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The Role of International Trade, Technology and Structural Change in Shifting Labour Demands in South Africa

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International Centre for Trade and Sustainable Development

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LIST OF ABBREVIATIONS AND ACRONYMS

ANC	African National Congress
ASGISA	Accelerated and Shared Growth Initiative of South Africa
CPIX	Consumer Price Index
DTI	Department of Trade and Industry
EAR	Employment absorption rate
ERP	Effective rate of protection
GEAR	Growth, Employment and Redistribution Strategy
GHS	General Household Survey
GVA	Real gross value added
HS	Harmonized System
LFS	Labour Force Survey
MFN	Most Favoured Nation
OHS	October Household Survey
RDP	Reconstruction and Development Programme
SADC	South African Development Community
SARB	South African Reserve Bank
TGR	Target growth rate
UIF	Unemployment Insurance Fund of South Africa

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FOREWORD

Structural reforms and the liberalization of foreign trade and investment have occurred all over the world. The majority of developing countries have embraced reforms that differ regarding the timing and speed of implementation but not in character. The economic model pursued has combined adjustment and stabilization reforms with the liberalization of foreign trade, increasing the level of competition in international markets.

As a result of their increased integration into the world economy, developing countries today are more exposed to the risks associated with external shocks. Indeed, most of them have suffered greatly from the decrease in global demand, the drying up of trade finance and the decline in investment and remittances resulting from the recent financial and economic crisis. While several developing nations have shown early signs of recovery, the crisis may have reversed modest progress towards poverty alleviation. Furthermore, social indicators suggest that natural rates of unemployment are likely to be higher in the future, prompting concerns about possible jobless growth.

For a small open economy like South Africa the impact of the crisis was quite significant: its economy experienced its first recession in the post-apartheid era, marking the end of a long period of positive GDP growth. Moreover, in the aftermath of the crisis, South Africa experienced an unprecedented collapse in employment, with about 800,000 workers losing their jobs. The crisis mainly affected the most vulnerable groups, that is young, African, male or female workers with incomplete schooling, severely affecting the situation in one of the countries with the highest unemployment rates in the world.

In the last few decades, South Africa undertook a series of reforms which have profoundly changed the structure of its economy by increasing its capital intensity and the role of a modern tertiary sector. Moreover, the country has developed its internal market and has progressively integrated into regional and international markets. Overall, the impact of trade on employment has been relatively benign, though unskilled or semi-skilled workers experienced job losses. Therefore, more interventionist policies are required to cope with this situation, which further worsened with the crisis.

This paper titled 'The Determinants of Labour Demand Shifts in South Africa: The Role of International Trade, Technology and Structural Change' by Haroon Bhorat, et al. (Development Policy Research Unit, School of Economics, University of Cape Town, South Africa) gives an overview of South Africa's economic changes over the last few decades and analyzes the key factors that have shaped the economy's chronic labour market crisis. Finally, it gives concrete recommendations to ameliorate the social consequences of trade liberalization and the crisis on the employment situation.

With this paper, which was published in combination with three other country-studies (Chile, Mexico, and India), ICTSD aims to contribute to a knowledge based debate on the impact of trade liberalization and the economic and financial crisis on trade and labour market. These studies also aim to inform the debate on whether development assistance and aid for trade in particular, can help to mitigate different impacts of the trade liberalization process and the crisis on the labour market.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

South Africa's relatively peaceful transition from minority rule to majority rule in 1994 masked the challenges that lay ahead in terms of dealing with the economic vestiges of the system of racial exclusivity. The post-apartheid labour market challenge is twofold: firstly, South Africa has one of the highest unemployment rates in the world – officially at 26.7 percent and 38.8 percent when discouraged workers are included. Secondly, alongside this excess supply of labour, the economy for a variety of historical reasons has experienced a rapid increase in the demand for educated workers – the upshot of which has been an ongoing and severe skills shortage.

The core of the paper is a detailed attempt at outlining the key factors that have shaped the economy's chronic labour market crisis. In particular, we focus on the different forces that have shaped labour demand trends in the apartheid and post-1994 period. We attempt to explain the relative contributions of structural shifts in the economy, technology and international trade, respectively, in determining the labour demand trajectory of the economy over the last three and a half decades. Moreover, the paper provides a descriptive analysis of the impact of the global economic and financial crisis on South Africa's employment performance.

The historical data (1970–1995) indicates increasing capital intensity of production accompanied by structural changes in the South African economy, with the tertiary sector accounting for a growing share of GDP. The post-apartheid labour market has seen a continuation of growth of the tertiary sector accompanied by growth in the sector's aggregate employment, as well as an intensification of the skill-biased labour demand trajectory already established in the pre-1994 period.

A decomposition exercise shows that within-sector forces were more dominant in explaining changing labour patterns than between-sector forces in the 1970–1995 period, as well as the 1995–2005 period. This implies that the sources of within-sector shifts such as technology change and outsourcing of non-core functions were more important than trade flows in influencing the changes in the demand for labour. In addition, when the changes in relative demand for labour are decomposed to isolate the specific impact of trade, it is found that the overall impact of international trade on employment has been relatively benign, with only agricultural workers in 1970–1995 and production workers in 1995–2005 experiencing actual job losses. Indeed, it is not evident whether the impact of trade has been statistically significant. In terms of the South African labour market, however, given the various influencing factors, the losers have been unskilled labourers, specifically unskilled African workers. The winners, invariably, have been better-educated, skilled workers who in turn have been disproportionately White and Asian.

The democratic government of South Africa has always concerned itself with the triumvirate of welfare challenges, namely poverty, inequality and unemployment. Despite these challenges, the South African economy, guided by strong macroeconomic policies, has been able to maintain 55 quarters of positive economic growth since the demise of apartheid. With the onset of the global economic crisis, many South African policy makers believed that the economy would be protected from the crisis as the banking sector had limited exposure to asset-backed securities and the sub-prime mortgage market. Unsurprisingly, the economy's immunity from the global crisis was short lived as the real economy effects of the financial crisis were felt globally. Not surprisingly then, in October of 2008, South Africa experienced its first recession in almost seventeen years which significantly changed the course of not only the growth path of the economy, but also the country's employment performance.

1. INTRODUCTION

South Africa's formal transition from white minority rule in 1994 justifiably received international attention and acclaim. In April 1994, the country's first democratically elected party, the African National Congress (ANC), was voted into power. This relatively peaceful transition from apartheid, however, masked the challenge that lay ahead in terms of dealing with the economic vestiges of the system of racial exclusivity. Nowhere is this challenge more apparent than within the area of labour markets. The post-apartheid labour market challenge is manifest in two key, but by no means exclusive, ways. Firstly, this is an economy characterized by one of the highest unemployment rates in the world – officially at 26.7 percent and 38.8 percent when discouraged workers are included. Secondly, alongside this excess supply of labour, for a variety of historical reasons the economy has experienced a rapid increase in the demand for educated workers – the upshot of which has been an ongoing and severe skills shortage. This is a labour market that is in disequilibrium – manifest in a severe mismatch between demand and supply.

Through the marshalling of historical and more recent, post-apartheid data, this paper has four key aims. Firstly, it provides a brief overview of the key economic policy developments in post-1994 South Africa, together with some of the core economic trends that have shaped this economy over the last decade. Secondly, a more detailed overview of trends that have defined the South African labour market in its first decade of democracy is provided. Thirdly – and this forms the core of the paper – there is a detailed attempt at outlining the key factors that have shaped the economy's chronic labour market crisis. In particular, we focus on the different forces that have shaped labour demand trends in the apartheid and post-1994 period, and explain the relative contributions of structural shifts in the economy, technology and international trade, respectively, in determining the labour demand trajectory of the economy over the last three and a half decades. Finally, the paper analyses the impact of the recent economic crisis on South Africa's employment performance.

2. THE POLICY ENVIRONMENT AND ECONOMIC TRENDS IN SOUTH AFRICA

Post-apartheid, the policy environment in South Africa has been dominated by the adoption of the Growth, Employment and Redistribution Strategy (GEAR) in 1996. The GEAR policy took a market-oriented approach to growth and employment, attempting to boost investment in the economy through the creation of a stable macroeconomic environment. In this model – a fairly standard mainstream economic policy package – fiscal austerity and low inflation are emphasized, accompanied by a liberalized trade regime. The hope was that this would boost investment, leading to growth and thereby helping to solve the unemployment problem.

However, both private domestic investment and foreign direct investment over the ten years since democracy have been less than impressive, leading to much lower levels of growth than expected and a corresponding increase in unemployment over the period, compounded by greater labour force participation rates. In addition, the liberalizing of trade following accession to the WTO in 1995 has contributed to structural change in the economy and changing trade flows, with possible employment effects.

This section expands on the specific economic policies and resultant economic trends within this period of intense economic policy reform.

2.1 Economic Policy Environment in Post–Apartheid South Africa

The advent of democracy in 1994 saw the new government inherit an economy that was on the verge of a debt trap. The apartheid government had been spending public funds inefficiently in defending apartheid and was largely isolated from the global economy, with strict exchange controls and complex import tariff structures. The challenge lay in turning around the key macroeconomic fundamentals and promoting growth, whilst simultaneously trying to address the plight of the many poor, unemployed and marginalized in the society.

In 1994 the newly elected African National Congress, under Nelson Mandela, published the Reconstruction and Development Programme (RDP) White Paper. The RDP was a policy framework that was strongly committed to alleviating poverty and inequality, focusing on the links between development, growth, reconstruction and redistribution. The way to achieve growth was seen to be through largely government-supported infrastructural development. Although the RDP acknowledged the interdependencies between growth and development, the approach had development programmes at the heart of the strategy, with growth largely resulting from these stimuli.

In June 1996, however, the ANC government released the GEAR strategy – the new and clearly articulated macroeconomic strategy for South Africa for the period 1996 to 2000. Whereas the RDP focused on growth through development, with government investment playing a major role, GEAR was a more market-oriented policy, with the focus on development through growth, and private sector investment as the major driver. Public sector investment was still considered important, although to a lesser degree. Both domestic and foreign investment was sought, with a focus on export manufacturing sectors in the context of an outward-oriented growth strategy. The intent was to break out of the country's dependence on mineral exports and encourage the growth of non-gold export revenue. Increased investor confidence would be achieved through tight monetary and fiscal policies and the promise of economic stability. GEAR propounded a stabilization package characterized by high interest rates, low inflation, low fiscal deficits and a stable real exchange rate with major currencies. In 1999 the government introduced a formal inflation target band, with the aim of reinforcing economic confidence and lowering inflationary expectations, and thus inflation in the future.

The new government thereby sought to assure the international investment community that it was pursuing orthodox macro and microeconomic policies. The response from the international community has been that international investors now recognize South Africa as an "emerging economy". The South African economy thus entered the fast-globalizing world economy on the back of a strict and orthodox fiscal and monetary policy regime, supported by complementary strategies such as deregulation and the lifting of exchange controls. However, the key policy regime shift, with respect to the direct impact of globalization on the domestic economy, is to be found in the arena of trade policy.

The government of 1994 inherited a trade regime that was characterized by high levels of protection, a wide dispersion of tariffs and a complicated array of tariff types. South Africa applied to join the WTO in 1995. The country offered to "bind 98 percent of all tariff lines, reduce the number of tariff rates to six, rationalize the over 12,000 tariff lines and to replace quantitative restrictions on agricultural products with tariffs" (Dunne and Edwards, 2006).

The GEAR strategy achieved its goals in terms of fiscal austerity but not in terms of growth, employment and redistribution since the welfare challenges remained. While government's commitment to macroeconomic stability remains in the post-GEAR period, in 2001 there was a shift in the policy stance towards government having a more direct role in promoting economic expansion and broadening opportunities. A microeconomic strategy was added to the macroeconomic policy package, with the aim of improving efficiency in the economy and eliminating constraints to business development so that the levels of growth required to make real inroads into employment creation and poverty reduction could be achieved (National Treasury, 2001; Department of Trade and Industry, 2002). Intensive investment in skills, explicit focus on small business development and increased investment in social and economic infrastructure are all seen as more active ways for government to promote employment creation, and, in contrast to modelling assumptions of GEAR, crowd in private investment (Streak, 2004).[1]

In 2005, after consultation with various stakeholders, including organized business, labour and domestic and international experts, the government launched the Accelerated and Shared Growth Initiative of South Africa (ASGISA). ASGISA is a national growth initiative that consists of a set of interventions intended to serve as a catalyst for accelerated and shared growth. Under ASGISA, the key tenets of GEAR (most notably macroeconomic stability and fiscal austerity) remain, but areas such as skills development, infrastructure provision and small business regulation are given more attention. In broad terms, ASGISA is an attempt at undoing some of the microeconomic constraints on long-term economic growth. This could range from legislative interventions and fiscal allocations to sectors or specific areas of the economy.

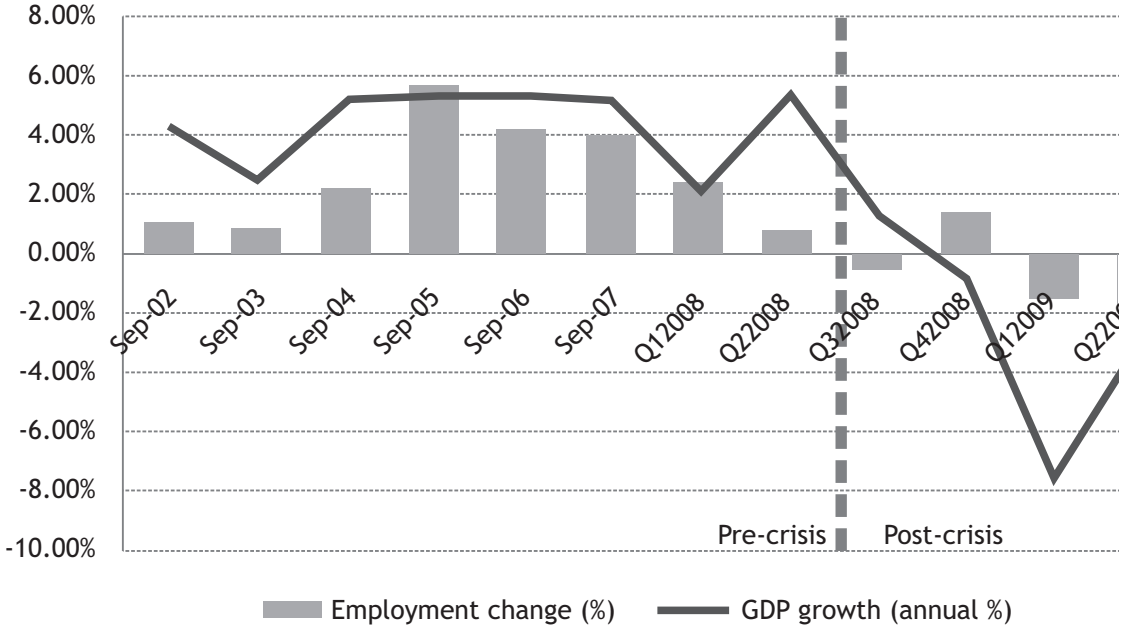
The domestic economic policy environment since 1994 can thus be caricatured as one where the new government – after flirting with more populist interventions through the RDP – sought to allay foreign investor concerns and set out on a path of orthodox management of the economy through the GEAR strategy. The success of at least one core goal of GEAR – i.e. fiscal and monetary stability – has thus made way for a third phase of policy reform (ASGISA) that is designed to undo, through a variety of different avenues and mechanisms, what are perceived to be the critical microeconomic constraints on long-run economic growth and development in South Africa.

2.2 Key Economic Trends in Post–Apartheid South Africa

This section considers the key macroeconomic trends, trade patterns and performance of key indicators that have defined post-apartheid South Africa. Graph 1 shows that the new government inherited an economy in which real GDP was contracting rather than growing

for the three years from 1990 to 1992. This trend was reversed in 1993 and real growth remained positive over the entire period under review. In fact, since September 1999, the business cycle has been in its longest upward phase since the Second World War. Many have argued that this represents the success of years of fiscal and monetary stability. However, the rate of growth experienced from 1994 to 2003 was lacklustre. Real GDP grew at an average of 2.94 percent per annum over the period. The population growth rate has been approximately two percent, meaning that real GDP growth per capita averaged a mere 0.86 percent over the ten years.

Graph 1: Growth and Investment, 1990-2003 (real percentage change, 2000 prices)



Source: SARB (2005)

It was hoped that the more stable macroeconomic environment would lead to increased private investment. Private investment growth, however, has been lower than expected, which can be attributed in part to the restrictive monetary policy stance pursued for much of the period. This was especially true in the case of small and medium businesses, for which the cost of borrowing was excessive. This situation disappointed hopes for significant job creation in this sector. In addition, global economic events, such as the emerging market crisis in 1998 and the economic slump after 11 September 2001, led to domestic currency crises, exceptionally unstable economic conditions and therefore an investor-unfriendly environment. Gelb (2004) also cites uncertainty within South Africa related to sociopolitical concerns such as crime, labour regulations, social policy and the tax regime as additional factors that deterred investment, at least up until the early 2000s.

The hoped-for injection of foreign direct investment also produced disappointment, with, on average, it accounting for only 1.4 percent of GDP over the period (authors' calculations, SARB 2005). Furthermore, most investment was due to privatization of government assets or the acquisition by non-residents of a small number of large South African companies. Foreign investment in terms of new business initiatives with the accompanying stimulatory effects has been low over the period.

There was quite substantial progress made in liberalizing the trade regime, as shown in Table 1. The total number of eight-digit Harmonized System (HS) tariff lines fell from over 12,000 in 1990 to 7,914 in 2003. In addition, the tariff structure has been simplified with the share of eight-digit HS lines bearing formula, mixed or specific duties declining from 31.4 percent in 1994 to between 0.7 percent (South African

Development Community (SADC) and 25.3 percent in 2003. Lastly, the number of ad valorem tariff rates facing the European Union and SADC countries declined, but still exceeds the six tariff rates proposed in the Uruguay Round offer (Edwards, 2005).

Table 1: Summary of Tariff Statistics (including ad valorem equivalents)

	1990	1994	1998	2003 (avg.)	2003 MFN	2003 EU	2003 SADC
Number of tariff lines	12 466	11 231	7773	–	7914	7914	7914
Number of ad valorem tariff rates	38	37	45	–	38	27	27
Unweighted Mean							
Total	13.2	17.5	14.1	10.6	11.3	9.7	5.1
Agriculture	4.5	5.1	5.2	5.0	5.4	4.6	1.5
Mining	3.7	2.8	1.2	0.6	0.9	0.2	0.0
Manufacturing	13.6	18.0	14.7	11.0	11.8	10.1	5.3
Unweighted Mean (including surcharges)							
Total	20.5	21.9	14.1	10.6	11.3	9.7	5.1
Agriculture	10.4	8.9	5.2	5.0	5.4	4.6	1.5
Mining	3.7	2.8	1.2	0.6	0.9	0.2	0.0
Manufacturing	21.1	22.5	14.7	11.0	11.8	10.1	5.3

Source: Adapted from Edwards (2005)

The simple average Most Favoured Nation (MFN) tariff rate, including surcharges, declined from 22 percent in 1994 to 11.3 percent in 2003. The SA-EU Free Trade Agreement and the SADC Free Trade Protocol saw average tariffs facing EU and SADC countries falling to 9.7 percent and 5.1 percent, respectively, by 2003. 2004 saw further simplifications to the tariff structure that led to additional reductions in average tariff rates facing MFN (8.3 percent), EU (7.1 percent) and SADC countries (2.4 percent) (Edwards, 2005).

As Table 2 shows, nominal tariff reductions were biased against unskilled labour intensive and semi-skilled sectors, with deep cuts in tariffs on textiles, footwear, wearing apparel and communication equipment. However, despite the reductions, nominal rates of protection remain high in some of the labour intensive sectors such as textiles, clothing and footwear, as well as in sectors such as tobacco, furniture, beverages and motor vehicles.

Table 2: Measures of Sectoral Protection (%)

	Nominal Rate of Production			Effective Rate of Protection (ERP)	
	1994	2003 (average)	% change	1994	2003
Total	**21.9**	**10.6**	**-9.3**	**38.6**	**18.9**
Agriculture	8.9	4.4	-4.1	7.3	3.8
Coal mining	0.0	0.0	0.0	-5.5	-2.3
Gold mining	10.0	0.0	-9.1	11.4	-2.1
Other mining	2.9	0.9	-1.9	1.7	0.2
Manufacturing	**22.5**	**10.9**	**-9.5**	**48.4**	**24.3**
Food	18.8	11.5	-6.2	55.3	38.3
Beverages	29.3	15.4	-10.8	51.9	28.4
Tobacco	41.7	32.9	-6.2	340.5	257.2
Textiles	41.3	20.3	-14.8	149.7	76.2

Table 2. *Continued*

	Nominal Rate of Production			Effective Rate of Protection (ERP)	
	1994	2003 (average)	% change	1994	2003
Wearing apparel	75.1	33.4	-23.8	218.4	94.1
Leather products	25.9	11.3	-11.5	59.7	18.8
Footwear	48.0	22.7	-17.1	106.0	51.1
Wood products	14.5	8.5	-5.3	21.7	14.0
Paper products	11.3	6.2	-4.7	15.8	10.3
Printing and publishing	16.1	4.6	-9.9	22.2	4.5
Coke and petroleum	5.1	3.3	-1.8	10.0	8.2
Base chemicals	8.1	1.6	-5.9	14.4	1.4
Other chemicals	16.2	4.4	-10.2	32.3	7.4
Rubber products	18.6	10.8	-6.5	46.6	31.7
Plastic products	19.8	9.8	-8.4	36.2	20.3
Glass products	17.2	7.2	-8.5	32.1	13.3
Non-metallic minerals	15.0	5.6	-8.2	29.9	10.8
Basic iron and steel	8.8	4.3	-4.2	20.1	11.0
Non-ferrous metals	10.8	2.1	-7.9	17.9	2.9
Metal products	18.3	7.9	-8.8	36.7	16.1
Machinery and equipment	10.4	3.6	-6.2	11.9	2.9
Electrical machinery	18.3	7.1	-9.4	33.0	13.8
Communication equipment	24.2	2.9	-17.1	35.5	1.2
Professional and scientific	12.2	0.3	-10.6	9.5	-5.9
Motor vehicles	25.9	15.2	-8.5	45.1	32.3
Other transport	12.3	0.8	-10.2	14.9	-3.2
Furniture	32.1	17.4	-11.2	82.6	46.4
Other manufacturing	26.5	5.9	-16.2	96.5	17.5

Source: Adapted from Edwards (2005)

Note: Nominal protection rates are the simple unweighted average calculated using HS8-digit data. Tariffs include surcharges and ad valorem equivalents (AVE) for formula duties, specific duties and mixed duties:

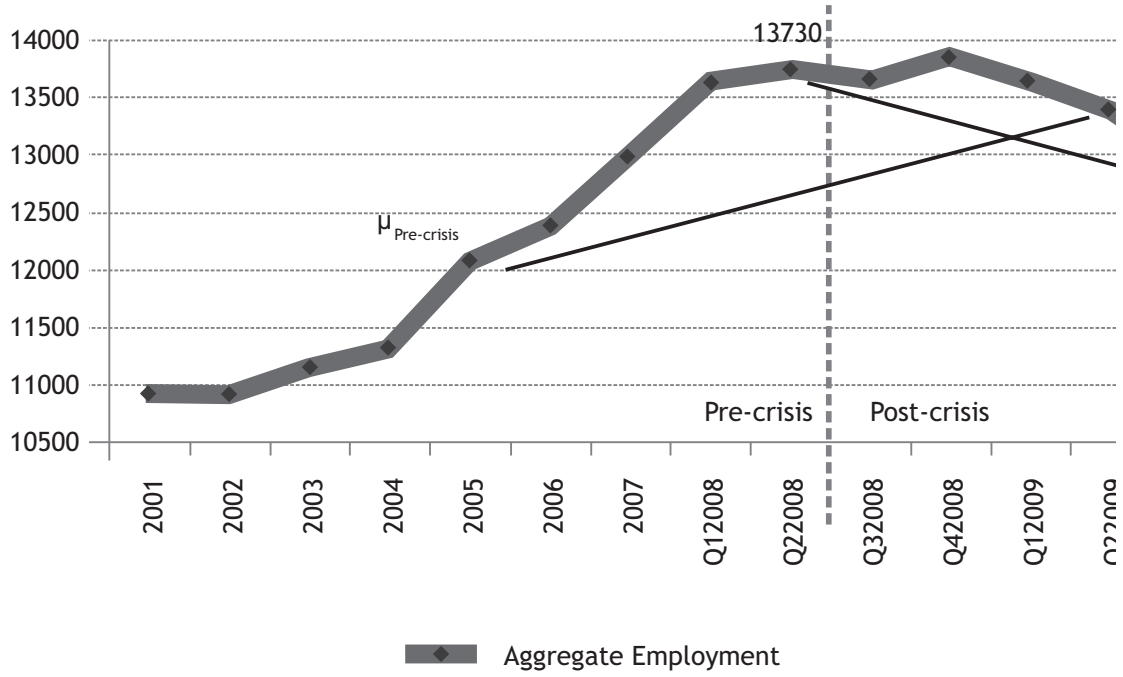
i) calculated as ((t1 - t0)/(1+t0)-1)

ii) the averages are calculated using ERP at the 2 and 3 digit SIC level. Total output values between 1988 and 2002 are used as weights.

Although nominal tariffs have fallen, there is disagreement about the degree to which trade has been liberalized when considering the effective rate of protection (ERP). Edwards (2005) finds that average ERP has fallen but still remain fairly high, particularly in manufacturing where it averaged about 24.3 percent in 2003. Despite significant declines, ERP appears to remain quite high for the tobacco, textiles, clothing, footwear and furniture sectors.

The opening up of the economy post-apartheid led to improvements in industrial productivity and international competitiveness (Edwards, 2005). Furthermore, the exchange rate has depreciated dramatically during currency crises, with the recovery still leaving the currency in a weaker position against major trading partners. This has also led to greater international competitiveness, although the latest strengthening of the South African rand from 2002 has had the reverse effect.

Graph 2: International Trade and Transactions, 1990-2003

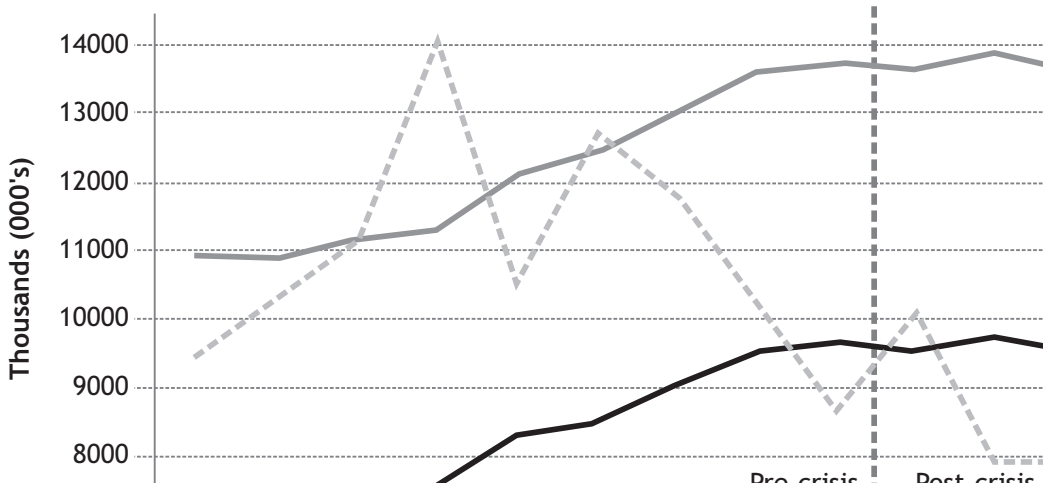


Source: SARB (2005)

Graph 2 shows that imports and non-gold exports as a proportion of GDP increased strongly over the period. The composition of exports also changed with gold's share experiencing a marked decline and manufactured goods a significant rise. The current account balance as a proportion of GDP has been fairly stable with a deficit always below two percent over the period.

When the period is extended to include trade volumes from 1970 onwards, Graph 3 shows fairly stagnant trade flows between 1970 and 1991. Over that period, the volume of imported goods and services remained the same, while non-commodity exports only increased by 11 percent. In contrast, there was a clear upward trend in the growth of non-gold commodity exports (Edwards and Lawrence, 2006: 11-12). By the early 1990s there is a marked change, with all three series displaying very strong upward trends.

Graph 3: Export and Import Volumes, 1970-2003



Source: Edwards and Lawrence (2006)

South African trade data decomposed according to the standard industrial classification are not available. Edwards and Lawrence (2006: 12) compiled the table below showing average annual growth rates in export volumes between 1970 and 2005, disaggregated by certain sub-sectors. The growth in total export volumes was lacklustre between 1970 and 1990, with average annual growth rates of 1.1 percent in 1970–1980 and 1.3 percent in 1980–1990. Growth picked up after 1990, but declined again between 2000 and 2005.

Table 3: Average Annual Growth in Export Volumes (%)

Product	1970-2005	1970-1980	1980-1990	1990-2000	2000-2005
Gold	-3.44	-4.2	-2.3	-1.5	-9.7
Commodities, non-gold[a]	4.3	8.5	1.7	3.9	2.5
Non-gold mining	4.85	14.2	1.6	1	2
Commodity manufacturers	4.11	4.9	1.2	6.9	3.6
Non-commodities[b]	4.43	-2.1	4.9	10.8	5.8
Non-commodity manufacturers	5.8	0.7	4.7	13.7	4.2
Services	3.11	-4.4	5.2	7	8.6
Addendum					
Manufacturing	4.79	3.6	2.2	9.5	3.9
Autos	12.48	0.5	13.2	24	18.1
Non-auto manufacturers	4.06	0.7	3.9	11.3	-3.3
Total, non-gold	4.36	4.8	2.5	6.4	4
Total	2.43	1.1	1.3	5.1	2.7

Source: Edwards and Lawrence (2006), based on Quantec Data Base

[a]Non-gold commodities include primary commodities and manufactured goods with a relatively high share of primary commodity inputs in their values.

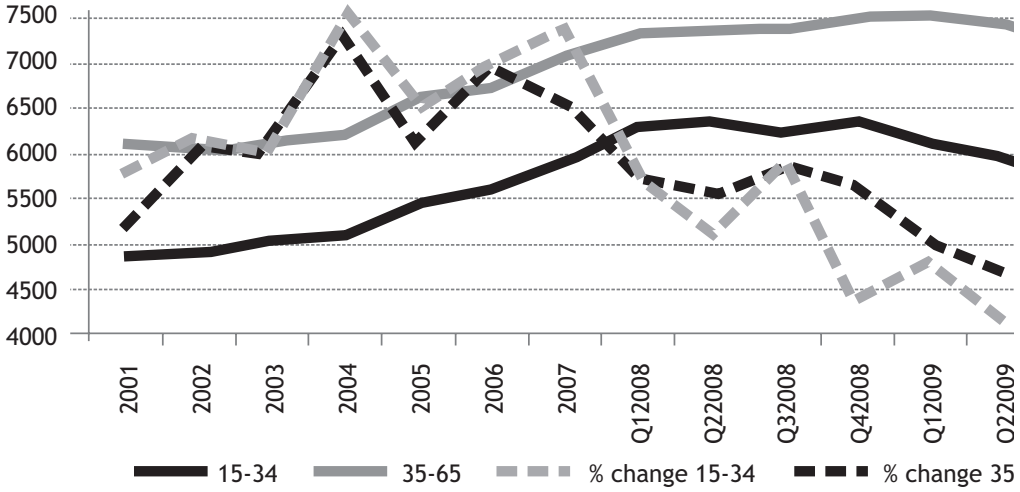
[b]Non-commodities refers to exports of services and other manufactured products.

Some of the more striking results are the sharp decline in gold exports and the increasing importance of non-commodity exports, including non-commodity manufacturers after 1980. The growth in manufacturing exports was patchy, but still averaging an annual rate of almost 5 percent over the total period. Services exports picked up sharply in the last five years, with an average annual growth rate of 8.6 percent.

We now consider whether fiscal and monetary policy targets have been met. The main target of fiscal policy was to decrease the fiscal deficit and the debt to GDP ratio. As shown in Graph 4, the tight fiscal and monetary stance, beginning even before 1994, has achieved this. The budget deficit declined from 5.6 percent of GDP in 1994 to a little over one percent in 2003, averaging 2.3 percent per year over the period. There has been a corresponding decline in government debt to GDP from 50 percent to a more manageable 40 percent.

The main target of monetary policy was to protect the value of the rand and achievements have been made in terms of its internal value. Headline inflation experienced a declining trend, with the CPI inflation rate falling three percentage points from 8.8 percent to 5.8 percent over the decade under review, as shown in Graph 4. The Consumer Price Index (CPIX), which is directly targeted by the South African Reserve Bank (SARB), has remained fairly stable since it was first calculated in 1997 with CPIX inflation averaging 7.4 percent from 1998 to 2003. The interest rate was the main policy instrument used to curb inflation.

Graph 4: Selected South African Macroeconomic Indicators 1990–2003



Source: SARB (2005)

Exchange rate policy must be considered together with monetary policy since the outcomes and instruments are interdependent. With the liberalization of the capital account (now known as the financial account) in 1995 and a number of unforeseen world economic events, the task of protecting the external and internal value of the rand and managing the capital account became impossible for the SARB. This was compounded by the fact that the nature of foreign investment into South Africa has been mostly in the form of fairly short-term portfolio investments.

South African specific circumstances in 1996, the emerging market crisis in 1998, the Argentinean crisis of 2001, the collapse of dot-com industries, 9/11 and the political situation in Zimbabwe all affected investor confidence and led to capital flight and significant currency depreciations. In 1996 and 1998, the SARB attempted to stabilize the exchange rate by selling US dollars forward. This proved to be unsustainable, however, and led to a significant loss of foreign exchange reserves. The government stopped trying to protect the currency and the interest rate was subsequently used to dampen inflationary pressures.

While the government has done well in achieving the GEAR targets of fiscal and monetary austerity, the hoped-for private and foreign investment needed to boost growth in the economy has been less impressive. The low average rate of growth over the period has not been sufficient to bring down the high levels of unemployment. Slow economic growth combined with a rapidly increasing labour force participation rate has served to compound the national unemployment crisis. Criticism has been levelled on several fronts, including the contention that monetary and fiscal policy has been too stringent.

2.3 Economic Growth and Employment in the Post–Apartheid Period

Nationally representative data on the labour market have been based on household and labour force survey data since 1994.[2] This section describes some of the key trends in the labour market in the post-apartheid period. Table 4 for the period 1995 to September 2005, which utilizes the October Household Survey for 1995 and the Labour Force Survey for the 2005 estimates, shows that aggregate employment increased from 9.5 million in 1995 to 12.3 million in 2005, translating into a growth in employment of 29 percent over the period.

Since 1994, however, a growing number of economists have highlighted the fact that the

South African economy has been unable to create adequate employment despite sustained economic growth over the period (Altman, 2003; Mahadea, 2003; Moolman, 2003; Sellars, 2000). One of the key features of both academic and public debates about the post-apartheid labour market has been the notion that the economy has been experiencing "jobless growth" – i.e. that amidst positive economic growth (outlined in detail above) there has been an absolute decline in the number of jobs created in the economy. In the semantics of output-employment elasticities, this "jobless growth" thesis implicitly asserts that the elasticity value is negative and significant. While the sectoral and skills detail of this growth varied, it is clear from the data presented below that the notion of aggregate "jobless growth" in the South African economy is erroneous. The economy, in the aggregate, has been creating jobs rather than shedding them.

Table 4: Employment, Unemployment and Labour Force Trends 1995-2005

Category	1995 (Oct) ('000s)	2005 (Sep) ('000s)	Change		Target Growth Rate	Employment Absorption Rate
			Absolute ('000s)	Percent		
Broad Definition Estimates						
Employment	9 515	12 301	2 786	29.28	66.69	43.90
Unemployment (broad)	4 239	7 800	3 561	84.01		
Labour Force	13 754	20 100	6 346	46.14		
Official Definition Estimates						
Employment	9 515	12 301	2 786	29.28	55.08	53.16
Unemployment (narrow)	2 032	4 487	2 455	120.82		
Labour Force	11 547	16 788	5 241	45.39		

Source: OHS 1995; LFS 2005:2 (Statistics SA)

However, although there was no jobless growth in this period, employment growth was clearly insufficient relative to the growth in the labour force. Employment increased by 2.8 million while the labour force expanded by 6.3 million. The rise in participation rates in excess of employment growth resulted in an increase in unemployment – to just fewer than 8 million unemployed in 2004.

In order to provide a basic litmus test for these labour market trends, we have used two very simple performance indicators, shown in Table 4. These are the "'target growth rate" and the "employment absorption gap". The target growth rate (TGR) measures how fast employment would have had to expand in order to provide work for all net entrants to the labour market over a given period (say, between time t and t + 1), and is defined as follows:

$$TGR_k = \frac{EAP_{k,t+1} - EAP_{k,t}}{L_{k,t}}$$

where EAPk refers to the economically active population of group k, defined by any given covariate, and Lk is the number of employed group k individuals. Because this target growth rate captures the growth required to provide employment to only new entrants since 1995, it is independent of the rate or level of unemployment in the base year (1995). Employment growth at the target rate would result in a reduction in the relevant group's overall unemployment rate.[3] The employment absorption rate (EAR) is the ratio between actual employment growth and the desired or target rate, expressed as a percentage:

$$EAR_k = \frac{\frac{L_{k,t+1} - L_{k,t}}{L_{k,t}}}{\frac{EAP_{k,t+1} - EAP_{k,t}}{L_{k,t}}} = \frac{L_{k,t+1} - L_{k,t}}{EAP_{k,t+1} - EAP_{k,t}}$$

It denotes the proportion of the net increase in the labour force that finds employment. The higher the employment absorption rate, the better the actual relative to the desired employment performance. An EAR of 100 denotes a situation where the increase in the labour force is fully accounted for by an increase in employment. An EAR of greater than 100 is possible where employment grows more than the labour force in absolute terms, i.e. where employment is growing and unemployment falling in numerical terms. Hence, the closer the employment absorption rate is to 100, the better the actual relative to the desired employment performance. These figures are critical as they are predictors of relative employment performance – something that the standard growth rates do not yield.

Table 4 shows that while employment grew at 29.3 percent over the period, for all new entrants to find jobs, employment would need to have grown by 66.7 percent over the period. In other words, in order to maintain the unemployment rate at the 1995 level, employment should have risen by just over two times the rate that actually occurred. In terms of the employment absorption rate, the data suggest that over the period the economy has been able to provide 44 jobs for every 100 economically active individuals that entered the labour market over the period. Even by the strict definition of unemployment, which is the official representation of the labour market, the economy has created only 53 jobs for every 100 members of the labour force. When calculating simple elasticities from these aggregate employment figures, the GDP elasticity of *total* employment is positive and, in the post-1994 period, fairly close to one.

Table 5: Simple GDP Elasticity of Total Employment

	Annual Percentage Change in:		Elasticity
	Total Employment	GDP	
1990-1995	0.13	0.8	0.16
1995-2005	2.60	3.27	0.80

Source: Loots (1998:331) for 1990-1995 figures; for 1995-2005 figures, authors' calculations using SARB Quarterly Bulletins, Statistics SA (2000, 2005) and Bhorat and Poswell (2003)

According to the household survey figures, total employment has grown by an average 2.6 percent per annum. Specifically, the simple output elasticity of total employment for the period 1995–2005 is 0.80, indicating that for every 1 percent growth in GDP, total employment increased by 0.8 percent. This stands in sharp contrast to the elasticity of –0.59 for non-agricultural formal employment between 1995 and 2002, as calculated from South African Reserve Bank data – and indeed the data source that incorrectly fuelled the jobless growth thesis (see Bhorat and Oosthuizen, 2005). The 1995–2005 elasticity is also significantly higher than the 1990–1995 elasticity calculated by Loots (1998).

Ultimately, though, while employment expansion has been recorded since the election of South Africa's first majority government, in terms of the increasing economically active population this job performance has been far from adequate. While there was no jobless growth in the post-1994 period, the economy returned tepid levels of employment growth. There are, though, four critical caveats to this conclusion. Firstly, the relationship between output and employment varies across sectors. Hence, we find that output growth in some sectors results, through changing factor proportions, in a relatively inelastic employment response. (We turn to this "sectoral jobless growth" below). While, in the aggregate, the employment performance of the economy has not been as abysmal as often indicated, the sectoral details vary. Secondly, we cannot be sure if the growth in employment is primarily a function of informal sector expansion. Output growth may be associated with growing informal employment, but aggregate contraction of formal sector employment.[4] Thirdly, the growth

in employment recorded is for all workers, irrespective of their supply characteristics. Hence, the nature of employment growth may be biased towards skilled and semi-skilled workers, with unskilled workers losing their jobs over this period (discussed below). Put differently, the basic output-employment relationship referred to above may mask specific skills preferences in the labour demand trajectory of the economy. Finally, the above estimates do not reveal anything about possible changes in the quality of employment. Quality of employment may be affected through, for example, the increased prevalence of part-time work, reduction in benefits offered to the workforce, greater outsourcing, etc.

3. UNDERSTANDING THE POST–APARTHEID LABOUR DEMAND TRAJECTORY: STRUCTURAL CHANGE, TECHNOLOGY AND INTERNATIONAL TRADE FLOWS

It is clear that unemployment has increased in the period under review and that the growth in employment has been insufficient to absorb all those entering the labour market. In this section we examine the nature of the South African economy's labour demand trajectory – both during the apartheid era, which established the conditions that the democratically elected government faced in 1994, and the post-apartheid period. Our analysis is anchored in the idea that there are three key sets of forces that together impact on the nature of labour demand patterns. These are "within-sector" impacts, "between-sector" forces and international trade flows.

Within-sector employment shifts are those changes in labour allocation that come from within the industry itself. Sources of within-sector shifts include technological change in a sector that may create the need for a certain skill type over another or a change in the price of a non-labour factor, such as capital equipment or computers, which results in altered preference for certain labour types. Outsourcing of non-core functions, although hard to measure, is another form of within-sector shifts that may result in changing labour preferences. Between-sector changes are relative employment shifts occurring between sectors in the economy as a result of changing shares in relative output of different sectors. As sectors typically have differing patterns of skill demands, a growing or declining share in production of a sector may alter labour demand at different skill levels. The share of domestic output that changes due to trade flows can similarly affect shifting labour demands between sectors.

While the primary question is the impact of these factors on employment in the aggregate, it also critical to estimate the extent of the labour demand impact across different skills classes within the labour market and the impact by race[5] and gender.

3.1 Decomposing Labour Demand Trends in South Africa: 1970–1995

We begin our review with the 25-year period before the end of apartheid. As noted above, labour demand is affected by a variety of factors, including technology, the changing structure of the economy and trade flows. Increasing use of technology and capital intensity can be captured through capital labour ratios, and is usually associated with an increase in demand for skilled labour and a decrease in the demand for unskilled labour. Table 6 shows increasing capital-labour ratios in the South African economy between 1970 and 1995, and how this may be suggestive of specific corresponding labour demand outcomes.

Table 6: Capital-Labour Ratios by Economic Activity, 1970 and 1995 (capital R'000 per worker, 1990 rands)

Year/ Sector	Total	Agric.	Mining	Manuf.	Electr.	Const.	Whlsale.	Transpt.	Finan-ce	Comm. Serv.
1970	40.1	10.0	29.3	30.8	466.5	3.8	22.5	140.8	340.8	46.5
1995	97.4	27.0	151.3	79.3	712.9	9.9	26.3	252.2	282.8	100.9
Change (%)	142.8	168.8	416.0	157.3	52.8	160.1	17.0	79.1	-17.0	117.0

Source: IDC (1995)

The overall average capital-labour increase was 142.8 percent for the period. The primary sectors (agriculture and mining) experienced the most extensive capital deepening followed by construction and manufacturing, while the service sectors saw only a modest increase in their capital to labour ratios. These trends can be understood through a number of factors, including negative real interest rates for agricultural bank loans, dramatic increases in the nominal wages for unskilled labour in the mining sector, growth in the manufacturing sector that was biased towards capital-intensive sub-sectors and a rapid rate of information technology (IT) adoption. This capital deepening of the economy appears to have affected primary and secondary sectors the most, while the service sectors have been impacted by the shift to microelectronics.

While the above points to a capital deepening in the economy, we observe that over the period there were also structural shifts, with changing importance of primary, secondary and tertiary sectors. Table 7 shows the changing shares of GDP by sector between 1970 and 1997.

Table 7: Share of GDP by Economic Activity, 1970-1997

	Agric.	Mining	Manuf.	Utilities	Const.	Internal Trade	Transport & Communic.	Finance	Comm. Serv.
1970	8.3	10.3	24.2	2.6	4.3	15.1	9.2	11.1	14.8
1975	8.1	12.1	22.8	2.3	5.2	14.0	9.1	12.5	13.8
1980	6.9	21.7	22.2	3.6	3.5	11.3	8.1	10.8	11.8
1985	5.7	14.9	22.0	4.1	3.6	11.5	8.5	13.5	16.2
1990	5.1	9.4	24.7	4.2	3.4	14.6	7.2	14.0	17.3
1995	4.2	7.5	23.4	4.0	3.0	15.7	7.3	16.4	18.5
1997	4.4	7.5	23.0	3.8	2.8	15.4	7.4	17.2	18.6
Change (1970-1997)	-3.9	-2.8	-1.2	1.2	-1.5	0.3	-1.8	6.1	3.8

Source: IDC (1995)

The primary sector saw its share of GDP drop by 6.7 percentage points over the period. This can be explained in the agricultural sector by, inter alia, the diminishing opportunities for increasing output after rapid mechanization and increasing land usage in the 1970s. The drop in commodity prices and a dwindling stock of extractable resources can explain the stagnating growth in mining output. While the primary sector saw its share of GDP decrease over the period, the secondary sector witnessed a relatively unchanged share in GDP. The service sector witnessed an increase in its share of GDP by 8.4 percentage points, spurred mostly by an increasing share of producer services (transport, communication, financial and business services) and final demand social services.

It is therefore clear that over a 25-year period in South Africa, the economy witnessed, firstly, a significant change in the structure of domestic output. The latter has been manifest in a move away from a dependence on the primary sectors, matched almost equally by a rapid growth in share of output within the tertiary sector. Secondly, over this same period, the domestic economy, through the adoption of new technologies, has seen rising capital-labour ratios. More importantly, however, these two forces will have very specific effects on the nature and structure of labour demand

patterns. It is to a more detailed explanation of these that we now turn.

3.1.1 Labour demand trends, 1970–1995: adescriptive overview

Between 1970 and 1995, the labour absorptive capacity of the formal economy was inadequate in providing jobs for all the new entrants into the labour market, which manifested itself in the growing number of unemployed. The two primary sectors, agriculture and mining, with decreasing shares in GDP, suffered huge employment losses over the 25-year period, while most other sectors reported increases in their workforce. The largest percentage increases in employment were in the financial and business services sector, followed by the wholesale and retail trade sector, both of which increased their shares in GDP. The transport sector and community, social and personal services sectors both experienced significant increases in their employment numbers. While the secondary sector (manufacturing, utilities and construction) saw a net rise in employment, the major uptake in employment was in the services sector.

The changing structure of the South African economy over this period was accompanied by corresponding occupational shifts. As shown in Table 8, the occupations that report the largest increases were professionals, followed by managers and transport occupations. On the other hand, the number of workers in low-skilled occupations, namely farming, production work and labourers, either declined or increased marginally. It is therefore evident that the aggregate employment shifts since the 1970s were not skills-neutral. The structure of the labour demand shift shows clearly that skilled workers at the high end of the job ladder benefited most from output growth, while those in unskilled positions at the bottom end benefited least. While this considers the between sector shifts in employment, it is important to look at within-sector shifts, as well as in employment, to explain labour demand changes.

Within agriculture, while the large decline in the share of those in the unskilled farming occupations explains most of the labour demand trend, there were significant shifts at the higher end of the job ladder. We see in Table 8 a large percentage rise in the number of employees in the top three skilled occupations, albeit off a small base, within agriculture. For mining, similar trends are observed, as the decline in the share of production workers explains a large part of the overall employment losses in the sector. However, again, an increase is seen in the share of higher skilled workers, notably in the professional and managerial categories. These within-sector employment shifts are a result of a number of factors, including technological change that is non-neutral in its factor demand impact, as well as lower prices on non-labour inputs, such as capital equipment or computer services. Hence, in the mining industry, for example, capital-labour ratios between 1970 and 1995 increased by 416 percent, while in agriculture, the ratio rose by about 170 percent. The importance of these within-sector labour demand shifts relative to between-sector shifts is estimated in the following section to allow for a more nuanced analysis of the weighted contribution of these two forces in explaining labour demand trends.

In the secondary sectors, within-sector employment shifts are also apparent. Hence, in manufacturing, for example, the share of the top two occupations has increased dramatically since 1970, while that of production workers declined and the share of labourers remained constant. Even in construction, where absolute employment numbers fell by about 46,000, the skilled occupations made gains. The number of managers and professionals in this sector increased by at least 100 percent since 1970, while it was primarily labourers that bore the brunt of the job losses.

Table 8: Formal Employment Trends by Sector and Occupation, 1970-1995

	Agric.	Mining	Manuf.	Utilities	Const.
Prof/Semi-Prof/Tech	1 450	7 806	34 014	2 384	9 615
95	3 631	21 791	105 672	16 255	22 289
% change	150.4	179.2	210.7	581.8	131.8
Adm/ Exec/ Mngr	910	2 380	29 145	267	11 155
95	6 672	13 125	82 567	2 506	22 274
% change	633.2	451.5	183.3	838.6	99.7
Clr & Sales	3 330	17 593	119 226	3 507	15 148
95	12 709	37 953	130 009	10 368	15 858
% change	281.7	115.7	9.0	195.6	4.7
Service	4 919	25 448	31 721	2 646	6 985
95	17 809	37 076	79 610	7 246	6 952
% change	262.0	45.7	151.0	173.8	-0.5
Farm/Fish/ Forestry	2 443 353	4 525	5 198	456	1 086
95	1 019 352	3 538	8 521	0	469
% change	-58.3	-21.8	63.9	-100.0	-56.8
Prod wrkr & Oper/Art	13 163	585 365	585 470	18 096	265 197
95	21 657	229 466	690 781	39 279	255 473
% change	64.5	-60.8	18.0	117.1	-3.7
Labourer	8 331	14 101	16 007	17 935	150 640
95	19 448	70 498	233 245	8 888	82 890
% change	133.4	400.0	40.5	-50.4	-44.9
Transp	6 293	22 159	47 493	1 226	14 297
95	137 159	52 469	119 386	8 072	21 334
% change	2079.5	136.8	151.4	558.4	49.2
Unspec	211	974	7 677	241	1 379
95	407	3 395	6 510	1 466	1 197
% change	92.9	248.6	-15.2	508.3	-13.2
Total	2 481 960	680 351	1 025 951	46 758	475 502
95	1 238 844	469 311	1 456 301	94 080	428 826
% change	-50.1	-31.0	41.9	101.2	-9.8

Table 8. *Continued*

	Int. Trade	Transpt.	Finance	Comm. Serv.	Total
Prof/Semi-Prof/Tech	13 077	11 091	25 408	251 557	356 402
95	62 891	66 626	184 918	983 988	1 468 061
% change	380.9	500.7	627.8	291.2	311.9
Adm/ Exec/ Mngr	40 547	6 996	11 493	12 165	115 058
95	162 562	31 982	54 037	52 243	427 968
% change	300.9	357.1	370.2	329.5	272.0
Clr & Sales	318 230	49 915	110 006	95 680	732 635
95	276 252	61 316	221 146	297 206	1 062 817
% change	-13.2	22.8	101.0	210.6	45.1
Service	94 736	16 886	26 609	1 033 398	1 243 348
95	595 741	41 831	105 612	738 796	1 630 673
% change	528.8	147.7	296.9	-28.5	31.2
Farm/Fish/ Forestry	2 733	864	390	63 866	2 522 471
95	11615	2 871	1 629	107 790	1 155 785
% change	325.0	232.3	317.7	68.8	-54.2
Prod wrkr & Oper/Art	102 933	68 887	3 415	37 268	1 679 794
95	196 518	57 980	20 680	93 359	1 605 193
% change	90.9	-15.8	505.6	150.5	-4.4
Labourer	71 959	78 949	3 879	76 083	587 884
95	118 860	26 809	7 970	69 302	638 000
% change	65.2	-66.0	105.5	-8.9	8.5
Transp	61 601	102 353	8 322	22 645	286 389
95	93 466	184 082	30 091	134 312	780 371
% change	51.7	79.9	261.6	493.1	172.5
Unspec	2 019	2 283	409	2 944	18 137
95	4 942	2 881	2 215	79 673	102 686
% change	144.8	26.2	441.6	2 606.3	466.2
Total	707 835	338 224	189 931	1 595 606	7 542 118
95	1 522 847	476 378	628 298	2 556 669	8 871 554
% change	115.1	40.8	230.8	60.2	17.6

Source: Census, 1970; October Household Survey 1995 and authors' own calculations

Within the service sectors, the same trend is observed. Managers and professionals saw their numbers increase by a minimum of 291 percent over this period. In all sectors, apart from the community and social services sector, the share of the service workers occupation group increased. The share of labourers again declined and, in the case of two sectors, the actual number employed fell. This is a stark reminder that even within the four fastest-growing sectors of the economy there was a high attrition rate for those at the bottom end. While the absolute numbers are small, it is interesting to note that for production workers, the results are mixed. Hence, in the retail and transport sectors, their share of employment fell, while in finance and community services it increased. The majority of these workers in community services are employed in government, either at the central or local level.

It must be remembered that, on the whole, the service sectors are more skills-intensive than the secondary or primary sectors. Hence, any growth in these sectors would result in a skewed preference for those individuals with greater skills. However, it cannot be doubted that the onset of the microelectronics revolution, epitomized by greater computer usage, has spurred on this preference within services for higher skilled individuals. The fact that the capital–labour ratios in the service sectors rose by as much as 117 percent strongly supports this notion. Simply put, the forces driving within-sector labour demand preferences witnessed a sharp increase in the employment of the most skilled workers, matched by an alarming decline in the demand for unskilled employees.

3.1.2 Technology, structural change and labour demand trends

The above data suggest that labour demand shifted toward individuals with greater skill levels. The fact that we can observe the labour demand outcome, however, is only half the puzzle solved. The other, perhaps more important, half is to determine the relative importance of the factors that shaped this labour demand trajectory.

As alluded to above, it is useful to think of labour demand patterns as being driven at the sectoral level by two forces – *within-sector shifts* and *between-sector shifts*. The issue is to estimate the relative strengths of these two forces in explaining the employment trends observed in Table 8. In order to achieve this, we utilize a basic decomposition technique drawn from Katz and Murphy (1992). Details of this decomposition technique are provided in Appendix A.1.

It should be noted that there are a number of drawbacks with the decomposition approach. First, it assumes that wages are constant in all employment shifts recorded. Hence, we record quantity shifts only, without recourse to the possible impact of wage changes on labour demand. Secondly, the technique and, indeed, all decomposition techniques, suffer from their static analysis. In other words, the analysis may show, for example, that technological change resulted in a decrease in employment of certain groups or occupations in the period under study. However, it does not (or cannot) take account of the indirect input–output effects of such a change. These indirect effects may in the long term, via higher national economic growth, for example, cause an increase in the demand for these labour types. This is the most fatal critique of the decomposition technique, but yet one that is not easily resolved by better alternative techniques currently available.

The underlying assumption here, and in the rest of this paper, is of a perfectly elastic labour supply function. This also explains the assumption of constant relative wages. In essence, we measure the sectoral dynamics of a shift in the labour demand function along the labour supply curve of any given occupation or socioeconomic group.

Table 9 presents the decomposition results by occupational classification between the two periods, 1970 and 1995.

Table 9: Industry-Based Relative Demand Shift Measured by Occupation, 1970-1995

Shift	Between	Within	Total	Share of Within
Prof/Semi-Prof/Tech	0.87	14.61	15.48	94.38
Exec Mngr	0.36	18.44	18.80	98.10
Clerical & Sales	2.91	20.46	23.37	87.56
Service	2.78	11.85	14.63	81.02
Farm/Fish/Forestry	-8.87	-25.65	-34.44	74.49
Prodn. wrkr. & Operator	-0.34	-1.21	-1.55	78.04
Labourer	0.64	6.88	7.52	91.55
Transport	0.51	11.26	11.77	95.66
Unspecified	0.03	10.25	10.28	99.73

Source: Census, 1970; October Household Survey 1995 and authors' own calculations

The total demand shift index reiterates, in a more robust form, the rise in the demand for semi-skilled and skilled workers. Hence the highest total relative demand shift is for clerical and sales occupations, followed by managers and professionals. The poorest performers are farm workers, production workers and labourers. The table also shows the contribution of the between- and within-sector shifts to overall relative demand for the given occupation. There is a clear indication that, across all nine occupational categories, the within-sector component dominates over between-sector shifts in explaining the profile of relative demand. The last column of the table displays the percentage share of the within-sector component in explaining the overall shift. Particularly in the case of the skilled occupations, the within-sector component is the major source of the labour demand shifts observed over the 25-year period. While the within-sector component is also more important for farm workers and production workers, its dominance is less striking, reflecting the decline in the primary sectors' contributions to GDP. These two occupations are the largest segment of the workforce in agriculture and mining, respectively.

The within-sector dominance for all skilled occupations is captured partly by the classic form of machinery substituting for labour, in particular the adoption of computer usage across all sectors of the economy, but within services in particular. This is the key mechanism for the growth in the demand for higher-skilled individuals. The analysis also suggests that the rise in the output share of the service sectors compared with the primary and secondary sectors was a less-important determinant of the observed employment shift toward skilled workers in this sector.

Table 10 provides the decomposition results by race and gender for the period.

Table 10: Industry-Based Relative Demand Shift Measured by Race and Gender, 1970-1995

Group	Between	Within	Total	Share of Within
Race				
African	-4.54	-2.10	-6.64	31.68
Coloured	0.50	5.02	5.52	90.97
Asian	0.37	13.80	14.16	97.42
White	3.31	11.61	14.92	77.80
Gender				
Male	-1.15	-0.56	-1.71	32.69
Female	1.12	2.27	3.39	66.88

Source: Census, 1970; October Household Survey 1995 and authors' own calculations

The first interesting result is that for Africans it is not within-sector, but rather between-sector relative demand shifts, that explain the overall demand trends for this group of workers. The between-sector shifts that occurred in the economy account for about 70 percent of the labour demand patterns observed for African workers. Given that the majority of African workers are unskilled, this is a race-specific outcome extending the evidence for farm labourers and production workers in the previous table, on the importance of between-sector shifts. It suggests that when examining the high attrition rate for unskilled African workers, the key cause was the decline in certain sectors, matched by the rise in other sectors since 1970. Put differently, the decline in the primary sectors (which are intensive in the employment of unskilled African workers relative to other race groups) combined with the rise in the service sectors (which are in general intensive in the use of skilled non-Africans) is the dominant explanation for the loss of jobs among African employees.

The relative demand for males fell by 1.7 percent, while that for females increased by over 3 percent between 1970 and 1995. The within-sector component dominates for males. This outcome very much reflects the decline in the primary sectors and specifically job losses amongst unskilled male workers, who make up the bulk of farm and production workers in these sectors. Within-sector shifts explained the increased demand for female labour. Female workers have gained partly as production methods place a greater emphasis on pre-production planning and design, as well as the fact that the job gains from the information technology revolution are gender-neutral.

The final decomposition is according to differing education levels. Table 11 indicates that the only two education categories to witness a decline in demand for their labour are those with no education and individuals with primary schooling.

Table 11: Industry-Based Relative Demand Shift Measured by Education Level, 1970–1995

Education Level	Between	Within	Total	Share of Within
None	-4.80	-9.11	-13.92	65.48
Primary	-0.11	-0.24	-0.34	68.96
Incomplete Secondary	2.82	8.13	10.95	74.22
Completed Secondary	1.48	17.67	19.16	92.26
Tertiary	0.23	18.05	18.28	98.75

Source: Census, 1970; October Household Survey 1995 and authors' own calculations

This is a further indication of the movement away from unskilled individuals in the economy. Relative employment demand increased by at least 10.9 percent for those individuals with incomplete secondary education or more. It is important to note that when trying to link firms' demand needs to skills development policies, the attainment of a matriculation relative to incomplete secondary education alters significantly the demand for a worker across all sectors of the economy. As is to be expected, the two largest relative demands are for individuals in the two highest education cohorts.

3.1.3 The impact of trade flows on labour demand

An extension to the above decomposition is to consider the effect that international trade flows may have on labour demand.

Under the standard trade theory the impact of trade liberalization on the demand for labour is commonly analysed by using the two-sector, two-factor, two-country Heckscher-Ohlin model and the Stolper-Samuelson theorem derived from this model. According to the Stolper-Samuelson theorem, a decline in the output

price of the unskilled labour-intensive sector relative to the skilled intensive sector will lower the wage of unskilled labour relative to skilled labour. This happens when a relative price shock increases the output of skilled intensive sectors while reducing the output of unskilled labour intensive sectors. Firms will respond to the change in relative wage by substituting skilled labour for (cheaper) less-skilled labour, which will reduce the skill intensity of production (Edwards, 2003:18; Edwards and Behar, 2005:3). Edwards (2003:19) derives testable hypotheses concerning the impact of trade liberalization on employment and changes in technology. When output declines in import competing firms due to a reduction in protection, employment will decline in all occupation categories via a reduction in demand. The extent of the decline for each skill category will be dependent on changes in the relative wages according to the Stolper-Samuelson theorem. Relatively large declines in employment are expected in sectors that are negatively affected by trade liberalization, while employment is expected to increase in export oriented firms or firms with large shares of imported inputs.

The major challenge in looking at the impact of trade flows on the South African labour market is to unravel the specific impact that tariff liberalization, as opposed to a range of other factors, such as the exchange rate and domestic demand, play in influencing employment patterns. This line of enquiry is constrained by data. Instead, what we attempt here is to examine the impact of the change in trade flows on labour demand. How, for example, did increasing product trade deficits influence labour demand? The aim of this section is to look at annual data from 1970 to 1997 to examine the link between changing trade patterns and labour demand.

As with the previous section, the Katz and Murphy (1992) decomposition technique is utilized. While the reasoning and technique is similar to that discussed above, there are a few important differences, which are presented in detailed form in Appendix A.1. Essentially, the technique proceeds from the assumption that labour, as a factor of production, is required to produce goods and services. Given this, changes in output or production levels will induce changes in the demand for labour. Net exports constitute tradable output that utilizes domestic labour. We isolate the value of net trade in national output and measure the contribution of labour identified by occupation, race and gender to this traded output. The results reflect which labour types the movements in net trade in the economy positively or negatively affect.

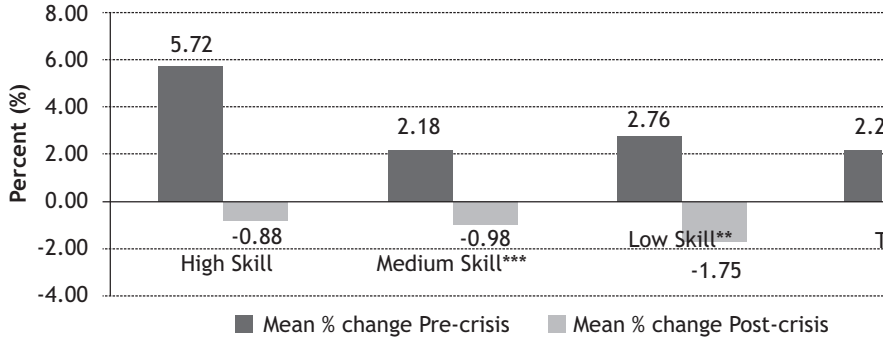
As with the first decomposition, the two drawbacks are that we assume wages to be constant and that the long-term multiplier effects on employment are not considered. The latter is particularly important for this trade decomposition, as the technique cannot predict whether continued growth in net exports may in fact benefit those skill groups that initially lost out from the change in trade volumes. This is of course a key component of the debate around the costs and benefits of trade liberalization. However, while not providing such a dynamic long-term analysis, the decomposition yields results that allude to the short- and medium-term labour demand trajectory that trade flows are likely to engender.

Owing to limitations with the 1970 data we have used the equal allocation method, which assumes the demand for production and non-production workers is affected similarly through exports and imports. One must keep in mind that if this is not the case, and if more highly skilled workers are not displaced through imports to the same degree as production workers, then the change in relative demand for these occupations (the production workers) will be understated in our calculations. The underlying sectoral data that informed the calculations are drawn from only three sectors: agriculture, mining and manufacturing. Trade data for the remaining sectors, particularly for services, are notoriously poor for both 1970 and 1995. Secondly, despite the omission of the remaining sectors, the three included constitute the dominant share of South African exports and imports in the period under

consideration. In 1995, these three sectors accounted for more than 80 percent of trade of goods and services in 1995 (Bhorat and Poswell, 2003: 22). The export and import data, as well as the output data, would have been ideally represented in real value terms. However, at present no optimal price deflators exist for exports and imports, with the latter being particularly problematic. The solution opted for here, albeit a second-best one, was to use nominal values for exports, imports and GDP by sector. Given that we are interested only in the ratios of the trade variables to GDP, this was viewed as an acceptable route to take, noting that little detail would be lost through this approach.

Graph 5 presents the changes in the relative demand for labour according to occupation groups due to changes in international trade in agriculture, mining and manufacturing for 1970 to 1995.

Graph 5: Shifts in Relative Demand due to Trade by Occupation, 1970-1995

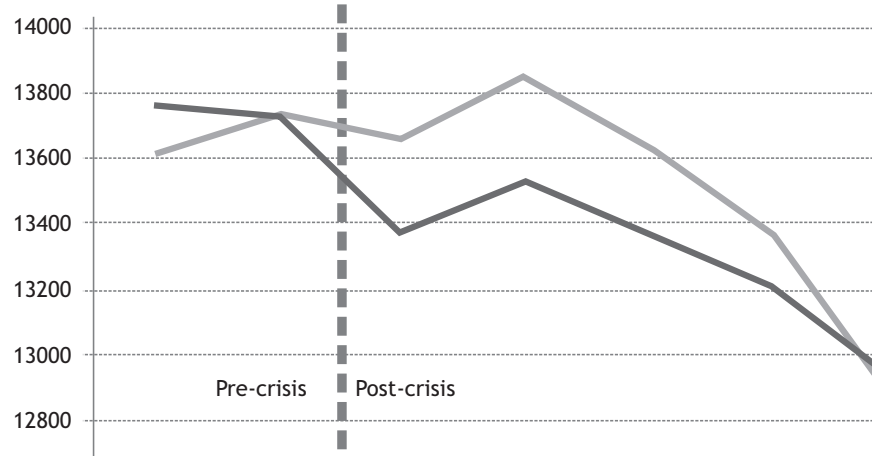


Source: Census, 1970; October Household Survey 1995 and authors' own calculations

Between 1970 and 1995, all occupation groups, with the exception of farming, fishing and forestry workers, enjoyed a positive relative demand due to international trade. In other words, across all skills levels, ranging from highly skilled professionals and managers to unskilled labourers, workers experienced an increase in relative demand. Production workers/operators benefited most from demand due to trade.

Decomposing the demand effects due to trade by race shows that both Africans and coloured experienced a decline in their relative demand for labour. This is to a large extent a reflection of the decline in the relative demand for farming, fishing and forestry workers seen in Graph 6, with low- skilled African and coloured workers constituting the bulk of this workforce.

Graph 6: Shifts in Relative Demand due to Trade by Race, 1970-1995

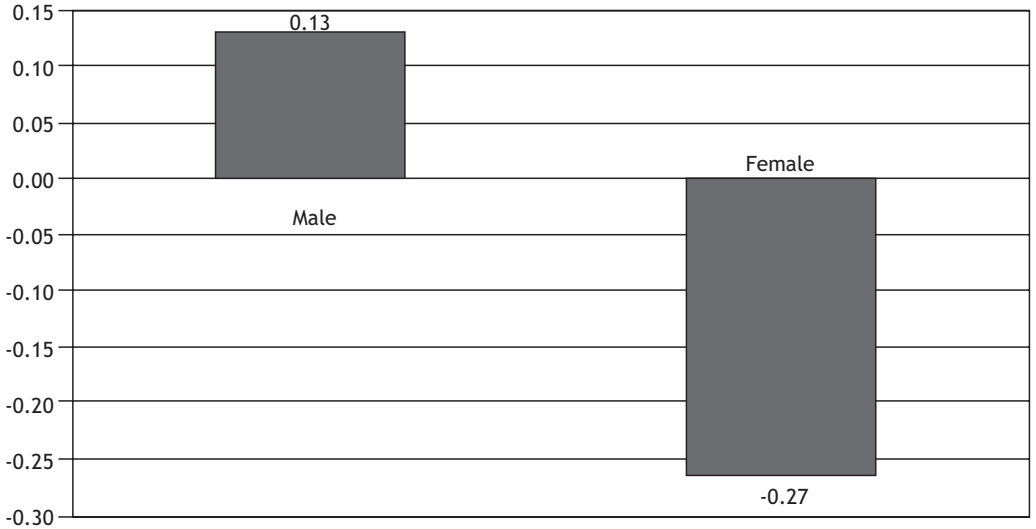


Source: Census, 1970; October Household Survey 1995 and authors' own calculations

The relative demand for Asian and white workers increased due to trade. The employment numbers for Asians are relatively small, making it difficult to draw meaningful conclusions. The positive demand for white workers, on the other hand, reflects their dominant representation in the skilled occupations.

When we decompose the relative demand effects due to trade by gender, males are the clear winners. In the period under consideration, the male workforce was more than double that of the female workforce and labour demand was disproportionately skewed toward males.

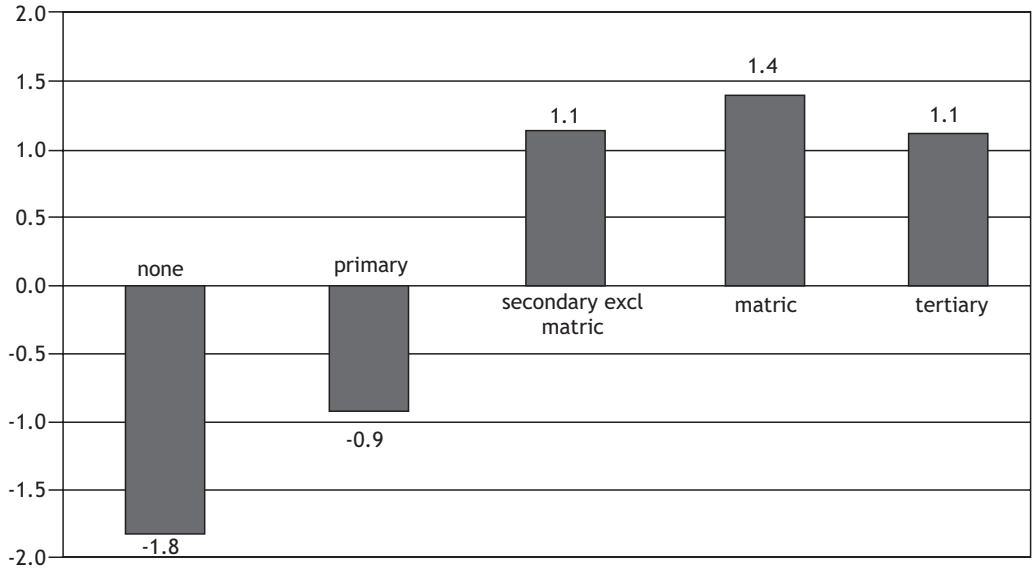
Graph 7: Shifts in Relative Demand due to Trade by Gender, 1970–1995



Source: Census, 1970; October Household Survey 1995 and authors' own calculations

Graph 8 shows that it was labour market participants with at least some secondary education or more that benefited from international trade between 1970 and 1995. This result points tentatively to the possible origins of a skills-biased labour demand trajectory for the South African economy.

Graph 8: Shifts in Relative Demand due to Trade by Education, 1970–1995



Source: Census, 1970; October Household Survey 1995 and authors' own calculations

Those with a matriculation certificate benefited most, followed by individuals with either a tertiary qualification or secondary education up to Standard 9 (or Grade 11 – the second last year of secondary school). During this period, the benefits of tertiary education as opposed to a matriculation certificate have not yet emerged.

Overall, changes in relative demand due to trade had a positive impact on all skill levels, with the exception of farming, fishing and forestry workers. African and coloured workers, and male workers were the biggest losers when considering shifts in the demand for labour by race and gender. This is not surprising considering that they constitute the majority of farming, fishing and forestry workers. Lastly, the decomposition by education indicates an increasing preference for skilled workers.

3.2 Decomposing Labour Demand Trends in South Africa: 1995–2005

The analysis in 3.1 above shows that in the 1970–1995 period, there was a deepening of capital in the economy accompanied by a shift away from primary sectors towards secondary and tertiary sectors, as measured by share in GDP. The consequent labour demand effects show that the primary sectors suffered huge employment losses, while most other sectors saw gains, with the financial and business services sector showing the biggest gains. This was accompanied by occupational employment shifts that were skills-biased. Within sectors, this manifested in increased demand for high-skilled occupations in the primary and secondary sectors, while the demand for unskilled workers declined. This, combined with the growing importance of the tertiary sectors – which on the whole are more skill-intensive than the primary and secondary sectors – yielded a strongly skills-biased labour demand trajectory.

The Katz and Murphy decomposition shows that across all occupations, within-sector forces were the dominant explanation for the occupational structure of labour demand. The implication is that factors such as technological change within firms, or the relatively lower price of capital to labour, have been some of the major explanations for the changing preference of firms from lower-skilled to higher-skilled workers. However, for lower-skilled workers, structural change or between-sector shifts were more dominant in explaining labour demand shifts, with this result prominent in the race decompositions. Thus, the decline in primary sectors relative to the service industries bears a disproportionate responsibility in explaining job losses at the bottom end of the job-ladder relative to within-sector or within-firm factors. The manufacturing history showed that the early years of protection offered greater gains for unskilled workers relative to unskilled workers, but from 1988 onwards, and particularly in the 1993–1997 period with greater trade liberalization, there were high job losses for unskilled workers and gains for skilled workers.

The following section attempts to determine in a descriptive manner – and through a Katz and Murphy decomposition for the 1995–2005 period – whether the trends above have continued in the post-apartheid period. It must be noted, however, that the shorter time period under consideration means that the long-term trends may not yet be evident.

3.2.1 Labour demand trends, 1995-2005: a descriptive overview

We now consider whether the trends experienced in the 1970–1995 period have continued in the decade since 1995. Table 12 presents real gross value added (GVA) at basic prices as the measure of output across the economy's main sectors for the first post-apartheid decade.

Nationally, over the 1995–2005 period, real GDP growth averaged 3.0 percent annually for the economy as a whole. While there was significant sectoral heterogeneity within this overall expansion in national output, all sectors recorded positive growth in GVA.

Table 12: Sectoral Economic Performance (Gross Value Added) 1995-2004

	1995 (R mil, 2000 prices)	2005 (R mil, 2000 prices)	Change			Share of Change (%)	Share of 1995 GVA (%)
			Total '000s	Total (%)	Ave. Ann. Rate (%)		
Primary	85 417	99 192	13 775	16.13	1.5	4.9	11.7
Agric/ Forestry/ Fishing	20 850	28 684	7 834	37.57	3.2	2.8	2.9
Mining/ Quarrying	64 567	70 508	5 941	9.20	0.9	2.1	8.9
Secondary	181 870	235 730	53 860	29.61	2.6	19.1	25
Manufacturing	140 877	181 137	40 260	28.58	2.5	14.3	19.3
Utilities	20 592	24 082	3 490	16.95	1.6	1.2	2.8
Construction	20 401	30 511	10 110	49.56	4.1	3.6	2.8
Tertiary	461 113	675 175	214 062	46.42	3.9	76.0	63.3
Internal Trade	99 994	152 712	52 718	52.72	4.3	18.7	13.7
Transport & Commic.	58 923	109 188	50 265	85.31	6.4	17.8	8.1
Finance	125 955	216 632	90 677	71.99	5.6	32.2	17.3
Gen. Gov. Services	132 945	138 373	5 428	4.08	0.4	1.9	18.3
Personal Services	43 298	58 270	14 972	34.58	3.0	5.3	5.9
Total	728 400	1 010 097	281 697	38.67	3.3	100.0	100

Source: SARB (2005), Statistics SA (2005a) and authors' own calculations

The data indicate that it is principally the tertiary sector that has been responsible for the attainment of 3 percent GDP growth over the period. While the primary sector grew at an average annual rate of 1.5 percent and the secondary sector at 2.6 percent, the tertiary sector as a whole grew at a rate of 3.9 percent per annum over the 10-year period. As a result, the tertiary sector accounted for 76 percent of total output expansion, despite only contributing 63 percent of total GVA in 1995. All the main primary and secondary sectors accounted for a smaller proportion of output expansion than their original proportions of 1995 output. Even over this shorter time period, the results reflect the intensification of structural change in the economy – away from primary towards tertiary or services-based output.

Within the tertiary sectors, transport and communication, finance and internal trade were the best performing sectors over the period, each growing GVA in excess of 4 percent per annum and accounting for 47 percent of total output expansion. This is particularly impressive given the fact that these three sectors accounted for only 39 percent of GVA in 1995. The sectoral shift that characterized the South African economy from the 1970s through the mid-1990s, from primary and secondary activities to tertiary sector activities, has continued after 1995 until the present. The structure of South Africa's domestic production is now one more readily characterized by a large share of tertiary output – casting some doubt on the notion that the appropriate characterization of the South African economy continues to be "resource-based".

This intensification in tertiary output has, as a consequence, impacted on the nature of sectoral employment shifts in the 1995-2005 period. As is evident from Table 13, employment growth in the decade since 1995 was unevenly distributed between the various sectors, with most of the growth occurring in the tertiary sector.

Within the primary sectors, employment has contracted substantially, with a loss of almost 500,000 jobs, or just over a quarter of the 1995 total of 1.8 million. Both the agriculture, forestry and fishing sector and the mining and quarrying sector have lost jobs, the former losing around 310,000 jobs and the latter 182,000 jobs. However, given the difference in the sizes of these two sectors, relative employment contraction has been more severe in the mining and quarrying sector at a rate of -3.1 percent per annum on average as opposed to -2.5 percent in agriculture. Secondary sector employment, in contrast, grew by 40 percent over the period, equivalent to an average annual rate of 4 percent. This indicates a recent turnaround in this sector. Bhorat and Oosthuizen (2005:13) found that secondary sector employment grew by a total of 16.0 percent between 1995 and 2002, or 2.1 percent per annum, implying a substantial improvement in the employment performance of the secondary sectors after 2002. The largest number of jobs was created in the construction sector, where employment more than doubled from 446,000 to 934,000. Construction alone accounted for 63 percent of all jobs created in the secondary sector and 18 percent of overall net employment creation for the 1995-2005 period. Employment in manufacturing also expanded by around 275,000 jobs and at a rate lower than the overall national employment growth rate.

Table 13: Employment Expansion by Sector, 1995-2005

	Total Employment		Change	% Change	Share of Employment	
	1995	2005	1995-2005	1995-2005	1995	2005
Primary Sectors	1 828 081	1 335 970	-492 111	-26.92	0.19	0.11
Agriculture, Hunting, Forestry and Fishing	1 235 081	924 893	-310 188	-25.11	0.13	0.08
Mining and Quarrying	593 000	411 077	-181 923	-30.68	0.06	0.03
Secondary Sectors	1 957 997	2 741 233	783 236	40.00	0.20	0.22
Manufacturing	1 430 518	1 706 458	275 940	19.29	0.15	0.14
Electricity, Gas and Water Supply	83 256	99 804	16 548	19.88	0.01	0.01
Construction	444 223	934 971	490 748	110.47	0.05	0.08
Tertiary Sectors	5 660 133	8 195 118	2 534 985	44.79	0.59	0.67
Wholesale and Retail Trade	1 663 341	3 024 281	1 360 940	81.82	0.17	0.25
Transport, Storage and Communication	473 834	615 743	141 909	29.95	0.05	0.05
Financial Intermediation, Insurance, Real Estate and Business Services	578 555	1 295 584	717 029	123.93	0.06	0.11
Community, Social and Personal Services	2 145 035	2 192 255	47 220	2.20	0.22	0.18
Private Households	799 368	1 067 256	267 888	33.51	0.08	0.09
Other and Unspecified	111 009	28 514	-82 495	-74.31	0.01	0.00
Total	9 557 220	12 300 835	2 743 615	28.71	1.00	1.00

Source: OHS 1995, LFS 2005:2 (Statistics SA) and authors' own calculations

Notes: 1. Mining figures for 1995 adjusted using official Chamber of Mines figures, given the exclusion of hostel dwellers in the 1995 OHS as in Bhorat and Poswell (2003).

2. Individuals whose sectors were insufficiently defined or unspecified, or who are classified as working in the Exterior Organizations and Foreign Government sector were omitted.

The bulk of employment expansion between 1995 and 2005, as noted, occurred in the tertiary sectors. Together, these sectors added approximately 2.5 million jobs over the period, representing an average annual rate of growth of 4.5 percent. This growth was mainly driven by two sectors, namely, financial and business services and internal trade. Employment in financial and business services more than doubled over the period, representing an increase of over 700,000 jobs, while growth of 1,360,940 jobs in the internal trade sector occurred at a rate of 8.2 percent annually.

We turn now to considering how these changes have manifested themselves in changes in the demand for different skill levels within different sectors in the economy. Table 14 records the percentage change in employment by sector for each aggregated skills category. Within overall employment growth of about 2.9 percent per annum, low-skilled, semi-skilled and skilled employment grew between 2.6 percent and 4.3 percent per annum. The demand for skilled workers grew at a significantly higher rate than that for low skilled workers. In sectors reporting overall positive growth in employment, it is notable that this was also true across all skills classes within the given sector. However, this was not the case in the two declining primary sectors: mining witnessed a secular decline in employment across all skills; employment of low-skilled workers in agriculture declined by close to 50 percent, while semi-skilled and skilled employment increased.

Table 14: Employment Growth by Skill Level (percentage change, 1995-2005)

Main Sector	Skilled	Semi-Skilled	Low Skilled	Total
Agriculture, Forestry and Fishing	370.12	66.03	-49.41	-25.11
Mining and Quarrying	-14.35	-1.34	-21.68	-30.68
Manufacturing	62.14	17.14	13.50	19.29
Utilities	47.59	11.46	24.58	19.88
Construction	114.98	100.12	159.99	110.47
Wholesale and Retail Trade	50.81	53.85	217.80	81.82
Transport and Communication	7.25	34.35	85.20	29.95
Financial Intermediation etc	152.09	94.38	267.25	123.93
Community, Social and Personal Services	13.68	-12.46	21.20	2.2
Total	43.07	33.52	26.44	28.71

Source: OHS 1995, LFS 2005(2) (Statistics SA) & authors' own calculations.

Note: Skilled refers to ISOC codes 1-3; Semi-Skilled refers to ISOC codes 4-8; Unskilled refers to ISOC code 9.

The data suggest that post-apartheid employment trends seem to be proceeding along the following lines. Firstly, employment expansion was fairly closely correlated with positive output growth. Secondly, within this national picture, the tertiary sector dominated both employment and output gains. South Africa, at least in terms of domestic production and employment, has become a tertiary sector-based economy. Thirdly, this structural shift in the domestic economy, away from primary sector production, witnessed elements of jobless growth in mining and agriculture. Hence, these sectors, amidst modest output growth, shed significant numbers of jobs. Lastly, while it appears that growth is generally good for all skills classes, the skills-biased labour demand trajectory continues to be a prominent feature of the economy.

However the skills-biased employment growth between 1995 and 2005 has not produced a marked shift in the distribution of total employment over the skills spectrum. There has been a marginal change, with skilled workers seeing their share of employment rise from 0.20 to 0.22, while the share of semi-skilled and unskilled workers within total employment

declined slightly. This stands in contrast to previous analyses of different time periods (see Bhorat and Poswell, 2003 and, for the 1995-2002 period, Bhorat and Oosthuizen, 2005, which revealed more noticeable differences for the three categories. The slowly changing shares of the three skills categories within total employment are due to the relative shares of employment in 1995 in combination with the relative growth rates over the period. Fastest growth in employment was recorded amongst skilled occupations, which was also the smallest skills category within total employment in 1995. However, if skilled employment growth continues to exceed growth in semi-skilled and unskilled occupations by a significant margin, the change in the structure of employment will become more marked.

Table 15: Skills Breakdown of Employment by Sector, 1995 and 2005

Sector	Year	Skilled	Semi-Skilled	Unskilled	Total Empl. Growth
Agriculture, Hunting, Forestry and Fishing	1995	0.01	0.22	0.77	-25.1
	2005	0.05	0.46	0.49	
Mining and Quarrying	1995	0.07	0.75	0.19	-30.7
	2005	0.06	0.78	0.15	
Manufacturing	1995	0.12	0.69	0.19	19.3
	2005	0.16	0.66	0.18	
Utilities (Electricity, Gas and Water Supply)	1995	0.18	0.68	0.14	19.9
	2005	0.23	0.63	0.14	
Construction	1995	0.10	0.71	0.19	110.5
	2005	0.10	0.67	0.24	
Internal Trade (Wholesale and Retail Trade)	1995	0.17	0.64	0.20	81.8
	2005	0.14	0.53	0.34	
Transport, Storage and Communication	1995	0.26	0.62	0.11	29.9
	2005	0.21	0.63	0.16	
Financial Intermediation, Insurance, Real Estate and Business Services	1995	0.38	0.56	0.06	123.9
	2005	0.42	0.48	0.10	
Community, Social and Personal Services	1995	0.46	0.39	0.15	2.2
	2005	0.51	0.36	0.13	
Private Households	1995	0.00	0.02	0.97	
	2005	0.00	0.01	0.99	
Total	**1995**	**0.20**	**0.49**	**0.31**	**28.7**
	2005	**0.22**	**0.48**	**0.30**	

Source: OHS 1995, LFS 2005(2) (Statistics SA) & authors' own calculations.

Note: Skilled refers to ISOC codes 1-3; Semi-Skilled refers to ISOC codes 4-8; Unskilled refers to ISOC code 9. Unspecified occupations were omitted from the analysis.

At the sub-sectoral level, however, the experience varied. In agriculture, employment shifted significantly in favour of skilled and semi-skilled occupations and against unskilled occupations, continuing the apartheid era trend. The share of unskilled workers within total employment fell dramatically from 77 percent to 49 percent. In contrast, skilled workers saw their share of employment rise by four percentage points to 5 percent, while semi-skilled workers more than doubled their share of employment to 46 percent. Mining and quarrying experienced a relative displacement of both skilled and unskilled workers by semi-skilled workers, the latter's share of employment rising from 0.75 to 0.78 percent. Employment

change in three sectors, namely manufacturing, utilities and community, social and personal services, was characterized by marked growth in the share of skilled workers, while semi-skilled and unskilled workers saw their shares of employment either decline or stagnate. The shares of skilled workers within employment in these three sectors increased by four, five and five percentage points, respectively, over the period. Conversely, unskilled workers displaced skilled and semi-skilled workers in relative terms within the construction, internal trade and, to a lesser extent, the transport and communication sectors. Semi-skilled workers saw their share of employment within the financial intermediation sector reduced by more rapid employment expansion amongst skilled and unskilled workers. The shares of skilled and unskilled employment within this sector increased by four percentage points each, resulting in the share of semi-skilled workers falling from 0.56 percent in 1995 to 0.48 percent in 2005.

Internal trade, the third fastest growing sector in terms of employment, has seen a rise in the proportion of unskilled workers at the cost of employment of more highly skilled workers. This highlights the impact that informal sector growth has on aggregate employment data. Since informal vendors are classified as part of the internal (wholesale and retail) trade sector, informal sector growth has resulted in deterioration in the skills profile of this sector.

3.2.2 Technology, structural change and labour demand trends: the post-apartheid evidence

Using the Katz and Murphy (1992) decomposition methodology as described above, we attempt to understand labour demand patterns in the post-apartheid period. Again, the tables report these shifts as relative demand shifts, in an attempt to emphasize the magnitude of net sectoral employment growth. The contribution of the between- and within-sector shifts to total labour demand shift is shown, as well as the within-sector component's share of the total relative change.

Table 16 shows the decomposition by occupation between 1995 and 2005, in a similar manner to the 1970–1995 decomposition. There has been a rise in the relative demand for most occupational categories with the highest positive demand shift for managers, followed by craft and trade workers and clerical workers. These increases match well with the data above showing strong employment growth in sectors such as finance, trade and construction, which translated into increased demand for certain skilled and semi-skilled categories.

Operators and assemblers experienced the lowest relative increase. Coupled with the decline in the demand for elementary workers,[6] this reflects the general increase in preference for skilled and semi-skilled workers in the economy.[7]

Table 16: Industry-Based Relative Demand Shift Measured by Occupation, 1995–2005

	Between	Within	Total	Share of within in Total
Managerial	1.28	18.24	19.52	93.46
Professional	1.42	7.50	8.92	84.08
Clerical	2.43	14.66	17.09	85.78
Service	2.24	14.34	16.58	86.50
Agric. & Fishing	–0.17	–17.23	–17.40	99.00
Craft & Trade	2.39	14.68	17.08	85.99
Operators & Assemblers	0.73	5.20	5.93	87.62
Elementary	–0.13	–0.53	–0.66	80.37
Domestic Workers	1.48	10.16	11.64	87.26
Unspecified	–0.18	–18.73	–18.91	99.03

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

The 1970–1995 decomposition excluded domestic workers as they were not surveyed in 1970. For comparative purposes, we redid the decomposition excluding domestic workers from the private household sector in the 1995–2005 period.[8] The results are roughly similar, although elementary workers no longer show a decline in relative demand (see Appendix A.2 for results).

When we compare the between- and within-sector contributions to overall labour demand shifts, Table 17 shows that, for all occupation groups, within-sector factors played the dominant role in explaining relative demand shifts. Within-sector shifts explained more than 80 percent of the change in relative demand across all occupations. This share was highest for managers (93 percent) and lowest for elementary workers (80 percent), which may suggest that between-sector forces play a slightly larger role in the change in the demand for unskilled workers. Overall, however, it is clear that forces within firms and within sectors were the main reasons for the relative labour demand changes over the decade.

Though these results are not directly comparable to those from the 1970–1995 decomposition due to the difference in the occupation categories, the changes for different levels of skills can be compared.[9] In both periods within-sector forces were dominant, with the highest increase in the relative demand consistently for skilled workers (executive managers in 1970–1995 and managers in 1995–2005). There is, however, one major change. In the first period, there was a relatively large increase in the relative demand for unskilled labour, while in the second period, relative demand for unskilled elementary workers experienced a small decline. This result shows the increased preference for skilled and semi-skilled workers in the 1995–2005 period.

Table 17 shows that when the demand for labour is decomposed by race, there is a small decrease in the relative demand for African workers that is more pronounced when domestic workers in private households are excluded (see Appendix A.2 for the decomposition excluding domestic workers working in private households). The relative demand for the other race groups is positive and larger for whites and Asians than for coloureds. These results are very similar to the results from the 1970–1995 decomposition by race.

Table 17: Industry-Based Relative Demand Shift Measured by Race, 1995–2005

	Between	Within	Total	Share of Within in Total
African	-0.18	-0.10	-0.28	35.49
Coloured	0.14	0.98	1.12	87.80
Asian	0.21	5.08	5.29	95.99
White	0.94	3.66	4.60	79.57

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

As with the 1970–1995 decomposition, the most striking result for 1995–2005 is the dominance of between-sector forces in explaining the change in relative demand for African workers. Again, this is a race-specific outcome that shows that the losers in terms of labour demand were unskilled African workers working in the primary sectors.

For the other race groups the within-sector forces remain dominant, indicating that it is mainly factors such as technological change that resulted in increased job opportunities for skilled and semi-skilled coloured, Asian and African workers.

The decomposition by gender using the full sample (Table 18) shows a relative decrease, though small, for males and a relative increase for female workers. The change in the demand for males is driven primarily by between-sector factors while the female demand is driven by within-sector factors. This result is similar to that of 1970–1995 and is again a reflection of

job losses amongst unskilled (mainly African) males due to the decline in the primary sectors. In addition, the increased demand for females may be a reflection of the increased feminisation of the South African labour market. The increased labour force participation rates of females from all race groups since the mid-1990s have been well documented. It has been shown that females entered the labour force at a much faster rate than males between 1995 and 2005. In addition, more than half of the net increase in employment over that period accrued to female jobseekers (see Van der Westhuizen, et al., 2007).

Table 18: Industry-Based Relative Demand Shift Measured by Gender, 1995–2005

	Between	Within	Total	Share of Within in Total
Male	–0.17	–0.11	–0.28	39.14
Female	1.37	2.05	3.42	60.00

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

The result shown above, however, may be biased through the inclusion of (predominantly female) domestic workers in the sample. When domestic workers in private households are removed from the sample, the relative demand for males becomes slightly positive (Table 19). The relative demand for females remains larger and driven by within-sector forces, indicating that females have benefited more from technological chances within sectors as well as from the rise in the services sectors.

Table 19: Industry-Based Relative Demand Shift Measured by Gender, 1995–2005 (excluding domestic workers in private households)

	Between	Within	Total	Share of Within in Total
Male	0.07	0.05	0.12	39.24
Female	0.42	0.88	1.30	67.76

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

The final decomposition is according to education. Table 20 shows an increase in relative demand across all education categories, with the biggest increase being for those with a matriculation certificate, followed by those with secondary schooling excluding matric and those with tertiary education. The smallest increases in relative demand are for those with no education and primary school education, further reflecting the increased demand for skilled and semi-skilled labour in the economy.

Table 20: Industry-Based Relative Demand Shift Measured by Education, 1995-2005

	Between	Within	Total	Share of within in total
None	0.01	0.12	0.13	91.89
Primary	0.04	0.15	0.19	77.10
Sec. ex Matric.	0.11	0.24	0.35	69.00
Matric.	0.09	0.31	0.39	77.96
Tertiary	0.04	0.24	0.27	85.96
Other/Unspec.	0.01	0.26	0.26	98.09

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

The positive demand for workers with no or primary school education is surprising and differs from the results from 1970–1995. The South African labour force has, however, become better educated over time and in the 1995–2005 period a relatively small share of the labour force has no or only primary school education. The results may therefore be a reflection of the small number of individuals without some secondary education in the job market.

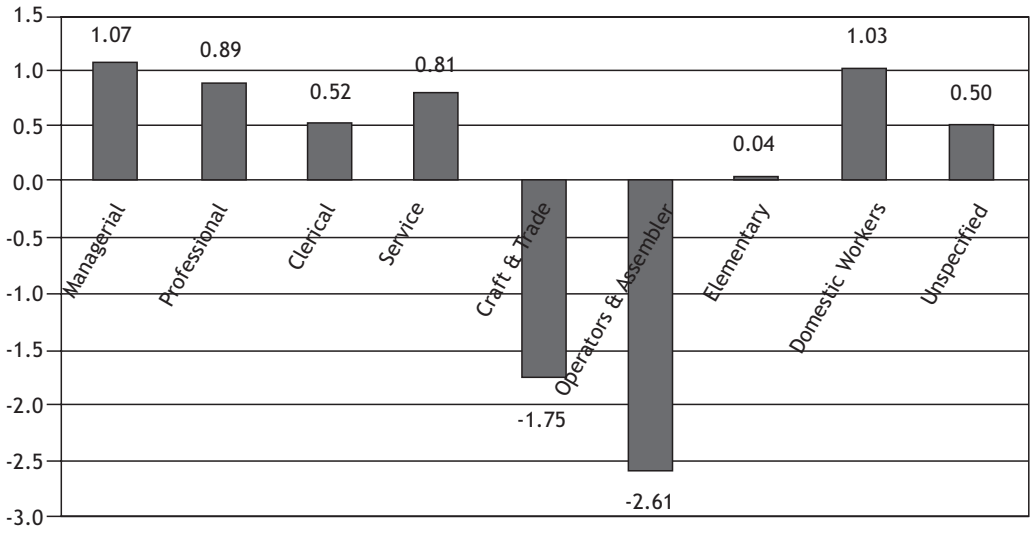
3.2.3 The impact of trade flows on labour demand

We again extend the above decomposition to determine the effect of international trade flows on the demand for labour between 1995 and 2005, and reapply the equal allocation method which assumes that the demand for production and non-production workers is affected similarly through exports and imports. In this case, the sectoral data is drawn from only two sectors, namely manufacturing and mining. Trade data on services remain problematic. The agriculture sector was omitted completely from the decompositions (both in terms of the underlying sectoral data and the employment estimates) because the creation of a new occupation group, skilled agricultural and forestry workers, after 1995 and the reclassification of those workers make comparisons of employment in that sector highly problematic. The manufacturing and mining sectors, however, continue to constitute the dominant share of export and imports in the South African economy, making the decompositions still meaningful.[10]

Due to the changes in the classification of some occupation groups, the results of the decomposition by occupation group from 1970–1995 are not directly comparable to those from 1995–2005. However, it is again possible to compare the experiences of skilled versus semi- and unskilled workers.

Graph 9 presents the results for the trade flow decomposition by occupation group between 1995 and 2005. The results look slightly different from those obtained for the 1970–1995 period.

Graph 9: Shifts in Relative Demand due to Trade by Occupation Group, 1995–2005



Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

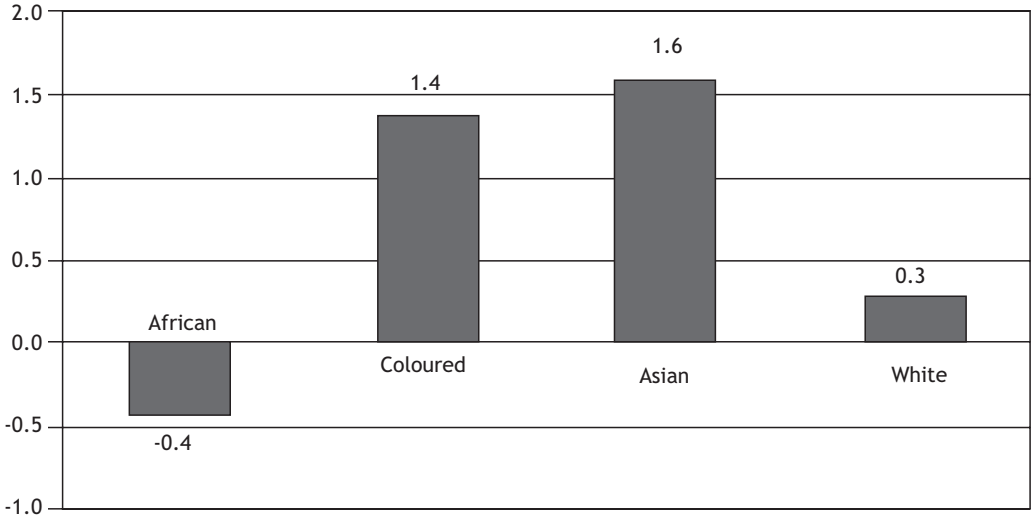
Both highly skilled workers (managers and professionals) and unskilled workers (elementary and domestic workers) enjoyed positive relative demand due to trade over the decade. Managers benefited most, with elementary workers experiencing only a very small relative increase in demand. In contrast, in the 1970–1995 period, unskilled labourers enjoyed a larger relative demand for labour than skilled workers.

The experiences for semi-skilled workers vary across categories. Clerical and services workers experienced relative increases in demand due to trade, while craft and trade workers, as well as operators and assemblers experienced relative decreased demand. These two occupation groups experienced relatively large decreases in demand, in contrast to the relatively large increase in the demand for production workers and operators in the 1970–1995 period. The results generally

suggest that skilled workers and certain semi-skilled categories benefited from international trade between 1995 and 2005, while production workers (as represented by craft and trade workers and operators and assemblers) suffered most. This may be a reflection of the decline of certain import-competing manufacturing sectors, such as clothing.

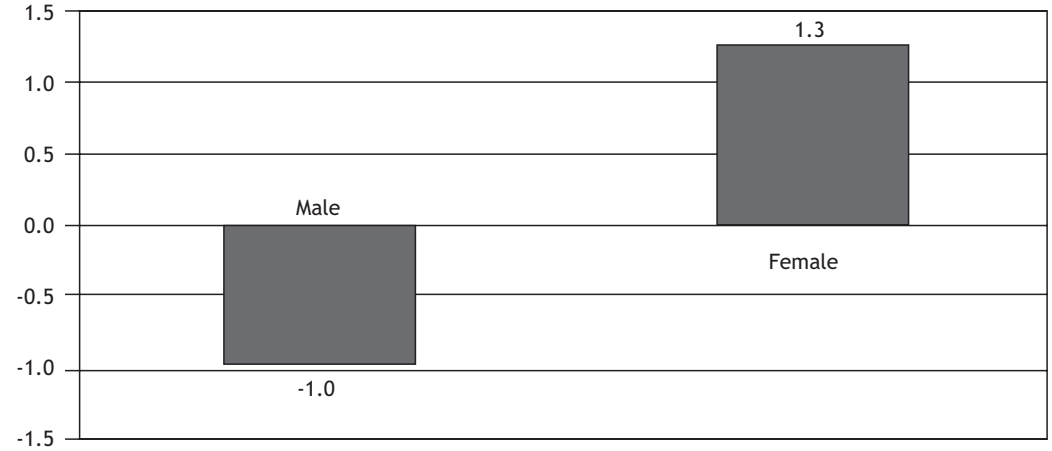
The trade flow decomposition by race shows that only Africans experienced a relative decline in the demand for their labour. This is not surprising, as Africans have relatively high representation in those two occupation groups that experienced a relative decline in demand for labour over the period.

Graph 10: Shifts in Relative Demand due to Trade by Race, 1995–2005



Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

Graph 11: Shifts in Relative Demand due to Trade by Gender, 1995–2005

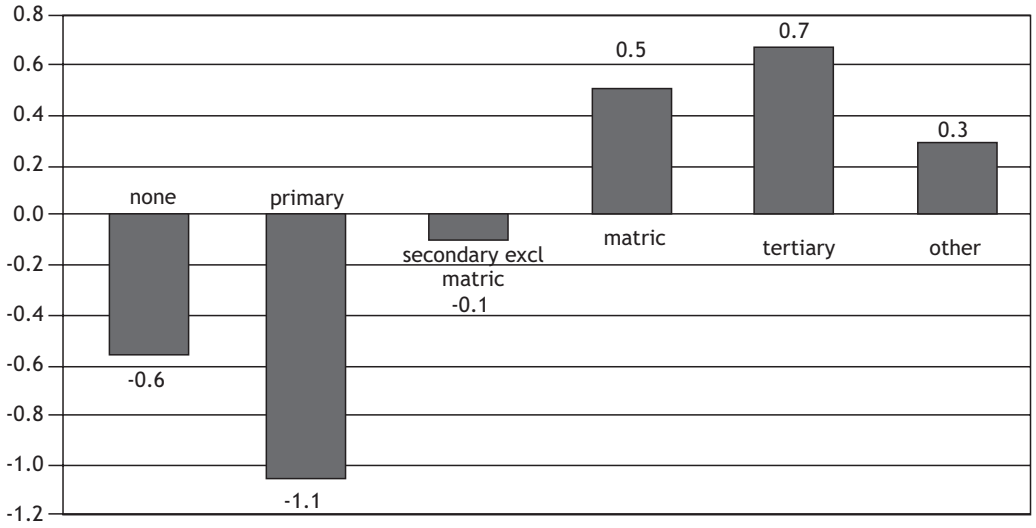


Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

Males experienced a decline in relative demand for their labour, while females experienced a relative increase in demand for labour due to trade. This may partly be a reflection of males losing jobs in the mining and manufacturing sectors. This is again in line with the evidence of the increased feminization of the labour market since 1995, as well as the fact that women benefited more from the new jobs created over the decade (see 3.2.2 above).

Graph 12 shows the impact of trade flows on the demand for labour by level of education. Similar to the results from 1970–1995, trade had a positive effect on those with a relatively higher level of education.

Graph 12: Shifts in Relative Demand due to Trade by Education, 1995-2005



Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

The increased demand for skilled labour is more pronounced in the 1995–2005 period with individuals with some secondary education (but without matric) now experiencing a decline in relative demand for labour. Tertiary educated individuals benefited most from the increase in labour demand due to trade. This is slightly different from the 1970–1995 result where the highest relative demand was for individuals with matric. The economy's demand for highly skilled labour is therefore becoming more pronounced.

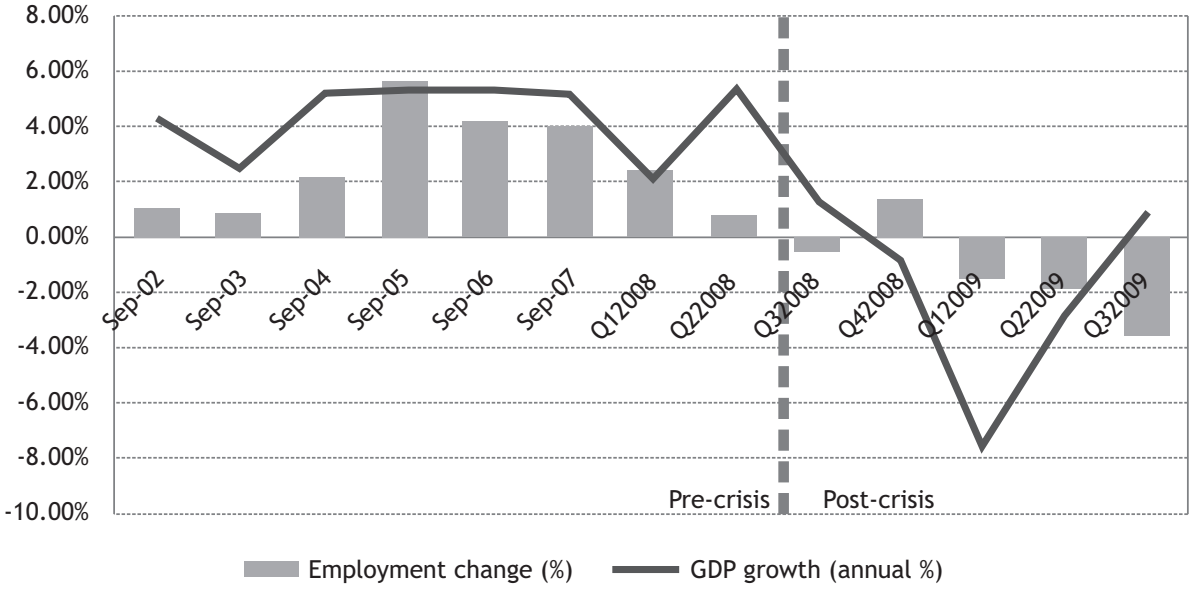
To summarize, the winners in terms of increase demand for labour as a result of international trade between 1995 and 2005 have generally been highly skilled and to a certain extent semi-skilled workers. The losers were African and male workers, who are generally over-represented in the production worker categories that experienced job losses due to trade.

4. THE IMPACT OF THE ECONOMIC CRISIS ON SOUTH AFRICA'S EMPLOYMENT PERFORMANCE

4.1 Snapshot of Macro Trends and Growth Employment Dynamics

There was some level of expectation amongst analysts and market spectators that the global financial crisis would have a minimal impact on the South African economy. This hope was anchored around the fact that while developed economies were struggling with solvency issues and the collapse in credit availability, the South African financial system did not experience any significant crisis domestically. However, it is now well-known, that what began as a financial crisis in the developed world very rapidly transformed into a real economy crisis in both developed and developing economies. South Africa, of course, was not spared the local real economy effects of a global industrialised country financial and credit crisis. As we show below, for a small open economy like South Africa's, the impact of the financial crisis was both significant and potentially devastating to the country's long-run growth trajectory, as well as its is employment performance.

Graph 13: Percentage Change of Employment and GDP: Pre- and Post-Crisis, South Africa



Source: SARB 2009 Economic and Financial data, Statistics SA LFS (September 2000-September 2007, QLFS (2008:Q2-2009Q3) & Own Calculations

Indeed, the headline result, when trying to understand the impact of the global crisis on South Africa, is that the economy experienced its first official recession in the post-apartheid era, marking the end of 55 quarters of uninterrupted positive growth. Figure 1 presents the percentage change in employment and GDP from 2001 to 2009, using both quarterly as well as the annual data. South Africa's economy grew at an average of almost five percent annually between 2001 and 2007. It should be noted that the period from quarter 3 of 2008 onward is referred to in this section- and in the rest of the paper- as the 'post-crisis' period, while the years prior to quarter three of 2008 are noted as the pre-crisis period.

In the last quarter of 2008 as alluded to above, South Africa reported its first significant decline in seasonally adjusted, annualised quarterly gross domestic product, with a growth rate of -0.73 percent, thus ending 17 years of positive economic growth for the economy. As expected, the contraction in GDP was coupled with an equally unimpressive employment performance. Hence, employment growth became negative in quarter one of 2009, with a growth rate of -1.5 percent. The decline continued for at least three consecutive periods at an increasing rate, ending with a sharp decrease of 3.64 percent in the third quarter of the same year.

4.2 Simple Growth–Employment Effects

In trying then to link the impact of this decline in growth to the consequences for the labour market, this section turns to estimating and evaluating simple output-employment elasticities for the domestic economy. The simple elasticity of employment or the ratio of percentage change in employment to the percentage change in GDP provides a good indication for the sensitivity of GDP to employment growth and hence serves as some proxy of the labour absorption rate of economic growth.[1]

The annualised figures suggest that in the pre-crisis periods, annual GDP grew on average at 4.54 percent over the period 2001 to 2007 while employment grew by 3.24 percent. GDP growth dropped to -2.54 percent over the period 2008 to 2009 while employment declined at -5.64 percent in the post-crisis period. Table 1 presents the mean employment changes and mean simple elasticity of employment from pre-to post-crisis period, according to individual characteristics.

It is evident that the simple output elasticity of total employment for the pre-crisis period is 0.73, indicating that for every one percent growth in GDP, total employment increased by 0.73 percent. In periods of a recession though, as in the post-crisis period here, the simple output elasticity of total employment is interpreted as for every one percent decrease in GDP, total employment decreased by 2.22 percent.

Table 21: Mean Percentage Change and Elasticity of Employment Pre- and Post-Crisis (General GDP)

	Pre-Crisis (2001 - 2008:2)		Post-Crisis (2008:3 - 2009:3)	
	Employment %Δ	Simple Elasticity	Employment %Δ	Simple Elasticity
By Race				
African	4.35%	0.95	-6.61%	2.6
Coloured	2.87%	0.73	-2.01%	0.79
Asian	1.77%	0.39	-6.21%	2.44
White	-0.21%	0.01	-3.73%	1.47
By Gender				
Male	2.76%	0.51	-6.81%	2.68
Female	3.91%	0.82	-4.18%	1.64
By Age				
15-24 years	3.74%	0.60	-14.29%	5.63
25-34 years	3.75%	0.79	-7.31%	2.88
35-44 years	2.01%	0.36	-0.64%	0.25
45-54 years	3.66%	0.79	-4.79%	1.89
55-65 years	3.94%	0.70	-4.55%	1.79
By Education				
None	-3.25%	-0.99	-21.35%	8.4
Incomplete GET (Gr0 - Gr8)	-1.44%	-0.32	-16.32%	6.42
Complete GET (Gr9 - Gr11)	6.23%	1.23	-3.87%	1.52
Complete FET (Gr12)	5.84%	1.38	-2.58%	1.01
Dipl/Cert, less than Gr 12	4.12%	-0.02	-30.61%	12.05
Dipl/Cert, with Gr 12	7.14%	1.47	8.60%	-3.39
Degree	4.11%	0.61	-1.10%	0.43
Total	3.24%	0.73	-5.64%	2.22

Source: SARB 2009 Economic and Financial data, Statistics SA

If one decomposes the simple elasticity of employment by race, it is evident that the impact of the crisis is heterogeneous across different race groups. The estimate for Africans changed from 0.95 in the pre-crisis period to 2.6 in the post-crisis years. While mean average growth in employment for Africans was the highest amongst all race groups at 4.35 percent, the post-crisis estimate suggests that the average decline in national output of -2.54 percent was associated with an average drop in African employment of -6.61 percent. These results show that although Africans have gained more in formal employment than other race groups in the pre-crisis periods, they were also the most vulnerable to job losses when the crisis struck.

The employment elasticity results by gender suggest an interesting reversal in trends as a result of the crisis. In the pre-crisis periods, the female elasticity was 0.82, while that of males stood at 0.51, suggesting that female employment was more sensitive to changes in GDP. However, in the post-crisis period, the opposite occurred with males being more sensitive to changes in output. In particular, the data suggests that in the post-crisis period, with GDP declining, male employment declined at a faster rate than female employment, showing clear signs of the vulnerability of male relative to female employment in times of crisis.

In terms of age cohorts, simple elasticity estimates show that young individuals between the age of 15 and 24 have experienced the worst effect on their employment levels as a result of the crisis, given that for every one percentage decrease in GDP, employment for young adults decreased by 5.63 percent. Whilst not strictly monotonic, data shows that elasticity in older cohorts is significantly lower than those derived for younger people. In particular the cohort most buffered from job losses during the recession were individuals aged 35-44, where a one percent decline in GDP only resulted in a 0.25 percent drop in their employment.

The elasticity of employment by education clearly reveals the importance of education as a determinant of employment as well as job security, in particular, when an economy is in the midst of a recession. Those individuals who have experienced job losses during the post crisis period have disproportionally been those with no education, incomplete GET, complete GET and incompletion of grade 12 without a senior certificate. These groups with incomplete education saw a post-crisis decline in employment on average of 22.76 percent. Ultimately, the data suggests that individuals who have not completed grade 12 are at most risk of losing their employment in the crisis environment. Indeed, as many as one fourth to one third of individuals in the category lost their jobs in the post crisis period thus far. The results for better educated individuals suggest that the recession has not had as dramatic and deleterious an impact on their employment levels, and the elasticity estimates confirm this. Ultimately the extremely low estimates for highly educated degreed workers in particular, suggest a demand for their labour which is fairly invariant to changes in output.

The impact of the recession on output has been heterogeneous across different sectors of the South African economy. This begs the question of the nature of these sectoral shifts and thus, its subsequent impact on the demand of labour. Therefore, we turn to an analysis of the total value added shifts in output that have occurred by sectors, contrasting it with the percentage change in and the relevant ratio or elasticity of employment by main sector

As illustrated in Table 2, there is a clear difference between employment and total value added movements across different sectors, reinforcing and re-emphasising these idiosyncratic variations at the sectoral level of output and employment shifts. In particular, the manufacturing industry witnessed the most severe decline in output relative to all industries in the post-crisis period at -12.42 percent. Similarly, the primary sector also shrank at an average of -6.13 percent and lost 129 000 jobs in total since the recession struck. However, the construction industry experienced a noticeable counter-cyclical trend, expanding at 7.9 percent in total value added, carried, of course, by the public infrastructure expansion programme.

Table 22: Simple Elasticity of Employment for Pre- and Post-Crisis by Major Divisions (SIC 3-digit codes)

Industry	Pre-Crisis			Post-Crisis		
	Mean Annual %Δ					
	Employment	Total Value Added	Mean of Simple Elasticities	Employment	Total Value Added	Simple Elasticity
Agriculture, Forestry & Fishing	-2.65%	3.24%	-0.91	-14.86%	-5.54%	2.68
Mining and Quarrying	-6.78%	0.05%	-3.03	-4.78%	-6.72%	0.71
Manufacturing	2.58%	4.15%	0.83	-10.12%	-12.42%	0.81
Electricity, Gas and Water Supply	1.41%	3.93%	0.75	-18.18%	-0.65%	27.82
Construction	9.20%	9.92%	0.82	-4.08%	7.90%	-0.52
Wholesale and Retail Trade	4.16%	4.13%	-2.09	-10.20%	-2.47%	4.13
Transport, Storage & Comm.	5.22%	5.81%	1	-4.16%	-0.08%	51.31
Financial & Related Services	6.83%	7.01%	1	3.06%	-0.15%	-20.48
Community and Private Services	3.67%	3.40%	1.01	-2.17%	3.65%	-0.59

Source: SARB 2009 Economic and Financial data, Statistics SA
Notes: For the pre-crisis period, the mean of the simple elasticities is shown (i.e. the mean for the annual elasticities for the 2001 to 2008:3 period). For the post-crisis period, the simple elasticity is only calculated for one year, namely the 2008:3 to 2009:3 period and therefore corresponds to the ratio of change in employment to change in output.

The data also shows that Agriculture experienced a severe contraction in output as total value-added declined by close to six percent after the second quarter of 2008. Employment in agriculture fell by close to 15 percent. The large job losses in wholesale and retail trade, where employment fell by ten percent and output by three percent, reflect on the collapse in domestic demand as the crisis struck. As we will discuss later, this sectoral result also indirectly reflects on the impact of the crisis on informal sector employment. Finally, it is interesting to note that while this credit crisis eroded employment and value-added in financial institutions around the world, South Africa (and possibly many other emerging economics) witnessed almost no change in value-added, and indeed managed to marginally increase their employment in this sector.

The crude summary of the crisis impact on a macro level, within the context of output and employment, is as follows: Firstly, similar to the global economy in general, the South African economy possessed no immunity when faced with the real economy effects of the financial crisis, despite limited exposure to toxic assets which initiated the crisis. Secondly, the crisis had a differentiated impact on employment by supply characteristics. More specifically, individuals who are young, hence most likely inexperienced, African and male with incomplete secondary level schooling were at most risk of losing their jobs during the crisis. It is the more detailed analysis of these labour supply effects that the next section turns to.

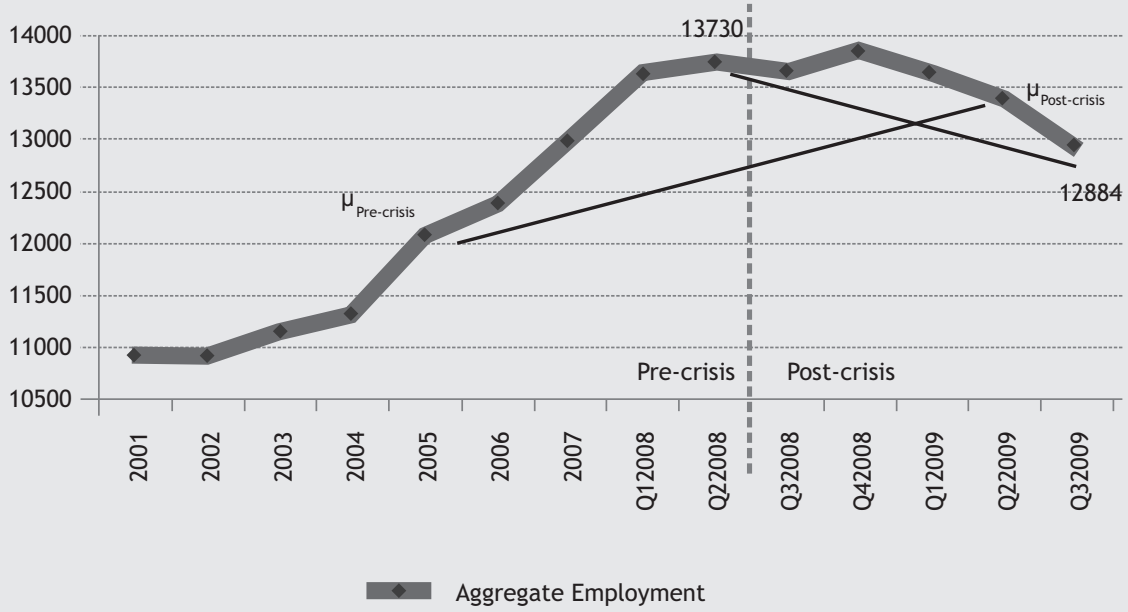
Box 1: "The Tally of the Recession, the Number of Actual Jobs Lost"

The evidence presented in the section above shows that total employment declined significantly over the post-crisis period, numbering almost 770 000 employees. To understand, however, in a more detailed and nuanced manner the quantum of jobs lost as a consequence of the recession, we consider alternative estimates which may collectively assess how the recession has impacted on total employment.

The data shows monotonically rising employment from 2001 to 2008:2, with total employment peaking at 13.7 million individuals in this second quarter of 2008. By the third quarter of 2009, a mere 15 months later, total employment declined by 845 000 workers. Interestingly, these levels of employment were last observed in September 2006. It is important to note, however, that not all the gains of employment of the last decade were completely eradicated during the post-crisis period since the mean level of employment before the onset of the crisis was 12.13 million workers compared to the 12.88 million in Q3 2009 – the quarter representing the lowest point of total employment since the recession.

Another manner in which to evaluate the impact of the crisis would be to compare the average employment in the pre-crisis period relative to the average employment in the post-crisis period. The results here indicate that the mean employment for the post-crisis period was slightly higher than that of the pre-crisis period: Mean employment during the pre-crisis stood at 12.13 million compared with a mean in the post-crisis period of 13.48 million. This comparison shows that even though growth in employment weakened significantly during the post-crisis period, at the mean, employment levels remained higher than the pre-crisis period.

Graph 14: Changes in Total Employment Pre- and Post-Crisis, South Africa, 2001- Q3 2009



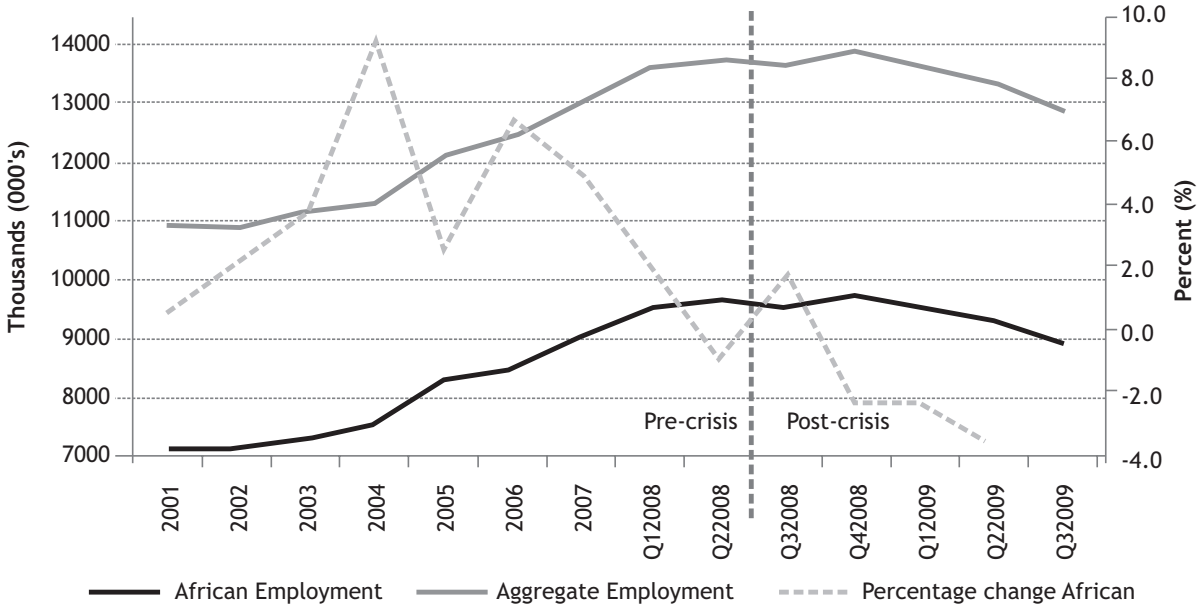
Source: Labour Force Survey (September 2000 - September 2007), Quarterly Labour Force Survey (Q3 2008, Q3 2009), Own Calculation

Ultimately, though, the key point here is that assessing the number of jobs lost as a consequence of the crisis, really depends on the question. If we compare the high-point pre-crisis period to the low-point post-crisis for example, 845000 jobs were lost. In turn, though, a longer-term measure of comparing average employment in the seven year pre-crisis period (2001-2005) to the average following the crisis yields a rise in employment.

4.3 Employment Shifts by Individual Supply Characteristics

The figure below provides a clearer picture of the changes in total employment, since it includes both the actual estimates of the change in total employment over the period, for the aggregate and the African population respectively, as well as the percentage change in African employment. Africans account for approximately 70 percent of the employed, and as a result, it is expected that the changes in total employment for this group mirrors that of the aggregate.

Graph 15: Changes in Total Employment, Aggregate and the African Population: South Africa, 2000 – 2009



Source: Labour Force Survey (September 2000 - September 2007), Quarterly Labour Force Survey (Q3 2008, Q3 2009) & Own Calculation

Additionally, African workers experienced the most significant decline in their employment between October 2008 and October 2009. 638 000 of the 774 000 individuals who lost their jobs, or 82.4 percent, were African, with job loss occurring at a rate of 6.7 percent over the period of 2008:3 - 2009:3. Indeed, this suggests that Africans were disproportionately affected by the recession, relative to their share in total employment which stands at approximately 70 percent. The loss of employment for the remaining race groups was not as dramatic. For example, the Coloured population were least affected by the recession, experiencing a decline of 2.1 percent, or 32 000 individuals in total employment while the White population saw a decline of 6.1 percent, or 75 000 individuals in total employment over the 2008:3 to 2009:3 period.

The results for the mean and median percentage changes for the national employment trends for the pre- and post- crisis are disaggregated by race and are presented below. A statistically significant change here means that the rate of change (for both mean and median percentage changes) in the post-crisis period is statistically significantly different from the rate of change in the pre-crisis period. The estimates displayed in Table 3 reiterate the findings of Figure 3, and clearly demonstrate the sharp deterioration of total employment for the aggregate and African population with the onset of the recession. Both the differences in the mean and median percentage changes in total employment between the pre- and post-crisis period for Africans are statistically significant at the one percent level of significance.

Table 23: Mean and Median Percentage Change of Employment by Race: Pre- and Post-Crisis, South Africa

	Mean		Median	
	Pre-Crisis (2001 –2008:2)	Post-Crisis (2008:3 – 2009:3)	Pre-Crisis (2001 –2008:2)	Post-Crisis (2008:3 – 2009:3)
Race				
African	3.92	-1.53*	2.45	-2.24*
Coloured	2.50	-0.35	1.32	0.20
Asian	1.10	-0.54	0.65	-1.50
White	-0.17	-0.76	0.55	-0.05
Gender				
Male	2.54	-1.58*	2.30	-2.20*
Female	3.42	-0.84**	2.56	-0.62**
Total	2.90	-1.25*	2.04	-1.50*

Source: Statistics SA LFS (September 2000 - September 2007, QLFS (2008:Q2 - 2009Q3) & Own Calculations
Notes:
1. An asterisk (*) denotes that the change is statistically significant at the 1% level, two asterisks (**) denotes that the change is statistically significant at the 5 percent level, and three asterisks (***) denotes that the change is statistically significant at the 10 percent level.
2. The percentage changes for the pre-crisis are annualised averages while those for the post-crisis period are quarter-on-quarter changes.

Prior to the onset of the crisis, African employment was rising at a rate greater than the mean percentage change of all other race groups. However, during the recession, the mean and median percentage change for total employment for both the aggregate and the African workforce plummeted. The average percentage change during the post-crisis period for Africans was -1.53 percent compared to 3.92 percent in the pre-crisis period. The median percentage change in turn was 2.45 percent before the recession, and -2.24 percent during the post-crisis period. The data suggests that whilst it was predominantly Africans who benefited from the rise in employment in the pre-crisis period, it was African workers who were disproportionately affected by the collapse in employment engendered by the recession.

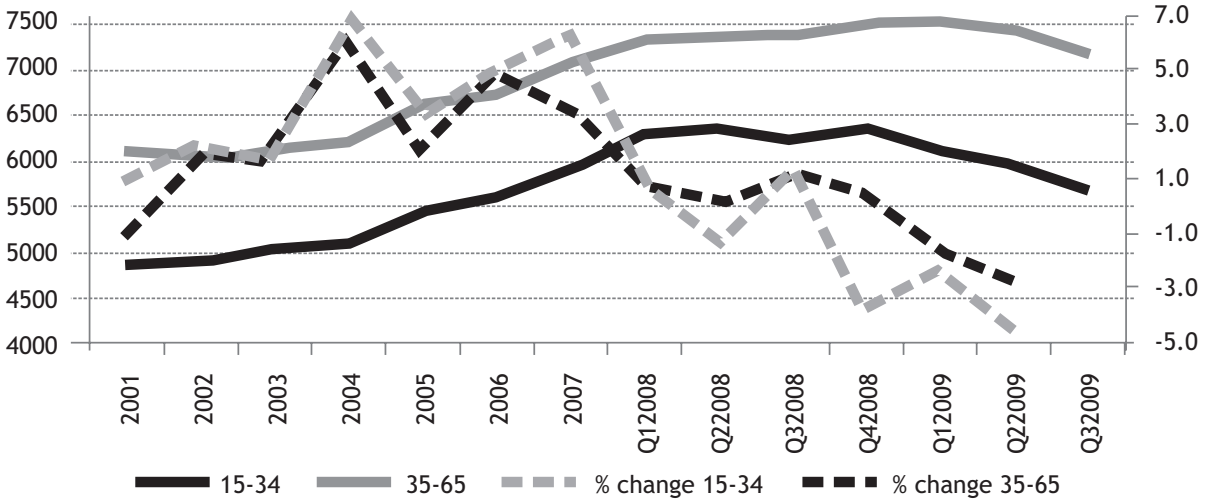
The shifts in crisis-related male and female employment reflect a similar trend to that of aggregate employment, where both genders experienced a positive average shift in employment during the pre-crisis period, which consequently declined sharply with the onset of the recession. The mean change in employment for males decreased from 2.54 percent to -1.58 percent, or by 4.12 percentage points, between the pre- and post-crisis period. Females in contrast witnessed a decline, from 3.42 percent to -0.84 percent between the two periods, representing a deterioration of 4.26 percentage points. Even though males experienced an absolute higher mean percentage change during the post-crisis period, females experienced a larger difference in their mean percentage change between the two periods and were thus more adversely affected by the crisis when the difference in mean percentage changes are considered.

In terms of provinces, only the changes in the mean employment shifts for the Western Cape, KwaZulu-Natal and Gauteng were statistically significant. The province worst affected by the recession was Gauteng, which experienced a decrease in the mean change in employment from 4.74 percent to -1.72 percent between the pre- and post-crisis period. The Western Cape only experienced an employment decline of -0.21 percent after the onset of the recession. Employment in the KwaZulu-Natal on the other hand also experienced a rather dramatic decline, from an average change of 3.56 percent before the recession to an average change of -1.21 percent during the post-recession period.

Figure 4 considers total employment for workers between the ages of 15 and 34 years and non-youth workers (those aged between 35

and 65 years). Total employment for both age groups reveals a similar trend to that of the aggregate level noted above – namely that of an increase in youth and non-youth employment between 2001 and June 2008. It was only with the onset of the global recession that both age cohorts experienced a significant decline in total employment.

Graph 16: Changes in Total Employment, 15 - 34 years and 35 - 65 years: South Africa, 2000 – 2009



Source: Labour Force Survey (September 2001 - September 2007), Quarterly Labour Force Survey (Q3 2008, Q3 2009) & Own Calculation

Interestingly, however, the burden of the recession was borne by the youth of South Africa, with young workers absorbing 73.9 percent of the loss of employment between quarter three of 2008 and 2009. Total youth employment declined by 9.1 percent or 570 000 individuals, whereas the non-youth experienced a decline of 2.7 percent, or 201 000 individuals. Moreover, a disproportionate share of the job losses was experienced by the youth, since they only accounted on average for 44.2 percent of total employment in this period.

The evidence shown in Table 4 reinforces the findings presented in Figure 4 that it has indeed been young people in the labour market (those aged between 15 and 34) who have borne the brunt of the impact from the recession.

Table 24: Mean and Median Percentage Change of Employment by Age: Pre- and Post-Crisis, South Africa

Age	Mean		Median	
	Pre-Crisis (2001 -2008:2)	Post-Crisis (2008:3 - 2009:3)	Pre-Crisis (2001 -2008:2)	Post-Crisis (2008:3 - 2009:3)
15-24 years	4.06	-4.12**	2.47	-4.14**
25-34 years	3.26	-1.45*	3.57	-1.71*
35-44 years	1.77	-0.13	0.44	-0.14
45-54 years	3.11	-0.84*	3.30	0.46*
55-65 years	3.45	-0.90**	1.24	0.00**
Total	2.90	-1.25*	2.05	-1.50*

Source: Statistics SA LFS (September 2000 - September 2007, QLFS (2008:Q2 - 2009Q3) & Own Calculations
Notes: 1. An asterisk (*) denotes that the change is statistically significant at the 99 percent level, two asterisks (**) denotes that the change is statistically significant at the 95 percent level, and three asterisks (***) denotes that the change is statistically significant at the 90 percent level.
2. The percentage changes for the pre-crisis are annualised averages while those for the post-crisis period are quarter-on-quarter changes.

When comparing the mean and median changes across the age cohorts, we find that the youth experienced the most dramatic deterioration in their mean employment changes. During the pre-crisis period those aged 15 - 24, and those aged 25 - 34 witnessed an average percentage change of 4.06 percent and 3.26 percent respectively, which is significantly higher than that of the older cohorts, except for those between the ages of 55 and 65 (an age group which accounts for a relatively small share of the employed). However, they also experienced the weakest employment performance during the post-crisis period at -4.12 percent and -1.45 percent respectively. These estimates are in direct contrast to the older age cohorts: those aged 45 - 54 years observed an overall decrease of 3.6 percentage points, or from 3.11 percent to -0.84 percent over the same period. Those aged between 55 and 65 saw their mean employment changes decline by four percentage points, or from 3.45 percent to -0.90 percent between the two periods. Those between the ages of 35 and 44 did not see any statistically significant difference in mean employment changes between the two periods.

Analysing the impact of the recession on the various education cohorts does not yield any surprising results. We expect that the recession will adversely affect those with lower levels of education disproportionately to those who achieve higher levels of education. Unfortunately very few comparisons across the educational cohorts after the recession can be legitimately analysed since the only statistically significant differences between the pre- and post-crisis periods were for those with incomplete FET (grades 9 to 11) and those with grade 12 schooling.

Table 25: Mean and Median Percentage Change of Employment by Education: Pre- and Post-Crisis, South Africa

Education	Mean		Median	
	Pre-Crisis (2001 –2008:2)	Post-Crisis (2008:3 – 2009:3)	Pre-Crisis (2001 –2008:2)	Post-Crisis (2008:3 – 2009:3)
None	-2.70	-4.82	-2.90	-4.59
Incomplete GET (Gr 0 – G r8)	-1.06	-3.74	-1.91	-1.75
Incomplete FET (Gr 9 – Gr 11)	5.57	-0.90**	2.84	-0.88**
Complete FET (Gr 12)	5.12	-0.56*	5.58	-0.39*
Diploma/Certificate, less than Gr 12	2.93	-5.39	-6.13	-5.56
Diploma/Certificate, with Gr 12	6.16	1.84	7.10	0.70
Degree	3.50	0.19	0.89	-0.22
Total	2.90	-1.25*	2.04	-1.50*

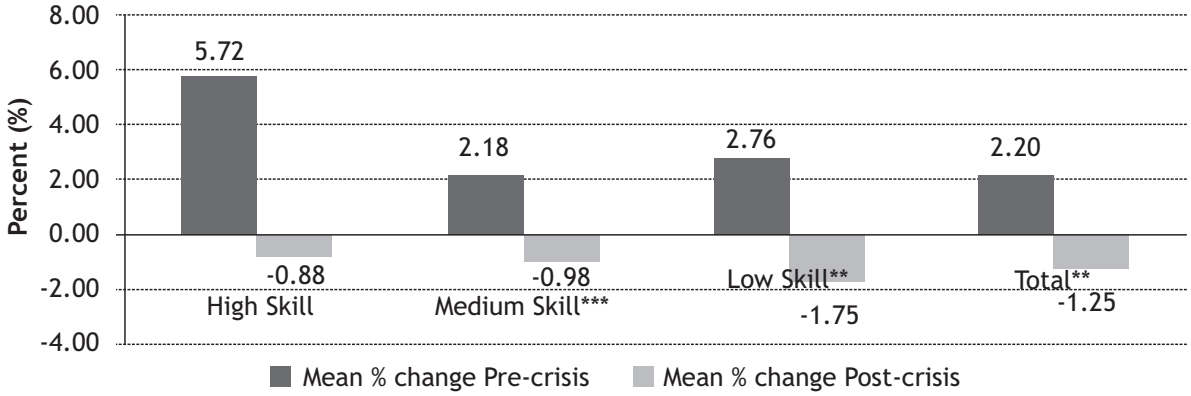
Source: Statistics SA LFS (September 2000 - September 2007, QLFS (2008:Q2 - 2009Q3) & Own Calculations
Notes: 1. An asterisk (*) denotes that the change is statistically significant at the 99 percent level, two asterisks (**) denotes that the change is statistically significant at the 95 percent level, and three asterisks (***) denotes that the change is statistically significant at the 90 percent level.
2. The percentage changes for the pre-crisis are annualised averages while those for the post-crisis period are quarter-on-quarter changes.

The evidence for those with incomplete FET (grades 9 to 11) and Matric (grade 12) suggests that they experienced a contraction in employment during the post-crisis period. In addition to the post-crisis results being negligible for both cohorts (-0.90 percent for those with incomplete FET and -0.56 percent for those with Matric), they were also significantly lower than the aggregate decline in employment.

It is evident that in the pre-crisis period, total employment increased across all skill levels from 2002 to October 2008. Although

all skill levels experienced a decline in their total employment, it was those who were low and medium-skilled who experienced the greatest loss in employ-ment. Low-skilled workers experienced an immediate decline in employment (3.3 percent), while medium-skilled workers experienced a drop of almost one percent in employment in the fourth quarter of 2008. Our data suggests that of the total jobs lost out of 773 000 workers between quarter three of 2008 and 2009, almost 60 percent of the individuals were medium-skilled workers. Low-skilled labourers accounted for 28.7 percent of the decline in employment, whereas high-skilled workers constituted a 10.9 percent decrease. The evidence therefore suggests that the majority of job losses arising from the crisis occurred amongst the semi-skilled workers in the economy.

Graph 17: Mean and Median Percentage Change of Employment by Skill Level, South Africa, Q3 2008 - Q3 2009



Source: Statistics SA LFS (September 2000 - September 2007, QLFS (2008:Q2 - 2009Q3) & Own Calculations
Notes: 1. An asterisk (*) denotes that the change is statistically significant at the 99 percent level, two asterisks (**) denotes that the change is statistically significant at the 95 percent level, and three asterisks (***) denotes that the change is statistically significant at the 90 percent level.
2. The percentage changes for the pre-crisis are annualised averages while those for the post-crisis period are quarter-to-quarter changes.
3. Skill levels are categorised by the type of occupation in which individuals are employed. High skills include those who are professionals and managers, medium skills consist of those who are technicians, clerks, sales and service workers and craft and trade worker. Low skills are composed of elementary and domestic workers.

It is important to note, however, that despite semi-skilled job losses being predominant in the aftermath of the crisis, the largest percentage decline in employment changes occurred amongst unskilled workers. Hence, this skill cohort saw their mean percentage change of employment decrease from 2.76 percent to -1.75 percent during the pre- and post-crisis period. Whilst of course, the same trend was evident for the medium-skilled workers, their decline was less severe.

Therefore, our results thus far suggest that the impact of the economic crisis on the South African labour market has been disproportionately experienced by young, African workers (either male or female) who had incomplete schooling and are semi-skilled.

4.4 Sector and Occupation Shifts as Result of the Recession

With the exception of manufacturing, transport, storage and communication, financial and business services and CSP, very few of the individual economic sectors recorded a statistically significant decline in their mean percentage change of employment between the pre- and post-crisis period. Prior to the downturn of the economy, employment growth was unevenly distributed among the various sectors. The three key employment growth sectors during the pre-crisis period were construction (8.46 percent), financial and business services (6.43 percent), and transport storage and communication (4.62 percent).

Table 26: Mean, Median Percentage Change of Employment by Industry: Pre- and Post-Crisis, South Africa

Industry	Mean		Median	
	Pre-Crisis (2001 -2008:2)	Post-Crisis (2008:3 - 2009:3)	Pre-Crisis (2001 -2008:2)	Post-Crisis (2008:3 - 2009:3)
Agriculture, Forestry & Fishing	-1.96	-3.71	-1.13	-3.40
Mining and Quarrying	-4.89	-2.75	-1.25	-4.20
Manufacturing	2.64	-2.57***	0.98	-2.59***
Electricity, Gas and Water Supply	0.99	-2.94	1.08	-7.00
Construction	8.46	-1.34**	5.46	-3.16**
Wholesale and Retail Trade	3.36	-1.66	0.89	-1.95
Transport, Storage & Communication	4.62	-0.96**	4.95	-0.65**
Financial & Other Related Services	6.43	-0.02**	4.73	-0.87**
Community, Social and Personal Services	3.63	-0.05**	2.61	-0.38**
Total	2.90	-1.25*	2.06	-1.50*

Source: Statistics SA LFS (September 2000 - September 2007, QLFS (2008:Q2 - 2009Q3) & Own Calculations
Notes: 1. An asterisk (*) denotes that the change is statistically significant at the 99 percent level, two asterisks (**) denotes that the change is statistically significant at the 95 percent level, and three asterisks (***) denotes that the change is statistically significant at the 90 percent level.
2. The percentage changes for the pre-crisis are annualised averages while those for the post-crisis period are quarter-on-quarter changes.

It is clear that the manufacturing sector was deeply affected by the recession, as 24.7 percent of total employment lost over the period can be attributed to the manufacturing sector. Indeed this is a result corroborated by the value added data provided earlier. Furthermore, prior to the global economic downturn, the manufacturing sector was performing relatively well in terms of employment growth with a mean annualised increase of 2.64 percent. With the onset of the recession however, it was this sector which experienced the most significant deterioration in employment during the post-crisis period, represented by an average decline of -2.57 percent. This loss in employment can be ascribed most visibly, but not predominantly, to the decline in global demand for motor vehicles, as firms across the entire motor industry value chain were deleteriously affected by this collapse in demand.

The change in employment for the remaining industries was less dramatic than that for the manufacturing sector. While the difference between the pre- and post-crisis means employment shifts were significant for most sectors, these areas did not experience sizeable negative mean changes in employment during the post-crisis period (when compared to manufacturing).

The majority of changes in occupation for both the formal and informal sectors were statistically insignificant at the 95 percent level of significance. Only changes for the craft and trade workers were statistically significant. The results for this occupational group show that total employment declined by 193 000 workers, or a decline of 14.22 percent in the formal sector and 106 000 workers, or a decline of 20.75 percent in the informal sector between

Q3 2008 and Q3 2009. These results once more suggest that the informal sector experienced a disproportional decline in employment levels as a result of the recession.

Hence, the tentative occupational evidence suggests that the majority of job losses occurred amongst craft and trade workers in both formal and informal sectors of the economy. Perhaps to caricature this occupational result, it may suggest that the typical worker who lost their job in the aftermath of the crisis in South Africa was either a semi-skilled industrial worker or a semi-skilled tradesman involved in informal retailing.

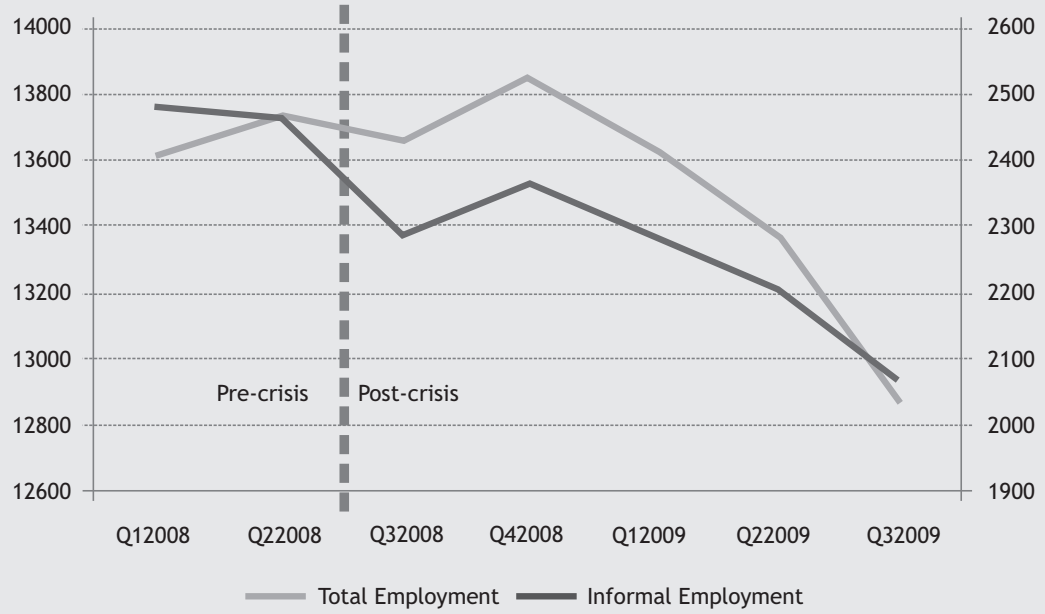
Box 2: The Impact of the Crisis on the Informal Sector

A key part of the debate around the impact of the recession is the effect of the economic downturn on the informal sector. Our estimates suggest that it is the informal sector which has been at the forefront of the job losses. It is not surprising that the downturn in the economy has affected those employed in the informal economy: The informal economy of course provides less security, less stability, and lower wages than the formal sector. This heightened vulnerability renders the sector and its employees particularly susceptible to economic shocks.

Due to data constraints, only estimates for the QLFS are considered, since the definition of the informal sector has changed considerably between the two datasets. Moreover, a comparable variable cannot be constructed since there are certain key variables in the QLFS that are notably absent in the LFS. We are therefore unable to differentiate between the formal and informal sector before quarter one of 2008, as this was the inception date of the QLFS.

A graphical depiction of the changes in informal sector employment and aggregate employment shows that there has been a dramatic decline in employment following the crisis. The evidence suggests that the informal sector experienced a steeper decline in employment than the formal sector. While aggregate employment declined by 5.64 percent, the informal sector saw a nearly ten percent decline in employment. Furthermore, the absolute loss in employment for the informal sector stood at 217 000 workers, or at a reduction from 2.29 million to 2.07 million workers between Q3:2008 to Q3:2009. This decline in informal sector workers represents 28.15% of the total fall in employment.

Graph 18: Changes in total employment pre- and post Crisis, South Africa, 2001- Q3 2009



Source: Statistics SA LFS (September 2000 - September 2007, QLFS(2008:Q2 - 2009Q3) & Own Calculations

Box 2: *Continued*

The informal sector not only experienced a significant decline in employment but also a disproportionate share of the loss in total employment during the recession. While the result is not entirely unexpected, it is troubling as the informal sector accounts for only about 20 percent of total employment, yet accounted for almost 30 percent of the loss in total employment.

4.5 Conclusion

Ultimately then, on the basis of our descriptive evidence above it is clear that the effect of the weakened economy resulted, in the first instance, in almost 800 000 workers losing their jobs over the period of October 2008 to October 2009. While there was strong, positive employment growth during the pre-crisis period, there was an unprecedented collapse in employment with the onset of the recession. The detailed individual characteristic analysis shows that it was young, African, male or female workers with incomplete schooling who bore the brunt of the recession. In terms of sectoral results, large job losses were experienced in manufacturing (and to some extent construction), with semi-skilled workers in particular negatively affected.

The evidence also showed that informal sector workers represented 28.15 percent of the total fall in employment during the post-crisis period, and that employment shifts for the informal sector were significantly higher when compared with employment changes in total employment. Informal sector employment declined by almost ten percent, while total employment declined by 5.64 percent between the third quarter of 2008 and the third quarter of 2009. The results in sum then, suggest that it is in general, those participants deemed most dispensable by employers who have been most deleteriously affected by this downturn in the domestic economy, as well as those in less stable, less secure informal sector jobs.

5. CONCLUSION AND RECOMMENDATIONS

The historical data indicate increasing capital intensity of production accompanied by structural changes in the South African economy, with the tertiary sector accounting for a growing share of GDP. A decomposition exercise showed that within-sector forces were more dominant in explaining changing labour patterns than between-sector forces in the period 1970 to 1995. This is true for all skill levels, with the dominance of the within-sector forces slightly more pronounced for the highly skilled occupation categories.

The post-apartheid labour market has seen a continuation of growth of the tertiary sector accompanied by growth in the sector's aggregate employment. In addition, while the tertiary sector is growing and absorbing greater employment, its ratio of skilled workers relative to unskilled workers, continues to increase. This marks the intensification of a skills-biased labour demand trajectory, already established in the pre-1994 period. The growing importance of the tertiary sector in the economy is likely to impact negatively upon the demand for unskilled workers.

For the 1995–2005 period, within-sector factors continued to be dominant in explaining relative labour demand changes and were particularly strong for skilled and semi-skilled workers. Unskilled African workers were the losers in this period, with between-sector forces explaining the bulk of the decline in the relative demand for African workers – a result which strongly reflected the decline in unskilled employment in the primary sectors.

Changes in relative demand for labour due to trade flows in the period 1970 to 1995 had a positive impact on all skill levels, with the exception of farming, fishing and forestry workers. African and coloured workers and male workers were the biggest losers when considering shifts in the relative demand for labour by race and gender, while the decomposition by education indicates an increasing preference for skilled workers. The winners in terms of increase demand for labour as a result of international trade in decade since 1995 have been highly skilled and certain semi-skilled workers. The losers continued to be African and male workers, who are generally over-represented in the production worker categories that experienced job losses due to trade over the period. The impact on unskilled elementary workers was positive but almost negligible in terms of magnitude.

Employment changes in South Africa over the last decade, since the transition from apartheid, have been a function of a variety of factors, including structural changes in the composition of output, technology and innovation, relative factor prices and fiscal expenditure, as well as trade and tariff liberalization. Overall, the impact of international trade on employment has been relatively benign, with only (semi-skilled) production workers experiencing actual job losses between 1995 and 2005, according to the decompositions presented in this paper. This confirms the results from other research (Dunne and Edwards, 2006; Edwards, 2003). Indeed, it is not evident whether the impact of trade is statistically significant. In terms of the South African labour market, however, given these various influencing factors, the losers have been unskilled labourers, specifically unskilled African workers. The winners, invariably, have been better-educated, skilled workers who in turn have been disproportionately white and Asian.

In the labour market environment that we have outlined above, the future job-generating capacity of the South African economy will be skewed toward those with higher skill levels. More interventionist policies will therefore be required to increase the supply of appropriate skills and to ameliorate the social consequences of this labour demand trajectory. Fostering a higher-skilled labour force lies at the heart of a successful growth and development strategy for South Africa.

Although with this backdrop there would appear to be a number of interventions that can be captured under the A4T umbrella, these should also certainly be manifest as a coherent, broader country-level strategy designed to deal with some of the deleterious consequences of international trade. We have noted these recommendations under the following categories:

- macroeconomic policy;
- targeted assistance to affected workers;
- wage subsidies (tradeables, new sectors).

These interventions are designed to cover not only issues of buffering the losers from trade but also, as will be shown, to serve as an attempt at possibly unlocking growth amongst individuals and firms not traditionally seen as winners from increased trade liberalization.

5.1 Macroeconomic Policy

The main objective of monetary policy in the early post-apartheid years remained the maintenance of monetary and fiscal stability. This has been manifest in the protection of the value of the South African rand, the reduction of the inflation rate and steady reduction in the deficit-to-GDP ratio. In late 1999, the government introduced a formal inflation target band, with the aim of reinforcing economic confidence and lowering inflationary expectations and thus inflation in the future. By 2006, the state reported a balanced budget – almost unheard of for an economy in the developing world. Within a current environment of economic growth rates hovering around 4.5 percent per annum, attention has shifted to the need for the current stabilization policies. In particular, there seems to be some latitude for considering alternative stabilization policies, given the significant disequilibria in the labour market coupled with the strong skills bias in the country's growth and trade trajectory.

Two issues dominate this discussion. The first revolves around monetary policy and the need for the South African Reserve Bank (SARB) to both modify the inflation band and allow issues around competitiveness, trade and employment to influence its decision-making (see Rodrik, 2006). Hence, this is a key recommendation revolving around the need to review the current goal of monetary policy. Currently, the argument is that monetary policy is too heavily biased toward fighting inflation with little consideration for the potential impact of interest rate adjustments on the real economy. In many senses, this is a need to ensure that monetary policy, while not oblivious to inflationary pressures in the economy, also attempts to see its role as part of a policy framework designed to create low-skilled employment and grow labour intensive exports.

A second issue, in relation to the stabilization policy, relates to the fiscus. There can be no doubt that fiscal stability has been the success story of post-apartheid South Africa. However, the achievement of a balanced budget has resulted in a criticism that expenditure by the fiscus could be more aggressive. Certainly, there can be no doubt that there have been rapid increases in commitments to education, health and social services. However, it would seem opportune, given South Africa's healthy fiscal balances, to enact precisely the kind of targeted interventions usually considered by aid agencies under the standard A4T programmes. Hence (and this is discussed in greater detail below), excess funds vested with the state could be utilized to target those workers and households significantly and negatively impacted upon by international trade and tariff liberalization. Below, we expand on the possibility of linking fiscal expenditure to those individuals in specific sectors who may have been losers as a consequence of globalization.

5.2 Targeted Assistance to Affected Workers

The United States, as is now well known, has had in place a regulatory environment to provide supportive mechanisms in the form of the Trade Adjustment Assistance Reform Act (amended 2002). This Act effectively allows for the state to provide targeted assistance in various forms to those workers deemed to have suffered hardships as a consequence of increased competition from imports. It is the US economy's formalized state support scheme for the losers from globalization. It would therefore seem most appropriate to consider such schemes within the developing world. Within the South African context, where the negative impact from international trade has been relatively small and fiscal balances are extremely good, such a targeted intervention would be a strong recommendation.

In practice, such an act could then follow the US model fairly closely, where there is a requirement for workers or their representatives to file a demand for assistance under the act. The request is first screened and evaluated, before a resource commitment is ensured. In turn, the resource commitment could range from skills development in the form of new training or upgraded training and employment search assistance to income transfers and targeted livelihood assistance. The scope for targeting these interventions at workers affected by cheaper imports is thus potentially vast. At present, at least within the South African economy, labour market and social security assistance does not provide for any specific focus on trade-related casualties in the domestic economy. It is therefore strongly recommended that individuals deemed to be casualties of trade-related adjustments in the domestic economy be provided with targeted assistance that is legislated.

It needs to be remembered that against the backdrop of South Africa's high unemployment rate and high levels of poverty and inequality, the country has a well-targeted system of social grants, aimed specifically at the disabled, the aged and children. South Africa is unique amongst developing countries in this respect. According to Woolard (2003:2), almost six million South Africans benefit from social assistance grants each month and, in February 2003, for example, benefits totalled over R2.25 billion. Furthermore, social assistance grants provide stable, reliable incomes to households in isolated rural areas and are gender sensitive with, for example, twice as many women qualifying for the state old-age pension (SOAP) than men. Moreover, in real terms, these grants have increased in value every year. In addition, the Child Support Grant (the largest in terms of number of beneficiaries) has been gradually extended to include children up to the ages of 14 years. The government also provides free basic services to the poor and unemployed, including free basic water, electricity and sanitation. Government housing subsidies also target low-income households. Social spending (including spending on education and health) accounted for approximately 50 percent of total government expenditure for the 2005/06 fiscal year.

The upshot of the above is that there is a fairly deep and wide social security and social service system in operation in South Africa. Implicitly, this system supports the unemployed who are distributed across households that are recipients of these state transfers and services. Data show that between 15 and 30 percent of households with unemployed residents has access to one form or another of income transfer. Of course, within this sample of unemployed are those individuals who have lost their jobs, specifically as a consequence of trade and tariff liberalization. While not deliberately targeted, the state's extensive social service and security system could reach these individuals. It is therefore, in effect, an example of aid-for-trade generalized to all indigent households and individuals in the society, some of whom may have been deleteriously affected by competing imports.

Currently, South Africa has a contributory unemployment insurance scheme, where workers are covered for a maximum of six months

after employment with a firm has ended. This is a recommendation to directly target trade-affected sectors with an insurance scheme that is, firstly, lengthier and, secondly, more extensive. It is entirely feasible, then, that the period of coverage for prone sectors be increased to, say, ten or 12 months. This allows for an increased lead time for individuals to retrain and search for employment, etc. The cash reserves available through the insurance scheme would allow for this.

In addition, through the Unemployment Insurance Fund (UIF) of South Africa, a stronger link could be made between these recently retrenched workers and other retraining schemes, search employment agencies and so on. While this could potentially be required of all the unemployed, the UIF could develop a very specific targeted programme for those individuals negatively affected by competing imports. Indeed, for South Africa's import profile, a large number of potentially affected sectors comprise individuals and workers with mobile and malleable skills. This latter fact could be exploited more creatively by the UIF. Lastly, while increasing the duration of the scheme should not of course be linked to increased contributions, the additional funds could be raised through the fiscus.

5.3 Wage Subsidies (Tradeables, New Sectors)

The South African government is currently mooting the idea of a national wage subsidy linked to its retirement reform plans. However, it seems pertinent that this subsidy be considered within the context of the "Aid for Trade" debate. A wage subsidy will reduce the cost of hiring, and thereby may engineer both an increase in employment and potentially enhanced cost competitiveness. Such schemes exist, in different guises, in, for example, Mexico, the Netherlands and the United Kingdom. South Africa also has a history of wage subsidies, although these were admittedly designed to prop up its apartheid system of separate development.

The recommendation made here though is that such a wage subsidy be specifically targeted to assist exporters trying to break into new markets – and particularly in cases where there may be a cost disadvantage. Indeed, there may be some evidence that for very specific products in the export market, unit labour costs may be an impediment to growing volumes for South African firms. It is in this instance that a wage subsidy for a specified period could be beneficial to expanding the economy's export base. Indeed, the country's current dependence, in revenue terms, on a fairly narrow band of exports is particularly worrying. A non-market based intervention of this sort could see significant returns to firms in the tradable sectors.

An additional wrinkle to such a proposal could be to provide support for small businesses attempting to access export markets. It is entirely possible to conceive of a proportionate wage subsidy, rather than a flat rate, where size of the firm is appropriately matched to the value of the subsidy.

It is precisely these kinds of initiatives that have not currently featured in the country's national industrial policy framework. The extremely healthy fiscal balance (alluded to above) that South Africa currently has, must be used towards these types of interventions where the potential to realize the gains from trade are significant.

5.4 Summary Recommendations

Given the above, a more succinct representation of some of the key recommendations that could potentially ameliorate the social consequences of trade and tariff liberalization in South Africa are:

- To ensure that monetary policy, while not oblivious to inflationary pressures in the economy, also attempts to see as one of its objectives the need to create low-skilled employment and increase labour-intensive exports.

- Fiscal expenditure, with the current healthy balances, should be utilized to target those workers and households significantly and negatively impacted upon by international trade and tariff liberalization.

- Workers deemed to be casualties of trade-related adjustments in the domestic economy could be provided with targeted assistance and state support, with strict criteria and rules that are legislated. The US Trade Adjustment Assistance Reform Act (amended 2002) could serve as the model for such a programme.

- Directly target trade-affected sectors with an unemployment insurance scheme that is lengthier and more extensive than the current scheme.

- A wage subsidy could be specifically targeted to assist exporters trying to break into new markets – and particularly in cases where there may be a cost disadvantage to exporters.

ENDNOTES

1 The presumptions in the GEAR model are that government borrowing to finance the deficit would raise interest rates, which would effectively crowd out private sector investment (Weeks, 1999).

2 Specifically, South Africa had its first nationally representative household survey – known as the October Household Survey (OHS) – in 1994. This ran annually until 1999. From 2000 onwards, the country has had an annual General Household Survey (GHS) and a biannual Labour Force Survey (LFS).

3 This is because, considering new labour market entrants as a group on their own, if employment grew at the target growth rate, thereby absorbing all new entrants into employment, their unemployment rate would be zero. The fact that, in reality, not all new jobs go to new entrants does not impact on this reduction in the overall unemployment rate.

4 The poor coverage of the informal sector in OHS for 1995 makes this comparison of formal versus informal sector employment growth very difficult to determine. However, there would seem to be indicative evidence that both organic growth in informal employment and better capturing by Statistics South Africa, have yielded a rapid expansion in informal employment.

5 We use the race classification system whereby the South African society is divided into four groups, namely, African, coloured, Asian and white. These categories are drawn from the historical apartheid classification system and are critical in the post-apartheid era to measure socioeconomic progress (or lack thereof) across previously advantaged versus disadvantaged groups.

6 The occupation category of elementary workers in the OHS and LFS is one of the two unskilled classifications in these two surveys, with the other being domestic workers. This category roughly corresponds to the "labourer" category from the 1970–1995 period and includes a wide variety of unskilled workers, including street vendors, cleaning staff and unskilled labourers in agriculture and manufacturing.

7 The decrease in relative demand for skilled agricultural and fishery workers is difficult to interpret due to the reclassification of skilled agricultural workers as a new occupation group.

8 We have excluded only domestic workers from private households because this figure corresponds roughly with the number of workers taken out in the 1995 sample used in the 1970–1995 decomposition.

9 The two skilled categories "executive managers" and "professional/semi-professional/technicians" from the 1970–1995 analysis correspond to the 1995–2005 categories of "managers" and "professionals", respectively. The unskilled category of "labourers" in 1970–1995 corresponds to "elementary occupations" in 1995–2005. In both years, the remainder of the categories constitute semi-skilled workers (with the exception of domestic workers in 1995–2005, which constitutes an unskilled category).

10 In South Africa, both the South African Reserve Bank and the national Department of Trade and Industry (DTI) publish trade data. The DTI, however, does not publish statistics on trade in services, while the Reserve Bank does not break down trade in goods according to sector. While there are some discrepancies in the two institutions' figures for total trade in goods, they still confirm that between 70 percent and 80 percent of South Africa's exports and imports respectively are made up from manufacturing and mining.

11 One can think of group k as representing occupation, or socioeconomic categories, such as race and gender.

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ANNEX I: DECOMPOSING BETWEEN- AND WITHIN-SECTOR EMPLOYMENT SHIFTS (KATZ AND MURPHY, 1992)

This technique proceeds along the following lines of rationale: Assume that total employment in the economy has changed from one period to the next. This total employment shift will in turn be represented in primarily two ways: first, because sectors are growing (or shrinking) they will hire more (or less) workers; secondly, firms may find that internal changes lead them to hiring more or less employees. In addition, we can work from the assumption that we are interested not only in total employment shifts, but also shifts in employment that have occurred by occupation, race, gender, etc. In this way we can determine, for example, what has happened to the demand for skilled professionals in the economy. We can easily determine the total change in the demand for their services. However, what the decomposition technique offers is the ability to determine which of the above two factors – the between-sector versus the within-sector – has been the primary cause for this employment shift.

The technique has its theoretical foundation in a set of labour demand equations, where labour is hired subject to a cost constraint, assuming constant returns to scale in the production function. The derivation allows the authors to arrive at a representation of labour demand where the total relative labour demand shift is represented according to a given group (e.g. occupation), which is then readily decomposable into a between-sector and within-sector component. It should be remembered that both these shifts are to be understood under a regime of fixed relative wages. The total shift, as well as the between-sector shift (according to occupation or socioeconomic groups), are directly observable. Utilizing this theoretical approach, one can then arrive at an empirically estimatable equation, to determine the size of these three segments of relative labour demand by any given cohort. The index of relative labour demand shifts is constructed as follows:

$$\Delta X_k^d = \frac{\Delta D_k}{E_k} = \sum_j \left(\frac{E_{jk}}{E_k}\right)\left(\frac{\Delta E_j}{E_j}\right) = \frac{\sum_j \alpha_{jk}\Delta E_j}{E_k} \qquad (1)$$

The subscripts k and j refer to occupation (or socioeconomic) groups and sectors respectively. The total relative demand shift for group k in the period under consideration is measured by ΔX_k^d. Specifically, it is measured by $\alpha_{jk} = \frac{E_{jk}}{E_k}$, which is group k's share in sector j, as a share of total employment in that sector, weighted by the percentage change in total sectoral employment, ΔE_j, in which the weight is the group-specific employment distribution, E_k. Note that the between-sector component explaining part of the shift in relative demand for group k is given by ΔD_k, while the within-sector shift is simply the difference between the total- and between-sector shifts. As with the Katz & Murphy (1992) approach, we normalize total employment in each year to sum to one and thereby obtain a measure of relative demand shifts. In addition, the values for α_{jk} and E_k are represented in the base year, which in this case is 1970.

ANNEX II: DECOMPOSING THE IMPACT OF INTERNATIONAL TRADE ON LABOUR DEMAND (KATZ AND MURPHY, 1992)

In order to measure this impact of trade flows on labour demand, we utilize a similar decomposition technique to the one outlined above and again draw directly from the methodology of Katz and Murphy (1992). This approach isolates the impact of trade flows on explaining shifts in labour demand over time. Assume that the supply of labour, or factor inputs, is related to output in a standard production function paradigm. It is then possible to extend this and consider the impact of direct labour supply on traded output, ignoring indirect input-output effects. Thus, the implicit labour supply function in trade would be the labour input required to produce traded output domestically. Formally, let I_{it} be net imports in industry i in year t, Y_{it} the domestic output of industry i in year t, and E_{it} the share of labour units in the economy employed in industry i at year t. Therefore, the implicit supply of labour embodied in net imports in any given industry at time t, measured as a fraction of total labour units is given as $(E_{it}/Y_{it})xI_{it}$.

From this formulation, we can derive a more generalized result, i.e. that of the implicit supply of labour of group k[11] contained in net trade in year t as a proportion of total domestic labour supply of group k. This would be:

$$L_t^k = \sum_i e_i^k E_{it} \left(\frac{I_{it}}{Y_{it}} \right) \quad (2)$$

where e_i^k is the average proportion of employment in industry i made up of workers in group k over the specified time period. Using the above, we can then measure the effect of trade on the relative demand for demographic group k in year t as:

$$T_t^k = -\left(\frac{1}{E^k} \right) \sum_i \left[e_i^k E_{it} \left(\frac{I_{it}}{Y_{it}} \right) \right] + \sum_i e_i^k E_{it} \left(\frac{I_{it}}{Y_{it}} \right) \quad (3)$$

where E^k is the average share of total employment of group k over the period under consideration. The first term is the implicit labour supply of the group k contained in trade, normalized by the base year employment of group k, with the sign reversed to convert this supply shift measures into a demand shift measure. The second term adjusts the demand shift measure so that trade affects only the relative demand for labour in group k.

The above equation, however, assumes that export and import flows affect all workers homogeneously. This may not be the case, and it may be true that skilled and unskilled workers are differentially affected by these trade flows. In order to measure this different impact of exports and imports, the first term on the right-hand side of the above equation is replaced by:

$$-\left(\frac{1}{E^k} \right) \sum_i \left\{ \left(e_i^k E_{it} \left(\frac{X_{it}}{Y_{it}} \right) \right) - \left[p_i^k E_{it} \left(\frac{M_{it}}{Y_{it}} \right) \right] \right\} \quad (4)$$

where X measure exports and M imports, and p_i^k is group k's average share of unskilled workers' employment in industry i over the stipulated period. It is therefore assumed that imports will disproportionately impact on the demand for production-level workers relative to export flows.

ANNEX III: INDUSTRY-BASED RELATIVE DEMAND SHIFT MEASURED BY OCCUPATION, 1995-2005 (EXCLUDING DOMESTIC WORKERS IN PRIVATE HOUSEHOLDS)

	Between	Within	Total	Share of within in Total
Managerial	1.38	18.14	19.51	92.95
Professional	1.54	7.41	8.95	82.84
Clerical	2.62	14.47	17.09	84.69
Service	2.45	14.38	16.83	85.42
Agric & Fishing	-0.17	-15.62	-15.79	98.91
Craft & Trade	2.58	14.52	17.11	84.90
Operators & Assemblers	0.79	5.16	5.95	86.65
Elementary	0.15	0.54	0.68	78.55
Domestic Workers	0.47	9.41	9.88	95.25
Unspecified	-0.20	-18.71	-18.91	98.96

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

ANNEX IV: INDUSTRY-BASED RELATIVE DEMAND SHIFT MEASURED BY RACE, 1995–2005 (EXCLUDING DOMESTIC WORKERS IN PRIVATE HOUSEHOLDS)

	Between	Within	Total	Share of Within in Total
African	-0.82	-0.60	-1.42	42.29
Coloured	0.04	0.35	0.40	88.75
Asian	0.21	5.09	5.30	96.00
White	0.94	3.67	4.61	79.59

Source: OHS 1995, LFS 2005(2) (Statistics SA) and authors' own calculations

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