DISCUSSION PAPER SERIES

IZA DP No. 9271

A Detailed Decomposition Analysis of the Public-Private Sector Wage Gap in South Africa

Prudence Kwenda
Miracle Ntuli

August 2015

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

A Detailed Decomposition Analysis of the Public-Private Sector Wage Gap in South Africa

Prudence Kwenda
University of the Witwatersrand

Miracle Ntuli
University of the Witwatersrand
and IZA

Discussion Paper No. 9271
August 2015

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

IZA Discussion Paper No. 9271
August 2015

ABSTRACT

A Detailed Decomposition Analysis of the Public-Private Sector Wage Gap in South Africa

The present study examines the public-private sector wage gap in South Africa using individual cross section data for 2000-7. Results from unconditional quantile regressions and generalised Oaxaca-Blinder type decompositions show that the wage gap is inverted-U shaped across the wage distribution. The 'composition' effect is more important than the 'price' effect at the bottom of the distribution while the opposite applies at the top. Key factors underpinning the 'composition' effect are unionisation, industry of employment and education, while those associated with the 'price' effect are education, race and occupation.

JEL Classification: C21, J31, J45

Keywords: public sector, wage gap, recentered influence function, decomposition

Corresponding author:

Prudence Kwenda
University of the Witwatersrand
1 Jan Smuts Avenue
Braamfontein, Johannesburg
South Africa
E-mail: prudence.magejo@wits.ac.za

1. Introduction

The peculiarly large burden of income inequality in post-Apartheid South Africa has been met with the 'one-handed' finding that less wage dispersion is central in its reduction (Leite *et al.*, 2006; Tregenna and Tsela, 2012). Naturally, many research efforts have been expended towards understanding the role of apartheid engineered wage dispersion factors. These encompass wage discrimination, distribution of and returns to education (Mwabu and Schultz, 1996; Branson *et al*., 2012) and labour unions (Schultz and Mwabu, 1998; Butcher and Rouse, 2001). Generally, these factors have been found to play a non-trivial role in current wage dispersion, though discrimination and institutions are waning in influence (Ntuli and Kwenda, 2014). Despite being educative, this literature has largely overlooked the intricate link between the above factors and the South African government's dominant role in employment; single largest employer in the country (Woolard, 2002). Thus, South African studies of wage differentials need to be sensitive that the labour market is segmented into public and private sectors, *inter alia*. The importance of this divide is evident as the sectoral wage differential has been intensively (somewhat) explored for developed (developing) countries[1]. While there is no outright consensus in the literature, many studies find a public sector wage premium; albeit with some heterogeneity across demographic groups and percentiles of the wage distribution (e.g. Nielsen and Rosholm, 2001; Melly, 2005).

Only a few studies have investigated public-private sector wage differentials in South Africa; Woolard (2002), Bosch (2006) and Kerr and Teal (2012). In line with international literature, these studies found evidence that the government has distributive effects on wages. This ensues through a wage premium which tends to be largest in the middle of the wage distribution (Woolard, 2002). While these studies span recent methodological advancements in the literature; mean-based to distributive estimators, some methodological flaws are evident. For instance, Kerr and Teal (2012) applies a mean-based fixed effects estimator to a panel dataset with a negligible number of movers across public and private sectors. This brings to question the study's conclusion that the public sector premium is an artefact of movers into rather than out of the sector. As for Woolard's (2002) distributive analysis, it successfully tracks the premium across the wage distribution, but its attempt to explain sources of the premium leaves some questions unanswered. The study broadly attributes the

[1] See for instance Smith (1976) for the United States, Mueller (1998) for Canada, Disney and Gosling (1998) for the United Kingdom, Melly (2005) for Germany, Mizala *et al*., (2011) for Latin America, Lindauer and Sabot (1983) for Tanzania, Nielsen and Rosholm (2001) for Zambia, and Hyder and Reilley (2005) for Pakistan.

premium to inferior endowments of productive characteristics among private sector workers and returns thereof. This leaves us uninformed on the relative importance of these components in explaining the premium, as well as the underlying covariates. This drawback masks vital information for targeted measures aimed at attenuating the sectoral wage gap.

Given the above, this study investigates the public-private sector wage gap in post-Apartheid South Africa using a decomposition technique based on Firpo *et al.*'s (2009) recentered influence function (RIF) regressions, and individual cross section data for the period 2000-7. This approach allows us to go beyond Woolard (2002) by investigating sources of the public sector premium across unconditional quantiles of the wage distribution. In line with the Oaxaca-Blinder (1973) decomposition technique, our methodology divides the sectoral wage differential at each unconditional quantile into a 'composition effect' (attributable to public-private sector differences in observable characteristics) and a 'price effect' (attributable to public-private sector differences in returns to these characteristics). The method also determines the partial contribution of each covariate to these components. This identifies the sources of the premium across the unconditional wage distribution which is important for initiatives to reduce wage inequality in South Africa. For instance, we show that the wage gap is widest in the middle of the distribution. Its key sources tend to be sensitive to percentiles of the distribution, with the 'composition effect' playing a significant role at the bottom of the distribution, while the 'price effect' is more important at the top. The influential covariates for these findings are discussed in the sequel.

This article is organised as follows. In section 2, we provide a brief review of the public sector and its link to wages in South Africa. The data and methodology are presented in section 3, while section 4 discusses the empirical results. Section 5 concludes.

2. The public sector and wages in South Africa

In 1994, the post-Apartheid South African government inherited an economy that was replete with race-based socioeconomic inequalities. Access to basic services, economic, and labour market opportunities were skewed along racial lines; with Whites being more privileged followed by Indians, Coloureds and Blacks, respectively. The Gini coefficient of household income per-capita was around 0.57 (Hoogeveen and Ozler, 2005). In addition, the public service was marred by policies and practices which could undermine the new Government's effectiveness. It was characterized by lack of representativeness of all South Africans,

conflicting labour relations, poorly paid and demotivated workers (Ministry for the public service and administration, 1995). The dismal pay was partly due to an absence of formal wage negotiations in the public sector pre-1994. Thus, transforming the public service for an effective service delivery to many, in quantity and quality, was an imperative for the country's socioeconomic transformation. This was underpinned by policies and guidelines as per the 'Constitution of the Republic of South Africa' (1996), the 1995 'White Paper on the Transformation of the Public Service', the 'Code of Conduct for Public Servants', and the 1997 'Batho Pele' (People First) initiative (Schwella, 2001).

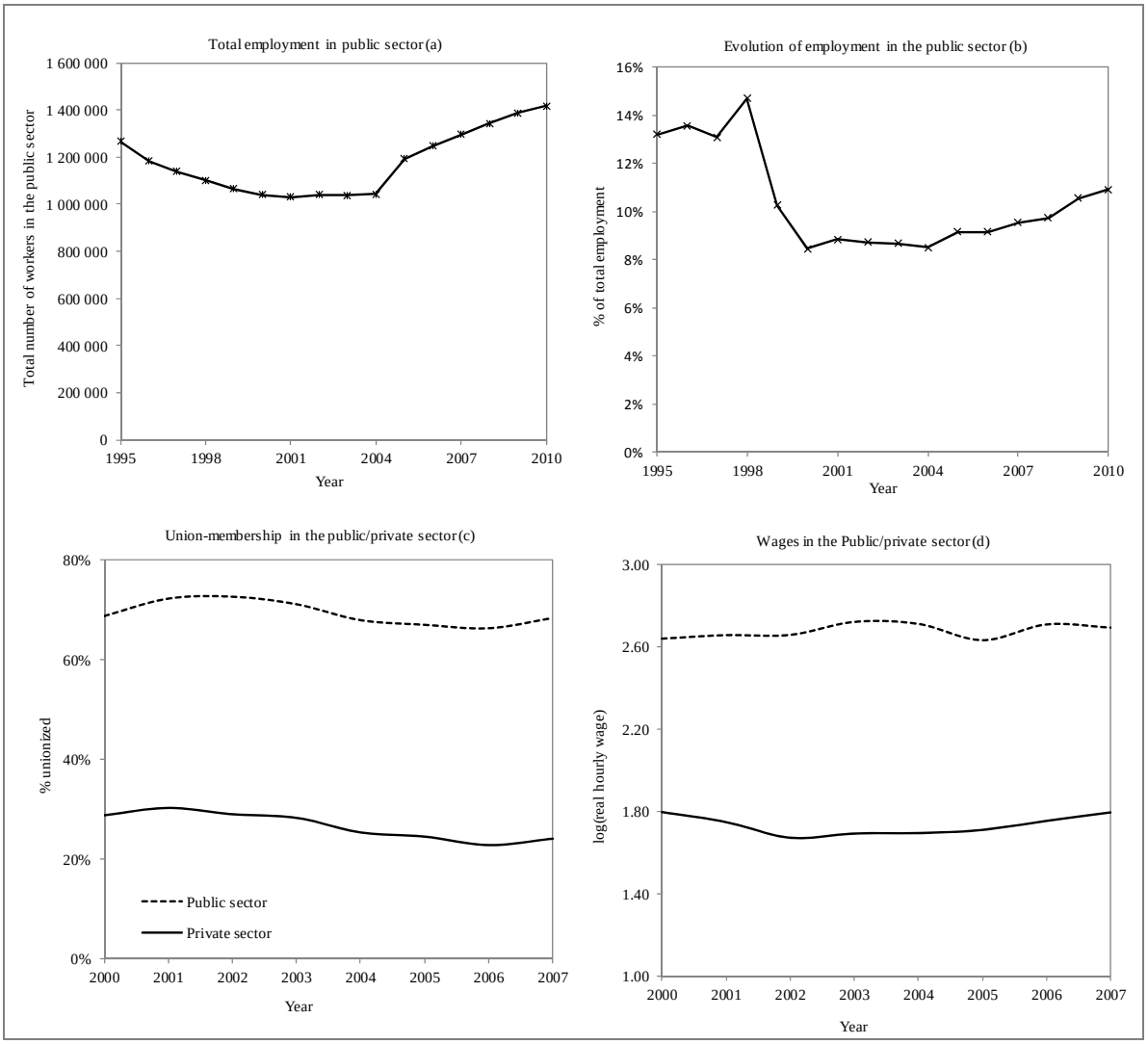
As a response to above measures, the government[2] has since recruited many workers in priority areas across the skills spectrum, especially from previously disadvantaged groups. In line with the Employment Equity (1998) Act, skilled labour, recruited consciously for closing gender and racial imbalances in society, serves to strengthen the service delivery process. It is also notable that effective service delivery required that the government embark on a 'rightsizing' programme, from 1996, to create a leaner and cost-effective public service (Schwella, 2001). Naturally, this reduced the size of the public service, especially among unskilled workers. This partly fuelled the unemployment problem in the country hence, the government embarked on job creation programmes such as the Expanded Public Works which has led to an increase in the public service around 2004; see Figure 1 (a). Thus, the government has become a dominant player in the labour market; accounting for around 20% of formal sector employment and around 10% of total employment, see Figure 1 (b). To some extent, that the government has been hiring skilled labour implicates the human capital theory in explaining the sectoral wage gap in South Africa.

To complement the Employment Equity Act, the 1995 Labour Relations Act provides a framework for collective bargaining. This enables labour unions and employer organizations to bargain for wages and employment conditions, regardless of sector. However, union density is disproportionately higher in the public (around 70%) than the private sector (around 30%), see Figure 1 (c). Consequently, public sector wages are mainly set through the collective bargaining process. This entails the Minister of Public Service and Administration setting the wage which will then be negotiated by the relevant unions, at the Public Service

[2]The South African government follows a decentralized framework of governing comprising of, national-, provincial- and local-government as well as parastatals. National government formulates policy while provincial and local-governments are largely responsible for implementation.

Coordinating Bargaining Council (Clark, 2007). It is worth mentioning that the South African labour unions movement is intricately linked to the ruling party due to complementarity of their efforts in resisting the Apartheid regime. Hence, the unions are labelled as too powerful for the country's level of income (Schultz and Mwabu, 1998). Unsurprisingly, wages are higher in the public than the private sector.

Figure 1: Evolution of employment, unionization and wages in the public/private sector



Notes: (a) and (b) Data for 1995-2004 authors compilation from South Africa Deptartment of Public Service Administration annual reports while data for 2005-2010 are obtained from Breytenbach and Rossouw (2013). For (a) and (b), the public sector is comprises national and provincial government only. Graphs (c) and (d) are based on authors' calculations using the 2000-7 Labour Force Survey data, the public sector comprises of national-, provincial-, and local government as well as public enterprises.

The given wage setting process has several implications for the origins of the sectoral wage gap in South Africa. As an employer, the government succumbs to political pressure from labour unions - these are fundamental for increasing its electorate (Gunderson, 1979).

Additional pressure emanates from equity concerns since it should be exemplary in the country's pursuit of wage equality (Altman, 2006; Woolard, 2002). To some extent, this constrained position has a setback in terms of the forgone opportunity to pursue competitive or profit based wage setting procedures as in the private sector (Gunderson, 1979). Consequently, the public sector consistently pays more than the private sector, see Figure1 (d). This has raised concerns that the public sector wage bill is too high and unsustainable which poses serious threats to the national fiscus, labour market efficiency and overall economic performance (International Monetary Fund, 2012; Rossouw et *al*., 2014)[3]. Taken together, it is vital that a rigorous evaluation of the underlying sources of the public-private sector wage gap in South Africa be undertaken.

3. Data and Methodology

3.1. Methodology

This study utilises an Oaxaca-Blinder (1973) type detailed decomposition method based on Firpo *et al.*'s (2009) recentered influence function (RIF) regressions to carry out a distributional analysis of the public-private sector wage gap in South Africa. In RIF regressions, the outcome variable W (log of hourly wages for public and private sectors) is replaced by the RIF; whereby the influence function (IF) for the τ^{th} unconditional quantile of W (q_{τ}) is expressed as:

$$IF(W;q_{\tau}) = \frac{\tau - I(W \leq q_{\tau})}{f_W(q_{\tau})} \quad (1)$$

where f_W and $I(.)$ represent the marginal density function of the wage distribution and an indicator function, respectively. A summation of the IF and $q\tau$ yields the RIF:

$$RIF(W;q_{\tau}) = q_{\tau} + IF(W;q_{\tau}) \quad (2)$$

The conditional expectation of the RIF can be modelled as a linear function of predictor variables, and the regression coefficients present marginal effects of the variables on quantiles of the wage distribution (Firpo *et al.*, 2009), i.e. $E[RIF(W;q_{\tau} \mid X) = X\beta_{\tau}$. Given that the true RIF is unobservable, its sample analogy is utilised in empirical studies i.e. $\widehat{RIF}(W;\hat{q}_{\tau})$. An

[3] The wage bill is the single largest component of government current expenditure absorbing around 12% of the country's GDP – it is one of the largest in peer emerging markets (African Economic Outlook, 2012).

important theoretical property of the RIF is that its mean at the τ^{th} quantile equals the unconditional quantile q_τ (Firpo *et al*., 2009). This enables us to apply a generalised Oaxaca-Blinder (1973) decomposition across similar quantiles of public and private sector wage distributions (Fortin *et al*., 2011) as follows:

$$\hat{q}_{P\tau} - \hat{q}_{N\tau} = \overline{RIF}(W_P; \hat{q}_{P\tau}) - \overline{RIF}(W_N; \hat{q}_{N\tau}) = \underbrace{\left(\overline{X_P} - \overline{X_N}\right)\hat{\beta}_{P\tau}}_{a} + \underbrace{\left(\hat{\beta}_{P\tau} - \hat{\beta}_{N\tau}\right)\overline{X_N}}_{b} \quad (3)$$

where $\hat{q}_{P\tau}$ and $\hat{q}_{N\tau}$ are τ^{th} quantiles of the marginal distributions of wages for public (P) and private (N) sectors, respectively. $\hat{\beta}_{P\tau}$ and $\hat{\beta}_{N\tau}$ are τ^{th} quantile regression coefficients from RIF regressions for each sector. $\overline{X_P}$ and $\overline{X_N}$ are average characteristics for each sector. In (3), *a* and *b* represent components of the public-private sector wage differential $(\hat{q}_{P\tau} - \hat{q}_{N\tau})$ due to different endowments of observable characteristics 'composition effect' and different wage structures (coeffients) across the sectors 'price effect', respectively. These components can be further decomposed as follows to give partial contributions of the k^{th} predictor variable:

$$a = \sum_{k=1}^{K}\left(\overline{X}_{P,k} - \overline{X}_{N,k}\right)\hat{\beta}_{P\tau,k} \quad \text{and} \quad b = \sum_{k=1}^{K}\left(\hat{\beta}_{P\tau,k} - \hat{\beta}_{N\tau,k}\right)\overline{X}_{N,k} \quad (4)$$

The detailed decomposition of the 'price effect' (b) has been controlled for the parameter invariace problem as per Yun (2005). It is notable that issues of sample selection bias and endogeneity are beyond the scope of this study due to data constraints. Previous studies have shown that available data does not have plausible instruments to adequately control for the problem, see Casale and Posel (2011).

3.2. Data

Our study uses the Post-Apartheid Labour Market Series (PALMS) dataset for the period 2000-7. This pooled dataset was developed by Kerr *et al*., (2013) based on the Labour Force Surveys (LFS) conducted by Statistics South Africa. The LFS collects detailed labour market information on a nationally representative sample bi-annually. However, as highlighted by Branson and Wittenberg (2013), the LFS data are not directly comparable overtime. Thus, the PALMS data harmonizes the cross sections using cross entropy weights. Apart from being data driven, the period of analysis provides a fair picture of the post-Apartheid South African

labour market. Prior to this period, the public sector was undertaking major reforms while the post-period is characterized by a number of trends that are likely to affect the composition and wages of the two sectors. For instance, the 2008 financial crisis and the hosting of the 2010 world cup could have affected employment probabilities of low skilled workers.

We restrict our sample of analysis to workers aged 16-60 years in paid employment. Self-employed workers are excluded to avoid potential biases due to self-selection and the usual difficulties in evaluating their wage. We also exclude individuals with missing information on any of our key variables. This leaves a final sample of 151,830 workers with 30,975 (20%) in the public sector and 120,855 (80%) in the private sector. A public sector employee is defined as one employed in a parastatal, national-, provincial- and local-government, while a private sector employee is one in a private business; this excludes organisations such as business leagues, co-operatives and non-governmental organisations.

The LFS provides detailed information on individual earnings and hours worked per week in the primary job. This information is used to construct gross hourly wages deflated to 2000 values using the consumer price index. In the total sample, 24% of workers report their earnings in brackets. An examination of these responses by sector shows that 33% (22%) of public (private) sector workers give bracket responses. These differences are statistically significant suggesting that earnings bracket responses are potentially non-random (Posel and Casale, 2006). We reweight wages for individuals who gave point responses to account for the non-randomness of bracket responses using a set of weights published in the PALMS data[4]. Table A.1 in the Appendix provides a detailed description of the other variables used in our estimations, while Table 1 presents descriptive statistics of the sample.

Table 1: Descriptive (average) statistics

	All		Female		Male	
	Public	Private	Public	Private	Public	Private
Log wage	2.881	2.050	2.900	2.014	2.866	2.065
Demographics:						

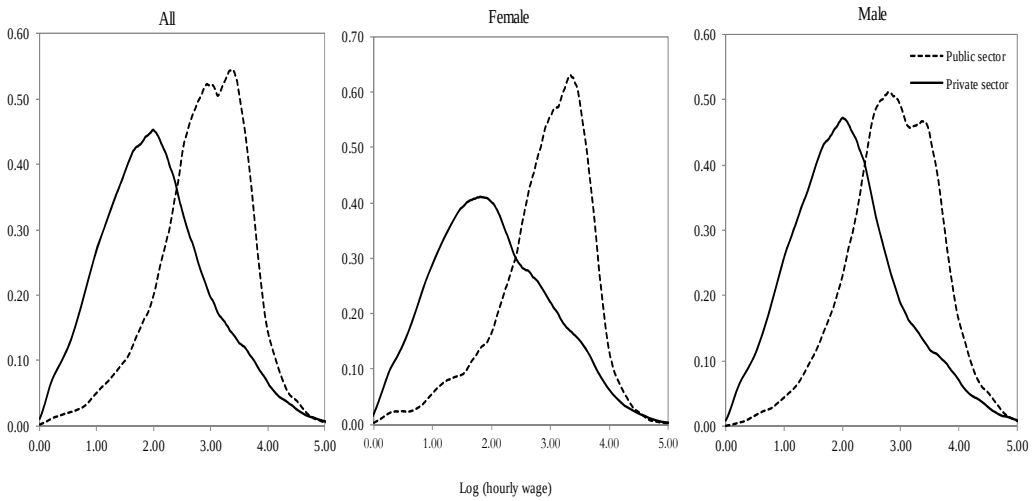
[4] For each point response which falls in bracket j, the weight is computed as a product of its cross entropy weight and the inverse probability of giving a bracket response in bracket j. This reweighting allows us to treat bracket responses as point data missing at random (Wittenberg, 2013).

Female	0.455	0.304				
Age	39.79	35.76	39.84	35.22	39.76	36.00
Black	0.717	0.692	0.718	0.581	0.716	0.740
Coloured	0.103	0.130	0.098	0.168	0.108	0.113
Asian/Indian	0.030	0.041	0.028	0.051	0.031	0.037
White	0.150	0.137	0.157	0.201	0.145	0.110
Married	0.655	0.577	0.558	0.483	0.737	0.618
Education:						
No schooling	0.026	0.053	0.018	0.035	0.033	0.061
Primary	0.111	0.222	0.068	0.153	0.146	0.251
Incomplete secondary	0.207	0.361	0.173	0.347	0.236	0.367
Matric	0.269	0.280	0.244	0.352	0.290	0.249
Diploma	0.237	0.051	0.313	0.069	0.173	0.043
Degree	0.150	0.033	0.184	0.043	0.122	0.029
Job characteristics:						
Union membership	0.708	0.298	0.709	0.233	0.707	0.326
Tenure (years)	11.222	6.292	10.696	5.573	11.661	6.606
Firm size: < 5 workers	0.047	0.104	0.055	0.104	0.041	0.104
Firm size: 5-9 workers	0.081	0.134	0.087	0.147	0.077	0.128
Firm size: 10-19 workers	0.193	0.173	0.231	0.179	0.161	0.170
Firm size: 20-49 workers	0.256	0.203	0.273	0.227	0.242	0.193
Firm size: 50/more workers	0.422	0.386	0.354	0.344	0.479	0.405
Occupation:						
Manager	0.041	0.043	0.029	0.039	0.051	0.045
Professional	0.125	0.024	0.164	0.032	0.093	0.020
Technician	0.290	0.063	0.401	0.089	0.197	0.052
Clerks	0.132	0.114	0.170	0.249	0.101	0.055
Skilled agriculture worker	0.008	0.009	0.003	0.006	0.012	0.010
Craft & related trades	0.054	0.188	0.009	0.065	0.093	0.241
Service & shop sales workers	0.151	0.130	0.086	0.162	0.205	0.115
Operator	0.045	0.181	0.009	0.072	0.076	0.228
Elementary occupation	0.153	0.249	0.131	0.286	0.172	0.233
Industry:						
Agriculture	0.009	0.127	0.006	0.121	0.010	0.130
Mining	0.009	0.108	0.001	0.011	0.016	0.150
Manufacturing	0.024	0.212	0.011	0.211	0.034	0.213
Construction	0.024	0.091	0.013	0.020	0.034	0.122
Trade	0.019	0.228	0.015	0.323	0.021	0.186
Transport	0.080	0.045	0.038	0.024	0.115	0.055
Financial services	0.037	0.126	0.032	0.161	0.041	0.110
Social services	0.799	0.063	0.883	0.129	0.728	0.035
Location:						
Gauteng	0.099	0.151	0.081	0.190	0.114	0.134
Western Cape	0.121	0.065	0.147	0.068	0.100	0.064
Eastern Cape	0.031	0.025	0.027	0.021	0.035	0.026
Northern Cape	0.080	0.075	0.081	0.060	0.079	0.082
Free State	0.202	0.177	0.207	0.196	0.198	0.168
Kwazulu Natal	0.081	0.085	0.084	0.060	0.079	0.096
North West	0.059	0.073	0.061	0.060	0.057	0.079
Mpumalanga	0.103	0.055	0.104	0.055	0.103	0.056
Northern Province	0.223	0.294	0.208	0.291	0.236	0.295
Year of survey						
2000	0.123	0.112	0.118	0.112	0.127	0.112
2001	0.130	0.117	0.120	0.118	0.137	0.116
2002	0.064	0.060	0.065	0.059	0.063	0.061

2003	0.127	0.124	0.129	0.122	0.126	0.125
2004	0.133	0.135	0.138	0.128	0.129	0.138
2005	0.140	0.141	0.139	0.136	0.141	0.144
2006	0.140	0.152	0.141	0.158	0.139	0.149
2007	0.144	0.158	0.150	0.166	0.138	0.154
N	30,975	120,855	14,826	39,623	16,149	81,232

On average, wages are significantly higher in the public than private sector by 0.831 log points. Notably, the public sector wage advantage is higher for women than it is for men. To fully describe the public and private sector wages, Figure 2 depicts the kernel density estimates of the public/private sector wage distributions. These show that wage distributions in the two sectors are fundamentally different. In particular, the mass of the public sector distribution lies to the right of the private sector's. In addition, the public sector's distribution is more peaked and exhibits lower dispersion than the private sector's. Clearly, wages are higher and more compressed in the public than in the private sector. This is consistent regardless of gender.

Figure 2: Kernel density estimates of public and private sector wage distributions



The disparities exhibited in Figure 2 are potentially due to differences in workers' characteristics across sectors. Indeed, Table 1 shows that a higher proportion of public sector workers are women, Black, older and married compared to those in the private sector. In addition, the education distribution is skewed in favour of the public sector. For instance, 39% of workers in the public sector have a diploma or a degree compared to 8% in the private sector. Consistent with the education distribution, the public sector has a higher proportion of workers in white-collar occupations (i.e. professionals, technical and clerical)

while private sector workers are mainly in blue-collar occupations (i.e. crafts and related trades, machine operator and elementary work).

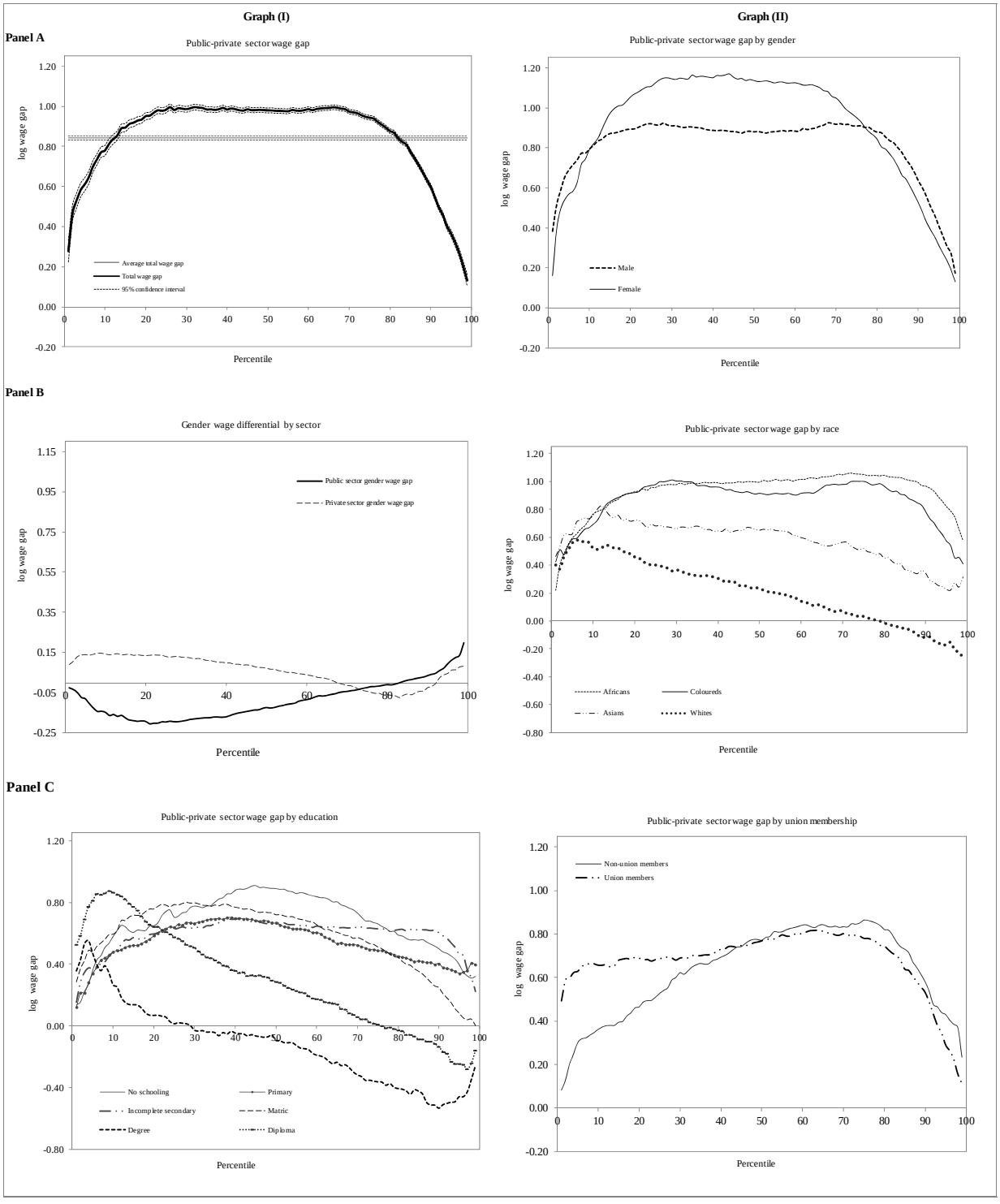
The descriptive statistics also highlight that workers in the public sector are more likely to be unionized. We do not observe significant differences in union-membership across gender in the public sector; the converse applies to the private sector where men have higher unionisation rates. As expected, public sector workers have considerably longer tenure periods and are more concentrated in larger establishments than private sector workers. We also find marked differences in economic activities across sectors. For example, the dominant industry of employment in the public sector is social and community services, while the corresponding industry for the private sector is wholesale, retail and trade. Clearly, the demographic, skill and occupational profiles differ considerably across the public and private sectors. The variation of the wage gap by (selected) characteristics is considered next.

3.3. Overview of the total public-private sector wage gap

Figure 3 presents a visual summary of the sectoral wage gap for all workers and separately by gender, race, union membership and education. Panel A, graph (I) shows the total wage gap at the mean and at different points of the wage distribution. Evidently, the gap is not constant across the wage distribution but follows an inverted U-shape. It monotonically increases at the lower-end (1-24th percentiles), becomes flat in the middle (25-69th percentiles), and then declines. Panel A, graph (II) shows the intra-gender sectoral wage gap for men and women. The wage gap is higher among women than men, except at the tails of the distribution. In line with extant literature, women fare better in the public sector than their male counterparts. This is corroborated by Panel B, graph (I) which plots the within sector male-female wage differential. Panel B, graph (II) shows the sectoral wage gap by race. We find that the gap is highest among the previously marginalized groups (Blacks and Coloureds), while the reverse applies to Whites with Asian/Indians occupying the intermediate position.

We further explore the sectoral wage gap by education and union membership, given the importance of these variables in South African wage determination. Panel C, graph (I) shows considerable differences in the sectoral wage gap across education levels. The gap is higher among workers with lower levels of education (less than matric) than for those with higher levels (diploma and degree). We remark that from the 30th (77th) percentile onwards the public-private sector wage gap is in favour of private sector workers with a degree (diploma).

Figure 3: The wage gap by gender, race and education



The portrait for union membership is unsurprising – Figure 3 Panel C, graph (II); at the lower end of the distribution, unionised workers enjoy higher wages than their non-unionised counterparts, while the differences are statistically similar at higher percentiles. Furthermore, when comparing public and private sector wages among unionised workers, we find a

differential in favour of the public sector. This suggests that public sector unions are relatively more influential in wage determination. Given that the wage gap exhibits considerable heterogeneity across characteristics, we proceed to analyse these within a multivariate framework.

4. Empirical results

4.1. Unconditional quantile regression results

Table 2 presents estimates from RIF regressions for the public and private sectors. To streamline the discussion, we focus on the results for the bottom (10^{th} percentile), middle (50^{th} percentile) and top (90^{th} percentile) of the wage distribution. The results show that the effects of the variables on wages differ across sectors and percentiles of the distribution. Generally, after controlling for observable characteristics there is a gender wage penalty to the disadvantage of women; this tends to be larger in the private than the public sector, except at the bottom. This result is consistent with findings in previous studies (Woolard, 2001; Gregory and Borland, 1999). The findings for race are in line with the well-known South African racial wage hierarchy. Across the distribution the racial wage disparities are higher in the private than the public sector, especially at the top. The results for age show the usual positive but declining effect on wages; this strengthens with percentiles of the distribution.

Table 2: Unconditional quantile regression results

	Public sector			Private sector		
	10^{th}	50^{th}	90^{th}	10^{th}	50^{th}	90^{th}
Demographics:						
Female	-0.249***	-0.091***	-0.158***	-0.180***	-0.169***	-0.229***
Blacks	-0.305***	-0.397***	-0.255***	-0.206***	-0.668***	-1.674***
Coloured	-0.106**	-0.219***	-0.120**	-0.001	-0.350***	-1.390***
Asian/Indian	-0.005	-0.151***	-0.159**	0.033***	-0.100***	-1.282***
Age	-0.007	0.051***	0.033***	0.018***	0.017***	0.067***
Age-sq.	0.000	-0.001***	0.000***	0.000***	0.000***	-0.001***
Married	0.097***	0.028**	-0.016	0.043***	0.084***	0.109***
Education:						
Primary	0.264	-0.002	-0.012	0.230***	0.103***	0.050***
Incomplete sec.	0.676***	0.189***	0.038*	0.425***	0.291***	0.193***
Matric	1.044***	0.479***	0.132***	0.537***	0.548***	0.495***
Diploma	1.291***	0.694***	0.277***	0.601***	0.781***	1.496***
Degree	1.268***	0.868***	0.658***	0.509***	0.692***	2.669***
Work characteristics:						
Union	0.711***	0.140***	-0.063***	0.168***	0.262***	-0.048*
Tenure	0.078***	0.023***	0.007**	0.024***	0.029***	0.019***
Tenure sq.	-0.002***	0.000***	0.000	-0.001***	-0.001***	0.000

Firm size: < 5 wkrs.	-0.639***	-0.105***	-0.032	-0.362***	-0.256***	-0.319***
Firm size: 5-9 wkrs.	-0.230***	-0.078***	-0.055**	-0.118***	-0.156***	-0.304***
Firm size: 10-19 wkrs.	-0.229***	-0.009	-0.080***	-0.038***	-0.116***	-0.264***
Firm size: 20-49 wkrs.	-0.174***	-0.001	-0.025	0.002	-0.056***	-0.155***
Occupation:						
Manager	0.836***	0.833***	0.983***	0.123***	0.546***	1.572***
Professional	0.856***	0.755***	0.291***	0.088***	0.569***	1.570***
Technician	0.817***	0.694***	0.168***	0.131***	0.498***	0.814***
Clerks	0.893***	0.341***	0.030	0.201***	0.502***	-0.011
Service workers	0.318***	0.341***	0.014	0.047***	-0.023	-0.051*
Skilled Agric.	0.326*	0.096*	0.048	0.185***	0.105***	-0.005
Crafts	0.613***	0.238***	-0.017	0.113***	0.235***	0.064***
Operator	0.671***	0.126***	-0.078***	0.140***	0.252***	-0.199***
Industry:						
Agriculture	-0.921***	0.099*	-0.203***	-1.020***	-0.537***	-0.097***
Mining	0.193	-0.056	-0.050	0.312***	0.248***	0.000
Social services	0.453***	0.006	-0.252***	0.081***	-0.085***	-0.270***
Construction	-0.266*	-0.014	-0.240***	0.075***	-0.174***	-0.073**
Trade	-0.215	-0.154***	-0.247***	0.034***	-0.139***	-0.230***
Transport	0.439***	0.110**	-0.203**	-0.033	-0.100***	0.044
Financial services	0.402***	-0.009	-0.093	0.110***	-0.139***	-0.043
Location:						
Western Cape	-0.093*	-0.052*	-0.037	0.187***	-0.092***	-0.129***
Eastern Cape	-0.331***	-0.008	-0.041	-0.382***	-0.254***	-0.183***
Northern Cape	-0.256***	-0.024	-0.016	-0.253***	-0.283***	-0.143***
Free State	-0.227***	0.008	-0.088***	-0.508***	-0.353***	-0.184***
Kwazulu Natal	-0.132***	-0.065***	-0.099***	-0.135***	-0.206***	-0.179***
North West	-0.080*	0.011	-0.116***	-0.272***	-0.225***	-0.073**
Mpumalanga	-0.220***	-0.007	-0.051	-0.277***	-0.250***	-0.045
Northern Province	-0.267***	-0.006	-0.105***	-0.607***	-0.296***	-0.120***
Year of survey:						
2001	0.088*	-0.009	0.057**	-0.037**	-0.018	-0.009
2002	0.014	0.035	0.035	-0.051**	-0.070***	0.001
2003	0.168***	0.055**	0.064**	0.030*	-0.046***	-0.013
2004	0.219***	0.093***	0.099***	0.100***	0.017	0.071**
2005	0.147***	0.090***	0.159***	0.136***	0.011	0.098***
2006	0.208***	0.118***	0.195***	0.201***	0.066***	0.127***
2007	0.202***	0.164***	0.208***	0.232***	0.088***	0.136***
Constant	-0.584*	1.036***	3.124***	0.177***	1.598***	3.014***

Reference groups defined in Table A.1 in the Appendix. Significance level: ***=1%, **=5%, *=10%.

For education, the returns are positively correlated to the echelons, in line with the human capital theory. However, the magnitudes tend to vary within and across sectors. At the bottom of the distribution, returns to all levels are relatively higher in the public sector; the opposite applies to higher percentiles. Within the public sector, all levels' returns decline as a function of percentiles, while in the private sector divergent patterns emerge for high and low education levels. Returns to low (high) levels of education are negatively (positively) correlated with percentiles of the distribution. As such, the within-sector effect of education

is to compress (disperse) wages in the public (private) sector while the between-sector effect is to disequalise wages.

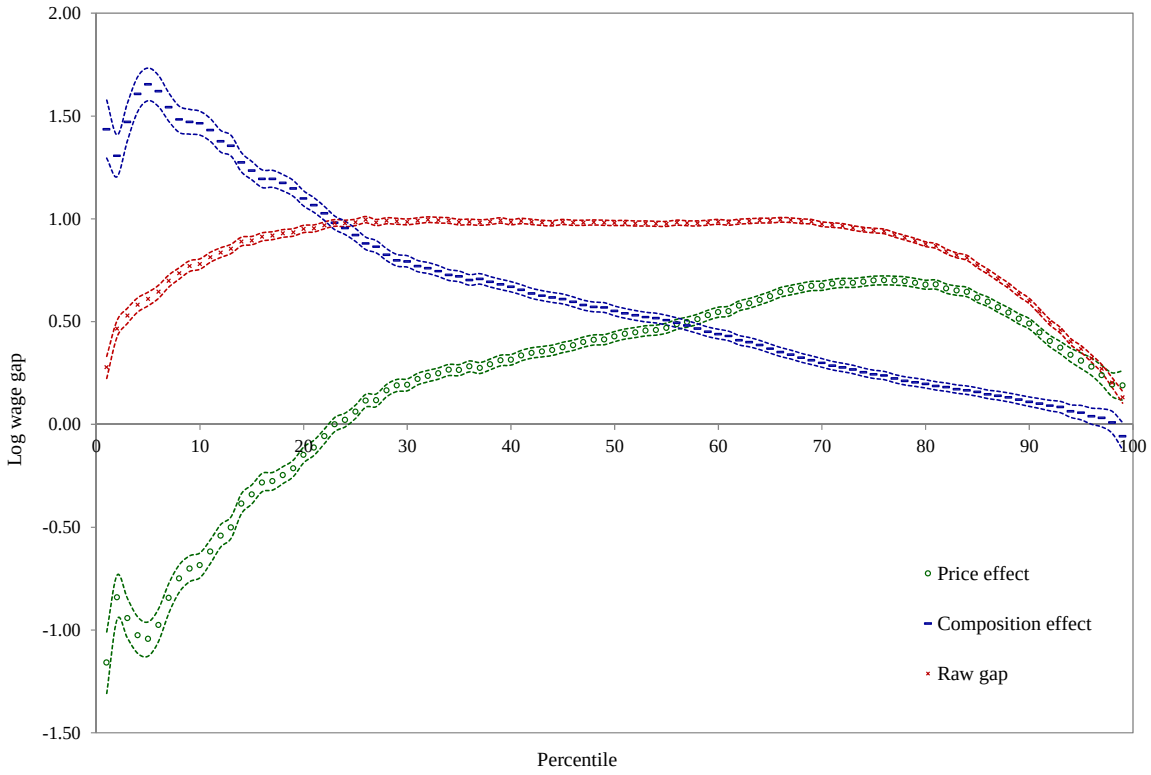
Logically, union membership yields a wage premium (penalty) at the bottom (top) of the distribution in the both sectors. In line with our descriptive analysis, the union premium is higher in the public than in the private sector. Overall, unions tend to reduce wage dispersion within sectors and at the same time induce sectoral wage disparities, particularly at the bottom. Further, the results reveal an inverted U-shaped wage tenure profile, for both sectors. Also as expected, the results exhibit a firm size wage premium, regardless of sector. We uncover considerable sectoral differences in returns to occupation and industry. The case for all occupations shows higher returns at the bottom of the public sector distribution, while at the top, white-collar occupations have higher returns in the private sector. For industry, the results are not robust. More generally, at the bottom, highest paying industries in the public sector are social services; and transport and communications; this extends to mining and financial services in the private sector. The results further uncover geographical heterogeneity in wages across and within the sectors. Provincial wage differentials are smaller in the public than in the private sector. Moreover, workers in Gauteng earn more than workers elsewhere. This is expected as Gauteng is the country's economic hub. Finally, we generally find a temporal increase in wages; the largest increase pertains to the median (bottom) of the public (private) sector wage distribution.

4.2 Overall decomposition of the wage gap

As outlined in equation 3, we decompose the total wage gap into the 'composition effect' and the 'price effect'. Results of the decomposition are presented in Figure 4 along with the 95% confidence intervals (dashed lines). Tables 3 and 4 also provide a summary of the results for selected points of the wage distribution. As discussed earlier, the total wage gap exhibits an inverted U-shape. Figure 4 shows that at the 10-20th percentiles, the wage gap is entirely due to the 'composition effect' rather than the 'price effect'. In fact, returns to workers' characteristics serve to narrow the wage gap as indicated by the strong negative 'price effect'. This finding is contrary to anecdotal evidence suggesting that high public sector wages, particularly at the bottom of the distribution, are due to a public sector premium. We argue the wage gap at the bottom is fully attributable to inferior endowments among private sector workers. This compositional effect, however, declines across the distribution, although it remains the predominant driver of the wage gap up to the 56th percentile. Thereafter, the

wage gap is largely due to the 'price effect'; accounting for 82% of the total gap at the 90th percentile.

Figure 4: Decomposition of the public-private sector wage gap



The results for the wage premium/penalty uncovered here are quite different from those reported in previous South African studies; see Table A.2 in the Appendix. Bosch (2006) reports an average public sector wage premium of 35% while Kerr and Teal (2012) report a premium of 47-62%. A considerably lower wage premium of 13-19% across the distribution is found by Woolard (2002). In contrast, this study finds a substantial wage penalty of 69% at 10th percentile and a considerably large premium of 49% at the 90th percentile. These vast differences are possibly due to differences in sample restriction and methodologies used. In a bid to reconcile these findings, we try mimicking Woolard's (2002) study, whose scope is closest to the present study, by estimating conditional quantile regression (QR) with a public sector dummy. It is important to note that this approach makes the assumption that the wage structure in the two sectors is identical. We first, we estimate the QR-model on our 2000-7 sample and then restrict the sample to 2000 as in Woolard (2002). Results from this exercise are presented in Table A.2 in the Appendix. Interestingly, we find smaller differences between our estimates and those based on Woolard's methodology. The differences, are further attenuated when the sample is restricted to year 2000; the remaining small differences

can be attributed to differences in sample restrictions and model specifications. Accordingly, it is reassuring that the vast differences are mainly methodological.

4.3 Detailed decomposition of the wage gap

Based on equation 4, the 'composition' and 'price' effects, are decomposed to show the contribution of each covariate. Tables 3 and 4, respectively, show results for these effects. The total effect ('composition' plus 'price' effects) of each covariate is presented in Figure A.1 in the Appendix. Generally, the impact of covariates on the wage gap varies considerably across the wage distribution; nevertheless, some systematic patterns emerge. Our discussion will consider the 10-30th percentiles as representing the lower-end of the wage distribution while 70-90th percentiles represent the upper-end.

Results show that the overrepresentation of women in the public sector serves to narrow the wage gap by 2-5% points at lower-end and by 1-2% points at the upper-end. However, this effect is weakened by the corresponding positive 'price effect' at the 30-90th percentiles. As a result, the total effect of gender is negligible; except at the bottom where it reduces the total gap by at most 8% points (see Figure A.1 in the appendix). For other demographic characteristics, we find that compositional effects linked to age, race and marital status have a trivial effect throughout the distribution – collectively accounting for 1-4% points of the gap. Conversely, the price effects associated with these covariates tend to be important. For instance, returns to age serve to reduce the gap by 64% (42%) points at the 10th (90th) percentile, but increases it by 7-48% points at the 20-70th percentiles. In addition, returns to race mostly serve to widen the gap. The importance of race steadily increases across the wage distribution accounting for 40% of the gap at 90th percentile. This suggests that had the pay structure for race been similar in both sectors the gap would be considerably lower at the upper end. We note that this result is mainly driven by the return associated with Black South Africans.

Further, the results indicate that differences in educational endowments contribute positively to the wage gap throughout the distribution. However, the effect is inversely related to percentiles – accounting for 36% (16%) of the gap at the 10th (90th) percentile. This 'composition effect' is generally underpinned by endowment differences related to higher education (diploma and degree). Interestingly, at the lower (upper) end of the distribution, the 'composition effect' is counteracted (reinforced) by returns to education. The total effect of

education hovers around 17% points for the first half of the wage distribution, but consistently increases (20-78% points) for the remainder of the distribution.

Table 3: Detailed decomposition of the 'composition effects'

	10th	30th	50th	70th	90th
Total wage-gap	0.780	0.985	0.979	0.974	0.600
Composition effect	**1.465** [188%]	**0.793** [80%]	**0.552** [56%]	**0.299 [**31%]	**0.110** [18%]
Contribution of:					
Female	*-0.045*	*-0.017*	*-0.012*	*-0.013*	*-0.018*
Age	*0.001*	*0.014*	*0.027*	*0.021*	*0.030*
Marital status	*0.010*	*0.004*	*0.003*	*0.000*	*-0.001*
Race	*0.002*	*0.004*	*0.006*	*0.003*	*0.003*
African	-0.002	-0.002	-0.002	-0.001	-0.001
Coloured	0.001	0.001	0.001	0.001	0.000
Indian/Asian	-0.001	-0.001	0.000	0.000	0.000
White	0.004	0.006	0.007	0.005	0.004
Education	*0.281*	*0.206*	*0.188*	*0.138*	*0.097*
No schooling	0.023	0.012	0.010	0.006	0.004
Primary	0.061	0.046	0.038	0.026	0.018
Incomplete sec.	0.020	0.027	0.030	0.025	0.019
Matric	0.002	0.001	0.000	0.000	0.000
Diploma	0.112	0.072	0.056	0.032	0.012
Degree	0.063	0.049	0.053	0.048	0.044
Union	*0.351*	*0.118*	*0.058*	*0.013*	*-0.022*
Tenure	*0.220*	*0.085*	*0.064*	*0.060*	*0.023*
Industry	*0.514*	*0.178*	*0.030*	*-0.029*	*-0.056*
Agriculture	0.134	-0.004	-0.012	-0.002	0.004
Mining	-0.016	0.012	0.005	-0.004	-0.005
Manufacturing	0.009	0.006	0.002	-0.011	-0.021
Construction	0.021	-0.001	-0.001	0.000	0.003
Trade	0.044	0.050	0.027	0.014	0.012
Transport & comm.	0.016	0.007	0.004	0.000	-0.001
Financial services	-0.032	-0.002	0.001	0.001	-0.004
Social services	0.338	0.109	0.004	-0.029	-0.044
Occupation	*0.129*	*0.192*	*0.181*	*0.112*	*0.062*
Managers	0.000	0.001	0.001	0.001	0.001
Professionals	0.027	0.031	0.033	0.024	0.009
Technicians	0.054	0.068	0.064	0.032	0.000
Clerks	0.011	0.005	-0.002	-0.004	-0.004
Skilled agric. Workers	0.000	0.000	0.000	0.000	0.000
Crafts and tradesmen	-0.001	0.017	0.020	0.015	0.019
Operators	-0.012	0.028	0.034	0.029	0.025
Elementary	0.057	0.043	0.031	0.018	0.012
Service worker	-0.008	-0.001	-0.001	-0.002	-0.003
Firm size	*0.044*	*0.020*	*0.010*	*0.003*	*0.002*
Location	*-0.036*	*-0.003*	*0.001*	*-0.005*	*-0.004*
Year	*-0.007*	*-0.008*	*-0.004*	*-0.005*	*-0.004*

Ratio of 'composition effect' to total log wage gap in square brackets. % points shown. Figures in italics are aggregated across the category's subcomponents.

Table 4: Detailed decomposition of the 'price effects'

	10th	30th	50th	70th	90th
Total wage-gap	0.780	0.985	0.979	0.974	0.600
Structural effect	**-0.685** [-88%]	**0.192** [20%]	**0.427** [44%]	**0.675** [69%]	**0.490** [82%]
Contribution of:					
Female	*-0.032*	*0.026*	*0.028*	*0.028*	*0.010*
Age	*-0.640*	*0.200*	*0.476*	*0.068*	*-0.422*
Marital status	*0.041*	*-0.015*	*-0.025*	*-0.046*	*-0.047*
Race	*-0.040*	*0.020*	*0.133*	*0.230*	*0.238*
African	-0.041	0.020	0.142	0.252	0.275
Coloured	-0.007	0.003	0.008	0.028	0.041
Indian/Asian	0.001	-0.001	-0.005	-0.003	0.006
White	0.007	0.000	-0.012	-0.047	-0.084
Education	*-0.123*	*-0.089*	*-0.049*	*0.070*	*0.371*
No schooling	-0.026	-0.002	0.003	0.015	0.033
Primary	-0.095	-0.037	-0.013	0.047	0.126
Incomplete sec.	-0.064	-0.053	-0.028	0.033	0.173
Matric	0.037	-0.006	-0.012	-0.008	0.086
Diploma	0.015	0.004	-0.003	-0.014	-0.016
Degree	0.010	0.005	0.004	-0.003	-0.031
Union	*0.189*	*0.000*	*-0.036*	*-0.043*	*-0.006*
Tenure	*0.275*	*0.010*	*-0.025*	*-0.024*	*-0.041*
Industry	*-0.084*	*-0.028*	*-0.008*	*0.017*	*0.017*
Agriculture	0.000	0.132	0.072	0.022	-0.002
Mining	-0.020	-0.059	-0.040	-0.002	0.000
Manufacturing	-0.021	-0.032	-0.029	-0.003	0.013
Construction	-0.043	-0.004	0.006	0.004	-0.006
Trade	-0.069	-0.070	-0.024	0.007	0.011
Transport & comm.	0.019	0.010	0.005	-0.003	-0.005
Financial services	0.028	-0.009	0.001	-0.004	0.003
Social services	0.020	0.005	-0.001	-0.004	0.003
Occupation	*-0.121*	*-0.076*	*-0.046*	*0.065*	*0.182*
Managers	0.007	0.007	0.006	-0.002	-0.010
Professionals	0.005	0.003	0.001	-0.004	-0.015
Technicians	0.012	0.011	0.006	-0.008	-0.013
Clerks	0.027	0.001	-0.024	-0.030	0.026
Skilled agric.	-0.003	-0.003	-0.001	0.001	0.003
Crafts and tradesmen	0.000	-0.020	-0.017	0.010	0.034
Operators	0.011	-0.035	-0.037	0.014	0.057
Elementary	-0.142	-0.066	-0.015	0.044	0.064
Service worker	-0.037	0.025	0.035	0.039	0.037
Firm size	*0.041*	*-0.011*	*-0.021*	*-0.034*	*-0.030*
Location	*-0.048*	*-0.095*	*-0.069*	*-0.026*	*-0.010*
Year	*-0.007*	*0.001*	*-0.003*	*-0.002*	*0.003*
Constant	*-0.136*	*0.250*	*0.072*	*0.371*	*0.224*

Ratio of 'price effect' to total log wage gap in square brackets. % points shown. Figures in italics are aggregated across the category's subcomponents.

In the case of labour unions, both 'composition' and 'price effects' work to increase the gap at the lower-end of the distribution, with the former outweighing the latter. For instance, at the 10th percentile 45% of the total gap is due to underrepresentation of private sector workers in unions, while 24% is due to sectoral differences in the union premium. However, Figure A.1 demonstrates that the total effect of unions is attenuated at higher percentiles. The effect of tenure follows a similar pattern across the distribution, and in 'composition' and 'price effects'; albeit the union effect is relatively stronger.

Results also show that, for the first half of the distribution, sectoral differences in the industrial distribution of workers serves to increase the gap, but this is dampened by the negative 'price effect'. Thereafter, the effects are reversed. In particular, if the private sector had a similar industrial configuration to that in the public sector, the gap will be lower by 18-51% points at the bottom, but higher by 4-6% points at the top. As for occupation, compositional differences increase the gap throughout the distribution. If workers in the private sector had a similar occupational distribution as their public sector counterparts, the wage gap will be lower by 6-19% points. The occupational wage structure counteracts the 'composition effect' in the first half of the distribution, but strengthens it thereafter. Consequently, Figure A.1 illustrates that the total effect of occupation enhances the wage gap, with the effect monotonically increasing across the wage distribution. Results also show a small positive (negative) compositional ('price') effect associated with firm size. Location generally serves to narrow the wage gap through 'price' and 'composition' effects, with the latter effect much stronger – the total effect weakens from -10% points to -2% points from the bottom to the top of the distribution.

Concerning the relative importance of the covariates in explaining the wage gap, we find that unions, tenure, and industry have a relatively large effect at the bottom of the distribution. This is largely driven by their 'composition' rather than their 'price effects'. Age emerges as the single most important factor driving the gap at the middle of the distribution through its 'price effect'. Race and occupation also play a crucial role through their 'price' and 'composition effects', respectively. Lastly, at the top of the wage distribution, race and occupation are the dominant explanatory factors though their 'price effects'. Notably, education propels the gap across the distribution; the 'composition effect' strengthens its

contribution from the 10-70th percentiles, while the 'price effect' dominates the remainder of the distribution.

4.4. Discussion of results

This paper has established that the total public-private sector wage gap in South Africa follows an inverted-U shape across quantiles of the wage distribution. Thus, the wage differential is highest in the middle of the distribution. A key finding from the study is that the gap at the bottom of the distribution is fully explained by sectoral differences in observed characteristics, while that at the top is largely due to the 'price effect'. On the one hand, it is commendable that the wage gap at the bottom of the distribution is due to better (inferior) characteristics among public (private) sector workers. Inference can be drawn that the public sector is able to attract workers with better endowments, in line with their mandate for improved service delivery - the 'Batho Pele' initiative. On the other hand, the presence of a pay structure which penalises those at the bottom and rewards those at the top of the wage distribution is contrary to the usual result of wage compression in the public sector (Melly, 2005). This result is worrisome as it suggests that the public sector pay structure has an unintended consequence of largely benefitting the middle class, at the expense of the low class.

Furthermore, we find that the 'composition effects' of race and gender – dimensions historically used to sort workers into the labour market - play a trivial role in explaining the sectoral wage gap. To some extent, this shows that affirmative action policies have reduced gender and racial imbalances in the labour market. Nonetheless, education, unions, tenure and industry emerge as inequality enhancing characteristics in this context. This result implies that sectoral differences in employment stability, functions, and institutions underlie the gap at the lower end of the distribution. Based on these results, it can be inferred that the gap at the bottom of the distribution is an artefact of structural configurations of the sectors; hence, its existence raises little alarm. However, in the case of unions, the gap calls for an extension of coverage among private sector workers; to strengthen their voice in wage negotiations. Similarly, the private sector's distribution of human capital can benefit from capacity building initiatives to increase the pool of workers with better education.

In the middle of the distribution, age ('price effect'), race ('price effect'), and occupation ('composition effect') play a significant role in explaining the sectoral wage gap. An exceptional finding pertains to age whose 'price effect' is hump-shaped across the

distribution; in line with the lifecycle hypothesis. The public sector penalty at the tails of the distribution is possibly associated with younger and older workers' timing of entry in the labour market. Arguably, younger workers lack experience which is highly valued in the public sector. As for older workers, they might have not benefitted significantly from post-Apartheid interventionist policies as these were instituted later in their career trajectories. However, the positive 'price effect' for their private sector counterparts could possibly be due to selection effects; they managed to join the sector when it was highly restrictive. On the contrary, the age-pay structure for the middle of the distribution favours prime-aged workers in the public sector. Perhaps, the post-Apartheid interventionist polices were implemented at the early stages of their career paths – the public sector was more likely to embrace them than the private sector given its central role in setting labour market standards. Compared to the top, race and occupation play an important role in the middle but have a more pronounced 'price effect' at the top of the distribution. This finding can be understood in light of the public sector's quest to retain highly-skilled workers, especially Black South Africans, and compensate them for past injustices in society. However, this is not an unqualified good as the government policies appear to have mostly benefitted educated Blacks who had already surpassed the poverty tipping point and were in a positon to acquire jobs in higher echelons of the occupational ladder.

5. Conclusion

This study sets out to investigate the public-private sector wage differential in South Africa using individual cross section data for 2000-7. We provide a comprehensive distributional analysis based on RIF regressions and a generalised Oaxaca-Blinder decomposition analysis, to shed light on sources of the sectoral wage gap. Results show a total wage gap which is largest in the middle of the wage distribution. At the bottom of the distribution, the gap is attributable to sectoral differences in characteristics, while differences in prices mainly explain that at the top. Further, we find that compositional effects of job characteristics (unions, tenure, and industry) explain a relatively large fraction of the gap at the bottom. Conversely, price effects for race, education and occupation explain a significant portion of the gap at the top. In the middle of the distribution, the wage gap is mainly driven by price effects associated with age and race, and a compositional effect of occupation. Notably, education consistently plays a crucial role throughout the distribution.

Our results suggest that a one size fits all approach will be inadequate in reducing the public-private sector wage gap in South Africa, instead targeted strategies would be more appropriate. To reduce the differential at the bottom of the distribution initiatives to encourage unionisation and better education of private sector workers are an imperative. In the middle of the distribution, the sectors should consider aligning their pay scales for prime-aged workers, and along racial lines, in order to curb the sectoral wage divergence. At the top end, pay-scales need to be synchronised along race, education and occupational lines. We believe that these measures can go a long way in reducing the sectoral wage gap, and the ensuing income inequality in the country. Nevertheless, we remark that the entire public-private sector wage gap cannot be eradicated as it partly emanates from structural configuration inherent in the sectors e.g. differences in industrial and occupational compositions of the sectors.

Our study has three main limitations. First, the RIF regressions herein may suffer from sample selection bias due to data limitations. For instance, workers with better unobserved characteristics may self-select into the public sector. Due to this, our analysis is mainly descriptive, which calls for caution when interpreting and generalising the results. In this case, our results for the sectoral wage gap might be biased upwards. Second, the study does not comprehensively control for firm-level characteristics which might influence wages, due to data issues. Third we can only identify areas where public-private sector wage structures require synchronisation, but our methodology precludes us from specifying the 'fair' wage regime which should be used for the process. Future studies can benefit from addressing these limitations.

Appendix

Table A.1. Variable definitions

Variable	Description
Log(wage)	Natural logarithm of hourly wage.
Public	Dummy variable: 1 if employed in the public sector, 0 otherwise.
Female	Dummy variable: 1 if female, 0 otherwise.
Age 16-24 years[R]	Dummy variable: 1 if aged 16-24 years, 0 otherwise.
Age 25-34 years	Dummy variable: 1 if aged 25-34 years, 0 otherwise.
Age 35-44 years	Dummy variable: 1 if aged 35-44 years, 0 otherwise.
Age 45-60 years	Dummy variable: 1 if aged 45-60 years, 0 otherwise.
Blacks	Dummy variable: 1 if Black South African, 0 otherwise.
Coloured	Dummy variable: 1 if Coloured, 0 otherwise.
Asian/Indian	Dummy variable: 1 if Asian or Indian, 0 otherwise.
White[R]	Dummy variable: 1 if White, 0 otherwise.
Married	Dummy variable: 1 if Married, 0 otherwise.
No schooling[R]	Dummy variable: 1 if an individual has 0 years of schooling or grade R, 0 otherwise.
Primary	Dummy variable: 1 if highest level of education is grade 1 to 7, 0 otherwise.
Incomplete secondary	Dummy variable: 1 if highest level of education is grade 8 to 11; certificate/diploma with <than grade 12; NTCI&2, 0 otherwise.
Matric	Dummy variable: 1 if highest level of education is grade 12; NTCIII, 0 otherwise.
Diploma	Dummy variable: 1 if highest level of education is a certificate/diploma with grade 12; NTCIV&V, 0 otherwise.
Degree[R]	Dummy variable: 1 if highest level of education is a degree; NTCVI, 0 otherwise.
Union	Dummy variable: 1 if a union member, 0 otherwise.
Tenure	Number of months in employed by the current employer
Firm size: < 5 workers	Dummy variable: 1 if number of employees at work place is 2 to 4, 0 otherwise.
Firm size: 5-9 workers	Dummy variable: 1 if number of employees at work place is 5 to 9, 0 otherwise.
Firm size: 10-19 workers	Dummy variable: 1 if number of employees at work place is 10 to 19, 0 otherwise.
Firm size: 20-49 workers	Dummy variable: 1 if number of employees at work place is 20 to 49, 0 otherwise.
Firm size: >49 workers[R]	Dummy variable: 1 if number of employees at work place is 50/more, 0 otherwise.
Manager	Dummy variable: 1 for Legislators, senior officials or managers, 0 otherwise.
Professionals	Dummy variable: 1 for professionals, 0 otherwise.
Technician	Dummy variable: 1 for technical or associate professionals, 0 otherwise.
Clerk	Dummy variable: 1 for clerks, 0 otherwise.
Service & shop workers	Dummy variable: 1 for service workers, shop or market sales workers, 0 otherwise.
Skilled agricultural worker	Dummy variable: 1 for agricultural workers, 0 otherwise.
Operator	Dummy variable: 1 for plant or machine operators & assemblers, 0 otherwise.
Crafts	Dummy variable: 1 for craftsmen or tradesman, 0 otherwise.
Elementary occupation[R]	Dummy variable: 1 for elementary jobs, 0 otherwise.
Agriculture	Dummy variable: 1 if employed in the agricultural sector, 0 otherwise.
Mining	Dummy variable: 1 if employed in the mining sector, 0 otherwise.
Manufacturing[R]	Dummy variable: 1 if employed in the manufacturing sector, 0 otherwise.
Construction	Dummy variable: 1 if employed in the construction sector, 0 otherwise.
Trade	Dummy variable: 1 if employed in the wholesale and trade sector, 0 otherwise.
Transport	Dummy variable: 1 if employed in the transport & communications sector, 0 otherwise.
Financial services	Dummy variable: 1 if employed in the financial services sector, 0 otherwise.
Social services	Dummy variable: 1 if employed in the community, personal & social services, 0 otherwise.
Western Cape	Dummy variable: 1 if residing in Western Cape province, 0 otherwise.
Eastern Cape	Dummy variable: 1 if residing in Eastern Cape province, 0 otherwise.
Northern Cape	Dummy variable: 1 if residing in Northern Cape province, 0 otherwise.
Free State	Dummy variable: 1 if residing in Free State province, 0 otherwise.
KwaZulu-Natal	Dummy variable: 1 if residing in KwaZulu Natal province, 0 otherwise.
North West	Dummy variable: 1 if residing in North West province, 0 otherwise.
Mpumalanga	Dummy variable: 1 if residing in Mpumalanga province, 0 otherwise.
Northern province	Dummy variable: 1 if residing in Northern province, 0 otherwise.
Gauteng[R]	Dummy variable: 1 if residing in Gauteng province, 0 otherwise.
2000[R] - 2007	Dummy variables: 1 for each year of survey from 2000 to 2007, 0 otherwise.

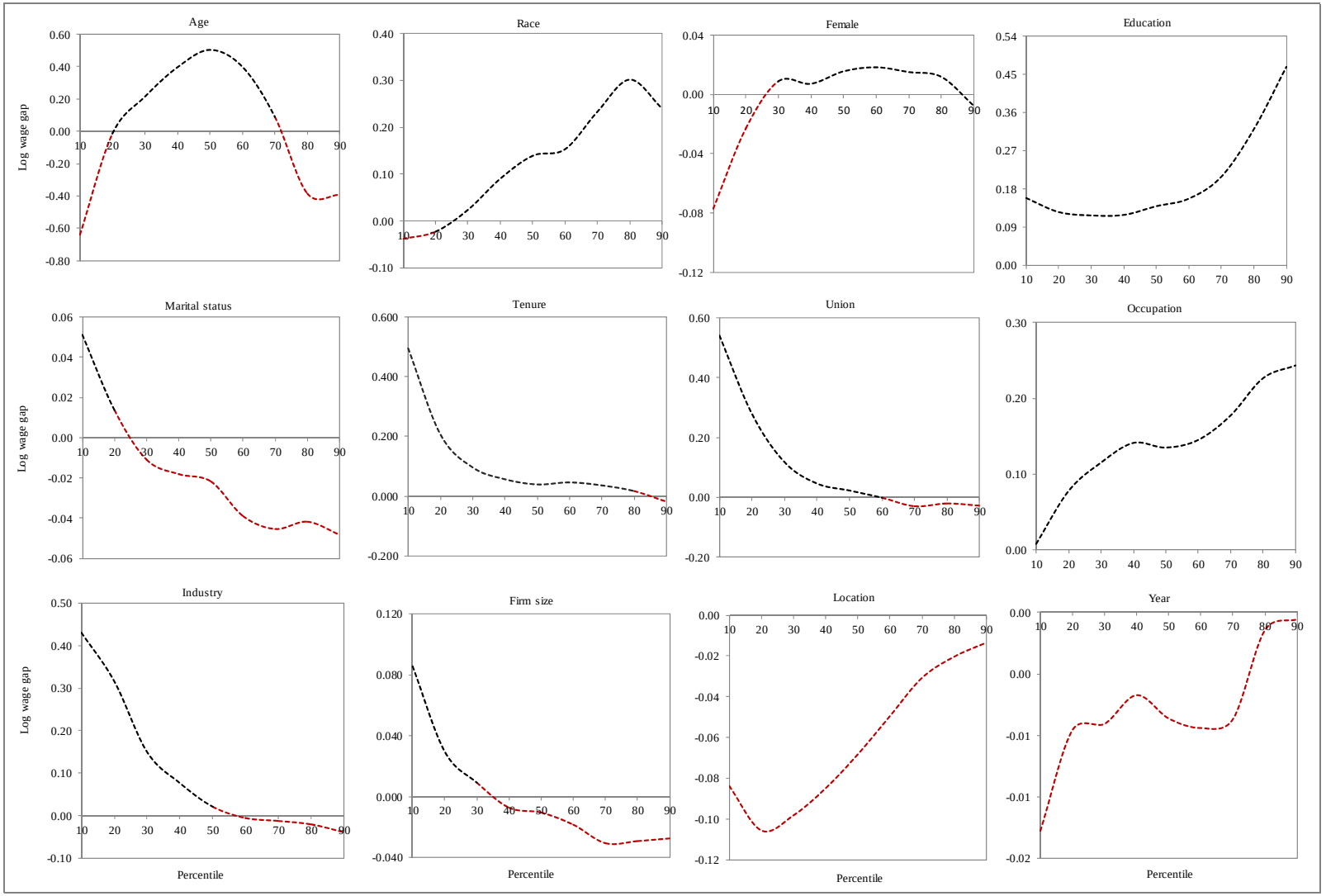
Notes: [R] denotes reference group in regressions.

Table A.2: Comparison with previous South African studies

Study	Data	Method	Public sector premium/penalty
Woolard, 2002	Labour Force Survey (2000)	QR	10th quantile: 0.132 Median 0.254 90th quantile 0.189
Bosch, 2006	Labour Force Survey (2005)	OLS	0.35
Kerr and Teal, 2012	KwaZulu-Natal Income Dynamics Study (1993-2004)	FE	public sector-union: 0.47 public sector non-union: 0.662
Present study	Labour Force Survey (2000-2007)	Decomposition	10th quantile: -0.685 Median: 0.427 90th quantile: 0.49
	Labour Force Survey (2000-2007)	QR	10th quantile: 0.224 Median: 0.302 90th quantile: 0.250
	Labour Force Survey (2000-2005)	QR	10th quantile:0.173 Median: 0.264 90th quantile: 0.228

QR denotes quantile regressions, OLS denotes ordinary least squares, FE denotes fixed effects.

Figure A.1: Factor total effects



References

Altman M (2006) Low skill work in South Africa. Paper presented to: IZA/World Bank conference on employment and development, Berlin, Germany, May 25 -27, 2006.

Blinder A (1973) Wage discrimination: reduced form and structural estimates. Journal of Human Resources 8: 436-455

Bosch A (2006) Determinants of public and private-sector wages in South Africa. Research Department, South African Reserve Bank.

Branson N, Wittenberg M (2013) Reweighting South African national household survey Data to create a consistent series over time: A cross-entropy estimation approach. South African Journal of Economics 82:19-38.

Branson N, Garlick J, Lam D, Leibbrandt M (2012) Education and inequality: The South African case. A Southern Africa Labour and Development Research Unit Working Paper Number 75 University of Cape Town.

Breytenbach A, Rossouw J (2013) 'n Ontleding van vergoedingsneigings in die Suid-Afrikaanse staatsdiens, 2005 to 2012. Tydskrif vir Geesteswetenskappe 53: 635-650.

Butcher K, Rouse C (2001) Wage effects of unions and industrial councils in South Africa. Industrial and Labour Relations Review 54: 349-374.

Casale D, and Posel D (2011) Unions and the gender wage gap in South Africa. Journal of African Economies 20: 27-59.

Casale D, Posel D (2006) Who replies in brackets and what are the implications? An analysis of earnings data in South Africa. ERSA Working Paper No. 7. Cape Town: Economic Research Southern Africa.

Clarke AR (2007) Public service labour relations: Centralised collective bargaining and social dialogue in the public service of South Africa, 1997 to 2007. A thesis submitted in partial fulfilment of the requirements for the degree of Masters: Administration in the School of Government of the University of the Western Cape.

Disney R, Gosling A (1998) Does it pay to work in the public sector? Fiscal Studies 19: 347-374.

Firpo S, Fortin NM, Lemieux T (2009) Unconditional quantile regressions. Econometrica 77: 953-973.

Fortin MN, Lemieux T, Firpo S (2011) Decomposition methods in economics. In: Ashenfelter, O., Card, D. (Eds.), Handbook of Labor Economics 4: 1-102. North Holland, Amsterdam.

Gunderson M (1979) Earnings gaps between the public and private sectors. Canadian Journal of Economics 12: 228-242.
Gregory RG, Borland J (1999) Recent developments in public sector labor markets. In: O. Ashenfelter and D. Card eds. Handbook of Labor Economics, Vol. 3, Amsterdam, The Netherlands: Elsevier, pp. 3573–3630.

Hoogeveen JG, Ozler B (2005) Not separate, not equal: Poverty and inequality in post-apartheid South Africa. Working Paper 379, William Davidson Institute, Ann Arbor.

Hyder A, Reilly B (2005) The public and private sector pay gap in Pakistan: A quantile regression analysis. The Pakistan Development Review 44: 271-306

Kerr A, Teal F (2012) Determinants of wage inequalities: Panel data evidence from South Africa. Institute for the Study of Labor, IZA Discussion Paper No. 6534.

Kerr A, Lam D, Wittenberg M (2013) South Africa-post Apartheid labour market series 1994-2012. Data First, University of Cape Town.

Leite PG, McKinley T, Osorio RG, (2006) The post-Apartheid evolution of earnings inequality in South Africa, 1995-2004.Working Paper No. 32, October, International Poverty Centre, Brasilia.

Lindauer D, Sabot RH (1983) The public-private wage differential in a poor urban economy. Journal of Development Economics 12: 137-152.

Melly B (2005) Public-private sector wage differentials in Germany: Evidence from quantile regression. Empirical Economics, 30:505-520

Ministry for the public service and administration 1995. The white paper on the transformation of the public service notice 1227 of 1995.

Mizala A, Romaguera P, Gallegos S (2011) Public-private wage gap in Latin America (1992-2007): A matching approach. Labour Economics 18:S115-S131.

Mueller R (1998) Public-private sector wage differentials in Canada: evidence from quantile regressions. Economics Letters 60: 229-235

Nielsen HS, Rosholm M (2001) The public-private sector wage gap in Zambia in the 1990s: A quantile regression approach. Empirical Economics 26: 169-182.

Ntuli M, Kwenda P (2014) Unions and intra-African wage inequality in South Africa. Development Southern Africa *31:*322-46.

Rossouw J, Joubert F, Breytenbach A, (2014) Suid-Afrika se fiskale afgrond: 'n Blik op die aanwending van owerheidshulpbronne. Tydskrif vir Geesteswetenskappe 54:144-162.

Schultz TP, Mwabu G (1998) Labour Unions and the Distribution of Wages and Employment in South Africa. Industrial Labour Relation Review 51:680-703.

Schwella E (2001) Public sector policy in the new South Africa: A critical review. Public Performance and Management Review, 24: 367-388

Smith S (1976) Pay differentials between federal government and private sectors workers. Industrial and Labour Relations Review 29: 233-257.

Oaxaca R (1973) Male-female wage differentials in urban labor markets. International Economic Review 14: 693-709.

Tregenna F, Tsela M (2012) Inequality in South Africa: The distribution of income, expenditure and wage. Development Southern Africa 29:35-61.

Woolard I (2002) A Comparison of wage levels and wage inequality in the public and private Sectors, 1995 and 2000. Development Policy Research Unit, Working Paper 02/62.

Yun MS (2005) A simple solution to the identification problem in detailed wage Decompositions. Economic Inquiry, 43: 766-72.