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## SEVEN

# South Africa

### *Demographic, Employment, and Wage Trends*

**Haroon Borhat, Karmen Naidoo, Morné Oosthuizen,  
and Kavisha Pillay**

After negative and slow growth in the late 1980s and early 1990s, South Africa's triumphant transition to a democratic and more inclusive society in 1994 saw the economy once again begin to grow steadily. This renewed growth was supported by strong macroeconomic management and effective institutions. Since then, the South African economy has grown at an annual real average of 3.19 percent. Accompanying this growth performance are significant welfare gains seen in the rise of access to social services, housing, and basic infrastructure, as well as a moderate reduction in extreme poverty (Bhorat and others 2015b). One of the factors preventing greater development and welfare improvements is that economic growth has come with considerable variation.

In the five years immediately after democracy, growth averaged 2.76 percent, rising to 3.17 percent in the following five years (table 7-1). The period of fastest economic growth was between 2004 and 2008, where real GDP expanded at an annualized average rate of almost

**TABLE 7-1.** *Real GDP and GDP per Capita Annual Average Growth Rates, South Africa*

Percent

	1994–98	1999–2003	2004–08	2009–13
GDP	2.76 (1.40)	3.17 (0.73)	4.92 (0.84)	1.91 (2.03)
GDP per capita	0.50 (1.43)	1.09 (0.78)	3.55 (0.83)	0.56 (2.00)

Source: World Bank, World Development Indicators (WDI) (2015); authors' calculations.

Note: Standard deviations shown in parenthesis.

5 percent. This period of relatively fast growth was then abruptly interrupted by the global financial crisis, which caused the South African economy to enter a brief recession in 2009.

National output subsequently rose to just over 3 percent in 2010, but has since weakened. Over the last five years, therefore, GDP per capita has grown at an annual average of merely 0.56 percent. This weakening of the South African economy can ultimately be attributed to a combination of factors, including slow global growth, industrial disputes, electricity shortages and concomitant price hikes, a lack of international competitiveness in manufacturing, and declining gold, platinum, and coal prices since 2012.

A brief analysis of the sectoral composition at two points in time shows that four sectors are expanding relatively faster than overall GDP: transport, storage, and communication; financial and business services; construction; and wholesale and retail trade.<sup>1</sup> Transport, storage, and communication is now one and a half times the size it was in 1994, financial and business services have expanded by 42 percent over the period, and construction by 47 percent. The remaining five sectors have all declined in their share of GDP.

The most marked change is that of the mining sector. From constituting up to 15.5 percent of GDP in 2014, it is now almost half that proportion, at 8.5 percent. In addition, agriculture and manufacturing have also declined considerably in their shares of GDP, by 22 percent and 10 percent, respectively. While the country has effectively transitioned away from its earlier reliance on the mining sector, mining

remains an important contributor to economic activity. Most important, the sector generates more than half of the country's foreign exchange revenue and its firms account for a quarter of the national stock exchange market capitalization (Chamber of Mines 2015). Thus, exports are heavily concentrated in natural resources, where gold and other mining products make up 44 percent of exports, a proportion similar to that of manufacturing (Industrial Development Corporation 2013).

Based on the sectoral composition of GDP, then, it is evident that South Africa has become a service-driven economy since 1994. The share of output contributed by wholesale and retail trade, transport, and communication—and most visibly—financial and business services, shows increases over the first two decades of democracy in South Africa. The economy, it is fair to argue, has slipstreamed onto an economic development trajectory that is increasingly intensive in the provision of services. What is most starkly evident in this deepening output from services, however, is the stagnation in manufacturing. Hence, we find that the manufacturing sector's share of GDP has declined marginally since 1994 in South Africa. Since trade became more liberalized in the early 1990s, South Africa's manufacturing sector has failed to compete in global manufacturing export markets. Increased import competition and the level and volatility of the real exchange rate have been shown to be important drivers of South Africa's manufacturing decline (Rodrik 2006). No country to date has managed to transition out of a middle-income to a high-income country status without the dynamism of a vibrant, labor-intensive manufacturing industry. In the lexicon of post-apartheid South Africa, however, this notion of labor-intensive manufacturing as a driver of growth and jobs in the country is strikingly absent.

South Africa is classified as an upper middle-income country, with real GDP per capita currently at US\$5,916, up from US\$4,652 in 2000. The uneven and, at times, sluggish growth in average income levels, however, has meant a moderate decline in poverty, from 40 percent of the population in 1995, to 26 percent in 2013, using the World Bank's \$2-a-day poverty line. With a current population of almost 53 million, this equates to about 13.7 million people living in poverty in South Africa. At perhaps the more appropriate national poverty line, the poverty headcount ratio has increased from 31 percent in 1995 to a current

level of 53.8 percent.<sup>2</sup> This headcount ratio is calculated using the upper bound level of a newly rebased national poverty line, but even at the national lower bound headcount poverty rate of 37 percent, poverty has undoubtedly remained high.

Thus, while extreme poverty has declined, the trends on the national poverty line are more worrying. South Africa's inability to translate growth into reducing poverty is not surprising given the extremely unequal nature of the society. With a Gini coefficient of 0.59, the exceptionally high level of income inequality is arguably the most important factor hindering the poverty reducing power of economic growth.<sup>3</sup> The exclusivity of South Africa's growth path is further emphasized by an unemployment rate of 25 percent, and one that has averaged 23.7 percent over the last two decades, with its lowest level at 17 percent in 1995.<sup>4</sup> South Africa is clearly in a labor market crisis, which in a low growth environment serves only to reinforce further the unsustainably high level of income inequality.

Therefore, despite the optimistic outlook for the South African economy as the country transitioned to democracy in 1994, economic growth over the last two decades has been moderate. In addition, while the comprehensive social welfare system has succeeded in reducing inequalities in access to public services and housing, poverty has remained stagnant and inequality has remained exceptionally high—underpinned by one of the world's consistently highest unemployment rates. Given this all too brief background to the economy's growth record and the structure of this growth trajectory, the remainder of this paper focuses on demographic and labor market trends during the period to understand better some of the factor market underpinnings of South Africa's economic performance.

### **ESTIMATING SOUTH AFRICA'S DEMOGRAPHIC DIVIDEND**

The South African labor market has undergone considerable changes since the end of apartheid and the elimination of various statutory restrictions on labor market access and participation. The key feature of the latter half of the 1990s and the early 2000s was the rapid growth in the size of the labor force, driven by increasing labor force participation

rates—rather than a rapidly growing working-age population—particularly among rural African women (Casale and Posel 2002). For the 1995 to 2002 period, for example, growth in the working-age population averaged 2.1 percent per annum, which was less than half the rate of growth of the labor force (irrespective of the unemployment definition utilized) (Bhorat and Oosthuizen 2006, p. 145). As a result, although employment growth was able to keep pace with growth in the working-age population and, largely, with economic growth, it was unable to keep up with the growth in the labor force. Unemployment, thus, moved rapidly higher, both in absolute terms and as a proportion of the labor force.

This disconnect between employment growth and labor force growth points to the importance of understanding the longer-term challenges and opportunities associated with demographic change. Projections from the United Nations Population statistics suggest that the share of the working-age population (WAP) in the total population in South Africa will remain between 65 percent and 67 percent until the year 2030. Given slowing population growth rates, this means that the working-age population is expected to increase gradually, from the current 34.2 million to 36.5 million by 2030. South Africa is, therefore, quite some way along its demographic transition. In fact, the median age in South Africa has risen from eighteen years to twenty-five years over the last three decades, and is estimated to rise to thirty-one over the next three decades as the population continues to age (Oosthuizen 2014).

According to the National Transfer Accounts (NTA) framework, the shift from a high-fertility, high-mortality equilibrium to a low-fertility, low-mortality equilibrium—referred to as the demographic transition—is associated with two potential dividends that can contribute toward longer term economic growth and development (Mason and Lee 2007; NTA 2013). The first demographic dividend is triggered by falling fertility rates, having been preceded by falling mortality rates, particularly among children. This process helps to boost economic growth through lowering the extent of dependency on working-age adults.

Typically, dependency is measured in terms of dependency ratios, namely the ratio of economically inactive cohorts to economically active cohorts (for example, the total dependency ratio is the ratio of children under the age of fifteen and adults aged sixty-five years and

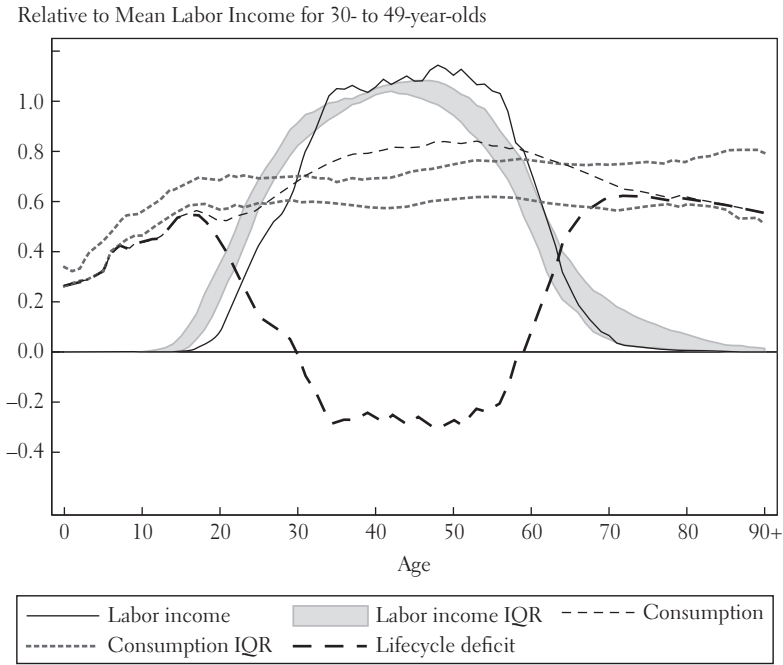
older to the working-age population). This one-zero switch between dependence and nondependence, though, is not realistic, and is avoided within the NTA framework by calculating the support ratio. The support ratio measures the number of effective workers (a country's population-weighted per capita labor income profile) relative to the number of effective consumers (the population-weighted per capita consumption profile). A rise in the support ratio implies a relative increase in the number of effective workers and, therefore, a lower level of dependence.

Declining fertility leads to a reduction in the ratio of dependent children relative to nondependent (that is, earning) adults and is the underlying driver of the demographic dividend—defined as the rate of change of the support ratio—as it drives the support ratio higher. This raised support ratio implies an increase in the number of effective workers relative to effective consumers and, thus, income per effective consumer rises, *ceteris paribus*. This, in turn, implies higher standards of living and an improved scope for human capital investment. Upon this foundation, then, a second demographic dividend, achieved through capital deepening, can be realized if the benefits of the first dividend are invested in human, physical, and financial capital.

For South Africa, the average fertility rate has already declined significantly, from 6.4 births per woman in the 1950s to 2.4 births in 2005–10 (United Nations 2012). However, the high level of unemployment and the resulting low labor income—particularly for young workers—has significantly constrained the economy's ability to reap the potential benefits of this demographic dividend. In addition to demographic change, both labor income and consumption are important factors influencing the rate of change of the support ratio and, therefore, the magnitude of the demographic dividend.

Figure 7-1 shows that labor income begins to rise at a later age and is markedly lower among young people in South Africa than in a range of other developed and developing countries. The interquartile ranges (IQR) of normalized labor income and consumption profiles across a variety of other countries are plotted in the graph using NTA data.<sup>5</sup> In addition, per capita labor income is shown to fall significantly and more steeply for older working-age adults in South Africa compared to the group of thirty-three other countries.

**FIGURE 7-1.** *Per Capita Labor Income, Consumption and Lifecycle Deficit, 2005*



Source: Oosthuizen (2014) using National Transfer Accounts (2013) data.

Note: Values are expressed as ratios to average per capita labor income at age 30–49. For a list of NTA member countries, see [www.ntaccounts.org](http://www.ntaccounts.org).

South Africa’s consumption pattern also differs significantly from other countries. Consumption for children and young adults in South Africa is positioned within the first quartile of the IQR of the other countries, but rises to the top quartile for those between the ages of thirty and sixty years. For older individuals in South Africa, consumption declines quite strongly compared to other countries, where elderly consumption remains relatively stable. This decline in consumption among older cohorts in South Africa points to underlying weaknesses in the private and public institutions that should allocate resources to ensure that consumption among the elderly is maintained at a level that is comparable to that among prime working-age cohorts (Oosthuizen 2014). Finally, evaluating income and consumption together, South



Africa's lifecycle surplus period lasts thirty years, between the ages of thirty and fifty-nine years, which is broadly typical of NTA countries, albeit slightly delayed.

Estimates of the first demographic dividend for South Africa show that the country has passed through at least half of the period in which the first demographic dividend is expected to be positive, and is now in the stage during which the magnitude of the dividend is falling. The magnitude of South Africa's demographic dividend is in line with other middle-income countries. Over the 2005–10 period, the annual growth in the support ratio ranged between 0.15–0.40 percent, compared to an average of 0.40 percent for a group of twelve other upper middle-income countries for which there are NTA estimates (Mason and Lee 2012, as quoted in Oosthuizen 2014).

The continuing weaknesses within the South African labor market and the historical problems in the public provision of quality education to the broader population remain as two of the most significant challenges to realizing some benefit of the final phase of the positive demographic dividend over the next thirty years. While the low level of employment and labor income of young South Africans is critical to address, a greater positive impact on the demographic dividend would be achieved if South Africa's consumption profile were similar to that of the median NTA country. As figure 7-1 suggests, this would imply lowering the level of consumption of prime age adults relative to peak labor income to levels that are in line with international trends, while raising per capita consumption among the elderly. Underlying this finding is South Africa's relatively advanced point within the demographic transition. The youngest cohorts within the working-age population are expected to stabilize in size and begin to contract, while older working-age cohorts—which would comprise a relatively large proportion of effective consumers, given their high per capita consumption—are expected to grow rapidly. This suggests that weak sharing mechanisms within South African society may have a negative impact on per capita income growth over time (Oosthuizen 2014). In some sense, this provides support for the argument that inequality can act as a brake on economic growth.

## STRUCTURE OF THE LABOR MARKET AND GROWTH–EMPLOYMENT INTERACTIONS

The South African labor market has received considerable analytical and research attention over the past fifteen years and, as a result, there are a large number of labor market reviews covering the post-apartheid era (see, for example, Burger and Woolard 2005; Bhorat and Oosthuizen 2006; Branson 2006; Oosthuizen 2006; Yu 2008). Instead of a detailed review of the post-apartheid labor market, this paper seeks to explore the particular trends relating to skills-biased labor demand, as well as to highlight two new, more recent post-apartheid labor market trends. The latter is displayed in the rise, first, of temporary employment services as a form of alternative employment and, second, in the sharp increase in the level of public sector employment.

The number of the employed in South Africa is currently just under 15 million individuals, rising from 12.4 million in 2004. This increase of 2.6 million over the last decade is equivalent to an average annualized growth rate of 2.3 percent, with the most rapid growth occurring between 2004 and 2008, when the economy was growing at its fastest rate. Employment, thus, peaked at 14 million workers in the final quarter of 2008. The effects of the global economic recession, however, were felt heavily in South Africa, where the first three quarters of 2009 saw an estimated 900,000 jobs lost, and by the end of 2010, the number of employed equaled 13.2 million (Oosthuizen 2011). Employment creation has since remained weak.

The slow pace of job creation in South Africa over the last decade has meant the number of unemployed individuals has increased from 4.2 million in 2004 to a current level of 4.9 million by the narrow definition—an unemployment rate increase from 13 percent to 24 percent. Since 1994, the number of unemployed has doubled. When using an expanded definition of unemployment, the current unemployment figure stands at 8.1 million, a 35 percent unemployment rate.<sup>6</sup> The economic challenges then become clear: labor intensive sectors have failed to grow at a rapid enough pace to absorb the rising levels of labor force participation and the growing working-age population over time.

Simple elasticities of employment to GDP growth are provided in table 7-2. The estimates indicate that over the entire twenty-year period,

**TABLE 7-2.** *Employment–Growth Elasticities, South Africa, 1994–2013*

	<i>Employment</i> (thousands)	<i>Real GDP</i> (US\$ millions)	<i>Employment-growth elasticities</i>		
			1994–2004	2004–13	1994–2013
1994	9,847	173,021.42	0.71	0.64	0.64
2004	12,342	234,667.86	...	...	...
2013	14,983	313,465.97	...	...	...

Source: DataFirst PALMS (1994, 2004); StatsSA Quarterly Labour Force Survey (QLFS) (2013); World Bank WDI (2015); authors' calculations.

employment increased on average by 0.64 percent for every 1 percent in GDP growth. The employment intensity of growth was clearly higher in the first decade after democracy than the second. Against other comparable economies, South Africa's simple output elasticity of total employment is by no means an outlier (Bhorat 2012). Following this, there is no immediate evidence here that South Africa's economy has a weak labor absorptive capacity (Bhorat 2012).

Furthermore, relative to a small subset of countries, Bhorat (2008) shows that South Africa's simple elasticity is relatively high. For example, fast growing economies (such as India and Malaysia) experienced a more moderate employment response to the high growth during the 2001–05 period; South Africa's estimate then was 0.60, while Malaysia and India were 0.47 and 0.25, respectively (Bhorat 2008). Of course, within South Africa's high unemployment environment, consumption levels are likely to be less than optimal and there may be lower incentive for investment, which would work together to dampen economic growth. The wide-scale provision of social grants would partly serve to offset these effects. Clearly, there is a nontrivial two-way relationship between growth and employment. Arguably, though, any development plan for South Africa needs to place economic growth at its core, with a focus on growth in labor-intensive sectors, for the benefits of growth and employment creation to be more equitably distributed.

### Uneven Sectoral Shifts in Employment

Table 7-3 shows that the South African economy has created about 2.5 million jobs over the 2001–12 period, with significant job losses in the primary sector. It is evident in the sectoral breakdown that the over-

**TABLE 7-3.** *Employment Shifts by Industry, South Africa, 2001–12*

Percent share in total employment

	Growth (2001–12)		Employment shares		Share of change ( $\Delta E_i/\Delta E$ ) <sup>b</sup>
	Absolute	Relative <sup>a</sup> ( $\% \Delta E_i/\% \Delta E$ )	2001	2012	(2001–12)
Primary	-719,232	-2.6	0.15	0.07	-0.28
Agriculture	-514,468	-2.7	0.1	0.04	-0.2
Mining	-204,764	-2.2	0.05	0.02	-0.08
Secondary	537,376	1.0	0.2	0.21	0.21
Manufacturing	112,149	0.3	0.14	0.12	0.04
Utilities	10,774	0.5	0.008	0.008	0.004
Construction	414,453	2.5	0.05	0.07	0.16
Tertiary	2,720,821	1.6	0.63	0.71	1.08
Trade	513,572	0.9	0.21	0.21	0.2
Transport	288,364	2.1	0.04	0.06	0.11
Financial	782,108	2.8	0.09	0.13	0.31
CSPS <sup>c</sup>	1,041,524	2.1	0.17	0.22	0.42
Private households	95,253	0.4	0.09	0.08	0.04
Total	2,497,763	1	1	1	1

Source: Borat and others (2014) using PALMS dataset (2012).

a. The ratio of the percentage change for each respective subsector and industry to the total overall percent change in employment over the period (relative sectoral employment growth).

b. The ratio of the percentage change in the share of employment to the overall change in employment over the period (share of change in employment). This measure shows, within each broad sector, where the sources of employment growth are. For example, employment in the tertiary sector is 1.08 times (or 108 percent of) the level of employment in 2001, which is the sum of the changes for all the industries within this subsector. CSPS, then, is the greatest contributor to employment growth in the tertiary sector.

c. CSPS (community, social, and personal services) is predominantly public sector employment.

whelming majority of jobs in the other two sectors (84 percent) have emanated from the tertiary sector. This is completely consistent, of course, with our output share analysis above.

Two additional sectoral shifts are crucial to note. First, job destruction in the primary sectors is very clear. Specifically, agriculture and mining together lost almost 72,000 jobs. One factor contributing to declines in agricultural employment over this period was the introduction of a minimum wage in March 2003 (Bhorat and others 2012). The poor performance of the mining sector can be attributed to a range of factors,

including a strongly appreciating Rand in the mid-2000s, infrastructural constraints (such as rail transport), energy constraints, and the application of new mining laws in South Africa (Organization of Economic Cooperation and Development [OECD] 2008). The recent widespread strike action in the mining sector in 2010 and 2011 exacerbated the problems.

Second, consistent with the lack of dynamism in manufacturing, employment levels in the sector have stagnated. Hence, it is instructive that the South African manufacturing sector has generated just over 110,000 jobs over an eleven-year period, yielding a relative employment growth rate of only 0.3 percent per annum. In contrast, the relative employment growth rates of the transport, finance, and community, social, and personal (CSP) services sectors all exceed 2 percent per annum. Employment and growth generators in the South African economy since 2001 have been disproportionately located in the services sectors.

In terms of the share of this change in employment since 2001, the last column in table 7-3 provides a key insight into the scale of this economic and employment shift. In particular, then, we see that the CSP sector and the financial and business services accounted for 73 percent of the total employment shift in this period. As a result, the financial sector now accounts for 13.5 percent of employment, from 10 percent a decade ago. The CSP result suggests, in the first instance, that one of the biggest drivers of job creation since 2004 has been the expansion of employment in the public sector, which makes up the majority of community, social, and personal services. Hence, from contributing 17 percent of employment in 2001, the broader industry now accounts for 22.5 percent of employment, once again making it the largest industry by employment. Furthermore, public sector employment is the main driver of employment growth in the tertiary sector. This rising trend in public sector employment is an important focus of this paper, and is discussed in more detail later.

In essence, we observe important and new characteristics relative to the early post-apartheid years: job destruction in the primary sectors, a manufacturing sector that has been ineffective as a generator of large-scale jobs, and a tertiary sector that has stepped in to fill this vac-

uum. Employment has, thus, disproportionately emanated from the tradable and nontradable services sectors. We turn next to a relatively new phenomenon characterizing job creation in South Africa, the rise of temporary employment services.

### Rise of Temporary Employment Services

In terms of the second largest sectoral contributor to the overall employment change, the financial and business services industry result is slightly more complex, given that this sector is not often a large generator of jobs. Disaggregating the sources of employment in the financial sector reveals an interesting pattern: employment growth in financial services is about growth in the business service colloquially known as “labor brokering” or, as it is known globally, temporary employment services (TES) provision. This statistical hidden identity of the TES sector arises because the labor force survey data does not list TES as a separate sector, but houses it within the financial and business services sector, classifying it as the subsector Business Services Not Elsewhere Classified (NEC). TES employment essentially involves the practice of companies providing, as a third-party employer, workers across various occupations (such as cleaning, accounting, secretarial, security services, and so on) to formal sector firms. The latter, then, do not directly hire these workers. TES employment as a percentage of the financial industry employment increased rapidly in the post-apartheid period in South Africa from 26.64 percent in 1995 to 47.36 percent in 2014. As a proportion of total employment, while remaining quite small, TES employment has nearly tripled, by increasing from 2.22 percent to 6.44 percent over the same period.<sup>7</sup>

To understand where employment is actually concentrated within the Business Activities Not Elsewhere Classified (NEC) sector for the period 1999 to 2014, our analysis shows that Protective Services Workers Not Elsewhere Classified<sup>8</sup> accounted for the relatively largest share of the employed, at between 43 percent and 47 percent.<sup>9</sup> The second largest share, at 15 percent, was accounted for by commercial helpers and cleaners (as opposed to residential cleaners), highlighting the increased use of contract cleaners over this time. By 2014, 6 percent of

those employed in this subsector were categorized as farmhands and laborers, compared to an almost negligible category in 1999 (only 131 employed as farmhands and laborers). While this employment category remains relatively small, Bhorat and Mayet (2012) point out that the rapid growth in this type of employment classification is reflective of increased labor broker recruitment in this area of work.

There are two possible explanations here. One is that these results suggest that the rapid expansion of employment related to protective and crime-prevention services is a response to South Africa's high crime rate. At another level, these results provide some powerful evidence of the rise of labor-brokering agencies that have for some time been an important topic of public debate in the country. In this debate, it is the burden of South Africa's regulatory environment that is often thought to be a central factor in the rise of TES employment. This form of employment, while not always offering lower direct costs of employment, often allow firms to circumvent the indirect costs of employment thought to reside in the economy's labor regulatory environment (Bhorat and van der Westhuizen 2013).

To assess whether South Africa's scores on a set of normalized employment protection legislation measures are indicative of an over-regulated or rigid labor market, Bhorat and others (2015a) use the 2013 World Bank's Doing Business survey to provide a comparison of South Africa's measures of labor regulation against other regions of the world. As table 7-4 indicates, low-income and high-income OECD countries exhibit the highest average scores of labor market rigidity, nonwage labor costs, and firing costs. Countries that lie between these two extreme income categories exhibit two distinct patterns. First, there is declining rigidity and firing costs as income level rises; and second, nonwage labor costs rise with income level, as is expected.

South Africa's rankings for the firing costs and nonwage labor costs indices are both below its income category (upper middle-income) means, and the global means. While South Africa's difficulty of firing and rigidity of hours indices are above the respective income category and global means, it is the difficulty of hiring index that stands out as remarkably high. Therefore, as Bhorat and others (2015a) highlight, South Africa's labor legislation framework maintains a relatively flexible

**TABLE 7.4. Mean Measures of Labor Regulation by Income Level<sup>a</sup> in South Africa, 2006–2013**

Area of regulation	Low income	Lower-middle income	Upper-middle income	High-income: Non-OECD	High-income: OECD	South Africa	All countries
Difficulty of hiring <sup>b</sup>	50.89	35.28	30.40	17.79	27.72	55.67	33.13
Difficulty of firing <sup>c</sup>	36.88	33.96	25.60	16.25	22.26	30.00	27.95
Rigidity of hours <sup>d</sup>	19.38	18.33	14.00	16.67	24.52	20.00	18.16
Aggregate rigidity of employment index	35.71	29.19	23.33	16.90	24.83	35.22	26.41
Non-wage labor costs <sup>e</sup>	12.40	16.01	17.31	21.43	10.17	2.40	15.62
Firing costs <sup>f</sup>	65.32	50.91	44.63	31.32	54.64	24.00	51.34

Source: Bhorat and others (2015a) using World Bank (2013) data; Benjamin and others (2010).

a. Regarding the consistency of South Africa's ranking over time, the 2013 results show no change in South Africa's relative position (compared to each country income-category and the global averages) in the aggregate rigidity of employment index from 2006 to 2013.

b. The "difficulty of hiring" index measures restrictions on part-time and temporary contracts, together with the wages of trainees relative to worker value-added.

c. The "difficulty of firing" index assesses and ranks specific legislative provisions on dismissals.

d. The "rigidity of hours" index measures the various restrictions around weekend, Sunday, and public holiday work, limits on overtime, and so on.

e. "Labor costs" indicates results from the 2006 *Doing Business Report*, which focused on the jobs challenge and, thus, provided more detailed labor market indicators.

f. "Firing costs" measures the cost of terminating the employment of an individual in terms of legislated prior notice requirements, severance pay, and so on.



labor market in terms of hiring and firing costs; however, the legislated procedural requirements on hiring workers introduces a degree of regulatory inflexibility. Benjamin and others (2010) argue, however, that the World Bank's Doing Business survey does not measure the inefficiency of the labor courts system, which potentially adds a very high cost to the firing of workers. Thus, it is arguably these degrees of inflexibility that firms can overcome through employing workers through labor brokers or temporary employment service providers.

### Human Capital and Skills-Biased Labor Demand

The rising shares of tertiary sector employment have implications for the underlying occupational shifts as they relate to skills levels. This section looks more closely at South Africa's educational profile and the economy's skills-biased growth trajectory to better understand the underlying implications for the labor market.

#### *Weaknesses in South Africa's Educational System*

One of the fundamentally destructive legacies of the apartheid government's reign was a highly unequal schooling system and a tertiary system that was not accessible to those with poor levels of schooling. While there have been enormous strides in the last twenty years to increase access to schooling, the poor quality of schooling in South Africa remains a critical challenge.

Enrollment in primary school in South Africa has reached almost 100 percent, supported by a no-fee policy for children from poor households, fulfilling the constitutionally enshrined right to basic education for all children. This is, no doubt, a positive development over time; however, the average quality of the schooling provided to all these children remains weak. Comparing the grade 6 standardized mathematics and reading scores from SACMEQ III (Southern and Eastern Africa Consortium for Monitoring Educational Quality) for a number of African countries, South Africa's average for both subjects fall below many other countries, such as Tanzania, Swaziland, Kenya, Botswana, and Zimbabwe, as well as below the African mean scores (Presidency 2014).<sup>10</sup> In addition, using TIMSS (2011) data for grade 8

students, we can compare the results of standardized mathematics and science tests. The results show that South Africa does not compare favorably to comparator countries such as Turkey, Thailand, Botswana, and Chile, and is actually one of the worst performing countries. More than 50 percent of grade 8 pupils in South Africa score below 400 for mathematics—the low international benchmark score—and a mere 6 percent score above 550 (the high international benchmark score).<sup>11</sup> South African pupils perform equally poorly on the standardized science test.

As such, South Africa's education system is comprised of a very high primary school enrollment rate, a very low dropout rate before grade 6, and low-level learning for those who do complete grade 6 (Spaull and Taylor 2015). High levels of between-school inequality in learning outcomes have also shown to be strongly dependent on the socioeconomic differentials, where clearly the South African schooling system—and poorer schools, in particular—has not been able to overcome inherited socioeconomic disadvantages (van der Berg 2006). Thus, for every 100 pupils who start school in South Africa, fifty make it to grade 12 (final year of high school), forty will pass, and only twelve will qualify for university (Spaull 2013). There is considerable education research to suggest that learning deficits are acquired early on, during primary school, and grow each year until they become insurmountable, leading to failure (and thus grade repetition), and eventual dropout during grades 10 to 12. Research using two waves of the National Income Dynamics Survey panel data confirms the notion that grade repetition—a signal of learning deficits—is a key determinant of school dropout even after controlling for school quality and socioeconomic status (Branson and others 2013). Given the significantly positive returns to higher education in the South African labor market, it is not surprising that the extremely high levels of income inequality have persisted.

Clearly, the South African government has found it difficult to influence the quality of education over time, which is evident in the numerous changes to the national curriculum. The outcomes-based curriculum was introduced in 2005 and, due to implementation problems, was replaced by various revisions between 2011 and 2014 (Presidency

2014). Some of the important supply-side challenges to educational outcomes over the last two decades have been related to the delivery of basic school materials (particularly textbooks), as well as the lack of establishing minimum standards for school infrastructure and teacher quality.

The country's education crisis has had important implications for the levels of human capital available in the workforce. There has been notable improvement. The proportions of those in the workforce with no education, incomplete primary school education, or completed primary education as their highest educational attainment, have all declined substantially since 1994.<sup>12</sup> However, the current educational profile of the employed shows that only 20 percent have post-secondary education and 32 percent have a high school completion. Of the remaining half of the workforce, 70 percent have an incomplete secondary education as their highest level of education. The South Africa workforce is, at best, a semi-skilled workforce.

More worrying, then, is that one-third of the unemployed also have a complete high school qualification, a proportion that has risen from 17.5 percent in 1994. These are individuals who, though having a basic level of education, do not possess the skills in demand in the workplace or are otherwise ill prepared for the work force. A further 48 percent of unemployed are those who have dropped out of high school, most likely due to accumulated learning deficits as a result of being educated in poorly resourced schools, with poor teacher quality and an inability to provide remedial classes to those pupils who most need it. The returns to these lower levels of education in the South African labor market remain low, which has wide-reaching consequences for future generations of these unemployed individuals. This, in turn, will likely serve to perpetuate high levels of inequality as these individuals are excluded from the benefits of economic and employment growth, and perhaps also from accessing opportunities for self-employment.

### *Skills-Biased Labor Demand*

Table 7-5 explores the interaction between occupational skills and sectoral changes for the 2001–12 period. A few key observations emerge. First, the primary sector lost more than half a million medium-skilled

TABLE 7-5. *Changes in Skills Shares by Sector, South Africa, 2001–12*

Percent unless otherwise specified

	<i>Within sector shares</i>					<i>Change over 2001–12</i>	
	2001	2004	2007	2010	2012	Percent	<i>Number of jobs in category</i>
Primary							
High skilled	2.9	5.4	4.8	7.2	7.6	4.8	27,602
Medium skilled	54.5	52.5	53.1	35.2	36.8	-17.7	-571,229*
Unskilled	42.6	42.1	42.1	57.6	55.5	12.9	-175,392*
Total	100	100	100	100	100		-719,232*
Secondary							
High skilled	14.2	15.3	16.6	19	18.1	3.9	188,518*
Medium skilled	69.8	64.7	63.6	64.2	61.5	-8.3	136,140
Unskilled	16	19.9	19.8	16.8	20.4	4.4	214,002*
Total	100	100	100	100	100		537,376*
Tertiary							
High skilled	27.4	27.1	31.8	28.3	29.3	1.9	931,498*
Medium skilled	41.8	41.5	39.8	42.6	42.6	0.8	1,214,349*
Unskilled	30.8	31.4	28.4	29.1	28.1	-2.7	576,288*
Total	100	100	100	100	100		2,720,821*

Source: Borhat and others (2014) based on StatsSA LFS (2001–07) and PALMS (DataFirst 2014) data.

The primary sector includes agriculture and mining; the secondary sector includes manufacturing, utilities, and construction; and the tertiary sector includes trade, transport, financial services, community services, and private households.

High-skilled workers include managers and professionals; medium-skilled workers include clerks, service and sales workers, skilled agricultural and fishery workers, craft and trade workers, and operators and assemblers; and unskilled workers include elementary workers and domestic workers.

\* denotes a significant change at the 5 percent level based on a simple t-test in STATA.

jobs and 175,000 unskilled jobs over the period, with no significant change in the number of high-skilled jobs. Over the period, there was positive output growth in both agriculture and mining, which suggests, then, that an increase in the capital intensity of production resulted in the reduction of medium-skilled and unskilled labor.

Second, the secondary sector saw an increase of about half a million jobs over the period, predominantly in high-skilled and unskilled employment. Therefore, while the proportion of unskilled workers in the sector rose significantly, it remains low at 20 percent of employment. Medium-skilled workers continue to make up the large majority of employment in the secondary sector. Growth in employment was driven primarily by the construction sector, which was boosted by investment in infrastructure for the 2010 Football World Cup.

Finally, then, it is clear that the tertiary sector was the largest creator of jobs between 2001 and 2012, growing by 2.7 million workers. While employment grew significantly across the skills spectrum, more than 70 percent of the increase in jobs was associated with high- and medium-skilled employment. As a result, both the proportions of high-skilled and medium-skilled workers in the sector rose, while the proportion of unskilled workers marginally declined. By 2012, high-skilled workers accounted for just under 30 percent of tertiary sector workers, while medium-skilled and unskilled workers accounted for 42.6 percent—adding up to approximately three-quarters of the sector's workforce. Interestingly, the major occupational group within the TES subsector is service and sales workers—medium-skilled employees—which account for slightly less than half of overall TES employment. Therefore, TES employment growth has also been an important contributor to the shifting skills shares seen in the table.

Overall, both the secondary and tertiary sectors witnessed a rise in the proportion of high-skilled employment, along with a rise in the proportion of medium-skilled employment in the tertiary sector. At the same time, the primary and tertiary sectors saw declining proportions of unskilled labor. It has earlier been shown that employment losses between 1994 and 2003 were likely due to skills-biased technological changes, though trade liberalization accounts for some of the change (Bhorat and Hodge 1999; Bhorat 2001; Dunne and Edwards 2006; Bhorat and others 2014). This trend seems to have continued over the last decade. In the context of a growing economy, it would suggest that firms are investing in capital and skills, causing the shift away from unskilled labor. The results show that while unskilled employment rose in both secondary and tertiary sectors, the proportion of unskilled

workers rose only in the secondary sector. Both the primary and secondary sectors of the economy witnessed dramatically declining proportions of medium-skilled workers.

To have employment disproportionately favoring the skilled is a huge long-run concern for an economy like South Africa's, which has an excess supply of labor that is greater than most other emerging markets in the world as well as serious challenges in improving access to and quality of secondary and higher education. It is clear that the tradable sectors have adopted production techniques that are increasingly capital-intensive. Essentially, the mismatch between labor demand and labor supply goes to the heart of what is wrong with the structure of South Africa's growth pattern.

### ROLE OF THE PUBLIC SECTOR IN EMPLOYMENT

While the growth in TES employment is novel and involves regulatory avoidance, the rise of public sector employment has a much greater potential import for the future trajectory of the economy's employment path. This is the focus of the rest of the chapter. Table 7-6 shows that the total number of public sector employment has increased from 2.16 million in 2008 to 2.69 million at the end of 2014—an increase of more than half a million jobs in a six-year period. We further disaggregate public sector employment here into government (national, provincial, and local) and state-owned enterprises (SOEs). Public sector employment is largely dominated by national, provincial, and local government, which has accounted for about 88 percent of public sector employment over the period.

Therefore, from constituting 14.5 percent of total employment at the beginning of 2008, the share of public sector employment has risen to 17.5 percent by the end of 2014—which is 1.2 times the 2008 share. The data also makes it clear that the growth in public sector employment is driven by employment in national, provincial, and local government structures, as opposed to employment in state-owned enterprises. The latter has maintained a stable share in overall employment since 2008. Evident in table 7-6, the fastest period of public sector employment

TABLE 7-6. *Employment in the Public Sector, 2008–14, South Africa*

Year	Government <sup>a</sup>	SOEs	Total	Year-to-year change in share of public sector total employment	Share in employment index
2008 Q4	1,903,027	254,920	2,157,947	n.a.	1.00
2009 Q4	1,912,965	265,561	2,178,526	6.79	1.07
2010 Q4	1,960,613	292,007	2,252,620	3.92	1.11
2011 Q4	2,104,959	281,393	2,386,352	2.72	1.14
2012 Q4	2,215,565	318,064	2,533,629	4.81	1.20
2013 Q4	2,328,769	319,749	2,648,518	0.00	1.20
2014 Q4	2,365,131	322,960	2,688,091	0.46	1.21

Source: StatsSA QLFS (2008–2014), authors' calculations.

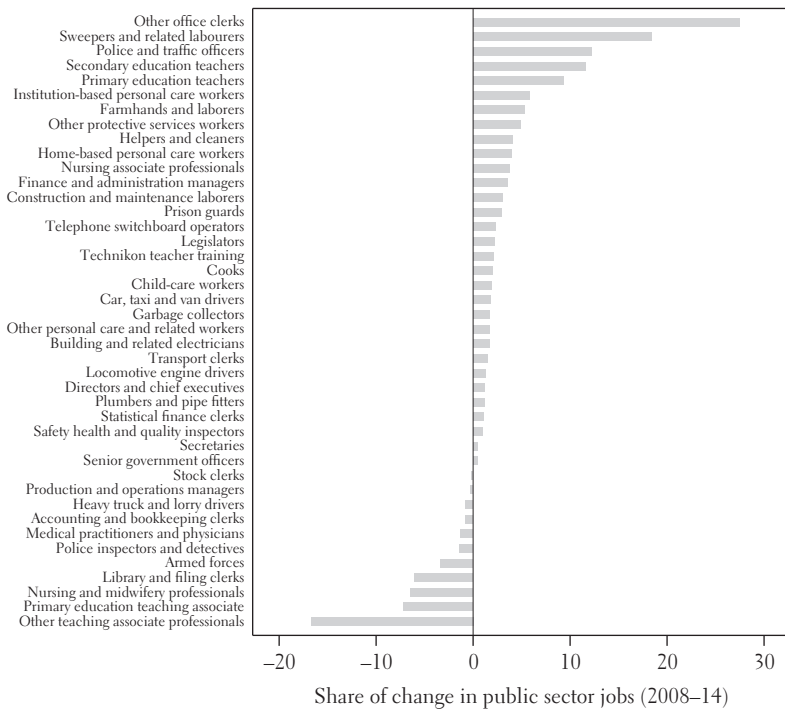
a. "Government" comprises national, provincial, and local governments.

growth was during 2009, immediately following the global financial crises, during which South Africa experienced significant job losses. This suggests that the state possibly acted as an unintended creator of jobs during a period of extreme labor market distress. Public sector employment growth was also high in 2012, after which employment stabilized.

For the more than half a million jobs created in the public sector over the 2008–14 period, figure 7-2 plots the contribution of each occupation toward this change. Many of the occupations that are large contributors to public sector job growth fall under the category of elementary occupations (unskilled workers): sweepers and related laborers, farmhands and laborers, helpers and cleaners, construction and maintenance laborers, and garbage collectors. The other major contributors to public sector jobs creation are primarily within the service and related workers category (medium-skilled workers): police and traffic officers, institution- and home-based care workers, other protective services, prison guards, technician teacher training, cooks, and child-care workers.<sup>13</sup> Apart from jobs in these two broad occupations, higher skilled jobs such as primary and secondary school teachers, finance and administrative managers, and legislators have also contributed to public sector job growth.

From this brief analysis, it would seem that the government's Expanded Public Works Program (EPWP) is an important driver of

**FIGURE 7-2.** *Share of Change in Public Sector Jobs by Detailed Occupation, 2008 Q1–2014 Q4*



Source: StatsSA QLFS 2008Q1, StatsSA QLFS 2014Q4, authors' calculations.

Note: These occupations are the largest 42 public sector occupations, making up 80 percent of total employment in the public sector in 2014, and 97 percent of the change in the number of public sector jobs over the 2008–14 period.

public sector job creation. The EPWP was launched in 2004, and focuses on providing income relief through creating jobs for the unemployed and unskilled that involve socially useful activities. The EPWP creates jobs through government-funded infrastructure projects, through its nonprofit organization and community work program, as well as through its public environment and culture programs. As such, much of the public sector job growth shown in figure 7-2 relates to the construction industry, the protection and safety sector, public sanitation, and personal care industries. Apart from EPWP, this data provides some evidence of the South African government's attempts to address the education crisis through increasing the number



of primary and secondary school teachers within the public schooling system.

Table 7-7 clearly shows that there are significant differences between the average profile of employees in the public and private sectors, across all the demographic indicators and occupational categories, and for both time periods. The average age of public sector workers is forty-one years old, compared to thirty-eight in the private sector. Public sector workers have a significantly higher average educational level in both time periods, with this average rising faster in the public sector than the private. Females have greater representation in the public sector, making up 52 percent of the respective workforce, compared to 44 percent in the private sector. From making up 72 percent and 66 percent of public and private sector employees in 2008, respectively, Africans now make up 77 percent of public sector employment, with little change in this proportion in the private sector. There have been no changes in the proportion of Indian and Coloured<sup>14</sup> workers in either sector, and white workers make up a smaller proportion of workers in both sectors now than they did in 2008. The public sector has clearly been able to transform its labor force at a faster pace than the private sector, given the higher proportion of both women and African workers in the sector—groups that have faced historical discrimination in the South African labor market.

In terms of the skills profile of each sector, the data shows that the public sector is more skills-intensive. Almost 45 percent of all public sector employees fall into the top three occupational categories, compared to 26 percent of workers in the private sector. Both sectors, however, have a similar proportion of unskilled (elementary) workers, which indicates that private sector workers are concentrated in the medium-skilled occupations. Interestingly, the proportion of the two most skills-intensive occupations have not changed in the public sector between 2008 and 2013, but the proportion of professionals in the private sector has increased by 25 percent—consistent with the skills-biased labor demand shifts discussed earlier. As shown in figure 7-2, growth in public sector jobs was driven by the medium-skilled occupation of service workers, as well as in elementary occupations, where these shares grew by 31 percent and 23 percent, respectively. Again, this may point to the

**TABLE 7-7.** Mean Characteristics of Public and Private Sector Workers, 2008 and 2013,<sup>a</sup> South Africa

	2008	2013	2008–13	
	Ratio of means (public / private)	Ratio of means (public / private)	Percent $\Delta$ Public	Percent $\Delta$ Private
<b>Demographics</b>				
Age	1.10*	1.07*	0.51	2.63
Male	0.84*	0.86*	-2.04	-3.45
<b>Race</b>				
African	1.09*	1.15*	6.94	1.52
Colored	0.91	0.91*	0	0
Indian/Asian	0.50*	0.50*	0	0
White	0.83*	0.65*	-26.67	-5.56
Years of school	1.07*	1.10*	4.12	1.04
Married <sup>b</sup>	1.15*	1.09*	-4.92	0
Union <sup>c</sup>	2.27*	3.18*	2.34	-26.91
<b>Occupation:</b>				
Legislators, senior officials, and managers	0.60*	0.60*	0	0
Professionals	1.83*	1.57*	0	25
Technical and associate professionals	4.13*	3.00*	-18.18	10.48
Clerks	1.25*	1.25*	0	0
Service, shop, and market workers	1.18*	1.31*	30.77	18.18
Craft and related trades workers	0.36*	0.33*	-20	-14.29
Plant and machine operators, and assemblers	0.30*	0.30*	0	0
Elementary occupation	0.76	0.94*	23.08	0

Source: StatsSA QLFS (2008, Quarter 4), StatsSA LMDS (2013), authors' calculations.

a. Public sector includes all levels of government and state-owned enterprises (SOEs). Non-public sector excludes those working in agriculture or the informal sector.

b. Married includes individuals who are married or have partners and live together.

c. Union data is from the 2007 QLFS: Q4.

\* Indicates that the mean for the public and private sectors for each characteristic is significantly different at a 5 percent significance level.

state being able to absorb excess unskilled and medium-skilled labor at times of economic and labor market distress.

Therefore, public sector workers are more educated, older, more skilled, and mostly African in comparison with the formal private sector. Furthermore, the data shows that the public sector is more gender equitable than the private sector.

### **Bargaining Power and the Wage Premium**

Another feature of the public sector labor market is the relatively higher rates of unionization, which is often associated with a wage premium. Bhorat and others (2015a) show that the proportion of the public sector's formal workforce who are union members—or the public sector's union density—rose from 55 percent in 1997 (834,000 workers) to almost 70 percent in 2013 (1.4 million workers). The private sector union density displays the opposite overall trend, declining from 36 percent in 1997 (1.8 million workers) to 24 percent in 2013 (1.9 million workers), while the absolute number of private sector unionized workers has remained fairly constant.

Interestingly, as employment in the public sector has risen, so has membership of public sector trade unions, to the extent that they now dominate union membership in South Africa. Not only, then, do we witness a rise in public sector employment, but this data also makes it clear that this employment rise has been commensurate with the rise of public sector trade unions in South Africa.

Powerful labor unions are often associated with creating a wage premium for their members, given their ability to mobilize industrial action and negotiate in favor of their members during times of wage negotiations. There is extensive literature on the union wage gap in South Africa, but slightly fewer studies on the bargaining council premium.<sup>15</sup> Taking account of this, Bhorat and others (2012) use the 2005 South African Labor Force Survey data to investigate the union and bargaining council wage premiums and correct for the endogeneity of union status through a two-stage selection model, controlling for firm-level and job characteristics. In their most richly specified estimation,<sup>16</sup> it is found that union members outside of the bargaining council system

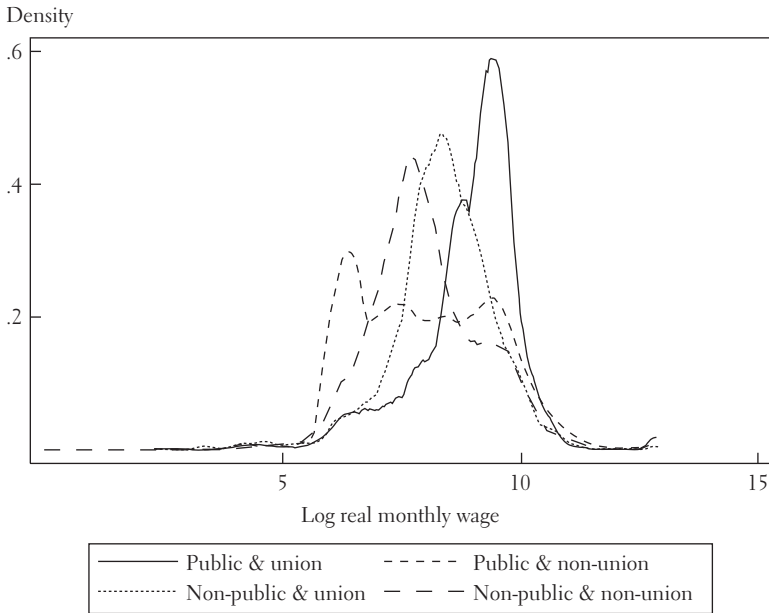
earned a premium of 7.04 percent and those members of private and public bargaining councils not belonging to unions earned an 8.97 percent and 10.5 percent premium over nonunion workers outside of the bargaining council system, respectively.<sup>17</sup> The total estimated premium to union workers within the public bargaining council stands at 22 percent.<sup>18</sup> Therefore, there is evidence that belonging to either unions or bargaining councils is associated with statistically significant wage premiums, and, furthermore, that unions may negotiate at the plant level for additional gains for their members within the bargaining council system.

When comparing wage levels between the public and private sectors, the data shows that both median and mean wages of the public sector are significantly higher than that of the private sector (which is confirmed by simple t-tests). The real monthly wage of an average public sector employee is R11,668 (US\$1,209) compared to R7,822 (US\$811) for an average private sector worker.<sup>19</sup>

Disaggregating the wage distributions by unionization reveals a slightly different picture (figure 7-3). For nonunionized workers, the average real monthly wage in the private sector is statistically significantly larger than that of the public sector, by a margin of R952 (US\$99). While small, this suggests that the public sector premium is negative, or at the least disappears, for workers who do not belong to a union. Therefore, this provides some initial evidence that the public sector premium may be very closely tied to a public sector union membership premium.

Our analysis confirms that the 30 percent of public sector workers who are not union members are, on average, distinctly (and statistically) different from those who are unionized on a number of characteristics. Unionized public sector workers are slightly older, more likely to be male, and have a higher average level of education than nonunionized public sector employees. African employees make up almost 80 percent of nonunion public sector employees, and Coloured workers a further 10 percent. Most important, though, nonunionized public sector workers are concentrated in elementary occupations (30 percent), service and sales occupations (16 percent), and technical and associate professional occupations (16 percent). While it remains uncertain, the nonunionized workers in the first two occupational groups are likely to be those employed under the EPWP.

**FIGURE 7-3.** Wage Distributions for Public and Private (Non-Public) Formal Sector Employees, by Union Status, 2013



Source: StatsSA LMDS (2013), authors' graph.

Note: Non-public sector excludes agriculture and the informal sector. A two-sample Kolmogorov-Smirnov test of the equality of distributions confirms that the distributions of unionized workers' wages by sector are significantly different from each other, as are the distributions of wages for non-unionized workers by each sector. Within the public sector, the wage distributions of unionized workers are significantly different from nonunionized workers, and similarly for the private sector.

Ultimately though, these wage distributions suggest that, at least in terms of earnings, a dual labor market may, indeed, be prevalent in the South African labor market. Previous models of segmentation in the South African labor market have commonly referred to the distinction between the employed and the unemployed, or more recently, the formal and informal sector (Hofmeyr 1998; Bhorat and Leibbrandt 1999; Fields 2000; Devey and others 2006; Valodia 2007) as the key identifying markers of this segmentation. We suggest a nuance to South Africa's segmented labor market here. In particular, and on the initial evidence of these bimodal wage distributions, it would appear that the distinction between public and private sector, in terms of earnings and

employment, would seem to be a new form of segmentation that has evolved in the South African labor market.

### *An Econometric Estimation*

To investigate the public sector wage premium more rigorously, we estimate a two-stage Heckman employment model correcting for selection into the labor market. In this respect, then, the standard earnings function of the following form is run:

$$y_i = \alpha + \beta_1 X_i + \delta PS_i + \mu U_i + \eta(PS_i \times U_i) + \gamma TES_i + \varepsilon_i$$

#### **Equation (1)**

where  $y_i$  represents each individual's,  $i$ , log monthly real earnings,  $X_i$  is a vector of individual characteristics,  $PS_i$  indicates whether an individual is employed in the public sector or not,  $U_i$  indicates whether an individual is a union member or not,  $TES_i$  is a dummy variable for whether the individual is employed in the TES sector or not, and  $\varepsilon_i$  is a normally distributed error term.  $\delta$  shows the wage premium for public sector workers who do not belong to a union, and coefficient  $\mu$  provides the wage premium for union members who are not employed in the public or TES sectors. The sum of coefficients ( $\delta + \eta$ ) yields the conditional estimate for the public sector premium of unionized workers. In our richest estimation, we split the public sector dummy variable into two separate dummies for government employment and SOE employment:

$$y_i = \alpha + \beta_1 X_i + \delta Gov_i + \tau SOE_i + \mu U_i + z(Gov_i \times U_i) + \gamma(SOE_i \times U_i) + \gamma TES_i + \varepsilon_i$$

#### **Equation (2)**

The results of the OLS earnings function are shown in table 7-8. In specifications 1 and 3, we model the public sector as a whole, while in 2 and 4, we disaggregate it into government employment and SOE employment. Specification 3 is differentiated from specification 1 by interacting the public sector dummy with the union dummy, and similarly for specification 4, government and SOE are interacted with the union dummy.

In the first two specifications, which merely control for union membership, we find no significant wage premium for workers in the

**TABLE 7-8.** *Estimated Earnings Function, Corrected for Selection Bias, c,f*  
*South Africa, 2013*

Log of real monthly wages <sup>a</sup>	Specifications			
	(1)	(2)	(3)	(4)
Government level				
Public sector <sup>d</sup>	0.0109 (0.0162)	...	-0.205*** (0.0223)	...
Government <sup>e</sup>	...	0.0194 (0.0165)	...	-0.233*** (0.0230)
SOE	...	-0.0392 (0.0393)	...	-0.0287 (0.0619)
Interaction with union				
Public*Union	...	...	0.393*** (0.0285)	...
Government*Union	...	...	...	0.444*** (0.0294)
SOE*Union	...	...	...	0.0558 (0.0785)
Union	0.318*** (0.0139)	0.317*** (0.0139)	0.207*** (0.0162)	0.207*** (0.0162)
TES	-0.108*** (0.0209)	-0.108*** (0.0209)	-0.111*** (0.0209)	-0.110*** (0.0209)
Lambda	-0.180*** (0.0353)	-0.179*** (0.0354)	-0.165*** (0.0352)	-0.162*** (0.0352)
Observations <sup>b</sup>	52,475	52,475	52,475	52,475
R-squared	0.402	0.402	0.406	0.406

Source: StatsSA LMDS (2013), authors' calculations.

a. Dependent variable is log of real monthly wages.

b. We exclude the agricultural sector and informal workers. Therefore, we only considered those employed in the formal non-agricultural sectors, who are within the 15–65 age category.

c. We include the following controls: gender, age, race, education splines, province dummies, whether the person lives in an urban or rural location, occupation dummies, and firm size.

d. The public sector is made up of both government and state-owned enterprises (SOEs), which are interrogated separately in specifications (2) and (4).

e. "Government" is comprised of national, provincial, and local governments.

f. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

public sector. The union membership premium, however, is large and significant at 37 percent.<sup>20</sup> Given our earlier analysis, however, it seems likely that the interaction between union membership and public sector employment would reveal a more interesting picture. The results of the interacted specifications show that, for nonunionized members,

there is a wage penalty for working in the public sector, relative to the private sector, of 18.5 percent. In addition, there is also a wage penalty associated with TES employment for nonunionized workers. For unionized workers, however, the public sector wage premium is 20.7 percent.<sup>21</sup> In particular, for government workers, the wage premium within the group of workers belonging to a union is 23.5 percent, whereas there is no significant wage premium for employees of SOEs.

Therefore, these initial results show that, when also controlling for TES employment, there is no public sector wage premium. However, as a member of a union, the premium is significant and large. This result is certainly novel. Earlier estimates of the public sector wage premium are provided by Woolard (2002), who finds a premium of 18 percent for public sector workers. Her results also show that the premium is higher for women (21 percent) than for men, and particularly for African women, who were associated with a 36 percent premium. While these results control for union membership, there is no interaction of union membership with public sector employment.

Given the rising membership of public sector unions already shown, together with the growing political influence of these unions, these results possibly allude to the role played by unions in driving higher returns for their members in the post-2000 period. This pattern of wage returns potentially suggests segmentation between unionized public sector workers versus all other formal, nonagricultural workers.

A more nuanced analysis of the public sector wage premium can be performed using quantile regressions, presented in table 7-9. This analysis is conducted to investigate whether the results shown in table 7-8 are purely mean effects (for example, driven only by a few specific occupations that, then, influence the mean wage premium), or whether the premium exists across the income distribution. Recall that quantile regressions refer to the generalized case of the least absolute deviations estimator. While through ordinary least squared estimation, as per the above estimations, we derive a sample mean by minimizing the sum of squared residuals, the sample median can be derived through minimizing the sum of absolute residuals (Koenker and Bassett 1978; Koenker and Hallock 2001).

We estimate the returns to government and SOE employment using interacted variables, presented in table 7-9. The coefficients of interest are plotted in figure 7-4. The results show that for South African workers



**TABLE 7-9. Estimated Quantile Earnings Function with Interactions, Corrected for Selection Bias, <sup>c,d</sup> South Africa, 2013**

Log of real monthly wages <sup>a</sup>	Specifications				
	(1) 10th	(2) 25th	(3) 50th	(4) 75th	(5) 90th
Government (non-union)	-0.239*** (0.0292)	-0.447*** (0.0146)	-0.316*** (0.0272)	-0.0966*** (0.0331)	-0.0237 (0.0240)
SOE (non-union)	-0.0792 (0.122)	-0.0783** (0.0324)	-0.0336 (0.0593)	0.128*** (0.0352)	0.0307 (0.0218)
Union (non-public sector)	0.225*** (0.0289)	0.227*** (0.0188)	0.229*** (0.0128)	0.221*** (0.0142)	0.186*** (0.0206)
Government*Union	0.334*** (0.0562)	0.680*** (0.0316)	0.636*** (0.0319)	0.374*** (0.0361)	0.164*** (0.0293)
SOE*Union	-0.111 (0.153)	0.0699 (0.104)	0.103 (0.0791)	0.104* (0.0537)	0.137** (0.0542)
TES	0.126*** (0.0331)	0.00510 (0.0183)	-0.126*** (0.0148)	-0.224*** (0.0178)	-0.284*** (0.0322)
Lambda	0.00453 (0.0544)	-0.105*** (0.0371)	-0.218*** (0.0300)	-0.238*** (0.0346)	-0.280*** (0.0407)
Observations <sup>b</sup>	52,475	52,475	52,475	52,475	52,475

Source: StatsSA LMDS (2013), authors' calculations.

a. The dependent variable is log of real monthly wages.

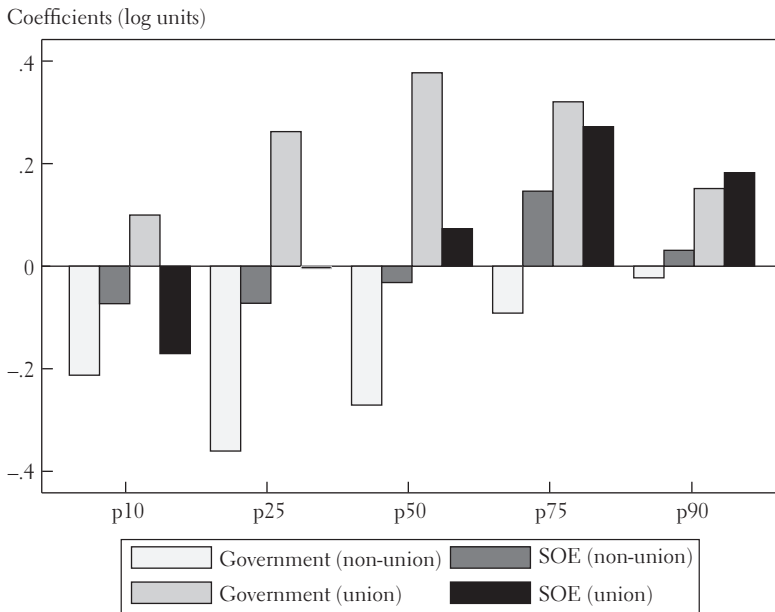
b. We exclude the agricultural sector and informal workers. Therefore, we only considered those employed in the formal non-agricultural sectors, who are within the 15–65 age category.

c. We include the following controls: gender, age, race, education splines, province dummies, whether the person lives in an urban or rural location, occupation dummies, and firm size.

d. Robust standard errors in parentheses.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**FIGURE 7-4.** *Estimated Public Sector Wage Premia across the Wage Distribution, 2013*



Source: StatsSA LMDS (2013), authors' calculations.

who do not belong to a union, there are significant wage penalties associated with government employment, across the wage distribution. This penalty is highest at the 25th percentile and decreases toward the highest wage levels. The wage returns for nonunionized workers to SOE employment has a different pattern. There are small wage penalties below the median wage; however, this becomes positive and high at the 75th percentile.

For unionized workers in the labor market, there are high and positive returns to government employment relative to those unionized workers in the non-TES private sector. The median wage premium is 37 percent, which declines to 15 percent at the 90th percentile. Unionized employees at SOEs only experience positive wage premiums in the top quartile of the distribution, relative to non-TES private sector unionized workers in this same quartile.

In summary, our results do not show any significant average public sector premium using the latest data available. Instead, we find average wage penalties to government employment at lower wage levels, and positive wage premiums at higher levels, while controlling for union membership that is associated with positive wage premiums across the distribution. When isolating unionized workers, we find that there are significantly large wage premiums associated with government employment relative to unionized workers in non-*TES* private sectors.

Therefore, we find that a key new facet of the South African labor market is an estimated wage wedge between unionized public sector workers and other formal nonagricultural workers in the labor market. In one conception, we could argue that the post-2000 period has generated a new labor elite in the labor market, namely the unionized public sector employee.

#### **FINAL REFLECTIONS ON THE CURRENT MARKET TRENDS**

South Africa's economic growth over the past two decades has been driven primarily by the services sector; namely the financial and business services sector, construction, and to some extent wholesale and retail trade. Employment growth has been driven by services sectors and, in particular, higher-skilled occupations. This is against a backdrop of stark human capital deficits that are a result of elevated rates of high-school dropouts and low levels of learning for those who do complete high school. In combination, these two factors are arguably central to the persistently high levels of unemployment and inequality.

The growth of the *TES* sector was shown to be a relatively new labor market trend. Part of the growth in services employment has been the rise in labor brokers that source workers for the *TES* sector. On the surface, it seems to be related to South Africa's stringent labor market regulations, however, this needs deeper investigation.

This chapter has also shown that an important trend in the South African labor market has been the rising share of workers in the public sector, and in government in particular. Job creation in government over the last six years is concentrated in unskilled and medium-skilled

occupations, and the data suggests that it may be linked to a government-led program to create jobs for the unemployed and the unskilled in activities relating to infrastructure building, public safety, and other community-based public service jobs.

Overall, though, we see higher average wages in the public sector relative to the private sector. Estimations of the wage premiums for public sector workers show that much of the difference in public–private wages has to do with union membership. For unionized workers in the South African labor market, employment in government is associated with significantly higher returns than private sector employment. We show, then, a key new form of segmentation in the South African labor market, namely between the higher earning unionized public sector worker and the rest of the labor market.

Ordinarily such segmentation would be of general curiosity and academic interest. However, coupled with a sclerotic economy that is unable to generate large numbers of jobs in the private sector (most notably in manufacturing), or where its firms are actively engaged in avoiding direct employment, this result is particularly worrying. A long-run employment trajectory built on the public sector requires critical reassessment as part of a broader revitalizing of the economy's growth and development strategy.

#### NOTES

1. Data from the South African Reserve Bank (2015).

2. The South African National Poverty Line is measured at the lower bound at US\$3.50 a day and at the upper bound at US\$5.43 a day (StatsSA 2015). These poverty lines were recently rebased by StatsSA so that they are reflective of a current average basket of food and nonfood consumption items. The 2011 poverty headcount rate at the lower bound is 37 percent.

3. There is a rich literature on the linkages between growth, poverty, and inequality, which includes Kanbur (2005); Kanbur and Squire (1999); Kakwani (1993); Datt and Ravallion (1992); Ravallion (1997, 2001). While this is an important area in the macroeconomics of growth and development, it is not the focus of this chapter.

4. World Development Indicators (World Bank 2015), using national estimates.

5. The IQR is the spread between the upper and lower quartiles of income and consumption for all the NTA countries, at each age.

6. This definition includes those who are unemployed and willing to work but have stopped searching for jobs, commonly referred to as discouraged workers.

7. These are calculated using data from StatsSA October Household Survey (OHS) 1996–99; StatsSA LFS September 2001–07; StatsSA QLFS Quarter 4 2008–13; and StatsSA QLFS Quarter 1 2014.

8. The category specifically includes security guards, security patrolmen, security patrolwomen, bodyguards, coastguards, beach guards, lifeguards, beach patrolmen, beach patrolwomen, traffic wardens, game wardens, bird sanctuary wardens, wildlife wardens, taxi-guards, and traffic coordinators.

9. StatsSA OHS 1999; StatsSA QLFS Quarter 1, 2014.

10. SACMEQ III was undertaken from 2005 to 2010, targeted all pupils in grade 6 level (at the first week of the eighth month of the school year) who were attending registered mainstream primary school. The desired target population definition for the project was based on a grade-based description and not age-based description of pupils.

11. According to the TIMMS methodology, four points in the overall subject scales are identified as international benchmarks: 400 is the low international benchmark, 475 is the intermediate international benchmark, 550 is the high international benchmark, and 625 is the advanced international benchmark.

12. Data analysis is based on StatsSA LFS (1994 and 2004) and StatsSA QLFS (2013), but is not shown here.

13. This relates to skill level 5 out of nine national skill level categories, where 9 is the least skilled category. See notes to table 7-5 for an explanation of how occupations map into skill levels.

14. Racial analysis in this chapter uses the country's four main race groups as defined by South African authorities and in the literature on South African society: African, Coloured (mixed-race), Indian, and white.

15. "Bargaining councils can be established by one or more registered trade unions and by one or more registered employer organizations for a specific sector and area. Worker interests are, therefore, represented at bargaining councils by the relevant trade unions. Participation by unions and employer organizations in the system is voluntary, and the issues to be negotiated are left to the discretion of the parties. Wage formation within the bargaining council system is, thus, a voluntary exercise ongoing annually between employer organizations and employees (represented by trade unions). In many cases, these councils have a long history of regularized

bargaining and engagement around worker issues” (Bhorat and others 2012, p. 402).

16. Including dummy variables for union status, private and public bargaining council status, type of work, firm characteristics, and nonwage benefits.

17. With significance at the 5 percent level.

18. This research suggests that institutional wage premiums in South Africa may be smaller than previously estimated, with most of the previous studies reporting a premium in excess of 20 percent—possibly overstated by not accounting for bargaining council coverage (Butcher and Rouse 2001; Armstrong and Steenkamp 2008; Miliea and others 2013).

19. All Rand figures are converted to US\$, using an average 2013 exchange rate of ZAR/US\$: 9.65.

20. Calculated as  $e^{0.317}-1$ .

21. Calculated as  $\exp^{(-0.205+0.393)}-1$ . The remaining wage premiums are calculated similarly.

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