The Public-Private Sector Earnings Gap in Australia: A Quantile Regression Approach

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Abstract
This paper investigates the public-private sector earnings gap for Australian men. It finds that the average earnings of men working in the public sector are larger than the earnings of men employed in the private sector. The difference in the earnings of public and private sector workers is slightly larger for those working in the federal government sector than for those working in the state/local government sector. Using a quantile regression approach, the paper also finds that the wage premium for public sector employment varies substantially along the earnings distribution, with low-paid workers having the largest wage advantage from employment in the public sector. Employment in the public sector has a negative impact on the wages of high-paid workers.

1. Introduction
Several Australian studies have identified that a key determinant of earnings is whether an individual is employed in the public or private sector. When compared to the private sector, the public sector can be viewed as being a relatively large internal labour market (see, Preston, 2001). And as it is subject to political constraints, issues regarding pay equity and fairness may be more apparent in the public sector than in the private sector. The wage outcomes of public and private sector employees are therefore likely to differ.

It is commonly reported for Australia that public sector employees have higher earnings than individuals employed in the private sector. For example, using 1996 Census data, Voon and Miller (2005) suggest that the earnings premium associated with employment in the public sector is approximately 9 per cent for men. It has also been reported that the gap has widened in recent years. For example, using aggregate data, Preston (2003) notes that the differences in the average pay of male public sector and private sector full-time workers rose 7.2 percentage points from 1990 to 2002.1

Despite many Australian studies establishing a public-private sector earnings gap, the literature on understanding this gap is fairly limited.2 Only a small number of

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1 This study compares the average earnings of male public sector workers with those of private sector workers and suggests that the rise in wage differential may be linked to the relatively slower growth in wages for male private sector workers (see, Preston, 2003, 431).

2 It should be noted that the focus of many Australian studies that estimate the impact of working in the public sector on earnings is on other factors, such as the gender wage differential

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studies attempt to explain the sources of the differences in public and private sector earnings using decomposition methods. Moreover, the findings from this research are mixed. On one hand, some researchers have used decompositions of the public-private sector earnings gap to suggest that the gap can be wholly explained by differences in the characteristics of individuals employed in the two sectors, such as differences in their educational attainment (Borland et al., 1996). On the other hand, other researchers have used the same methodology to show that when differences in the characteristics of workers in the two sectors are accounted for, an unexplained earnings gap still exists (see, Preston, 1997, and 2001).

While the Australian literature generally examines the links between earnings and the public and private sectors as a whole, there is a small body of overseas literature that suggests that consideration should be given to the level of government (for example, see Mueller, 1998). Consideration of level of government may be of importance in Australia as the wage setting systems and arrangements in the federal and state government differ (see www.wagenet.gov.au). Up until recently, the federal government wage setting procedures were administered by the Australian Industrial Relations Commission (they are now administered by the Australian Fair Pay Commission), whereas the state government awards are the responsibility of state industrial tribunals.

The Australian studies on the private-public sector earnings gap noted above have a focus on the earnings gap at the conditional mean. Several overseas studies have used quantile regression to examine how the public-private sector earnings gap varies across points on the earnings distribution. It has been reported that the gap varies between low-paid and high-paid workers. Examples of these studies include Disney and Gosling (1998) and Yu et al. (2004) for the United Kingdom, Poterba and Rueben (1994) for the United States and Mueller (1998) for Canada. There is an expectation for Australia, untested to date, that given the degree of unionisation and collective bargaining within the government sector, the earnings distribution for public sector employees will be less dispersed than that for private sector employees. Accordingly, given prior evidence of an advantage for public sector workers in mean earnings, it might be expected that there would be a larger advantage when lower quantiles of the earnings distribution are considered, and a smaller advantage or even a disadvantage when higher quantiles of the earnings distribution are examined. The quantile regression approach, which permits a characterisation of all parts of the conditional earnings distribution, facilitates an examination of patterns of wage advantages/disadvantages among low-wage and high-wage workers of this nature.

Given the limited research in Australia on public-private sector earnings gaps, the purpose of this paper is to enhance the understanding of the determinants of public and private sector earnings. The paper examines the earning differences of men working in the two sectors using recent data. It considers the earnings gap for the sectors as a whole as well as the gap for different areas of government. The earnings gap is estimated at the conditional mean of wages and at various points of the earnings distribution.

The paper is structured as follows. Section 2 presents a brief literature review on public-private sector earnings gaps. Section 3 discusses the methodology and empirical models used in the analysis. The empirical results are presented in section 4 and section 5. A conclusion is given in section 6.
2. Literature Review

Two approaches have been used to examine the public-private sector earnings gap. The first of these incorporates a dummy variable (a binary variable that is generally equal to one for employment in the public sector and zero for employment in the private sector) into the earnings equation estimated on data pooled across workers in the two sectors. The second approach estimates separate earnings functions for the public and private sectors and applies decompositions based on that proposed by Blinder (1973).

Most Australian studies that take the first approach when examining the impact of public sector employment on wages have found that, ceteris paribus, a positive correlation between earnings and working in the public sector exists (see table 1 for a review of studies). As shown in table 1, for male employees, this wage premium appears to be in the order of 10 per cent, and has not changed substantially over time. For example, using data from 1981, Chiswick and Miller (1985) found that men working in the public sector had earnings that were 8.4 per cent larger than the earnings of men working in the public sector. Brazenor (2002) reported a similar difference in earnings for men (9.3 per cent), using data from a much more recent time period (1998).

The Australian studies that use the second, decomposition, approach to examine the standardised public-private sector earnings gap have reported a wide range of findings. As noted in the introduction, using data from 1993, Borland et al. (1998) report that almost all of the public-private sector earnings gap can be explained by differences in the characteristics of men employed in the two sectors. Yet it has also been reported that, after taking into account differences in the observable characteristics of male public sector and private sector employees and using data from 1991 and 1996, an earnings gap of around 6 to 10 per cent still exists (see, Preston, 1997 and 2001).

The difference between these findings may be a result of choices made when decomposing the earnings gap. Borland et al. (1998) decompose the public-private sector earnings gap using the method outlined in Neumark (1988), where a pooled earnings structure for public and private sector employees is treated as the non-discriminatory wage structure. In the studies by Preston (1997 and 2001), the public-private sector earnings gap is decomposed using the method by Blinder (1973), and public sector wages are treated as the non-discriminatory wage structure.

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3 The pattern of the relatively stable public-private sector wage gap over time found in studies using the dummy variable approach differs from the pattern in studies that plot the raw wage gap. Given that raw aggregate data indicate that the public-private sector wage gap has increased over time, while the standardised gap (i.e., the gap for men with the same levels of human capital) has remained relatively stable over time, it is possible to suggest that, in recent years, the level of human capital in the public sector has risen at a faster rate than that in the private sector.

4 A number of studies have found positive links between earnings and public sector employment for women (e.g., Langford, 1995; Voon and Miller, 2005; Wooden, 1999; and Brazenor, 2002). This wage return is also in the order of 10 per cent.

5 Many overseas studies that examine public and private sector earnings have findings similar to those reported in the Australian literature (see, Gregory and Borland, 1999 for reviews of studies). While most studies report there are positive links between earnings and public sector employment, the earnings gaps reported vary across studies, with Gregory and Borland (1999) arguing that the estimates of the public sector earnings gap are sensitive to sample choice and specification of the earnings equation.
Table 1 - Estimated Impact of Sector of Employment on Men’s Earnings: Selected Australian Studies(a)

<table>
<thead>
<tr>
<th>Study/ Year/ Dependent Variable/ Independent Variables</th>
<th>Estimated Coefficient</th>
</tr>
</thead>
</table>
| Chiswick and Miller (1985): 1981; log of yearly income; human capital, marital status, ethnicity, locality and sector of employment. | Australian-born: 0.103  
All men: 0.084 |
| Langford (1995): 1989-90; log of hourly wages; human capital, marital status, ethnicity, presence of children, sector of employment, industry of employment and occupation. | 0.102 |
| Preston (2001): 1991 and 1996; log of weekly earnings; human capital, marital status, ethnicity, locality, presence of children, sector of employment and hours worked. | 1991: 0.054  
1996: 0.091 |
| Miller and Mulvey (1996): 1993; log of hourly earnings; human capital, marital status, ethnicity, locality, age of children, sector of employment, industry of employment, occupation, firm size, computer skills, hours worked and union membership. | Firm size controls: 0.054  
No firm size controls: 0.073 |
| Wooden (1999): 1993; log of hourly earnings; human capital, marital status, ethnicity, locality, number and age of children, sector of employment, industry of employment, occupation, occupation concentration, firm size, computer skills, hours worked and union membership. | Occupation/industry controls: NS  
Only industry controls: NS  
No occupation/industry controls: -0.032 |
| Preston and Crockett (1999): 1996; log of weekly earnings; human capital, marital status, ethnicity, locality, presence of children, sector of employment and hours worked. | All: 0.070  
Lives in New South Wales: 0.130  
Lives in Victoria: 0.115  
Lives in Queensland: 0.026  
Lives in South Australia: NS  
Lives in Western Australia: NS |
| Voon and Miller (2005): 1996; log of weekly earnings; human capital, marital status, ethnicity, sector of employment. | 0.086 |
| Brazenor (2002): 1998; log of weekly income; human capital, marital status, ethnicity, locality, presence of children, disability status, sector of employment, hours worked, occupation, and whether a multiple job holder. | 0.093 |

Notes: (a) In each study sector of employment is a binary variable which equals one if the man is employed in public sector and zero if he is employed in the private sector. NS stands for not significant at the 10 per cent level.

The issue of whether the earnings gap is the same for all levels of the public sector has attracted attention in overseas studies. For example, the Canadian study by Mueller (1998) disaggregated the public sector into three categories: federal government, state government and provincial government. It was reported that the public-private earnings gap was larger for federal government employees than for local government employees. Provincial government employees were found to have lower earnings than their counterparts working in the private sector.
## Table 2 - The Impact of Sector of Employment on Earnings Using Quantile Regression: Selected Studies(a)

<table>
<thead>
<tr>
<th>Study/Year/Country/Quantiles Examined/Sample</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poterba and Rueben (1994): 1979 to 1992; United States; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings at the lower quantiles and a negative impact on earnings at the upper quantiles.</td>
</tr>
<tr>
<td>Disney and Gosling (1998): 1983 and 1991; United Kingdom; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings across the entire earnings distribution. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Melly (2005)(b): 1984 to 2001; Germany; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings at the lower quantiles and a negative impact on earnings at the upper quantiles. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Mueller (1998)(c): 1990; Canada; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector generally had a positive impact on earnings across the earnings distribution. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Blackaby et al. (1999) (b): 1993 to 1995; United Kingdom; 0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings at the lower quantiles and a negative impact on earnings at the upper quantiles. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Yu et al. (2004): 1994 to 2000; United Kingdom; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings at the lower quantiles and a negative impact on earnings at the upper quantiles. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Gardeazabal and Ugidos (2003): 1995; Spain; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings across the entire earnings distribution. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Garcia et al. (2001): 1995; Spain; 0.10, 0.25, 0.50, 0.75 and 0.90; men.</td>
<td>- Being employed in the public sector had a positive impact on earnings across the entire earnings distribution. This impact was larger for workers at the upper-end of the earnings distribution.</td>
</tr>
<tr>
<td>Albrecht et al. (2003): 1998; Sweden; 0.10, 0.50 and 0.90; men.</td>
<td>- Being employed in the private sector had a positive impact on earnings for most of the earnings distribution. This impact was larger for workers at the upper-end of the earnings distribution.</td>
</tr>
<tr>
<td>Lucifora and Meurs (2004): 1998; Great Britain, France and Italy; 0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80 and 0.90; pooled sample of men and women.</td>
<td>- Being employed in the public sector generally had a positive impact on earnings across most of the earnings distribution. This impact was larger for workers at the lower-end of the earnings distribution.</td>
</tr>
<tr>
<td>Dolado and Llorens (2004); 1999; Spain; 0.10, 0.25, 0.50, 0.75 and 0.90; men disaggregated by education levels.</td>
<td>- Being employed in the public sector was generally insignificant across the earnings distribution</td>
</tr>
</tbody>
</table>

Notes: (a) With the exceptions of Melly (2005), Blackaby et al. (1999), Mueller (1998) and Albrecht et al. (2003), sector of employment is measured by a binary variable, where working in the public sector equals one and working in the private sector equals zero. The main findings presented in the table (with the exception of Melly, 2003 and Blackaby et al. 1999) refer to the impact of this variable in the wage equation. (b) Melly (2005) and Blackaby et al. (1999) only report results from decompositions of the public-private sector earnings gap. (c) Mueller (1998) controls for working in a number of different sectors within the public sector.
Similarly, the issue of whether the differences in the earnings of public sector and private sector workers vary across the earnings distribution has also been examined in the overseas literature, with the use of quantile regression. These studies (using data from Western countries) are summarised in table 2. Three main conclusions can be drawn from the studies. First, with the exception of men earning very high wages, the wage advantage associated with working in the public sector occurs across the entire earnings distribution (see, Disney and Gosling, 1998; Gardeazabal and Ugidos, 2003; Garcia et al., 2001; Lucifora and Meurs, 2004; and Mueller, 1998).

Second, for men earning very high wages, there is generally a negative relationship between earnings and working in the public sector (see, Poterba and Rueben, 1994; Melly, 2005; and Blackaby et al., 1999). For example, Mueller (1998) found that at the 90th quantile of the earnings distribution, male public sector employees had earnings that were 3 per cent lower than the earnings of their counterparts working in the private sector. Similarly, Blackaby et al. (1999) reported that at the 80th quantile, the earnings of men working in the public sector were 2 per cent lower than the earnings of male private sector employees.

The third main conclusion is that the impact of working in the public sector on earnings is typically more pronounced for men earning lower wages than for men earning high wages. For example, using data from 1993 to 1995, Blackaby et al. (1999) found that the difference in the earnings of male public sector and private sector employees was 6.4 per cent at the 10th quantile of the earnings distribution and 2.7 per cent at the 30th quantile of the distribution.

While most of the studies reviewed in table 2 quantify the public sector earnings differential using the dummy variable approach, several estimate quantile regressions for the separate samples of public sector and private sector employees, and use the estimates in decomposition exercises. Examples of these studies include Blackaby et al. (1999), Melly (2005), Lucifora and Meurs (2004) and Mueller (1998). While the decomposition methods differ across these studies they have generally found that there is an ‘unexplained’ public-private sector earnings gap for men, and that the gap varies across the earnings distribution. The unexplained earnings gap is larger for men at the lower-end of the earnings distribution.

The issue of sample selection bias for sector choice has been addressed by Blackaby et al. (1999) and Hyder and Reilly (2005). In these studies, a sample selection correction term for sectoral choice is included in the wage equations estimated for the separate samples of public and private sector workers. The findings from these studies, however, suggest that controlling for sample selection bias does not have any major effect on public sector wage premiums. For example, Blackaby et al. (1999, p. 204)

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6 Many of the studies summarised in table 2 also examine the public-private sector earnings gap for female workers using quantile regression (e.g., Poterba and Rueben, 1994; Dolado and Llorens, 2004; Disney and Grosling, 1998; Melly, 2005; Albrecht et al., 2003; Blackaby et al., 1999; and Gardeazabal and Ugidos, 2003). In most cases the findings for women are very similar to those for men.

7 Some of the decompositions methods include those outlined in Machado and Mata (2005) (see Melly, 2005; Hyder and Reilly, 2005; Mueller, 1998; and Lucifora and Meurs, 2004) and those in Juhn et al. (1993) (see Blackaby et al., 1999).

8 For the other studies that estimate the determinants of earnings for separate samples of public sector and private sector workers, the issue of sample selection bias in the choice of sector of employment has not been considered. For example, Melly (2005, 507) writes ‘Issues of sample selection bias and the potential problem of endogeneity of sector choice are considered outside the scope of the present paper’.
indicate ‘… the findings of this paper are not contingent upon the treatment of the endogeneity of sector of employment choice’. Similarly, the sample selection correction terms in Hyder and Reilly (2005) were insignificant in the earnings equations, and they write ‘The differentials based on correcting for selection bias provide few new insights on either the magnitude or evolution of the public sector premium across the conditional wage distribution’, (Hyder and Reilly, 2005, p. 21).

In summary, the existing Australian literature on the earnings of public and private sector male employees indicates that public sector workers have higher earnings than their counterparts working in the private sector. Overseas studies have shown that the wage advantage of public sector workers varies by the area of government they are employed in. It also varies across the earnings distribution, with the positive returns from working in the public sector being larger for those at the lower-end of the earnings scale. The research reported below aims to extend the Australian literature to examine whether the public sector earnings advantage varies by the level of government, and also whether it varies across the wage distribution.

3. Methodology, Data and Estimating Equations

The majority of studies examining the relationship between a worker’s earnings and their sector of employment are based on a simple wage model. The model assumes that the individual’s wages ($w_i$) are a function of their stock of human capital ($E_i$), their ability ($A_i$) and their sector of employment ($P_i$). Hence, the wage rate for an individual can be expressed as:

$$w_i = w_i(E_i, A_i, P_i).$$

(1)

Analysis of models such as that outlined in equation (1) using OLS provide estimates of the determinants of wages at the conditional mean. The quantile regression approach, developed by Koenker and Bassett (1978), and popularised by Buchinsky (1998a), allows for the impact of the explanatory variables on the dependent variable to be analysed for the entire distribution of the sample, rather than just the conditional mean. When applied to the conventional earnings equation, it allows the determinants of wages to be examined at distinct quantiles on the earnings distribution.$^9$

Assuming that $x_i$ is a $k$ by 1 vector incorporating $E_i$, $A_i$ and $P_i$, the quantile regression model to estimate the determinants of wages can be written as:

$$w_i = x_i \beta_\theta + u_{\theta i}, \text{ Quant}_\theta (w_i | x_i) = x_i \beta_\theta,$$

(2)

where $\text{Quant}_\theta (w_i | x_i)$ is the conditional quantile of wages, conditional on the vector of the explanatory variables $x_i$, and $\theta$ is between 0 and 1. It is assumed that:

$$\text{Quant}_\theta (u_{\theta i} | x_i) = 0.$$

(3)

To obtain the quantile regression estimates, the weighted sum of the absolute value of the errors are minimised (see Buchinsky, 1998a). In other words, the $\theta$th conditional quantile regression estimator for $i$ is obtained using:

$^9$The use of quantile regression has become increasingly popular in studies that examine gender wage differentials (e.g., Albrecht et al., 2003) and the rates of return to education (e.g., Fersterer and Winter-Ebmer, 2003).
The analysis below, which uses both OLS and quantile regression, is based on data drawn from the Australian Bureau of Statistics’ (ABS) Household Sample File from the 2001 Census (see, ABS, 2001). The data sample is restricted to men aged 20 to 64 years, who were employed in the week prior to the Census. Those who did not provide information on their level of education, weekly income, hours of work, birthplace, proficiency in speaking English, locality of residence, marital status, occupation, industry of employment and sector of employment were excluded from the sample. Overall, the data sample is comprised of 29,893 men.

A description of the variables used in the analysis is presented in Table 3.

Two models are used to estimate the impact of working in the public sector on earnings. The first model contains a binary variable for public sector employment (Govt) that equals one if the man is employed in the public sector and zero if employed in the private sector. This model can be written as:

$$\ln \text{inc}_i = \beta_0 + \beta_1 \text{Schl}_i + \beta_2 \text{Exp}_i + \beta_3 \text{Exp}_i^2 + \beta_4 \text{Noncapital}_i + \beta_5 \text{Esb}_i + \beta_6 \text{Nesb}_i + \beta_7 \text{Well}_i + \beta_8 \text{Notwell}_i + \beta_9 \text{Married}_i + \beta_{10} \text{Govt}_i + \epsilon_i.$$  (5)

The second model contains variables for being employed by the federal government (Fedgovt) or by the state/local government (Stategovt) in place of the broader variable controlling for public sector employment. This model can be written as:

$$\ln \text{inc}_i = \beta_0 + \beta_1 \text{Schl}_i + \beta_2 \text{Exp}_i + \beta_3 \text{Exp}_i^2 + \beta_4 \text{Noncapital}_i + \beta_5 \text{Esb}_i + \beta_6 \text{Nesb}_i + \beta_7 \text{Well}_i + \beta_8 \text{Notwell}_i + \beta_9 \text{Married}_i + \beta_{10} \text{Fedgovt}_i + \beta_{11} \text{Stategovt}_i + \epsilon_i.$$  (6)

Equations (5) and (6) are estimated with and without controls for industry of employment and occupation. 13

10 There are two versions of the Census data made available by the ABS, the basic version and the expanded version. While the expanded version of the data set, made available on the Remote Access Data Laboratory (RADL) provides more detailed information on particular variables there are a number of limitations with the RADL. In particular, RADL only offers three software packages to conduct empirical analyses, namely SAS, SPSS and Stata. RADL could be improved if it contained additional software packages used in statistical analysis, such as Limdep and EViews. Furthermore, the versions of software made available on RADL are not the latest versions of the software. The SAS software on RADL is Version 8, while the latest version of SAS is Version 9, the Stata software on RADL is Version 8, where as the latest version is Version 9, and the SPSS software on RADL is Version 11.5 and the latest version of SPSS is Version 15.

11 The analysis could also be conducted for women. However, given the issue of selection bias when estimating the determinants of wages for women this analysis only focuses on men.

12 As only 2 per cent of men in the data sample were employed by in the local government sector, no attempt is made to conduct separate analyses for state and local government workers.

13 The earnings functions do not contain information on union membership as the Census does not have such information. While Preston (2001) suggests that the public-private sector earnings gap may be a result of the fact that the public sector is highly unionised, many of the Australian studies that control for sector of employment in the wage model do not control for union membership.
Table 3 - Description of the Variables Used in Models to Estimate the Determinants of Earnings of Men Aged 20 to 64 Years

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lninc</td>
<td>Continuous variable for the natural logarithm of hourly income.(^{(a)})</td>
<td>2.962</td>
<td>0.561</td>
</tr>
<tr>
<td>Years of Schooling</td>
<td>Continuous variables for years of completed secondary schooling and post-school education.</td>
<td>12.324</td>
<td>2.022</td>
</tr>
<tr>
<td>Exp</td>
<td>Continuous variable for potential labour market experience, measured by age minus years of schooling minus five. It is entered in quadratic form.</td>
<td>21.816</td>
<td>11.607</td>
</tr>
<tr>
<td>Locality of Residence</td>
<td>Dummy variable for men living outside the capital cities of Sydney, Melbourne, Brisbane, Perth, Adelaide, or who live in Tasmania and the Northern Territory.</td>
<td>0.347</td>
<td>0.476</td>
</tr>
<tr>
<td>Birthplace</td>
<td>Dummy variable for men born overseas in countries that mainly speak English.</td>
<td>0.101</td>
<td>0.302</td>
</tr>
<tr>
<td>Nesb</td>
<td>Dummy variable for men born overseas in countries mainly do not speak English.</td>
<td>0.162</td>
<td>0.386</td>
</tr>
<tr>
<td>Australia</td>
<td>Omitted category.</td>
<td>0.737</td>
<td>0.441</td>
</tr>
<tr>
<td>Proficiency in English</td>
<td>Dummy variable for speaks a language other than English at home and speaks English well or very well.</td>
<td>0.130</td>
<td>0.337</td>
</tr>
<tr>
<td>Notwell</td>
<td>Dummy variable for speaks a language other than English and speaks English not well or does not speak English.</td>
<td>0.012</td>
<td>0.108</td>
</tr>
<tr>
<td>OnlyEnglish</td>
<td>Omitted category.</td>
<td>0.858</td>
<td>0.349</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Dummy variable for men who are in a registered or de facto marriage and their spouse is present.</td>
<td>0.653</td>
<td>0.476</td>
</tr>
<tr>
<td>Sector of Employment</td>
<td>Dummy variable for being employed in the public sector.</td>
<td>0.176</td>
<td>0.380</td>
</tr>
<tr>
<td>Fedgovt</td>
<td>Dummy variable for being employed by the federal government.</td>
<td>0.061</td>
<td>0.239</td>
</tr>
<tr>
<td>Stategovt</td>
<td>Dummy variable for being employed by the state or local government.</td>
<td>0.115</td>
<td>0.319</td>
</tr>
<tr>
<td>Private</td>
<td>Omitted category.</td>
<td>0.824</td>
<td>0.310</td>
</tr>
</tbody>
</table>

Notes: (a) A limitation of the 2001 Census is that it only contains weekly income from all sources, such as income from wages and salaries, overtime and allowances. It does not contain information on weekly wages. As the 2001 Census categorises weekly income and hours worked in bands rather than in a continuous form, the midpoints for each band are used to construct the dependent variable. The income bands in the Census are '$1-$39', '$40-$79', '$80-$119', '$120-$159', '$160-$199', '$200-$299', '$300-$399', '$400-$499', '$500-$599', '$600-$699', '$700-$799', '$800-$899', '$900-$999', '$1000-$1,499', and '$1,500 or more'. The upper limit for the income category '$1,500 or more' was given a value that was 1.5 times the size of the lower limit. The hours of work categories are '1-15 hours', '16-24 hours', '25-34 hours', '35 hours', '35-39 hours', '40 hours', '41-44 hours', and '49 or more hours'. The upper limit for the hours of work category '49 or more hours' was given the limit of 54 hours.
4. Differences in Public-Private Sector Earnings

This section presents the results from the estimation of equations (5) and (6) using the data sample pooled across public sector and private sector workers. The results from the estimation of the determinants of earnings using OLS are presented in table 4. Column (i) contains the results for the earnings equation estimated with controls for employment in the public sector as a whole (equation (5)) and column (ii) presents the results for the determinants of earnings using the more detailed specification of public sector employment (equation (6)).

Many of the findings presented in column (i) of table 4 are consistent with those reviewed by Preston (2001). Hence, they show that men receive positive wage returns for schooling (Schl). Men also receive positive wage returns to labour market experience, though at a diminishing rate. An additional year of labour market experience increases earnings by 2 per cent after 10 years of potential experience, 1.1 per cent after 20 years of experience and 0.5 per cent after 25 years of experience. The wage returns to labour market experience peak around 31 years of experience.

Men who live in non-capital city areas (Noncapital) have lower earnings than their counterparts living in the capital cities. The reduction in earnings is 10 per cent. Similar reductions have been reported in Gregory and Daly (1990). Men who are married (Married) have higher earnings than their never married counterparts, by around 10 per cent. This earnings premium is comparable with that reported in Eastough and Miller (2004).

The results show that men who were born overseas in non-English speaking countries (Nesb) and those who do not speak English well (Notwell) have earnings that are lower than other men. The difference in the earnings of NESB men and Australian-born men is 5 per cent. Men who have limited English skills have earnings that are 26 per cent lower than the earnings of their counterparts who only speak English.

Consistent with the results reviewed in table 1, table 4 shows that working in the public sector has a positive impact on earnings. For the public sector as a whole (Govt) the earnings premium is 9 per cent. In other words, for men with the same level of human capital, those employed by the government have earnings that are almost one-tenth larger than the similarly qualified employed by private businesses.

The results from the model estimated with more detailed measures of public sector employment (column (ii)) are very similar to those obtained using the broader definition of public sector employment. The findings show that the earnings premium for employment in the public sector is slightly more pronounced for men working in the federal government than for men working in the state/local government. Hence, the earnings advantage from working in the federal government sector (Fedgovt) is 10 per cent, while it is 9 per cent for working in the state/local government sector (Stategovt). Given that the differences in the returns from public sector employment for men working in the federal government and state government are fairly small (of one percentage point), the findings suggest that there is not too much distortion in the public sector earnings premium in Australia when only considering the sector as a whole (as done by the studies reviewed in table 1).

14 The following section presents the results for earnings equations estimated on separate samples of men working in the public and private sectors.
15 Tests showed that the estimated coefficients for the Fedgovt and Stategovt variables did not differ significantly (F-test = 0.50).
Table 4 - Results from the Estimation of the Determinants of Earnings for Men Using OLS(a)

<table>
<thead>
<tr>
<th></th>
<th>Column (i)</th>
<th>Column (ii)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constant</strong></td>
<td>1.363 (60.04) ***</td>
<td>1.363 (60.05) ***</td>
</tr>
<tr>
<td><strong>Years of Schooling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schl</td>
<td>0.099 (62.16) ***</td>
<td>0.099 (62.17) ***</td>
</tr>
<tr>
<td><strong>Labour Market Experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exp</td>
<td>0.030 (28.04) ***</td>
<td>0.030 (28.04) ***</td>
</tr>
<tr>
<td>Exp2/100</td>
<td>-0.049 (21.51) ***</td>
<td>-0.049 (21.51) ***</td>
</tr>
<tr>
<td><strong>Locality of Residence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncapital</td>
<td>-0.099 (15.26) ***</td>
<td>-0.099 (15.22) ***</td>
</tr>
<tr>
<td><strong>Birthplace</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esb</td>
<td>0.019 (1.88) *</td>
<td>0.020 (1.97) **</td>
</tr>
<tr>
<td>Nesb</td>
<td>-0.053 (5.10) ***</td>
<td>-0.052 (5.00) ***</td>
</tr>
<tr>
<td><strong>Proficiency in English</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well</td>
<td>-0.088 (8.04) ***</td>
<td>-0.088 (8.04) ***</td>
</tr>
<tr>
<td>Notwell</td>
<td>-0.257 (7.64) ***</td>
<td>-0.256 (7.61) ***</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>0.081 (12.30) ***</td>
<td>0.080 (12.15) *</td>
</tr>
<tr>
<td><strong>Sector of Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt</td>
<td>0.093 (13.12) ***</td>
<td>(b)</td>
</tr>
<tr>
<td>Fedgovt</td>
<td>(b)</td>
<td>0.100 (9.46) ***</td>
</tr>
<tr>
<td>Stategovt</td>
<td>(b)</td>
<td>0.090 (10.90) ***</td>
</tr>
<tr>
<td>Mean Lninc = 2.962</td>
<td>Mean Lninc = 2.962</td>
<td></td>
</tr>
<tr>
<td>Adjusted R² = 0.195</td>
<td>Adjusted R² = 0.195</td>
<td></td>
</tr>
<tr>
<td>Sample Size = 29,893</td>
<td>Sample Size = 29,893</td>
<td></td>
</tr>
</tbody>
</table>

Notes: (a) Absolute value of ‘t’ statistics are in parentheses. The symbol *** represents significant at the 1 per cent level, ** represents significant at the 5 per cent level and * represents significant at the 10 per cent level. (b) Not included in the estimating equation.

Equations (5) and (6) were also estimated with variables for industry and occupation of employment. The inclusion of these variables did not have a substantial impact on the earnings advantage associated with public sector employment. Thus, when controlling for industry and occupation of employment, the estimated coefficient...
for the ‘Govt’ variable is 0.11 (without these controls it is 0.09). The estimated coefficients for the ‘Fedgovt’ and ‘Stategovt’ variables in the models with occupation and industry are 0.12 and 0.11, respectively. In the model without these controls, the coefficients for the ‘Fedgovt’ and ‘Stategovt’ are 0.10 and 0.09, respectively.

To examine whether the earnings premium associated with public sector employment varies over the earnings distribution, equations (5) and (6) were estimated using quantile regression. Following Lucifora and Meurs (2004) and Blackaby et al. (1999), the equations were estimated at every tenth quantile on the earnings distribution, starting at quantile 0.10. These results are presented in table 5.

The regression equation is, as indicated by the Likelihood Ratio test, highly significant at each quantile. The results show that across the entire earnings distribution, years of schooling, potential labour market experience and being married have positive impacts on earnings, though in line with the OLS results, the impact of labour market experience diminishes among more experienced workers. The impacts of these variables are larger for those earning high wages than for those earning low wages. Similar patterns in the relationship between earnings and schooling have been reported by Machado and Mata (2005), and similar patterns in the relationship between earnings and labour market experience have been reported by Garcia et al. (2001) and Blackaby et al. (1999).

Tables 5 shows that men living outside the capital cities of Australia, those who are born overseas in non-English speaking countries, and those who do not speak English fluently have lower earnings than their counterparts for most points on the wage distribution. The difference in the earnings of men living in non-capital city areas and those who do not is larger at the lower-end of the earnings scale than at the upper-end. Being born overseas in a non-English speaking country influences the wages of high-income earners to a greater extent than it influences the wages of low-income earners. This finding is comparable with that in Dolado and Llorens (2004) on the impact of being an immigrant on earnings in Spain. The impact of limited English skills on earnings varies along the wage distribution, with it having a larger impact on earnings around the middle of the wage distribution than on earnings at the lower- and upper-ends of the distribution.

Of central importance to this study are the results indicating that public sector employment has a positive impact on earnings for most men. This relationship is illustrated in figure 1.

Three further points can be made about the findings in figure 1. First, the impact of working in the public sector on earnings is larger for men with low wages than it is for men with high wages. For example, for men with earnings at the 10th quantile of the earnings distribution, the premium associated with public sector employment is 20.8 per cent, while it is 8.6 per cent for men with earnings at the 70th quantile of the distribution. These findings are comparable with many of the studies reviewed in table 2, including Disney and Gosling (1998), Mueller (1998) and Lucifora and Meurs (2004).

The literature on quantile regression does not indicate which quantiles on the earnings distribution should be examined. While most of the quantile regression literature on public-private sector wages examines earnings at quantiles 0.10, 0.25, 0.50, 0.75 and 0.90, the larger number of quantiles examined above allows for a greater understanding of the impact of sector of employment on the earnings distribution. The quantile regression results were obtained using the quantile regression procedure in SAS Version 9.1. The OLS results were obtained using SAS made available on RADL (SAS Version 8).
Table 5 - Results From the Estimation of the Determinants of Earnings Using Quantile Regression For Men: Controls for Public Sector Employment as a Whole(a)

<table>
<thead>
<tr>
<th>Quantile</th>
<th>Constant</th>
<th>Years of Schooling</th>
<th>Labour Market Exp.</th>
<th>Locality</th>
<th>Birthplace</th>
<th>English Language</th>
<th>Marital Status</th>
<th>Sector of Employ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.10</td>
<td>1.197</td>
<td>0.075</td>
<td>0.026</td>
<td>-0.145</td>
<td>0.022</td>
<td>-0.127</td>
<td>0.100</td>
<td>0.209</td>
</tr>
<tr>
<td>0.20</td>
<td>1.272</td>
<td>0.082</td>
<td>0.026</td>
<td>-0.106</td>
<td>0.011</td>
<td>-0.103</td>
<td>0.098</td>
<td>0.177</td>
</tr>
<tr>
<td>0.30</td>
<td>1.253</td>
<td>0.091</td>
<td>0.028</td>
<td>-0.101</td>
<td>0.001</td>
<td>-0.097</td>
<td>0.064</td>
<td>0.148</td>
</tr>
<tr>
<td>0.40</td>
<td>1.220</td>
<td>0.099</td>
<td>0.031</td>
<td>-0.085</td>
<td>0.002</td>
<td>-0.092</td>
<td>0.109</td>
<td>0.119</td>
</tr>
<tr>
<td>0.50</td>
<td>1.192</td>
<td>0.108</td>
<td>0.033</td>
<td>-0.081</td>
<td>0.003</td>
<td>-0.092</td>
<td>0.094</td>
<td>0.085</td>
</tr>
<tr>
<td>0.60</td>
<td>1.202</td>
<td>0.113</td>
<td>0.036</td>
<td>-0.086</td>
<td>0.003</td>
<td>-0.098</td>
<td>0.095</td>
<td>0.085</td>
</tr>
<tr>
<td>0.70</td>
<td>1.210</td>
<td>0.121</td>
<td>0.037</td>
<td>-0.079</td>
<td>0.008</td>
<td>-0.102</td>
<td>0.096</td>
<td>0.054</td>
</tr>
<tr>
<td>0.80</td>
<td>1.356</td>
<td>0.122</td>
<td>0.037</td>
<td>-0.083</td>
<td>0.017</td>
<td>-0.103</td>
<td>0.079</td>
<td>0.028</td>
</tr>
<tr>
<td>0.90</td>
<td>1.842</td>
<td>0.107</td>
<td>0.032</td>
<td>-0.077</td>
<td>0.017</td>
<td>-0.103</td>
<td>0.040</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Notes: (a) Absolute value of ‘t’ statistics are in parentheses. The symbol *** represents significant at the 1 per cent level, ** represents significant at the 5 per cent level and * represents significant at the 10 per cent level. The sample size is 29,983. LR refers to the Likelihood Ratio test statistic.

Second, figure 1 suggests that the earnings of public sector employees are in fact lower than their private sector employees among high paid men (those in the top 20 per cent of the earnings distribution). For example, male public sector workers who are at the 90th quantile of the wage distribution have wages that are 5 per cent lower than the wages of their counterparts working in the private sector. This finding
Figure 1 - Estimated Impact of Public Sector Employment on Earnings for Men: OLS and Quantile Regression

Figure 2 - Estimated Impact of Federal and State/Local Government Employment on Earnings for Men: OLS and Quantile Regression
in consistent with the view that given the degree of unionisation and collective bargaining within the Government sector, the earnings distribution for public sector employees is less dispersed than that for private sector employees. It is also consistent with the studies by Poterba and Rueben (1994), Melly (2005) and Blackaby et al. (1999).

Third, the quantile regression estimates are quite different from those obtained using OLS. Indeed, the estimated coefficients for the ‘Govt’ variable were significantly different from that obtained using OLS for each quantile except for the 50th quantile. Therefore, the OLS coefficient underestimates the difference in earnings for low-paid workers and overestimates the difference in earnings of high-paid workers. As such, quantile regression provides a more complete picture of the differences in public-private sector earnings than OLS.

The links between earnings and employment in various levels of the public sector were also quantified using quantile regression. The estimated coefficients for the variables associated with federal government employment (Fedgovt) and state and local government employment (Stategovt) are illustrated in figure 2. This figure shows that the relationship between earnings and employment in different areas of the public sector are comparable with the relationship between earnings and employment in the public sector as a whole, with the earnings advantage associated with working for the federal government or the state and local government being larger for men on low wages than for those on high wages.

Figure 2 shows that, across the entire earnings distribution, the rates of return to public sector employment are larger for men working in the federal government than for men working in the state and local government. This pattern is slightly more pronounced at the upper quantiles of the earnings distribution, indicating that the narrowing of wage differences among public and private sector employees over the earnings distribution is slightly more distinct for state and local government employees than for federal government employees.

In conclusion, this section has shown that male workers receive an earnings premium for public sector employment at most points of the earnings distribution. This earnings premium is larger for working in the federal government. It is also much larger for low-paid workers. High-paid workers in the public sector have lower wages than their counterparts employed in the private sector. The largest difference in the public sector earnings premiums among low-paid and high-paid workers occurs for men employed in the state/local government.

5. Sources of the Public-Private Sector Earnings Premium

Determinants of Earnings by Sector of Employment

To examine the potential sources of the earnings differential between public and private sector workers, the wage model was estimated using separate samples of male public

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18 The quantile results are consistent with the conjectures earlier based on the higher mean earnings of public sector workers and the smaller dispersion of their earnings. The standard deviation on the mean earnings for men working in the public sector is 0.47, while it is 0.57 for men working in the private sector.

19 The models containing variables for industry and occupation of employment were also estimated using quantile regression. The results from these models did not change any of the material conclusions regarding the impact of public sector employment on earnings.
sector and private sector workers. The results using OLS are presented in table 6. Column (i) has the results for men employed in the private sector, column (ii) has men employed in the public sector as a whole (Govt) and columns (iii) and (iv) have the results for men working for the federal government (Fedgovt) and state/local government (Stategovt), respectively.

Table 6 - Results from the Estimation of the Determinants of Earnings for Men: By Sector of Employment(a)

<table>
<thead>
<tr>
<th></th>
<th>Column (i) Private Sector Workers</th>
<th>Column (ii) All Public Sector Workers</th>
<th>Column (iii) Federal Government Sector Workers</th>
<th>Column (iv) State/Local Sector Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.273 (41.12) ***</td>
<td>1.744 (40.17) ***</td>
<td>1.906 (27.27) ***</td>
<td>1.630 (29.28) ***</td>
</tr>
<tr>
<td>Years of Schooling</td>
<td>Schl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.106 (40.85) ***</td>
<td>0.079 (29.62) ***</td>
<td>0.067 (15.70) ***</td>
<td>0.087 (25.51) ***</td>
</tr>
<tr>
<td>Labour Market Experience</td>
<td>Exp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.032 (26.82) ***</td>
<td>0.024 (10.28) ***</td>
<td>0.027 (6.44) ***</td>
<td>0.023 (7.97) ***</td>
</tr>
<tr>
<td></td>
<td>Exp/100</td>
<td>-0.052 (20.51) ***</td>
<td>-0.035 (6.97) ***</td>
<td>-0.046 (4.98) ***</td>
</tr>
<tr>
<td></td>
<td>Locality of Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Noncapital</td>
<td>-0.105 (14.08) ***</td>
<td>-0.067 (5.40) ***</td>
<td>-0.066 (2.73) ***</td>
</tr>
<tr>
<td></td>
<td>Birthplace</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Esb</td>
<td>0.020 (1.75) *</td>
<td>0.014 (0.70)</td>
<td>0.001 (0.03)</td>
</tr>
<tr>
<td></td>
<td>Nesb</td>
<td>-0.052 (4.48) ***</td>
<td>-0.057 (2.53) ***</td>
<td>-0.069 (1.92) *</td>
</tr>
<tr>
<td></td>
<td>Proficiency in English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Well</td>
<td>-0.089 (2.36) **</td>
<td>-0.089 (3.23) ***</td>
<td>-0.067 (1.80) **</td>
</tr>
<tr>
<td></td>
<td>Notwell</td>
<td>-0.259 (7.34) ***</td>
<td>-0.193 (1.60) ***</td>
<td>-0.161 (2.40) **</td>
</tr>
<tr>
<td></td>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>0.078 (10.45) ***</td>
<td>0.089 (6.61) ***</td>
<td>0.112 (4.99) ***</td>
</tr>
<tr>
<td></td>
<td>Mean Lninc</td>
<td>Mean Lninc = 2.922 (10.45) **</td>
<td>Mean Lninc = 1.47 (6.61) **</td>
<td>Mean Lninc = 3.197 (4.99) **</td>
</tr>
<tr>
<td></td>
<td>Adjusted R²</td>
<td>Adjusted R² = 0.175 (0.175)</td>
<td>Adjusted R² = 0.204 (0.204)</td>
<td>Adjusted R² = 0.190 (0.190)</td>
</tr>
</tbody>
</table>

Notes: (a) Absolute value of ‘t’ statistics are in parentheses. The symbol *** represents significant at the 1 per cent level, ** represents significant at the 5 per cent level and * represents significant at the 10 per cent level. (b) Not included in the estimating equation.
Blackaby et al. (1999) and Hyder and Reilly (2005) have attempted to accommodate the potential endogeneity of the government sector variable using sample selection approaches. These studies have had to confront the issue of identification of the selection equation in their model, and have typically been constrained by the data sets used in this regard. This is particularly the case in the current application, where the Census data set does not contain any variables that might realistically be held to affect the choice of sector to work in but not wages. This issue is compounded when the sample selection methodology is applied in the quantile regression framework. As Buchinsky (1998b) shows, sample selection correction in quantile regression requires a Taylor’s series expansion which results in higher order terms in the sample selection correction variable.

The presence of this specification of the sample selection correction term can compound the typical collinearity problems encountered with the selection correction approach. In line with most studies in the area (such as, Melly, 2005; Lucifora and Meurs, 2004; and Mueller, 1998), the results presented below do not correct for selection bias.20

The table shows that the rates of return to schooling and potential labour market experience are larger for men working in the private sector than for men working in various areas of the public sector. The relationship between earnings and years of schooling for the groups of men is similar to the findings in Preston (1997 and 2001) and Nevile and Saunders (1998) regarding the relationship between earnings and degree attainment. The findings for labour market experience are comparable with those in Preston (2001). The higher rates of return to education and labour market experience for men working in the private sector may be a result of the competitive nature of employment within the sector. Psacharopoulos (1983) suggests that sectors with strong competition for employment generally pay higher rates of return to human capital than non-competitive markets.

The negative impact of living in a non-capital city area or not speaking English fluently is considerably larger for men who work in private companies than for their counterparts employed in the public sector. For example, male private sector employees living in non-capital city areas have earnings that are 11 per cent lower than men living in capital city areas. The reduction in earnings associated with non-capital city residency is only 7 per cent for men employed in the public sector. Similarly, the difference in the earnings of men who do not speak English well and those who only speak English is 26 per cent for male private sector employees and 16 per cent for men employed by the federal government. These findings may be a result of the more egalitarian wage structure that the public sector promotes.

The estimation of the wage model using quantile regression for the separate samples of public sector workers and private sector workers produced similar findings, in terms of direction and relative magnitudes of impacts, across sectors to those obtained at the conditional mean (table 6).21 Hence, across most quantiles, the positive returns to schooling and the positive (though diminishing) returns to labour market experience are larger for men working in the private sector than for men working in the public sector.

20 Hyder and Reilly (2005) and Blackaby et al. (1999) use a single conventional correction term, and as discussed in Section 2, these studies indicate that controlling for selection bias did not have a major impact on the empirical results.

21 For space reasons, these results are not report. They are available on request from the author.
sector. The impact of living outside the capital city and having limited English language skills is also larger for male private sector workers than for their counterparts employed in the public sectors.

Figure 3 - Estimated Impact of Years of Schooling on Earnings for Men by Sector of Employment: Quantile Regression

![Figure 3](image1)

Figure 4 - Estimated Impact of Potential Labour Market Experience on Earnings (Evaluated at 10 Years of Experience) for Men by Sector of Employment: Quantile Regression

![Figure 4](image2)
The results from the quantile regressions for the sector of employment groups also show that the wage impacts of schooling, labour market experience, home location and English language skills vary considerably along the earnings distribution for men working in the private sector. For these men, years of schooling and years of potential labour market experience have larger impacts on the earnings of high-paid workers, whereas living outside the capital city and being married have larger impacts on the earnings of low-paid worker. For example, as shown in figure 3, an additional year of schooling increases the earnings of men working in the private sector by 7 per cent if their earnings are at the 10th quantile of the earnings distribution and by 13 per cent if their earnings are at the 90th quantile. Figure 4 shows the rate of return to labour market experience (evaluated at 10 years of experience) for men working in the private sector is 1.7 per cent at the 10th quantile of the distribution of earnings and 2.7 per cent at the 90th quantile.

The wage effects of schooling, labour market experience, home location and language skills do not fluctuate substantially along the earnings distribution for public sector employees (see figures 3 and 4). Thus, an extra year of schooling for men working in the public sector as a whole raises earnings by 8 per cent at the 10th quantile and by the same amount at the 80th quantile. The returns to experience for men working in the public sector are 1.8 per cent at both quantile 0.1 and quantile 0.8.

The relatively similar impact of particular factors on earnings along the earning distribution of public sector employees may be a result of the importance of unionisation and collective bargaining in the government sectors resulting in a more explicit egalitarian wage structure. If this is the case, these principles in wage determination are very pervasive, and obviously much stronger than is generally suggested in the literature.

The differences in the earnings of public sector and private sector workers across the wage distribution may be a result of differences in the characteristics of each group of workers. For example, the mean years of schooling of men is one year higher for those working in the public sector than for those working in the private sector. The average potential labour market experience is two years greater for public sector employees than for private sector employees. The proportions of men working in the private sector who were born overseas in non-English speaking countries and who do not speak English well are considerably larger than the corresponding proportions in the public sector. While these differences are taken into account in the dummy variable approach used in figure 1, this approach may be too restrictive, as it constrains the estimated effects of each wage determinant to be the same for each sector. The results presented above from the estimation conducted separately for private sector and public sector workers indicates there may be merit to adopting a more flexible approach that is sensitive to differences in the wage effects across sectors when quantifying the public-private sector earnings gap.

Decomposition of the Public-Private Sector Earnings Differential

This section uses the regression estimates for the public and private sectors presented above to compute a standardised public-private sector wage differential. The method used is based on extensions of the Blinder (1973) decomposition proposed by Machado...
This extension has been used in several recent quantile regression studies on the public-private sector earnings differential (for example see Melly, 2005 and Hyder and Reilly, 2005). It considers the mean characteristics of men at each quantile of the earnings distribution\(^{22}\) to obtain the standardised earnings differential between public sector and private sector employees. This earnings differential is computed as:

\[
\bar{X}_{Private}^{\theta}(\hat{\beta}_{Govt}^{\theta} - \hat{\beta}_{Private}^{\theta}),
\]

where \(\hat{\beta}_{Govt}^{\theta}\) and \(\hat{\beta}_{Private}^{\theta}\) are vectors of the estimated quantile regression coefficients for the quantiles examined, and \(\bar{X}_{Private}^{\theta}\) is the mean characteristics of private sector workers at each quantile of interest on the earnings distribution.

The standardised earnings differential for the different levels of the public sector (Fedgovt and Stategovt) can be computed as:

\[
\bar{X}_{Private}^{\theta}(\hat{\beta}_{Fedgovt}^{\theta} - \hat{\beta}_{Private}^{\theta}),
\]

and

\[
\bar{X}_{Private}^{\theta}(\hat{\beta}_{Stategovt}^{\theta} - \hat{\beta}_{Private}^{\theta}),
\]

respectively.

The results from the decomposition for the sample of public sector workers as a whole are presented in figure 5. The standardised public-private sector wage gap is similar to that obtained using the dummy variable approach (see, figure 1). Hence, when taking into account differences in characteristics, most public sector workers receive higher wages than men working in the private sector. Moreover, the standardised earnings premium for public sector employment falls steadily over the wage distribution. As was the case with figure 1, among workers in the lower-half of the wage distribution, the standardised earnings differential is larger than that obtained using OLS. For workers in the upper-half of the wage distribution, the standardised earnings premium is smaller than the premium computed using OLS.

The results from the decomposition also suggest that working in the public sector has a negative impact on earnings for men at the upper-end of the wage distribution. The standardised earnings premium for public sector employment is -2.4 per cent at quantile 0.8 and -6.5 per cent at quantile 0.9. This finding is consistent with the results from the decompositions presented in Blackaby et al. (1999) and Melly (2005).

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\(^{22}\) Based on Albrecht et al. (2003), the mean characteristics of men who are in each of the quantiles of the wage distribution are obtained by drawing random samples of one hundred men for the separate sector of employment groups. These men are sorted by earnings to get an estimate of their characteristics at each quantile on the earnings distribution. The procedure is repeated five hundred times and the means of these draws used in the decompositions.
Figure 5 - Standardised Public-Private Sector Earnings Differential Computed From Quantile Regression and OLS on Separate Samples of Public Sector and Private Sector Workers

Figure 6 - Standardised Public-Private Sector Earnings Gap Computed From Quantile Regression and OLS on Separate Samples of Federal Government, State/Local Government and Private Sector Workers
Figure 6 illustrates the standardised public-private sector earnings gap by different levels of government. Similar to the findings in the previous section, figure 6 shows that, across the entire earnings distribution, the standardised earnings premium for employment in the public sector is larger for federal government employees than it is for state and local government employees. It also shows that the difference in the earnings premiums for the two groups of public sector workers is largest for low-paid workers. To the extent that employment in the government sector has a more explicit egalitarian wage structure than that in the private sector, this finding indicates that for low-paid workers, working in the federal government is more beneficial than working in the state and local governments.

The standardised earnings of high-paid federal government and state/local government workers are lower than the standardised earnings of men working in the private sector. For example, at the 90th quantile of the earnings distribution, being employed by the federal government is associated with a reduction in earnings of 8 per cent. Being employed by the state and local government is associated with a reduction in earnings of 11 per cent. This finding indicates that among men earning very high wages, those working in the state and local government sectors are the most disadvantaged in terms of wages.

5. Conclusion

The Australian literature suggests that, on average, men employed in the public sector have wages that are around one-tenth larger than the wages of men working in the private sector. However, the Australian research to date has only focused on the public-private sector wage gap at the conditional mean of wages and on the gap for the sectors as a whole. This paper has extended this research by considering whether the earnings gap varies according to the level of government and whether it is the same at points on the earnings distribution.

The paper used two approaches to estimate the public-private sector earnings gap. The first approach used a wage equation containing a dummy variable for sector of employment estimated on a pooled sample of public and private sector workers. This approach showed that the mean wage advantage for employment in the public sector was 9 per cent. The wage advantage was slightly larger for employment in the federal government sector than for employment in the state and local government sectors. Using quantile regression, the dummy variable approach also showed that the wage premium associated with working in the public sector was considerably larger at the lower-end of the earnings distribution than at the middle of the distribution. Being employed in the public sector had a negative impact on the wages of men with high earnings.

The second approach used to estimate the public-private sector wage gap estimated the earnings model on separate groups of public and private sector workers. It found the rates of return to schooling, labour market experience, locality of residence and English language skills were larger (in absolute terms) for men working in the private sector than for men working in the public sector. It also found that these rates of return varied considerably along the earnings distribution for private sector workers but were similar along the earnings distribution for public sector workers.
The results from the examination of the determinants of wages for the separate
groups of public and private sector workers were used to construct a standardised
earnings gap. The findings from this analysis were similar to those from the dummy
variable approach, with the standardised wage premium for public sector employment
being largest for low-paid workers. The decomposition also found that the standardised
earnings premium was negative for high-paid workers.

A main conclusion from the analyses is that a more detailed set of findings on
the public-private sector wage gap can be obtained using quantile regression than can
be obtained using OLS. Moreover, the wage premium obtained using OLS may be
misleading as the quantile regression results indicate that the public-private sector
wage gap is considerably larger at the lower-end of the earnings scale. Quantile
regression also showed that public sector workers had lower wages than private sector
workers at the upper-end of the earnings distribution.

The evidence presented in this paper suggests that for low-paid workers
(generally those with low skills) there are substantial benefits from employment in the
public sector. For high-paid (high-skilled) workers, employment in the private sector
is more beneficial than, employment in the public sector. This may result in the public
sector being characterised as sector that has little difficulty in attracting and retaining
low-skilled workers, but does not have the pay structure needed to attract and retain
high-skilled workers. Given that the earnings of high-paid public sector workers are
around five per cent lower than the wages of the top-paid workers in the private sector,
the results tend to justify recent pay increases for top-paid public servants, such as the
recent wage increases for high levelled public sector executives in Western Australia
(see Buckley-Carr, 2006 for further discussion on the pay increase). An avenue for
future research would be to examine whether the differences in the public-private
sector wage gap can be explained by compensating factors and such as fringe benefits
and working conditions.

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