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ABSTRACT

We document the rise in unemployment in South Africa since the transition in 1994. We describe the likely causes of this increase and analyze whether the increase in unemployment is due to structural changes in the economy (resulting in a new equilibrium unemployment rate) or to negative shocks (that temporarily have increased unemployment). We conclude the former are more important. Our analysis includes a multinomial logit approach to understanding transitions in individual-level changes in labor market status using the first nationally representative panel in South Africa. Our analysis highlights several key constraints to addressing unemployment in South Africa.

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Section 1

1. Introduction

Too many South Africans are unemployed. Just how many are unemployed depends on how one defines unemployment, but even by a narrow definition, about 26 percent of the labor force is unemployed. It has not always been this way. Unemployment was fairly low through the 1970's, although data limitations preclude certainty. At the time of democratic transition in 1994, unemployment was substantially lower than it is today. A nationally representative survey conducted just before the transition indicated that unemployment was 13 percent. Another nationally representative survey in 1995 found unemployment to be around 15 percent. By the end of the decade, unemployment had jumped to 30 percent before declining slightly.

We structure our analysis by adopting the view that unemployment is comprised of two parts: its equilibrium rate (i.e. the rate to which, all else equal, the unemployment series converges) and deviations from that equilibrium. Using this construct, we ask whether the rise in South African unemployment represents an increase in the equilibrium rate or whether temporary shocks to the economy have driven unemployment above its equilibrium level. In the case of the former, one should not expect to see unemployment return to its previous level while in the case of the latter, a halving of the current unemployment rate might reasonably be expected even absent much intervention.

We rely on a decade of detailed nationally representative household surveys to inform our inquiry, and we place a greater emphasis on the more recent data. Our focus on individual-level data, as opposed to, say, industry-level, data permit us to delve deeply into the microeconomic aspects of South African unemployment.

We begin our analysis in Section 2 by documenting unemployment and the characteristics of the labor force in South Africa. This section puts forth the set of facts that any explanation for unemployment must confront. These facts lay the groundwork for our explanation of the current high unemployment rate. We find, for example, that the supply of labor increased after the fall of apartheid. In particular, there was an unprecedented influx of African women into the labor market. On the whole, these new entrants into the labor market tended to be relatively unskilled. At about the same time,

the demand for labor did not increase and, in the mining and agricultural sectors, the demand for labor fell. These shrinking sectors also tended to employ relatively less-skilled labor. Further contributing to the decline in the demand for unskilled labor, skill-biased technical change was occurring in South Africa (as well as the rest of the globe). The shrinking demand for and huge influx of relatively unskilled labor created a “perfect storm,” and unemployment among the less-skilled and/or less-experienced workers ballooned.

Section 3 investigates the compositional changes in employment at the sectoral level and the accompanying trends in wages. High-skilled workers have seen their employment share and their real wages increase as industries, and the economy as a whole, shift towards more skilled workers. The unemployed are becoming, on average, less-skilled and the gap is widening between their skill level and the skill level of the employed. These results have important policy implications. For example, because the unemployed became ever less-skilled, and those employed yet more skilled, policies to transition the unemployed into the labor market face even greater hurdles.

Section 4 moves beyond the sectoral viewpoint of section 3 and examines unemployment at the level of the individual. Having documented the rather bleak picture of the labor market portrayed in sections 2 and 3, we next investigate why unemployment has persisted. In the simplest economic models, when supply increases while demand is falling, we expect prices (i.e. wages) to fall to clear the market. While there is some evidence that real wages fell in South Africa during the worst years of unemployment, the nominal decline that would have been necessary to clear the labor market was simply too large to be politically or socially acceptable. Furthermore, there were institutional constraints that kept wages from declining as much as they otherwise might have. We find, for example, a persistent union wage differential suggesting that unions are keeping wages higher for union members. This is good news for employed union members, but it poses additional challenges to addressing the unemployment problem.

One way in which unemployment might have been reduced would have been for South Africa to “inflate” its way out of the morass. With inflation and fairly constant nominal wages, the real declines could, in principle, clear the market. In the years after transition, however, South Africa was under intense scrutiny by the international

financial community and therefore kept inflation reasonably under control. Hence, inflation and the resulting decline in real wages in and of itself was not a viable “solution” to the unemployment problem.

Another way in which many sub-Saharan African countries often deal with rigidities in the formal sector labor market is through a burgeoning informal sector. South Africa, though, has a relatively small informal sector relative to its African neighbors. One reason this might be the case is that a spirit of entrepreneurship was actively discouraged for decades under apartheid. This history may help explain why the informal sector has not grown as quickly as one might otherwise expect. In section 4, we examine the role of the informal sector as a potential “springboard” into the formal sector. The results are not entirely encouraging. An investigation of individual-level transitions in labor market status shows that while some parts of the South African labor market are surprisingly dynamic (there is, for example, a lot of churning into and out of some types of employment), some transitions are rare. These results speak to the difficulties associated with some types of job search as well as point to potential constraints that might be relaxed with policy. For example, a vestige of apartheid is the geographic distance between where many of the unemployed reside and where most businesses are located. This makes searching for employment especially expensive and difficult, and our results suggest that transitions by urban Africans (who tend to live in outlying areas) from informal to formal sector jobs are rare.

Discrimination is another possible explanation for the persistent unemployment. After decades of institutionalized racial discrimination, remnants surely persist, but the magnitudes are unclear and remain so despite our attempts to examine it empirically. While our many analyses almost always find that race matters, there are competing explanations for this correlation. The difficulty in interpreting the results stems from the fact that for decades, race mattered in most economically-relevant aspects of South Africa. Persistent unemployment of Africans could result from discrimination but it is also consistent with many other outcomes that are correlated with race. For example, the effects of historically low investments in African education still impact post-apartheid employment outcomes. The data cannot distinguish between the observable attribute (race) and the many economically relevant but unobserved attributes (quality of

education, distance from where jobs are located, personal networks that might lead to employment, etc.) that are correlated with race and which impact labor market status.

In section 4, we also examine the potential role of high reservation wages in the employment equation. The State Old Age Pension system mitigates the necessity of employment in some households. While the pension scheme is certainly not primarily responsible for unemployment, our results suggest it may contribute to the problem, especially for young workers. The mechanism is one in which household-level pension income perhaps raises the reservation wage of some household members. On the other hand, work by Posel, Fairburn & Lund (2004) and Edmonds, Mammen & Miller (2003) shows that pension receipt facilitates the departure of prime-age women from the household to permit them to migrate in search of work. The effect of the pension is really quite complex.

We conclude that while there may be some elements of the recent increase in unemployment that result from temporary “shocks” away from the equilibrium rate, most of the evidence points to structural changes in the labor market that resulted from the dismantling of apartheid. The evidence suggests that the equilibrium rate of unemployment has in fact increased, and active policy is especially necessary because the problem is not mostly self-correcting.

Section 2

2. The Structure of Unemployment and Labor Input

In this section we describe some of the key patterns in the data that motivate our analysis. In Table I, we present the recent data on labor force participation, employment and unemployment. The first question that deserves attention speaks to the definition of these variables. Typically, the working age population is divided into those that are in the labor force in a given period and those not participating in the labor market in that period. Those in the labor force are then further classified as being employed or unemployed. Official statistics in South Africa follow the international standard developed by the International Labor Organization (ILO) and classify working age individuals as being in the labor force if during a week of reference they were employed or wanted to work and were available to start working within a week but also had actively looked for work during the past four weeks. In what follows, we refer to this classification as the ILO definition. We also present statistics that use an extended or broader definition of labor force participation and unemployment by eliminating the requirement of having actively searched for a job in order for an individual as to be classified as unemployed.

Table I presents the recent trends in participation, employment and unemployment for the population aged 16 to 64 years. Several interesting facts emerge. First of all, unemployment, irrespective of the measure adopted, is extremely high, and has increased substantially since the African National Congress came to power after South Africa's first democratic elections in 1994. Using the ILO definition, unemployment doubled between 1995 and 2001, going from an already high unemployment rate of 15.6 percent to 30.3 percent. Since then, it started to decline but it still is substantially higher than in 1995. In 2005, we estimate unemployment to be 26.7 percent.²

Second, labor force participation also substantially increased since the end of apartheid. Using the ILO definition, it increased by 6 percentage points, which, over a decade, represents a large shock to the labor market. Furthermore, using the broad definition, it increased by 10 percentage points. Finally, the employment rate decreased

² Our statistics are not exactly the same as those officially published by STATS-SA since we restrict our estimates to the population aged 16-64 years old.

slightly during the same period. It went from 43.3 percent to 41.9 percent. However, it is likely that this reflects an unusually high employment rate for males in 1995 (see section 2.1 below).³

Table I: Participation, Employment and Unemployment Rates					
(%)					
Year	ILO Classification			Broad Classification	
	Participation	Employment	Unemployment	Participation	Unemployment
1995	51.4	43.3	15.6	60.3	28.2
1997	48.2	37.5	22.1	60.6	38.0
1999	55.4	41.7	24.8	69.0	39.9
2001	59.4	41.4	30.3	72.1	42.5
2003	56.8	40.6	28.6	70.6	42.5
2005	57.2	41.9	26.7	71.2	41.1

Notes: All statistics are for population 16 to 64 years old.
Source: Authors calculations using the October Household Survey and the September wave of the Labor Force Survey.

Table II presents some useful international comparisons. Clearly, South Africa contrasts poorly with the sample of countries presented in this table. Employment in South Africa is among the lowest while unemployment ranks among the highest in the group. Even among African countries, which tend to have lower employment rates and higher unemployment rates than OECD and Latin American countries, South Africa performs poorly.

The very high reported unemployment in South Africa has naturally generated debate about its reliability. For instance, an International Labor Organization report expresses reservations about the unemployment estimates because earlier surveys excluded employed miners living in hostels from the sample. Another concern relates to mistakenly categorizing as unemployed those who may be involved in informal work.

³ A concern with the 1995 October Household Survey is that several districts in KwaZulu/Natal were not surveyed because they were considered too dangerous for the survey teams. The population in these areas was about 3 million, so the omission may be important. Survey weights were calculated to compensate for this problem (see Butcher and Rouse, 2001). However, the fact that these workers are not represented must be kept in mind when comparing later periods to 1995.

Nattrass (2000) reviews the evidence and concludes that there is little reason to believe that the official statistics are significantly wrong (see also Borat, 1999).⁴

Table II: International Comparisons. Participation, Employment and Unemployment Rates (%)				
Country	Year	Participation	Employment	Unemployment
OECD Countries				
United States	2004	75.4	71.2	5.6
United Kingdom	2004	76.2	72.7	4.7
Spain	2004	69.7	62.0	11.0
France	2004	69.3	62.4	10.0
Greece	2004	66.5	59.6	10.4
Poland	2004	64.2	51.9	19.3
Latin America	2002/2004	69.5	62.6	9.8
African Countries				
Botswana	2001	57.6	46.7	18.9
Cameron	2001	64.3	57.2	11.0
Egypt	2002	45.2	40.6	10.2
Ethiopia	2004	65.3	50.0	23.4
Lesotho	1997	61.9	38.4	37.9
Mauritius	2004	63.2	57.9	8.4
Namibia	2000	65.0	43.0	33.8
Tunisia	2003	53.3	45.4	14.7
Average African countries in our sample		59.5	47.4	19.8
South Africa	2005	57.2	41.9	26.7
Note: The statistics in this table are supposed to be comparable. We attempted to report all the African countries with data available for one recent year. However, we discarded a few countries with extremely low and extremely high participation rates.				
Source: International Labor Organization.				

Even if one believes that unemployment is very high in South Africa, and that it has increased substantially since the early 1990's, the question remains open of what happened to unemployment during the 1980s when the unions became stronger. This is a more difficult question to tackle. On one hand, the mere fact that the apartheid regime imposed severe restrictions on search behavior makes estimates of unemployment rates for this period incomparable to the statistics gathered since the early 1990's. On the other

⁴ Klasen and Woolard (1999) also point out that different South African household surveys give similar estimates of unemployment rates.

hand, even if one were to overlook this problem, the lack of appropriate data still makes it difficult to answer this question with certainty difficult. Feinstein (2005) assembled census data between 1951 and 1996 in an attempt to bring together comparable estimates of unemployment over time. However, these series were constructed by making assumptions and extrapolations and are subject to large measurement error. Thus, the results should be interpreted with caution. In Feinstein’s data, unemployment appeared quite stable until 1980, when it was still estimated to be around 7 percent. The next point estimate presented is for 1991, when unemployment was estimated to be as high as 18 percent.⁵ Seekings and Natrass (2006) review the available evidence from different sources and conclude instead that unemployment has increased since the mid-1970s.⁶ All in all, it appears that unemployment grew during the mid-1970s, and continued to grow throughout the 1980’s until it reached the levels observed in the 1993 SALDRU survey (and again in the 1995 October Household survey.)

Table III: Participation, Employment and Unemployment by Region
(%)

Year	Urban			Rural		
	Participation	Employment	Unemployment	Participation	Employment	Unemployment
1995	60.7	51.8	14.6	39.2	32.2	17.8
1997	57.4	45.7	20.4	34.4	25.3	26.4
1999	63.4	48.8	23.0	43.4	31.0	28.5
2001	67.7	48.1	28.9	47.1	31.4	33.3
2003	65.5	46.8	28.5	43.8	31.2	28.7

Notes: All statistics are for population 16 to 64 years old. ILO definitions adopted. The 2005 data cannot be classified by region.
Source: Authors calculations using the October Household Survey and the September wave of the Labor Force Survey.

In Table III we present the recent trends in participation, employment and unemployment in urban versus rural areas. Unemployment is quite high in both categories. However, participation and employment are much higher in urban areas than in rural ones. Figure I exploits a further geographical division of the country into 53 districts and assigns to each district the degree of urbanization by computing the

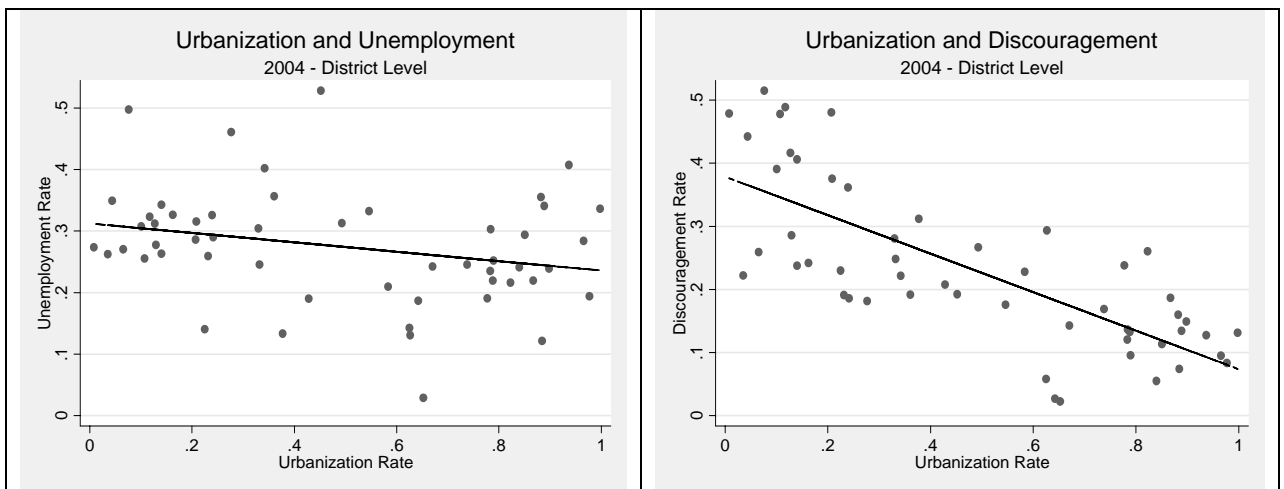
⁵ However, note that to the extent that these estimates are comparable to our household survey-based estimates, they are analogous to the broad definition of unemployment.

⁶ During the mid-1970s several household surveys were conducted, mainly by university-based academics, in response to the lack of good data about unemployment. All of them reported high rates of unemployment among Africans by the mid-to-late 1970s (see the evidence summarized in Seekings and Natrass, 2006).

proportion of people residing in urban areas within each district. Although unemployment decreases with urbanization, it does so only slightly. Unemployment appears to decrease from 30 percent in rural districts to 20 percent in urban districts. The rate of discouraged workers in the labor force appears to decrease from 40 percent in rural districts to below 10 percent in urban districts.

One striking feature of South Africa is its low level of labor market participation and employment in rural areas. For example, comparing employment rates by age group and region between South Africa and Latin America and the Caribbean we observe that even though the statistics are always lower in South Africa, the differences are strikingly large in rural areas (see Table IV).

Figure I: Unemployment and Discouragement by level of urbanization



Source: Authors' calculations based on March 2004 LFS.

**Table IV: Employment Rates by Region and Age Group
South Africa and Latin America
(%)**

	Year	Rural					Urban				
		(15-19)	(20-24)	(25-34)	(35-49)	(50-64)	(15-19)	(20-24)	(25-34)	(35-49)	(50-64)
South Africa	2004	3.9	16.5	38.3	52.3	36.3	4.0	25.3	55.4	65.8	49.4
Latin America and the Caribbean	2000- 2004	43.1	60.8	68.6	72.0	65.7	24.0	53.1	70.9	75.7	60.7

Source: Authors' calculations based on Household Surveys.

Table V presents the recent trends in participation, employment and unemployment by gender. As it is often the case, males are more likely to participate in the labor market and less likely to be unemployed. Indeed, female unemployment rates are about 50 percent higher than those for males, a figure that is not unusual relative to other labor markets in the world. The table also shows that the participation gender gap narrowed between 1995 and 2005.

**Table V: Participation, Employment and Unemployment by Gender
(%)**

Year	Male			Female		
	Participation	Employment	Unemployment	Participation	Employment	Unemployment
1995	62.1	54.5	12.3	41.1	32.7	20.5
1997	57.9	47.7	17.7	39.2	28.2	28.1
1999	63.3	50.2	20.7	48.1	33.8	29.7
2001	66.5	48.7	26.7	53.0	34.8	34.4
2003	64.2	47.7	25.6	50.3	34.2	31.9
2005	65.2	50.5	22.6	49.8	34.0	31.7

Notes: All statistics are for population 16 to 64 years old. ILO definitions adopted.

Source: Authors calculations using the October Household Survey and the September wave of the Labor Force Survey.

Table VI disaggregates these statistics by race. We use the racial categories constructed by the apartheid regime: African, Coloured, Indian (those of Indian origin) and White. Not surprisingly, a legacy of the apartheid era is that Africans have worse labor market outcomes than the other groups. Coloured and Indians also had worse outcomes than Whites.

Table VI: Participation, Employment and Unemployment by Race
(%)

Year	African			Colored		
	Participation	Employment	Unemployment	Participation	Employment	Unemployment
1995	45.9	36.7	20.1	64.2	55.3	13.8
1997	43.5	31.3	28.0	60.8	50.9	16.3
1999	51.1	35.4	30.6	67.1	56.1	16.4
2001	56.1	35.6	36.7	67.2	52.2	22.4
2003	53.6	35.4	34.0	65.8	51.4	21.8
2005	54.2	36.9	31.9	65.4	52.3	20.0

Year	Indian			White		
	Participation	Employment	Unemployment	Participation	Employment	Unemployment
1995	60.1	54.4	9.3	68.6	66.4	3.3
1997	57.6	51.2	11.1	64.8	61.9	4.6
1999	64.6	53.5	17.3	71.3	67.1	5.9
2001	67.0	53.4	20.3	72.0	66.9	7.0
2003	63.8	52.7	17.4	71.3	67.3	5.5
2005	63.9	52.0	18.7	70.3	66.7	5.1

Notes: All statistics are for population 16 to 64 years old. ILO definitions adopted.

Source: Authors calculations using the October Household Survey and the September wave of the Labor Force Survey.

In 1995, the labor force participation of Africans was only 45.9 percent, their employment rate was 36.7 percent, and their unemployment rate was 20.1 percent. All the other groups have participation rates above 60 percent and unemployment rates that are substantially lower. The unemployment rate of Coloureds was 13.8 percent, Indians 9.3 percent and Whites 3.3 percent. Since 1995, all groups have increased their labor market participation, but they have not increased their employment rates – in fact Coloureds and Indians saw slight decreases. All population groups experienced increased unemployment rates. Africans increased participation rates by approximately 10 percentage points from 1995 to 2005 and their unemployment rate increased by about 50 percent. Clearly, many of the new entrants to the labor market were not finding jobs. Coloureds and Indians increased their participation rates by only about 3 percentage points and yet unemployment rates about doubled. Finally, the unemployment rate for Whites, while small, rose by about 50 percent. Thus, all racial groups are performing worse in terms of employment than they were a decade ago.

We turn next to labor market performance by educational attainment. We classify the population into four education groups: Less than matric, matric, some post-matric education and Tertiary education completed. There are few surprises. Table VII shows that higher education is correlated with better employment outcomes and greater labor market participation. The largest increase in participation from 1995 to 2005 is for workers with a matric or less. This group also has seen its employment rate actually decline. The employment rate for individuals with matric decreased from 54 percent to 49.7 percent during this period. Consequently, their unemployment rate almost doubled, from 15.2 percent to 28.2 percent. Even post-matric individuals are facing high unemployment rates. Indeed, it takes a completed university degree to mostly escape unemployment in South Africa.

Table VII: Participation, Employment and Unemployment by Educational Level (%)

Year	Less than matric			matric		
	Participatio n	Employmen t	Unemploymen t	Participation	Employment	Unemployment
1995	44.8	36.6	18.4	63.7	54.0	15.2
1997	41.3	30.8	25.4	62.5	48.7	21.9
1999	47.8	34.6	27.7	68.8	50.4	26.7
2001	51.8	34.4	33.6	73.3	49.7	32.3
2003	48.4	33.1	31.6	71.2	49.2	30.9
2005	49.2	34.2	30.4	69.2	49.7	28.2

Year	Post-matric			College		
	Participatio n	Employmen t	Unemploymen t	Participation	Employment	Unemployment
1995	80.6	76.8	4.6	85.8	84.0	2.1
1997	80.0	73.7	7.9	83.6	80.4	3.9
1999	85.0	74.3	12.6	87.4	82.2	6.0
2001	85.9	72.4	15.7	90.1	83.2	7.7
2003	89.1	76.1	14.6	89.7	85.6	4.6
2005	86.2	76.1	11.7	88.5	85.6	3.3

Notes: All statistics are for population 16 to 64 years old. ILO definitions adopted. Matric are those individuals with grade 12/standard 10/form 5/matric. Post-matric education includes those with: certificate with grade 12/std 10 and diploma with grade 12/std 10. College includes all individuals with: bachelors degree, bachelors degree and diploma, honors degree and higher degree. This classification eliminates around 0.3% of the sample with vocational degrees.

Source: Authors calculations using the October Household Survey and the September wave of the Labor Force Survey.

Table VIII slices the data by age groups for the years 1995 and 2005. As expected, participation in the market for those below 20 years old is quite low. Still, as is typically the case, their unemployment rates are the highest of all age groups. The unemployment

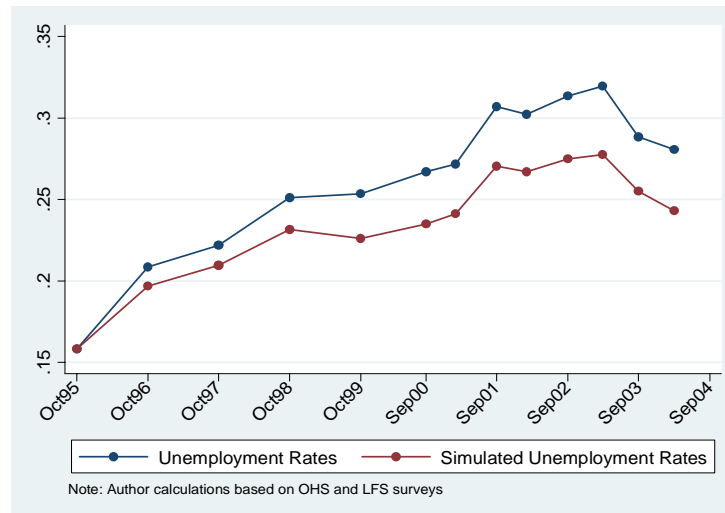
rate for those 20 to 25 years of age is twice the unemployment rate of the entire population. This is true both in 1995 and 2005, implying that unemployment increased more for youths (82 percent) as for the whole population (72 percent). In addition, labor force participation increased most among those aged 16 to 29 years.

Table VIII: Participation, Employment and Unemployment by Age (%)			
Age	Participation	Employment	Unemployment
1995			
16-64	51.4	43.3	15.6
16-19	8.7	5.0	42.7
20-24	38.6	26.6	31.1
25-29	61.3	48.2	21.3
30-34	70.2	59.6	15.1
35-39	71.7	63.3	11.7
40-49	69.2	63.5	8.3
50-64	46.4	43.4	6.4
2005			
16-64	57.2	41.9	26.7
16-19	12.1	5.3	56.6
20-24	47.8	22.8	52.3
25-29	71.4	45.7	36.0
30-34	75.8	56.1	26.0
35-39	75.7	60.8	19.6
40-49	72.2	61.7	14.5
50-64	50.6	46.3	8.5
Notes: ILO definitions adopted. Source: See Table I.			

Clearly, the composition of the labor force has changed dramatically since the end of apartheid. The respective shares of Africans, young people, and females increased considerably. *Ceteris paribus*, these changes alone would have increased unemployment. An alternative way to view the increases in unemployment is to consider the role of demographic changes. We conduct this exercise by constructing a counterfactual: we divide the population into 240 mutually exclusive groups based on age, sex, race, education and region of residence, and assume that the share of each of these groups is constant over time at the values of 1995. In Figure II we present the actual unemployment series using ILO definition as well as the counterfactual series. This

figure clearly illustrates that a large fraction of the increase in unemployment is due, *ceteris paribus*, to the change in the composition of the labor force. Indeed, we estimate that this accounts for 31 percent of the increase in unemployment between 1995 and 2005 – an extremely large jump to be accounted by demographics alone in a ten-year period.

Figure II: Actual and Counterfactual Unemployment rates



In Table IX we decompose the stock of individuals who were unemployed in 2005 by whether they have worked before or not. Most strikingly, just under 60 percent of the unemployed have never worked before. Long-term unemployment is a problem: of those who have worked before, 58.6 percent have been unemployed for a year or more. This figure is 68.3 percent for those who have never worked. It is important to note that youth unemployment is also a serious problem, as young people make up the majority of those who have never worked.

Table IX: Unemployment by previous working status and incomplete duration spell			
Worked Before		Never Worked	
41.1		58.9	
< 1 year	>= 1 year	< 1 year	>= 1 year
41.4	58.6	31.7	68.3

Notes: ILO definitions adopted.
Source: Authors calculations using the October Household Survey and the September wave of the Labor Force Survey.

2.1 Trends in Labor Supply

There was an increase in labor force participation rates of both sexes in the late 1990s, notably among females whose participation rate increased by 10 percentage points (see Figure III). This was a substantial shock to the market. Participation rates have decreased since 2000, however some of this may be due to incomparability of the OHS and LFS surveys. Labor force participation increased dramatically between the end of apartheid and September 2000 in both urban and rural areas (see Figures IV and V). Since then, both urban and rural participation rates have trended downward, with rural rates dropping significantly more.

Figure III: Participation and Employment Rates

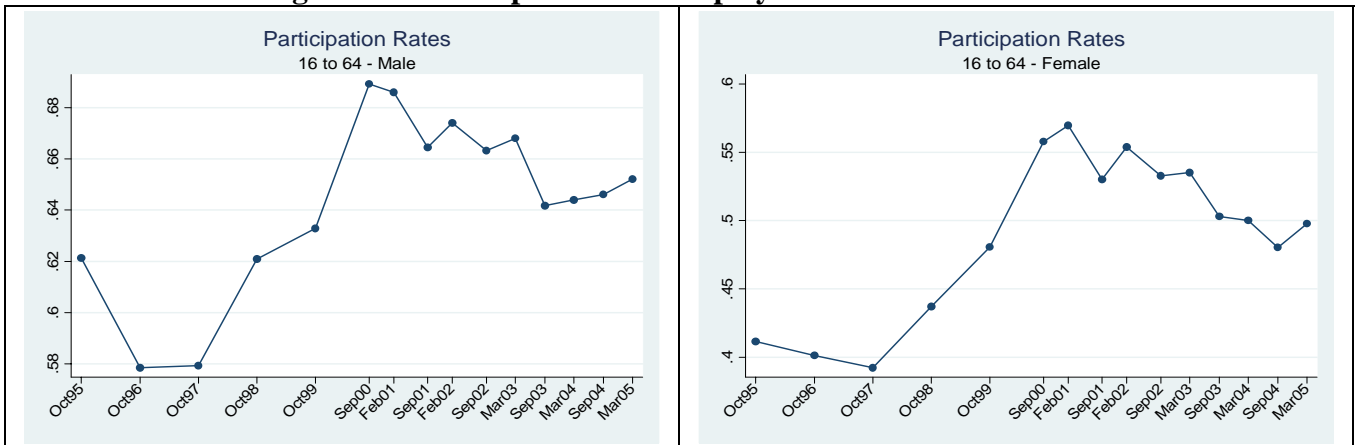


Figure IV: Urban Participation Rates

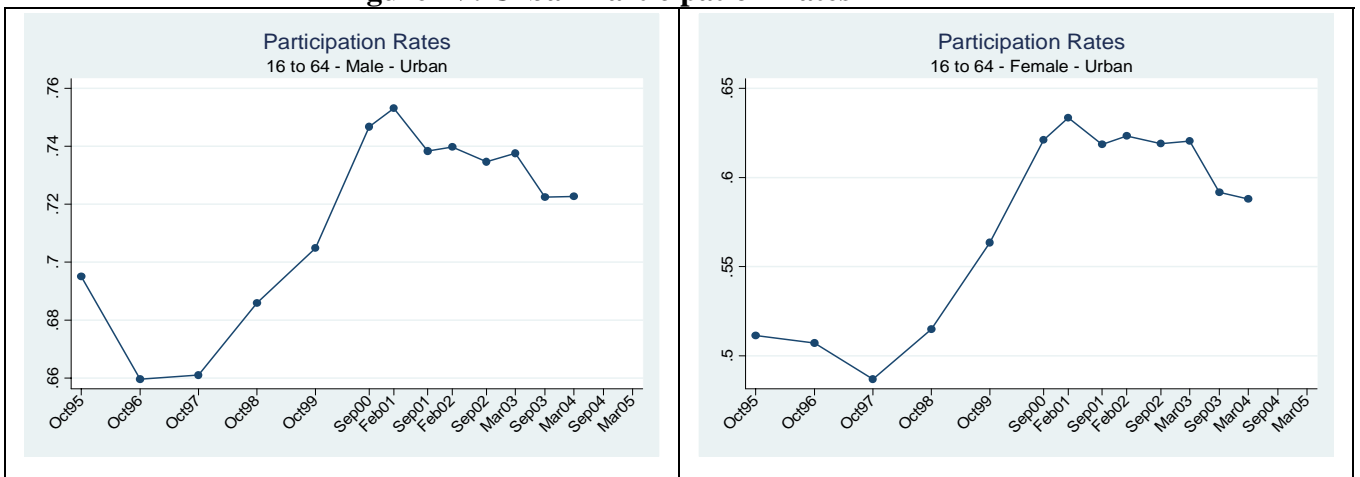
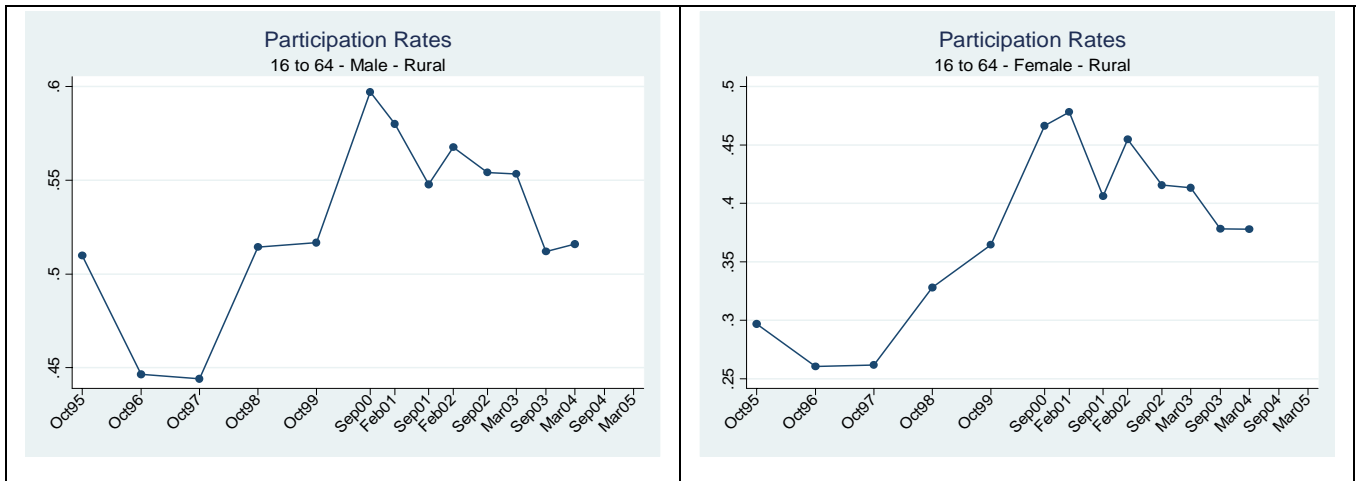
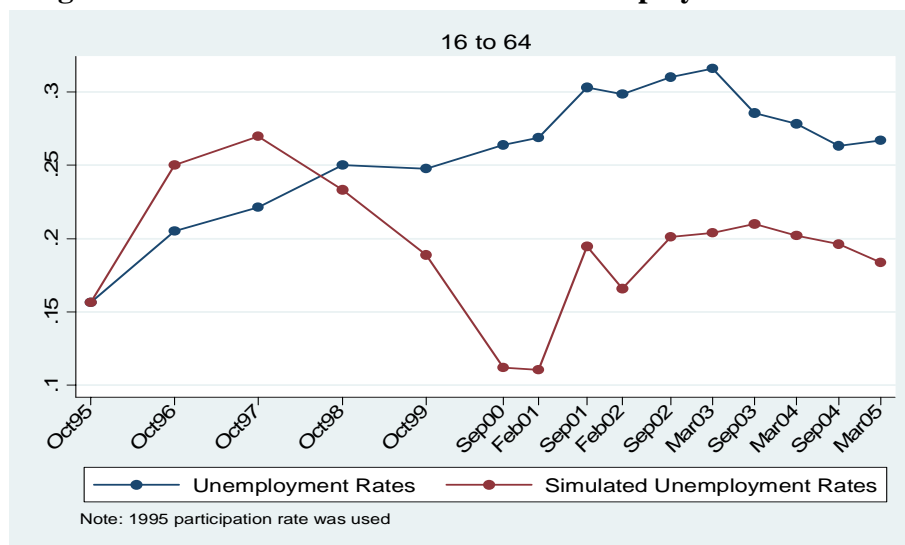


Figure V: Rural Participation Rates



The main message of these figures is that the entire secular movement in unemployment prior to 2005 can be accounted for by changes in participation. In Figure VI we present the actual unemployment series along with a counterfactual series that is constructed by holding the labor force participation rate constant at 1995 levels. The counterfactual rate is approximately the same at the beginning and end of the period (1995-2005) with a rise and fall mirroring changes in participation.

Figure VI: Actual and Counterfactual Unemployment Rates



2.2 Patterns in Labor Demand

We now turn our attention to the evolution of the composition of employment in South Africa. We rely on the analysis in Borat (2000) for trends in employment between 1970-1995 (using the Census of 1970 and the 1995 OHS) and extend the analysis using the Labor Force Surveys of September 2000 and March 2005. The data show a dismal employment performance over the whole period (see Table X). In 35 years, total employment only increased by 57 percent, which implies an annualized growth rate of 1.3 percent per year. The number of employees only increased 35.3 percent over the same period, which implies an annualized growth rate of 0.8 percent per year. Contrasting this employment growth with the fact that the population aged 14-65 grew at 2.68 percent per year paints a clear picture of the role labor demand played in the unemployment problem.

Table X: Total Employment

Source and Year	Census 1970	OHS 1995	LFS Sep 2000	LFS Mar 2005
Total Employment	7,709,476	10,151,548	11,969,273	12,107,554
Employee	6,294,614	8,659,211	7,919,963	8,519,063
Self Employee	572,264	795,649	3,043,059	2,734,482
Domestic Workers	842,598	696,688	1,006,251	854,009
Unemployment	303,165	1,998,914	4,088,846	4,288,875

Sources: Census 1970, OHS 1995 and LFS September 2000 and March 2005.

Section 3

3.1.1 Employment Trends by Sector and Skill Level: 1970-2005

The poor growth in total employment between 1970-2005 is associated with substantial structural change. The Primary sector – mainly Agriculture and Mining – was shedding labor throughout the period while Finance, Wholesale and Retail Sales and Community, Social & Personal Services increased employment (see Table XI).⁷ Thus, the sectoral composition of employment changed substantially in South Africa. Agriculture went from 33 percent of total employment to only 11 percent while Wholesale and Retail Sales increased from 9 to 25 percent, and employment in the financial sector also increased: from 3 to 11 percent. This altered the composition of employment in terms of educational attainment, favoring more skilled workers (see Table XII). It also appears plausible that displaced workers from agriculture and mining were unable to relocate to other regions where jobs might be available, which could be why there are so many discouraged workers in rural areas.

Table XI: Evolution of relative employment by industry (%)

Total Employment					Employees				
Industry	1970	1995	2000	2005	Industry	1970	1995	2000	2005
Agriculture	33	14	17	11	Agriculture	33	14	10	8
Mining	9	5	5	4	Mining	9	6	7	5
Manufacturing	14	16	15	15	Manufacturing	14	17	17	17
Utilities	1	1	1	1	Utilities	1	1	1	1
Construction	6	5	6	7	Construction	6	5	6	8
Wholesale & Retail	9	19	23	25	Wholesale & Retail	9	17	18	19
Transport	4	6	5	5	Transport	4	6	6	6
Finance	3	7	9	11	Finance	3	7	11	11
Community	21	26	19	21	Community	21	28	24	24

Note: Domestic workers are excluded.

Sources: Census 1970, OHS 1995 and LFS September 2000 and March 2005

⁷ In this section we adopt the same educational classification as Borhat (2000). Individuals who earned a diploma or a certificate are considered as having tertiary education.

Table XII: Evolution of relative employment by education level (%)

Total Employment					Employees				
Education Level	1970	1995	2000	2005	Education Level	1970	1995	2000	2005
None	38	7	7	5	None	38	7	5	4
Some Primary	31	20	24	18	Some Primary	31	21	20	17
Some Secondary	23	31	30	29	Some Secondary	23	31	30	29
Complete Secondary	6	24	21	29	Complete Secondary	6	24	24	31
Tertiary	1	17	18	18	Tertiary	1	17	21	19

Sources: Census 1970, OHS 1995 and LFS September 2000 and March 2005

Following the methodology of Katz and Murphy (1992), we look at how the skill composition of the labor force has changed within each sector and in the economy overall. The *within* sector shifts capture how the relative shares of employment by skill level have changed within sectors over time (holding total industry employment fixed). The *between* sector shifts measure how the skill composition of the economy changes when sectors that are more intensive in, say, high-skill workers, expand or contract, either gaining or shedding employees. Table XIII presents the results in percentage points of total employment.

Table XIII: Educational Decomposition into Between Industry and Within Industry Shifts.
Total Employment
 (% of Total Employment in Economy)

1970-1995					1995-2000				
	Between	Within	Total	Within%		Between	Within	Total	Within%
None	-10.84	-20.01	-30.85	64.86	None	0.67	-0.57	0.10	45.81
Some Primary	-0.42	-10.35	-10.77	96.10	Some Primary	1.21	2.00	3.21	62.37
Some Secondary	7.26	0.27	7.53	3.62	Some Secondary	0.29	-1.10	-0.82	79.25
Complete Secondary	3.52	14.58	18.11	80.54	Complete Secondary	-0.39	-2.87	-3.27	87.94
Tertiary	0.48	15.50	15.98	97.00	Tertiary	-1.78	2.55	0.77	58.90

2000-2005					1970-2005				
	Between	Within	Total	Within%		Between	Within	Total	Within%
None	-1.07	-1.33	-2.40	55.33	None	-13.43	-19.72	-33.14	59.48
Some Primary	-1.70	-3.37	-5.07	66.40	Some Primary	-1.41	-11.21	-12.62	88.82
Some Secondary	0.06	-0.90	-0.84	93.47	Some Secondary	9.25	-3.38	5.87	26.77
Complete Secondary	1.24	6.74	7.97	84.47	Complete Secondary	5.00	17.82	22.81	78.10
Tertiary	1.47	-1.14	0.33	43.59	Tertiary	0.59	16.49	17.08	96.56

The structural shift of employment from the primary sector to the tertiary sector accounts for the large decrease in employment of the lowest-skill workers and for the increase in the share of individuals with at least some secondary education. These between-industry shifts are particularly important prior to 1995. Table XIII suggests that within-industry shifts account for most of the dramatic decrease in the employment of least educated individuals (with less than a completed secondary education) since 1995.

3.1.2 Wages and Quantities by Educational Attainment

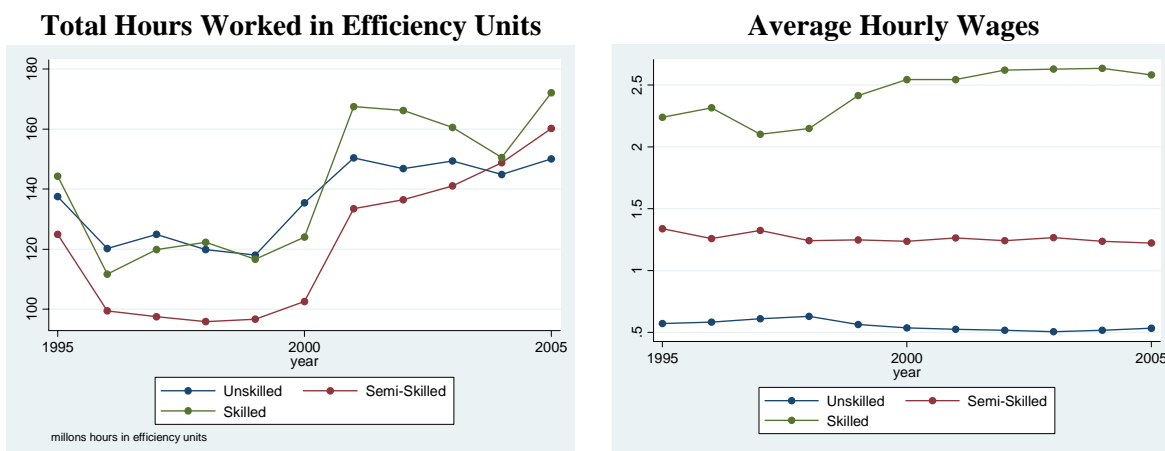
We construct a relative wage index (by educational attainment) for full-time employees using the OHS data (1995-1999) and LFS data (2000-2005). In each year, the population was divided in distinct cells according to gender, age, schooling and race. For each cell we computed a wage and a quantity measure. The wage measure is the average hourly wage by cell while the quantity measure is the cumulative sum of total hours worked by cell. This quantity measure was normalized to sum one in each year.

Using these cells wages we then compute a wage index for the whole economy that is insensitive to composition effects. We use this wage index to deflate nominal wages and to obtain a measure of *relative wages* for each cell. Finally, the average of this relative wage over the whole period is used to aggregate quantities in *efficiency units*.

We divide workers in three skill groups according to their educational attainment, using the same categories as in the previous section. Unskilled workers are those who have not completed secondary education, Semi-Skilled workers include those who have complete secondary education and Skilled are those with tertiary studies. For each skill group we computed average hourly wages, which were deflated using the wage index, and total hours worked in efficiency units. These measures are presented in Figure VII.

The contraction in total employment during the late 1990s is evident in the left panel of Figure VII from the decline of total hours worked (in efficiency units), especially by skilled workers. Relative wages for skilled workers increased slightly while relative wages for unskilled workers were stable over this period. These results are robust to changes in skill, age and gender composition of the labor force, such as those we discussed above.

Figure VII: Wages and Quantities



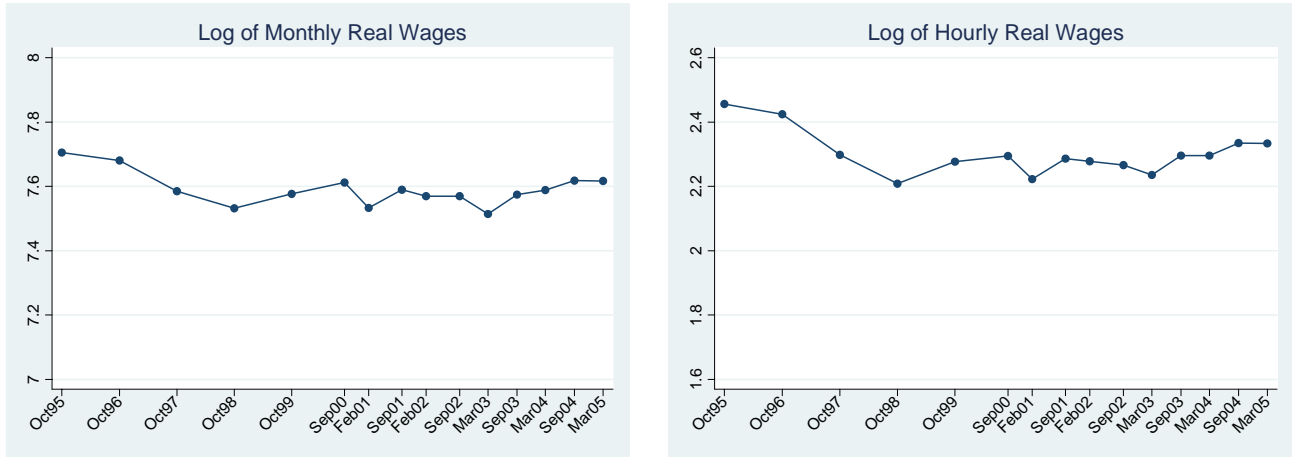
3.2 The Evolution of Wages

It is safe to say that average real wages in South Africa have been stable or decreased slightly between 1995-2005. We estimate that real wages decreased by approximately 10 percent during this time, as a result of a decline from 1995-1998 and a recovery at the end of the period (see Figure VIII). Burger and Yu (2006) estimate a rise of 4 percent over the same period. Our estimates might overestimate the drop in wages near the beginning of the series, while their estimates might overestimate the growth rate in the later years, so the true real wage adjustment is bounded by our estimates.⁸ This is consistent with results in Hoogeveen and Ozler (2005), who find that per capita growth of household expenditures only grew 0.5 percent between 1995-2000.⁹

⁸ We follow Burger and Yu (2006) in two methodological decisions. The efficiency with which the OHS captures informal low-wage workers has increased over time, which implies that earlier surveys overestimated real wages. Thus we consider only full-time employees to exclude most informal salaried workers that were captured differentially in the early surveys. We also drop extremely high wage observations that are likely the result of coding errors.

⁹ Our series matches the patterns in consumption of durable goods that exhibit a U-shape with its lowest value in 1999.

Figure VIII: Real Wage Trends



The trends in average real wages hide the evolution of a composition effect: while the real wages of most groups declined, the share of high-income workers increased during this period, propping up the average real wage. We examine real wages of full-time salaried workers by age group and educational attainment (see Figure IX). Real wages for workers under 30 rose slightly between 1995-2005, while real wages for workers over 30 fell. Workers without a college degree have lost close to 20 percent of their real wage (see the bottom two sets of panels in Figure IX). This finding is consistent with Leibbrandt et al. (2005), who find that the decline in real individual income is attributable to the decline in returns to individual endowments (attributes).

We examine the evolution of relative wages using a series of repeated cross-section earning equations for salaried workers. Figure X presents results using monthly earnings (left panel) and hourly earnings (right panel), and conditioning on educational dummies (same four categories as in Table VII), experience, experience-squared, gender and race dummies. Results for this exercise are similar if we also include industry dummies.

Figure IX: Real Wage Trends

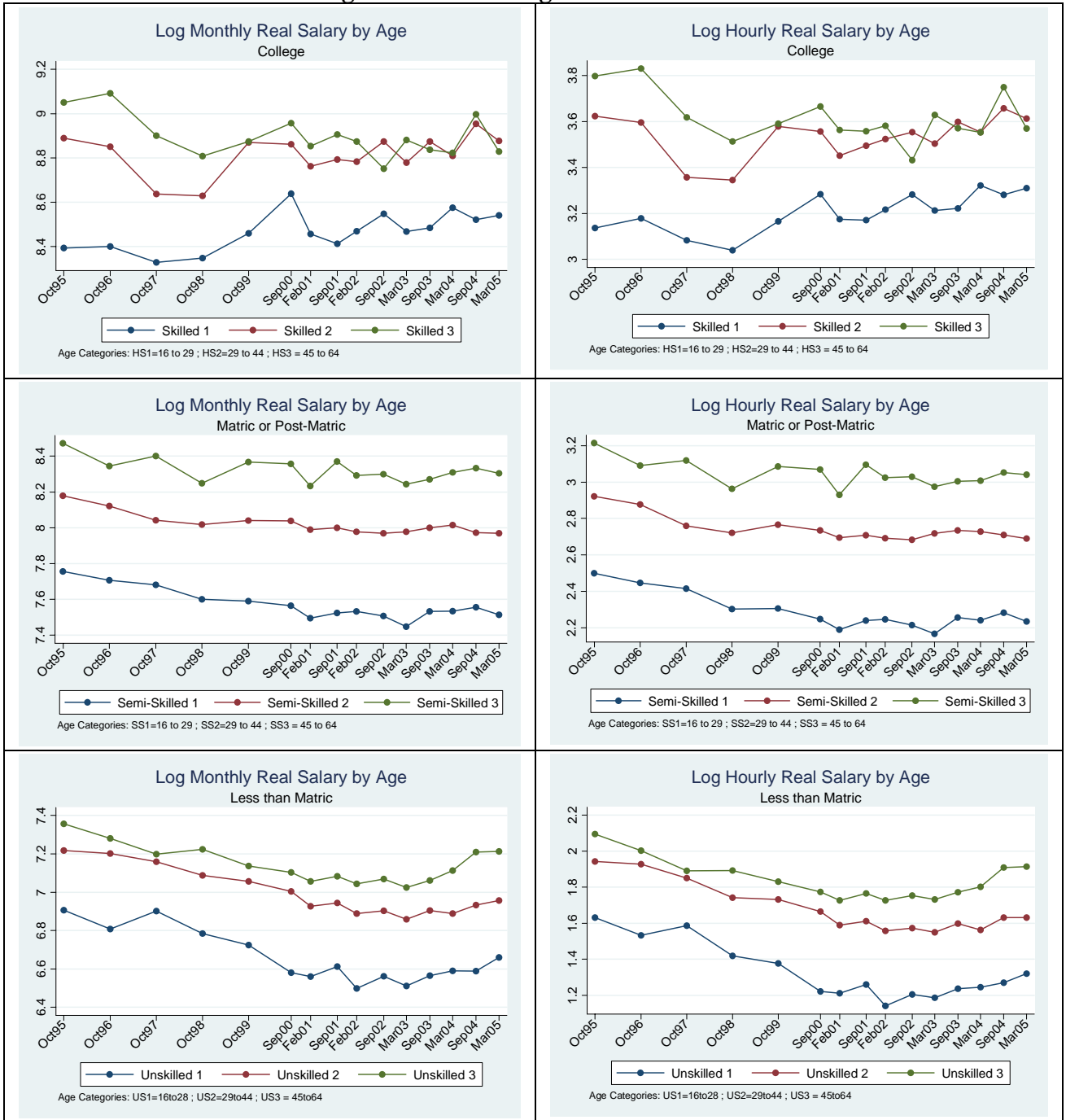
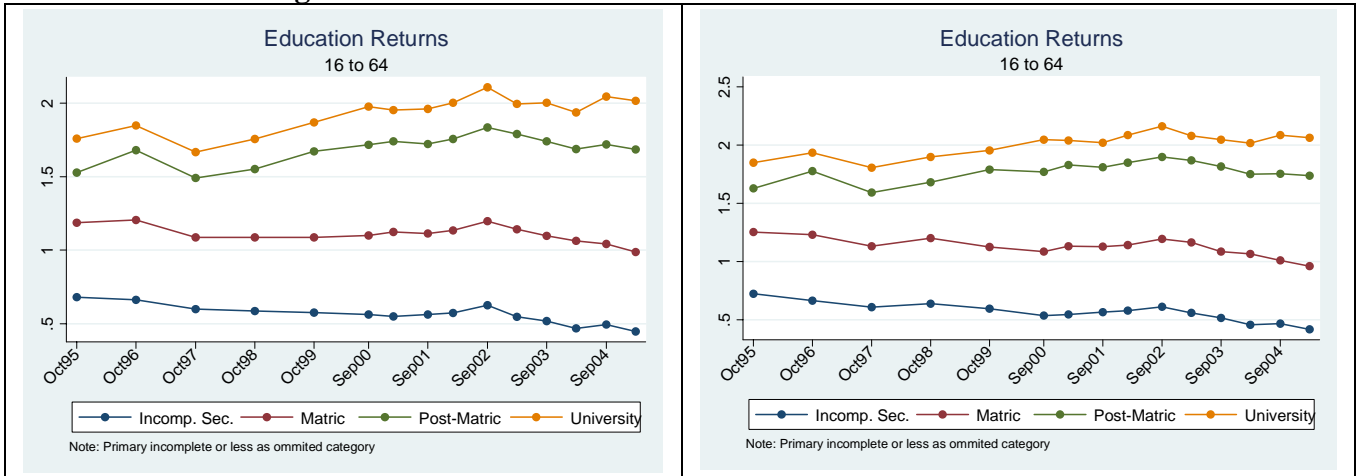


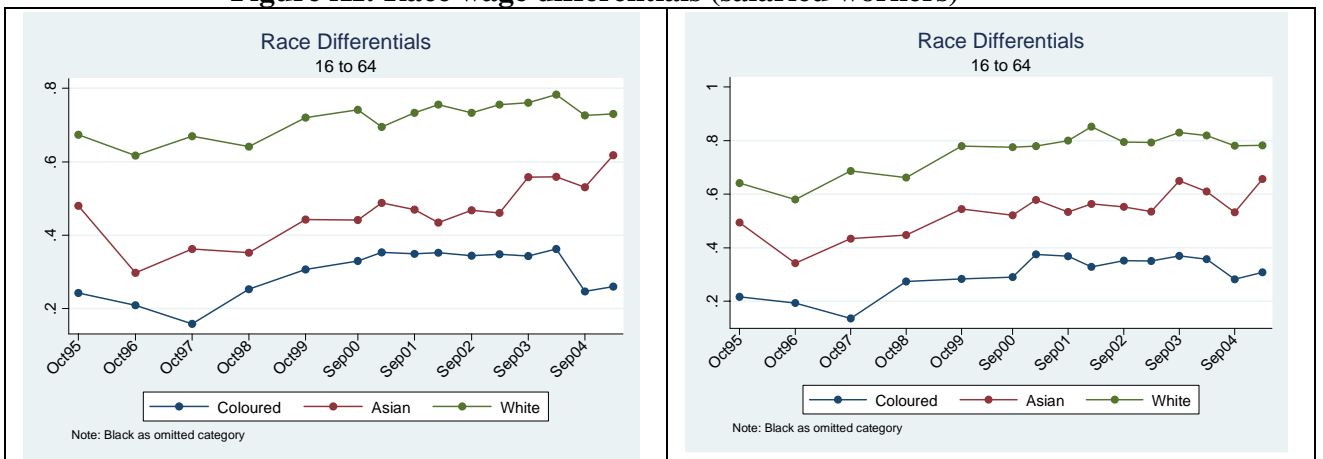
Figure X: Return to Education salaried workers



Note: left panel uses monthly total income and right panel uses hourly income.

There is evidence of a rise in the return to education for those with education beyond matric, and a decline in returns for those with a matric or less. These patterns are consistent with an increase in the demand for skilled labor and with an increase in the supply of labor, especially matric holders, as discussed above. The other striking fact about wages is that Africans seem to be falling behind (see Figure XI). The race indicator variable may be increasingly picking up unobserved differences in the *quality* of education as education levels between Africans and others converge.

Figure XI: Race wage differentials (salaried workers)



Note: left panel uses monthly total income and right panel uses hourly income.

3.2.1 Labor unions

Labor unions have an important role in determining the evolution of wages because of their sizeable membership and substantial economic and political force in South Africa. The relationship between the union wage premium and labor productivity will have ramifications for unemployment. According to surveys by the Bureau of Market Research, 2.5 percent of African workers in urban areas of South Africa were unionized in 1975, 5.5 percent by 1980, and after officially legalizing African unions in the early 1980s, 19 percent were by 1985 (Moll, 1993). The Congress of South African Trade Unions (COSATU) estimates that the rate of unionization grew to 37 percent in 1993 (Schultz and Mwabu, 1997).

In Table XIV we present the share of employees that were union members in 1993, 1995, 1998 and 2004. The share of employees that were union members appears to have been stable since 1993. Unionization rates are highest in mining, manufacturing, electricity and water and educational, medical and legal services. In most sectors, unionization rates are higher for Africans than for whites (see Schultz and Mwabu, 1997).

Table XIV: Share of employees that are union members

Industrial Sector	1993	Oct. 1995	Oct. 1998	Sep. 2000	Feb. 2004
Agriculture	4.5	6.9	9.5	8.7	6.7
Mining	73.1	70.7	72.9	70.0	78.5
Manufacturing	48.0	45.7	45.6	41.5	40.2
Electricity and Water	36.8	41.6	41.7	36.0	32.3
Construction	23.5	18.5	15.0	12.1	10.9
Wholesale, Retail, Hotel and Restaurants	26.4	23.7	22.7	18.3	19.1
Transport, Communication and Finance	29.8	30.8	30.0	23.8	23.6
Educational, Medical and Legal	30.4	45.2	60.2	63.2	62.0
Domestic and other Services	12.0	12.8	7.8	5.6	7.1
All Industries	29.8	33.2	32.8	29.6	29.6

Source: for 1993, Schultz and Mwabu (1997) based on 1993 LSMS dataset. For 1995, 1998 and 2004, own elaboration based on the OHS and LFS.

One could imagine that the presence of so many unionized workers might drive up wages faster than productivity growth, thereby exacerbating unemployment. This is especially a problem because collective agreements reached by bargaining councils in South Africa can be extended to all workers and to all firms in an industry, even if they

were not parties to the negotiations (see Bendix, 2003). Bargaining council agreements cover about 25 percent of formal sector employees (Godfrey, Maree and Theron., 2006).

Here we will look mainly at the wages of unionized workers over time in South Africa. Because collective bargained wages might be extended to the non-union workers, our estimates might only capture part of the effect of unions on competitive wages. For 1995, Butcher and Rouse (2001) provide an estimate of the effect of unions on non-unionized workers in sectors with industrial councils on the order of 10 percent while the union-wage premium they estimate it is about 20 percent.

We estimated the following set of regressions in order to analyze the evolution of the union wage premium for male salaried employees from 1995 to 2004. We used data from OHS 1995 and 1998, LFS September 2000 and LFS February 2004. Each regression is estimated for all full-time male employees and for African full-time male employees.

In the first column of Table XV we report a baseline model where we condition on a full set of education, race, age, industry and occupation dummies. We also included province dummies interacted with an urban/rural dummy. This set of controls is included in every regression presented in this section. In column 2, following Butcher and Rouse (2001), we include household fixed effects in the model. Thus, the union/non-union gap is identified only through households with more than one full time male employee so as to introduce intrahousehold variability in union status. Column 3 presents the estimate of adding a public sector dummy to our baseline specification in Column 1. In Column 4 we augment the specification of Column 3 with tenure and tenure squared in the actual job as control variables. Finally, in Column 5 we report an estimate of the union wage gap by the method of stratified matching using the controls in Column 4 to estimate the propensity score.

These estimates consistently show that the estimated union wage premium increased during this period. The maximum premium seems to have occurred in 2000 – the same time as when employment dampened and wages were at their lowest levels. In 1995, we estimate the union wage gap for all males to be around 13 percent (see column 5, our preferred specification in terms of controlling for observable variables) and 14 percent for African males.

Table XV: Estimated Coefficients – Union Wage Premium

Year	(1)		(2)		(3)		(4)		(5)	
	Baseline Model		Baseline Model + Household Fixed Effects		Baseline Model + Public Sector dummy		Baseline Model + Dummy and Tenure		Stratified Matching	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t	Coef.	t
Africans										
1995	0.21	14.92	0.11	2.15	-	-	0.18	12.87	0.14	7.61
1998	0.29	12.38	0.35	3.89	-	-	0.25	10.38	0.20	6.97
2000	0.42	23.11	0.37	4.86	0.39	20.92	0.33	17.63	0.27	11.38
2004	0.41	21.95	0.47	5.40	0.37	19.28	0.33	17.13	0.23	6.92
All										
1995	0.19	17.65	0.19	5.09	-	-	0.16	14.56	0.13	8.46
1998	0.27	13.75	0.33	4.71	-	-	0.23	11.42	0.18	6.81
2000	0.38	25.03	0.43	7.19	0.34	22.00	0.29	18.96	0.25	11.00
2004	0.35	22.88	0.52	8.11	0.31	19.96	0.27	17.41	0.17	5.73

Note: The public sector dummy is not available for 1995 and 1998.

It seems plausible that the wage premium differed among the different levels of education. Therefore, we repeated the estimation of the equation shown in column four of Table XV including interactions between the union dummy and the education level. High education individuals have tertiary education, medium education includes matric and post matric education and the less education category has less than matric. The results are shown in Table XVI. Moreover, it also seems possible that the union wage premium differed between the public and the private sector employees. Table XVI also reports the results for the interacted public sector and union dummies.

The results show that the wage premium for unskilled and semi-skilled workers increased over time but decreased for the skilled workers. The public and private sector union wage premiums have commensurate values; however, there seems to be an additional significant public sector wage premium.

Table XVI: Estimated Coefficients – Interacted Union Wage Premium

		OLS – Union interacted with skill level						OLS – Union interacted with public sector					
		High Ed.		Medium Ed.		Low Ed.		Union x Public		Union x Private		Public	
Year		Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	T	Coef.	t
Africans	1995	0.21	12.43	0.15	5.37	-0.05	-0.58	-	-	-	-	-	-
	1998	0.26	9.45	0.26	5.69	-0.28	-1.49	-	-	-	-	-	-
	2000	0.36	17.08	0.28	8.30	-0.08	-0.80	0.39	11.20	0.38	18.04	0.28	8.78
	2004	0.37	16.08	0.33	10.95	-0.35	-3.92	0.34	8.77	0.38	17.32	0.44	10.64
All	1995	0.19	14.21	0.12	6.76	-0.04	-0.71	-	-	-	-	-	-
	1998	0.24	10.46	0.21	6.27	-0.04	-0.38	-	-	-	-	-	-
	2000	0.35	19.44	0.22	8.47	-0.10	-1.76	0.33	11.19	0.35	19.23	0.28	10.08
	2004	0.33	17.00	0.24	10.07	-0.09	-1.60	0.31	9.91	0.31	17.44	0.35	10.51

3.2.2 Wage Push

Prima facie, given that real wages have been falling in South Africa for most of the last decade and more, it is slightly odd to be discussing the possibility of unemployment being driven by a wage push. In particular, as we saw in section 3.2 above, the fall in wages was faster among the relatively lower skilled and the young, the two groups that suffered disproportionately from unemployment. However, what people seem to have in mind when they think of wage push in South Africa is wage push in the formal sector, where unions are powerful and minimum wage laws may be especially binding.¹⁰ This can create job losses in the formal sector, increasing the demand for informal sector jobs. Some friction/rigidity in the informal sector then turns this increase in demand into unemployment.

We repeat the analysis presented in Figure IX, restricting the sample to unionized workers in Figure XII. While average wages for all workers did not increase between 1995 and 2005 (see Figure IX), the real wages of the unionized skilled workers trended upwards and wages of the unskilled workers fell, at least until early 2004. Yet these are exactly the categories where unemployment has grown the most. In other words, the growing union wage premium, especially for African workers (who tend to be unskilled),

¹⁰ However, as argued below, minimum wage laws do play a role outside the formal sector, and the overall decline in real wages, especially at the bottom, happened in spite of attempts to raise the minimum wage.

kept the wages of the unionized unskilled from falling as fast as they otherwise would have (given what was happening outside the unionized sector). Naturally, the fact that the wages of unskilled unionized workers did not fall when the shocks in the labor market required them to go down indicates that unions play an important role in determining the equilibrium in the labor market even though the episode is not one of a wage push.

Section 4

4. Evidence on the Speed of Transitions

Policy interventions to address the unemployment problem can be better targeted if we know *who* is unemployed and what determines transitions into and out of the labor force. We disaggregate the unemployment data presented in Section 2, and examine transition rates by age, race and education. One might expect that the relatively stable unemployment rate since 2000 reflects structural inefficiencies in the labor market that hinder transition. However when we look directly at transitions it becomes clear that this stability hides large gross flows between employment categories.

For this analysis, we use newly constructed panel data comprised of matched LFS waves. The LFS panel is the first nationally-representative panel data on employment in South Africa it follows individuals over time and permits us to directly observe employment transition. A more complete description of the panel is found in Appendix A.

Our analysis is structured as follows: first, we determine who is in each employment status category; second, we examine who is transitioning between employment categories; third, we use multinomial logit regression analysis to identify the factors that make an individual more or less likely to transition out of the unemployment pool. We then discuss the role played by search costs and reservation wages in transition rates.

4.1.1 A snapshot of employment status

First, we look at the factors that determine the employment status of workers in a particular period (September 2002, wave 6), controlling for gender, race, age, education level, urban/rural and whether the individual has held a job before (see Table XVII).¹¹ These results augment the tables given in Section 2, because here we examine *conditional* probabilities. There are few surprises, and we discuss only the main points that emerge

¹¹ The table presents mean derivatives instead of coefficients because in a multinomial logit analysis the derivatives contain more useful information (the sign and magnitude of the effect) than the coefficients. The mean derivatives are a more consistent estimator of the marginal effects than are derivatives evaluated at the mean. Significance levels are taken from the test of the null hypothesis that the coefficient from the multinomial logistic regression is equal to zero. The standard errors on the mean derivatives are uninformative regarding significance and thus are omitted from the table.

from the analysis. Urban residents are more likely to be unemployed or in the formal sector, and less likely to be in the informal sector than are rural residents, controlling for covariates. The informal sector is overwhelmingly African and female, which likely reflects the proportion of the informal sector made up by domestic workers. The coefficients on the indicator variables for race demonstrate that Africans (the reference group) are more likely to be unemployed or in the informal sector than the other population groups, and less likely to be in the formal sector or NEA.

Table XVII

Multinomial results for employment status in wave 6, (men & women)

Table presents mean derivatives (i.e. the average marginal effect)

	NEA		Unemployed		Informal		Formal
urban	-0.022	***	0.040	***	-0.032	***	0.015
female	0.064	***	0.017	***	0.064	***	-0.145
neverworked	0.337		0.351	***	-0.216		-0.472
white	0.055	***	-0.060	***	-0.085	***	0.090
indian	0.147	***	-0.138	***	-0.096	***	0.087
coloured	0.213		-0.237	***	-0.083	***	0.108
age	-0.029	***	0.023		-0.006	***	0.012
age^2	0.043	***	-0.036		0.007	***	-0.015
primary	-0.008	***	0.011	***	-0.004	***	0.001
secondary	-0.002	***	-0.011	***	-0.009	***	0.022
matric	-0.062	***	0.010	***	-0.036	***	0.087
postmatric	0.044	***	-0.112	***	-0.081	***	0.148

Note: province dummies were included, but results not shown

Note: Coefficients for Formal (the reference group) are for illustrative purposes only

Holding a matric is by no means a guarantee of employment. Although matric holders are more likely to be employed in the formal sector and less likely to be in the informal sector than are workers who have less than a matric, they are also 1 percentage point more likely to be unemployed. In fact, a large portion of the unemployed have yet to find their first job and enter the labor force: individuals who have never before held a job are 35 percentage points more likely to be unemployed than are workers who have worked before. This highlights the importance of obtaining that first job and suggests a focus for policy intervention. This result is likely a combination of sorting by the labor market and the glut of matric holders driving down returns to a matric. The result is also

consistent with a story in which there is a mismatch between the skills being taught in schools and the skills needed in the workplace. On the other hand, having at least some education beyond the matric is good insurance against poor labor market outcomes. Those with post-matric education are 11 percentage points less likely to be unemployed and 8 percentage points less likely to be in the informal sector, which has lower returns to education than the formal sector (results not shown).

4.1.2 Transition matrices

The LFS panel data allow us to look at the experience of individuals over time to determine who is making employment transitions and how large the gross flows actually are. Table XVIII presents transition matrices for several slices of the data for the six-month period between September 2002 (wave 6) and March 2003 (wave 7). These transition matrices for wave 6 to wave 7 are broadly representative of the other wave-to-wave transitions in the panel. Transitions matrices for a one-year period were generally similar as well. For brevity we do not present these results here. The top panel of Table XVIII presents transition probabilities for all adults, ages 16-64 inclusive. That matrix shows, for example, that:

- Of adults 16-64 who are unemployed (and either discouraged or searching), 9.6 percent find employment in the formal or informal sector after six months.
- Discouraged workers most frequently transition into actively searching for work. About 14 percent transition from discouraged and reportedly not searching for work, to employed six months later.
- Discouraged workers are twice as likely to transition into the informal than the formal sector, while the unemployed who are searching are equally likely to transition into the informal or formal sectors. Almost 12 percent of those who are initially working in the informal sector transition within six months to the formal sector.
- Of those with formal sector employment, only 16 percent have transitioned into another state after six months with the other 84 percent staying in the formal sector.

- So-called retirement is apparently not a permanent (absorbing) state. Of those who are retired in wave 6, only about 68 percent are classified as retired six months later. This is perhaps an artifact of how data were recorded, since another 16 percent were classified as NEA six months later. Even if all the NEA were in fact still retired, there are 15 percent of the so-called “retired” who are either looking for work or working six months on.

Table XVIII

All adults (16-64)			<u>State wave 7</u>					
<u>State wave 6</u>	N	Retired	NEA	Unemp_d	Unemp_s	Informal	Formal	Total
Retired	1,065	68.45	16.32	3.09	1.96	7.32	2.85	100
NEA	7,057	2.87	68.01	9.26	12.11	4.29	3.45	100
Unemp_d	2,264	1.91	19.09	36.11	28.78	9.89	4.22	100
Unemp_s	3,630	0.83	14.15	16.41	49.82	9.27	9.53	100
Informal	2,496	3.16	12.04	8.13	12.96	51.86	11.86	100
Formal	6,677	0.92	3.36	1.63	5.04	4.79	84.26	100
Total	23,189	4.68	26.87	10.82	17.94	11.28	28.4	100

Male adults (16-64)			<u>State wave 7</u>					
<u>State wave 6</u>	N	Retired	NEA	Unemp_d	Unemp_s	Informal	Formal	Total
Retired	311	64.4	13.02	5.02	3.5	7.56	6.5	100
NEA	2,926	1.8	74.37	6.81	11.24	2.66	3.12	100
Unemp_d	792	2.74	15.99	30.81	33.46	10.56	6.43	100
Unemp_s	1,573	1.25	12.33	13.81	51.05	10.31	11.25	100
Informal	919	2.42	8.89	6.83	16.75	48.65	16.46	100
Formal	3,929	0.77	1.92	1.62	6.14	4.92	84.63	100
Total	10,450	3.21	24.44	7.97	17.92	10.1	36.36	100

Female adults (16-64)			<u>State wave 7</u>					
<u>State wave 6</u>	N	Retired	NEA	Unemp_d	Unemp_s	Informal	Formal	Total
Retired	754	70.23	17.78	2.25	1.29	7.21	1.24	100
NEA	4,131	3.65	63.42	11.03	12.74	5.46	3.69	100
Unemp_d	1,472	1.45	20.81	39.06	26.17	9.52	2.98	100
Unemp_s	2,057	0.49	15.59	18.46	48.85	8.45	8.17	100
Informal	1,577	3.69	14.29	9.06	10.24	54.15	8.57	100
Formal	2,748	1.16	5.59	1.64	3.33	4.59	83.69	100
Total	12,739	5.96	28.99	13.31	17.96	12.31	21.48	100

Most importantly, we are struck by just how much churning there appears to be in the labor market. Although the aggregate unemployment figures in Table I show little change from LFS wave to wave, the individual-level data show remarkable mobility. Examples include:

- Only about half of the workers who are employed in the informal sector are still employed there six months later.

- Half of the workers who are listed as formally searching for a job are still searching six months later.
- Only about a third of the workers who list themselves as discouraged are so listed six months later.
- Even among the NEA, about 30 percent no longer report being in that category after six months.

Rather than a sclerotic labor market where individuals tend to stay in the same employment category from wave to wave, the transition data suggest a high level of mobility at the individual level. One concern that we had is that this reflects the burden of HIV/AIDS. Perhaps people are forced to transition out of the labor market when they get very sick and return when they are in remission. This does not appear to be the case. We can use the LFS data to identify those who changed the labor market status because of their own illness. The results remain qualitatively similar when we leave them out: only the percentage of workers listed as retired or NEA change slightly.¹²

We examined the difference in transition rates out of formal employment for those who report being a member of a union compared to those who don't. Between wave 6 and wave 7, just under 10 percent of unionized workers (n = 2658) transition out of the formal sector, while 20 percent of non-unionized workers (n = 20,531) make the same transition. Even though the unionized have a slower transition rate than the non-unionized, 10 percent is very high considering it is over a six month period. Results are similar when we control for observed characteristics: union workers are 11 percentage points more likely to remain in the formal sector (multinomial logit results not shown).

There is no clear pattern of transition from the informal sector to the formal sector, as is observed in many other developing countries. For both men and women, an equal proportion transition from the informal sector into unemployed and searching as transition into the formal sector. However, men transition into the formal sector at a higher rate (16.5 percent) than women do (8.5 percent). Multinomial logit analysis of the probability of transition into the formal sector (conditioning on observable

¹² One caveat is that the data do not allow us to identify individuals who transition because they are caring for family members ill with AIDS.

characteristics) reveals little additional information, suggesting that *unobservable* characteristics such as quality of education or access to personal networks play a role in finding a job (results not shown).

If we examine the *inflow* into the formal sector (between waves 6 and 7), we find that 84 percent were in the formal sector the wave before, with approximately equal inflows from the informal sector (4.5 percent) and unemployed who are searching (5 percent), and negligible inflows from the other employment categories (See Table XIX below). This raises questions about the nature of job search, the nature of informal employment and the pathways to a formal sector job. What is it about informal sector employment that increases formal job finding rates to the level of job searching (as a primary activity)? It may be that those who are searching or in the informal sector live or are able to travel to where the jobs are. It also may be that workers recognize that the informal sector is sub-optimal, and for many “informal employment” is actually informal employment *plus* job search.

It is worth noting that there are similar inflows and outflows between the formal sector and each of the other employment categories, percentage-wise. This indicates that the labor market is close to its steady state. However, these *unconditional* transition probabilities mask important changes in the skill composition of the formal sector workforce.

Table XIX

Inflow into formal sector	
<u>State (t-1)</u>	<u>Percent</u>
retired	0.42
NEA	3.47
u/e discouraged	1.61
u/e searching	5.67
informal employed	4.63
formal employed	84.19
Total	100

Table XX gives transition probabilities for South African youth (ages 16-24 inclusive). We identify two reasons for high unemployment rates among young people: low outflows because searching is not very successful, and high inflows because, for

example, high school drop-outs go directly into unemployment and are likely to remain there. Those between the ages of 16-24 who are searching for a job are much more likely to transition into discouraged worker status than they are to obtain employment (in the formal or informal sector). Of the youth classified as NEA in wave 6 (most of whom are students), about 22 percent transition out of NEA within six months: 18.5 percent into unemployment and only 3 percent into employment. One policy response to this situation is for the government to induce firms to create special low wage jobs for younger workers. Such an institutional arrangement does exist in South Africa (it is called a learnership) and it is in fact subsidized. A careful analysis of this existing program, in light of the persistent unemployment concentrated among the younger workers, seems appropriate.

Table XX

Youth (ages 16-24)

Men and women

<u>State wave 6</u>	N	NEA	Unemp_d	<u>State wave 7</u> Unemp_s	Informal	Formal	Total
NEA	4,318	78.23	7.51	11.11	1.73	1.43	100
Unemp_d	722	21.79	37.27	31.89	6.03	3.02	100
Unemp_s	1,062	18.54	16.91	52.29	4.74	7.53	100
Informal	213	31.51	14.6	17.72	27.77	8.41	100
Formal	512	5.23	6.26	13.8	3.63	71.08	100
Total	6,827	53.91	12.8	21.08	3.82	8.39	100

Men only (16-24)

<u>State wave 6</u>	N	NEA	Unemp_d	<u>State wave 7</u> Unemp_s	Informal	Formal	Total
NEA	2,223	80.58	6.39	9.66	1.79	1.58	100
Unemp_d	293	20.41	27.65	40.18	6.21	5.54	100
Unemp_s	511	16.64	13.31	54.93	7.01	8.11	100
Informal	119	26.12	10.45	23.21	31.26	8.96	100
Formal	281	4.67	6.79	17.33	4.46	66.75	100
Total	3,427	55.67	9.66	21.11	4.49	9.07	100

Women only (16-24)

<u>State wave 6</u>	N	NEA	Unemp_d	<u>State wave 7</u> Unemp_s	Informal	Formal	Total
NEA	2,095	75.65	8.74	12.69	1.65	1.27	100
Unemp_d	429	22.66	43.4	26.61	5.91	1.42	100
Unemp_s	551	20.31	20.29	49.81	2.61	6.97	100
Informal	94	39.15	20.47	9.95	22.82	7.62	100
Formal	231	5.98	5.57	9.14	2.53	76.78	100
Total	3,400	52.12	16	21.06	3.13	7.69	100

The retention rate in the informal sector is low among youth (28 percent) suggesting that this is likely casual (temporary) employment rather than a more permanent attachment to the informal sector. Only about 8.5 percent of youth in the informal sector transition into the formal sector between waves 6 and 7. They are less likely to transition into the formal sector than they are to transition into any other employment category.

These analyses of youth transition probabilities all point to the potential benefits of getting young workers into their first job. The school-to-work transition is key and it simply is not working at present. As noted in the introduction, this could be because of search costs, because of reservation wages, or because of a mismatch between the skills taught in school and those required in the labor market. These explanations are discussed below in sections 4.3 and 4.4.

Table XXI presents the transition matrices for all adults (ages 16-64) by education level. Not surprisingly, those with more education have better employment outcomes, both in terms of transitions and retention. Having education beyond the matric increases the probability that an individual will retain formal sector employment after six months from 83 percent to 92 percent, and reduces the probability of transition into unemployment if formal sector employment is not retained. Even controlling for other observables, post-matric qualifications increase the probability of remaining in the formal sector by 7 percentage points (multinomial logit, results not shown). Workers in the formal sector with a matric or less have about an 8 percent chance of transition into unemployment over a six-month period, compared to less than 2 percent if the worker has more than a matric. Having a job in the formal sector is one thing, and, apparently, keeping it is quite another.

The nature of retirement differs depending on the education level of the retiree. As mentioned above, retirement is not an absorbing state, especially for the many retirees who have less than a matric. The few retirees in our sample with post-matric education are much more likely to remain retired: six months later 82 percent of these are still classified as retired.

Informal sector employment is vastly more important for individuals with a matric or less than it is for those with more than a matric. In our sample, 13 percent of adults with less than a matric are in the informal sector compared to 3 percent for those with post-

matric education. Additionally, tenure in the informal sector decreases with education: the probability of remaining in the informal sector is 54 percent with less than a matric, 40 percent with only a matric, and only 23 percent with more than a matric.

Table XXI

Adults 16-64 with degree or postmatric				<u>State wave 7</u>				
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	66	82.49	7.39	0.52	0	1.44	8.15	100
NEA (broad definition	142	3.16	55.34	5.04	20.41	2.6	13.45	100
u/e discouraged	44	2.59	3.65	24.29	60.12	3.18	6.17	100
u/e searching	151	1.28	8.93	11.47	56.85	6.77	14.71	100
informal employed	61	3.1	7.74	2.65	4.38	23.03	59.08	100
formal employed	1,253	0.92	2.99	0.59	1.32	1.92	92.25	100
Total	1,717	4.92	7.76	2.47	8.77	3.08	73.01	100

Adults 16-64 with matric only				<u>State wave 7</u>				
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	59	63.69	20.09	3.95	0	6.54	5.74	100
NEA (broad definition	676	2	52.71	10.07	24.35	4.27	6.6	100
u/e discouraged	379	1.01	12.23	38.54	36.01	5.07	7.13	100
u/e searching	887	0.1	14.57	15.03	54.19	6.32	9.79	100
informal employed	234	0	8.98	6	20.43	40.45	24.15	100
formal employed	1,438	1.05	3.99	1.35	6.24	4.12	83.25	100
Total	3,673	1.87	16.38	10.49	25.2	7.35	38.72	100

Adults 16-64 with less than a matric				<u>State wave 7</u>				
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	940	67.42	16.93	3.28	2.3	7.95	2.13	100
NEA (broad definition	6,239	2.97	70.04	9.27	10.53	4.33	2.86	100
u/e discouraged	1,841	2.08	20.79	35.89	26.66	11	3.6	100
u/e searching	2,592	1.05	14.27	17.14	47.96	10.41	9.17	100
informal employed	2,201	3.54	12.52	8.53	12.29	54	9.12	100
formal employed	3,986	0.88	3.23	2.11	5.89	6.1	81.79	100
Total	17,799	5.28	31.18	11.76	17.28	13.01	21.49	100

Table XXII presents labor market transitions by population group. Outcomes for African workers are generally worse than for the other population groups: they are more likely to remain in the informal sector, less likely to transition from the informal sector into the formal sector, and less likely to retain formal sector employment should they obtain it. The informal sector can be characterized as a second-best alternative to formal employment – the returns to education are lower than in the formal sector (results not shown). While only 19 percent of Whites in the informal sector remain there after six months, over 50 percent of Africans and Coloureds, and 43 percent of Indians do. About

60 percent of Whites in the informal sector transition to the formal sector after six months; the corresponding figure for Coloureds and Indians is about 20 percent, and for Africans is below 10 percent.

Table XXII

BLACK AFRICAN		<u>State wave 7</u>						
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	753	66.75	15.76	3.71	2.2	9.94	1.65	100
NEA (broad definition)	5,425	2.37	67.76	10.71	12.63	4.74	1.78	100
u/e discouraged	2,028	1.66	18.69	37.34	28.61	10.09	3.61	100
u/e searching	3,121	0.7	13.6	17.26	51.12	9.11	8.2	100
informal employed	2,196	3.33	11.71	8.78	13.48	53.02	9.68	100
formal employed	3,743	0.53	2.85	2.24	6.74	5.75	81.89	100
Total	17,266	4.22	28.12	13.18	20.66	12.95	20.87	100
COLOURED		<u>State wave 7</u>						
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	144	66.53	26.66	3.19	1.34	1.24	1.04	100
NEA (broad definition)	924	4.89	65.81	4.18	13.63	2.66	8.83	100
u/e discouraged	177	0.23	21.89	22.58	34.35	11.4	9.55	100
u/e searching	378	0.9	14.57	11.73	45.1	11.66	16.04	100
informal employed	220	1.81	15.06	3.35	9.25	52.03	18.5	100
formal employed	1,311	1.14	3.6	1.18	4.36	4.52	85.2	100
Total	3,154	4.57	23.98	4.79	14.17	8.86	43.62	100
INDIAN/ASIAN		<u>State wave 7</u>						
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	26	66.34	17.12	0	8.48	2.89	5.16	100
NEA (broad definition)	208	4.74	72.27	2.61	11	1.69	7.69	100
u/e discouraged	26	6.02	23.17	11.62	51.25	0	7.94	100
u/e searching	70	1.37	31.28	6.19	30.91	4.61	25.64	100
informal employed	19	0	17.59	6.08	11.49	43.53	21.31	100
formal employed	296	0.15	3.51	0.82	4.85	5.11	85.56	100
Total	645	4.25	26.51	2.44	11.65	4.85	50.3	100
WHITE		<u>State wave 7</u>						
<u>State wave 6</u>	N	Retired	NEA	U/E disc	U/E search	Informal	Formal	Total
retired	142	76.63	13.17	1.02	0.35	0.59	8.24	100
NEA (broad definition)	500	5.08	71.64	2.61	5.35	2.4	12.92	100
u/e discouraged	33	19.47	30.94	23.41	5.52	0	20.66	100
u/e searching	61	5.32	18.65	8.14	31.11	11.84	24.94	100
informal employed	61	2.06	13.41	0	6.32	18.79	59.42	100
formal employed	1,327	1.91	4.38	0.65	1.44	2.58	89.04	100
Total	2,124	8.34	20.57	1.68	3.37	3.18	62.87	100

Table XXIII shows the conditional probabilities of transition from the informal sector to the formal sector, controlling for the probabilities of remaining in the informal sector or transitioning to another employment status.¹³ For most groups, the informal sector does not seem to be a stepping stone into the formal sector. Moreover, it

¹³ Results in table are a portion of the multinomial logit results. We have controlled for the conditional probabilities of remaining in informal and transitioning from informal to NEA or unemployment.

reinforces already-existing inequalities: women are 7 percentage points *less* likely to transition than men, Whites are 31.5 percentage points *more* likely than Africans, and having some post-matric education increases the likelihood of making this transition by 24 percentage points.

Table XXIII

Effect of covariates on probability of moving from informal sector to formal sector (percentage points)

Variable	Percentage points
urban	0.025
female	-0.070 ***
coloured	0.061
indian	0.031
white	0.315 ***
age	0.006
age^2	-0.007
primary	0.000
secondary	0.006
matric	0.052
postmatric	0.244 **

*province dummies were included, but results not shown
 Note: Wave 6 to wave 7 transition
 Note: mean derivatives presented with significance levels from mlogit (results from other categories excluded)

The size of the outflow of African workers from the formal sector is large due to the combination of the relative size of the African population and the fact that African workers are proportionally less likely to retain a formal sector job than are other races. In a six-month period, Whites are about 7 percentage points more likely than Africans to remain in the formal sector, while Coloureds and Indians are about 4 percentage points more likely than Africans to do so. If we condition on gender, race, age, education level, urban/rural and whether the individual has held a job before, the gap between Whites and Africans is only reduced slightly to 5.5 percent (multinomial logit, results not shown).

Job search is more effective for Whites and Indians than it is for Africans and Coloureds. Of those who are actively job searching, 50 percent of Africans and 45 percent of Coloureds are still searching after six months, whereas only 30 percent of Whites and Indians remain in this state. Africans are more likely to move from actively

searching to either discouraged or NEA than into employment, while the other population groups are more likely to move into employment in the formal sector or NEA than the other categories. It is troubling that as much as 17 percent of Africans who are actively searching for a job transition into discouragement within six months. This raises questions about the efficacy of various search methods and the reasons why so many Africans transition into discouragement. We deal with some of these questions in the multinomial logit analysis below.

The proportion of discouraged workers in the labor force has been growing, with African workers comprising a larger portion of discouraged workers over time.¹⁴ Discouraged worker status is a much more sticky employment status for Africans than for the other population groups: 50 percent remain discouraged six months later, while this figure is approximately 23 percent for Coloureds and Whites, and only 12 percent for Indians. A troubling statistic is the magnitude of the outflow of Africans from the formal sector *directly* into the discouraged worker category.

4.1.3 Multinomial logit analysis of outflow from unemployment

Policy interventions must address the current stock of unemployed and increase the outflow from unemployment either into employment or out of the labor force (i.e. into NEA). We examine the current rate of outflow using a multinomial logit analysis to see if there are populations that could be targeted with policy (see Table XXIII). These results confirm what is already apparent: urban residents, Africans and younger workers are less likely to make the transition from unemployment to employment (either formal or informal). Searching while unemployed not only increases the probability of transition into employment, but it slightly decreases the probability of transition into NEA. These results suggest that those who are searching are less likely to give up, those who have no easy “NEA” option are more likely to actually search. In addition to being more likely to transition into employment, Whites and Indians are also more likely to transition into NEA, where they are no longer classified as unemployed even if they are not working. This increases the proportion of the unemployed over time who are African or Coloured.

¹⁴ LFS 2000-2005, Broad definition of unemployment

Each additional year of secondary education (without having a matric) reduces the probability of transition from unemployment into NEA by about 1.3 percent, which means they're more likely to remain unemployed.

4.1.4 Summary

If the high rate of unemployment that we observe is the equilibrium rate, then it is unlikely to go down on its own without a policy intervention or substantial shock to the market. Assuming that the first transition matrix in Table XVIII is the true transition matrix for the South African economy for this period, we can calculate the steady state it implies. In the steady state the share of the retired will be 5.4 percent, the share of those not economically active (NEA) is 24.7 percent, the share of those unemployed but discouraged is 10.8 percent, the share of those who are unemployed and searching is 18.3 percent, the share of those informally employed is 11.7 percent and the rest, 29.1 percent are in the formal sector working. The corresponding fractions in the actual data are 4.7 percent, 26.9 percent, 10.8 percent, 17.9 percent, 11.3 percent and 28.4 percent. In other words, the labor market is more or less already in the steady state.

The results from this section suggest that the bulk of the unemployment is structural rather than transitional. This does not of course mean that there are no transitional elements in what we observe. Nor should we conclude that the elements identified in this section, such as search costs, are unimportant. But if they play a role, it is not so much because the economy is in transition, but because they interact with other structural features of the economy.

The huge amount of churning in the labor market presents two avenues for policy: increase the inflow into the formal sector and/or slow the outflow out of it. As mentioned above, the labor market is very near the steady state so it is unlikely that the unemployment rate will fall without intervention or an external shock. This evidence does not tell us whether these transitions out of the formal sector are voluntary quits or lay-offs (although anecdotal evidence suggests they are the former), but high turnover in the workforce generally leads to a sub-optimal level of investment in firm or industry-specific human capital on the part of workers and the employers. On the other hand,

workers seem to have a reasonable chance of finding jobs, but the large bi-directional flows may be hiding changes in the skill composition of the formal sector discussed in section 3. If firms have been upgrading the skill level of their labor force as real wages remain stable, then we may have a more sclerotic labor market than it seems, as one set of people lost their jobs and a very different set gained.

4.2 Search

Search costs are an underlying reason why unemployment and the informal sector are more “sticky” labor market outcomes for some groups than for others. As shown above, Africans and Coloureds are more likely to remain searching than Whites or Indians. The differential effectiveness of search may be accounted for by the legacy of apartheid-era spatial separation. The high turnover rates we see in the data reduce incentives on the part of employees and employers to invest a lot in the search process. In a changing world there will always be people and jobs that are mismatched and efficiency demands that they be reallocated. While this could be achieved without creating unemployment (employers and employees could wait till they find new employees/jobs before effecting a separation) there are good and well-known reasons why this is not how it typically happens. For example, firms are likely to be reluctant to train people for jobs knowing that they will be replaced soon and if employees have to find a job without quitting, this would place limits on how much time and travel they can put into the job search.

The problem with this class of explanations is that people and firms everywhere need to search for jobs and employees and yet most places do not have the kind of unemployment we see in South Africa. There are however some potential reasons why search may be a bigger problem in South Africa. First, the history of apartheid was a history of apartness. Many Blacks were banished to distant homelands, and only allowed to come to the “white” areas if they had a job. As a result, a substantial part of the African population of South Africa grew up far from the centers of business and industry. Moreover, given the poor infrastructure in these places, their often-inconvenient locations, and white beliefs about the (potentially insecure) nature of these places, unfounded or otherwise, it is unlikely that capital will move there en masse. Therefore, workers from these areas need to search for jobs far from their homes, and this is

typically a major discouragement. We know that even in an ultra-mobile society like the United States, most people prefer to stay where they were born even when wages are much higher elsewhere. So perhaps it is no surprise that a lot of people from the homelands elect to stay where their family lives and look for a job that they will not find, rather than stepping into some distant unknown world.

To make matters worse, the lack of high-density urban centers makes South Africa very different from most middle-income countries. High-density centers make job search easy, in part because there are many opportunities close by, and in part because the density makes it possible to set up low cost public transportation systems. As a result, the physical costs of job search may be particularly high in South Africa, thereby reducing the effectiveness of the job search of a large group of the population and increasing the equilibrium unemployment rate. However, this was also true in the past, when unemployment appeared to be lower. There are two reasons why this might be more problematic now than in the past. One possibility is that in the past there were more jobs near the homelands in the primary sector and the loss of these jobs left the population in these areas residing further away from the new jobs without the possibility of moving closer to them because of apartheid. The other possibility is that because of the impossibility of search in the apartheid era, people in the homelands did not consider themselves unemployed (but rather NEA). Now that apartheid is over, they do.

The history of racial prejudice may be another reason why search is a particular problem in South Africa. Some white employers might have strong beliefs about what Africans can and cannot do, which might make them unwilling to give a chance to someone who is qualified. Knowing that such discrimination exists might also discourage Africans from searching. This in turn might discourage unprejudiced white employers from searching, since they know that they are unlikely to find someone good. Indeed as known from the work of Diamond (1984), search models admit multiple equilibria with differing levels of search, and a small amount of prejudice could tip the equilibrium towards the inefficient low search equilibrium (or shift the unique equilibrium towards the low search outcome).

Finally, unions may protect jobs to the point where very few people ever leave their jobs, which would mean that there are few openings and job search is frustratingly slow. The transitions data suggest this is not the case.

High search costs could in principle explain high levels of transitional unemployment when combined with the fact that the demand and supply of labor in South Africa had shifted enormously during this period, making large reallocations necessary. High search costs would slow down this transition, though whether that increases or decreases unemployment depends on whether, on balance, this leads to more time spent searching. After all, firms and individuals could decide not to search and just make do with whatever employee or employer they currently have.

4.3 Reservation wages

As documented in sections 2 and 4.1.2, unemployment is especially high among workers under the age of 35, and most of these unemployed young people have never worked before. One possible interpretation of this phenomenon is that people claim that they want a job and are looking, but are really not, either because they are looking for a job that is not there (a job that would pay them a lot or one that is in their backyard) or because they are putting very little effort into their job searches (perhaps without quite realizing it). In other words, they are not looking for the job that they can get.

Why might this be a particular problem in South Africa? One answer is that South Africa's social pension program is particularly generous, paying each senior South African something of the order twice the per capita income. No other middle-income country has a comparable program. This is a result of extending the very generous apartheid- era pension program for Whites to the rest of the population.

4.3.1 Pensions and reservation wages

One consequence of this program is that many unemployed South Africans can survive without having to take a job, as long as their elders are willing to support them.

This would mean that they might put less effort into job search and be fussier about jobs they take.

There is some evidence that this is indeed a problem. Bertrand et al., using data from the mid 1990s, show evidence that people who have family members who are eligible for the pension tend to work less than they would otherwise. Bertrand et al., though, rely entirely on cross-sectional evidence and use data that precedes the start of the LFS surveys that we have used in this paper. More recent (and perhaps more convincing) evidence is provided by Ranchhod (2006). His paper analyzes the change in employment and labor force participation rates using the panel components in the LFS. We incorporate results taken verbatim from a draft version of a recent paper presented at the Population Association of America. In Table XXIV, Ranchhod presents the coefficient estimates from several different regressions. The coefficient reported corresponds to a dummy variable that indicates whether the household is a Keeper or a Loser. The objective of this table was to investigate whether households experience other changes that correlate with the departure of the pensioner.

Table XXIV: "Difference in Difference" estimates of the effect of the loss of a pensioner
Regression coefficients where dependent variable is the change in composition

Dependent Variable	All Areas		Rural Areas		Urban Areas	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
HH size	-0.872	[0.061]***	-0.878	[0.075]***	-0.853	[0.103]***
# kids young	-0.061	[0.027]**	-0.07	[0.036]*	-0.036	[0.037]
# kids school	-0.052	[0.027]*	-0.039	[0.037]	-0.07	[0.037]*
# youth	-0.022	[0.021]	-0.032	[0.027]	-0.008	[0.033]
# adults	0.331	[0.035]***	0.336	[0.041]***	0.324	[0.065]***
# adult M	0.094	[0.024]***	0.075	[0.028]***	0.127	[0.043]***
# adult F	0.238	[0.025]***	0.26	[0.030]***	0.196	[0.045]***

Note:

1. Taken from Ranchhod V. "Household responses to adverse income shocks: Pensioner out-migration and mortality in South Africa"
2. Only the coefficient on the interaction term is reported.
3. Paper available via email: vranchho@umich.edu
4. Each entry is a regression coefficient from a different regression
5. Robust standard errors in brackets, clustered at the household level
6. * significant at 10%; ** significant at 5%; *** significant at 1%
7. Coefficients correspond to the estimate on the `LosePen' variable
8. Omitted controls include province dummies, initial household size and number of pensioners
9. In the ``All areas" regression, an `urban' dummy variable was also included.

The coefficients indicate that the loss of a pensioner correlates negatively with the number of dependents in the household (children and youth), and positively with the number of adults in the household. Indeed, the coefficient of 0.331 in the adults regression suggests that, on average, Loser households experience an increase of 0.331 adults more than Keeper households, in a six month period. This suggests that household formation is sensitive to pension income.

Table XXV below is of greater interest to our puzzle. It has been argued before that the Old Age Pension results in labor force withdrawal by the adult children of the pensioners (Bertrand et al., 2003). In this table, the author investigates whether the loss of a pensioner generates a corresponding increase in labor force participation. He also tests whether there are adverse effects on youth that forces them to drop out of school in order to find work.

These results suggest that, of the youth and children who remain in the Loser households, there is little statistical evidence to indicate that such adverse effects are experienced. What is very interesting and important is that he finds an increase in employment rates amongst adults, particularly adult women, of between 5 and 6 percentage points. In the high unemployment context already described, this is a large and economically important increase. This might also explain the particular age structure of unemployment—perhaps people start looking seriously for a job when their parents die (or are dying), which is why people above thirty are more likely to be employed. People above thirty are also much more likely to be married and/or have children, which might also make it harder for them to depend on their parents.

These results should be treated with some caution. First, the estimated effect might be a severe underestimate, since many people who do not live with pension-receivers may nevertheless depend on them economically. On the other side, households may lose pensioners precisely because someone in the household has now found a job, and the pensioner is now less needed (so she might move back to her home, for example). This would lead to an overestimate. Indeed when Ranchhod tries to look at the same question using deaths of potential pension-receivers, he does not find an effect, though this could easily be because he does not have enough data.

Finally, there may be a counter-balancing impact of pension receipts that leads to *increased* job search. Pension income may make it affordable for household members, and in particular women, to migrate in order to search for jobs. Research by Posel, Fairburn & Lund (2004) and Edmonds, Mammen & Miller (2003), for example, suggests that pension receipt facilitates the departure of prime-age women from the household to permit them to migrate in search of work. Hence, the ways in which the pension interact with the labor market in South Africa are nuanced.

Table XXV: "Difference in Difference" estimates of the effect of the loss of a pensioner
Regression coefficients where dependent variable is the change in Activity

Dependent Variable	All Areas		Rural Areas		Urban Areas	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Prop. kids schl	-0.002	[0.005]	0	[0.006]	-0.007	[0.009]
Prop. youth schl	0.018	[0.016]	0.023	[0.019]	0.004	[0.027]
Prop. youth inLF (n)	-0.01	[0.015]	-0.03	[0.017]*	0.03	[0.027]
Prop. youth Work	0.003	[0.009]	-0.001	[0.012]	0.014	[0.013]
Prop. adult inLF (n)	-0.003	[0.013]	-0.001	[0.017]	-0.009	[0.021]
Prop. adult inLF (b)	-0.042	[0.011]***	-0.042	[0.016]***	-0.042	[0.015]***
Prop. adults work	0.057	[0.011]***	0.059	[0.014]***	0.053	[0.018]***
Prop. adult M in LF (n)	-0.017	[0.018]	-0.003	[0.024]	-0.038	[0.027]
Prop. adult F in LF (n)	0.009	[0.017]	-0.003	[0.022]	0.03	[0.027]
Prop. adult M in LF (b)	-0.049	[0.014]***	-0.036	[0.019]*	-0.065	[0.021]***
Prop. adult F in LF (b)	-0.026	[0.015]*	-0.039	[0.020]*	-0.003	[0.021]
Prop. adult men work	0.029	[0.016]*	0.036	[0.021]*	0.016	[0.026]
Prop. adult women work	0.058	[0.014]***	0.059	[0.018]***	0.058	[0.023]**

Note:

1. Taken from Ranchhod V. "Household responses to adverse income shocks: Pensioner out-migration and mortality in South Africa"
2. Only the coefficient on the interaction term is reported.
3. Paper available via email: vranchho@umich.edu
4. Each entry is a regression coefficient from a different regression
5. Robust standard errors in brackets, clustered at the household level
6. * significant at 10%; ** significant at 5%; *** significant at 1%
7. Coefficients correspond to the estimate on the 'LosePen' variable
8. Omitted controls include province dummies, initial household size and number of pensioners
9. In the 'All areas' regression, an 'urban' dummy variable was also included.

4.3.2 Education, expectations, and reservation wages

Another reason why South Africa is different from many other countries is that there has been an enormous transformation of the structure of the labor force over the last 15

years. The implementation of the compulsory schooling laws has meant that almost all of the younger workers now have 10 years or so of education, whereas many of those who grew up under apartheid only had a few years of education. This means that the return to schooling and the benefits of having matriculated have probably fallen substantially. If the newly educated workers have not yet understood this, they may be holding out for jobs that are no longer going to be available to them. This may be why younger workers and especially matriculates among them have done so badly in recent years in terms of employment.

4.3.3 Employment attitudes and reservation wages

Despite the general plausibility of a high reservation wage being a constraint a number of scholars have argued against this possibility. One reason, cited by Kingdon and Knight (2003), is that the unemployed are less happy and poorer than the informally employed, but this could reflect underlying differences between these two populations.

In the LFS waves, all persons who were not working in the past seven days were asked why they were not working. We pooled the data from waves 6 to 11 to generate Table XXVI below. It shows the mean responses by various age groups. The earlier waves were omitted as the question differed slightly. Reservation wages do not seem to be an important part of the story.

As expected, amongst younger people an important reason for not working is to study. However, from the ages of 20 to 50, the most common reason provided is that people cannot find any work. Indeed, from age 20 to 40, over half of the respondents chose this category. Note that this is not that they cannot find suitable work, in terms of “salary, location or work conditions”, as this was captured by a separate question that is included in the ‘Other’ column in the table. Taken by itself it argues against the reservation wages view, but is not clear that we can infer from these answers that they have seriously looked for and not found a job.

With age, the reasons indicated for not working change. We thus observe that older cohorts are more likely to be NEA in order to be homemakers, or be retired. The importance of health reasons as we move up the age profile is striking. The data is fairly

limited on the specific types of health problems that preclude a person from working, and health itself is likely to be a function of poverty and prior work conditions. Regardless of the underlying cause, health is an important component in a person’s productivity, and more than a quarter of those not employed in their fifties claim that poor health is the problem. Understanding and treating these problems may contribute significantly to greater labor force participation amongst middle aged South Africans. From the ages of 60 upwards, the vast majority of this sub-population have retired, which is the age at which people start to receive the state Old Age Pension.

Table XXVI: Of those not working, why are they not working, by age group? (%)

Age category (5 years)	N	Home-maker	Student	Retired / Age	Health	Lack of Skills	Cannot find ANY work	Other
15 – 19	67,564	0.8	81.33	0.56	1.05	2.03	10.65	3.59
20 – 24	45,906	2.08	29.16	0.19	2.37	7.43	51.01	7.75
25 – 29	27,342	5.1	4.29	0.15	4.59	9.12	67.98	8.78
30 – 34	20,173	9.5	1.14	0.15	7.27	8.12	64.12	9.69
35 – 39	15,629	14.26	0.48	0.46	11.48	7.14	56.87	9.31
40 – 44	14,311	15.54	0.2	1.71	17.44	6.19	48.96	9.94
45 – 49	12,063	18.9	0.2	3.64	22.96	5	39.72	9.59
50 – 54	11,916	18.4	0.15	16.21	27.42	3.07	26.49	8.26
55 – 59	10,622	15.24	0.07	31.3	26.92	1.77	17.65	7.05
60 – 64	12,641	6.1	0.06	76.12	10.82	0.28	3.97	2.67
65 – 69	11,000	3.2	0.1	89.87	4.6	0.1	1.22	0.92
Total	249,167	6.54	27.77	9.5	7.63	5.04	36.79	6.74

4.4 Summary

Our analysis of transitions demonstrates that there is a lot of churning going on in the labor market. We suspect there is *selective* churning: the characteristics of workers in the inflow to and outflow from the formal sector, for example, are likely not identical. However we are unable to capture the nature of the sorting with the demographic variables we included in our analysis. Transition from the informal sector to the formal sector is more likely for more advantaged groups (Whites, men, those with more education). This evidence suggests that in addition to the skill-composition changes documented in section 2, employers may be more selective along other dimensions of

quality (experience, for example) that put the currently unemployed at even more of a disadvantage.

Despite the high rate of transition, many young workers don't transition into the labor force and instead remain unemployed (discouraged or searching) for long periods of time. The inability or unwillingness of these workers to enter the labor force and obtain their first job suggests an important role of high search costs, compounded by high turnover in the labor market (which reduces the incentive to invest in search), and of high reservation wages due to family support.

Section 5

Conclusion

We noted at the outset that changes in the unemployment rate can be viewed as resulting from either a temporary shock or a more permanent structural change. We proceeded by using several nationally representative household surveys to investigate multiple aspects of South African unemployment. On the more aggregate level, we noted that the demand for unskilled labor had fallen and that this was particularly manifested in the agricultural and mining sectors. Concurrent with the decline in the demand for less-skilled labor, there was a large increase in the supply of less skilled labor. Much of this increase was in the form of a large influx of African women into the labor market. The result of the increased supply and decreased demand was, predictably, increased unemployment.

While unemployment represents lost potential at both the personal and societal levels, it should be noted that the large influx of African women into the labor market which contributed to the unemployment may, in and of itself, not be a bad thing. If these women were previously not economically active because they perceived that the labor market provided no opportunities to them, then their entrance into the labor market is economically hopeful. It increases potential output. This is a “pull” story—the women are pulled into the labor market. If the increase in African women into the labor market is a “push” story, the implications are more dire. This would be the case if women are entering the labor force (and not finding jobs) because their economic circumstances dictate it. If, for example, spouses or partners have lost their jobs and/or fallen ill, and women are being forced into the labor market in order to support themselves and their families, the increased participation rate is in fact bad news. At this point, the “push” versus “pull” story is an open question and one that deserves further study. Our analysis simply notes that the increase in African female labor supply is one reason that, as the title asks, unemployment has increased in the new South Africa.

Be it “push” or “pull”, we view this massive influx of female labor supply as a structural change, not a temporary shock. There is simply no evidence to suggest that

women are likely to exit the labor market in the sort of numbers that entered any time soon. Similarly, there is little reason to expect that mining is likely to become more labor intensive. Capital has substituted for labor for some technical reasons (e.g. the mines are getting so deep that machines are needed rather than humans). Mining is subject to demand shocks as are most commodity-based industries. However, the fact that mining employment has fallen rather steadily during the recent commodity boom leads us to believe that the decline in mining employment is also a structural shift rather than a transitory shock. Finally, the decline in agricultural employment also strikes us as a structural shift. The South African economy has moved into sectors such as financial services and other service sectors, and agriculture is on the downswing.

In section 3, we noted that there have been important compositional changes in employment at the sectoral level. In particular, the pool of the employed has tended to become more skilled while the less skilled have more often become relegated to the ranks of the unemployed. This is a global phenomenon and is in no way unique to South Africa. Many economists attribute these sectoral changes to technical change that biases labor demand toward more skilled workers. The structural shift of skill-biased technical change has impacted South Africa at an especially inopportune time, for it tends to amplify the unemployment consequences of the increase in labor supply of unskilled workers.

Section 4 turned more closely to the individual-level evidence and explored how workers have adjusted (or not) to the changing labor market that is highlighted in sections 2 and 3. There we found that simply examining the employed/unemployed dichotomy is too simple. Among the employed, it matters if one is in the formal or informal sector and among the unemployed, the actively searching versus discouraged worker distinction matters a great deal to outcomes. We examined the likelihood of transitions from one labor market status to another, and the results are especially informative for policy. For example, the data indicate that there is substantial entry into and exit from the informal sector, but transitions are typically to some form of unemployment or lack of labor market participation. Transitions from the informal sector to the formal sector are surprisingly rare. The transitions results are especially stark when it comes to youth.

Obtaining that first job is crucial to future involvement in the labor market. It is also exceedingly difficult for many, and simply having a matric degree is of little help.

The results in section 4 illustrate how the labor market can be viewed as having two pieces. In one piece, there is the formal labor market and once one is in it, one has a very good chance of staying in it. The other piece is a mix of those searching for employment, those discouraged, those who have declared themselves not economically active, and those employed in the informal sector. Within this chunk of the labor market, there is substantial dynamism, but none of the labor market statuses in this category are very economically attractive.

Given that there is persistence in this second part of the labor market and that these outcomes are associated with low incomes, we ask how individuals cope. One important policy mechanism is the old age pension. We find that a presumably unintended consequence of this important social insurance policy is that it may discourage some individuals from seeking or taking a job that, in the absence of a pensioner in the household, the individual might seek or take. On the other hand, this policy may be part of the reason that South Africa has been able to withstand persistent high unemployment rates with relatively little social unrest.

One “wait it out” strategy is to let inflation lower real wages until the labor market clears. While possibly unintentional, this policy has been in effect. Inflation has been moderate but nominal wages have somewhat stagnated in the second half of the 1990’s, leading to stable or declining real wages. The persistence of high unemployment even while real wages were declining suggests that: a) unemployment would have been even higher absent the inflation; and b) the very moderate inflation has been insufficient to clear the labor market.

While we find that most of the reasons for the rise of unemployment in the new South Africa are structural (other such structural reasons include the legacies of the education system and the disconnect between where the jobs are and where people live), there is still a crucial role for policy intervention. Indeed, because most of the reasons for unemployment are structural, policy is especially needed. Simply waiting for the positive “shock” to counter the negative one is unlikely to be fruitful.

Neither do we believe that macroeconomic policy is likely to solve the unemployment problem. Were unemployment the result of a temporary easing of demand, this might make sense, but, as noted above, our analysis points to more structural causes of the rise in unemployment.

We have restricted ourselves in this paper to analysis that is supported by the data. An implication of this research strategy is that we have not engaged in much “big think” speculation on what might solve the unemployment dilemma. Some constraints are especially prominent and deserve policy consideration. One of these is the hurdle of school-leavers obtaining their first job. There are several policy options including a wage subsidy, a search subsidy, reduced regulations for first jobs, and government employment. Another constraint is the mismatch between where the unemployed live and where formal sector jobs reside. Here policy options include transportation subsidies, housing policy, business location policy, and infrastructure investment, among others. Yet another constraint is the mismatch between the skill set of the unemployed and the skills required in the labor market. But in the longer run, this mismatch can be eased with sound policy. Options here include educational reform, training programs, and training subsidies. At this point our analysis is simply insufficient to distinguish between the many options that might plausibly ease each constraint. Rather, we advocate a cautious approach that includes a focus on experimentation. Understanding why unemployment has risen in the new South Africa is akin to diagnosing the illness; the next step is finding the right medicine. We believe that much can be learned from smaller-scale interventions that are well-designed and which are accompanied by careful evaluation. That is the prudent next step.

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Appendix A

Description of the data

The results in Section 4 are based on individual-level data primarily from waves 4 through 9 of the South African Labour Force Surveys (LFSs), as released by Statistics South Africa. The surveys are conducted bi-annually, with the first wave in February or March, and the second wave in September of each year. From September 2002 (wave 4) to March 2003 (wave 9), the sample involved a rotating panel design, with 20 percent of respondents being rotated out between waves.¹⁵ Thus, between wave 4 and wave 5, 80 percent of respondents were kept in the sample, and a new 20 percent were included. This continued through each wave until Wave 9, with the exception that no one was rotated out between Wave 5 and Wave 6. Matching respondents across time was a complex and time consuming task, because the LFSs were not originally designed to be used as a panel. Considerable effort on the part of Statistics South Africa provided us with a panel of individuals who were matched between two or more cross-sectional waves. We are confident that the matching and editing process provides us with a good estimate of transition patterns in the data, and that the majority of the transitions are genuine and not an artifact of poor matching.¹⁶ The cross-sectional sample size is approximately 30,000 households with about 100,000 individual observations; the panel sample size ranges between 45,000 and 71,000 (see Table A-1).

The sampling method used is that of a stratified clustered random sample which results in each wave being a nationally representative cross-section of the country's population. Each wave comes with a set of sampling weights, which we used in generating all of our results. The weights correct for potential over-sampling of certain

¹⁵ With the exception of the transition estimates, we have treated all observations as coming from independently drawn samples.

¹⁶ Details of data processing can be found in Statistics South Africa's document entitled "Stats SA Labour Force Panel Study Methodology Document".

sub-populations, as well as for differential rates of non-response.¹⁷ Additionally, we use inverse probability weighting to correct for differential selection into the panel.

The primary sampling unit of the survey is a dwelling, not a family or an individual. The surveys do not follow people who changed their residence, nor do they keep track of mortality or births. This selection is not trivial, and our estimates are unbiased only insofar as the likelihood of being matched is orthogonal to the rate of transition across labor market states.¹⁸

Table A-1

<u>Date</u>	<u>Wave</u>	<u>Sample size</u>
Sept 2001	4	60,639
March 2002	5	71,153
Sept 2002	6	68,050
March 2003	7	66,825
Sept 2003	8	58,756
March 2004	9	45,856

¹⁷ To the extent that such non-response is not related to any variables of interest, such a correction will yield asymptotically unbiased estimates.

¹⁸ We have not performed any tests or corrections for non-random attrition.