# STRUCTURAL CHANGE AND PATTERNS OF INEQUALITY IN THE SOUTH AFRICAN LABOUR MARKET

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**Abstract:**
In the post-apartheid era South Africa has found itself in a long run growth trap with growth in Agriculture and Manufacturing notably absent from the economy, resulting in an inability of the economy to absorb excess labour supply. To understand the role that structural change has had on inequality in the labour market this paper provides an overview of key labour market trends in the post-apartheid era followed by an analysis of labour demand trends, and structural transformation. The impact of structural transformation on wage shifts and wage inequality is investigated pointing to the existence of a "missing middle" in the real-earnings distribution of those employed. Post-apartheid wage inequality is explained using a participation, employment and quantile regression framework, showing that wage inequality has increased over time. The role of unions, the impact of the New Minimum Wage, and the influence of legislative changes such as the regulatory amendment accounting for workers in Temporary Employment Services, and the employment tax incentive is evaluated. We show that in the two decades following the end of apartheid South Africa's growth path has been characterised by a rapid relative expansion in the services (or tertiary) sector resulting in the marginalization of workers in the middle of the skills and wage distribution. Ultimately, inequality in South Africa has been replicated through a reversion to a skills biased employment trajectory. With policies in place to protect the bottom end worker, a hollowing out of workers in the middle of the wage distribution has arisen. This "missing middle" is a key new manifestation of the persistent and high inequality in the South African labour market.

**Keywords:** Structural change, inequality, labour markets, missing-middle, wage distribution, south Africa, labour market

**JEL codes:** J21, J3, J6, N17, N37, O1, O14,O17



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# 1 Introduction

Whilst South Africa is formally classified as a middle income country, real GDP growth rates have lent themselves to the analytical conclusion that the country remains mired in a long-run low growth trap (Bhorat, Cassim & Hirsch, 2014). The data shows that between 1994 and 2007, South Africa grew at an average rate of 3.6 percent per annum. Much of this economic growth was driven by the commodity price boom over the last few decades – fueled of course by strong resource demand from China. However, contagion effects arising out of the global financial crisis, resulted in a significant contraction in output levels. Hence, over the period 2008 to 2014, GDP grew at a mere 1.9 percent per annum (Bhorat, et al., 2014). While the economy remains vulnerable to external shocks, and is driven largely by international demand, growth over the last decade is disproportionately attributable to the expansion in capital-intensive industries, retail trade, and financial services. Manufacturing output growth – so often the life-blood of emerging market economies – declined in South Africa from 3.1 percent between 1994 and 2007, to 0.5 percent between 2007 and 2014 (Bhorat, et al., 2014). High levels of growth in labour-intensive industries such as Agriculture and Manufacturing are thus notably absent in the South African context. In fact, sectoral output trends – which we elucidate on in greater detail below – show that the services sector has grown rapidly in the post-*apartheid* era, while manufacturing has stagnated, and agriculture has contracted. As a consequence, South Africa has become a services-dominant economy, which in turn has inextricably impacted on the nature and levels of labour demand in the economy.

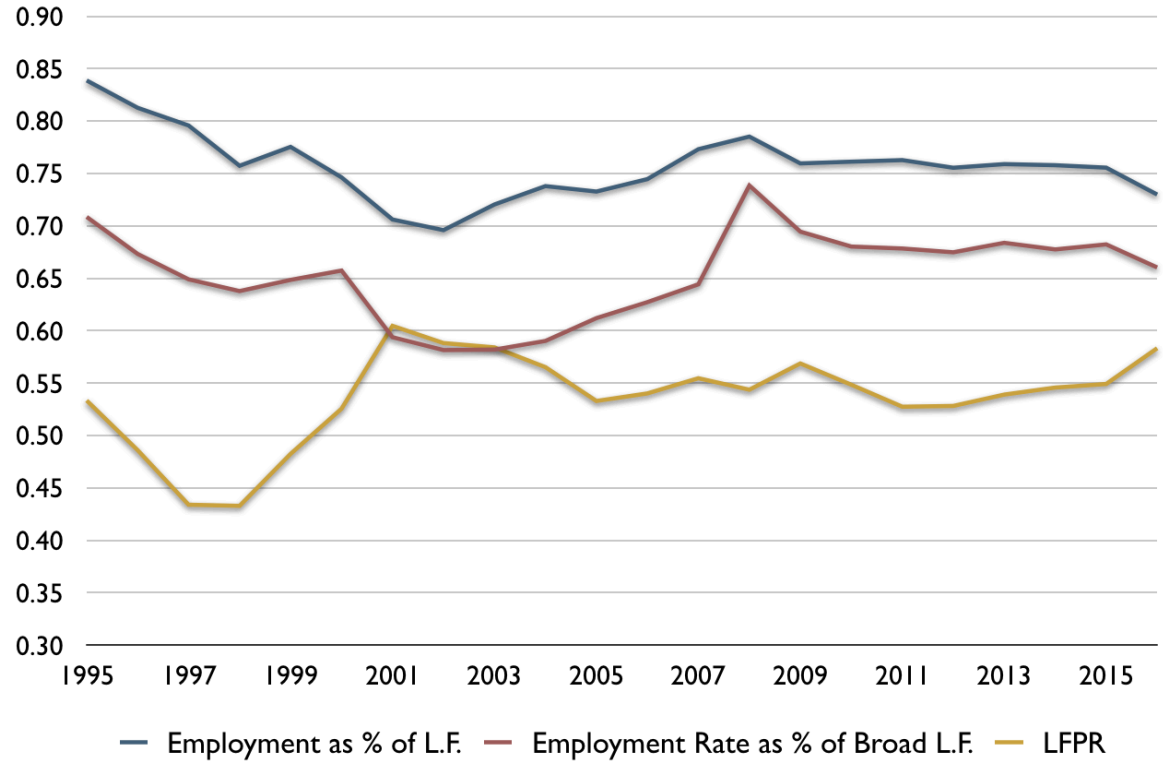
Given this particular pattern of sectoral growth exhibited in the South African economy, this paper examines in greater detail, the impact that structural change and sectoral labour demand have had on the profile of the South African labour force: specifically participation, employment, and unemployment levels. Once individuals are employed, wage levels of course also play a key role in replicating the patterns of inequality prevalent in the labour market. Hence, we explore in detail, the specific patterns of wage inequality arising out of the economy's growth and labour demand trajectory. We conclude with an analysis of the role of policy – including minimum wages, tax incentives, and labour regulatory changes changes – in contributing to the observed patterns of employment and wages in the economy.

# 2 Structural Transformation and Employment Outcomes

## 2.1 Key Labour Market Trends in Post-*Apartheid* South Africa

The South African labour force is characterised by high levels of unemployment, low participation, and a large number of discouraged (or survey defined non-searching) unemployed. As Figure I indicates, there has been a consistent inability of the economy to generate a sufficient quantum of jobs for the unemployed. This is within the context of a fairly steady labour force participation rate (LFPR) since about 2001.

**Figure 1: The LFPR and Employment Rate in South Africa, 1995-2016.**




Source: Post-*Apartheid* Labour Market Series (1995-2016), Authors' calculations.

What is interesting to note however, is the possible effect of the onset of political democracy on labour force participation rates in South Africa. An early post-*apartheid* dividend of sorts is observed then, as labour force participation rates increased sharply from 54.7 percent in 1995, to over 60 percent in 2001. In the new post-*apartheid* labour market, African workers were free to move around the country, and in particular, move to urban areas in search of employment. This pent-up labour supply then finds expression in a significant increase in LFPRs in the initial years after *apartheid* ended.

The economy though, despite this growth in participation rates, continues to struggle to generate a sufficient number of jobs. Indeed, as

Table 1 illustrates, employment as a share of the labour force has decreased since 1995 by 8 percentage points, to 76 percent in 2015. The national unemployment rate, according to the strict definition[1], has therefore increased by 8 percentage points (to 24 percent) over the same period. When including the non-searching unemployed, the share of the labour force employed drops to 68 percent in 2015, with the unemployment rate estimated at 32 percent.

[1] Strict unemployment is defined as unemployed, willing to work, and having actively searched for a job in the last four weeks.

**Table 1: Employment and Unemployment Rates, 1995-2015.**

| Category | 1995 | 2000 | 2015 |
|---|---|---|---|
| Employment as % of labour force | 84 | 75 | 76 |
| Strict unemployment (%) | 16 | 25 | 24 |
| **Strict labour force** | **100** | **100** | **100** |
| Expanded employment as % of labour force | 71 | 66 | 68 |
| Expanded unemployment[2] (%) | 29 | 34 | 32 |
| **Expanded labour force** | **100** | **100** | **100** |

Source: Labour Force Survey (1995, 2000 & 2015), Authors' calculations.

It is important to note that, while in absolute terms the number of discouraged worker-seekers does not appear to be growing (Figure 1Figure *1*) in the post-2008 period, the non-searching unemployed represent 2.3 million people unabsorbed by the labour force.

Table 2 presents cross-country comparative estimates for selected labour market indicators. It is evident that South Africa has one of the lowest labour force participation rates in the sample, with a participation rate which has also declined over the period under review. A potential reason for this is South Africa's high proportion of discouraged work-seekers (non-searching unemployed), as was observed in the expanded unemployment rate in Table 1, since these discouraged worker-seekers are excluded from the labour force. The table also reaffirms the well-known fact that South Africa has one of the highest unemployment rates in the world – and certainly the highest when compared to its peer economies or those within the region.

[2] Expanded unemployment = strict unemployment + non-searching unemployed

**Table 2: Key Labour Market Indicators: Cross-Country Comparisons**

| Country/Region | 1995 | 2005 | 2015 |
|---|---|---|---|
| **Labour Force Participation Rate** | | | |
| China | 78.9 | 73.5 | 70.9 |
| Sub-Saharan Africa | 69.0 | 68.8 | 69.3 |
| Brazil | 69.5 | 70.5 | 67.1 |
| Russian Federation | 60.5 | 61.9 | 63.5 |
| Middle income | 66.8 | 64.9 | 62.4 |
| India | 60.5 | 60.6 | 53.7 |
| *South Africa* | *55.7* | *53.7* | *53.0* |
| **Unemployment Rate** | | | |
| *South Africa* | *16.9* | *23.8* | *25.1* |
| Brazil | 9.9 | 11.4 | 8.5 |
| Sub-Saharan Africa | 7.6 | 8.0 | 7.2 |
| Russian Federation | 9.4 | 7.1 | 5.6 |
| Middle income | 5.9 | 6.2 | 5.5 |
| China | 4.6 | 4.1 | 4.6 |
| India | 4.0 | 4.4 | 3.5 |
| **Dependency Ratio** | | | |
| Sub-Saharan Africa | 92.0 | 88.5 | 86.1 |
| India | 68.6 | 56.3 | 52.4 |
| *South Africa* | *65.0* | *56.2* | *52.1* |
| Middle income | 64.4 | 51.3 | 50.5 |
| Brazil | 58.9 | 47.2 | 44.7 |
| Russian Federation | 50.4 | 38.8 | 43.1 |
| China | 50.7 | 34.5 | 36.6 |

Source: World Bank Indicators (2017), http://data.worldbank.org/indicator/.
Note: The dependency ratio represents the ratio of the non-working age population to the working age population, represented as the proportion of dependents per 100 working-age population.

Furthermore, while the unemployment rate in comparator regions has generally decreased over time, South Africa's unemployment rate has increased by about 0.4 percent on average per year for 20 years. Lastly, South Africa has a high proportion of dependents relative to those who are able to participate in the labour market, and this proportion decreased by almost 13 percent between 1995 and 2015.

While the information presented above is empirically suggestive of an economy that has not been able to generate a sufficiently large number of jobs, as Table 3 shows, between 1995 and 2015 approximately 4.8 million new jobs were created. The labour force though, grew by 1.6 times this quantum in the same period, adding 7.6 million new participants. Importantly then, employment growth in this period has been insufficient to match this rise in participation rates, resulting in a 144 percent increase in the number of unemployed individuals in the same period. Table 2 shows that the (strict) unemployment rate increased by a factor of 2.4 between 1995 and 2015.

**Table 3: Relative Employment Shifts, 1995-2015[3].**

| Category | 1995 | 2000 | 2015 | Absolute Change | Change % | Target growth rate (%) | Employment absorption rate (%) |
|---|---|---|---|---|---|---|---|
| Employment | 10,224 | 12,555 | 15,000 | 4,777 | 47 | | |
| Strict unemployment | 1,966 | 4,182 | 4,794 | 2,828 | 144 | | |
| **Narrow labour force** | **12,190** | **16,737** | **19,795** | **7,604** | **62** | **74** | **63** |
| Non-searching unemployment | 2,240 | 2,188 | 2,265 | 25.35 | 1 | | |
| Expanded unemployment[4] | 4,206 | 6,370 | 7,059 | 2,853 | 68 | | |
| **Expanded labour force** | **14,430** | **18,925** | **22,060** | **7,629** | **53** | **75** | **63** |

Source: Labour Force Survey (1995, 2000 & 2015), Author's calculations.

We calculate in Table 3 above, the target growth rate, to determine how fast the labour force would have had to expand over the period 1995-2015 to absorb new labour market entrants. The target growth rate for the narrow labour force over the period is 74 percent, suggesting that to absorb all new entrants into the labour market, employment would have had to grow at 74 percent over the period, as opposed to the observed 47 percent. The employment absorption rate shows the extent to which the labour market is able to create jobs for new entrants. Over the 20-year period under review then, the absorption rate is 63 percent – well below either 100 percent which indicates full absorption, or greater than 100 percent which signifies not only an absorption, but also a decrease in unemployment.

Ultimately then, the above suggests a few core labour supply trends which have defined the South Africa economy in the post-*apartheid* period. Firstly, whilst labour force participation rates experienced some sort of early post-*apartheid* spike, they have levelled off since, and notably continue to lag rates observed for comparator economies. Secondly, despite these modest participation rates, the economy has been consistently unable to generate a sufficient number of jobs for its work-seekers. By one simple indicator, the South African economy has been providing on average, a job to about 6 out of every 10 work-seekers, over the last 20 years. Recalling that providing jobs to all 10 of these individuals constitutes a steady state in unemployment rates, the third key result has been a rise in strict (and expanded) unemployment rates in South Africa. The economy, despite emerging from a political system of racial segregation, has thus witnessed a rise in its unemployment rate from 17 to 25 percent over a twenty-year period.

In order to further contextualise these labour market trends, an understanding of the labour demand side of the economy is required. The section below then turns to a more detailed understanding of the sectoral patterns of growth in the economy.

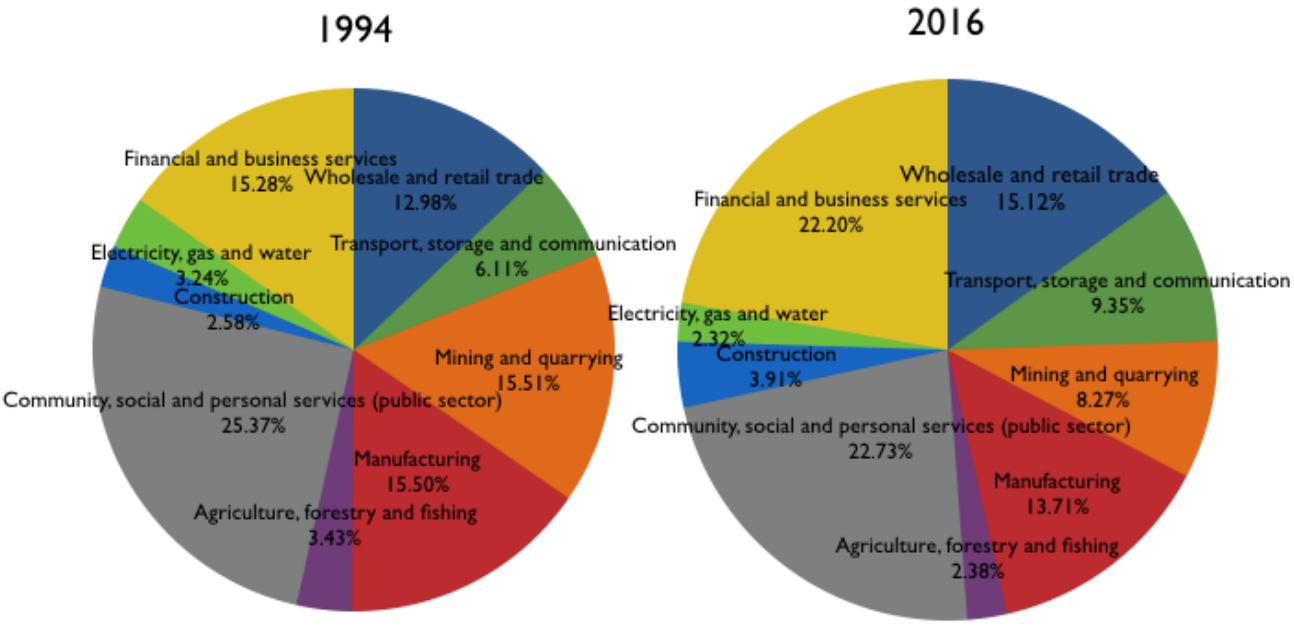
[3] The target growth rate ($T_k$) is measured by: $T_k = \frac{EAP_{kt} - EAP_{kt-1}}{L_{kt-1}}$ where EAP refers to the economically active population for group k and L is the number of employed individuals by any given covariate. The employment absorption rate ($ER_t$) is the ratio between the actual employment growth and the desired (or 'target') rate and is expressed as a percentage as follows: $ER_t = \frac{\frac{L_{kt} - L_{kt-1}}{L_{kt-1}}}{T_g} = \frac{L_{kt} - L_{kt-1}}{EAP_{kt} - EAP_{kt-1}}$

[4] Expanded unemployment = strict unemployment + non-searching unemployed.

## 2.2 Sectoral Labour Demand Trends

Over the period 1994 to 2016, there have been a few key shifts in the sectoral composition of output in South Africa. As Figure 2 below shows then, there has been a steady decline in the contribution of the primary sectors to GDP. In particular, the share of Mining in national output falls from 15.5 percent to 8.2 percent over the period. In addition, Agriculture's share of GDP, whilst not as a dramatic, declines as well.

**Figure 2: Sectoral Contribution to GDP, 1994 and 2016.**

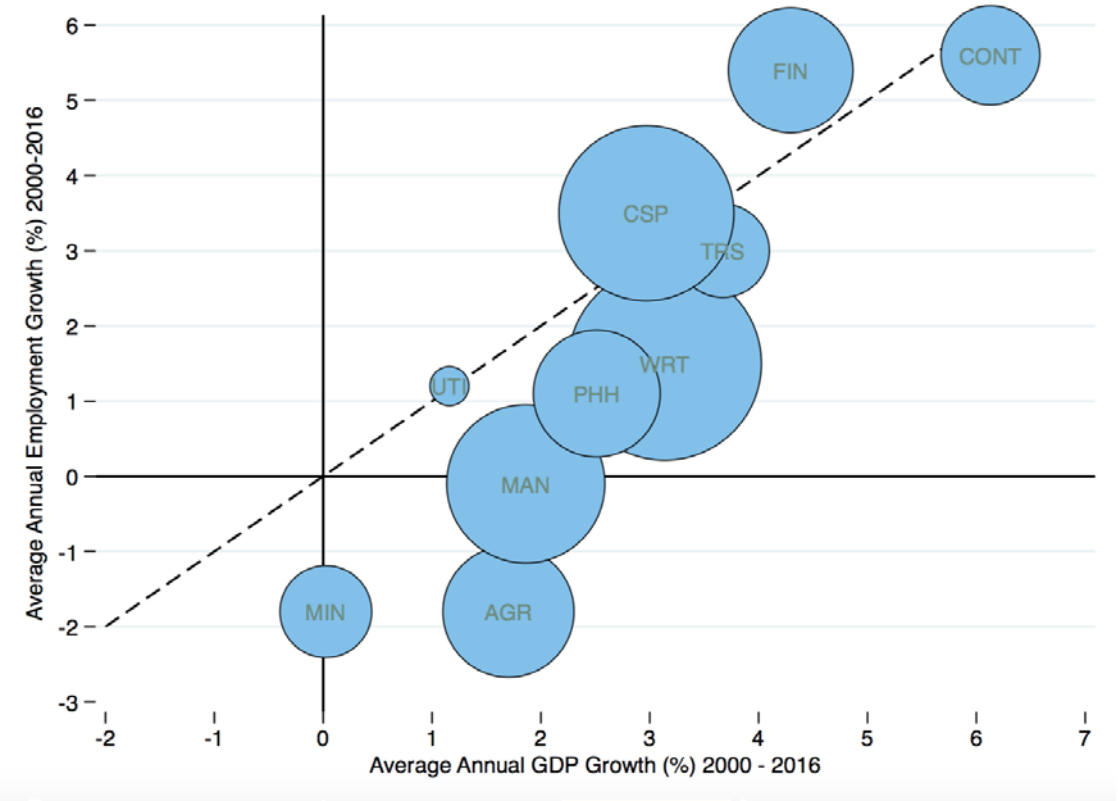



Source: South African Reserve Bank (2017); Author's Calculations.

In turn, significant growth has occurred in the services sectors. Hence, we see that the share of GDP attributable to Financial and business services; Transport, storage and communication, and Wholesale and retail trade – collectively rises from 34.4 percent in 1994 to 46.7 percent in 2016. As alluded to earlier, this shift has now sectorally transformed the South African economy into one dominated by the services sector. Crucially then, what this also means, is that the manufacturing sector has shown no expansion. Indeed, manufacturing's share of GDP has stagnated by about 1.8 percentage points.

Figure 3 estimates the value-added growth between 2001 and 2016, and the corresponding change in sectoral job creation. Each bubble represents the relative size of employment in that sector in 2016. Bubbles that lie above the 45-degree line point to sectors whose employment growth exceeded their output growth. Figure 3 clearly illustrates that, in combination with the failure of manufacturing and mining to expand and create jobs, most other sectors have failed to create employment growth at a rate that exceeds the growth of the sector. The exception is the financial services sector, although this result is driven by the rapid expansion of the temporary employment services sector – a labour market feature we turn to in greater detail below. In turn, retail, utilities and the community, social and public (CSP) services sector (which contains government services), have been important in increasing their own ability to create employment.

**Figure 3: Sectoral Gross Value-Added and Employment Growth, 2000-2016.**




Source: Labour Force Survey, South African Reserve Bank (2017); Authors' Calculations.
Notes: AGR = Agriculture; MAN = Manufacturing; MIN = Mining; WRT = Wholesale and Retail Trade TRS = Transport; PHH = Private Households; UTI = Utilities; CSP = Community, Social, Personal Services; FIN = Financial Services; CONT = Construction.

Mining and Agriculture yield either zero or low growth rates, amidst significant employment losses. Hence, growth in Mining output averaged 0 percent over the 2001-2016 period, whilst employment fell by 2 percent on average. Agriculture grew by 1.9 percent, but employment collapsed at an average annual rate of 2 percent. In simple terms, the contraction in Mining employment occurred amidst lower global commodity prices and the rising costs of production – driven by rising wages. Job losses in Agriculture, as has been noted elsewhere, have been a function of the imposition of the minimum wage in March 2003 in the sector (Bhorat, Kanbur & Stanwix, 2014). While the construction sector is not creating jobs at a greater rate than its output growth, it is the fastest growing, albeit it being one of the smaller sectors.

Table 4 presents a sectoral overview of employment growth over the last fifteen years. In the first instance, the table shows that the economy has generated about 4.3 million jobs since 2001. Notably, this occurred in a period when the primary sectors shed over 400 000 jobs, with close to 70 percent of these being in Agriculture. In turn, the manufacturing sector has been a very poor generator of jobs – with the sector in fact shedding some 17 000 employees over the 15-year period.

**Table 4: Sectoral Employment Trends, 2001-2016.**

| | Employment Growth (2001-2016) | | Employment Shares (%) | | Share of Change (2001-2016) |
|---|---|---|---|---|---|
| | **Absolute** | **Relative** | **2001** | **2016** | |
| **Primary** | **-422,565** | **-0.9** | **15.0** | **8.3** | **-0.10** |
| Agriculture | -286,101 | -0.9 | 10.1 | 5.6 | -0.07 |
| Mining | -136,464 | -0.8 | 4.9 | 2.7 | -0.03 |
| **Secondary** | **844,446** | **0.9** | **21.3** | **20.8** | **0.20** |
| Manufacturing | -17,847 | 0.0 | 14.7 | 10.7 | 0.00 |
| Utilities | 20,053 | 0.6 | 0.9 | 0.7 | 0.00 |
| Construction | 842,240 | 2.7 | 5.7 | 9.4 | 0.20 |
| **Tertiary** | **3,884,013** | **1.3** | **63.7** | **70.8** | **0.90** |
| Trade (wholesale and retail) | 652,297 | 0.7 | 22.0 | 20.2 | 0.15 |
| Transport | 333,951 | 1.4 | 5.1 | 5.8 | 0.08 |
| Finance | 1,279,463 | 2.6 | 9.1 | 14.6 | 0.30 |
| CSP | 1,426,395 | 1.7 | 18.1 | 22.1 | 0.33 |
| Domestic Services | 191,908 | 0.5 | 9.4 | 8.1 | 0.04 |
| **Total** | **4,305,895** | **1.0** | **100.0** | **100.0** | **1.00** |

Source: South African Reserve Bank (2017); Authors' Calculations.

In the secondary sector over this period, Construction has mainly been responsible for growth in jobs, despite the fact that the overall employment share of the sector contracted by 0.5 percentage points between 2000 and 2016. In essence then, employment creation has occurred predominantly within the services sectors of the economy. Collectively, the tertiary sector accounted for 90 percent of all jobs created in South Africa since 2001. Over a third of these jobs have emanated from the CSP sector, where the public sector is dominant. Whilst 30 percent of jobs have been derived within the financial services sector, much of this is a function of temporary employment services (TES) firms. Ultimately, whilst some jobs have been generated in the Construction sector, employment creation in South Africa has been characterized disproportionately by output, and consequently job growth in the services sectors of the economy.

Table 5 shows the proportion of skilled, semi-skilled and unskilled labour by sector. The table provides clear evidence that in the post-*apartheid* era, every main sector of the economy experienced a steady rise in skills intensity. Excluding domestic work then, the highest increases in skills intensity are seen in the financial services, construction, and agricultural sectors.

**Table 5: Employment by Sector and Skills level, % Share: 1995-2015.**

| | 1995 | | | 2015 | | | |
|---|---|---|---|---|---|---|---|
| **Sector** | **Skilled** | **Semi-skilled** | **Unskilled** | **Skilled** | **Semi-skilled** | **Unskilled** | **Skilled Share (% Ch.)** |
| Agriculture | 1 | 22 | 77 | 4 | 23 | 74 | 292 |
| Mining | 3 | 76 | 21 | 7 | 63 | 29 | 101 |
| Manufacturing | 6 | 74 | 20 | 10 | 70 | 20 | 64 |
| Electricity | 5 | 80 | 15 | 12 | 76 | 13 | 176 |
| Construction | 6 | 75 | 19 | 10 | 68 | 23 | 332 |
| Trade | 14 | 65 | 20 | 11 | 59 | 30 | 33 |
| Transport | 17 | 72 | 11 | 19 | 68 | 13 | 85 |
| Financial Services | 17 | 76 | 6 | 21 | 63 | 15 | 314 |
| CSP | 14 | 71 | 15 | 20 | 61 | 19 | 120 |
| Domestic Services | 0 | 3 | 97 | 0 | 2 | 98 | 376 |
| Other | | | | | 65 | 35 | - |
| **Total** | **9** | **59** | **32** | **13** | **56** | **31** | **118** |

Source: Labour Force Survey (1995 & 2015), Author's calculations.

Rising skills intensity of labour demand in South Africa has interestingly though, been at the expense of semi-skilled, rather than unskilled workers: The share of semi-skilled workers in total employment thus contracted over a 20-year period for all sectors except Agriculture. This decreasing share of semi-skilled labour across all non-agricultural industries is in part a function of the growth of capital intensity and the adoption of advanced technologies, which may be impacting on those tasks which are more easily automatable. Such tasks, the literature would suggest, tend to found amongst semi-skilled workers (Autor et al., 2003; Acemoglu & Autor, 2011; Fortin, Lemieux & Firpo, 2011). Consistent with this literature then, one could argue that the shrinkage of semi-skilled employment points to the possible existence of a "missing middle" in the labour market. That is, the rise in skills intensive employment has hollowed out the middle of the distribution, and is likely to be a contributor to increased wage inequality. We explore this theme in later sections of the paper.

### 2.3 Structural Transformation in the post-*Apartheid* Era

Structural and economic transformation of the economy is largely what drives the demand of labour between sectors, and understanding this dynamic along with what determines the allocation of employees between sectors, assists in unpacking the growth and development narrative. South Africa's path of structural transformation has been unique. Unlike other sub-Saharan African countries however, the proportion of employment created by subsistence Agriculture in South Africa has always been small. For example, as we showed above, in 2001 the agricultural sector constituted only 10.1 percent of total employment. Therefore, in estimating our structural transformation models here, the primary sector as a whole (Mining and Agriculture) was considered as the base against which transformation would be measured, instead of Agriculture alone. In 2001, the share of total employment in the primary sector stood at 15 percent. However, given the sectoral shifts in the domestic economy already observed above, a more interesting structural shift worth testing for South Africa would arguably be that between service and non-service based employment – or more specifically, between the primary and secondary sectors on the one hand, and the tertiary sector on the other.

Therefore, instead of estimating structural change as the move away from agriculture to other sectors, or away from the primary to the secondary or tertiary sector, given the unique positioning of the South African economy in the developing world, we argue that it would make

more sense to examine structural transformation as the shift from the non-services to the services sector. Following the methodology posed by Paci (2016), this section adapts a standard endogenous growth model approach to focus on the determinants of economic transformation instead of economic growth. These models exploit the heterogeneity in individual micro- and macro-level endowments to identify the drivers of structural transformation.

### *2.3.1 Individual Characteristics and Sectoral Transformation*

To explore the relationship between individual and household characteristics, and whether or not an individual is likely to be employed in the services as opposed to the non-services sector, the following logistic model is estimated:

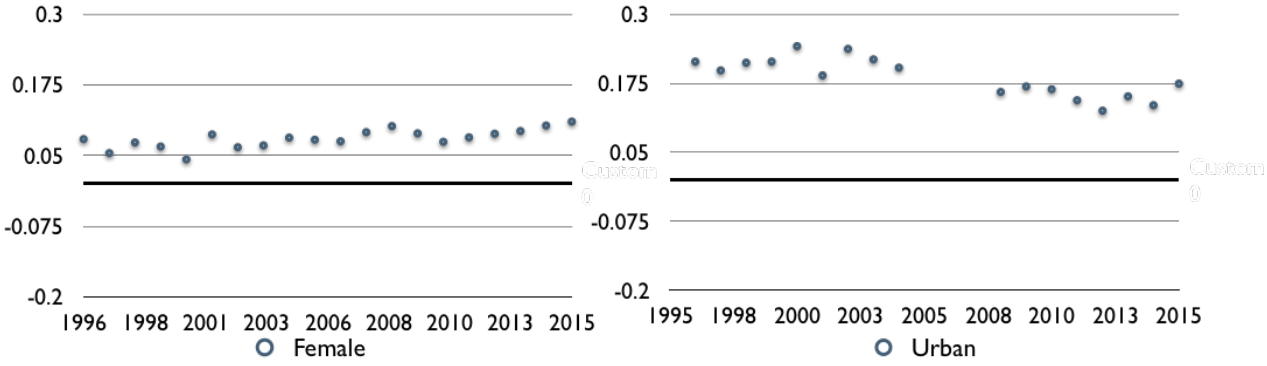
$$Pr(y_{i,t} \mid X_{i,t}) = G(\beta_0 + X_{i,t}'\beta) \text{ where G is a logistic function}$$

Where $y_{i,t} = 1$ if the individual is employed in the services sector, including retail and wholesale trade, transport, financial services, or the community, social, personal services (CSP) sector. Similarly, $y_{i,t} = 0$ if the individual is employed in any non-services sector which comprises agriculture, mining, manufacturing, electricity and construction. The vector of explanatory variables $X_{i,t}$ consists of individual and household characteristics that control for: sex, age, age-squared, marital status and highest level of education attained (no schooling, primary schooling, secondary schooling, or post-secondary education). $X_{i,t}$ also contains household level controls, including the proportion of the household under age 7, between 8 and 15, between 16 and 65, and over 65, and dummies for residence in urban areas, province, and a set of interaction variables between province and geo-location.

Since the dataset used (the Post-*Apartheid* Labour Market Series) is a repeated cross-section, it is not possible to control for time-varying effects which would potentially capture economic and policy factors specific to a given time period and individual, which could assist in explaining the conditional employment sector outcome. This should be borne in mind along with the fact that estimated coefficients represent the probability of working in the services sector, *conditional* on being employed.

Conditional on finding a job then, Figure 4 shows that the probability of working in the services sector is higher for already employed females relative to males, and for those who reside in urban areas. The probability of finding a job in the services sector conditional on already being employed, has increased over time for females. In other words, once employed, it is more likely that women will be employed in the services sector in South Africa than men. This coincides with the gendered structure of the primary and secondary sectors on the one hand, and the relatively lower barriers to entry for females in the services sectors of the economy on the other.

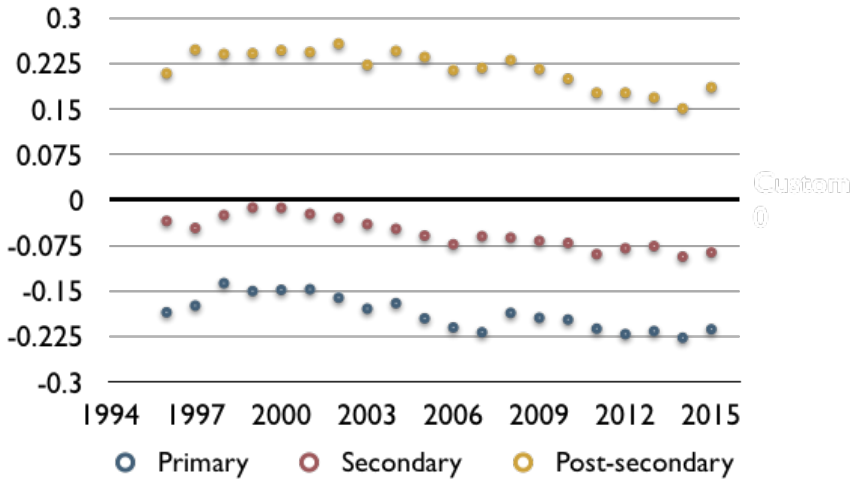
**Figure 4: Probability of Services Sector Employment, Individual Effects: 1994-2015.**




Source: Post-*Apartheid* Labour Market Series, Author's Calculations.

The results from the models also show that the probability of being employed in the services sector is only positive for those who have post-secondary education. The returns to primary and secondary education measured by the probability of employment in services (conditional on being employed) are negative, and crucially, these probabilities have been decreasing over time. This reinforces our descriptive evidence that the labour demand trajectory of the services sector, which corresponds to 71 percent of the employment share of the country (Table 3), is strong skills-biased in nature. At the same time, in 2015, the median employed individual has 12 years of education (corresponding to a secondary education), alluding to a large skills mismatch between employment and potential labour absorption.

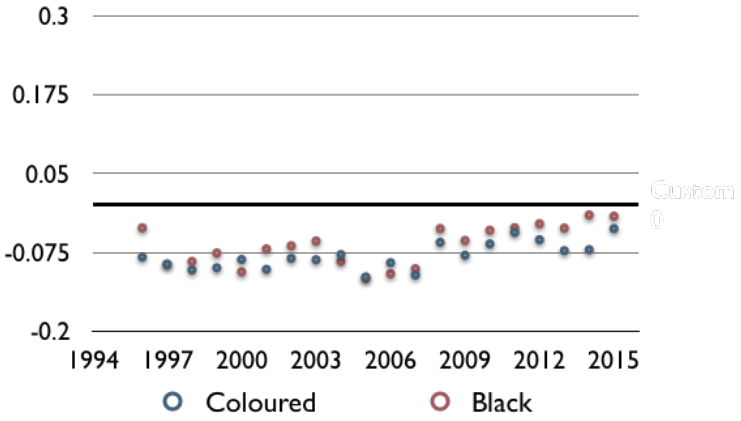
**Figure 5: Probability of Services Sector Employment, Human Capital Effects: 1994-2015.**




Source: Post-*Apartheid* Labour Market Series, Author's Calculations.

Conditional on already having a job, Figure 6 shows that the African and Coloured individuals in South Africa face a lower probability of working in the services sector as opposed to White workers. Put differently – the services sector in South Africa is a disproportionate employer of White workers, reinforcing racial patterns of wage inequality in the labour market. Notably however, the probability of African or Coloured workers finding a job in the services sector has increased since the mid 1990's, but by 2015 was still below zero. The figure also shows that Coloured individuals who constitute about 11 percent of the labour force are the most marginalised group, facing even lower probabilities of employment in the services sector than the African population, which accounts for over 70 percent of the labour force in 2015.

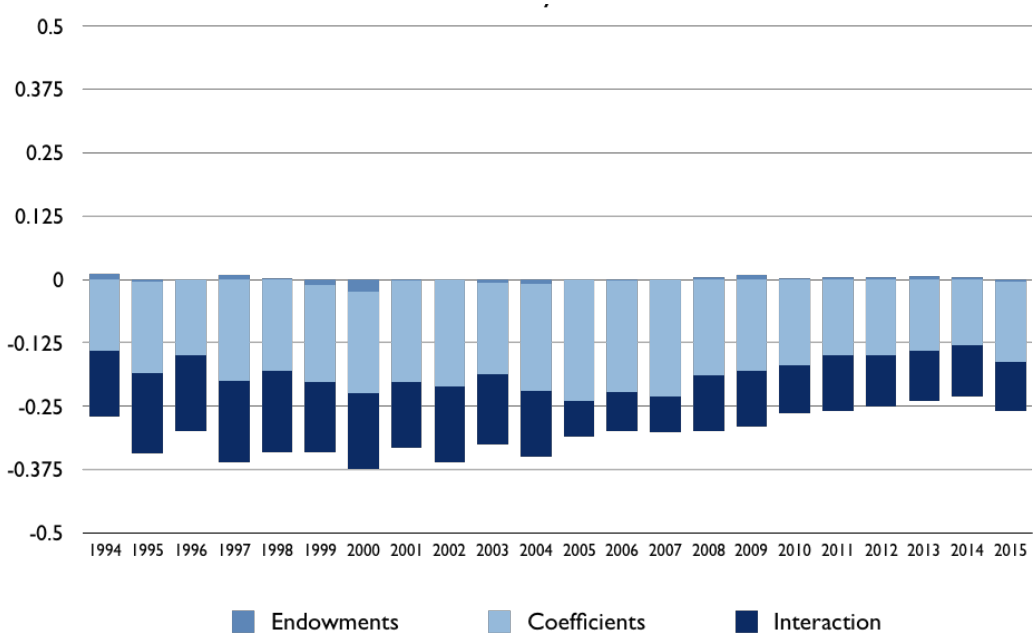
**Figure 6: Probability of Services Sector Employment, Race Effects: 1994-2015.**




Source: Post-*Apartheid* Labour Market Series, Author's Calculations.

Figure 7 shows that the predicted probability of employment in the services sector is negative for those who are non-tertiary educated. The above decomposition shows that this effect is not dependent on any other characteristics except education. That is, the effects of less than tertiary education on service-based employment are negligible (almost zero) if people with no post-secondary education had the same characteristics as those with tertiary education. However, if the coefficients of those who are tertiary educated are applied to the characteristics of those who are less educated, the effect is primarily negative.

**Figure 7: Decomposition of Services Employment, By post-secondary education area, 1994-2015.**




Source: Post-*Apartheid* Labour Market Series, Author's Calculations.

Applying the large return to the endowments of those with less education does not assist the less educated in finding employment in the services sector, suggesting that there is a substantial return to being tertiary educated in South Africa. The contribution of changes in endowments is negligible when compared with changes in the return to these characteristics on the sectoral allocation of employment to services. This return, along with the interaction between characteristics and coefficients, is a large driver of the sectoral employment patterns

shown above – namely a continuation in the post-*apartheid* period of a skills-biased labour demand trajectory.

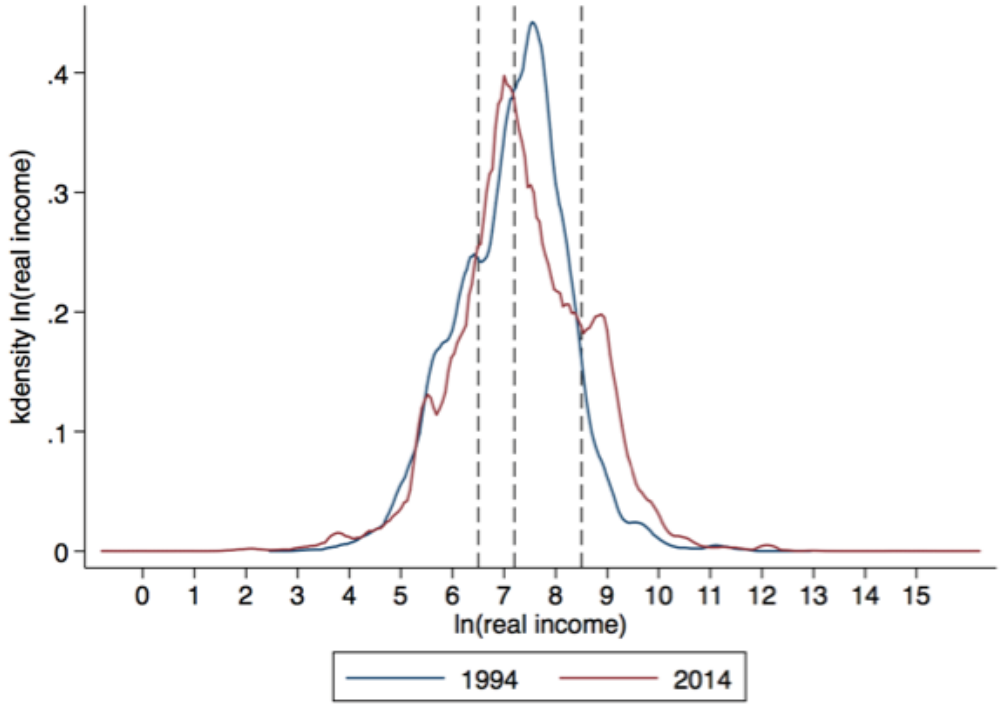
It is clear from the above then, that the key structural shift observed in South African economy has been the erosion of primary sector production, toward a greater share of GDP accruing to the services sector. Simply put, South Africa has now become a services-based economy. Over the period of this structural transformation then, the labour market has followed suite – as 9 out of every 10 net new jobs in the economy since 2001, have emanated from the services economy. Specifically though, we also show that this structural transformation has benefited skilled workers relative to semi-skilled workers, White workers more than Coloured and African employees – and interestingly females over males. Within this context of skills-biased, and services-based employment, we note that not only have semi-skilled workers been culled from this labour demand trajectory, but also that this trajectory reflects a paucity of low wage manufacturing jobs – a factor crucial to large-scale employment generation in the developing country context.

# 3 Wage Shifts and Wage Inequality

## 3.1 Wage Distribution and Wage Inequality in South Africa

A skills-biased labour demand trajectory in an economy would be suggestive of a widening level of internal labour market inequality. Indeed, over the period 1994 to 2014, our data suggests that the wage inequality levels have risen. Figure 8 shows that the extreme left of the real wage distribution has increased in density since 1994, while the moderate to center left has contracted between 1994 and 2014. Figure 8 also shows that a larger proportion of individuals are earning between log 6.5 (R665) and log 7.2 (R1 339) per month in 2014, compared to 1994. While these individuals have gained in real terms, the middle of the distribution – those with an income of between log 7.2 (R1 339) and log 8.5 (R4 915) per month – has compressed.

**Figure 8: Real Wage Distribution (Log per capita), 2000 prices: 1994 and 2014.**




Source: Post-*Apartheid* Labour Market Series, Authors' Calculations.

Simultaneously, there is a higher proportion of individuals with an income of above log 8.5 (R4 915) per month. This summary of the change in the wage distribution in the twenty years following the fall of *apartheid* alludes to the rise of the missing middle. That is, there is clear evidence of a smaller share of workers located in the middle of the wage distribution in 2014, compared to 1994.

To further understand the dynamics of inequality in the wage distribution described above, Table 6 reports real wages by percentile between 1994 and 2014, with the midpoint included. Real growth in wages has been positive for all percentiles of the distribution including the mean. However real wage growth rates are heterogeneous by percentile: The 10th percentile of the wage distribution returns the largest growth rate in real wages between 1994 and 2014 of 460 percent, followed by the 25th percentile at 367 percent.

**Table 6: Monthly Wages By Percentiles, 1994, 2004 and 2014.**

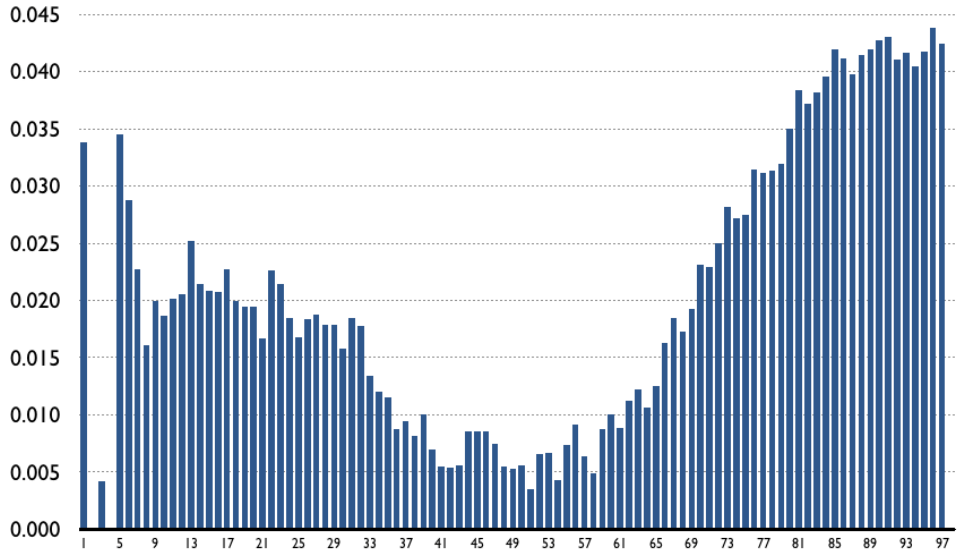
| Wage measure | Real wage (Rands) | | | Real wage (US$PPP) | | | ln percentile real growth rate (94-14) | Ratio of growth rate to 90th Percentile (94-14) |
|---|---|---|---|---|---|---|---|---|
| | 1994 | 2004 | 2014 | 1994 | 2004 | 2014 | | |
| 10th Percentile | 289 | 925 | 1,618 | 52 | 167 | 293 | 460% | 1.32 |
| 25th Percentile | 742 | 1,849 | 3,467 | 134 | 334 | 627 | 367% | 1.05 |
| Median (50th Percentile) | 2,087 | 4,004 | 7,011 | 378 | 724 | 1,268 | 236% | 0.68 |
| 75th Percentile | 4,469 | 9,246 | 18,492 | 808 | 1,672 | 3,345 | 314% | 0.90 |
| 90th Percentile | 9,265 | 8,492 | 41,608 | 1,676 | 3,345 | 7,525 | 349% | 1.00 |
| Mean | 3,911 | 7,795 | 20,940 | 707 | 1,410 | 3,787 | 435% | 1.25 |

Source: Post-*Apartheid* Labour Market Series, Author's Calculations.

The third highest growth rate is, crucially, at the 90th percentile at 349 percent. Median real wages – namely the wages typically for those semi-skilled workers – have grown by the smallest amount over the same period: 236 percent or 0.68 times the growth rate of the 90th percentile. The mean, which has grown at 435 percent or 1.25 times the growth rate of the 90th percentile over this period, thus conceals the inequality between the midpoint and the top end of the income distribution.

Taking a closer look at the average annualised percentage change in wage by percentile between 1994 and 2014, Figure 9 shows that the middle of the income distribution has indeed lost out the most in the post-*apartheid* era. The average annual real wage growth rate of the bottom 29 percentiles ranges between 3.4 percent to about 1.7 percent, after which the growth rate drops to an average of 0.98 percent between the 30th and 69th percentiles. For the 70th percentile and above, the average growth rate per annum is 3.6 percent.

**Figure 9: Real Monthly Wage by Percentile, Average Annualised Percentage Change 1994-2014.**




Source: Post-*Apartheid* Labour Market Series, Authors' calculations.

Thus, while the bottom of the distribution's real wages are growing at an average annualised rate of 2 percent per year, and high-end real wages are growing at almost twice the rate of the bottom, workers in the middle of the distribution have experienced real growth rates that barely exceed 1 percent. This points clearly to the case of a "missing middle" in the South African wage distribution. Put differently, in the post-*apartheid* era, those at the top and bottom of the income distribution have gained at the expense of those in the middle (between the 30$^{th}$ and 70$^{th}$ percentiles).

Policy may have a large role to play in explaining the gap seen for the middle of the wage distribution. Pro-poor policies such as the Basic Conditions of Employment Act, employment tax incentives, and various sectoral minimum wage laws (discussed further below), may have protected the employment and increased the wages of more vulnerable workers at the bottom of the distribution. A skills-biased growth path has in turn maintained the relatively high demand for skilled workers who, being in short supply, retain a significant premium. Ultimately then, the combination of policies protecting and promoting wages at the bottom of the distribution, an absent semi-skilled intensive manufacturing sector, and growth trajectory built on high demand for highly skilled workers, has had the unintended consequence of eroding the earnings of workers in the middle of the distribution.

The evolution of wage inequality in South Africa is provided in Table 7 below. The absolute size of the 90:10 percentile differential, and the extent to which it has increased since 1995, suggests that wage inequality has risen very sharply in South Africa. Specifically, the ratio has increased by 48 percent from the 90$^{th}$ percentile earning 17 times the wage of the 10$^{th}$ percentile in 1995, to earning 26 times the wage of the 10$^{th}$ percentile in 2014. This increase is realised despite the average annualised growth in real income of 2 percent observed for the 10$^{th}$ percentile in the same period.

**Table 7: Real Wage Inequality, 1995-2014.**

| Differential | 1995 | 2000 | 2005 | 2010 | 2014 | % Change (95-14) |
|---|---|---|---|---|---|---|
| 90:10 | 17.34 | 22.32 | 18.48 | 16.98 | 25.71 | 48 |
| 90:50 | 3.19 | 4.46 | 4.44 | 4.53 | 5.93 | 86 |
| 75:25 | 4.39 | 5.45 | 4.71 | 4.83 | 5.33 | 22 |
| 50:10 | 5.43 | 5.00 | 4.16 | 3.75 | 4.33 | -20 |
| 75:50 | 1.84 | 2.31 | 2.22 | 2.33 | 2.64 | 43 |
| **Gini coefficient** | 0.58 | 0.74 | 0.59 | 0.65 | 0.69 | 19 |
| **Coefficient of variation** | 2.23 | 15.73 | 5.40 | 12.74 | 12.09 | 442 |
| **Palma ratio** | 5.11 | 11.77 | 5.68 | 8.08 | 10.13 | 98 |

Source: Post-*Apartheid* Labour Market Series, Author's Calculations.

The other inter-percentile ratios, while not as dispersed as for the 90:10 ratio, shed light on the erosion of relative wages for those in the middle of the income distribution. Hence, the data reveal that the 50:10 percentile differential has decreased between 1995 and 2014 by 20 percent, showing a reduction in inequality between the middle of the income distribution and the bottom 10 percent. At the same time, the gap between the middle of the distribution and the top (90$^{th}$ percentile) has increased by 86 percent since the end of *apartheid*. In other words, workers in the bottom of the distribution have seen their wages rise faster than the median worker, so steadily narrowing inequality in the bottom-half of the wage distribution. Ultimately though, these percentile differentials simply reinforce our result in Figure 9 of high wage gains for low and high earners in the South African labour market, relative to those workers in the middle of the wage distribution.

The other measures of inequality presented in Table 7 show that inequality has increased significantly between 1995 and 2014. The wage Gini coefficient has thus risen from 0.58 to 0.69 between 1995 and 2014. At the same time, the Palma ratio (the share of the top 10 percent of earner's wages to the share of the of the bottom 40 percent's) has almost doubled from 5.11 to 10.13[5]. Decomposing the Gini coefficients by sector shows the extent to which larger scale wage inequality is driven by the interaction between intrasectoral skills mismatches (Table 5) and sector of occupation.Table 8 shows that whilst real wage inequality has increased in every sector since 1995, the size of the increase differs between sectors based on skills level.

**Table 8: Wage Gini Coefficients, by Sector: 1995-2014.**

| Sector | 1995 | 2000 | 2005 | 2010 | 2014 | % Change (95-14) |
|---|---|---|---|---|---|---|
| Agriculture | 0.50 | 0.51 | 0.54 | 0.59 | 0.72 | 43 |
| Mining | 0.45 | 0.70 | 0.49 | 0.45 | 0.50 | 12 |
| Manufacturing | 0.39 | 0.65 | 0.55 | 0.52 | 0.65 | 67 |
| Construction | 0.55 | 0.71 | 0.51 | 0.75 | 0.68 | 23 |
| Trade | 0.48 | 0.48 | 0.56 | 0.57 | 0.67 | 39 |
| Transport | 0.46 | 0.65 | 0.41 | 0.49 | 0.60 | 30 |
| Finance | 0.49 | 0.92 | 0.55 | 0.29 | 0.78 | 60 |
| CSP | 0.41 | 0.78 | 0.46 | 0.69 | 0.72 | 73 |
| Overall Gini | 0.56 | 0.74 | 0.59 | 0.65 | 0.69 | 9 |

Source: Post-*Apartheid* Labour Market Series, Author's Calculations.
Note: Utilities omitted due to small sample size.

[5] The Gini coefficient and Palma ratio measures vary widely between periods. This could be attributable to the quality of the data collected, since there is usually low representation of higher income earners in surveys on earnings.

For instance, the finance and community, social and personal services[6] sectors, whose shares of skilled labour were the highest in 2015 (Table 5), exhibit the largest growth (60 percent and 73 percent, respectively) in their sectoral Gini coefficients between 1995 and 2014. Conversely, the retail and wholesale trade sector, that boasted the highest growth in unskilled labour between 1995 and 2014, exhibits one of the lower growth rates in the wage Gini of 39 percent. This shows that lower skilled labour absorption has an effect on the distribution of wage inequality in South Africa.

An examination of the real earnings distribution in 1994 and 2014 presents a snapshot of the change in earnings in the post-*apartheid* era. Our key, new result, is the observation that employees in middle of the wage distribution, those typically in semi-skilled jobs, have experienced much lower real wage growth than workers on either side of them in the wage distribution. In this sense, wage movements in South Africa have reinforced a pattern of disadvantaging those in the middle of the distribution. These, we argue, have been reinforced variously by a particular sectoral pattern of growth favouring skills-intensive services, policy choices favouring the low wage worker, and finally technology responses from firms which may have deleteriously impacted on the median worker.

## 3.2 Explaining Post-*Apartheid* Wage Inequality

### *3.2.1 Labour Market Participation and Reservation Wages*

Pre-labour market differences impacting on the manner in which individuals choose to participate in the labour force in South Africa, are widespread. Differential provisioning of education, training and access to public services for different race groups, all affect the labour market participation outcome (Knight & McGrath, 1987; Moll, 1991; Case & Deaton, 1998). With the widespread incidence of discouraged workers, modelling the participation outcome is therefore a key part of understanding the South African labour market in further detail. To understand the determinants of labour force participation, and as is standard in this literature, multivariate discrete choice models were estimated.

Table 9 shows that in the South African context, education has a strong influence on the probability of labour market participation. Those with post-secondary education in 1995 were 19.5 percent percent more likely to participate in the labour market versus those with no education. For an individual in a household with a higher number of children, there is a negative impact on the probability of labour market participation.

[6] CSP services includes government services.

**Table 9: Determinants of Labour Market Participation outcome, Marginal Effects: Selected Years.**

| | 1995 | 2000 | 2005 | 2010 | 2015 |
|---|---|---|---|---|---|
| Age | 0.0763*** | 0.0764*** | 0.0789*** | 0.0807*** | 0.0831*** |
| | (0.000623) | (0.000669) | (0.000628) | (0.000361) | (0.000337) |
| Age Squared | -0.000974*** | -0.000957*** | -0.000989*** | -0.00101*** | -0.00104*** |
| | (0.0000083) | (0.0000091) | (0.0000087) | (0.0000050) | (0.0000046) |
| Secondary Edu | 0.0158*** | 0.0217*** | 0.0739*** | 0.0850*** | 0.0651*** |
| | (0.00390) | (0.00447) | (0.00388) | (0.00278) | (0.00291) |
| Post-secondary Edu | 0.195*** | 0.186*** | 0.250*** | 0.278*** | 0.240*** |
| | (0.00773) | (0.00983) | (0.00977) | (0.00496) | (0.00457) |
| Female | -0.198*** | -0.123*** | -0.133*** | -0.130*** | -0.116*** |
| | (0.00326) | (0.00382) | (0.00332) | (0.00214) | (0.00209) |
| Married | 0.0752*** | 0.0453*** | 0.0403*** | 0.0280*** | 0.0328*** |
| | (0.00448) | (0.00494) | (0.00416) | (0.00262) | (0.00254) |
| Share of HH from 8 to 15 | -0.121*** | -0.0609*** | -0.0987*** | -0.0516*** | -0.0534*** |
| | (0.0131) | (0.00586) | (0.00482) | (0.00244) | (0.00266) |
| Share of HH from 15 to 64 | 0.0564*** | 0.00717* | -0.0161*** | 0.000347 | 0.00350** |
| | (0.0100) | (0.00299) | (0.00373) | (0.00172) | (0.00122) |
| Share of HH 65+ | -0.126*** | -0.0847*** | -0.106*** | -0.0496*** | -0.0612*** |
| | (0.0202) | (0.0112) | (0.00856) | (0.00376) | (0.00461) |
| Black | -0.0401*** | 0.0519*** | 0.0137* | 0.0176*** | 0.0346*** |
| | (0.00538) | (0.00707) | (0.00624) | (0.00409) | (0.00405) |
| Coloured | 0.0283*** | 0.0500*** | 0.0446*** | 0.00677 | 0.0292*** |
| | (0.00688) | (0.00956) | (0.00909) | (0.00539) | (0.00547) |
| R-sq | 0.3005 | 0.2417 | 0.247 | 0.2953 | 0.296 |
| N | 80387 | 88328 | 136456 | 213390 | 179390 |

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

Notes: 1. $^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.001$

2. Controls include interactions between province and urban status, not reported here.

3. Urban/rural status not reported in survey between 2005 and 2007.

4. Base race is white, base education category is primary and no schooling combined, base household share category is share of household from 0-7 years of age.

In turn, the presence of a pensioner reduces the probability of participation. This is a fairly common result for South Africa, reflecting an income effect, which induces a lower conditional participation rate on average, or indeed the possibility of needing to care for the aged, and thus a withdrawal from the labour market. Unsurprisingly, women are less likely then men to participate in the labour force, but the effect has notably decreased from 19.8 percent in 1995, to 11.6 percent in 2015. Married individuals are more likely to be labour force participants.

Table 10 investigates the factors influencing incidence of employment in South Africa. The employment outcome is estimated separately in five year intervals between 1995 to 2015. Following existing literature[7], age, education, gender, marital status, race and location are all assumed to be correlated with employment outcomes in South Africa.

These regressions indicate that – even after controlling for location and human capital characteristics such as education and age – race remains a significant determinant of employment outcomes in South Africa. In 1995, African individuals were 16 percent less likely to be employed than Whites. The gap between White and Coloured South Africans was

[7] See for example Bhorat & Goga, 2013; Bhorat et al., 2009; Kingdon & Knight, 2004.

smaller but still significant, at 9.6 percent. By 2015, the difference in employment probability due to race had increased for both African and Coloured workers, relative to White employees.

**Table 10: Employment Equation, Marginal Effects: Selected Years.**

| | 1995 | 2000 | 2005 | 2010 | 2015 |
|---|---|---|---|---|---|
| Age | 0.0195*** | 0.0124*** | 0.0241*** | 0.0263*** | 0.0223*** |
| | (0.00125) | (0.00140) | (0.00145) | (0.000891) | (0.000873) |
| Age Squared | -0.000191*** | -0.0000586** | -0.000198*** | -0.000229*** | -0.000181*** |
| | (0.0000165) | (0.0000185) | (0.0000197) | (0.0000118) | (0.0000113) |
| Secondary Edu | 0.00185 | -0.0199*** | -0.0121* | 0.00810 | -0.00254 |
| | (0.00466) | (0.00560) | (0.00524) | (0.00423) | (0.00416) |
| Post-secondary Edu | 0.158*** | 0.122*** | 0.181*** | 0.160*** | 0.131*** |
| | (0.0101) | (0.0109) | (0.00917) | (0.00603) | (0.00574) |
| Female | -0.0866*** | -0.0541 | -0.0837*** | -0.0418*** | -0.0457** |
| | (0.00434) | (0.00494) | (0.00432) | (0.00292) | (0.00277) |
| Married | 0.0904*** | 0.0930*** | 0.0742*** | 0.0794*** | 0.0735*** |
| | (0.00485) | (0.00551) | (0.00493) | (0.00330) | (0.00300) |
| Black | -0.163*** | -0.215*** | -0.207*** | -0.192*** | -0.175*** |
| | (0.00718) | (0.00972) | (0.00912) | (0.00630) | (0.00632) |
| Coloured | -0.0956*** | -0.124*** | -0.136*** | -0.132*** | -0.139*** |
| | (0.00859) | (0.0127) | (0.0123) | (0.00786) | (0.00789) |
| Pseudo R-Squared | 0.181 | 0.143 | 0.1651 | 0.1510 | 0.1281 |
| N | 37609 | 51508 | 70997 | 108309 | 101518 |

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

Notes: 1. $^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.001$
2. Controls include interactions between province and urban status, not reported here.
3. Urban/rural status not reported in survey between 2005 and 2007.
4. Base race is white, base education category is primary and no schooling combined, base household share category is share of household from 0-7 years of age.

Whilst the conditional probability of employment for females is lower than for males, this effect has been declining in the period under review. This could be part confirmation of the patterns of structural transformation in sectoral employment observed above. Hence, while in 1995 females were, on average, 9 percentage points less likely to be employed than males, this figure had decreased to 5 percentage points in 2015. As expected, labour market outcomes are also better for individuals with a high level of education. In particular, it is crucial to note that the patterns of skills-biased labour demand are reinforced here, as it is only post-secondary schooling which provides a significant and positive return on the probability of being employed in the labour market. Finally, in terms of an economy that is not absorbing a sufficient number of new entrants into the labour market, as we noted above, the positive and significant age coefficient suggests that it is older rather than younger workers, who are more likely to be in employment.

### *3.2.2 Predicting and Decomposing Wages in South Africa*

Below, we estimate a standard log-linear wage equation to provide a framework for understanding those factors which may be impacting on wage levels and indirectly, wage inequality, in the South African labour market. There is an important data caveat which must be noted prior to examining the results below: Prior to 2012:2, all nonresponses to the earnings question were imputed by Statistics South Africa, along with all bracket responses. From 2012:3 onwards, nonresponses were no longer imputed but treated as missing. This change in the recording of earnings data is at least partially responsible for the differences in the coefficient estimates observed below for the 2010-2014 period, although it must be noted that with the intermediary years included (2011-2013), the changes do not appear as stark. We

provide these in the Appendix A1 below. To see if the nonresponses (recorded as missing) from 2012:3 onward had different characteristics from those who did respond, the explanatory variables for non-respondents and respondents were compared, and the initial evidence seems to indicate that non-responses (missing values) are non-random. Kerr and Wittenberg (2017) also estimate wage regression equations on the same dataset in a paper on public sector wage premiums, and find similar drops in the coefficients on returns to education, race and skills level.

The results indicate, in the first instance, that all else constant, older workers are on average likely to earn more than younger workers. In the period 1995 to 2010, this age premium is in the 2-5 percent range. Non-linearities in this age-earnings relationship are observed. Race and gender effects continue to predict earnings in the South African labour market. Hence, the conditional mean gender wage gap stood, on average, at about 27 percent up until 2010. More recent estimates, with the data caveat noted above, have seen this gender penalty decline to about 17 percent. The mean racial wage gap declined from 61 percent for African workers, to about 54 percent in 2010. By 2014, the mean African-White conditional wage gap is reported to have declined, recalling our data caveat above, to 26 percent. Our results indicate that being married and living in an urban area continued to afford wage premia ranging from 8 to 16 percent over the 1995-2014 period.

Together, the education and occupation coefficients reinforce the paper's previous findings, that South Africa's labour demand is, and has increasingly become, skills-intensive. Individuals with secondary education earn significantly more than those with no or primary schooling, whilst those with post-secondary education in turn earn a mean premium greater than the employed with some form of secondary schooling. There is clearly a monotonic return to human capital across the entire 1995-2014 period. In 2010 (2014) for example, a post-secondary educated worker earned on average about 78 percent (47 percent) more than an individual with no or primary schooling.

As expected, formality yields a higher average return, as does possession of a formal written contract. The average union wage premium over the full period under review, stands at about 25 percent, although more detailed analytical work (with more careful controls around bargaining council membership and trade union representation) does provide a union wage premia of about 7 percent (Bhorat, Goga & van der Westhuizen, 2012). We show below in greater detail though, that being unionised remains a key predictor for higher conditional earnings across the entire distribution, relative to non-unionised workers in the private sector.

All main occupations (except household domestic workers) earn significantly more than elementary workers (the base category for occupation). The average premium for a manager in 2014 stood at 142 percent relative to elementary workers, and even in the period up to 2010, increases from 84 to 90 percent. The period to 2010 for example, also shows that the mean wage premium for professionals relative to elementary workers was about 76 percent. These results serve to reinforce the pattern of skills-biased labour demand economic growth in the South African economy. There is some evidence of the hollowing out of the middle of the wage distribution, as the conditional mean premium for services' workers declines from 24.5 percent to 11.4 percent between 1995 and 2010, although it rises sharply in the post-2010 period. Notably though, the premium for technicians declines steadily from 67.5 percent in 1995 to 57.2 percent in 2014. The rise of the services sectors in the economy is in part reflected here by the steady increase in the premium offered to clerical workers – from 38 percent (1995) to 43 percent (2010), and then 59 percent (2014).

**Table 11: Log-Linear Wage Equation Estimates, Selected Years.**

| | 1995 | 2000 | 2005 | 2010 | 2014 |
|---|---|---|---|---|---|
| Age | 0.0531*** | 0.0497*** | 0.0454*** | 0.0200*** | 0.0136*** |
| | (0.00322) | (0.00483) | (0.00377) | (0.00325) | (0.00334) |
| Age squared | -0.000548*** | -0.000535*** | -0.000464*** | -0.000214*** | -0.000132** |
| | (0.0000404) | (0.0000606) | (0.0000470) | (0.0000404) | (0.0000410) |
| Female | -0.283*** | -0.256*** | -0.271*** | -0.280*** | -0.170*** |
| | (0.0113) | (0.0193) | (0.0138) | (0.0114) | (0.0118) |
| African | -0.616*** | -0.571*** | -0.662*** | -0.543*** | -0.263*** |
| | (0.0138) | (0.0253) | (0.0240) | (0.0170) | (0.0201) |
| Coloured | -0.413*** | -0.437*** | -0.470*** | -0.445*** | -0.254*** |
| | (0.0176) | (0.0354) | (0.0286) | (0.0210) | (0.0253) |
| Married | 0.0882*** | 0.0702*** | 0.0486*** | 0.0464*** | 0.0790*** |
| | (0.0111) | (0.0165) | (0.0124) | (0.0108) | (0.0109) |
| Urban | 0.125*** | 0.167*** | | 0.207*** | 0.160*** |
| | (0.0127) | (0.0189) | | (0.0129) | (0.0118) |
| Secondary | 0.324*** | 0.295*** | 0.259*** | 0.199*** | 0.156*** |
| Education | (0.0132) | (0.0172) | (0.0130) | (0.0140) | (0.0133) |
| Post-secondary | 0.630*** | 0.681*** | 0.709*** | 0.779*** | 0.474*** |
| Education | (0.0225) | (0.0363) | (0.0276) | (0.0220) | (0.0232) |
| Log(Hours | 0.162*** | 0.0185* | 0.0260*** | 0.0122*** | 0.0128*** |
| Worked) | (0.0204) | (0.00871) | (0.00581) | (0.00304) | (0.00261) |
| Union | 0.193*** | 0.236*** | 0.306*** | 0.250*** | 0.266*** |
| | (0.0104) | (0.0190) | (0.0155) | (0.0140) | (0.0140) |
| Written Contract | | 0.247*** | 0.279*** | 0.214*** | 0.0506* |
| | | (0.0175) | (0.0132) | (0.0201) | (0.0250) |
| Formal | | 0.302*** | 0.292*** | 0.187*** | 0.257*** |
| Business | | (0.0264) | (0.0192) | (0.0210) | (0.0236) |
| Private business | | -0.138*** | -0.326*** | -0.0477* | -0.00486 |
| or self employed | | (0.0264) | (0.0265) | (0.0220) | (0.0209) |
| Non profit | | | | | |
| business | | 0.193*** | -0.375*** | -0.367*** | -0.351*** |
| | | (0.0412) | (0.0400) | (0.0535) | (0.0362) |
| Manager | 0.850*** | 0.838*** | 0.944*** | 0.900*** | 1.415*** |
| | (0.0338) | (0.0509) | (0.0450) | (0.0280) | (0.0292) |
| Operator | 0.212*** | 0.164*** | 0.173*** | 0.205*** | 0.238*** |
| | (0.0177) | (0.0237) | (0.0207) | (0.0190) | (0.0220) |
| Professional | 0.761*** | 0.709*** | 0.818*** | 0.742*** | 1.346*** |
| | (0.0350) | (0.0556) | (0.0422) | (0.0304) | (0.0298) |
| Technician | 0.675*** | 0.509*** | 0.540*** | 0.493*** | 0.572*** |
| | (0.0232) | (0.0367) | (0.0293) | (0.0224) | (0.0240) |
| Service worker | 0.245*** | 0.0132 | -0.0711* | 0.114*** | 0.469*** |
| | (0.0246) | (0.0501) | (0.0325) | (0.0290) | (0.0263) |
| Clerk | 0.377*** | 0.387*** | 0.426*** | 0.427*** | 0.587*** |
| | (0.0207) | (0.0326) | (0.0242) | (0.0188) | (0.0207) |
| Agricultural | | | | | |
| worker | 0.633*** | -0.0292 | 0.208* | 0.0869 | 0.172* |
| | (0.0907) | (0.0370) | (0.0905) | (0.114) | (0.0690) |
| Artisan | 0.308*** | 0.189*** | 0.210*** | 0.298*** | 0.413*** |
| | (0.0202) | (0.0285) | (0.0218) | (0.0202) | (0.0209) |
| Domestic | | | | | |
| Worker | -0.00671 | 0.119** | 0.206*** | 0.0520* | -0.100*** |
| | (0.0243) | (0.0373) | (0.0247) | (0.0233) | (0.0202) |
| Mining | 0.790*** | 0.632*** | 0.686*** | 0.519*** | 0.345*** |
| | (0.0269) | (0.0350) | (0.0301) | (0.0334) | (0.0342) |
| Manufacturing | 0.803*** | 0.460*** | 0.412*** | 0.158*** | 0.00531 |
| | (0.0221) | (0.0312) | (0.0238) | (0.0226) | (0.0244) |
| Utilities | 0.984*** | 0.626*** | 0.397*** | 0.144 | 0.105 |
| | (0.0423) | (0.147) | (0.0538) | (0.0749) | (0.0594) |
| Construction | 0.653*** | 0.423*** | 0.330*** | 0.142*** | -0.00862 |

| | | | | | |
|---|---|---|---|---|---|
| | (0.0284) | (0.0443) | (0.0297) | (0.0251) | (0.0242) |
| Trade | 0.637*** | 0.347*** | 0.252*** | 0.125*** | -0.0430* |
| | (0.0221) | (0.0321) | (0.0219) | (0.0210) | (0.0208) |
| Transport | 0.849*** | 0.552*** | 0.415*** | 0.230*** | 0.0467 |
| | (0.0264) | (0.0417) | (0.0305) | (0.0276) | (0.0306) |
| Finance | 0.855*** | 0.523*** | 0.407*** | 0.221*** | -0.0443 |
| | (0.0271) | (0.0416) | (0.0276) | (0.0230) | (0.0232) |
| Community, Social and Personal Services | 0.871*** | 0.475*** | 0.282*** | 0.247*** | -0.0250 |
| | (0.0218) | (0.0374) | (0.0285) | (0.0256) | (0.0239) |
| Constant | 4.909*** | 5.210*** | 5.665*** | 6.223*** | 6.167*** |
| | (0.103) | (0.105) | (0.0853) | (0.0717) | (0.0742) |
| R-sq | 0.703 | 0.644 | 0.679 | 0.571 | 0.347 |
| N | 19986 | 21927 | 29433 | 32157 | 62116 |

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

Notes: 1. * p < 0.1, ** p < 0.05, *** p < 0.001

2. Controls include province dummies are not reported here.

3. Urban/rural status not available in survey between 2005 and 2007.

4. Variables on business type (formal business, private business or self-employed or non-profit business) and contract type not available for 1995.

5. The base sector is Agriculture, the base occupation is elementary workers, the base race group is White and the base business type is Government.

6. The base education category are those with no schooling or primary schooling.

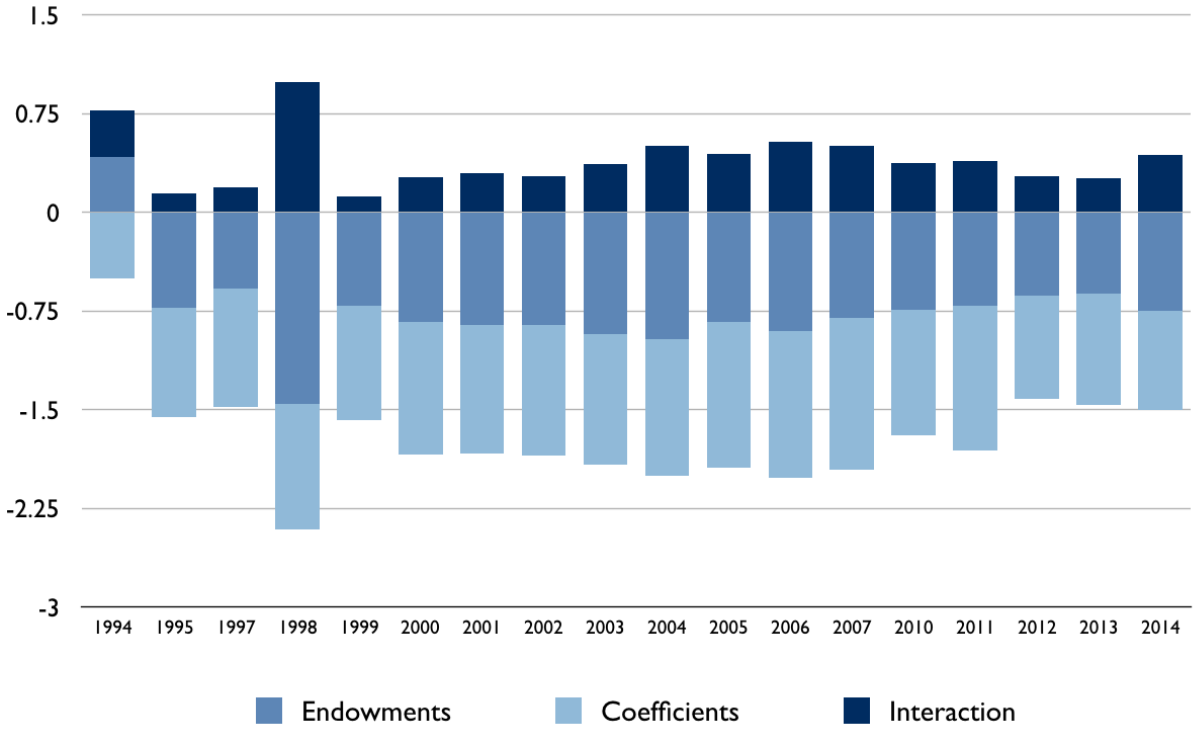
7. The domestic services sector is omitted from the regression due to collinearity with the domestic services occupation group.

8. Prior to quarter 3 2012 all non-responses on the outcome variable (earnings) were imputed by Stats SA. Post quarter 3 2012 this imputation on non-responses no longer took place.

The sectoral wage premium results confirm that all industries pay significantly higher wages than the agricultural sector (the base category), although in most cases this difference is decreasing, supporting the econometric evidence elsewhere showing a rise in mean farmworker wages arising out of the minimum wage in the sector (Bhorat, Kanbur & Stanwix, 2014). Whilst many of the sectoral dummies are insignificant in 2014, the results for 2010 suggest that the Mining industry, followed by the public sector and Transport main sector – continue to offer the highest sectoral mean wage premia. The lower than expected financial services premium, which stood at 86 percent in 1995, is in large part (as we argue below) due to the rise of the TES sector in the domestic economy.

Decomposing the changes in earnings over time provides further insight into the patterns underlying the distribution of income in South Africa. An Oaxaca-Blinder decomposition of earnings by post-secondary education, relative to all other education levels, shows that there would be a partial decline in wages to those without post-secondary education, based on endowments alone. This decrease is compounded when using the coefficients of those without post-secondary education – reinforcing both the earnings function result above, and of course the description of structural transformation i.e. that the returns to not having a post-secondary education reinforce vulnerability in the South African labour market. Finally, the interaction of endowments and coefficients increases the earnings potential of those with a post-secondary education, compared to those with secondary education or lower, reinforcing the skills premium associated with accumulating post-secondary human capital.

**Figure 10: Oaxaca-Blinder Wage Decomposition, By Post-Secondary Education.**




Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

There are other interesting patterns to emerge from decomposing wages over time. For instance, the gender wage gap is driven mostly by differences in the returns to what women could potentially earn with their current endowments, but using the coefficients attributable to men (Appendix Figure A1). Further, employment in the services, manufacturing, or finance sectors, (Appendix Figure A2-4) all experience a decline in the absolute size of the effect of the decomposition of earnings over time. Across all three sectors, the endowment and coefficient effects result in a negative effect on the wages of those working in these sectors, relative to all other sectors in the economy. For instance, in the case of the services sector, the endowments of service workers with the characteristics of non-service workers will result in a lower wage. Similarly, if the coefficients of those in other sectors are applied to those in the services sector, it will result in lower earnings for those in the services sectors of the economy. And finally, the interaction of coefficients of non-service workers and endowments of service workers results in a positive effect on the earnings of service workers. A final pattern which emerges, is that if urban dwellers used the coefficients of those in rural areas, their returns to employment would be lower (Appendix Figure A5). Similarly, if urban dwellers had the characteristics of rural dwellers, the (endowment) effect is negative.

### *3.2.3 Wage Inequality in the Inter-Quantile Range*

The interquantile regression for the 90$^{th}$ and 50$^{th}$ quantiles is specified as the linear combination of the quantile regressions of each, as follows:

$$Q_{90}(y_{i,t} \mid \mathbf{X}_{i,t}) = \beta_{0,90} + \mathbf{X}_{i,t}'\beta_{90}$$

$$Q_{50}(y_{i,t} \mid \mathbf{X}_{i,t}) = \beta_{0,50} + \mathbf{X}_{i,t}'\beta_{50}$$

$$Q_{90}(y_{i,t} \mid \mathbf{X}_{i,t}) - Q_{50}(y_{i,t} \mid \mathbf{X}_{i,t}) = (\beta_{0,90} - \beta_{0,50}) + \mathbf{X}_{i,t}'(\beta_{90}-\beta_{50})$$

The resultant interquantile regressions assist in explaining the determinants of differences between quantiles. In the models estimated, y, the outcome variable, is real monthly wages and excludes zero-wage earners. The vector of explanatory variables, **X**, contains a set of demographic and individual characteristics, including; age, sex, education level (no education,

primary, secondary, and post-secondary), marital status, skills level (skilled, semi-skilled and unskilled), sector of employment (agriculture, mining, manufacturing, utilities, construction, wholesale and retail trade, transport, financial services, and community, social and personal services), hours worked, province, rural/urban status, household share of individuals (those under age 7, between 8 and 15, between 16 and 64, and over 65), and race (African, White, and Coloured).

Table 12 shows that increased post-secondary education decreases the wage gap across all inter-quantiles, excluding the 90:10 gap in 2010/2011 and 2013/2014. The results show that, across the wage distribution, the 50:10 wage gap is the least responsive to changes in either primary, secondary or tertiary education, showing that at the bottom of the wage distribution education is actually less important in explaining earnings inequality.

**Table 12: Education and the Inter-Quantile Wage Gap (1995-2014).**

| Inter-quantile range | Education Level | 1995-1996 | 1998-1999 | 2001-2002 | 2004-2005 | 2006-2007 | 2010-2011 | 2013-2014 |
|---|---|---|---|---|---|---|---|---|
| 90:10 | Primary | -0.17*** | -0.06 | -0.13*** | -0.07* | -0.09** | -0.10* | -0.13** |
| | | (0.04) | (0.04) | (0.02) | (0.03) | (0.03) | (0.04) | (0.04) |
| | Secondary | -0.18*** | -0.06 | -0.08*** | -0.11*** | -0.10*** | -0.15*** | -0.13*** |
| | | (0.03) | (0.04) | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) |
| | Post-secondary | -0.19*** | -0.28** | -0.24*** | -0.31*** | -0.30*** | -0.05 | 0.03 |
| | | (0.04) | (0.09) | (0.04) | (0.06) | (0.04) | (0.03) | (0.05) |
| 90:50 | Primary | -0.10*** | -0.06* | -0.11*** | -0.10*** | -0.09*** | -0.05 | -0.01 |
| | | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) | (0.03) | (0.03) |
| | Secondary | -0.05** | -0.04 | -0.06*** | -0.08*** | -0.06*** | -0.05** | -0.04 |
| | | (0.02) | (0.02) | (0.01) | (0.01) | (0.01) | (0.02) | (0.02) |
| | Post-secondary | -0.02 | -0.18*** | -0.15*** | -0.19*** | -0.20*** | -0.19*** | -0.23*** |
| | | (0.02) | (0.05) | (0.03) | (0.03) | (0.02) | (0.01) | (0.03) |
| 50:10 | Primary | -0.07** | 0.00 | -0.03 | 0.03 | 0.00 | -0.04 | -0.12*** |
| | | (0.02) | (0.03) | (0.03) | (0.02) | (0.03) | (0.03) | (0.03) |
| | Secondary | -0.13*** | -0.01 | -0.03 | -0.03* | -0.04 | -0.09*** | -0.10*** |
| | | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) |
| | Post-secondary | -0.17*** | -0.10 | -0.10* | -0.12** | -0.10** | 0.14*** | 0.26*** |
| | | (0.04) | (0.06) | (0.04) | (0.04) | (0.03) | (0.02) | (0.05) |

Source: Post-*Apartheid* Labour Market Series, Authors' Calculations.
Notes: * p < 0.1, ** p < 0.05, *** p < 0.001.

This result may be reflective of the role that the minimum wage and other exogenous policies, such as collective bargaining agreements, have played in securing higher wages for the bottom (10$^{th}$ percentile) of the wage distribution.

The gender coefficients on the inter-quantile regressions estimates indicate that being female has a significant impact on the size of the 90:10 wage gap, and the 50:10 wage gap respectively (Table 13), for the period 1995 to 2011. However, by 2013, being a female worker was associated with a lower wage gap for the 90:10 and 50:10 inter-quantile differences, suggesting that some form of gender-based wage compression was beginning to occur. Notably though, for all years in the sample, being female was not found to have a significant effect on the 90:50 wage gap.

**Table 13: Gender and the Inter-Quantile Wage Gap (1995-2014).**

| Inter-quantile range | 1995-1996 | 1998-1999 | 2001-2002 | 2004-2005 | 2006-2007 | 2010-2011 | 2013-2014 |
|---|---|---|---|---|---|---|---|
| 90:10 | 0.05** | 0.03 | 0.05*** | 0.10*** | 0.06** | -0.01 | -0.11*** |
| | (0.02) | (0.02) | (0.01) | (0.03) | (0.02) | (0.02) | (0.03) |
| 90:50 | -0.01 | -0.01 | 0.02 | 0.01 | 0.01 | -0.03 | 0.00 |
| | (0.02) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.02) |
| 50:10 | 0.06*** | 0.04* | 0.03 | 0.10*** | 0.04* | 0.02 | -0.11*** |
| | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) |

Source: Post-*Apartheid* Labour Market Series, Authors' Calculations.
Notes: * p < 0.1, ** p < 0.05, *** p < 0.001.

In other words, gender is not a determinant of the wage difference between the 90$^{th}$ and 50$^{th}$ percentiles – indicating that it is a combination of education, skills, hours worked, sector of employment, race and other unobservable factors that are driving the wedge between the middle and the top of the income distribution – with gender actually being fairly marginal in explaining wage inequality.

As far as race is concerned, controlling for all other determinants of the conditional wage gap between percentiles, the 90:10 and 90:50 wage gaps have risen in the post-*apartheid* period (See Appendix 2). Put differently, the spread of conditional inter-quantile inequality in labour market earnings has increased for African and Coloured workers relative to White workers since the end of *apartheid*, even after controlling for skills, education, location and other demographic variables. This points to the impact that structural inequality has had on the distribution of wages in the South African labour market. That is, for the cohort of White workers, inequality in earnings is not as dispersed as it is for the African and Coloured population groups, even controlling for observable characteristics.

Additionally, our results from the inter-quantile regressions highlight a few key trends: Firstly, that working in an urban job has a significant effect on the wage gap for the 90:10, 90:50 and 50:10 gaps, but over time this significance has been decreasing. Secondly, the number of hours worked has a significant effect on the size of the wage gap between quantiles. A one percent increase in hours worked between the 90$^{th}$ and 10$^{th}$ percentiles has a much larger effect than the effect of an increase in hours worked on the 90:50 and 50:10 wage gaps respectively. This is to be expected, as the returns to labour at the top of the distribution are expectedly larger than the returns at the middle and at the bottom. Another significant finding is that household share of individuals in various age categories is not a significant and consistent determinant of the interquantile wage gap over time. Finally, and perhaps most importantly, the conditional effects of sector of employment on the interquantile wage gap are pronounced. Using Agriculture as the referent sector, and considering the time periods from 2001/2 onwards, all sectors (barring Utilities) have paid a wage premium relative to Agriculture at all interquantiles considered. In other words, working in manufacturing, wholesale and retail trade, transport, financial services or community and social services, will lead to a larger wage gap relative to the wage gap for a worker in Agriculture, be it at the 90:10 wage gap, the 90:50 gap or 50:10 gap.

The above has attempted an empirical assessment of key trends and movements in wage levels and wage inequality in the South African labour market. We find, firstly, that wage inequality has risen steadily over the post-*apartheid* period – marked by the wage Gini increasing from 0.58 to 0.69 over the 1995-2015 period. Secondly, we find strong evidence that overall wage inequality is driven by rising inequality in between the 90$^{th}$ & 50$^{th}$ and 90$^{th}$ & 10$^{th}$ percentile workers – whilst a compression in wage differences is observed between the 50$^{th}$ and 10$^{th}$ percentiles of the distribution. The latter leads to a key conclusion of the paper – that workers in the middle of the distribution have witnessed an erosion in the growth of their wages over time relative to the rest of the workforce in the labour market. Fourthly, our

modelling of labour supply reinforces the fact that race and gender continue to be key determinants of participation and employment outcomes. Notably though, some decline in the gender bias for participation and employment is observed over time. Fifthly race and gender in earnings outcomes, whilst retaining their predicted bias where African and female workers earn over average significantly less than male and White workers, does begin to show some decline in the post-2010 period. The latter result though, may, it must be stressed, be partly driven by an anomaly with the earnings data. The results for education levels suggest that increased levels of human capital accumulation – in particular for those with post-secondary schooling – results in a significantly greater probability of working, and thus in turn, a much higher mean wage. Crucially, the notion that better educated workers are much more likely to find employment and can earn a conditional average premium of about 60 percent, reinforces the pattern of structural economic transformation described above. Finally, the occupational mean wage results confirm the pattern of skills-biased labour demand in the South African economy, whilst we retain some support for a decline in the returns to mid-level, relative to elementary, workers. The stark result of a rise in returns to clerical workers confirms the conversion of South Africa to a de-facto services-based economy. Ultimately then, in an economy which has witnessed the combination of a rise in the service sector and a concomitant skills-biased labour demand trajectory, higher educated workers in high skilled occupations are strong relative winners in the domestic labour market.

## 4 Unionisation and Wage Inequality in South Africa

Union membership forms an integral part of the structure of the South African economy. The roots of its centrality lie in the socio-political role that union membership played in opposition to the *apartheid* regime. For the better part of the twentieth century, African workers were disenfranchised, with jobs being preserved for White individuals over Africans. Union membership, as allowed for under the industrial Conciliation Act of 1910, was not extended to African workers until the amendment act of 1979 (Bhorat, Jacobs & Yu, 2013).

With this history, trade unions in South Africa were inextricably political, acting as the voice of the African working class in the move towards democracy. In the late 1980's, African trade unions successfully managed to lobby for the creation of a national bargaining council (Godfrey, Clark & Theron, 2005), which led the way toward more centralised collective bargaining from the 1990's onward (Bhorat, Naidoo & Yu, 2014). As of 2016, there were 195 registered trade unions in South Africa (Department of Labour, 2016) with 18.2 percent of the private sector workers unionised in 2016: larger in absolute terms than any other year preceding 2016, but lower in proportion to the number of workers.

Bhorat et al. (2014) show that union density estimates for South Africa are not an outlier when compared to other OECD countries. In fact, the average union density for OECD countries was 30 percent in 2013, while South Africa's was 37 percent (Bhorat, et al., 2014). Through the use of a dataset from the 1990's by Botero, Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2004), it has been shown that South Africa's relative union power measured by a labour union power index is much higher than the mean value of other countries (Bhorat, et al., 2014). In turn, the protection of workers' index, capturing how the country fares during collective disputes, shows that South Africa falls below the global average in all income classified country categories. It has thus been argued that while South Africa exhibits a strong legally enshrined right to unionise, the levels of union power are not disproportionately high, when measured by the collective dispute index (Bhorat, Naidoo & Yu, 2014).

Perhaps a more tangible measure of the power of trade unions in South Africa pertains to wage premia associated with trade union membership. Bhorat, Goga and van der Westhuizen (2012), using the South African labour force survey, show that union members outside of the bargaining council system earned a premium of 7.04 percent relative to non-union members. This presents evidence that union membership is associated with statistically significant wage

premia, and that unions are also able to negotiate for additional gains for their members within the bargaining council system. For instance, the total estimated premium to workers within the bargaining council system stood at 22 percent (Bhorat, et. al, 2012) in 2005. Via a comparison with countries such as Brazil, Ghana and Mexico, the authors also show that the wage premia negotiated by unions in South Africa are by no means excessive compared to other countries at similar levels of development.

Table 14 shows that in general, there has been an average increase in public sector union membership as a percentage of public sector workers between 1997 and 2016. On the other hand, there has been a trend of decreasing private sector union membership as a percentage of total workers in the private sector. These trends show possible segmentation between public and private sector workers in the South African labour market, but also a clear correlation with the decline in employment observed in previously highly unionised sectors such as Mining and Manufacturing.

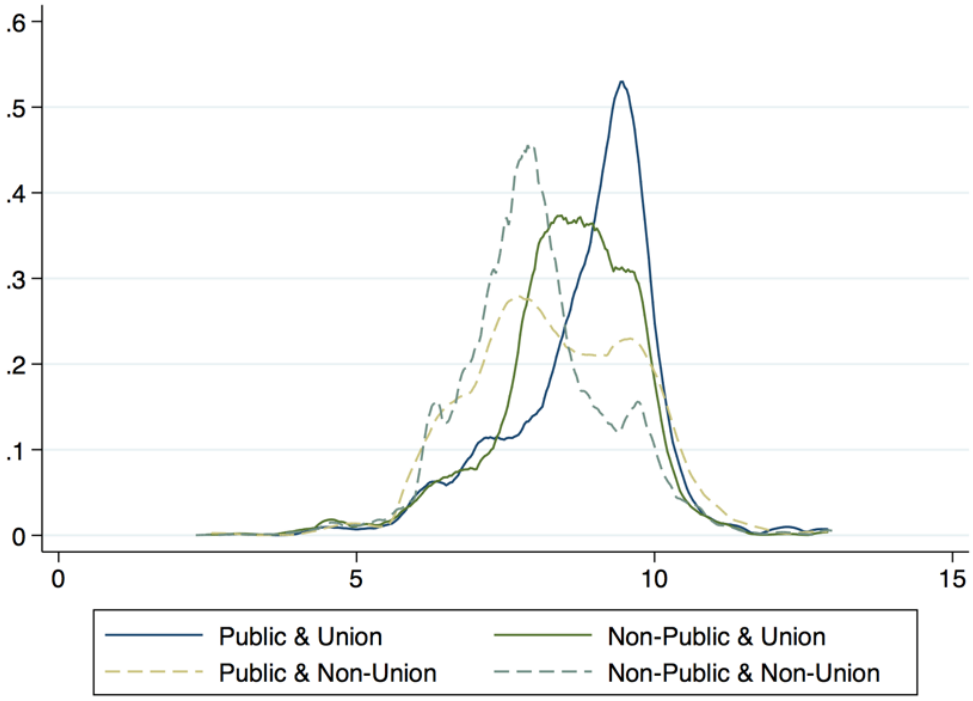
**Table 14: Trade Union Membership, Public and Private Sector, selected years.**

| Year | Private sector Number of union members | Private Sector Union members as % of workers | Public sector Number of union members | Public Sector Union members as % of workers |
|---|---|---|---|---|
| 1997 | 1 813,217 | 35.6 | 835,795 | 55.2 |
| 2001 | 1 748,807 | 30.6 | 1 070,248 | 70.1 |
| 2005 | 1 925,248 | 30.1 | 1 087,772 | 68.4 |
| 2010 | 1 888,293 | 26.3 | 1 324,964 | 74.6 |
| 2013 | 1 868,711 | 24.4 | 1 393,189 | 69.2 |
| 2016 | 2 596,084 | 18.2 | 1 192,447 | 66.1 |

Source: Adapted from Bhorat, Naidoo and Yu (2014); 2016 Figures from Quarterly Labour Force Survey, Q3 2016.

The impact that this trend in separation of union membership by the public and private sectors has had on the distribution of wages, is captured in the distribution of wages by sector and union status presented in Figure 11. It is clear that across the income distribution, unionised workers earn more on average than non-unionised workers, with public sector unionised workers earning the highest wages. This segmentation is cemented by the modes of the non-union wage distribution, where these modes are significantly to the left of the modes of the unionised workers' wage distributions. This demonstrates what Bhorat, Naidoo, Oosthuizen and Pillay (2015) refer to as the public/private segmentation of the South African labour market.

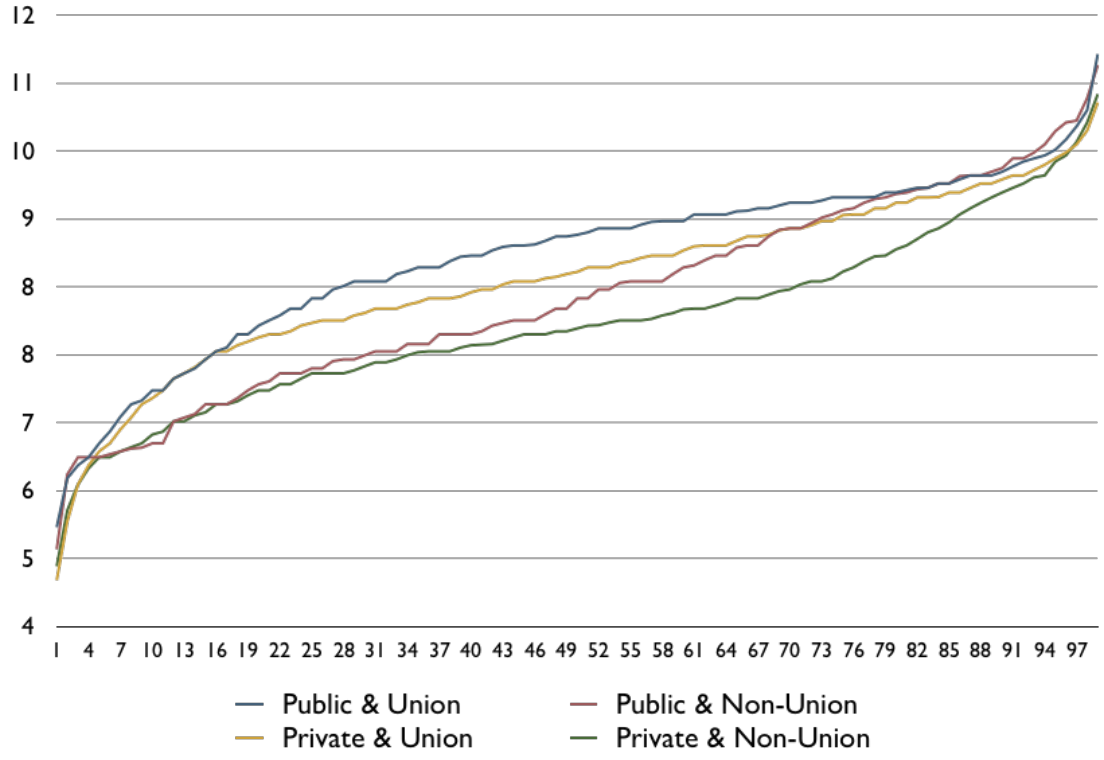
**Figure 11: Wage Distributions: Union Status and Public/Private Sector (2014).**




Source: LMDS, Q4 2016, Author's calculations.

Figure 12 presents the wages of public sector, private sector, unionised and non-unionised workers by percentile, to illustrate the impact of the segmentation discussed above, on wage inequality in South Africa.

**Figure 12: Percentile Distribution of Log wages, Public and Private Union Status, 2014.**

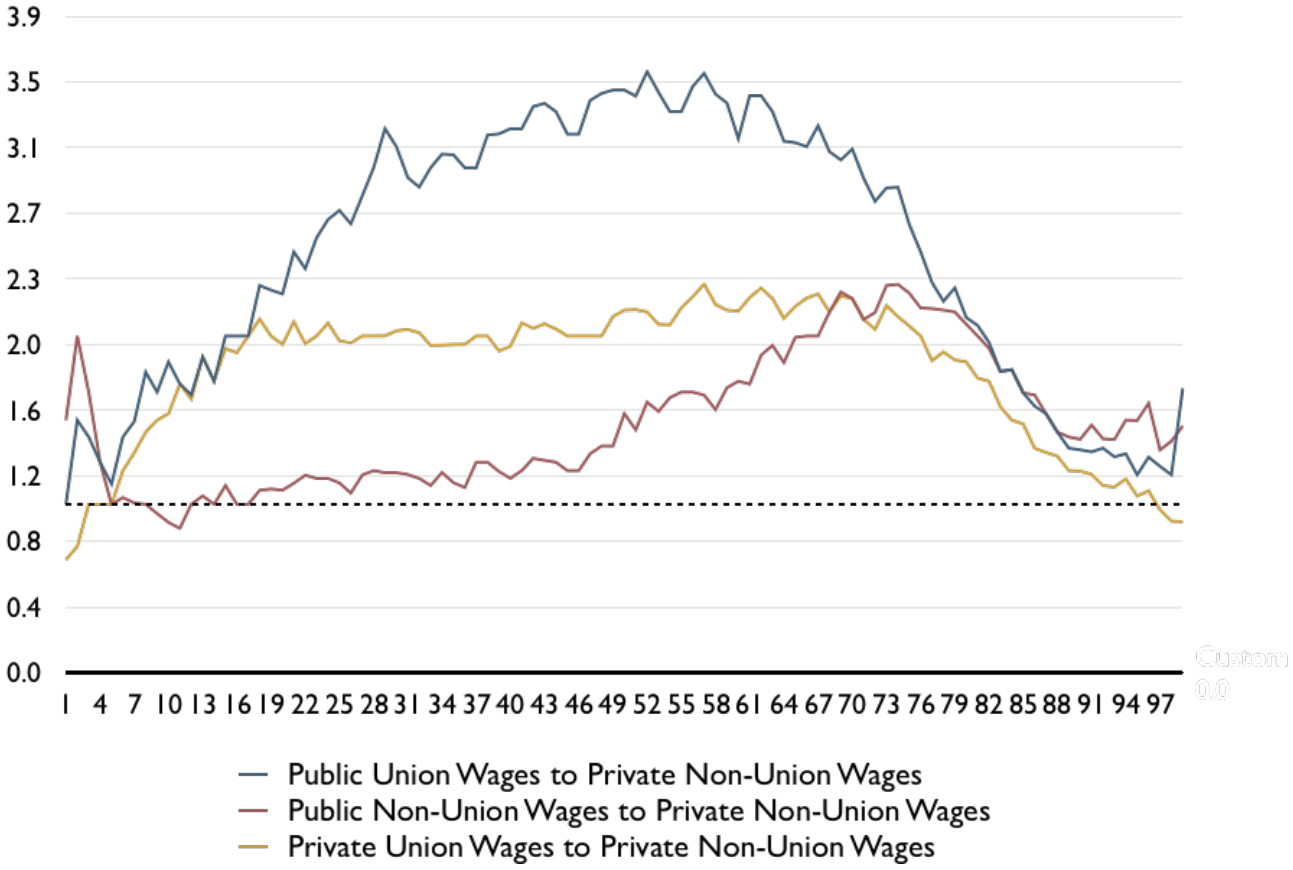



Source: LMDS, Q4 2016, Author's calculations.

What is evident is that at the extremities of the distribution, log wages are indistinguishable from each other. In general, at the bottom of the distribution the minimum wage seems to be at work protecting the earnings of workers irrespective of union status, whilst the skills premia at the top of the distribution remunerates workers equally as well, irrespective of union status or sector. However, between the 20th and 80th percentiles of the wage distribution, a clear ranking of earnings is visible. Unionised workers in the public sector earn the most, followed by unionised workers in the private sector. This is followed by non-unionised public sector workers and those who earn the least: private non-union workers. This is further evidence of a clear hollowing out of the middle of the distribution, suggesting that those who are not unionised and in the private sector have lost the most in the labour market – thus presenting a key channel through which rising wage inequality has manifested in the domestic labour market.

In trying to get a better sense of these public-private and union-non-union wage differentials, Figure 12 presents the ratio of the wages of unionised public sector workers, non-unionised public sector workers, and unionised private sector workers, to the base group of private sector non-unionised workers. While Figure 12 shows that the wages of this base group are the lowest, it also shows the extent to which the wages of other groups are larger than this base group across every point of the income distribution.

**Figure 13: Wage Ratios By Percentile, Public and Private Union Status, 2014.**




Source: LMDS, Q4 2016, Author's calculations.

From Figure 12 it is clear that the gap between public union wages and private non-union wages is the largest towards the middle of the distribution. This reinforces the finding above, that South Africa's middle-income earners have indeed witnessed the largest deterioration in their earnings. In terms of our data estimates, it is at the middle of the distribution that the gap between the wage for public sector unionised work and private sector non-unionised work is

the largest, showing that of the missing middle, it is the private non-unionised workers who have lost out the most. At the lower percentiles the ratio of public union wages to private non-union wages are the smallest, which we would ascribe, as noted above, to the promulgation of sectoral minimum wage laws which have served to protect the earnings of all workers at this end of the distribution.

## 5 Minimum Wages and Inequality in South Africa

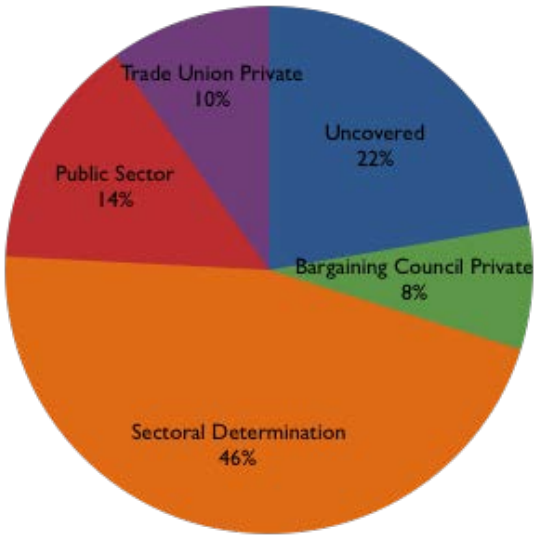
The Basic Conditions of Employment Act (BCEA) of 1997 made provision for a system of Sectoral Determinations which established minimum wages for workers in specific sectors of the economy in South Africa. The first minimum wage was introduced in 1999, and since then eleven sectoral determinations have been established to govern vulnerable workers in different sectors of the economy[8]. However, in February 2017, the South African government announced its intention to promulgate the new National Minimum Wage (NMW), which would to be applied to all sectors of the economy. The value of the NMW has, at the last official announcement, been set at R3 500 per month, or R20 per hour, to be effective by 8 May 2018.

The NMW is part of a number of labour market policies (elaborated upon below) designed to protect and improve earnings of those at the bottom of the income distribution. The NMW uses the definition of economic vulnerability set out in the BCEA to determine the initial subsample of workers to whom the NMW could potentially apply. That is, the BCEA institutes an income threshold below which workers are considered economically vulnerable, in the sense that their bargaining power is compromised. The economic vulnerability income threshold in the BCEA was R205 433.30 per year, or R17 119 per month, in 2014.

Figure 14 below looks at the typology of workers below this low wage threshold in 2014. It is clear that of the economically vulnerable in the labour force, more than half are covered by a sectoral determination, 10 percent belong to a private trade union, 8 percent to a private bargaining council, and 14 percent to the public sector, while 22 percent remain uncovered.

[8] Currently the sectoral determinations apply to the; Forestry, Agriculture, Mining, Contract Cleaning, Children in the performance of advertising, Artistic and Cultural Activities, Taxi Operators, Civil Engineering, Learnerships, Private Security, Domestic Workers, and Wholesale and Retail and Hospitality sectors (Department of Labour, 2010).

**Figure 14: Minimum wage coverage in South Africa, 2014.**




Source: Bhorat, et al. (2016).

Whilst the largest proportion of vulnerable workers however, are covered by some form of a sectoral minimum wage (46 percent), it is evidently the 22 percent of uncovered workers that the impending national minimum wage would, in the first instance, be targeting.

Table 15 shows that of these uncovered workers, most belong to the financial services, transport, construction, and manufacturing industries. Those in the financial services sector are predominantly workers in the temporary employment services sector – an issue we turn to in greater detail below.

**Table 15: Uncovered Workers, By Main Sector (2014).**

| Main Sector | Number of Workers | % of Uncovered Workers |
|---|---|---|
| Agriculture | 46 931 | 0 |
| Mining | 35 062 | 1 |
| Manufacturing | 719 467 | 31 |
| Utilities | 24 320 | 1 |
| Construction | 648 839 | 29 |
| Transport, storage and communication | 250 514 | 11 |
| Financial Services | 613 799 | 26 |
| Private Households | 14 642 | 1 |
| Other | 1 567 | 0 |
| **Total** | **2 355 142** | **100** |

Source: Bhorat, et al. (2016).

In order to better understand the characteristics of individuals covered by sectoral determinations in South Africa, the demographic statistics are presented below. The average covered worker is male, an urban resident, African, between the age of 25-34, has an incomplete secondary schooling, and predominantly resides in Gauteng. This characterisation fits the profile of a semi-skilled, racially disadvantaged worker noted above. This implies that a key motivator to becoming unionised is therefore to secure higher returns in wages in a market that otherwise penalises low skilled individuals.

**Table 16: Minimum Wage Workers, Demographic Characteristics (2014).**

| Gender | % | Geographical Area | % |
|---|---|---|---|
| Male | 57.6 | Rural | 29.8 |
| Female | 42.4 | Urban | 70.2 |
| **Race** | **%** | **Age Cohort** | **%** |
| African | 85.4 | 15 - 24 | 10.6 |
| Coloured | 9.7 | 25 - 34 | 33.6 |
| Indian | 1.3 | 35 - 44 | 30.0 |
| White | 3.6 | 45 - 54 | 17.9 |
| | | 55 - 65 | 7.5 |
| | | 65+ | 0.4 |
| **Province** | **%** | **Education Level** | **%** |
| Western Cape | 14.0 | No Schooling | 4.0 |
| Eastern Cape | 10.0 | Pre Primary | 1.9 |
| Northern Cape | 1.8 | Primary | 16.9 |
| Free State | 5.2 | Incomplete Secondary | 70.5 |
| Kwazulu-Natal | 19.7 | NTC | 0.8 |
| North West | 5.9 | D/C less matric | 0.6 |
| Gauteng | 25.1 | D/C+ Matric | 3.6 |
| Mpumalanga | 9.6 | Tertiary degree | 0.6 |
| Limpopo | 8.7 | Other | 1.3 |

Source: Adapted from Bhorat, et al. (2016), Author's calculations.

The National Minimum Wage (NMW) is planned, at the time of writing, to be instituted by 1 May 2018 at a nominal rate of R3 500 per month. Assuming a constant five-year average inflation rate, the real figures in 2015 prices are presented in Table 17***Table** 17*. The table presents an overview of the sectoral determination schedules of all sectors, the median wage earned in the sector, the NMW in real 2015 prices, and the difference and ratio between the NMW and the median wage earned. The last column of the table shows that across all sectors, wages would have to increase by an average of 19 percent to comply with the newly instituted minimum wage. The forestry, domestic workers and contract cleaning sectors would experience highest average increases in wages. The private security, and wholesale and retail trade sectors, exhibit a median wage that exceeds the NMW, so a smaller average adjustment would have to be made in these sectors.

**Table 17: Overview of Sectoral Minimum Wages (2015 prices)**

| Sectoral Minimum Wage | Lowest Sectoral Min. Wage | Highest Sectoral Min. Wage | Median Reported Wage | NMW 1st year | Difference - NMW and Median Sectoral Wage | Ratio *NMW: Median Sectoral Min. Wage* |
|---|---|---|---|---|---|---|
| Agriculture | R2 607 | R2 607 | R2 175 | R2 678[9] | R 503 | 1.23 |
| Forestry | R2 607 | R2 607 | R1 585 | R2 976 | R 1,391 | 1.88 |
| Domestic Workers | R1 813[10] | R2 065[9] | R1 359 | R2 232[11] | R 873 | 1.64 |
| Private Security | R2 067[12] | R6 155[10] | R3 137 | R2 976 | *R -161* | *0.95* |
| Wholesale & Retail | R2 514[13] | R6 506[11] | R3 171 | R2 976 | *R -195* | *0.94* |
| Taxi | R2 113 | R3 021 | R2 823 | R2 976 | R 153 | 1.05 |
| Hospitality | R2 761 | R3 077 | R2 719 | R2 976 | R 257 | 1.09 |
| Contract Cleaners | R2 844[14] | R3 122[12] | R2 196 | R2 976 | R 780 | 1.36 |
| **Avg. / Total** | **R2 522** | **R3 624** | **R2 396** | **R2 846** | **R 450** | **1.19** |

Source: Bhorat, et al. (2016) and Author's calculations.
Note: The sample has been restricted to 'employees' who earn less than the threshold for basic conditions of employment to be enforced, monthly legislated wages are reported for each SD.

Nonetheless, in their 2012 study, Bhorat, Kanbur and Mayet (2013) investigated the impact of the existing sectoral minimum wage laws in five low wage sectors: Wholesale and retail, domestic work, forestry, security, and taxi operators. The authors analysed the impact of the minimum wage on employment, wages, and hours worked. Using Labour Force Survey data between 2000 and 2007, the authors controlled for sector specific factors that could affect the outcome variables. Three main results were reported: First, that there was no significant negative impact of the minimum wage on the probability of employment across four of the five sectors considered. The negative impact on the probability of employment was observed for the taxi sector. Second, the minimum wage law was associated with a significant increase in real hourly wages in the post-law period, between 5 and 20 percent. This increase is proportionally higher in district councils where pre-law wages were further below the introduced minimum. Thirdly, in terms of the demand-side adjustments by firms, the results show that in some sectors employers have responded to the introduction of the minimum wage by decreasing the number of weekly hours worked. However, in three of these sectors, workers experienced an improvement in real monthly income via an increase in real hourly wages that outweighed decreases in working hours (Bhorat, Kanbur and Mayet, 2013).

[9] The National Minimum Wage panel report suggests that for the first year agricultural workers be paid 90 percent of the full NMW amount.
[10] Domestic workers who work fewer than 27 hours a week are excluded from this calculation.
[11] The National Minimum Wage panel report suggests that for the first year domestic workers be paid 75 percent of the full NMW amount.
[12] This figure only includes private security guards.
[13] This figure excludes the legislated wages for a Manager, Assistant Manager, Supervisor, and Trainee Manager, which are far above the other legislated wages in the Wholesale and Retail Sector.
[14] The contract cleaning SD only specifies a minimum hourly wage. To convert this hourly wage to a monthly wage, it was assumed contract cleaners work for 8 hours a day for 21.6 days a month.

Bhorat, Kanbur and Stanwix (2014) investigate the impact of minimum wages on Agriculture. They find that the introduction of the minimum wage in Agriculture was distinctly different to the other minimum wage sectors, as the law significantly reduced employment levels, with a disproportionate impact on part-time workers. Furthermore, the average number of hours worked declined, whilst average wages increased for those workers who retained their jobs.

To understand the impact of the proposed NMW on the distribution of inequality, the inter-sectoral Gini coefficients from Table 8 are replicated across sectors; assuming that all workers below the minimum wage are eligible for a wage increase, but that those above the threshold do not experience an increase in wages. It is also assumed that not all workers will receive a minimum wage increase, since not all employers may comply with the legislation. Following Bhorat, Kanbur and Mayet (2013), and calculations of non-compliance from Bhorat, et al. (2016), an average compliance rate of 60 percent is assumed.

**Table 18: Change in Wage Gini – 60% Enforcement of NMW, 2014.**

| Sector | Wage Gini 2014 | Wage Gini for Min Wage Scenario 2014 | % Change |
|---|---|---|---|
| Agriculture | 0.72 | 0.36 | -50 |
| Mining | 0.50 | 0.36 | -28 |
| Manufacturing | 0.65 | 0.42 | -35 |
| Construction | 0.68 | 0.34 | -50 |
| Trade | 0.67 | 0.44 | -34 |
| Transport | 0.60 | 0.46 | -23 |
| CSP Services | 0.72 | 0.55 | -24 |
| Finance | 0.78 | 0.42 | -46 |
| **Overall Gini** | **0.69** | **0.44** | **-36** |

Source: Post-*Apartheid* Labour Market Series, Authors' calculations.

Table 18 above, shows that holding all else constant, an enforcement rate of 60 percent will decrease wage inequality levels among wage earners by 36 percent, with the largest gains in the finance and construction sectors. This however, does not take into account the complexities and rigidities of the South African labour market, such as the potential disemployment effects, or adjustments at the extensive and intensive margin.

Using a standard Computable General Equilibrium (CGE) model that assumes unemployment for unskilled labour, and a labour market wherein skilled and semi-skilled labour are fully employed, Bhorat et al. (2016) show the impact of the change in the minimum wage rate, when all effects (both direct and indirect) from this policy shock to the economy are taken into account. The authors use a static CGE model, which does not assume long term shifts in the economy or sectoral declines, and in which all employment shifts observed are only applicable to wage-earning employees. Since the study was conducted before the final decision was reached on the value of a national minimum wage, two scenarios were utilised. One for a real minimum wage of R2 447 (2015 prices) and one for a real minimum wage of R3 400 (2015 prices). Furthermore, three different wage elasticities and predicted wage increases across sectors were used to generate a set of employment effects for these national minimum wage scenarios. These employment effects in turn affect the working poor and level of household inequality.

Bhorat et al. (2016) show that the biggest potential job losses in response to the introduction of the national minimum wage, contingent on the various wage elasticities, are expected in the private household, CSP Services, wholesale and retail, and manufacturing sectors. In order to move from the CGE model's predicted job losses to an inequality analysis, the authors assigned job losses to individuals who were employees at the time the survey was conducted. They derived a probability distribution of those most likely to lose their jobs. This probability

distribution was estimated using a two-step Heckman employment equation, taking into account sample selection bias of those who will keep their jobs, based on five individual characteristics: race, gender, education, location and age. Thereafter this probability was appended to the 'wage gap' – the 'distance' between an employee's current wage and the new legislated wage – as a weight, and thus jointly determined a ranking or queue of those individuals most likely to lose their jobs following a minimum wage introduction. Thereafter, the authors estimated the impact on household inequality for households with at least one wage earner, and then secondly, for all households including those with no wage earner.

To understand the extent to which the minimum wage has the potential to affect the distribution of wage inequality in South Africa, the wage Gini coefficients were calculated for these two sets of households. Table 19 shows that across all scenarios, the decreases in the Gini coefficient are the largest when wage-elasticity is at its lowest, because disemployment effects are minimised. When unemployed households are unaccounted, for the gains in reducing inequality are larger than when unemployed households are included. For employed households only, the wage Gini-coefficient in 2014 was 0.62. The introduction of the minimum wage reduced inequality to between 0.59 and 0.61 in the R2 447 scenario, and 0.56 and 0.62 in the R3 400 scenario for these households. When unemployed households are included, the pre-NMW wage Gini increases to 0.8. The introduction of the minimum wage only drops the Gini to between 0.79 and 0.8 in the R2 447 minimum wage scenario, or between 0.77 and 0.8 in the R3 400 scenario.

**Table 19: Wage Gini Coefficient By Minimum Wage Scenario and Elasticity (2014).**

| Scenario | Elasticity | Wage Gini Coefficient (R2 447) | Wage Gini Coefficient (R3 400) |
|---|---|---|---|
| **Employed households only** | | | |
| Current (Pre-NMW) | - | 0.62 | 0.62 |
| | -0.1 | 0.59 | 0.56 |
| | -0.3 | 0.60 | 0.60 |
| | -0.5 | 0.61 | 0.62 |
| **Employed and unemployed households** | | | |
| Current (Pre-NMW) | - | 0.8 | 0.80 |
| | -0.1 | 0.79 | 0.77 |
| | -0.3 | 0.79 | 0.79 |
| | -0.5 | 0.8 | 0.80 |

Source: Bhorat et al. (2016).

This stickiness of the Gini coefficient in the case of employed and unemployed households points to a larger problem surrounding resolving the extent of inequality in the South African context. While the national minimum wage has the potential to positively affect many low wage earners and employed households, the impact that the national minimum wage has on the broader inequality of the population becomes negligible.

## 6 Policy, Legal and Institutional Changes

Cross-country comparative evidence, based on the World Bank Doing Business Survey, suggests that the South African labour market is one that is not overly regulated (Bhorat and Cheadle, 2009). Instead, the bulk of reforms in the post-*apartheid* era consisted of the introduction of a number of basic labour standards through the Labour Relations Act No. 66 of 1995, the Basic Conditions of Employment Act (BCEA) No. 75 of 1997, and the Employment Equity Act No. 55 of 1998. These acts introduced the basic regulatory architecture that governs the domestic labour market. In particular, the BCEA was introduced to regulate the right to fair labour practice, and sets out the rights and duties of employees and employers. It introduced basic workers' rights, and aims to promote social justice by establishing the basic

standards for employment with regard to working hours, leave, payment, dismissal, and dispute resolution, through the legalization of bargaining councils and trade unions. The Act also regulates various aspects of working time such as the maximum number of working hours and the minimum number of paid leave days due to employees. The Employment Equity Act on the other hand, was introduced to achieve equity in the workplace. It does this through the implementation of affirmative action measures to redress the disadvantages in employment experienced by previously disadvantaged groups, while simultaneously promoting fair treatment through the elimination of unfair discrimination in the workplace.

The purpose of the Labour Relations Act introduced in 1995 was to advance economic development, social justice, labour peace, and the democratisation of the workplace, by complying with the labour standards set by the ILO (Oosthuizen et al., 2017). The Act provides a framework within which employees and their employers could collectively bargain around wages and conditions of employment. Over time, a number of amendments to the Act have been passed to allow for the organisational rights of trade unions, the provision of pension and medical scheme coverage of employees, and the power of bargaining councils to provide industrial support.

**Table 20: Amendments to the Labour Relations Act, 1996-2014.**

| 1996 | 1998 | 2000 | 2002 | 2014 |
|---|---|---|---|---|
| To facilitate and regulate the organisational rights of trade unions.<br><br>To promote and facilitate collective bargaining. | Made provisions for pension and medical schemes.<br><br>To adjust the requirements for extending any collective agreements concluded in a bargaining council to non-parties. | Specified the laws around bargaining council registration, extension agreements, and council agents.<br><br>Gave bargaining councils the power to provide industrial support services to participating parties. | To enhance the enforcement of collective bargaining agreements.<br><br>Extended services and functions of bargaining councils to the informal sector. | To provide greater protection for workers placed by temporary employment services by:<br><br>*Regulating the employment of fixed term contracts and part-time employees earning below the earnings threshold;*<br><br>*Specifying the liability for employer's obligations;*<br><br>*Limiting temporary employment to genuine temporary work that does not exceed six months.* |

Source: Oosthuizen et al. (2017).

The most recent amendment to the LRA (2014) focussed on providing greater protection for workers who are placed in employment by Temporary Employment Services (TES or labour brokers). This amendment has regulated the employment of fixed term contracts and part time employee's earnings for those earning less than R205 433 (in 2015) per annum. This regulatory amendment is of particular relevance since the TES sector has been the fastest growing sector in terms of employment in the post-2000 economy (Bhorat, Cassim, & Yu, 2016), with a particular bias toward less skilled and young workers (Bhorat, et. al, 2014).

At the same time, the rise in unemployment, especially among the younger cohorts of the population, gave rise to the Employment Tax Incentive Act No 26 of 2013. This Act was aimed at the promotion of employment through a demand side incentive for youth employment. These Acts and their impact on the policy environment and employment, are discussed below.

## 6.1 The Regulatory Amendment and TES Employment

The Labour Relations Amendment Act 6 of 2014 focussed on providing greater protection for workers in the TES sector. This amendment was introduced following a growing trend of TES workers being employed in the sector, as well as the prevailing view that working conditions for these employees are worse than for permanently employed individuals. To clarify, TES employment involves the practice of companies providing, as a third party, workers across various occupations to formal sector firms. In South Africa, they are referred to as 'labour brokering' services. Such occupations include cleaning, accounting, secretarial services, security services, and so on. The distinguishing factor of TES arrangements is that the firm that ultimately receives the service does not directly hire the individual providing that service. The services provided by TES employees range in skill level, but as noted, TES employees are generally more vulnerable, consisting of either youth, or individuals from households close to the national poverty line (Bhorat, Cassim & Yu, 2016).

The third party nature of TES employment lends itself to arguments that such working relationships allow the formal firms to obviate existing labour laws, since they were not previously considered to be the employer of the TES worker. Hence, the primary aim of the LRA amendment was to identify the hiring firm, as well as the TES firm, as accountable for the working conditions of the employee. Specifically, the amendment strove to regulate the employment of fixed term contracts and part time employees' earnings and benefits for individuals earning less than a specified threshold of R205 433 per annum. The LRA Amendment Act specified that workers who earned less than this annual threshold were deemed permanent employees after three continuous months of employment. As a result, the amendment made the employment of temporary staff for a continuous duration of longer than three months, illegal. The amendment also states that all temporarily employed persons must receive the same wage and non-wage benefits as permanently employed persons.

In general, the employment growth in TES has exceeded the national employment growth rate of most sectors (presented in Table 3 above), including the financial sector itself. TES employment, as a proportion of financial employment, increased from 27 percent in 1996 to 47 percent in 2014 (Bhorat et al., 2015), and as a proportion of total employment went from 2.2 percent to 6.44 percent in the same period. The TES sector has been instrumental in maintaining, and arguably raising, employment levels in the South African economy. In its attempt to protect vulnerable workers, the conditions presented by the Labour Relations Amendment Act of 2014 may have thus had adverse effects on the pattern of employment levels in the TES sector. The extent to which firms are compliant with basic employment condition legislation, such as paying unemployment insurance, is an important determinant of the way TES workers are treated (Bhorat, Cassim & Magadla, 2015). Nonetheless, the LRA amendment, which is an attempt at creating permanent employment, is targeted at all firms irrespective of compliance with legislation. The unintended consequences of this amendment may be an increase in labour shedding as firms try to shirk the responsibility of having to permanently employ more workers.

The impact of this amendment to this effect was evaluated by Bhorat, Magadla and Steenkamp (2015) using data from a survey conducted by the confederation of associations in the private employment sector. Using data from the post legislation period, the authors show that the amendment Act had the effect of reducing jobs across the TES industry, notwithstanding the effects of external shocks to each of the industries (See Appendix Table A4) (Bhorat, Magadla & Steenkamp, 2015). The authors show that the dominant firm response to the LRA amendment was to terminate employment, with a very small proportion of total jobs ending in permanent employment. The negative effects were largest in the metal and engineering, public, manufacturing, healthcare, white collar, and education industries.

To further understand the impact of the LRA on employment outcome, Bhorat and Lilenstein (2016) use a difference-in-difference estimator to isolate the impact of the exogenous shock of the amendment on employment. The comparison group for the difference-in-difference estimator was constructed using propensity score matching on age, gender, education level, race, marital status, and province of residence. Two model specifications were estimated: One where no prior knowledge or reaction from employers to the pending legislative change was expected, or the "no-expectations" model; and one where employers expected the legislative change through a negative reaction function and adjusted their behavior accordingly. They estimate the following regression:

$$Y_{it} = \alpha + \beta(T_t * d_i) + \theta_1 d_i + \theta_2 T_t + X_{it} + \mu_{it}$$

Where $Y_{it}$ represents the employment outcome; that is $Y_{it}$ is a dummy variable indicating whether the individual is employed or not, and thus this model includes both employed and unemployed individuals in the sample. $T_t$ represents the pre- and post-treatment period (represented here by the before and after periods of the no-expectations or expectations model)*;* $d_i$ represents the treatment (in this case the sample of TES workers) and control group (non-TES workers) cohorts; $X_{it}$ represents a vector of individual characteristics; and $u_{it}$ is the non-stochastic error term. The coefficient $\beta$*,* on the interaction term $T_t * d_i$, represents the difference-in-difference term, and the significance and magnitude of this determines whether the amendment can be said to have had an effect on the employment outcome, and if so,to what extent.

The results, reproduced in Table 21, show that if employer expectations are not taken into account, no fall in TES employment relative to non-TES employment is observed. However, in the expectations model, where employers anticipate the forthcoming legislative change, there is a significant negative impact on employment. In this model across all skills levels, there is a negative effect on the employment outcome of TES workers relative to non-TES workers in the matched control group, at the 5 percent level. This suggests that the unintended effect of the regulatory amendment was to stifle employment growth, with a stronger effect for unskilled and semi-skilled workers. This more rigorous technique reinforces the descriptive findings from Bhorat, Magadla and Steenkamp (2015), regarding sectoral job losses post the LRA amendment.

**Table 21. TES Employment Outcome by Skill Level.**

| | (1) All skill levels | (2) Semi- & Unskilled | (3) Unskilled Only |
|---|---|---|---|
| | *No-Expectations Model* | | |
| TES Worker | -0.038*** | -0.036*** | -0.016* |
| | [0.004] | [0.005] | [0.009] |
| Post Period | -0.000 | 0.002 | -0.021* |
| | [0.004] | [0.006] | [0.011] |
| TES*Post | -0.009 | -0.010 | 0.017 |
| | [0.007] | [0.008] | [0.016] |
| Constant | 0.567*** | 0.577*** | 0.515*** |
| | [0.010] | [0.012] | [0.021] |
| r2 | 0.047 | 0.034 | 0.032 |
| | *Expectations Model* | | |
| TES Worker | -0.020*** | -0.012 | 0.019 |
| | [0.006] | [0.008] | [0.014] |
| Post Period | 0.021*** | 0.036*** | 0.022* |
| | [0.004] | [0.006] | [0.012] |
| TES*Post | -0.031*** | -0.041*** | -0.041** |
| | [0.007] | [0.009] | [0.017] |
| Constant | 0.553*** | 0.554*** | 0.491*** |
| | [0.010] | [0.013] | [0.023] |
| r2 | 0.047 | 0.035 | 0.032 |
| N | 71 479 | 50 262 | 16 076 |

Source: Bhorat and Lilenstein (2016).

Notes: 1. Controls included are age, gender, years of education, marital status, race, province, and skill level.
2. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

The case of the LRA amendment of 2014 highlights the importance of nuance in implementing labour market regulation, and protective policies surrounding vulnerable workers and those in precarious employment. What the above results show, is that through the amendment of the LRA act, in the sample considered by Bhorat, Magadla and Steenkamp (2015), more than 50 percent of workers lost their jobs either through direct termination or retrenchment. Although these results are just descriptive and do not take into account sectoral shocks or trends, the results from the difference-in-difference analysis show that semi-skilled and unskilled workers did suffer job losses at the hands of the LRA amendment. The impact of this on wage inequality is presumably negative, although the studies did not investigate whether the incomes of those who retained employment increased.

With the stated aim of raising worker protection levels – and thus making employment more stable – the legislative amendment has had the adverse effect of worsening the vulnerability of workers by increasing unemployment. Once again, more nuanced legislation is required to avoid such effects: for instance, creating incentives that allow for higher compatibility with basic conditions of employment. This would protect workers in shorter term employment, even if it is for a transient period of time.

## 6.2 The Youth Employment Tax Incentive

The Employment Tax Incentive (ETI) is a policy by the South African government to counter the persistently high youth unemployment that has become a structural characteristic of the South African labour market. The policy was signed into law in 2013, and was due to last two years from January 2014 to December 2016. The rationale of the policy was to offset the costs of hiring young, typically inexperienced workers, in a country where education is not always a reliable signal of 'job readiness' (National Treasury, 2016). The policy is made up of a tax incentive to firms to stimulate youth employment. Firms are meant to pay less income tax (PAYE) per eligible employee between the age of 18-29 years, not having been hired before the 1st of October 2013, and earning less than R6 500 per month. Firms then have 24 months (or, until the 31st of December 2016) to claim a rebate for these workers, by which time, hopefully, workers have accrued a satisfactory level of experience to either keep their current job or qualify for a new one.

The incentive is structured so that for the first year the full tax rebate is due to the employer, and in the second year of employment this rebate halves. The incentive is designed to discourage a "race to the bottom" whereby employers stand to benefit by paying lower wages to prospective candidates. To this end, the size of the incentive is designed to rise, then fall, as monthly wages increase.

As it stands, the employment tax incentive is currently the only demand side incentive employed by government to absorb excess labour supply. Between the introduction of the incentive up to the end of 2015, over R2 526 billion in tax incentives were claimed by firms, supporting a total of 686 402 jobs, which relates to 5.1 percent of total jobs in the labour market (Table 22). Further, there were 3.65 million youth employed in March 2015, and the ETI supported 15 percent of these jobs with monthly remuneration of less than R6 500. In general, ETI supported workers were not highly-experienced, and 57 percent of them were not registered for tax before acquiring their job at the ETI-claiming firm.

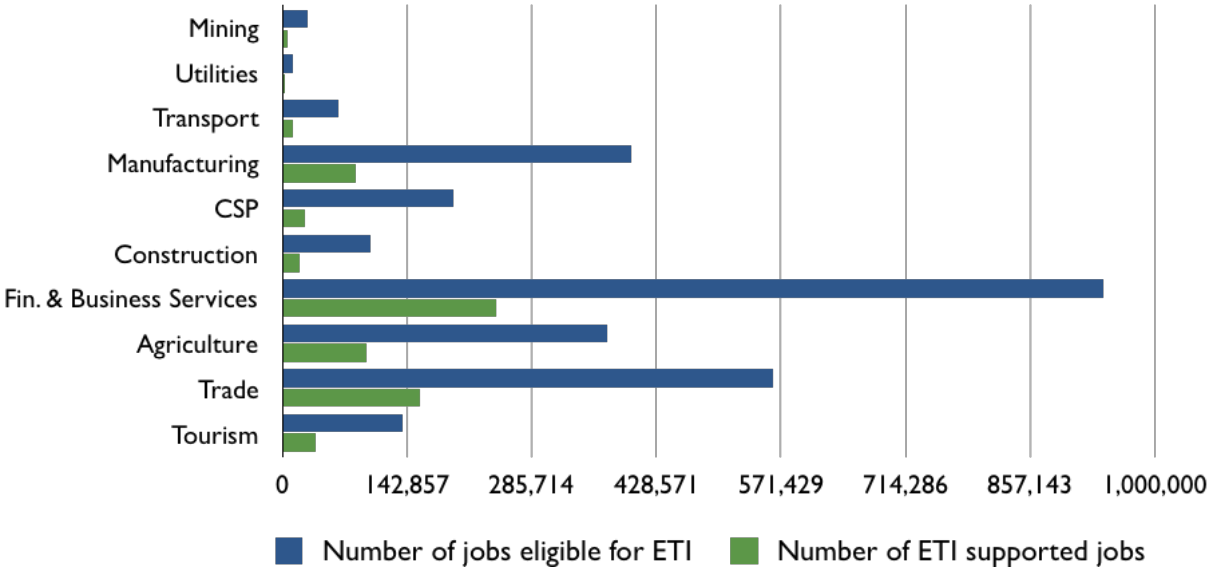
**Table 22: ETI Claims and Jobs, 2013-2016.**

| | 2013/4 | 2014/5 | 2015/6 |
|---|---|---|---|
| Duration of ETI Incentive | 2 months | 12 months | 12 months |
| Total ETI Claimed (Rand millions) | 61.16 | 2 465 | 3 534 |
| Claims as a % of Total Fiscal Spending | 0.04 | 0.2 | 0.3 |
| Number of Firms Claiming | 13 399 | 32 368 | - |
| Number of ETI Supported Jobs | 134 923 | 686 402 | - |
| ETI Supported Jobs as % of Total Jobs | 1.02 | 5.10 | - |
| Number of Individuals in ETI Supported Jobs | 134 196 | 645 973 | - |
| Marginal Job Cost (R) | 1 090 | 3 578 | - |

Source: Bhorat and Thornton (2016).

In terms of the incentive's efficacy, Bhorat and Thornton (2016) show that it has had differing impacts across sectors. Figure 15 shows the eligible and supported jobs by sector; with the highest numbers of potential or eligible workers belonging to the financial and business services sectors, wholesale and retail trade, and manufacturing. Actual take-up of the incentive was highest in the sectors with high eligibility; first financial and business services, followed by retail and wholesale trade, then agriculture and manufacturing. The authors also show that in terms of the absolute number of claims, the highest number of claiming firms came from manufacturing, followed by the financial and business services. The take-up rate was the highest in tourism, with a rate of 26 percent of firms.

**Figure 15: ETI Eligible and Supported Jobs, By Sector.**

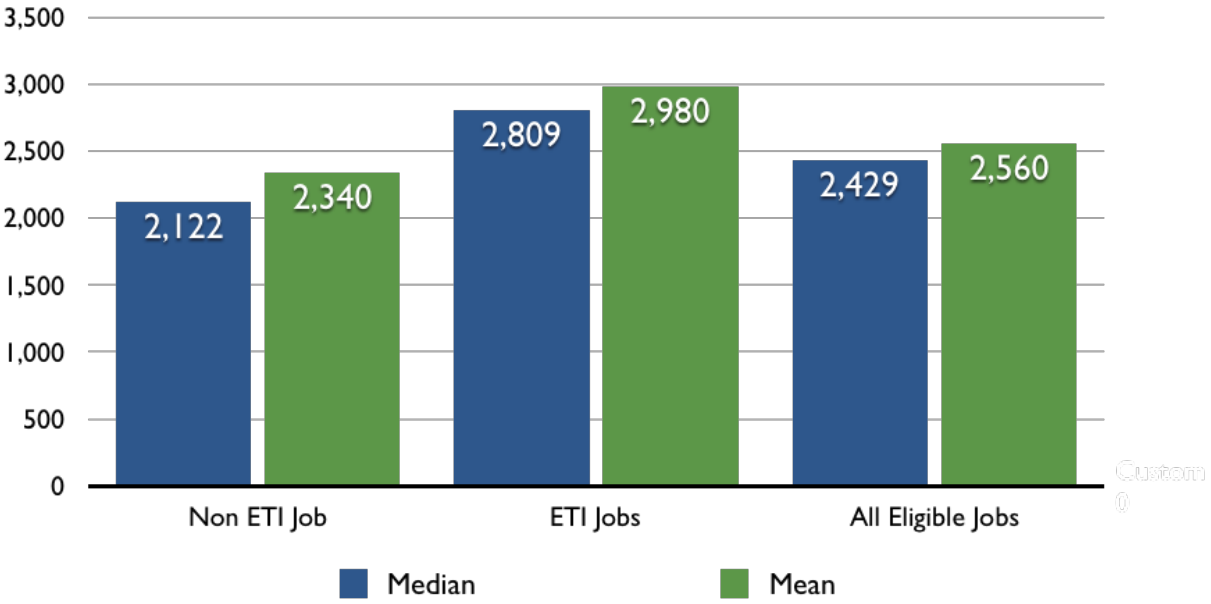



Source: Bhorat and Thornton (2016).

Econometric evidence by MacLeod and Rankin (2016) found that there was a drop in the growth of full time equivalent jobs for workers aged between 30 and 35 for the firms that claimed ETI, but the absolute number of this drop was small. This kind of displacement is an adverse effect of the tax incentive, as employers substitute younger subsidised labour for older workers. For workers in the 30-35 year age range, the authors found that the growth in full time equivalent jobs for the average firm claiming ETI was between 0.8 and 1.3 percentage points lower than it would have been without the ETI. These results were corroborated by first difference estimates. One caveat is that the authors look at job growth rates, while actual displacement may refer to actual growth in the number of jobs.

Aside from displacement, another concern regarding the ETI would be that wages would be depressed, or destructive churn would be created around firms shuffling employees to maximise benefits obtained from the incentive. Initial estimates that do not delineate by firm and worker characteristics, by Bhorat and Thornton (2016), show that this has not been the case. Instead, median monthly wages for 18-19 year olds increased between 2013/4 and 2015/6 from R2 643 to R2 751.

**Figure 16: Mean and Median Wages, ETI and non-ETI Jobs 2016.**




Source: Bhorat and Thornton (2016).

Another interesting dynamic to take into account, is the structural incidence of youth unemployment and low skill sets of workers, and the interplay with the rise of Temporary Employment Service placements (labour brokers). Since labour brokers usually employ young relatively unskilled workers, in theory they should be claiming for the ETI. Bhorat and Thornton (2016) show that labour brokers had the highest eligible proportion of jobs for ETI, at 43 percent of the sector or 74 583 jobs (Table 23). Further, of the sample of 626 labour broking firms, of which 257 claimed for the ETI, of these 31 percent were in the financial and business services sector. This reiterates the close connection between labour broking or TES, and the financial services sector.

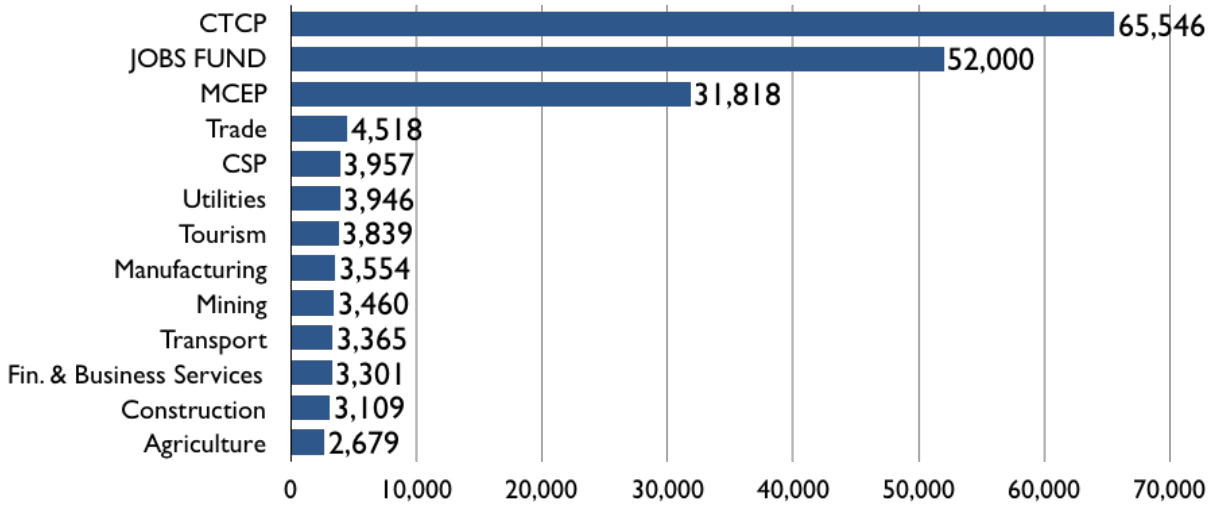
**Table 23: TES Firm Presence in the ETI scheme.**

| | |
|---|---|
| Number of ETI Eligible Jobs | 74 583 |
| Number of Jobs Claimed For | 21 567 |
| Number of Firms | 626 |
| Number of Firms Claiming | 257 |
| % of Firms claiming for ETI | 41 |
| Labour Broker Claim as % of Total ETI Claim Amount | 9 |
| Labour Broker Eligible Jobs as % of Total Eligible ETI Jobs | 11 |

Source: Bhorat and Thornton (2016).

The value added from the ETI is captured by the cost per job to the government relative to other employment stimulation policies. The Manufacturing Competitiveness Enhancement Programme (MCEP), Clothing and Textile Competitiveness Programme (CTCP), and the Jobs Fund, cost between R32 000 and R66 000 per job to institute. On the other hand, the cost of the ETI lies between R2 700 and R4 500 per job, indicating that the policy is substantially cheaper to implement.

**Figure 17: Fiscal Cost Per Job, By Employment Stimulation Policies.**




Source: Bhorat and Thornton (2016).

Overall, the early evidence from the ETI shows that it has been a cost effective and impactful way to stimulate youth unemployment, which assists in addressing one of the core consequences of skills-biased growth, through reducing the cost of employment and simultaneously building skills.

## 7 Conclusion

The two decades following the end of *apartheid* have yielded a growth path that has not, in the more classic sense, been driven by a shift to economic activity in traditionally high productivity sectors such as manufacturing. Instead, it has been characterized by a rapid relative expansion in the services (or tertiary) sector. Of these, the financial services and CSP sectors are the sectors to have created the highest quantum of jobs. Job creation however, has been heavily skills biased. That is, skilled labour has increased the most in its share of employment across all sectors between 1995 and 2015. At the same time, over this period, the share of semi-skilled labour in aggregate employment has declined steadily across all sectors of the economy in the last 15 years – representing a key first signal of the existence of a 'missing middle' in the South African labour force. Put differently, while there have been some lower skilled job losses in the economy, these jobs have been actively supported through various labour market interventions. In an economy driven by a high demand for skilled workers, the upshot has been the marginalization of those workers in the middle of the skills and wage distribution.

In understanding what individual factors help determine sectoral transformation in the country, the results of the regression estimates show that conditional on being employed, women, urban dwellers, and those with post-secondary education have a higher probability of working in the services sector. Individuals with a primary and secondary school education, Coloured and African individuals, all face lower probabilities of working in services (holding all else constant). That is, the structural transformation models show that conditional on employment, opportunity is divided by skills level, race and education. The high returns to post-secondary education are then shown not to be dependent on any 'discriminatory' factors, and are a response to post-secondary education attainment, a reflection of the skills-biased labour demand trajectory of the South African economy.

Further, the results from this paper show that the South African labour force is not only one that is unequal in terms of employment opportunities or sector of work, but also in terms of

wage levels. Hence, our analysis of wages shifts over time provides preliminary evidence of the existence of a missing middle in the labour force: Those at the bottom of the distribution have faced real wage growth rates that have averaged 2 percent per year, while those at the top of the distribution have faced growth rates at almost double that of the bottom. The middle of the distribution, however, faces an average annualized growth in real earnings of less than a third of the growth rate of those at the top. This is astonishing evidence of a missing middle among wage earners, and in part can be attributed to interventions and agreements: most notably minimum wages and collective bargaining agreements, which support low wage workers amidst a growth trajectory which is strongly skills-biased in nature.

In terms of dispersion, the data shows evidence that the gap between the 90$^{th}$ and the median percentile of the distribution is widening at a faster rate than the median and 10$^{th}$ percentile. Furthermore, the gap between the median and bottom of the distribution has decreased over same period, reinforcing the notion that wages of those workers at the 10$^{th}$ percentile of the distribution have been supported by aggressive minimum wage interventions and bargaining agreements.

Trends in unionisation levels show the stark segmentation between public and private sector union membership in South Africa. This has impacted on the distribution of wages and had the strongest impact on those individuals again in the middle of the distribution, as the wage premia between public sector unionised and private sector non-unionised workers have engendered wage gaps that are the largest in the middle of the distribution. Ultimately then, those workers who have lost out the most in terms of wage returns are not only in the middle of the income distribution, but invariably reside in the private sector, and are non-unionised.

In terms of understanding the impact of more recent labour regulatory changes, we show that the impact of the national minimum wage on national inequality levels, after job losses are taken into account, becomes negligible even when controlling for alternative elasticity values. The legislative amendment to the LRA in turn, with the aim of protecting the vulnerable, has witnessed a negative effect on the employment outcomes of those in the Temporary Employment Services sector. Finally, the employment tax incentive, which was introduced with the aim of addressing structural youth unemployment, has thus far not had any disemployment effects and has been shown to support a large number of jobs at an affordable rate to government.

Ultimately then, the various labour market channels through which inequality has been replicated in South Africa include a reversion to a skills-biased employment trajectory, defined by a dominant services sector. In turn though, the pursuit of this growth path, together with an active labour market policy designed to protect the bottom-end worker, have crucially defined a new attribute in the post-*apartheid* labour market: That of a hollowing out or marginalization of a worker in the middle of the wage distribution. This ‘missing middle’ represents arguably the key new manifestation of persistent and high income inequality in the South African labour market.

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# Appendix

**Table A1: Mincerian Regression Estimates, 2010-2014.**

| | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Age | 0.0200*** | 0.0125*** | 0.0130*** | 0.00926** | 0.0136*** |
| | (0.00325) | (0.00229) | (0.00252) | (0.00304) | (0.00334) |
| Age squared | -0.00021*** | -0.00011*** | -0.00014*** | -0.000098** | -0.00013** |
| | (0.0000404) | (0.0000284) | (0.0000315) | (0.0000374) | (0.0000410) |
| Female | -0.280*** | -0.257*** | -0.236*** | -0.211*** | -0.170*** |
| | (0.0114) | (0.00803) | (0.00876) | (0.0107) | (0.0118) |
| Black | -0.543*** | -0.515*** | -0.414*** | -0.269*** | -0.263*** |
| | (0.0170) | (0.0120) | (0.0137) | (0.0185) | (0.0201) |
| Coloured | -0.445*** | -0.380*** | -0.304*** | -0.272*** | -0.254*** |
| | (0.0210) | (0.0149) | (0.0166) | (0.0236) | (0.0253) |
| Married | 0.0464*** | 0.0358*** | 0.0558*** | 0.0728*** | 0.0790*** |
| | (0.0108) | (0.00771) | (0.00812) | (0.00997) | (0.0109) |
| Urban | 0.207*** | 0.175*** | 0.205*** | 0.174*** | 0.160*** |
| | (0.0129) | (0.00932) | (0.00963) | (0.0113) | (0.0118) |
| Secondary Education | 0.199*** | 0.257*** | 0.227*** | 0.206*** | 0.156*** |
| | (0.0140) | (0.0102) | (0.0111) | (0.0130) | (0.0133) |
| Post-secondary Education | 0.779*** | 0.906*** | 0.881*** | 0.882*** | 0.474*** |
| | (0.0220) | (0.0151) | (0.0166) | (0.0210) | (0.0232) |
| Log (Hours worked) | 0.0122*** | 0.0150*** | 0.00948*** | 0.00649** | 0.0128*** |
| | (0.00304) | (0.00199) | (0.00203) | (0.00234) | (0.00261) |
| Union | 0.250*** | 0.207*** | 0.241*** | 0.290*** | 0.266*** |
| | (0.0140) | (0.00955) | (0.0106) | (0.0132) | (0.0140) |
| Written Contract | 0.214*** | 0.196*** | 0.0875*** | 0.0679** | 0.0506* |
| | (0.0201) | (0.0149) | (0.0204) | (0.0245) | (0.0250) |
| Formal | 0.187*** | 0.159*** | 0.244*** | 0.234*** | 0.257*** |
| | (0.0210) | (0.0155) | (0.0195) | (0.0235) | (0.0236) |
| Private business or self employed | -0.0477* | -0.0632*** | -0.0843*** | -0.0451* | -0.00486 |
| | (0.0220) | (0.0151) | (0.0173) | (0.0191) | (0.0209) |
| Non-profit business | -0.367*** | -0.390*** | -0.436*** | -0.437*** | -0.351*** |
| | (0.0535) | (0.0371) | (0.0372) | (0.0323) | (0.0362) |
| Manager | 0.900*** | 0.977*** | 1.022*** | 1.159*** | 1.415*** |
| | (0.0280) | (0.0202) | (0.0218) | (0.0285) | (0.0292) |
| Operator | 0.205*** | 0.188*** | 0.220*** | 0.212*** | 0.238*** |
| | (0.0190) | (0.0146) | (0.0158) | (0.0202) | (0.0220) |
| Professional | 0.742*** | 0.914*** | 0.984*** | 1.170*** | 1.346*** |
| | (0.0304) | (0.0200) | (0.0221) | (0.0266) | (0.0298) |
| Technician | 0.493*** | 0.510*** | 0.524*** | 0.632*** | 0.572*** |
| | (0.0224) | (0.0152) | (0.0163) | (0.0207) | (0.0240) |
| Service Worker | 0.114*** | 0.121*** | 0.223*** | 0.325*** | 0.469*** |
| | (0.0290) | (0.0209) | (0.0224) | (0.0243) | (0.0263) |
| Clerk | 0.427*** | 0.453*** | 0.472*** | 0.540*** | 0.587*** |
| | (0.0188) | (0.0134) | (0.0147) | (0.0192) | (0.0207) |
| Agricultural worker | 0.0869 | -0.0432 | 0.0549 | 0.0285 | 0.172* |
| | (0.114) | (0.0599) | (0.0574) | (0.0767) | (0.0690) |
| Artisan | 0.298*** | 0.294*** | 0.357*** | 0.354*** | 0.413*** |
| | (0.0202) | (0.0140) | (0.0155) | (0.0201) | (0.0209) |
| Domestic worker | 0.0520* | 0.0961*** | 0.0209 | -0.0119 | -0.100*** |
| | (0.0233) | (0.0171) | (0.0178) | (0.0185) | (0.0202) |
| Mining | 0.519*** | 0.516*** | 0.524*** | 0.461*** | 0.345*** |

| | | | | | |
|---|---|---|---|---|---|
| | (0.0334) | (0.0263) | (0.0277) | (0.0304) | (0.0342) |
| Manufacturing | 0.158*** | 0.203*** | 0.146*** | 0.0957*** | 0.00531 |
| | (0.0226) | (0.0169) | (0.0194) | (0.0217) | (0.0244) |
| Utilities | 0.144 | 0.250*** | 0.102* | 0.0284 | 0.105 |
| | (0.0749) | (0.0434) | (0.0449) | (0.0582) | (0.0594) |
| Construction | 0.142*** | 0.175*** | 0.0804*** | 0.108*** | -0.00862 |
| | (0.0251) | (0.0192) | (0.0214) | (0.0245) | (0.0242) |
| Trade | 0.125*** | 0.132*** | 0.116*** | 0.00305 | -0.0430* |
| | (0.0210) | (0.0158) | (0.0183) | (0.0190) | (0.0208) |
| Transport | 0.230*** | 0.253*** | 0.207*** | 0.132*** | 0.0467 |
| | (0.0276) | (0.0218) | (0.0235) | (0.0267) | (0.0306) |
| Finance | 0.221*** | 0.207*** | 0.171*** | 0.0377 | -0.0443 |
| | (0.0230) | (0.0167) | (0.0199) | (0.0206) | (0.0232) |
| Community, social & personal services | 0.247*** | 0.183*** | 0.183*** | 0.0306 | -0.0250 |
| | (0.0256) | (0.0185) | (0.0218) | (0.0224) | (0.0239) |
| Constant | 6.223*** | 6.293*** | 6.296*** | 6.236*** | 6.167*** |
| | (0.0717) | (0.0506) | (0.0565) | (0.0687) | (0.0742) |
| R-sq | 0.571 | 0.563 | 0.525 | 0.426 | 0.347 |
| N | 32157 | 65328 | 65626 | 63773 | 62116 |

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

Notes: 1. $^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.001$

2. Controls include dummy variables for province which are not reported here.

3. Urban/rural status not reported in survey between 2005 and 2007.

4. Variables on business type (formal business, private business or self-employed or non-profit business) and contract type not reported for 1995.

5. The base sector is agriculture, the base occupation is elementary workers, the base race group is white and the base business type is government.

6. The base education category are those with no schooling or primary schooling.

7. The domestic services sector is omitted from the regression due to collinearity with the domestic services occupation group.

8. Prior to quarter 3 2012 all non-responses on the outcome variable (earnings) were imputed by Stats SA. Post quarter 3 2012 this imputation on non-responses no longer took place.

9. Earnings data is not reported in the dataset for 2015, therefore 2014 estimates are used.

**Table A2: Interquantile regression results, pooled periods: 1995/6, 1998/9, 2001/2.**

| | 1995-1996 | | | 1998-1999 | | | 2001-2002 | | |
|---|---|---|---|---|---|---|---|---|---|
| | 90:10 | 50:10 | 90:50 | 90:10 | 50:10 | 90:50 | 90:10 | 50:10 | 90:50 |
| primaryedu | -0.17*** | -0.07** | -0.10*** | -0.06 | 0.00 | -0.06* | -0.13*** | -0.03 | -0.11*** |
| | (0.04) | (0.02) | (0.02) | (0.04) | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) |
| secondaryedu | -0.18*** | -0.13*** | -0.05** | -0.06 | -0.01 | -0.04 | -0.08*** | -0.03 | -0.06*** |
| | (0.03) | (0.02) | (0.02) | (0.04) | (0.02) | (0.02) | (0.02) | (0.02) | (0.01) |
| postsecondary | -0.19*** | -0.17*** | -0.02 | -0.28** | -0.10 | -0.18*** | -0.24*** | -0.10* | -0.15*** |
| | (0.04) | (0.04) | (0.02) | (0.09) | (0.06) | (0.05) | (0.04) | (0.04) | (0.03) |
| urban | -0.13*** | -0.07*** | -0.06*** | -0.08* | -0.09*** | 0.00 | -0.07*** | -0.03 | -0.04*** |
| | (0.03) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) | (0.01) | (0.01) |
| loghrs | -0.24*** | -0.24*** | 0.00 | -0.35*** | -0.27*** | -0.08*** | -0.24*** | -0.21*** | -0.03*** |
| | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.02) | (0.01) | (0.01) | (0.01) |
| female | 0.05** | 0.06*** | -0.01 | 0.03 | 0.04* | -0.01 | 0.05*** | 0.03 | 0.02 |
| | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.01) |
| share07 | -0.04 | 0.00 | -0.04 | 0.11* | 0.08 | 0.03 | 0.05 | 0.02 | 0.02 |
| | (0.06) | (0.06) | (0.05) | (0.05) | (0.06) | (0.04) | (0.03) | (0.02) | (0.01) |
| share815 | -0.01 | 0.06 | -0.07 | 0.34*** | 0.21*** | 0.13** | 0.06** | 0.03 | 0.03* |
| | (0.09) | (0.08) | (0.05) | (0.08) | (0.06) | (0.04) | (0.02) | (0.02) | (0.01) |
| share1564 | -0.10 | -0.05 | -0.06 | -0.02 | 0.02 | -0.05* | -0.02* | -0.01 | -0.01 |
| | (0.06) | (0.05) | (0.05) | (0.03) | (0.02) | (0.02) | (0.01) | (0.01) | 0.00 |
| share65plus | 0.04 | 0.15 | -0.12 | 0.10 | -0.08 | 0.17 | 0.12* | 0.04 | 0.08** |
| | (0.13) | (0.10) | (0.13) | (0.14) | (0.13) | (0.11) | (0.06) | (0.05) | (0.03) |
| semiskilled | 0.15*** | 0.03 | 0.11*** | 0.24*** | 0.14*** | 0.10*** | 0.11*** | 0.06*** | 0.05** |
| | (0.03) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| highskilled | 0.20*** | 0.10* | 0.11** | 0.45*** | 0.28*** | 0.17*** | 0.15** | 0.11** | 0.05 |
| | (0.04) | (0.04) | (0.03) | (0.05) | (0.06) | (0.04) | (0.05) | (0.04) | (0.03) |
| mining | -0.30*** | 0.08 | -0.38*** | -0.30*** | -0.06 | -0.24*** | -0.26*** | -0.03 | -0.22*** |
| | (0.06) | (0.04) | (0.04) | (0.06) | (0.05) | (0.05) | (0.04) | (0.03) | (0.03) |
| manufacturing | -0.20*** | 0.08** | -0.28*** | 0.15** | 0.25*** | -0.10* | 0.20*** | 0.19*** | 0.01 |
| | (0.03) | (0.03) | (0.02) | (0.05) | (0.04) | (0.04) | (0.03) | (0.03) | (0.02) |
| utilities | -0.54*** | 0.06 | -0.60*** | 0.07 | 0.25* | -0.18* | 0.22 | 0.18 | 0.05 |
| | (0.11) | (0.10) | (0.04) | (0.17) | (0.12) | (0.08) | (0.12) | (0.10) | (0.08) |
| construction | -0.10 | 0.09 | -0.18*** | 0.25** | 0.26*** | -0.01 | 0.33*** | 0.23*** | 0.11** |
| | (0.06) | (0.05) | (0.04) | (0.09) | (0.05) | (0.06) | (0.04) | (0.03) | (0.03) |
| trade | -0.07 | 0.12*** | -0.19*** | 0.44*** | 0.37*** | 0.06 | 0.60*** | 0.44*** | 0.15*** |
| | (0.05) | (0.03) | (0.02) | (0.05) | (0.05) | (0.04) | (0.03) | (0.03) | (0.01) |
| transport | -0.30*** | -0.01 | -0.29*** | 0.15 | 0.27*** | -0.13* | 0.27*** | 0.19*** | 0.08** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (0.05) | (0.04) | (0.04) | (0.10) | (0.08) | (0.05) | (0.03) | (0.05) | (0.03) |
| finance | -0.29*** | 0.03 | -0.32*** | 0.03 | 0.09 | -0.06 | 0.26*** | 0.18*** | 0.08*** |
| | (0.06) | (0.05) | (0.04) | (0.08) | (0.06) | (0.05) | (0.05) | (0.03) | (0.02) |
| services | -0.37*** | 0.00 | -0.37*** | 0.18* | 0.33*** | -0.16*** | 0.32*** | 0.34*** | -0.02 |
| | (0.04) | (0.03) | (0.03) | (0.07) | (0.04) | (0.03) | (0.04) | (0.03) | (0.02) |
| African | -0.07* | -0.01 | -0.06** | -0.26** | -0.09 | -0.18*** | 0.01 | 0.09*** | -0.08*** |
| | (0.03) | (0.02) | (0.02) | (0.09) | (0.07) | (0.05) | (0.03) | (0.03) | (0.02) |
| coloured | -0.13*** | -0.05 | -0.08*** | -0.22* | 0.02 | -0.24*** | -0.13** | 0.05 | -0.18*** |
| | (0.04) | (0.03) | (0.02) | (0.10) | (0.07) | (0.05) | (0.05) | (0.03) | (0.03) |
| N | 23545 | 23545 | 23545 | 22053 | 22053 | 22053 | 39246 | 39246 | 39246 |

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

Notes: 1. Controls include province and marital status not reported here.

2. $^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.001$

**Table A3: Interquantile regression results, pooled periods: 2004/5, 2006/7, 2010/11, 2013/14.**

| | 2004-2005 | | | 2006-2007 | | | 2010-2011 | | | 2013-2014 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90:10 | 50:10 | 90:50 | 90:10 | 50:10 | 90:50 | 90:10 | 50:10 | 90:50 | 90:10 | 50:10 | 90:50 |
| primaryedu | -0.07* | 0.03 | -0.10*** | -0.09** | 0.00 | -0.09*** | -0.10* | -0.04 | -0.05 | -0.13** | -0.12*** | -0.01 |
| | (0.03) | (0.02) | (0.02) | (0.03) | (0.03) | (0.02) | (0.04) | (0.03) | (0.03) | (0.04) | (0.03) | (0.03) |
| secondaryedu | -0.11*** | -0.03* | -0.08*** | -0.10*** | -0.04 | -0.06*** | -0.15*** | -0.09*** | -0.05** | -0.13*** | -0.10*** | -0.04 |
| | (0.02) | (0.01) | (0.01) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) |
| postsecondary | -0.31*** | -0.12** | -0.19*** | -0.30*** | -0.10** | -0.20*** | -0.05 | 0.14*** | -0.19*** | 0.03 | 0.26*** | -0.23*** |
| | (0.06) | (0.04) | (0.03) | (0.04) | (0.03) | (0.02) | (0.03) | (0.02) | (0.01) | (0.05) | (0.05) | (0.03) |
| urban | | | | | | | -0.04* | -0.03 | -0.01 | -0.08* | -0.02 | -0.06*** |
| | | | | | | | (0.02) | (0.02) | (0.02) | (0.03) | (0.02) | (0.02) |
| loghrs | -0.19*** | -0.17*** | -0.02*** | -0.32*** | -0.23*** | -0.08*** | -0.07*** | -0.06*** | -0.01* | -0.05*** | -0.05* | -0.01* |
| | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | 0.00 | (0.01) | (0.02) | 0.00 |
| female | 0.10*** | 0.10*** | 0.01 | 0.06** | 0.04* | 0.01 | -0.01 | 0.02 | -0.03 | -0.11*** | -0.11*** | 0.00 |
| | (0.03) | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) | (0.02) | (0.01) | (0.01) | (0.03) | (0.02) | (0.02) |
| share07 | 0.08** | 0.07** | 0.02 | 0.08*** | 0.04* | 0.04** | 0.05* | 0.00 | 0.05*** | 0.01 | 0.00 | 0.01 |
| | (0.03) | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) | (0.02) | (0.01) | (0.01) | (0.03) | (0.02) | (0.02) |
| share815 | 0.08** | 0.06** | 0.03* | 0.04 | 0.04* | 0.00 | 0.05* | 0.03* | 0.02 | 0.00 | 0.02 | -0.02 |
| | (0.03) | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) | (0.01) | (0.03) | (0.02) | (0.02) |
| share1564 | -0.02 | -0.01 | -0.01* | -0.02 | -0.01 | -0.01 | -0.02 | 0.00 | -0.02 | -0.03 | 0.00 | -0.03** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.02) | (0.01) | (0.01) |
| share65plus | 0.13 | 0.08 | 0.05 | 0.07 | 0.05 | 0.02 | -0.03 | 0.00 | -0.02 | 0.00 | 0.00 | 0.00 |
| | (0.07) | (0.06) | (0.03) | (0.05) | (0.04) | (0.03) | (0.04) | (0.02) | (0.02) | (0.04) | (0.03) | (0.03) |
| semiskilled | 0.11** | 0.02 | 0.09*** | 0.10*** | 0.00 | 0.10*** | 0.09*** | 0.02 | 0.07*** | 0.13*** | -0.03 | 0.15*** |
| | (0.03) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.03) | (0.02) |
| highskilled | 0.21*** | 0.14*** | 0.07* | 0.20*** | 0.06 | 0.13*** | 0.22*** | 0.15*** | 0.08** | 0.23*** | 0.15*** | 0.08** |
| | (0.04) | (0.03) | (0.03) | (0.04) | (0.04) | (0.02) | (0.03) | (0.03) | (0.03) | (0.05) | (0.03) | (0.03) |
| mining | -0.02 | -0.01 | -0.01 | 0.16*** | 0.13** | 0.03 | 0.44*** | 0.39*** | 0.06 | 0.71*** | 0.60*** | 0.11* |
| | (0.05) | (0.03) | (0.04) | (0.04) | (0.04) | (0.02) | (0.06) | (0.06) | (0.03) | (0.13) | (0.14) | (0.05) |
| manufacturing | 0.37*** | 0.19*** | 0.18*** | 0.44*** | 0.30*** | 0.14*** | 0.42*** | 0.21*** | 0.21*** | 0.76*** | 0.44*** | 0.32*** |
| | (0.04) | (0.02) | (0.02) | (0.03) | (0.04) | (0.02) | (0.04) | (0.03) | (0.03) | (0.04) | (0.05) | (0.02) |
| utilities | 0.35*** | 0.30* | 0.05 | 0.48*** | 0.41*** | 0.07 | 0.48*** | 0.39*** | 0.09 | 0.84*** | 0.44** | 0.40*** |
| | (0.10) | (0.13) | (0.06) | (0.09) | (0.08) | (0.09) | (0.10) | (0.12) | (0.07) | (0.15) | (0.15) | (0.09) |
| construction | 0.27*** | 0.08* | 0.20*** | 0.32*** | 0.15*** | 0.17*** | 0.43*** | 0.16*** | 0.27*** | 0.57*** | 0.15*** | 0.42*** |
| | (0.05) | (0.04) | (0.04) | (0.03) | (0.03) | (0.03) | (0.04) | (0.04) | (0.03) | (0.03) | (0.04) | (0.05) |
| trade | 0.56*** | 0.34*** | 0.22*** | 0.51*** | 0.37*** | 0.13*** | 0.52*** | 0.26*** | 0.26*** | 0.73*** | 0.35*** | 0.38*** |
| | (0.03) | (0.02) | (0.01) | (0.02) | (0.02) | (0.02) | (0.03) | (0.03) | (0.02) | (0.05) | (0.04) | (0.02) |
| transport | 0.41*** | 0.24*** | 0.17*** | 0.50*** | 0.27*** | 0.23*** | 0.52*** | 0.21*** | 0.31*** | 0.84*** | 0.40*** | 0.44*** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (0.07) | (0.05) | (0.03) | (0.06) | (0.04) | (0.03) | (0.03) | (0.03) | (0.04) | (0.05) | (0.07) | (0.03) |
| finance | 0.25*** | 0.10*** | 0.14*** | 0.24*** | 0.16*** | 0.09** | 0.30*** | 0.09* | 0.22*** | 0.56*** | 0.25*** | 0.31*** |
| | (0.05) | (0.03) | (0.03) | (0.04) | (0.02) | (0.03) | (0.04) | (0.04) | (0.02) | (0.04) | (0.04) | (0.04) |
| services | 0.53*** | 0.40*** | 0.13*** | 0.49*** | 0.42*** | 0.07** | 0.60*** | 0.35*** | 0.25*** | 0.88*** | 0.45*** | 0.43*** |
| | (0.03) | (0.03) | (0.02) | (0.03) | (0.04) | (0.02) | (0.03) | (0.03) | (0.03) | (0.04) | (0.04) | (0.03) |
| African | 0.03 | 0.08** | -0.05 | -0.05 | 0.03 | -0.08* | -0.04 | 0.08* | -0.13*** | -0.33*** | -0.18** | -0.15*** |
| | (0.04) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.03) | (0.03) | (0.08) | (0.06) | (0.03) |
| coloured | -0.06 | 0.02 | -0.07* | -0.08* | -0.01 | -0.08* | -0.13** | 0.00 | -0.13*** | -0.22** | -0.07 | -0.15*** |
| | (0.06) | (0.04) | (0.04) | (0.03) | (0.04) | (0.04) | (0.04) | (0.04) | (0.03) | (0.08) | (0.08) | (0.03) |
| N | 33292 | 33292 | 33292 | 38240 | 38240 | 38240 | 39362 | 39362 | 39362 | 37212 | 37212 | 37212 |

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

Notes: 1. Controls include province and marital status not reported here.

2. $^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.001$

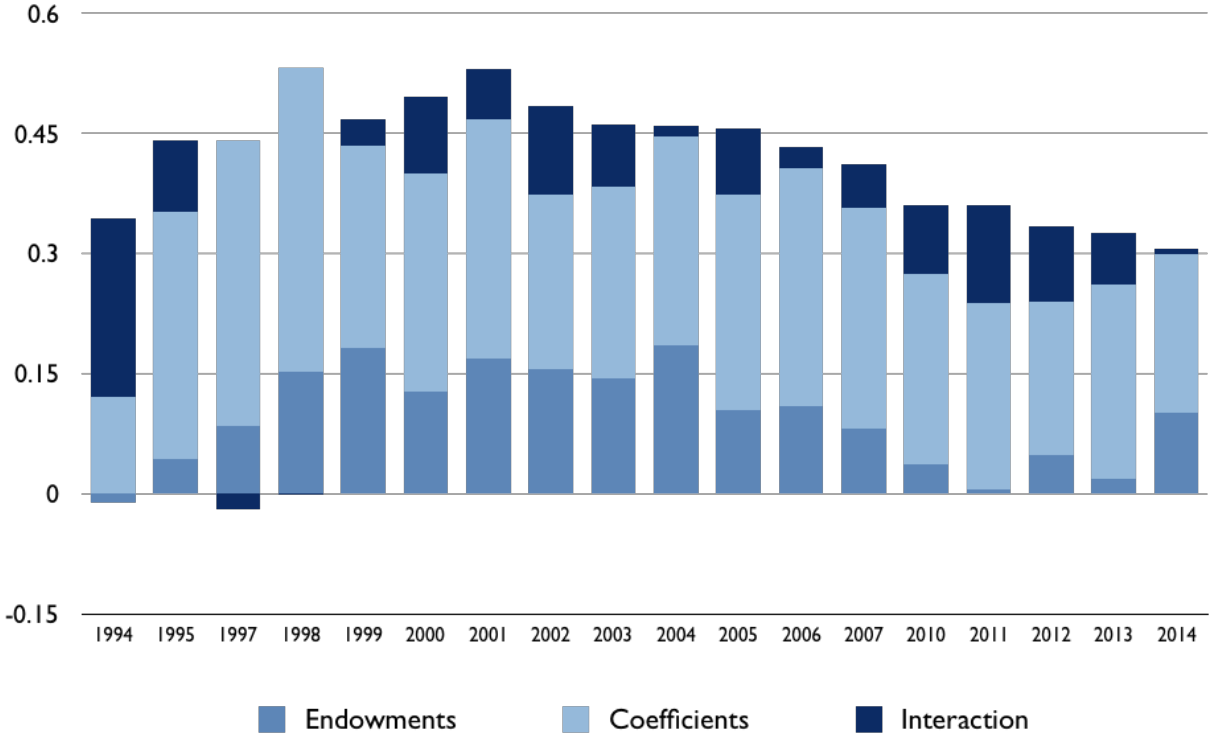
3. Urban/rural status not reported in survey between 2005 and 2007.

**Table A4: Employment shifts of labour broker employees by industry, 2015.**

| Industry | Total Employees | | Temp workers | | # Temp workers hired permanently by client | # Temp workers hired on contract by client | Employees unaffected |
|---|---|---|---|---|---|---|---|
| | on Site | Affected | Retrenched | Terminated | | | |
| Metal & Engineering | 1017 | 764 | 248 | 516 | 10 | 0 | 253 |
| Construction | 250 | 100 | 0 | 85 | 15 | 0 | 150 |
| FMCG | 350 | 347 | 102 | 75 | 120 | 50 | 3 |
| Retail | 169 | 113 | 0 | 0 | 113 | 0 | 56 |
| Banking | 643 | 464 | 30 | 250 | 111 | 73 | 179 |
| Hospitality/ Leis. | 572 | 572 | 0 | 100 | 272 | 200 | 0 |
| Public Sector | 795 | 793 | 0 | 793 | 0 | 0 | 2 |
| Power & Utilities | 690 | 314 | 0 | 232 | 82 | 0 | 376 |
| Waste Mgmt | 130 | 96 | 0 | 0 | 96 | 0 | 34 |
| Manufac-turing | 913 | 913 | 0 | 713 | 150 | 50 | 0 |
| Healthcare | 3 | 3 | 0 | 3 | 0 | 0 | 0 |
| Motor & Transport | 192 | 50 | 0 | 0 | 35 | 15 | 142 |
| White Collar | 83 | 83 | 0 | 83 | 0 | 0 | 0 |
| Insurance | 70 | 12 | 0 | 2 | 0 | 10 | 58 |
| Education | 120 | 120 | 0 | 100 | 0 | 20 | 0 |
| Park homes | 76 | 48 | 0 | 24 | 24 | 0 | 28 |
| Elite Fibre | 26 | 33 | 0 | 0 | 0 | 33 | 0 |
| Other/ Unspecified | 814 | 564 | 0 | 160 | 404 | 0 | 250 |
| **Total** | **6913** | **5389** | **380** | **3136** | **1432** | **451** | **1524** |

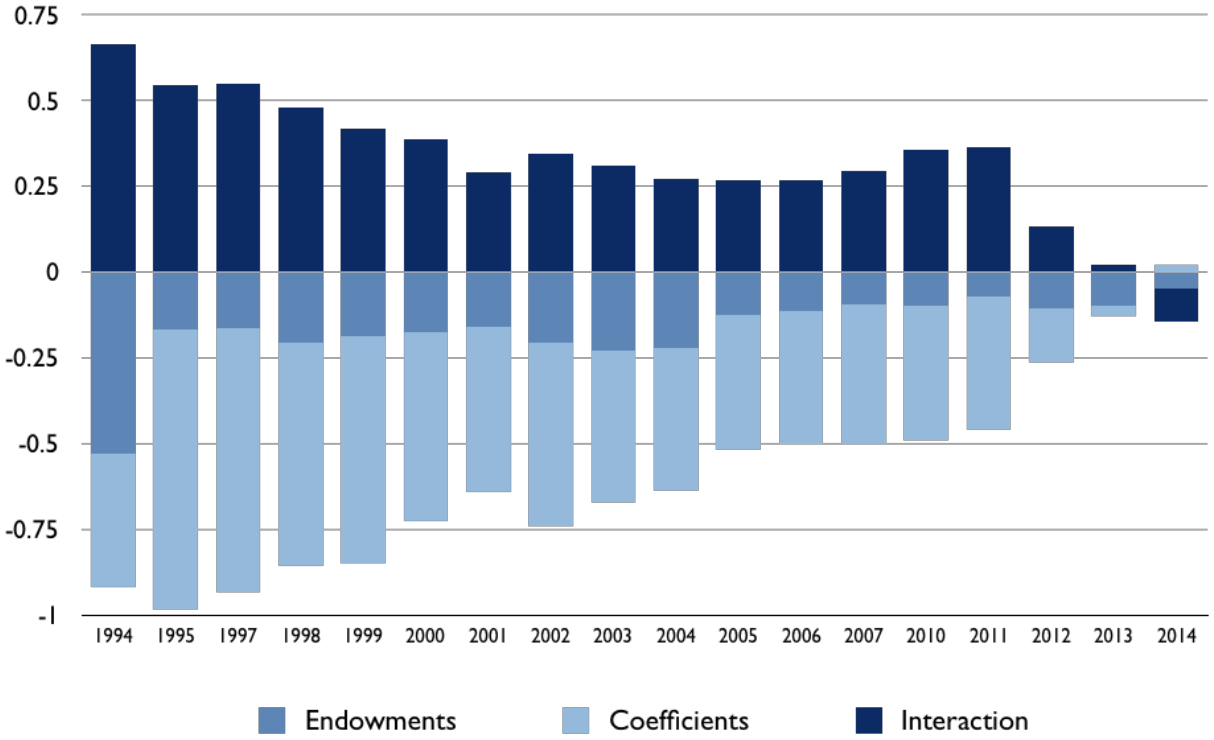
Source: Bhorat, Magadla & Steenkamp (2015).

**Figure A1: Decomposition of changes in earnings by female, 1994-2014.**



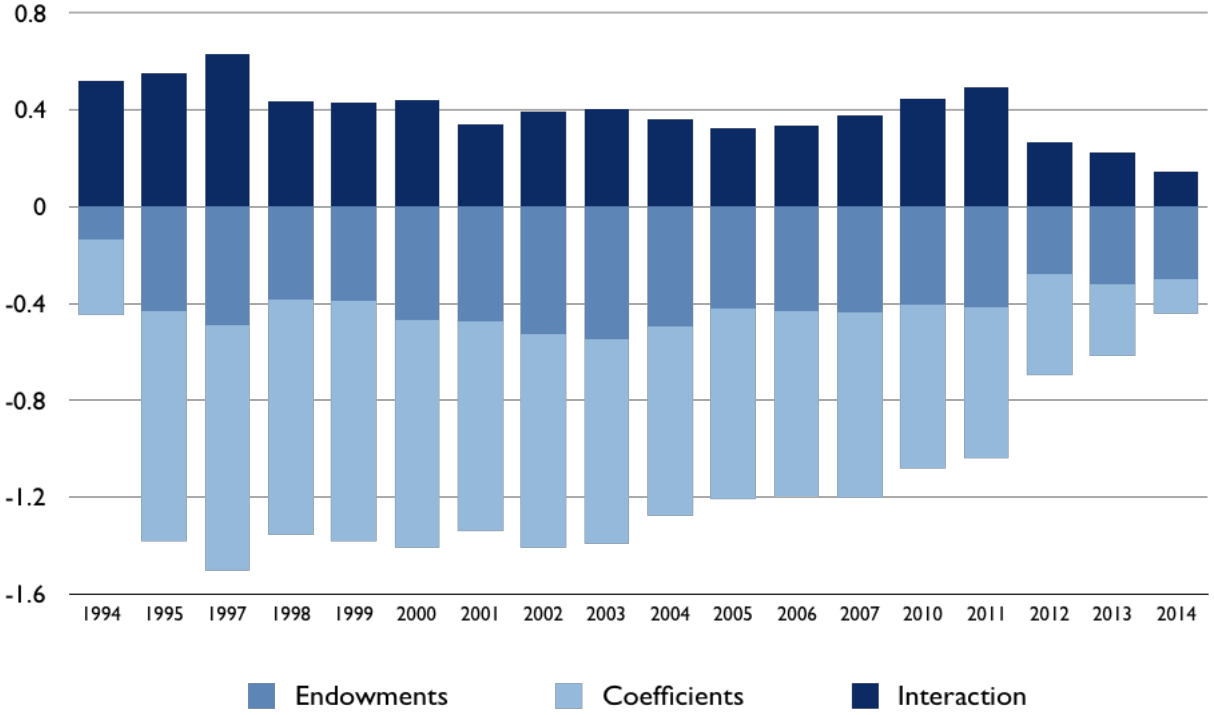

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

**Figure A2: Decomposition of changes in earnings by manufacturing sector, 1994-2014.**



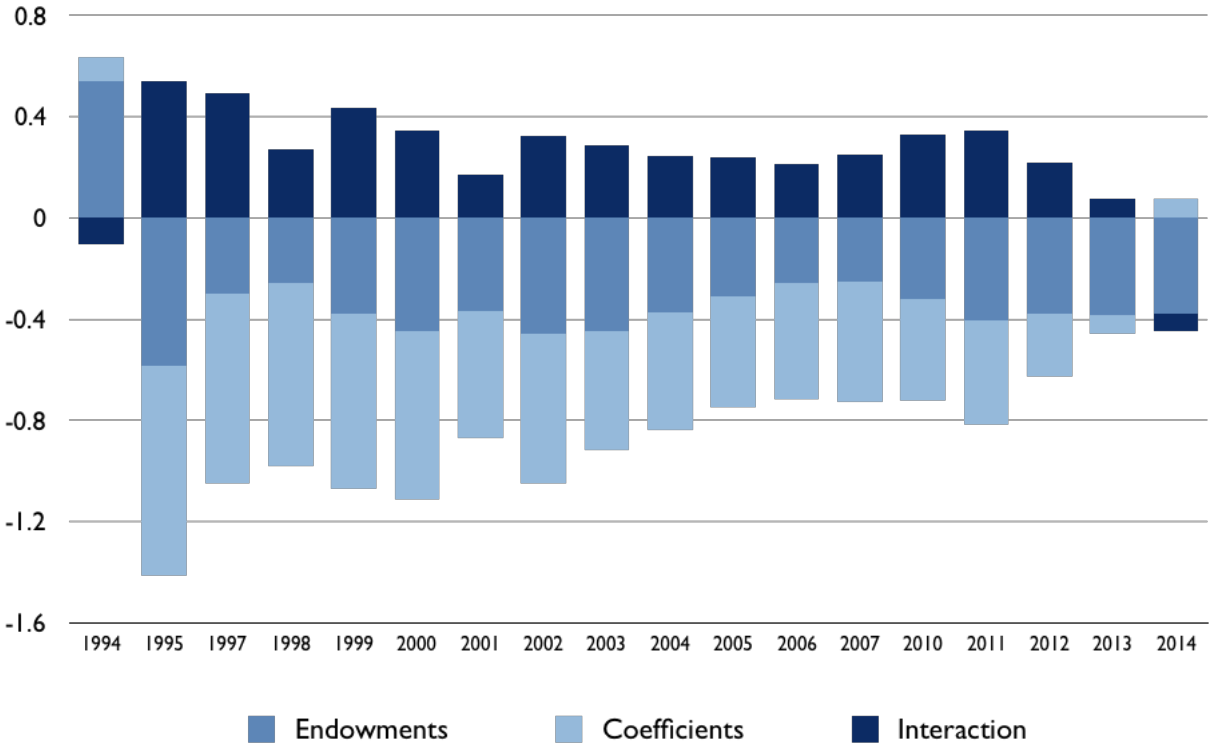

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

**Figure A3: Decomposition of changes in earnings by services sector, 1994-2014.**



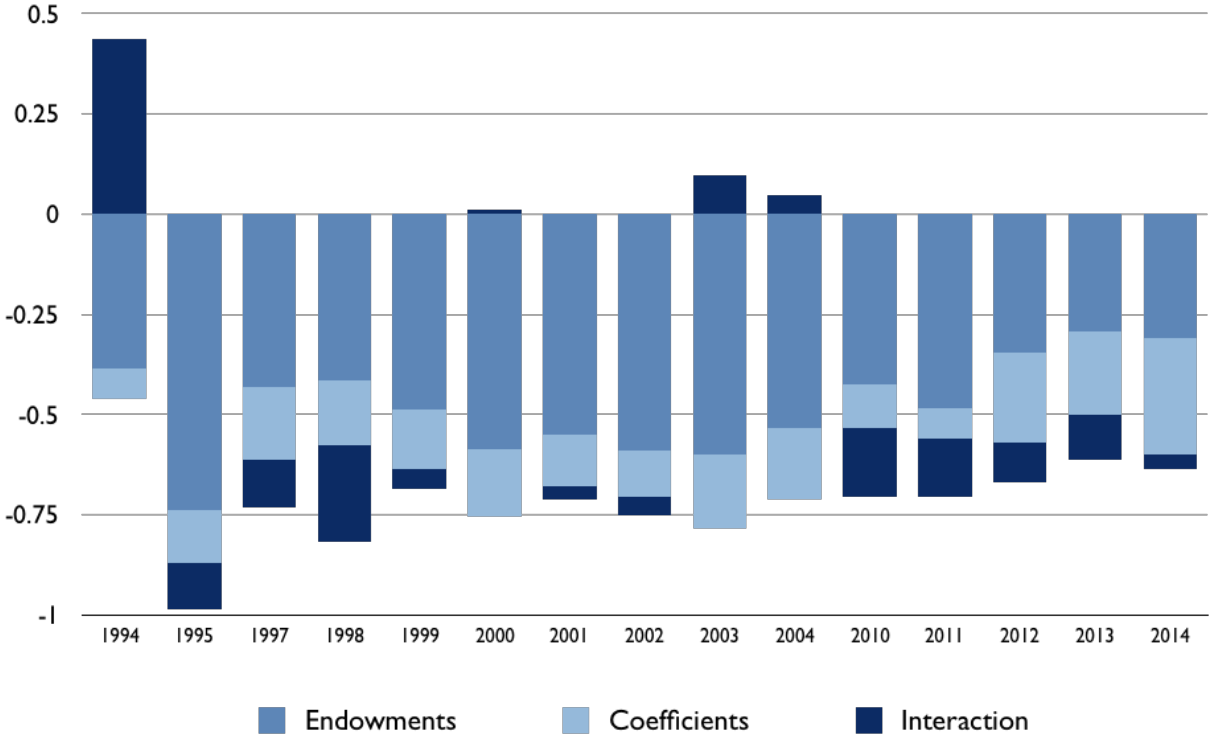

Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

**Figure A4: Decomposition of changes in earnings by finance sector, 1994-2014.**




Source: Post *Apartheid* Labour Market Series, Authors' Calculations.

**Figure A5: Decomposition of changes in earnings by urban location, 1994-2014.**




Source: Post *Apartheid* Labour Market Series, Authors' Calculations.
Notes: Urban/rural status not reported in survey between 2005 and 2007.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