

Assessing the wage gap between public and private sector employees in Ireland: issues, evidence and challenges

Research Article

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Abstract: Over recent years pay levels in the public sector of the economy have come under increasing scrutiny. This paper provides an assessment of the key issues and challenges central to a comparison of wage levels in the private and public sector in Ireland. A review of the extant studies that have employed multivariate analysis to estimate the gap between public and private sector wages in Ireland indicates a wage premium in favour of public sector workers. However the actual magnitude of the earnings gap is difficult to accurately assess as the size of the premium varies markedly across these various studies. A number of possible options are suggested to guide the development of a fair system for assessing wage levels in the public sector.

Keywords: *public sector pay, issues, evidence*

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INTRODUCTION

Over the recent years, pay levels in the public sector of the economy have come under increasing scrutiny in many countries (e.g. Christopoulou and Monastiriotis, 2014; Melly, 2005; Mueller, 2000). A critical concern in the Irish case in terms of pay levels in the public sector stems from the financial crisis in 2008 and the collapse of government revenues.

Since the financial crisis, public sector pay has been governed by a series of wage agreements between government and public sector trade unions. These agreements have mainly involved considerable concessions from public servants geared towards the reduction of pay and conditions, along with increased worker effort (Bach and Stroleny, 2013; Roche et al., 2015). Public servants have paid increased pension-related deductions, averaging 7% of total salary, and experienced substantial pay cuts in 2010 and 2013 in the range of 6%–19%.

The present Lansdowne Road Agreement (2016 – 2018) provides marginal increases in take home pay for all public servant earnings, weighted in favour of the lower paid. However, the key issue for public servants is the restoration of the earlier pay cuts. Under the agreement, restoration of remuneration due to the pay cuts will occur over a period stretching from 2017 to 2019 depending on improvements in the public finances. The agreement provides some degree of stability and predictability to the short-term cost of public sector pay to the exchequer.

As a result, the cost of the public sector net pay bill declined to 14 billion by 2013 from a high of >17 billion in 2008 (Central Expenditure Evaluation Unit [CEEU], 2014). Even so the public sector pay bill accounted for 28% of gross government current expenditure in 2013 and, consequently, the earnings of public sector employees has a considerable economic and political spillover into government finances and budgetary constraints. To address the current pay issues and the development of pay strategy in the public sector, the government established a Public Services Pay Commission in 2016.

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In the context of public concerns regarding the proportion of the public finances allocated to public sector pay and pensions, this paper provides an assessment of the key issues, evidence and challenges that are central to the setting of pay rates for public servants in Ireland. We first consider the theoretical issues and methodological problems in assessing pay levels in the public sector. Secondly, we review the empirical evidence of the earnings gap between public and private sector workers in Ireland and other European countries. Finally, we conclude with the lessons to be drawn from the methodological issues and the challenges that are likely to confront any endeavour to develop a rational and systematic process or mechanism to set levels of public sector earnings.

SETTING PAY RATES IN THE PUBLIC SECTOR

The underlying principles of Irish public service pay determination since the 1950s are based on the premise that the pay of public servants should – where possible – be set by reference to direct comparators in the private sector. Implicit in this policy is that, *ceteris paribus*, the earnings of comparable workers in each sector should be relatively equal. Many of the services provided by the Government are free at the point of consumption and exhibit the characteristics of a public good. In the absence of market forces, Government lacks a clear pricing mechanism to guide pay setting in the public sector, making it difficult to calculate a market evaluation of the output of workers engaged in the provision of these services (Belman and Heywood, 1996). The level of public sector compensation is a crucial factor determining both the competency and efficiency of government services.

Moreover, there is some evidence to indicate that there is a strong positive co-movement between public and private sector wages in the short-to-medium term in most euro area countries. This evidence suggests that generous public wage levels may put pressure on private sector wages, with potentially adverse effects on a country's competitiveness (Holm-Hadulla et al., 2010).

This poses a perennial challenge for government pay policy in the public sector of the economy. Too high a level of pay wastes the resources of Government, increasing the burden to taxpayers, while too low a level makes it difficult for governments to attract workers of the quality needed to provide quality services (Belman and Heywood, 2004).

Implicit in this approach to setting wage levels for different occupations in the public sector is that the traded private sector is an accurate barometer of true wage levels. Basic economic theory suggests that from a demand viewpoint, wages depend on the value that a worker adds to the firm, i.e. the worker's marginal revenue product (MRP). In turn, the MRP is determined mainly by two factors: (i) the productivity of the worker and (ii) the price and demand for the good or service that the worker produces. As well as demand, earnings will be also determined by the supply available, such as specialist skills, knowledge and experience. Comparability involves replicating the wages of public sector jobs with those of private sector workers, which reflect the correct marginal evaluations of utility-maximising workers and profit-maximising firms.

However, estimating the true wage is problematic in the real world. Productivity at the individual worker level and the added revenue product are often extremely difficult to measure and price. In addition, there is an assumption that markets are competitive, but in practice, labour markets are imperfect to some degree. For example, where there is a single buyer of labour (monopsony), the employer can pay lower wages to workers because of their market power and disregard workers' MRP generation. Furthermore, theories of efficiency wage and the institutional view of labour markets provide explanations for why wages may not equate to marginal revenue.¹ In practice, wages are a function of a number of factors, besides competitive pressures and ability to pay, such as trade unions, cost of living, government legislation and perceptions of a fair wage.

Aligning public sector wages closely to private sector wages may, however, have unintended consequences. Private sector earnings generally respond to relatively short-term market pressures and human capital supply imperatives, which may distort the earnings of some occupations either upwards or downwards. Linking such positions to public sector jobs carries a danger of inflating or deflating the earnings of some occupations in the sector. Considering the imperfections in the traded competitive market, it may be the case that the appropriate public sector wage is the correct competitive wage even if that wage is not always observed in the private sector (Belman and Heywood, 1996). Indeed, where women in the public sector fare better, as is the case in Ireland, this may be appropriate as the public sector wage premium may offset discrimination experienced by women in the private sector (Turner et al., 2017).

METHODOLOGICAL ISSUES

The main approaches used to address the differences in earnings between public and private sector workers either compare similar positions in either sector or compare the characteristics of the workers in each sector. In practice, many studies adapt a hybrid of these approaches.

Positional comparisons would appear to offer a relatively sound basis to compare the earnings of workers in the different sectors. However, it requires the availability of earnings data for similar positions within narrow and specific occupations such as accountancy or information technology jobs. Few public sector jobs in areas such as education, health and public administration have such narrow counterparts in the private sector. In general, the position-based approach can only be accurate when the work is very similar between sectors and when enough comparable positions exist (Belman and Heywood, 1996: 137). In the Irish context, the extant data on earnings have only allowed for comparisons at the broadest occupational level, i.e., at the one-digit level, which categorises occupation into nine major groupings from professional-type jobs to service and manual jobs. Few, if any, studies on the wage gap between the public and private sectors have compared jobs at the minor group level, which has 96 occupational groups, or the next detailed level, which has >400 job categories, simply because earnings data are not available at a more detailed occupational level (see, for instance, Central Statistics Office [CSO], 2013; Foley and Callaghan, 2010; Kelly et al., 2009). Studies that compare position and earnings can only be accurate if the work is relatively similar and sufficient comparable positions exist.

In the absence of data that match earnings with detailed occupational positions, one approach is to assess the value of positions by focussing on the job content. Typically, this involves a job evaluation exercise, wherein jobs are compared on a number of weighted factors, such as responsibility, judgement required, knowledge and skills. Points are awarded to each factor and summed to give a basis for comparison. A unique example of the application of job evaluation on a large scale was carried out in Ireland around the year 2000 by the Public Service Benchmarking Body, involving the collection of evidence and information for 138 public service grades, as well as 3994 individual jobs and 3563 jobs in the private sector (Report of the Public Service Benchmarking Body [RPSBB], 2002).

A weakness of the job evaluation method is that the weighting given to each factor, such as knowledge and responsibility, remains an entirely subjective judgement on which to base earnings. Moreover, job evaluation omits any consideration of the productivity of the worker or the price and demand for the good or service that the worker produces.

An alternative to the positional approach is to compare individual worker- and firm-level characteristics. Different wage levels using this method are usually linked to the notion of human capital as a 'set of skills' that increase a worker's productivity and wages (Becker, 1976; Sheffrin, 2003). These skills are perceived as a function of factors, such as gender, education, age and job experience, which explain a part of the existing differentials across individuals (Mincer, 1974). The human capital approach to assessing differences between public and private sector earnings has been to compute equations for human capital earnings to identify the returns to different levels of human capital in terms of years of schooling, work experience and job tenure (Bender and Elliott, 2002). However, there remain substantial problems with this approach. A range of different results can be derived depending on the model specification and estimation technique used to measure pay differentials. For example, weighted or unweighted regression analyses may be used (CSO, 2013), while more complex methodologies such as propensity score matching (PSM) and Blinder–Oaxaca (B–O) decompositions have also previously been utilised and may present divergent results.²

A substantial specification issue in the Irish case is the inclusion or exclusion of firm size. A considerable body of research shows the important role that firm size plays in accounting for the differential in pay levels between the public and private sectors (e.g. Bender and Elliott, 2002). In general, in the private sector, larger firms pay more than smaller firms for a number of reasons, such as the tendency to hire workers with greater human capital attributes, ensure greater profitability and, as part of the costs, discourage shirking (Kelly et al., 2012). On the other hand, firm size does not apply in the same way as a factor determining differences in earnings at the establishment level in the public sector. For example, the salaries for some 30000 teachers at the primary level are standardised across schools, both small and large. Consequently, organisational size is likely to matter in the private sector but may have little effect in the public sector. In a study of a number of European countries, restricting the comparison of public and private sector workers to only large private firms indicated a much lower earnings differential between the sectors (Giordano et al., 2011).

The size of the earnings differential between the sectors can also be influenced by whether earnings are compared at the hourly, weekly, monthly or annual level (Giordano et al., 2011; Turner and Flannery, 2016). The advantage of using hourly earnings is that it provides an unambiguous standard unit for comparison. Weekly and monthly earnings refer to a specific reference period when the data were collected and may not fully capture overtime and bonus payments and may disregard the actual hours worked. It can be argued that gross annual earnings provide a more reliable basis for comparative purpose as they include all payments over a full year. Annual earnings data (if available) – rather than hourly, weekly or monthly earnings – seem to provide a better basis for a comprehensive comparison of earnings in the public and private sectors as temporary or seasonal fluctuations are more likely to be ironed out (Turner and Flannery, 2016).

Comparisons of public and private sector workers overwhelmingly rely on average earnings data, but the actual wage distributions may be significantly different in each sector. Many studies find that there are imbalances, with public sector workers at the lower end of the hierarchy receiving the largest wage premium and workers at the upper end earning less than their private sector counterparts (Elliott and Duffus, 1996; Foley and Callaghan (2010). In such circumstances, as Bender (2003: 63) notes, achieving equal average pay rates between both sectors will not ensure equal comparability because of the skewed nature of the actual wage distribution.

Besides variation in earnings there may also be significant differences in the pension entitlements between public and private sector workers. However, factoring in pension entitlements as part of public sector earnings is not comparing like with like, unless pensions are also factored in for comparable private sector workers. Consequently, any consideration of pension entitlements in a comparison of public and private sector earnings is likely to be fraught with methodological difficulties due to the uneven pension coverage of workers in the private sector and the lack of data on the size of individual pensions. While it may be argued that pensions ought to be a factor in public sector earnings, no previous Irish studies comparing public and private sector wage levels have attempted to address the pension factor.

SOURCES OF EARNINGS DATA

Apart from methodological problems, there are practical issues relating to the availability of national and international data to compare the earnings of public and private sector workers. Three surveys carried out by the CSO have been used in the Irish case to estimate the wage gap between the two sectors: the Survey of Income and Living Conditions (SILC); the Earnings, Hours and Employment Costs Survey (EHECS); and the National Employment Survey (NES). The SILC is a household survey covering a broad range of issues in relation to income and living conditions and is run annually by the CSO. A respondent's position in the private or public sector has to be identified from among the broad industrial sectors. Consequently, any comparison of public and private sector earnings remains at best an approximate estimation. An advantage of this data is that it is available for other European countries through Eurostat, facilitating international comparisons.

The EHECS is run on a quarterly basis and uses a sample selection from the Business Register and usually surveys >7000 enterprises. The principal variables collected are number of employees, number of hours and earnings and includes a direct measure of whether people are employed in the public or private sector.

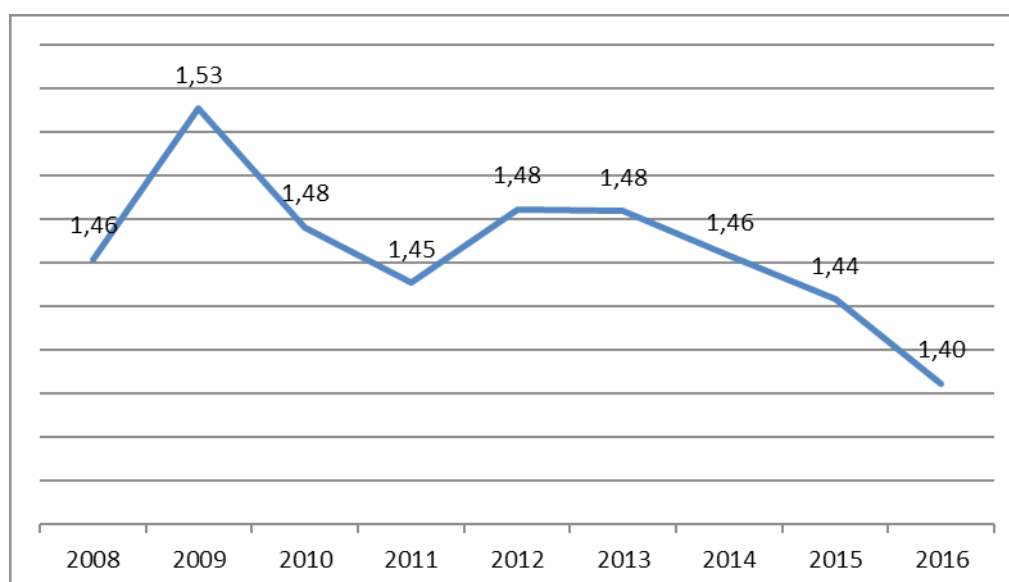
The NES is a national large-scale survey of employers and employees of individual-level hourly, weekly and annual earnings, along with measures of employment in the public or private sector and other characteristics, such as gender, educational level, age and occupation. However, the last NES was carried out in 2009, and the CSO now gathers these earnings measures from existing administrative data sources in order to comply with requirements of the European-level Structure of Earnings Survey (SES).

The SES provides comparable information on the relationships between the level of earnings and individual characteristics, such as gender, age, occupation and education, for European Union (EU) Member States. The survey is a large-enterprise sample survey and is run on a 4-yearly basis with data collected in 2002, 2006, 2010 and 2014. The data collected by the SES only cover enterprises with at least 10 employees operating in all areas of the economy. In Ireland, the CSO is responsible for selecting the sample, preparing the questionnaires, conducting the survey and forwarding the results to Eurostat, where the data are centrally processed.

ASSESSING DIFFERENCE IN RAW EARNINGS BETWEEN PUBLIC AND PRIVATE SECTOR WORKERS

Comparisons of public–private sector earnings difference based on raw earnings data are commonly reported in the Irish case as these data are routinely collected through the quarterly Earnings and Labour Costs Survey by the CSO. As Figure 1 indicates, the ratio of public-to-private sector earnings is considerably higher, with weekly earnings averaging >40% of private sector earnings. After 2009, it appears that the difference in raw weekly earnings between the public and private sectors declined. The findings of Doran et al. (2016) confirm this trend, showing that average raw earnings of private sector workers were higher in 2013 than in 2008, while the higher earners in the public sector experienced a fall in average earnings in the same period.

Figure 1. Ratio of public to private sector weekly earnings 2008 to 2016*



Note: * Quarter 2 returns.

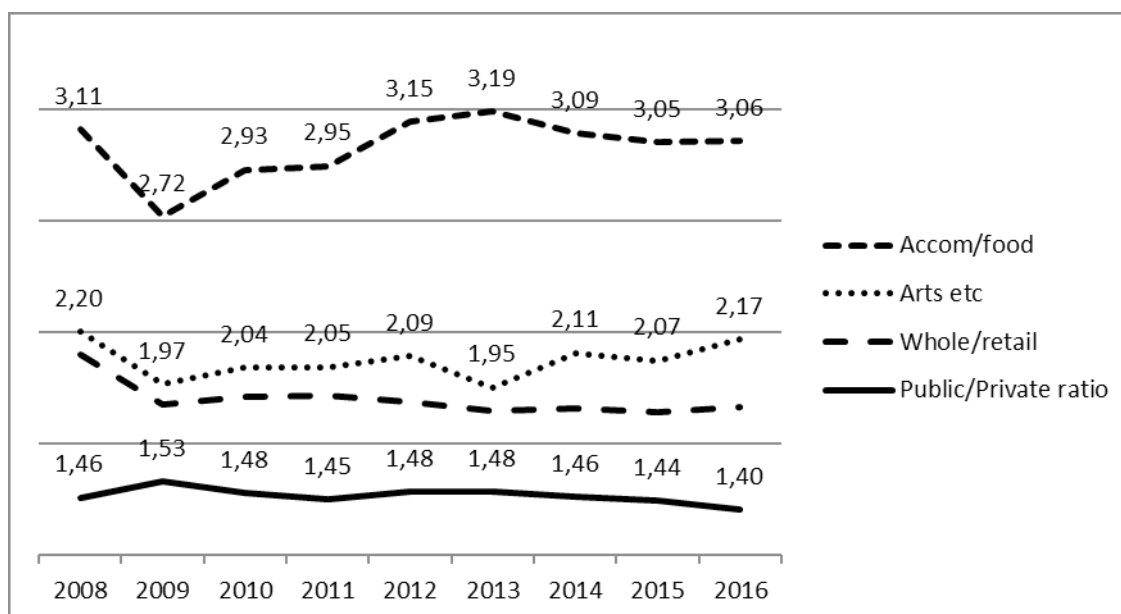
Source: CSO statistical release, 2012 and August 2016: *Earnings and Labour Costs Quarterly*.

Yet, the ratio of weekly earnings for workers employed in a particular industrial sector, such as finance and insurance, conveys a far greater earnings advantage than for those employed in the public sector (Figure 2). Workers in the Financial and Insurance sector consistently earned three times the average weekly earnings of those employed in the Accommodation and Food Services sector, twice the earnings of workers in the Arts sector and >1.8 times the earnings of workers employed in the Wholesale retail sector.

Similarly, higher-level occupations, such as managers and professionals, enjoy substantially greater average weekly earnings compared to clerical, service and other manual workers, and the gap in earnings between workers in large- and small-/medium-sized firms is greater than the differences in earnings between public and private sector workers. These figures serve to illustrate that there are even greater differences in basic average earnings depending on firm size, industrial sector or occupational level than the earnings gap between public and private sector workers.

However, the raw hourly and weekly earnings data comparing average worker earnings across all industrial and occupational groupings in the public and private sectors, provided by the CSO and popularly reported in the printed press, are a crude and inaccurate measure of the true earnings difference between the sectors.

Figure 2. Ratio of weekly earnings in finance and insurance, compared to selected industrial sectors.



Source: CSO statistical release, August, 2016: *Earnings and Labour Costs Quarterly*.

MICRO-LEVEL STUDIES OF THE WAGE GAP BETWEEN PUBLIC AND PRIVATE SECTOR EARNINGS

Simple comparisons of raw mean hourly or weekly earnings across the entirety of the public and private sectors are an unreliable gauge of the true wage gap. To estimate the true gap, empirical studies comparing earnings in the public and private sectors tend to use a hybrid of the positional and worker characteristics approach that combines position or occupational level with human capital measures depending on the extant measures available to researchers (Bender and Elliott, 2002). Typically, such studies use broad occupational level, gender, age, education, work experience and firm-level characteristics such as size and industrial sector. Proportionally, >50% of public sector positions can be classified as broadly professional-type occupations compared to about a quarter of private sector employees. The effect on earnings is significant. In 2014, 21% of employees in the public sector were in the lower half of the earnings distribution, compared to the majority (57%) of private sector employees (RPSPC, 2017: 44).

The aim of statistical methods such as ordinary least-squares (OLS) regression used in these studies is to identify any observed differences in the earnings between private and public sector workers that can be explained with reference to human capital attributes and positional characteristics. Any remaining positive or negative differences in earnings represent the true wage gap or unexplained differences between workers in the two sectors.

As noted by the CSO (2012), the public–private sector wage differential estimated using the OLS regression method is constrained in the information it provides about the differential. While it takes account of individual characteristics, it assumes that the return on these characteristics is the same for both the public and private sectors. In this context, other statistical methodologies such as PSM and the B–O decomposition (Oaxaca, 1973) have also been used in an attempt to accurately estimate this earnings gap. The PSM methodology is used to reduce the potential bias in the OLS estimates due to selectivity. This method ensures that public sector workers will be matched with private sector equivalents with similar observable characteristics (Gibson, 2009). The B–O decomposition is a statistical method whereby separate OLS equations are calculated for the public and private sectors. Using the estimated parameters from the two models, the differential can be decomposed into the part that can be explained by the different attributes of individuals and the characteristics of their workplace in the public and

private sectors, with the remainder representing the unexplained part of the differential. This unexplained part of the decomposition can be interpreted as the public–private pay differential (CSO, 2012). The B–O decomposition is currently considered the preferred method of calculating the public–private wage differential in the literature (CSO, 2012). Yet, even then, this is still likely to be merely an estimate as there may be other relevant characteristics that affect the differential but are absent due to data limitations, such as fringe benefits in the private sector or pension entitlements in the public sector (Giordano et al., 2011). In any case, when comparing the sectors, it is the wage gap or unexplained earnings difference that is of most concern from a public policy perspective.

Table 1 provides a list of the key studies, along with information on the survey data used, the types of control variables included and the specific studies that have used multivariate analysis to estimate the gap between public and private sector wages in Ireland. In general, each of these have found a wage premium in favour of public sector workers. Boyle et al. (2004) estimated a premium of ~13% on gross monthly earnings for public sector employees. The premium was significantly bigger for those near the bottom of the earnings distribution than for those at the top and was significantly larger for women than men in the mid-1990s. Ernst & Young and Murphy (2007) reported an overall premium of 10% in favour of public sector employees using the 2003 NES (6% for males and 15% for females). However, these vary substantially depending on whether OLS, B–O or PSM technique is used. Using a later NES, Kelly et al. (2009) found an even bigger overall public sector premium in weekly earnings of 26% for both males and females in 2006. This figure was also robust to the use of an OLS- or a PSM-based model. Based on data from the 2007 NES, Foley and Callaghan (2010) – using only full-time workers – estimated a public sector premium in weekly earnings ranging from 11.5% for unweighted data to 15.9% for weighted data. The wage premium was highest at the lower end of the wage distribution and lowest at the top end. Interestingly, when workers employed in the ‘Personal and Protective Service’ were excluded from the comparison, the public–private sector wage gap diminished considerably, particularly for males (from 7.2% to 2.7%).

The CSO (2012) estimated a public sector premium that ranged from 7.3% to 17.0% based on weekly earnings (excluding firm size) for 2010, again using the NES. Females in the public sector enjoyed a larger premium (12.0%–20.4%) compared to males (3.5%–14.5%), and the public sector pay differential generally decreased as earnings increased. In the private sector, there was a higher concentration of employees at the lower end of the earnings distribution, and the gender pay using hourly earnings was greater in the private sector than in the public sector in favour of males, 21.1% compared to 12.1%, respectively (CSO, 2012). The CSO provided a further update using the same data (CSO, 2013) where the public sector pension levy was deducted from gross pay for public sector workers and then new estimates calculated. These showed a premium of 1.3% for public sector workers in 2010 when firm size was included in regressions, with the same premium at 9.3% when firm size was removed as a control. Females still enjoyed a larger public sector premium (5.1%–12.9%) compared to males (–2.0% to 6.3%), with private sector males enjoying a wage premium compared to their public sector counterparts when the pension levy and firm size were accounted for.

More recent calculations from the CSO (2017) reveal similar trends for the years 2011–2014. Results for the OLS model for gross weekly earnings (deducting the pension levy and excluding size) shows a pay differential for the public sector ranging from 3.2% in 2011 to a negative gap (–0.4%) in 2014. The differential is greater for women, ranging from 10% in 2011 to <8% in 2014. Quantile regression results show that the wage gap (with the pension levy deducted) for gross weekly earnings between 2011 and 2014 was the highest (and positive) for public sector employees at the lower end of the earnings distribution and negative at the higher end. For example, in 2014, there was a positive wage gap of 11.2% in favour of public sector employees at the 10th decile (the lowest paid), declining to a negative gap of –12.5% at the 90th decile (the highest paid). Again, the pay differential was more positive for women than men.

As the wide range of estimates in Table 1 illustrate, the magnitude of the premium varies substantially depending on the explanatory variables used, the way variables are specified, the particular sub-sample analysed and the statistical methodology used in the estimations.

However, based on the recent CSO calculations and the Report of the Public Service Pay Service Commission (2017), a number of patterns are clearly evident. First, the average wage gap between the public and private sectors declined from a premium of about 24% in 2006, reaching parity or even a small discount in favour of private sector employees in 2014 (RPSPC, 2017: 52). Secondly, the decline in the public sector premium was greater for men than for women. Thirdly, the decrease in the positive wage premium for employees in the public sector was greatest among the higher deciles of the wage distribution and lowest among the lower decile earnings range.

Table 1: Studies using multivariate analysis that were conducted in the period 1994–2014

Source	Data source	Earnings measure	Controls included	Estimation methodology	Overall earnings premium	Male premium	Female Premium
Boyle et al., 2004	European Community Household Survey for Ireland 1994–2001	Gross monthly wages	Occupation, educational attainment, full-time status, gender, public or private sector, nationality, age, age-squared, permanent/non-permanent job status, length of service with current employer, part-time status and size of enterprise	OLS (with interaction terms) and quantile regressions	1994: 14.0% 1995: 14.6% 1996: 14.2% 1997: 9.9% 1998: 13.4% 1999: 8.3% 2000: 11.0% 2001: 12.9%	1994: 10.0% 1995: 10.6% 1996: 9.1% 1997: 14.1% 1998: 10.9% 1999: 8.8% 2000: 8.2% 2001: 11.4%	1994: 19.5% 1995: 19.8% 1996: 20.6% 1997: 14.1% 1998: 16.5% 1999: 11.1% 2000: 13.4% 2001: 14.5%
					OLS (with decomposition, PSM and quantile regressions)	OLS: 5% B-O: 7% PSM: 6%	OLS: 10% B-O: 13% PSM: 12%
Ernst & Young and Murphy, 2007	National Employment Survey 2003	Gross weekly earnings	Occupation, educational attainment, full-time status, gender, public or private sector, age, age-squared, permanent/non-permanent job status, length of service, employer, total length in employment, log of overtime hours (38+) worked, log hours worked and full-time dummy	OLS, B-O decomposition, PSM and quantile regressions	OLS: 8% B-O: 10% PSM: 10%		
Kelly et al., 2009	National Employment Survey 2003 and 2006	Gross weekly earnings	Occupation, educational attainment, full-time status, gender, public or private sector, nationality, membership of a trade union, membership of a professional body, experience, experience-squared, permanent/non-permanent job status, log of overtime hours (38+) worked, log of hours worked, shift work and supervisory status	OLS and PSM	2003 OLS: 14.1% 2006 OLS: 26.6% 2006 PSM: 25.9%	2003 OLS: 12.8% 2006 OLS: 26.6% 2006 PSM: 22.5%	2003 OLS: 14.9% 2006 OLS: 26.5% 2006 PSM: 25.2%
Foley and Callaghan (2010)	National Employment Survey 2007	Gross weekly earnings	Occupation, educational attainment, full-time status, gender, public or private sector, nationality, trade union membership, membership of a professional body, age, age-squared, permanent/non-permanent job status, length of service with current employer, total length in employment, log of overtime hours (38+) worked, log of hours worked, shift work, supervisory status and size of enterprise	OLS, B-O decomposition. Both unweighted and weighted results shown	OLS: 10.0%–14.5% B-O: 11.5%–15.9% Results with size of firm excluded: OLS: 15.1%–20.1% B-O: 16.0%–20.5%	OLS: 7.2%–13.7% B-O: 9.0%–16.6% Results with size of firm excluded: OLS: 12.6%–19.2% B-O: 13.7%–21.3%	OLS: 12.7%–13.9% B-O: 13.9%–14.9% Results with size of firm excluded: OLS: 18.0%–21.4% B-O: 19.2%–21.2%
CSO, 2012	National Employment Survey 2009 and 2010	Gross weekly earnings	Occupation, educational attainment, full-time status, gender, public or private sector, nationality, trade union membership, membership of a professional body, age, age-squared, permanent/non-permanent job status, length of service with current employer, total length in employment, log of overtime hours (38+) worked, log of hours worked, shift work, supervisory status and size of enterprise	OLS, B-O decomposition, quantile regressions	2007 OLS: 13.8% 2009 OLS: 11.9% 2010 OLS: 8.5% 2007 B-O: 12.6% 2009 B-O: 12.1% 2010 B-O: 7.3% Results with size of firm excluded: 2007 OLS: 20.1% 2009 OLS: 19.1% 2010 OLS: 17.0% 2007 B-O: 18.3% 2009 B-O: 17.2% 2010 B-O: 14.1%	2007 OLS: 13.0% 2009 OLS: 10.4% 2010 OLS: 5.4% 2007 B-O: 10.4% 2009 B-O: 7.1% 2010 B-O: 3.5% Results with size of firm excluded: 2007 OLS: 19.1% 2009 OLS: 17.2% 2010 OLS: 20.4% 2007 B-O: 21.2% 2009 B-O: 20.3% 2010 B-O: 18.2%	2007 OLS: 13.9% 2009 OLS: 13.7% 2010 OLS: 12.0% 2007 B-O: 15.1% 2009 B-O: 13.9% 2010 B-O: 12.0% Results with size of firm excluded: 2007 OLS: 21.4% 2009 OLS: 21.1% 2010 OLS: 20.4% 2007 B-O: 21.2% 2009 B-O: 20.3% 2010 B-O: 18.2%

Source	Data source	Earnings measure	Controls included	Estimation methodology	Overall earnings premium	Male premium	Female Premium
CSO 2013	National Employment Survey 2009 and 2010	Gross weekly earnings (with and without public pension levy deducted)	Occupation, educational attainment, full-time status, gender, public or private sector, nationality, membership of a trade union, membership of a professional body, age, age-squared, permanent/non-permanent job status, length of service with current employer, total length in employment, log of overtime hours (38+) worked, log of hours worked, shift work, supervisory status and size of enterprise	OLS and quantile regressions	2009 OLS: 13.5% 2010 OLS: 9.7% Results with size of firm excluded: 2009 OLS: 21.7% 2010 OLS: 19.1% Pension levy deducted from gross pay 2009 OLS: 4.7% 2010 OLS: 1.3% Results with size of firm excluded: 2009 OLS: 11.1% 2010 OLS: 9.3%	2009 OLS: 12.4% 2010 OLS: 7.0% Results with size of firm excluded: 2009 OLS: 20.2% 2010 OLS: 17.1% Pension levy deducted from gross pay 2009 OLS: 2.6% 2010 OLS: -2.0% Results with size of firm excluded: 2009 OLS: 8.7% 2010 OLS: 6.3%	2009 OLS: 14.2% 2010 OLS: 12.9% Results with size of firm excluded: 2009 OLS: 23.5% 2010 OLS: 22.0% Pension levy deducted from gross pay 2009 OLS: 6.2% 2010 OLS: 5.1% Results with size of firm excluded: 2009 OLS: 13.7% 2010 OLS: 12.9%
					2011 OLS: 9.2% 2014 OLS: 5.0% Results with size of firm excluded: 2011 OLS: 9.5% 2014 OLS: 5.3% Pension levy deducted from gross pay 2011 OLS: 2.9% 2014 OLS: -0.7% Results with size of firm excluded: 2011 OLS: 3.2% 2014 OLS: -0.4%	2011 OLS: 3.0% 2014 OLS: -0.7% Results with size of firm excluded: 2011 OLS: 3.3% 2014 OLS: -1.0% Pension levy deducted from gross pay 2011 OLS: -3.4% 2014 OLS: -6.4% Results with size of firm excluded: 2011 OLS: -3.1% 2014 OLS: -6.6%	2011 OLS: 15.3% 2014 OLS: 12.2% Results with size of firm excluded: 2011 OLS: 16.2% 2014 OLS: 13.5% Pension levy deducted from gross pay 2011 OLS: 9.1% 2014 OLS: 6.5% Results with size of firm excluded: 2011 OLS: 10.0% 2014 OLS: 7.8%
CSO 2017	Matched Quarterly National Household Survey and Revenue Commissioner's earnings data 2011–2014	Gross weekly earnings (with and without public pension levy deducted)	Occupation, educational attainment, full-time status, gender, public or private sector, nationality, membership of a trade union, membership of a professional body, age, age-squared, length of service with current employer, log of overtime hours, log of hours worked, shift work, supervisory status and size of enterprise	OLS and quantile regressions			

Note: The econometric results of the report of the Public Sector Pay Commission are not presented here as they use the same data and very similar methodologies as the previous studies outlined in the table. As a result, the estimated results are all extremely similar to those seen herein.

International comparisons

Previous studies of the wage gap between public and private sector workers in the US and Europe have generally found, in favour of public sector workers, a wage gap that is higher for women and for workers at the bottom of the wage distribution (for the US, see Poterba and Rueben, 1994; for European countries, see De Castro et al., 2013; Giordano et al., 2011; Gregory and Borland, 1999; Lucifora and Meurs, 2006). International data allow us to rank the size of the wage gap between public and private sector workers in Ireland relative to other EU countries. Two relatively recent studies compare the earnings differential between the public and private sectors in a number of European countries (De Castro et al., 2013; Giordano et al., 2011). Using micro data from the EU-SILC, Giordano et al. (2011) investigated the public–private wage differential in 10 euro area countries (Austria, Belgium, France, Germany, Greece, Ireland, Italy, Portugal, Slovenia and Spain) based on pooled observations for the years 2004–2007. To assess the true wage gap, earnings in the public and private sectors were regressed on the following controls: marital status, education level, gender, labour market experience, supervising other colleagues, occupying a managerial position, type of work and part-time or full-time employment (Giordano et al., 2011). Table 2 summarises the results.

Table 2: Wage gap (in percentage) in the public sector in relation to the private sector, 2004–2007 (with controls)

	Hourly gross earnings, €				Monthly gross earnings, €		
	All %	Male %	Female %		All %	Male %	Female %
Spain	25	23	26	Spain	17	14	20
Greece	21	17	26	Greece	16	11	20
Portugal	20	19	22	Ireland	16	14	18
Italy	19	16	22	Denmark	15	5	26
Ireland	19	16	20	Italy	13	8	17
Slovakia	11	8	12	Portugal	11	7	14
Denmark	11	3	19	Slovakia	10	6	11
Austria	10	4	14	Austria	10	4	14
France	5	4	7	France	3	–1	7
Belgium	5	3	7	Belgium	4	–1	7

Source: Giordano et al., 2011: adapted from Tables 4 and 9.

In terms of hourly gross earnings, the overall gap was 19% in favour of public sector workers in Ireland and ranks almost midway in the 10 countries. Females in the public sector enjoy a higher premium than males, 20% and 16%, respectively. The wage gap for monthly earnings is lower than for hourly earnings, though still positive for all countries. Ireland has the third highest wage gap of 16%: 18% for women and 14% for men. The evidence here indicates that Ireland tends to be ranked in the upper half of those countries with a more favourable wage gap for public sector workers.

De Castro et al. (2013), using data sourced from the 2010 European Structure of Earnings Survey, provide the most recent comparison of the hourly earnings wage gap between public and private sector workers in all the EU countries (Table 3). Controls included in the regression analysis to assess the true wage gap were age, educational attainment and job positions, measured in nine major groups ranging from managers and professionals to plant operators and elementary occupations and, finally, the industrial sector. Almost half the countries (12) reported a positive overall wage gap in favour of public sector workers and 13 countries reported a negative wage gap favouring private sector workers. The average wage gap for all 25 countries was just 4% – slightly more for males than for females. Ireland appears to have the second highest hourly earnings wage gap, just behind Cyprus and considerably above the EU average for males and females.

Table 3: EU countries with a positive hourly earnings gap in favour of public sector workers based on 2010 data (countries are ranked according to the size of the wage gap)

	Wage gap all	Male wage gap	Female wage gap
	%	%	%
Cyprus	21	20	19
Ireland	21	20	22
Luxembourg	20	23	16
Spain	15	13	17
Belgium	12	10	13
Portugal	12	11	12
Italy	11	6	15
Denmark	10	8	13
Poland	7	9	2
Greece	8	10	6
Austria	6	7	5
Lithuania	5	12	-3
Slovenia	5	8	2
EU average	4	4	3

Note: Countries with a positive hourly earnings gap in favour of private sector workers: Netherlands, UK, Malta, France, Czech Republic, Romania, Finland, Latvia, Bulgaria, Slovak Republic, Germany, Estonia and Hungary.

Source: De Castro et al., 2013: tables 2 and 3 (Economic Papers 508, Oct. 2013, European Commission).

It should be noted that the data for the 2010 European Structure of Earnings Survey were collected before the substantial changes to the pay of public servants in Ireland. As a result of the financial crisis in Ireland, in 2008, the government instigated a number of changes, which included public servants paying increased pension-related deductions averaging 7% of total salary and two substantial pay cuts in 2010 and 2013 in the range of 8%–19%. These changes are likely to have reduced the hourly earnings wage gap between the two sectors. Nevertheless, based on the available studies, the public–private sector earnings wage gap in Ireland appears to be significantly above the European average.

DISCUSSION AND CONCLUSION

Simple comparisons of the earnings gap between the public and private sector earnings tend to indicate a premium often substantially in favour of public sector workers. The ratio of public-to-private sector weekly earnings in Ireland declined to 1.4 times by 2016 from a high of 1.53 in 2009 (Figure 1).

To estimate the true wage gap in the public and private sectors, we need to identify any observed differences in the earnings between private and public sector workers that can be explained with reference to human capital attributes and positional characteristics. Any remaining positive or negative differences in earnings represent the true wage gap or unexplained differences between workers in the two sectors. The extant studies that have used multivariate analysis to estimate the gap between public and private sector wages in Ireland indicate a declining wage premium in favour of public sector workers. Indeed, by 2014, there was a small negative earnings difference in favour of private sector employees. This change in the wage premium was more negative for men and for the higher paid in the public sector.

While recent international studies using multivariate analysis indicate an earnings gap that is above the European average in favour of public sector workers in Ireland, particularly for women, some caution must be exercised regarding the magnitude of the earnings gap. Public sector employment appears especially beneficial for women. Rueda and Pontusson (2000: 358) suggest that the expansion of public sector jobs (favouring female employment) can offset the 'inegalitarian effects of female labour force participation' in low-skilled and part-time work in the

services sector of the economy. There are considerable challenges to developing a fair and systematic process to setting pay levels in the public sector. As noted earlier, the principles of Irish public service pay determination since the 1950s have been based on the premise that the pay of public servants should, where possible, be set by reference to direct comparators in the private sector. However, it is important to distinguish between the established salary for specific occupations and grades in the public service and the dynamic process of pay rises in the public sector. In the former case, established salary scales and an individual's position within the pay hierarchy in areas, such as the civil service, health and education, have a relatively long tradition and tend to be related in a logical and coherent hierarchical ranking system. In contrast, pay rises in the public sector have historically been negotiated between the Government as an employer and the public sector trade unions through collective bargaining. Most studies of earnings in the public and private sectors indicate that the earnings distribution is narrower in the public sector than in the private sector possibly due to, it is argued, greater wage solidarity in the public sector associated with higher union density levels compared to the same in the private sector (Rueda and Pontusson, 2000; Melly, 2005). From the late 1980s, pay rises for all public servants have been negotiated through a series of national wage agreements, which – until 2008 – covered both private and public sector workers. Since 2008, the private sector has reverted to company-level collective bargaining, and national agreements have been confined to public sector trade unions, their members and the Government (Bach and Stroleny, 2013; Roche, 2016). In this regard, any attempt to develop a fair process for determining pay levels in the public sector is most likely to occur within the collective bargaining arena. However, this does not preclude the government from influencing and shaping reform and change in the public service, as evidenced by the recent Croke Park, Haddington Road and the Lansdowne Road Agreements.

A number of possible options can be suggested to guide the development of a fair system for assessing wage levels in the public sector. First, there is a need to identify and pair specific and comparable occupational types in the public and private sectors on an ongoing basis in order to track pay levels and avoid situations wherein earnings in the private sector are a response to short-term market pressures and fluctuations. This would involve the establishment and funding of targeted research on a longitudinal basis. Such research could be broadened to include comparisons with other countries within the Economic and Monetary Union of the European Union (EMU). Secondly, government fiscal policy could be used to provide broad constraints on government spending on public sector pay. Specific provisions such as multi-year ceilings on the proportion of government revenue could limit the amount allocated to the growth rate of the public sector wage bill. Such spending limits could make it easier for governments to resist political pressures for budgetary expansion and help to maintain the country's competitiveness (Holm-Hadulla et al., 2010).

Thirdly, increases in public sector wages could be based on current and forecasted productivity levels in the private sector and economy generally, thus aligning long-term government wage dynamics with general economic trends. This may also overcome situations where earnings are distorted upwards or downwards and do not reflect workers' productivity levels. Fourthly, the Government could move away from the present industrial relations process of negotiating a single inclusive collective agreement with all public sector unions. An alternative approach would involve the negotiation of separate collective agreements with sub-sectors such as the civil service, health and education, which reflect the different recruitment and retention challenges confronting each sector. However, the attempt of the Benchmarking exercise in 2002 to break the system of public sector relativities and 'sever all previous pay links and establish new absolute levels of pay' has failed miserably, as indicated by the recent industrial disputes in the public sector in 2016 (RPSBB, 2002: 7). It seems that any attempt to sever the linkages between the various sub-sectors in the public sector is likely to be hazardous and uncertain in its outcome.

ENDNOTES

¹ Greenwood (2016) provides a comprehensive overview of these theories.

² This is evident from Table 1, which is discussed later in the paper.

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