

## **Remuneration of public sector employees versus the private sector**

Prepared by Wynnona Steyn and Yolandé Jordaan

Approved for publication by Dr Randall Carolissen and Mamiky Leolo

**Working paper**

**Economic Society of South Africa**

**Biennial Conference held in Bloemfontein**

**25 to 27 September 2013**

Note: This paper should not be reported as representing the views of the South African Revenue Service (SARS). The views expressed are those of the authors and do not necessarily reflect those of SARS or SARS policy.

## 1. Introduction

The purpose of this paper is to analyse the remuneration of personal income taxpayers in terms of two categories of employees, namely the public sector versus the private sector.

The distribution of the public sector in terms of numbers of employees and the distribution of taxable income, certain sources of income and deductions, as well as age and gender will be analysed and compared to those of private sector employees. The goal is to have a better understanding of remuneration in the public sector versus the private sector. The comparisons are done on the SARS personal income tax micro simulation model.

The OECD (2009) compares across countries the size of employment in government and public corporations. It also presents data on gender representation and age distribution. The OECD states that labour is the most important input in the government production of goods and services. Through its size and human resource management practices and policies, government employment affects the functioning of the wider labour market. It influences wage levels, general working conditions and the supply and demand for occupations. The data provided by the OECD provides insight on the scope, level and delivery method of public services across countries. The analysis also illustrates important differences in workforce characteristics across countries - such as the age structure - that could affect the capacity of government to deliver services and implement responses to current challenges. Tracking these variables over time can help analyse the effect of fiscal pressures on the size of the workforce.

As stated by Bowerunge and Rosen (2012), the dire economic conditions that arose in the aftermath of the 2008 financial crisis have stimulated a heated debate about the compensation of public employees. The issue has received particular attention because of the severe budgetary constraints facing governments at all levels.

There is a notion that remuneration of employees in the public sector is higher than those of the private sector and thus encourages the crowding out of private sector employment. The purpose of this study is not to compare the salary income of a public sector employee versus a private sector employee. It is acknowledge that many attributes determine the salary of an employee such as demand and supply of specific professions in the labour market, as well as skills and education. This paper however does not attempt to compare the occupational individual income and distribution of public and private sector employees.

Bowerunge and Rosen (2012) also noted a reason why public-private sector comparisons are problematic is that compensation consists of more than just wages and salaries. Pension benefits comprise an important part of compensation, so that comparisons of just wages and salaries may be misleading. Fletcher and Somashekhar [2011] note that, "as a group public employees, generally earn less than comparably educated private-sector employees, but they tend to enjoy far better health-care and retirement benefits".

In this paper the SARS personal income tax micro simulation model is used to compare the distribution of public and private sector employees, taxable income and tax liability. Further public and private sector analysis include the distribution of female and male employees, the age

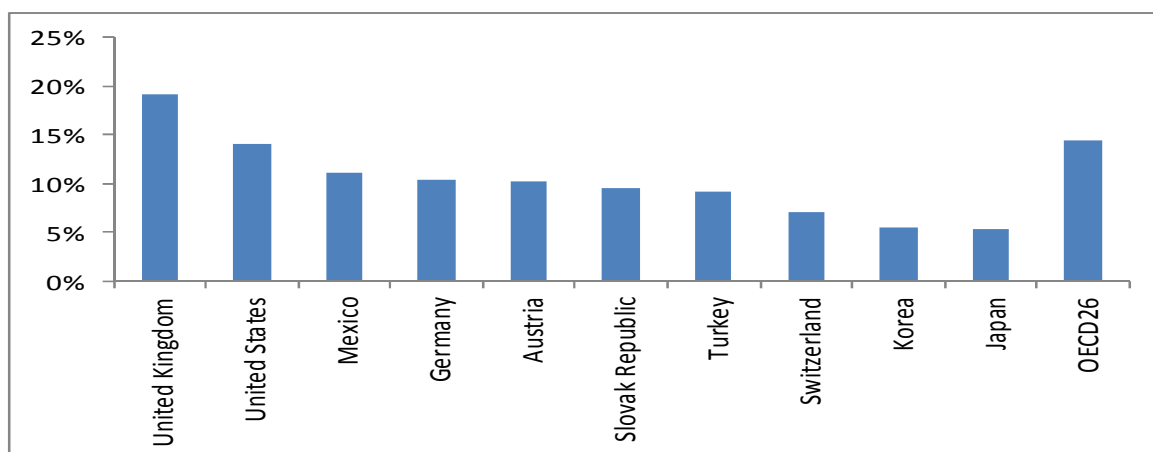
distribution across income groups and the importance of salary benefits in terms of the main allowances, namely pension contributions, medical expenses and business motor travel costs. Although there are differences in the various distributional aspects of public versus private sector employment, there are also similarities that explain the labour force dynamics in South Africa. The known unequal distribution of income in South Africa is confirmed by the distributional analysis of the available administrative tax return data.

The layout of the rest of the paper is as follows: Section 2 summarises an international analysis of the public versus private sector labour market in OECD countries to serve as a comparison of the South African labour market. Section 3 analyses the distribution of employees in South Africa in terms of number of employees, taxable income and tax liability which is followed by a comparative analysis of the public and private sector in all the available dimensions of the SARS personal income tax micro simulation model. Section 4 compares the salary benefits of public versus private sector employees in terms of pension contributions, medical expenses and business motor travel costs. Section 5 concludes the analysis. Annexure A contains summary tables that are discussed in the paper, namely the GINI coefficients and the percentage difference in public sector remuneration versus the private sector, as well as a summary of the annual changes since 2005 in public sector employment and remuneration as defined and published by the SARB Quarterly Bulletin.

## 2. International comparison of the public versus private sector labour market

Graph 1 illustrates for OECD countries employment in general government as a percentage of the labour force. On average the proportion of the labour force employed in government is 14.4% with the highest ratio of 19.1% in the United Kingdom and the lowest ratio of 5.3% in Japan (OECD,2009a).

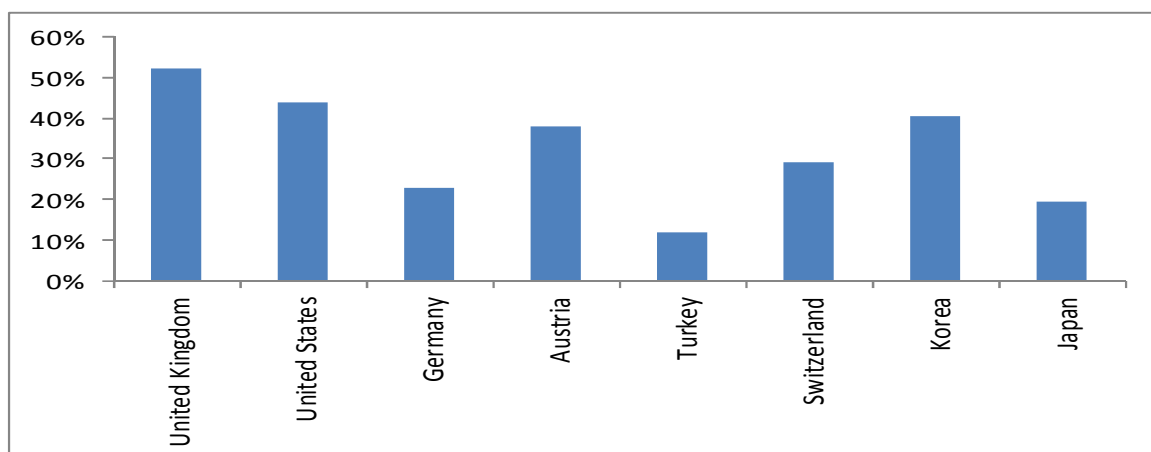
*Graph 1: Employment in general government as a percentage of the labour force*



Source: OECD (2009a)

Female employment in general government is shown in Graph 2 (OECD,2009b). In the United Kingdom, United States, Austria and Korea, females represent close to more than 40% of the labour force. In Turkey females are underrepresented in general government at 11.9%.

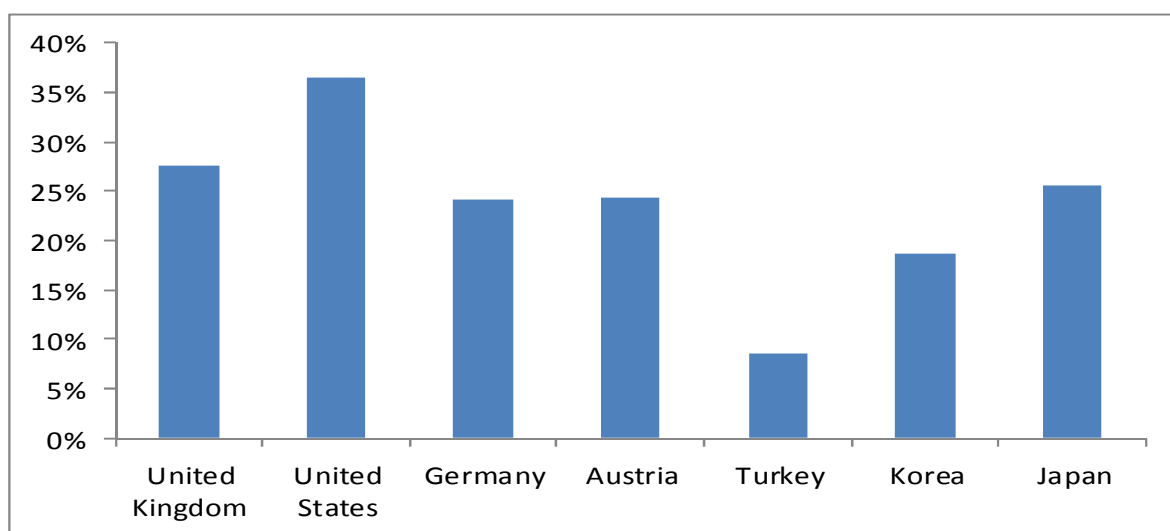
*Graph2: Female employment in general government as a percentage of the labour force*



Source: OECD (2009b)

Graph 3 indicates individuals older than 50 years employed in government (OECD, 2009c). In the United Kingdom, United States and Japan the ageing government employees are more than 25%. This raises a concern of a high number of employees retiring at the same time and to maintain the same quality of services in the government sector.

*Graph 3: Employment in general government of individuals older than 50 years as a percentage of the labour force*



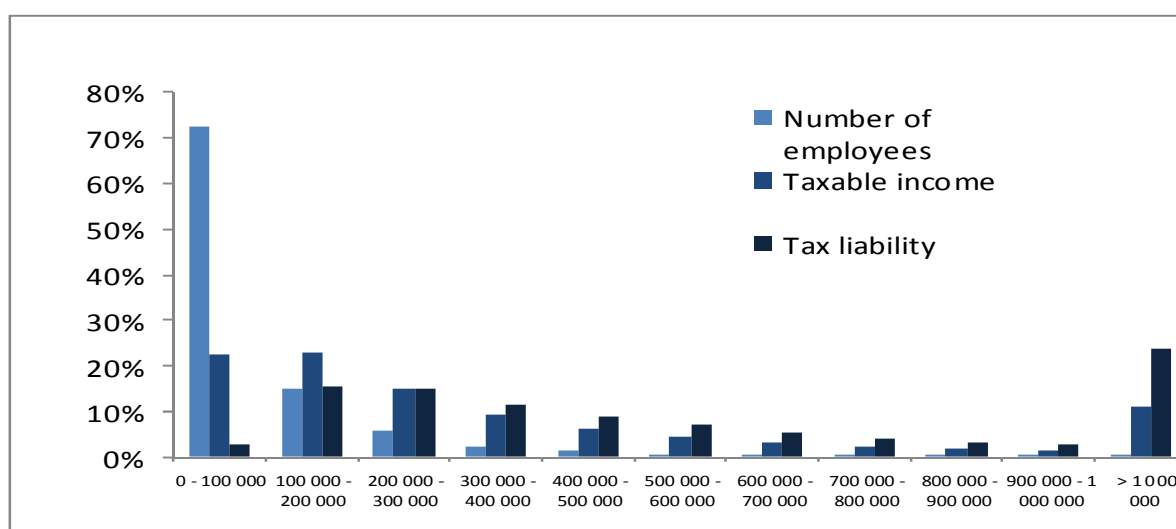
Source: OECD (2009c)

### 3. The public versus private labour market in South Africa

#### 3.1 Number of employees, distribution of taxable income and tax liability

Graph 4 below indicates the number of employees, the distribution of taxable income and tax liability in the 2010/11 tax year, the most representative tax year. There is a highly skew distribution of employees, taxable income and tax paid. The percentage of employees with taxable income less than R100 000 per annum totalled close to 73% of all employees in 2010/11. Their taxable income is about 23% of the total with a tax liability share of close to 3%. Employees in the top income group with taxable income above R1 million represents only 0.5% of total employees, but their taxable income share is 11% with a tax liability share of 24%. The ratio of average taxable income for employees in the top income group to the average taxable income for employees in the first income group is 66:1. The tax liability ratio is 25:1. There are 134 employees in the first income group for every 1 employee in the top income group.

*Graph 4: Distribution of employees*



Source: SARS PITSIM 2010/11

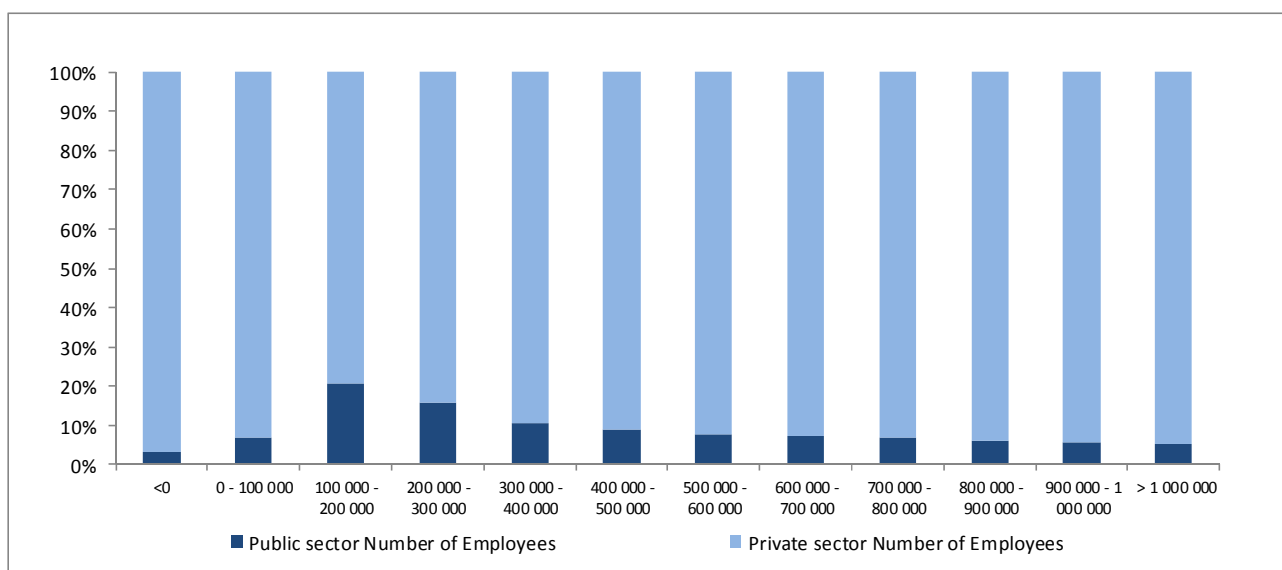
#### 3.2 Public and private sector employees, taxable income and tax liability

The public sector is defined to include employees from Public Administration, Educational Services as well as the Social and related Community Services sectors as per the employment salary sector codes as specified in the individual income tax returns. The public sector as defined in this paper therefore covers employees in the general government. The default main source code and the code other not specified are not material for the public sector classification and are grouped together with the information for the private sector. Commercial public corporations are classified as being part of the private sector. The private sector data includes individual employees with business income.

Approximately 1.4 million public service employees are accounted for in this analysis. That represents about 10% of total employees earning 12% of the taxable income that are liable for 11% of personal income tax. The private sector thus remains an important source of employment in South Africa.

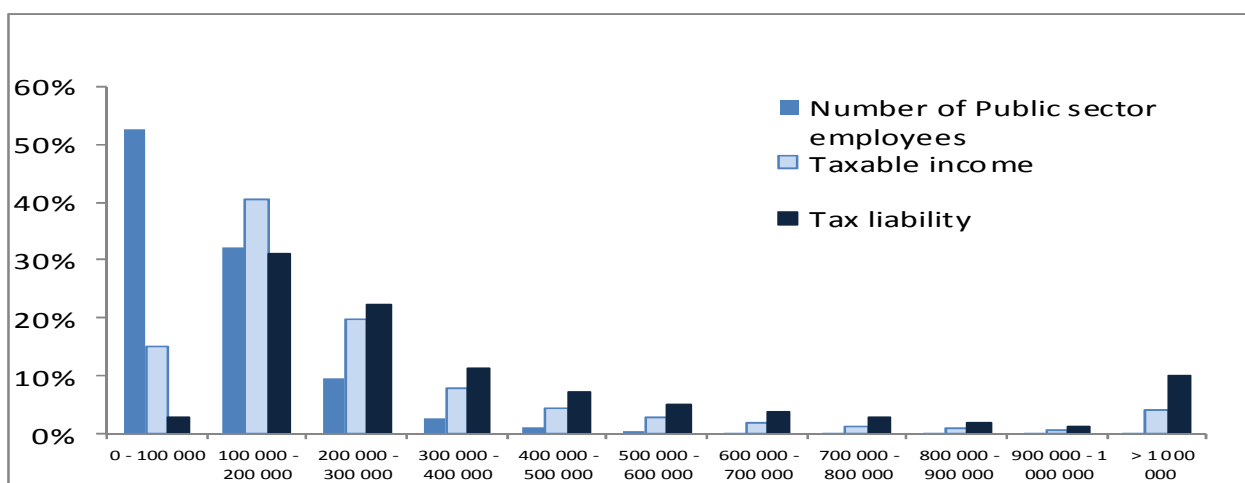
The distribution of public sector employees versus private sector employees is plotted in Graph 5 below. The concentration of public service employees is the highest in the R100 000 to R200 000 taxable income group. Close to 21% of employees in this income group are in the public sector as opposed to only 5% in the top income group. Higher income employees in the private sector constitute thus a relatively higher proportion of total employees.

*Graph 5: Distribution of public versus private sector employees*



Source: SARS PITSIM 2010/11

*Graph 6: Distribution of public service employees, taxable income and tax liability*



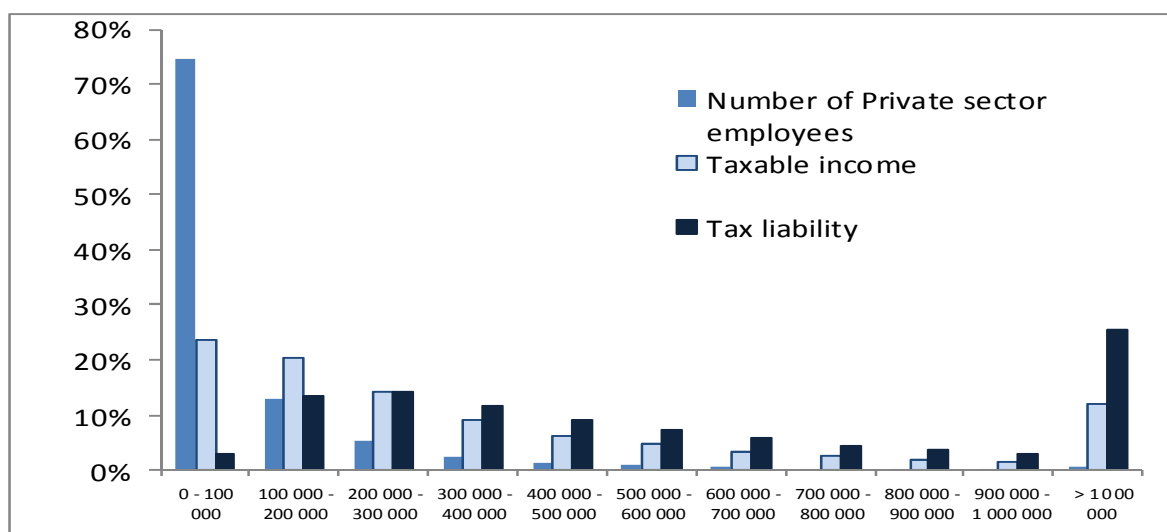
Source: SARS PITSIM 2010/11

The distributional analysis of the public service in Graph 6 shows the concentration of public service employees with close to 85% earning below the R200 000 taxable income level. They earn 55% of

the taxable income and contribute close to a third to the total public sector personal income tax liability. Refer to Graph 6 above.

In contrast employees in the private sector are more concentrated with 88% earning less than the R200 000 taxable income level and are also more skew in income with those employees earning only 44% of the taxable income and paying only 16% of the total private sector tax. This is due to the fact that close to 75% of private sector employees earn less than R100 000 taxable income as opposed to only about 52% public service employees. Refer to Graph 7 below.

*Graph 7: Distribution of private sector employees, taxable income and tax liability*



Source: SARS PITSIM 2010/11

Public sector wages are in total on average 27% higher than the private sector while tax liability is on also higher on average at 11%. This is mainly due to a more equal distribution of income. The GINI coefficient, a measurement of equality with 0 being total equal and 1 total unequal, is measured at 0.48 for employees in the public sector which is more equal compared to 0.59 for employees in the private sector. The progressiveness of tax liability in the public sector at 0.78 is also less than the private sector which is at 0.86 due to the more equal distribution of income. Refer to Table 3 in Annexure A.

### 3.2.1 Female and male employees in the public and private sectors

The concentration of employees and the highly skew distribution of income are also evident in the distribution of female and male employees in the public sector as well as the private sector. Table 1 below indicates the number of employees by income group as a percentage of total employees for the public as well as the private sector.

*Table 1: Distribution of female and male employees in the public and private sectors*

Female taxpayers		Public sector			Private sector		
2010/11	Number of taxpayers	Taxable income	Tax liability	Number of taxpayers	Taxable income	Tax liability	
0 - 100 000	52.5%	16.4%	3.5%	76.8%	29.3%	4.7%	
100 000 - 200 000	34.5%	47.4%	41.1%	14.1%	27.3%	22.7%	
200 000 - 300 000	9.4%	20.8%	26.2%	5.2%	17.0%	21.1%	
300 000 - 400 000	2.1%	6.6%	10.5%	1.8%	8.6%	13.4%	
400 000 - 500 000	0.7%	3.0%	5.6%	0.8%	4.8%	8.6%	
500 000 - 600 000	0.4%	1.9%	3.8%	0.5%	3.4%	6.7%	
600 000 - 700 000	0.2%	1.2%	2.5%	0.3%	2.2%	4.7%	
700 000 - 800 000	0.1%	0.7%	1.6%	0.2%	1.5%	3.4%	
800 000 - 900 000	0.1%	0.4%	1.0%	0.1%	1.0%	2.4%	
900 000 - 1 000 000	0.0%	0.3%	0.7%	0.1%	0.8%	1.8%	
> 1 000 000	0.1%	1.3%	3.5%	0.2%	4.1%	10.6%	
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	
Male taxpayers		Public sector			Private sector		
2010/11	Number of taxpayers	Taxable income	Tax liability	Number of taxpayers	Taxable income	Tax liability	
0 - 100 000	73.9%	20.4%	2.2%	52.4%	14.1%	2.3%	
100 000 - 200 000	12.3%	16.7%	9.8%	30.3%	35.3%	25.0%	
200 000 - 300 000	5.6%	12.9%	11.4%	9.9%	19.0%	19.7%	
300 000 - 400 000	3.0%	9.6%	10.7%	3.3%	9.1%	11.9%	
400 000 - 500 000	1.7%	7.1%	9.1%	1.6%	5.6%	8.3%	
500 000 - 600 000	1.0%	5.3%	7.5%	0.8%	3.7%	6.0%	
600 000 - 700 000	0.7%	4.0%	6.0%	0.5%	2.6%	4.6%	
700 000 - 800 000	0.4%	3.1%	4.8%	0.3%	1.9%	3.4%	
800 000 - 900 000	0.3%	2.4%	4.0%	0.2%	1.3%	2.5%	
900 000 - 1 000 000	0.2%	1.9%	3.2%	0.1%	0.9%	1.9%	
> 1 000 000	0.9%	16.6%	31.2%	0.5%	6.6%	14.4%	
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	

Source: SARS PITSIM 2010/11

The highest concentration of female public sector employees is in the R100 000 to R200 000 income group as opposed to the female private sector employees being concentrated in the less than R100 000 income group. Lower income public sector female employees are thus less concentrated than in the private sector and thus earn on average relatively more.

Close to 86% of public sector female employees earns less than the R200 000 taxable income level in 2010/11 as opposed to more than 90% for the private sector. These public sector female employees earn about 64% of the total public sector female remuneration as opposed to only 56% for the private sector.

In total, female public sector employees earn on average 44% more than female private sector employees and their tax liability is also 40% higher. The GINI coefficient of taxable income for female employees in the public sector is 0.43 which is more equal than the 0.52 for female employees in the private sector.

By contrast the opposites hold for public and private sector male employees with the highest concentration of public sector male employees earning less than the R100 000 taxable income level, close to 73%. Lower income private sector male employees are less concentrated and thus earn relatively more than males in the public sector.



Male public service employees earn on average 16% less than male employees in the private sector but only pay 1% less tax due to the fact that private sector male employees are relatively less concentrated in the low income groups. The GINI coefficient of taxable income for male employees in the public sector is 0.62 which is more unequal than the 0.5 for male employees in the private sector.

### 3.2.2 Age distribution of employees in the public and private sectors

The age distribution of employees is more similar for the public and private sectors. Close to 30% of employees are in the 25 to 35 year age group with close to 15% in the 55 to 65 age group. South Africa has a relatively more equal age distribution of the workforce that is also younger than other more developed countries. See Table 2 below for a distribution of employees by age.

There are relatively large differences in the average public sector wage and tax liability versus the private sector across the age distribution, but taxable income is on average higher in the public sector than in the private sector. The GINI coefficients or distribution of employees and taxable income explain these differences. The GINI coefficient by age for employees in the public sector is on average more equal across the age categories than the employees in the private sector except for the 18 to 25 years age group where the private sector GINI coefficient is more equal.

*Table 2: Age distribution of public and private sector employees*

Age distribution	Public sector			Private sector		
	Number of taxpayers	Taxable income	Tax liability	Number of taxpayers	Taxable income	Tax liability
18-25 years	6%	2%	1%	8%	2%	1%
25-35 years	30%	24%	21%	31%	22%	16%
35-45 years	28%	32%	33%	26%	31%	33%
45-55 years	22%	27%	29%	20%	28%	31%
55-65 years	14%	15%	16%	15%	17%	19%

Source: SARS PITSIM 2010/11

## 4. Salary benefits for public and private sector employees

The main deductions allowed for employees in 2010/11 were pension contributions, medical expense deductions and business motor vehicle expenses. These deductions were made against allowances in the salary packages of employees.

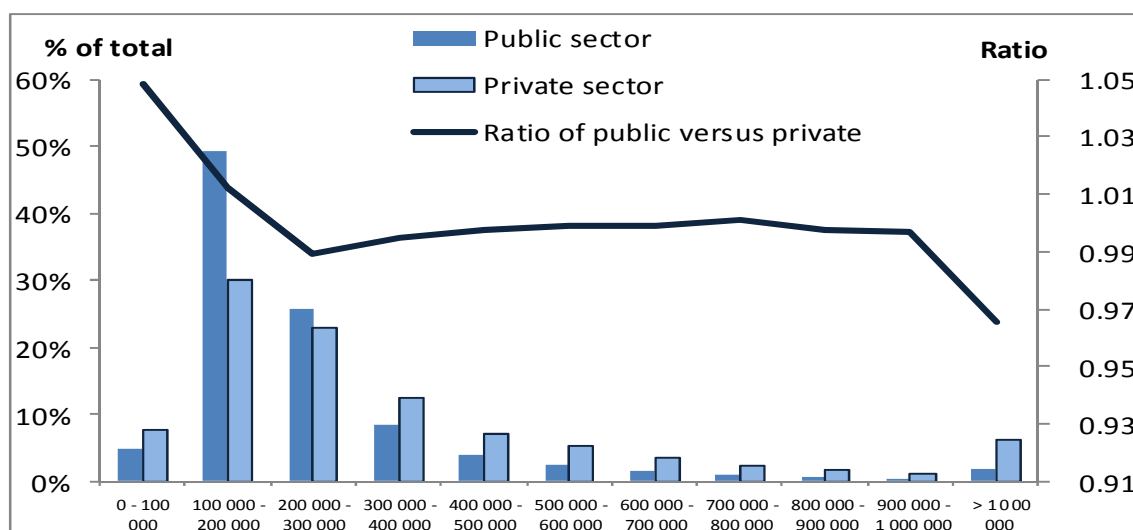
#### 4.1 Pension contributions by public and private sector employees

Total pension contributions by public sector employees with taxable income less than R300 000 exceed those of private sector employees while the opposite is the case for public sector employees with taxable income above R300 000. The concentration of pension contributions for taxable income levels less than R300 000 is due to the concentration of the number of taxpayers in these income groups. The share of pension allowances in the lower income groups is thus more concentrated and low income public sector employees have higher pension contributions versus private sector employees.

The ratio of average public sector pension contributions versus average private sector contributions by income group indicates the importance of pension allowances in the public sector relative to the private sector. This average ratio for all personal income taxpayers is 0.91. This means that on average public sector employees contributions are slightly less than those of private sector employees. This ratio is as high as 1.05 for employees earning less than R100 000 indicating the higher importance of pension contributions in the public sector versus the private sector for this income group. The ratio is close to 1 for the remaining income groups except for employees earning above R1 million taxable income level per annum where this ratio at 0.97 is less than 1 which indicates the higher pension contributions by high income private sector employees. Refer to Graph 8 below.

Pension contributions are on average 9% less than the average for the private sector. The GINI coefficient for pension contributions by employees in the public sector is more equal at 0.21 compared to 0.31 for private sector employees.

*Graph 8: Distribution of pension contributions in the public and private sectors*



Source: SARS PITSIM 2010/11

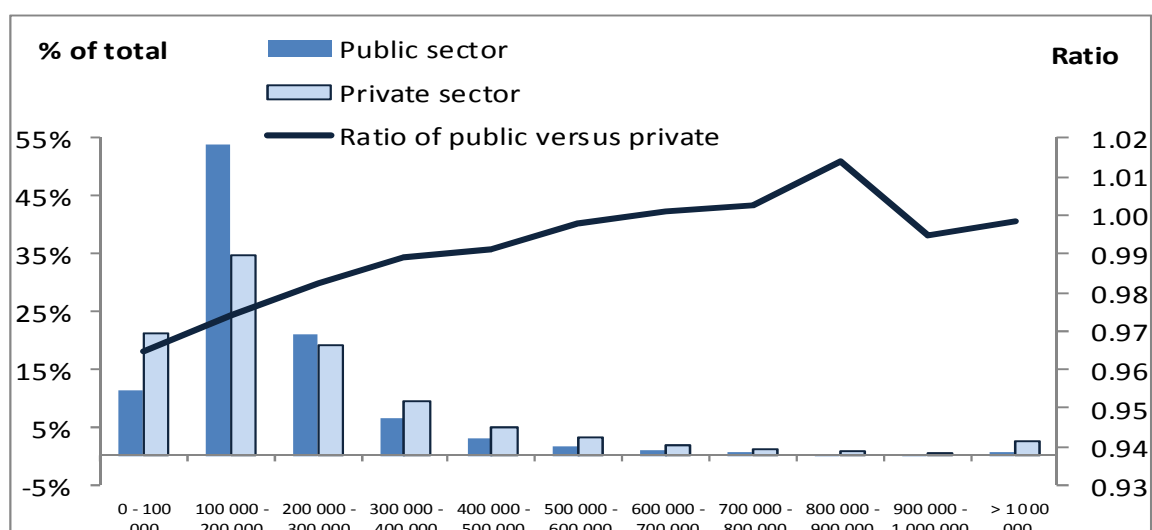
## 4.2 Medical aid contributions and medical expenses by public and private sector employees

Total medical contributions and expenses claimed by public sector employees with taxable income less than R300 000 exceed those of private sector employees while the opposite is the case for public sector employees earning above R300 000 per annum. The concentration share of medical expenses claimed by taxpayers with taxable income less than R300 000 is due to the concentration of the number of employees in these income groups. Medical allowances in the lower income groups are more concentrated and thus more important in the public sector versus the private sector.

Public sector employees are on average less covered for medical expenses given the average ratio of medical aid contributions and other medical expenses to those employed in the private sector. The average ratio of public sector medical deductions to private sector medical deductions is 0.98. The ratio of medical expenses claimed by public sector employees in the less than R100 000 taxable income group versus employees in the private sector is only 0.96. This ratio is higher than 1, only for the R800 000 to R900 000 income group. Refer to Graph 9 below.

On average medical expenses are in the public sector 2% less than in the private sector. The GINI coefficient for medical deductions is slightly more equal for employees in the public sector at 0.03 compared to 0.04 for employees in the private sector. This almost equal distribution of medical deductions is the outcome of tax policy whereby medical aid contributions are capped and other medical expenses is only allowed as a deduction for expenses above 7.5% of taxable income.

*Graph 9: Distribution of medical expenses claimed in the public and private sectors*



Source: SARS PITSIM 2010/11

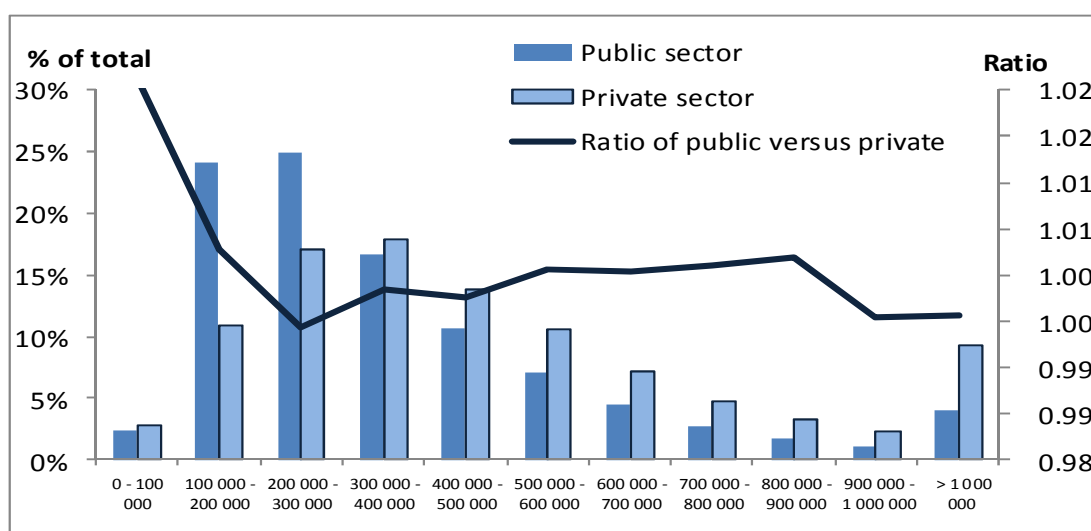
### 4.3 Business motor travel deductions against allowances by the public and private sector employees

The distribution of business motor travel costs claimed by the public and private sectors are relatively less concentrated than pension contributions and medical expenses claimed. Public sector employees earning less than the R300 000 taxable income level have a higher concentration of claims relative to the private sector. Public sector employees earning above the R300 000 taxable income level claim relatively less business travel costs than private sector employees. Motor vehicles allowances are on average relatively more important for middle income private sector employees than for public sector employees.

The ratio of public sector employees to private sector employees for business motor vehicle travel cost is on average 0.92. This ratio is close to 1 across income groups except for the first income group with taxable income less than R100 000 with a ratio of 1.02 indicating higher average claims by public sector employees relative to private sector employees. Refer to Graph 10 below.

The average business motor travel deductions are 8% less in the public sector than in the private sector. The GINI for business motor travel deductions are the same for employees in the public and private sectors at 0.11 which is a relatively equal distribution. This outcome is the result of the changes to the deduction business motor travel costs from the deemed method to actual business kilometres travelled.

*Graph 10: Distribution of business motor travel costs claimed in the public and private sectors*

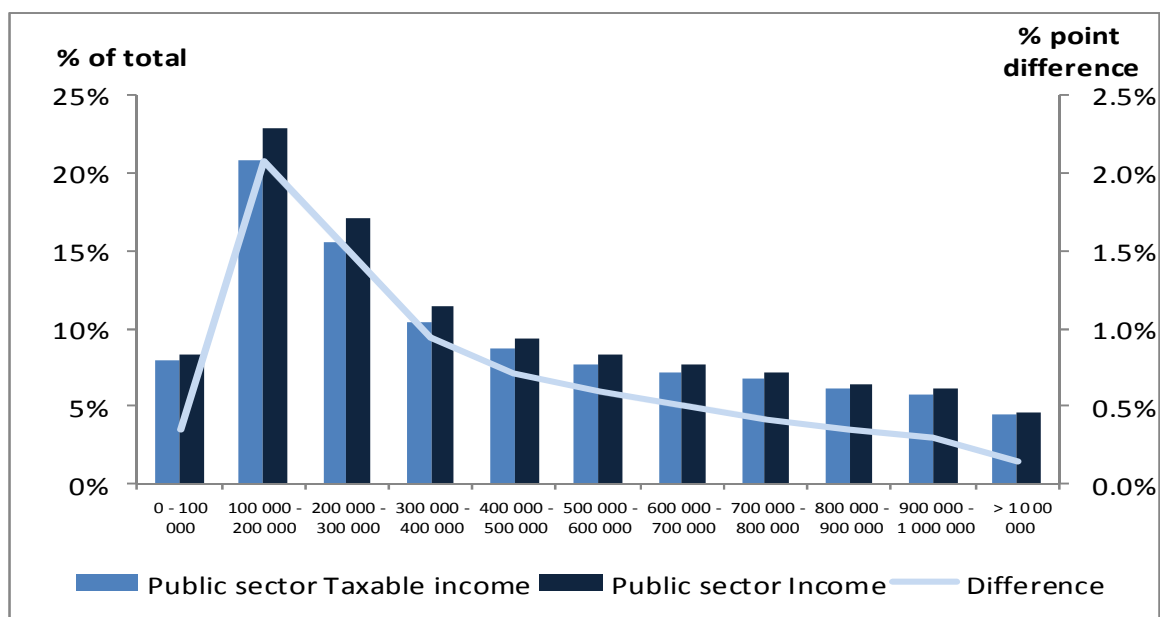


Source: SARS PITSIM 2010/11

A salary package consisting of pension, medical and motor travel allowances are more concentrated in the public sector for lower income employees versus the private sector. The percentage

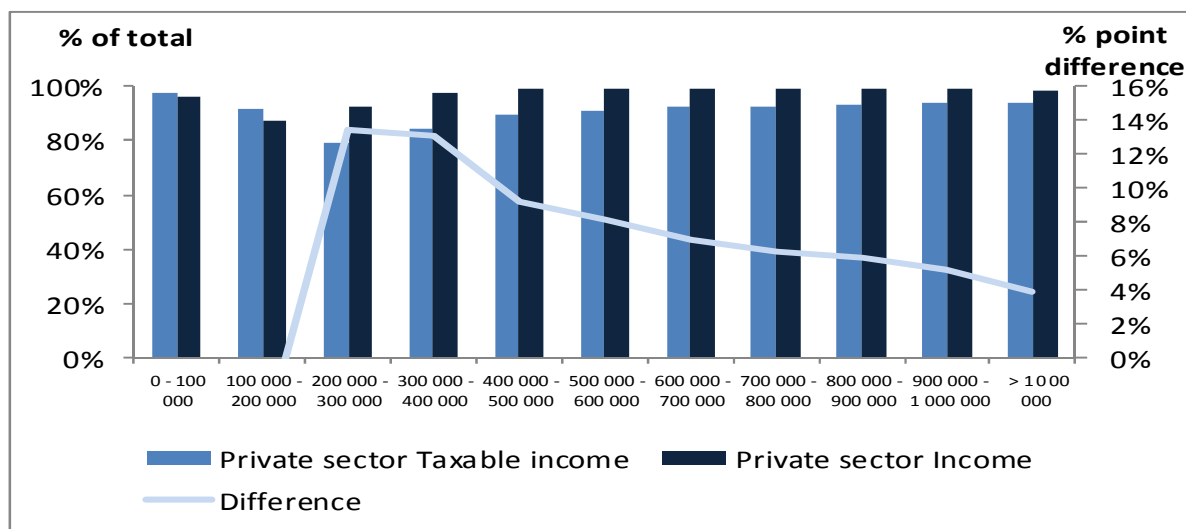
difference between the share of taxable income of public sector employees and the share of income that includes deductions against pension, medical and travel allowances of 2.1 percentage points is the highest for employees in the R100 000 to R200 000 income group. The higher the taxable income level the lower the percentage point differences mainly due to the limits in deductions for medical expenses and the reform in the business motor travel deductions. Refer to Graph 11 below.

*Graph 11: Distribution of public sector salary benefits in terms of taxable income and income that includes pension contributions, medical deductions and claims for business motor travel costs*



Source: SARS PITSIM 2010/11

*Graph 12: Distribution of private sector salary benefits in terms of taxable income and income that includes pension contributions, medical deductions and claims for business motor travel costs*



Source: SARS PITSIM 2010/11

The difference between taxable income and income that includes the deductions against allowances for pension contributions, medical expenses and business motor travel costs, is relatively more equally spread across income groups in the private sector. Due to a relatively higher share of deductions claimed by the R200 000 to R400 000 income groups, a decline in the share of income relative to taxable income is recorded in the taxable income groups below R200 000. Refer to Graph 12 above.

These allowances explain to a greater extent the differences in taxable income concentration of public sector employees versus the private sector. Public sector employees with a taxable income of less than R100 000 earn on average 16% more than a private sector employee. On the other hand, high income public sector employees with taxable income above R1 million earn on average 11% less than their counterpart in the private sector.

The progressivity ratio expressed as the change in income of public service sector employees in the above R1 million income group relative to the previous highest income group versus the change in employees is equal to 1.77. This ratio for private sector employees is equal to 1.99. This higher progressive ratio is indicative of the higher unequal distribution of income for high income private sector employees relative to high income public sector employees.

## 5. Conclusion

The analysis of public versus private sector employment and remuneration based on taxpayer return data adds a different perspective and enable more in depth analysis of various dimensions of the labour market which is not readily available from current survey data.

The unequal distribution of employees and taxable income are evidenced in both the public and private sectors. The public sector account for 10% of the employees but the concentration of public sector employees, namely 21% of total employees, is in the R100 000 to R200 000 taxable income group as opposed to 5% in the above R1 million income group. Public sector employees in the OECD account on average for 14% of total employment and are comparable to the percentage for South Africa.

Private sector employees are more concentrated in the low income group with 75% earning less than R100 000 taxable income per annum versus 52% for the public sector. This higher concentration in the private sector is due to the higher concentration of private sector female employees in the low income group. Male taxpayers in the low income group are more concentrated in the public sector. In the OECD public sector female employees differ with an upper range of close to 50% in the United Kingdom. In South Africa this percentage is close to 45%. The age distribution of taxpayers is more similar for the public and private sector employees. In the OECD, employees above 50 years constitute about 25% of total employees while in South Africa employees above 55 years constitute 14% of the total.

The salary benefits against which tax deductions are claimed were analysed in terms of pension contributions, medical aid expenses and business motor travel cost. As expected the distribution concentration is towards low income groups due to the concentration of the number of employees

in these income groups. However, the ratio of these deductions claimed by the public sector versus the private sector differs across the income groups. Pension contributions in the low income group are higher for employees in the public sector than for employees in the private sector. On the other hand pension contributions by high income earners in the private sector are relatively higher. Public sector employees are on average less covered for medical expenses especially for low income earners. Business motor travel expenses are relatively more equal spread across income groups except for low income public sector employees claiming noticeably more than employees in the private sector.

A salary package consisting of pension, medical and motor travel allowances are more concentrated for lower income employees in the public sector versus the private sector, especially for the R100 000 to R200 000 income group. The private sector concentration of allowances is in the R200 000 to R400 000 middle income group.

The analysis shows that a public sector employee with a taxable income less than R100 000 earns on average 16% more than a private sector employee. On the other hand, high income public sector employees with taxable income above R1 million earn on average 11% less than their counterpart in the private sector.

Income tends to be more equally distributed in the public sector versus the private sector, except for male employees in the public sector. The result is that the average income and tax paid in the public sector is higher than in the private sector. This outcome is supported by the fact that the average salary benefits and deductions are lower in the public sector than the private sector.

The final conclusion is that although there are differences in the remuneration of public and private sector employees the magnitude of these differences are relatively small and there are many similarities that explain the workforce supply and demand dynamics in South Africa.

## Annexure A

*Table 3: GINI coefficients, percentage differences of the public versus private sector - 2010/11 tax year*

		Gini		Public sector vs Private sector
		Public Sector	Private sector	Average
<b>Total</b>	<b>Taxable income</b>	0.48	0.59	27%
	<b>Tax liability</b>	0.78	0.86	11%
<b>Female</b>	<b>Taxable income</b>	0.43	0.52	44%
	<b>Tax liability</b>	0.65	0.83	40%
<b>Male</b>	<b>Taxable income</b>	0.62	0.50	-16%
	<b>Tax liability</b>	0.87	0.73	-1%
<b>Age: 18-25</b>	<b>Taxable income</b>	0.36	0.21	49%
	<b>Tax liability</b>	0.77	0.75	129%
<b>Age: 25-35</b>	<b>Taxable income</b>	0.44	0.49	43%
	<b>Tax liability</b>	0.67	0.83	43%
<b>Age: 35-45</b>	<b>Taxable income</b>	0.44	0.59	18%
	<b>Tax liability</b>	0.66	0.84	0%
<b>Age: 45-55</b>	<b>Taxable income</b>	0.44	0.60	10%
	<b>Tax liability</b>	0.65	0.83	-9%
<b>Age: 55-65</b>	<b>Taxable income</b>	0.50	0.62	17%
	<b>Tax liability</b>	0.73	0.88	-3%
<b>4008 Medical expenses</b>	<b>Taxable income</b>	0.03	0.04	-2%
<b>4001 Pension</b>	<b>Taxable income</b>	0.21	0.31	-9%
<b>4014 Travel</b>	<b>Taxable income</b>	0.11	0.11	-8%

Source: SARS PITSIM 2010/11



*Table 4: Employment in the non-agricultural sectors (Index)*

	Public Sector	% Change	Private Sector	% Change
2005	103.40		176.70	
2006	107.90	4.35%	200.10	13.24%
2007	112.60	4.36%	211.00	5.45%
2008	118.10	4.88%	213.20	1.04%
2009	121.90	3.22%	203.30	-4.64%
2010	124.90	2.46%	200.10	-1.57%
2011	130.90	4.80%	202.90	1.40%
2012	132.90	1.53%	204.80	0.94%

Source: South African Reserve Bank

*Table 5: Labour costs in the non-agricultural sectors (Index)*

	Public Sector	% Change	Private Sector	% Change
2005	154.60		143.50	
2006	164.20	6.21%	163.70	14.08%
2007	175.50	6.88%	177.40	8.37%
2008	198.30	12.99%	199.50	12.46%
2009	220.60	11.25%	221.90	11.23%
2010	250.50	13.55%	251.00	13.11%
2011	267.20	6.67%	268.80	7.09%
2012	288.40	7.93%	288.70	7.40%

Source: South African Reserve Bank

## References

Bewerunge , P & Neuss Associates. 2012. Wages, Pensions, and Public-Private Sector Compensation Differentials. Griswold Center for Economic Policy Studies. Working Paper No. 227 Harvey S. Rosen, Princeton University.

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

Freeman, R.B. 1987. How Do Public Sector Wages and Employment Respond to Economic Conditions? In *Public sector payrolls* (pp. 183 - 216). University of Chicago Press. Online available: <http://www.nber.org/chapters/c7154>.

Munnell, A, Aubry, J., Hurwitz, J. & Quinby, L. 2011. Comparing Compensation: State Local versus Private Sector Workers. Centre for Retirement Research, Boston College.

OECD. 2009a. Employment in general government and public corporations. Government at a Glance 2009, OECD. Online available: <http://dx.doi.org/10.1787/9789264061651-13-en> .

OECD. 2009b. Employment of women in central government. Government at a Glance 2009, OECD. Online available: <http://dx.doi.org/10.1787/9789264061651-15-en>.

OECD. 2009c. Ageing workforce. Government at a Glance 2009, OECD. Online available: <http://dx.doi.org/10.1787/9789264061651-16-en>.

South African Revenue Service. 2011. Personal Income Tax Micro-Simulation Model.

Wise, D. 1987. Public Sector Payrolls. University of Chicago Press. Online available: <http://www.nber.org/books/wise87-1>.

World Development Report. 2013.