

DOES IT PAY TO GO PUBLIC? PUBLIC/PRIVATE WAGE DIFFERENCES AMONG RECENT GRADUATES IN IRELAND

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1. Introduction

A recent report from the Central Statistics Office (2006), based on the results of the new *National Employment Survey, 2003*, shows that earnings in the public sector exceeded those in the private sector by about 40 per cent. This is a very substantial wage gap and is clearly related to significant underlying differences between the two sectors. Over half of all public sector workers are in professional occupations, compared to about 12 per cent of those in the private sector, and about half of public sector workers have a third level qualification, compared to about one-quarter of private sector workers. None the less there has been considerable discussion about levels of wages in the public sector and of relativities between public and private sector wage rates in Ireland in recent years.

The size of the public-private sector wage gap is of some importance. It may influence competition for workers between the public and private sphere. It is also likely to be controversial, not least because a second benchmarking exercise is currently in progress. The first benchmarking process allocated an extra 9 per cent on average to public sector workers on the grounds that they had fallen behind their private sector counterparts. A number of studies have questioned the first benchmarking exercise, arguing that, far from lagging behind the private sector, public sector

workers enjoy a premium (Ruane and Lyons, 2002; O’Leary, 2002). The key issue in this debate is to compare like with like. In this paper we examine survey data from a survey of relatively recent graduates of higher education institutions in Ireland. The advantages of using this data to address this question are twofold:

1. The survey of graduates allows us to focus on a group of highly qualified workers who have entered the labour market relatively recently, so we can minimise some of the human capital differences that are believed to influence wages in the wider labour market; and,
2. the survey collected a wide range of variables that are expected to be related to earnings. We are thus in a particularly strong position to compare like with like in assessing the size of the public-sector wage premium. Of course, consideration of public-private sector wage differences among recent graduates is of interest in its own right to the extent that it informs us about the career prospects of graduates, as well as recruitment issues in the public versus private sectors.

2. Public-Private Sector Wage Differences in Ireland

Public sector earnings are important. They constitute a substantial proportion of overall public expenditure. They have an important bearing on recruitment, retention and motivation of public servants (Boyle *et al.*, 2004). They may also influence private sector wage rates, and by extension, national competitiveness.

In Ireland wage movements have been largely shaped by centrally negotiated Social Partnership Agreements since 1987. Most public sector pay is determined by these national agreements so their influence in that sector has been particularly strong. Union density is lower in the private sector, a smaller proportion of the private sector is covered by national agreements, and the sector is accordingly regarded as being more responsive to market forces. Because of these differing mechanisms for wage determination, it can be expected that wage movements may differ between the two sectors over time. Fitz Gerald (2002) shows that, over the long term, there was no strong trend in of average earnings in the public relative to the private sector over a thirty-year period between 1970 and 2000. However, he finds that the ratio of average earnings in the public sector to those in the private sector fell during the 1980s and recovered in the 1990s. He also shows that the ratio of public to private earnings fluctuated between 1.3 and 1.6 over that period. The public sector advantage may be due to the higher skill composition of the public sector workforce. Casey (2004) shows that average earnings in the private sector grew by about 1.5 per cent per annum faster than in the public sector between 1998 and 2003.

Concerns that public sector earnings were falling behind those in the private sector during the tight labour market conditions at the turn of the century gave rise to the setting up of the Public Service Benchmarking Body (PSBB) which considered pay and conditions in the public and private sectors. The PSBB issued a report in 2002

advocating pay increases for a large number of public service grades ranging from 3 per cent to 25 per cent and averaging just under 9 per cent overall. Implementation of these special benchmarking awards was partially retrospective and the remainder unfolded over the following three years. The benchmarking process has been criticised on the grounds that it provided no specific justification for the range of pay increases that it recommended, that it presented no findings to support the contention that the public service was confronting difficulties in recruiting and retaining staff, or that public servants were underpaid relative to their counterparts in the private sector (Boyle, McElligot and O'Leary, 2004; O'Leary, 2002; Ruane and Lyons, 2002).

A key issue in the debate concerns the appropriate manner in which to compare wages in the public and private sector. As noted in the introduction, a simple comparison of average earnings in the two sectors can be misleading because of underlying differences in the composition of the two sectors, for example in levels of education, in occupational structure and in length of experience, all of which influence earnings. The methodological challenge is to compare like with like. The PSBB adopted a 'job evaluation' approach that measured the demand and requirements of a range of jobs across a sample of positions in the public and private sectors. A more conventional approach to establishing whether there are earnings differentials between two groups or sectors is to estimate a wage equation that controls for the range of factors that influence wages. These include both individual characteristics, such as age, gender, education and experience, as well as characteristics of jobs and organisations, such as working time, type of contract, organisational size and sector of activity. Controlling for such influential factors allows a rigorous measurement of the extent, if any, of any remaining wage differences that can be attributed to group membership or sectoral location. This is the approach adopted by Boyle, McElligot and O'Leary (2004) in their comparison of public-private sector wage differentials across the entire labour market in Ireland over the years 1994 to 2001. Their wage equations control for a wide range of factors, including age, gender, marital status, education, experience, organisational size and occupation. Controlling for these variables they found that public sector workers earned 13 per cent more than their private sector counterparts in 2001. Their estimate of the public sector wage premium varied between 10 per cent and 17 per cent over the 1994-2001 period. There was no linear trend over time.

These estimates of the public sector premium in Ireland are higher than those found in similar studies in other countries. For example, Lucifora and Meurs (2004) estimate the public-sector premium, controlling for both personal and organisational characteristics, to lie between 5 per cent and 6 per cent in France, Italy and the United Kingdom. Another feature of such research is that the premium varies by gender: in general the wage premium is higher for women than men. In the UK, Disney and Gosling (1998) found a public-sector wage premium of 4 per cent for men compared to a 9 per cent premium among women in the 1990s.

In each of the studies cited above the central thrust of the methodology is to control for as many potential influential variables as possible in order to compare like with like and thus generate a rigorous estimate of the unexplained difference, the public-private sector wage differential. Additional comparative leverage can be achieved by comparing earnings within particular sectors of the labour market. This is what the present paper attempts in comparing wage differences among relatively recent graduates. By focusing on this group of highly qualified workers who have entered the labour market relatively recently, we can minimise some of the human capital differences that are believed to influence wages in the wider labour market and generate a precise estimate of the public-private wage differences in this sector of the labour market.

3.
*The Graduate
Follow-up
Survey 2004*

The data used in our analysis are drawn from a survey of a sample of graduates of higher education institutions in Ireland who received their awards in 2001 and had entered the labour market in Spring 2002. The follow-up survey was conducted in 2004, so the graduates had been in the labour market for about 3 years post graduation. The survey was originally intended to examine gender pay differences and we selected 2001 graduates in order to focus on early stages of careers before issues such as interruptions in career for family and child caring become influential (see Russell, Smyth and O'Connell (2005) for a detailed description of the survey).

The survey was administered by post in two waves between May and November 2004 we relied on the kind co-operation of a number of individuals in the administrative and careers offices of the participating higher education institutions. The questionnaires were completed and returned in respect of almost 2,800 individuals, 29 per cent of those sampled. The resulting data were re-weighted to render them representative of the population – i.e. those identified as participating in the labour force in the 2002 *First Destinations Survey* compiled by the Higher Education Authority.

The Graduate Follow-up Survey 2004 is particularly useful for examining wage differentials because it collected a very extensive range of variables including not just the personal characteristics of individuals that relate to their human capital (such as gender, age, education, including field as well as level of education, work experience etc.), but also detailed information on their jobs, their workplaces and employing organisations as well as on the match between their education and their current job. As such the *Graduate Follow-up Survey* provides a unique opportunity to compare like with like in assessing public-private sector wage differentials. In order to ensure greater comparability across the sample of recent graduates we limit the analysis in this paper to those aged under 35 years of age. This excludes older workers who may have enhanced their qualifications in mid-career and who would, therefore, have accumulated greater work experience than the more typical recent graduates. We also exclude the self-employed to ensure comparability between employees in the two sectors.

Table 1: Average Wages of Graduates in the Public and Private Sectors, 2003

	Private €	Public €	Total €	Public/Private Ratio
Gross Hourly Wages	13.91	19.32	15.61	1.39
Monthly Wages	2,464.84	2,904.38	2,604.40	1.18
Monthly Wages Full-time Workers	2,494.90	2,971.35	2,640.32	1.19

Average gross hourly wages among graduates amounted to €15.61. The public sector average, €19.32 was 39 per cent higher than the average in the private sector. The gross hourly wage measure is a useful basis of comparison since it allows us to compare payment for work done on a comparable basis. However, it is also interesting to look at monthly wages, which is closer to relative living standards. Monthly income may also be more appropriate for comparisons in this, the high-skilled, sector of the labour market where many workers are paid a monthly salary irrespective of the actual number of hours worked. Graduates in the public sector earned just over €2,900 per month, 18 per cent higher than the in the private sector. A substantial part of the hourly wage differential between the two sectors is due to the fact that private sector workers report working longer hours. We also show monthly earnings for full-time workers, those usually working 30 hours or more per week. The wage differential on this basis is 19 per cent.

Table 2: Public/Private Earnings Ratios, Hourly And Monthly Earnings by Gender and by Level of Education

	Gross Hourly Wages	Monthly Wages, Full- time Workers
Men	1.35	1.19
Women	1.43	1.21
Certificate	1.01	0.94
Diploma	1.26	1.17
Primary Degree	1.22	1.15
Post-graduate Diploma	1.72	1.25
Post-graduate Degree	1.30	1.16

Table 2 shows public/private earnings ratios for men and women and by level of highest award.¹ This suggests that the hourly wage premium in the public sector is greater on average among women than men. Gender differences in the public/private wage premium are more muted when we consider monthly earnings of full-time employees. There is also some variation in the wage premium at different levels of education. When we consider

¹For our analysis we use the highest educational qualification in the majority of cases, this was also the award received in 2001.

monthly wages, those holding certificates may earn less per month in the private than the public sector. At other levels of education there is a public sector wage premium and this is greatest in respect of those holding post-graduate diplomas.

Table 3: Mean Values of Main Variables in the Analysis by Sector

	Private	Public
Usual working hours	41.09	36.84
Female	0.52	0.69
Certificate	0.05	0.05
Diploma	0.10	0.06
Primary Degree	0.55	0.35
Post-graduate Diploma	0.13	0.26
Post-graduate Degree	0.15	0.27
Other award	0.01	0.01
Arts & Humanities	0.11	0.14
Science	0.10	0.08
Engineering & Architecture	0.17	0.07
Social Science	0.02	0.14
Business	0.39	0.14
Computers/IT	0.13	0.07
Medicine & associated fields	0.01	0.11
Law	0.03	0.03
Education	0.02	0.19
Other field	0.03	0.02
Any Unemployment Experience	0.51	0.51
Employer Training in last 2 years	0.46	0.53
Months Employed excluding Current Job	22.91	27.65
Months in Current Job	23.79	23.58
<i>Establishment Size (ref < 20)</i>	0.18	0.08
Size 20-99 employees	0.16	0.17
Size 100-499 employees	0.15	0.10
Size 500+ employees	0.43	0.40
Size don't know	0.08	0.24
Job Located in Dublin	0.50	0.43
Senior Official/Manager	0.11	0.04
Professional	0.55	0.63
Associate Professional & Technician	0.18	0.14
Clerical	0.07	0.14
Other Service + manual	0.09	0.05
Permanent Contract	0.66	0.43
Trainee Position	0.08	0.01

Table 3 presents the mean values of the main variables in the analysis by sector. On average, private sector employees work longer hours. Public sector workers are more likely to be female,

and they are more likely to have achieved a post-graduate diploma or degree. In the private sector, 39 per cent of the graduates had studied business for their last award. In the public sector, fields of study are more evenly spread, with 19 per cent having studied education, and 14 per cent having studied each of arts, social science, and business. About half of employees in both sectors had ever experienced unemployment in the past. The public sector workers were somewhat more likely to have received employer sponsored training. Public sector workers had somewhat longer experience in previous employments (28 versus 23 months), but the two sectors were virtually equal in respect of length of tenure in the current job. Public sector workers were less likely to report that they worked in a small organisation with less than 20 employees, not surprisingly, although almost a quarter did not know the size of their employing organisation. Private sector workers were more likely to work in Dublin. Most of the sample was in professional and managerial occupations in both sectors, although those in the public sector were more likely to be professionals while there were more managers in the private sector. Interestingly, private sector workers were substantially more likely to report that they were employed on a permanent contract: about half of all public sector workers reported that they were in fixed-term or probationary contracts.

Table 4 presents OLS regression results for gross hourly wages and monthly wages, the latter confined to full-time employees. In both models we specify the natural log of the dependent variable. This conventional approach reduces the impact of extreme outlying values, renders the distribution of errors more nearly normal, and it eases interpretation as the coefficients can be read as percentages.

We specified three groups of control variables: personal characteristics, occupational and organisational characteristics and the individuals' assessments of the match between their education and their job. In general the results are consistent with our expectations. Women earn less than men when we consider monthly wages. Earnings increase with level of education. Those awarded first-class honours may earn more, although the result is not statistically significant.

We find some evidence of differences in earnings by field of study: those with medical qualifications earn substantially more per month than those with arts degrees (and most other fields of study), and those with qualifications in education earn more per hour.² Those with business qualifications earn somewhat less. The data provide no evidence of any wage premium in respect of qualifications in science, engineering or computers and information technology. This evidence on the absence of higher returns to education in these science and technology areas is at odds with

² This reflects hourly wages among teachers. Almost 40 per cent of teachers in our sample who indicated that they worked full-time also reported that they worked 22 hours per week, which corresponds to the contractual teaching hours of full-time secondary teachers. Well over half of full-time teachers reported working 30 hours per week or less.

recent findings claiming that graduates with science and technology content tend to be better paid (Forfás, 2006). Our findings may, however, help to explain why more students do not take science and technology subjects: they may be responding to market signals.

Table 4: OLS Models of Log Hourly Wages and Log Monthly Wages

	Hourly Wages		Monthly Wages	
	B	Sig.	B	Sig.
(Constant)	2.26	.000	7.44	.000
Public Sector	0.20	.000	0.09	.000
Female	-0.02	.148	-0.07	.000
<i>Highest Award (ref= Cert.)</i>				
Diploma	0.05	.251	0.08	.071
Degree	0.17	.000	0.17	.000
Postgraduate Diploma	0.21	.000	0.19	.000
Postgraduate Degree	0.21	.000	0.23	.000
Other Award	0.07	.438	0.10	.207
<i>Grade (ref. =pass)</i>				
Grade not applicable	-0.04	.199	0.02	.589
Honours	0.00	.892	0.01	.529
1 st Class Honours	0.03	.228	0.04	.087
<i>Field (ref. =Arts)</i>				
Science	0.00	.876	0.06	.027
Engineering & Architecture	0.02	.490	0.06	.041
Social Science	0.00	.986	0.04	.234
Business	-0.06	.015	-0.05	.063
Computers/IT	0.01	.672	0.02	.565
Medicine & associated fields	0.09	.046	0.31	.000
Law	-0.10	.039	-0.09	.045
Education	0.21	.000	-0.03	.395
Other field	-0.04	.396	-0.03	.546
Any Unemployment Experience	-0.04	.010	-0.07	.000
Employer Training in last 2 years	0.01	.613	0.01	.279
Months Employed ex. Current Job	0.00	.004	0.00	.008
Months in Current Job	0.00	.000	0.00	.000
<i>Establishment Size (ref < 20)</i>				
Size 20-99 employees	0.08	.001	0.05	.062
Size 100-499 employees	0.03	.204	0.06	.026
Size 500+ employees	0.11	.000	0.13	.000
Size don't know	0.05	.082	0.04	.097
Job located in Dublin	0.08	.000	0.09	.000
<i>Occupation (ref. = clerical)</i>				
Senior Official/Manager	0.16	.000	0.22	.000
Professional	0.24	.000	0.22	.000
Associate Professional & Technician	0.14	.000	0.13	.000
Other Service & manual	-0.01	.787	0.04	.218
Permanent Contract	0.05	.002	0.05	.001
Trainee Position	-0.25	.000	-0.27	.000
Education/Job match	0.07	.000	0.07	.000
N of Cases	1,756		1,695	
Adjusted R ²	0.41		0.40	

Work experience in the current job and experience in previous jobs both have small positive effects on wages,³ while previous unemployment has a negative effect. As usual, size is important: employees of larger organisations earn more. So also is occupation: professionals, senior officials and managers earn more than clerical workers. Employees with permanent contracts earn more than those with temporary contracts. Those who indicate that they are in a “trainee” position earn substantially less than those who do not. Those working in jobs located in Dublin earn 8 to 9 per cent more, on average than those working outside the capital.

Finally, we constructed a composite measure of the match between education and job from three questions relating to how respondents (1) considered that they used the knowledge and skills acquired in third level education; (2) indicated how closely related their fields of study were to their areas of work, and (3) considered to what extent their jobs were appropriate to their levels of education level.⁴ Our measure of the match between education and current job is positively related to earnings.

Our estimate of the public-sector wage premium is 20 per cent in respect of hourly wages, 9 per cent in respect of monthly wages. So recent graduates working in the public sector earn, on average, about 20 per cent more per hour, and 9 per cent more per month than their counterparts in the private sector after we have taken account of a wide range of personal and job-related characteristics that influence wages. A similar analysis of graduate earnings in the UK, relating to gross annual earnings seven years after graduation in 1999 and controlling for a wide range of factors, found a small public-sector wage *penalty*. This would suggest that the public sector wage premia found to obtain in this, as in other Irish studies (Boyle *et al.*) is comparatively large. We investigated whether the public-sector wage premium differed by gender by estimating separate male and female equations. There were no discernible gender differences, and here again, Ireland seems to differ from patterns found in other countries. This finding is consistent with Boyle *et al.* (2004), whose analysis of the entire labour market in Ireland finds that women ceased to enjoy a significantly larger public sector wage premium than their male colleagues after 1998.

Table 5: Summary Results for Log Hourly and Monthly Wages Models

	HOURLY WAGES		MONTHLY WAGES	
	Coefficient for Public Sector	Adjusted R ²	Coefficient for Public Sector	Adjusted R ²
1. Public Sector only	0.30	.131	0.14	.033
2. With individual controls	0.21	.278	0.09	.252
3. Adding occupational and organisational controls	0.22	.397	0.11	.390
4. Adding education/job match	0.20	.414	0.09	.414

³ We experimented with substituting age for the two experience variables. The results were not substantively different to those presented and we prefer to use experience in current and previous job as these provide a better measure of human capital.

⁴ The 3 components of the scale are highly positively correlated. Kronbach’s alpha for the scale is .8.

Table 4 reports the full results of the final wage models. Table 5 provides summary data on the coefficients for the public dummy variable for successive stages in the estimations of our models. We first estimated wage models specifying only the public sector dummy variable. This indicated an average public sector wage premium of 30 per cent per hour among all employees, and 14 per cent per month among full-time employees i.e. before any other factors are controlled for. In the second stage we added individual controls – gender, education and work experience. This reduced the hourly wage gap to 21 per cent and the monthly gap to 9 per cent. It also substantially improved model fit, as is evident from the increased adjusted R-squared. In the third stage we added job and organisational characteristics – size, occupation and contract type. Addition of these variables increased the estimated public sector premium slightly, and, again, there were substantial increments to R-squared. Finally, addition of the education-job match variable reduced the public sector wage premium by about 2 percentage points. This latter effect would suggest that more appropriate matching between skills and job requirements may occur in the public sector, at least as perceived by those performing those jobs.

In this analysis we have attempted to take account of all variables with the potential to influence the public-private wage difference. The question remains, however, whether there exist other unobserved factors, such as ability, that could influence wages and wage differences between the two sectors. If all graduates are competing in a single labour market for access to the higher-paid public sector, then the private sector could be populated by individuals in the lower tail of the ability distribution. Those in the public sector are more likely to have post-graduate qualifications, and we control for this in the wage estimations. Otherwise there is little to distinguish observed abilities in the two sectors (Russell *et al.*, 2005). However, if pay differentials are influenced by unobserved ability differences, then there remains the possibility that these could give rise to higher wages in the public sector. For the present paper we estimated a Heckman selection model to assess the impact of selection effects into the public sector. The results of the selection equations for hourly wages, a treatment effects model in this case, are reported in Appendix Table A1: the hazard lambda is non-significant and the public sector premium remains significant at about 21 per cent.⁵

4. Bonus Payments

Rewards from work are not confined simply to wages. Overall, about 35 per cent of all employers receive bonus payments from their employers, and in some case these can represent an important component of the overall compensation package. *The Graduate Follow-up Survey* collected detailed information about bonus payments as well as the frequency with which they were paid, so we

⁵ We also estimated a selection model for monthly wages and again, found no evidence to suggest that unobserved characteristics influences wages in the two sectors.

are in the unusual position of being able to take account of such payments in our comparison of public-private sector wage differences. We are not aware of other studies in this field that have had access to such systematic information on bonus payments.

Table 6 provides summary data on the percentage of public and private sector workers that received bonuses from their employers in the previous 12 months, the average value of those bonuses, and gross monthly wages with the addition of bonus payments. There is a sharp difference between the public and private sectors: just over 50 per cent of private sector workers received bonuses, compared to 10 per cent of those in the public sector. The actual value of bonuses was similar in the two sectors, averaging about €200 per month.

Table 6: Bonus Payments Received from Employers in Past 12 Months, Full-time Employees

	Public	Private
Received Bonus in last 12 months	10.0%	50.9%
	€	€
Average Monthly Value of Bonus (<i>among those who received bonuses</i>)	202	208
Gross Monthly Wage	2,971	2,495
Gross Monthly Wage + Bonus	3,003	2,616

Given that bonuses are much more widely paid in the private sector, the effect of adding bonuses to monthly wages is to increase wages in the public sector by 1 per cent and those in the private sector by about 5 per cent. This has the effect of narrowing the average wage gap from 19 per cent in respect of monthly wages to 14 per cent in respect of gross wages plus bonuses.

Table 7 presents OLS results for the natural log of gross monthly wages plus bonuses. Controlling for the full set of influential variables, we find that monthly wages plus bonuses are 7 per cent higher among public sector workers than their counterparts in the private sector. So including bonuses in the comparison of compensation packages does reduce the public-private wage gap, but a significant public sector wage premium remains. The pattern of effects in respect of the other variables in the model is very similar to that reported for monthly wages (without bonus) reported in Table 4.

Table 7: OLS Models of Log Monthly Wages + Bonus, Full-time Employees

	B	Significance
(Constant)	7.48	0.000
Public Sector	0.07	0.000
Female	-0.07	0.000
<i>Highest Award (ref= Cert.)</i>		
Diploma	0.05	0.216
Degree	0.16	0.000
Postgraduate Diploma	0.17	0.000
Postgraduate Degree	0.23	0.000
Other Award	0.11	0.170
<i>Grade (ref. =pass)</i>		
Grade not applicable	-0.01	0.738
Honours	0.00	0.864
1 st Class Honours	0.03	0.292
<i>Field (ref. =Arts)</i>		
Science	0.05	0.060
Engineering & Architecture	0.06	0.051
Social Science	0.05	0.221
Business	-0.05	0.062
Computers/IT	0.01	0.826
Medicine & associated fields	0.28	0.000
Law	-0.10	0.037
Education	-0.03	0.388
Other field	-0.03	0.601
Any Unemployment Experience	-0.07	0.000
Employer Training in last 2 years	0.02	0.139
Months Employed ex. Current Job	0.00	0.010
Months in Current Job	0.00	0.000
<i>Establishment Size (ref < 20)</i>		
Size 20-99 employees	0.03	0.174
Size 100-499 employees	0.04	0.102
Size 500+ employees	0.13	0.000
Size don't know	0.03	0.288
Job Located in Dublin	0.10	0.000
<i>Occupation (ref. = clerical)</i>		
Senior Official/Manager	0.23	0.000
Professional	0.23	0.000
Associate Professional & Technician	0.14	0.000
Other Service & manual	0.05	0.174
Permanent Contract	0.07	0.000
Trainee Position	-0.27	0.000
Education/Job match	0.07	0.000
N of Cases	1,647	
Adjusted R ²	.42	

Public sector workers in Ireland earn substantially more, on average, than those in the private sector. Much of this is due to underlying differences in the two sectors. There are greater proportions of professional and managerial workers in the public sector, a greater proportion have third level qualifications, and public sector workers also tend to have longer tenure.

A key challenge in assessing the public-private sector wage differential is to eliminate these differences in order to compare like with like. In this paper we achieve this comparison by focusing on a sample of highly skilled employees, graduates, who are relatively recent entrants to the labour market. Within this sample, when we control for a wide range of factors that influence wages, we find that the average hourly wage premium for public sector workers is reduced from 30 per cent to 20 per cent while the monthly wage premium is reduced from 14 per cent to 9 per cent. We also examined the impact of bonus payments, a factor that has not been looked at before in a systematic fashion. We found that bonuses are much more common in the private sector and that when we add the value of bonus payments to monthly wages, that this reduces the public-private sector wage gap. However, even including bonuses, the public sector wage premium remains at 7 per cent when we control for other factors that influence wages. These are substantial wage differences in early careers and appear to be higher than those observed in other countries. Arguably they represent a strong incentive for graduates to compete for jobs in the public sector in Ireland. Our findings would seem to have clear implications for the next public sector benchmarking exercise.

It should be acknowledged that our analysis, focusing as it does on relatively young recent graduates, is confined to the early stages of careers. As such, it tells us nothing about subsequent wage movements and how the public-sector wage gap may develop later in graduates' careers. Private sector earnings are generally more dispersed than in the public sector and international research suggests that wage rates for senior public servants may be substantially lower than those paid to senior individuals with comparable skills and responsibilities in the private sector (Lucifora and Meurs, 2004). In the Irish case this is reflected in the findings of Boyle *et al.* (2004) that at the top of the income distribution, above the 95th percentile, significant public sector wage penalties may exist. On this basis we might expect to see such differences emerging much later in the careers of the graduates in the present sample.

It should also be acknowledged that this paper focuses exclusively on wages and bonus payments. Other dimensions of remuneration and job quality, including pensions, job security and benefits in kind, may also differ between the public and private sectors. Analysis of the *Graduate Follow-up Survey* data shows that 62 per cent of public sector employees enjoy occupational pension entitlements, compared to only 45 per cent of private sector workers (Russell *et al.*, 2005). Moreover, most public sector pensions are non-contributory while many private sector pensions require contributions, and while most public sector pensions enjoy

parity with public sector wage increases, this is increasingly rare in the private sector, where pensions are either on a defined-contribution basis or, at best, pegged to price inflation. In Ireland, in general, public sector workers are also more likely to have long-term job security than their private sector counterparts. All of these considerations would tend to extend the gap between public and private sector employees. If we were to take account of all of these considerations and assign a financial value to them it is likely that we would increase the extent of the estimated public sector wage premia.

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Appendix Table A1: Treatment Effects Model- Log Hourly Wages

	Coef.	Sig.
Female	-0.024	.298
Diploma	0.054	.229
Degree	0.167	.000
Postgraduate Diploma	0.210	.000
Postgraduate Degree	0.212	.000
Other Award	0.058	.443
Grade not applicable	-0.037	.424
Honours	0.001	.942
1 st Class Honours	0.031	.215
Science	0.009	.504
Engineering & Architecture	0.025	.217
Social Science	-0.002	.811
Business	-0.054	.180
Computers/IT	0.019	.381
Medicine & associated fields	0.091	.094
Law	-0.094	.080
Education	0.211	.000
Other field	-0.031	.774
Any Unemployment Experience	-0.037	.015
Employer Training in last 2 years	0.005	.634
Months Employed ex. Current Job	0.001	.008
Months in Current Job	0.002	.000
Size 20-99 employees	0.082	.001
Size 100-499 employees	0.035	.186
Size 500+ employees	0.117	.000
Size don't know	0.057	.042
Senior Official/Manager	0.168	.000
Professional	0.245	.000
Associate Professional & Technician	0.150	.000
Other Service & manual	-0.007	.695
Permanent Contract	0.049	.003
Trainee Position	-0.252	.000
Education/ Job match	-0.068	.000
Job located in Dublin	0.074	.000
Public Sector	0.212	.020
Constant	2.249	.000
Public Sector Treatment		
Female	0.197	.020
Diploma	-0.453	.059
Degree	-0.363	.081
Postgraduate diploma	-0.185	.555
Postgraduate degree	0.019	.868
Other Award	0.032	.996
Grade not applicable	0.093	.471
Honours	-0.099	.268
1 st Class Honours	-0.073	.622

Appendix Table A1: (Continued)

Science	-0.280	.046
Engineering & Architecture	-0.452	.001
Social Science	0.974	.000
Business	-0.611	.000
Computers/IT	-0.486	.000
Medicine & associated fields	1.259	.000
Law	-0.155	.641
Education	1.032	.000
Other field	-0.567	.039
Professional qualification	-0.338	.000
Analytic/Communication Skills Score	0.091	.149
High Income important	-0.272	.001
Social Values Important	0.278	.003
Constant	-0.362	.269
Hazard lambda	-0.007	.895
Number of obs		1,779
Wald chi2(53)		1,444.93
Prob > chi2		.000