislators & Senior Officials	0.013	0.002	0.005	0.034	0.011	0.000	0.008	0.006
Corporate Managers	0.023	0.002	0.032	0.001	0.116	0.022	0.039	0.074
Managers of Small Enterprise	0.000	0.002	0.007	0.001	0.059	0.005	0.007	0.079
Engineering & Science Professionals	0.001	0.008	0.002	0.000	0.037	0.031	0.034	0.037
Life Science & Health Professionals	0.005	0.002	0.288	0.000	0.026	0.001	0.012	0.005
Teaching Professionals	0.000	0.785	0.020	0.000	0.004	0.000	0.000	0.004
Other Professionals	0.057	0.017	0.013	0.007	0.146	0.036	0.022	0.033
Engineering & Science Associate Professionals	0.004	0.015	0.006	0.001	0.031	0.074	0.029	0.035
Life Science & Health Associate Professionals	0.000	0.000	0.151	0.004	0.006	0.005	0.000	0.006
Teaching Associate Professionals	0.000	0.038	0.002	0.000	0.006	0.000	0.000	0.002
Other Associate Professionals	0.244	0.016	0.071	0.284	0.081	0.039	0.070	0.037
Office Clerks	0.550	0.076	0.140	0.010	0.378	0.156	0.289	0.083

Table A3: continued

	Civil	Education	Health	Security Services	Non-Commercial Semi-states	Commercial Semi-states	Local Authority	Private Sector
Customer Service Clerks	0.000	0.002	0.002	0.001	0.013	0.027	0.003	0.045
Personal & Protective Services Workers	0.012	0.010	0.156	0.635	0.003	0.209	0.060	0.078
Models, Salespersons & Demonstrators	0.000	0.000	0.008	0.004	0.004	0.015	0.000	0.080
Skilled Agricultural & Fishery Workers	0.025	0.000	0.001	0.000	0.000	0.000	0.001	0.005
Extraction & Building Trades Workers	0.013	0.000	0.011	0.006	0.004	0.011	0.006	0.090
Metal, Machinery & Related Trades Workers	0.000	0.000	0.000	0.000	0.012	0.061	0.004	0.031
Precision, Handicraft & Related Trades Workers	0.000	0.001	0.000	0.001	0.018	0.000	0.021	0.009
Other Craft & Related Trades Workers	0.017	0.014	0.001	0.004	0.014	0.004	0.092	0.028
Stationary Plant & Related Operators	0.001	0.000	0.000	0.001	0.004	0.018	0.008	0.014
Machine Operators & Assemblers	0.003	0.000	0.002	0.001	0.000	0.000	0.000	0.076
Drivers & Mobile Plant Operators	0.008	0.000	0.003	0.000	0.001	0.253	0.063	0.036
Sales & Services Elementary Occupations	0.022	0.007	0.074	0.003	0.013	0.029	0.123	0.040
Agricultural, Fishery & Related Labourers	0.001	0.002	0.000	0.001	0.013	0.000	0.033	0.006
Mining, Construction, Manufacturing & Transport Labourers	0.000	0.000	0.004	0.001	0.000	0.003	0.078	0.062

Note: ¹ Descriptive statistics presented in table are based on permanent, full-time employees aged between 25 and 59.

Table A4: Structure of Employment in Private Sector Organisations Compared to Public Service (October 2006 NES Data)¹

	Manufacturing	Construction	Wholesale & Retail	Hotels & Restaurants	Transport & Communication	Financial Intermediation	Business Services	Private Education	Private Health	Other Services	Public
Male	0.736	0.951	0.610	0.484	0.696	0.430	0.607	0.246	0.207	0.576	0.426
Experience	19.19	17.81	17.99	14.37	18.72	16.51	15.14	14.97	16.84	17.20	20.50
Experience Squared	474.53	416.80	419.69	292.60	469.16	371.10	320.24	289.69	383.33	390.78	528.87
Lower Secondary	0.179	0.199	0.182	0.138	0.150	0.018	0.093	0.052	0.085	0.220	0.094
Upper Secondary	0.271	0.281	0.361	0.262	0.334	0.325	0.230	0.130	0.202	0.244	0.219
Post Secondary	0.144	0.208	0.113	0.136	0.096	0.064	0.110	0.107	0.114	0.122	0.064
Third-level Non-Degree	0.119	0.074	0.108	0.158	0.123	0.179	0.145	0.286	0.180	0.118	0.134
Third-level Degree	0.167	0.085	0.136	0.163	0.207	0.404	0.340	0.408	0.323	0.190	0.417
Supervisory Responsibilities	0.298	0.446	0.478	0.543	0.389	0.430	0.408	0.473	0.412	0.497	0.338
Professional Body Member	0.105	0.102	0.111	0.103	0.104	0.321	0.185	0.156	0.239	0.132	0.246
Shift-work	0.388	0.107	0.180	0.501	0.288	0.060	0.228	0.175	0.370	0.275	0.318
Weekly Hours	40.62	40.46	39.19	37.92	39.61	37.80	39.27	33.58	38.00	37.93	36.30
Overtime Hours	4.72	4.77	3.93	3.39	5.00	1.79	4.98	2.76	4.13	3.93	5.17
Trade Union Membership	0.400	0.302	0.214	0.159	0.325	0.391	0.177	0.275	0.415	0.248	0.789
Legislators & Senior Officials	0.006	0.001	0.002	0.005	0.025	0.007	0.006	0.006	0.002	0.015	0.008
Corporate Managers	0.053	0.072	0.082	0.044	0.084	0.127	0.092	0.038	0.023	0.087	0.020
Managers of Small Enterprise	0.031	0.046	0.137	0.162	0.081	0.111	0.071	0.105	0.041	0.114	0.005
Engineering & Science Professionals	0.051	0.054	0.010	0.000	0.031	0.007	0.079	0.007	0.002	0.013	0.010
Life Science & Health Professionals	0.001	0.000	0.002	0.000	0.002	0.000	0.001	0.028	0.137	0.001	0.084
Teaching Professionals	0.000	0.001	0.000	0.000	0.003	0.000	0.001	0.194	0.080	0.003	0.221
Other Professionals	0.027	0.008	0.010	0.002	0.033	0.135	0.062	0.064	0.027	0.035	0.024
Engineering & Science Associate Professionals	0.060	0.016	0.020	0.000	0.128	0.003	0.042	0.000	0.005	0.019	0.020
Life Science & Health Associate Professionals	0.002	0.000	0.002	0.000	0.000	0.000	0.004	0.000	0.163	0.005	0.044

Table A4: continued

	Manufacturing	Construction	Wholesale & Retail	Hotels & Restaurants	Transport & Communication	Financial Intermediation	Business Services	Private Education	Private Health	Other Services	Public
Teaching Associate Professionals	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.144	0.023	0.000	0.011
Other Associate Professionals	0.025	0.010	0.025	0.006	0.028	0.100	0.095	0.009	0.048	0.037	0.091
Office Clerks	0.073	0.029	0.068	0.027	0.126	0.199	0.124	0.096	0.118	0.081	0.162
Customer Service Clerks	0.013	0.004	0.019	0.010	0.105	0.288	0.047	0.005	0.026	0.035	0.006
Personal & Protective Services Workers	0.004	0.004	0.028	0.583	0.023	0.010	0.106	0.243	0.209	0.209	0.156
Models, Salespersons & Demonstrators	0.032	0.007	0.336	0.062	0.044	0.009	0.065	0.000	0.015	0.026	0.005
Skilled Agricultural & Fishery Workers	0.006	0.000	0.001	0.007	0.000	0.000	0.002	0.000	0.003	0.058	0.004
Extraction & Building Trades Workers	0.042	0.410	0.010	0.001	0.003	0.000	0.033	0.016	0.009	0.018	0.007
Metal, Machinery & Related Trades Workers	0.052	0.059	0.036	0.001	0.004	0.000	0.009	0.000	0.000	0.005	0.010
Precision, Handicraft & Related Trades Workers	0.018	0.018	0.005	0.000	0.000	0.000	0.004	0.000	0.000	0.009	0.002
Other Craft & Related Trades Workers	0.040	0.034	0.047	0.008	0.011	0.000	0.017	0.000	0.003	0.018	0.012
Stationary Plant & Related Operators	0.039	0.006	0.005	0.000	0.006	0.000	0.005	0.000	0.002	0.013	0.004
Machine Operators & Assemblers	0.250	0.024	0.014	0.000	0.016	0.000	0.028	0.000	0.001	0.034	0.001
Drivers & Mobile Plant Operators	0.031	0.054	0.039	0.002	0.145	0.000	0.017	0.000	0.001	0.037	0.046
Sales & Services Elementary Occupations	0.008	0.015	0.084	0.067	0.045	0.002	0.067	0.042	0.046	0.109	0.037
Agricultural, Fishery & Related Labourers	0.008	0.011	0.003	0.003	0.003	0.000	0.000	0.000	0.009	0.015	0.003
Mining, Construction, Manufacturing & Transport Labourers	0.127	0.118	0.015	0.008	0.055	0.000	0.021	0.004	0.008	0.005	0.006

Note: ¹ Descriptive statistics presented in table are based on permanent, full-time employees aged between 25 and 59.

Year	Number	Title/Author(s) ESRI Authors/Co-authors <i>Italicised</i>
2009		
	320	A Code of Practice for Grocery Goods Undertakings and An Ombudsman: How to Do a Lot of Harm by Trying to Do a Little Good <i>Paul K Gorecki</i>
	319	Negative Equity in the Irish Housing Market <i>David Duffy</i>
	318	Estimating the Impact of Immigration on Wages in Ireland <i>Alan Barrett, Adele Bergin and Elish Kelly</i>
	317	Assessing the Impact of Wage Bargaining and Worker Preferences on the Gender Pay Gap in Ireland Using the National Employment Survey 2003 <i>Seamus McGuinness, Elish Kelly, Philip O'Connell, Tim Callan</i>
	316	Mismatch in the Graduate Labour Market Among Immigrants and Second-Generation Ethnic Minority Groups <i>Delma Byrne and Seamus McGuinness</i>
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	313	Immigrants and Employer-provided Training <i>Alan Barrett, Séamus McGuinness</i> , Martin O'Brien and <i>Philip O'Connell</i>
	312	Did the Celtic Tiger Decrease Socio-Economic Differentials in Perinatal Mortality in Ireland? <i>Richard Layte and Barbara Clyne</i>
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	310	Car Ownership and Mode of Transport to Work in Ireland <i>Nicola Commins and Anne Nolan</i>

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