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RACIAL EMPLOYMENT DIFFERENCES IN EMPLOMENT CONTRACT: EVIDENCE FROM THE SEPTEMBER 2002 LABOUR FORCE SURVEL

Timothy Hinks

Les Cahiers du SISERA – 2004 / 3

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Abstract

Many studies have estimated the size and extent of racial discrimination in the South African labour market. The findings indicate that this market inefficiency is an ever present in South Africa with little evidence that it is decreasing in size. In order to deepen this debate and to ascertain whether current labour market legislation is effective in promoting Black workers this study estimates the likelihood of being securely employed. The technique used allows employment likelihood to be considered first which has a significant impact on the model of whether securely employed or not. The findings reveal that racial group, broad occupational group, trade union status, industry and job tenure all play a significant role in the chances of being in a secure job. Provincial location and quantity of schooling play a significant role in employment likelihood only but play little role in whether securely employed. The study then attempts to test the hypothesis that older 'secure' Whites benefit more from unexplained (interpreted as discrimination) factors than younger Whites relative to Blacks since they benefited from apartheid era employment policies. The findings are largely inconclusive with further research required into testing the impact of apartheid era legislation on the current labour market.

I Introduction

With South African workers encountering a 30 per cent unemployment rate in 2002 and using the broader definition a 42 per cent unemployment rate, serious questions arise as to who these unemployed persons are and what differences there are between the employed and the unemployed. Another important issue though is the extent of quality jobs in South Africa and the determinants of having a 'quality' or decent job. This is currently the focus of much work in South Africa, and has important implications for issues such as poverty-reduction, labour market flexibility and the success/failure of government labour market legislation.

Since entering government in 1994, the African National Congress (ANC) has adopted a mixture of labour market reform through new labour legislation [e.g. Labour Relations Act (1995), Employment Equity Act, (1998), Basic Conditions of Employment Act, (1998)] and a free-market macro-economic approach in an attempt to improve the efficiency of the labour market. However, recent evidence suggests that the Employment Equity Act that requires employers to implement affirmative action measures including the preferential treatment of previously disadvantaged groups has not been credibly enforced by the Department of Labour. While various newspaper reports highlight this issue[1] there is now an increasing amount of evidence using survey data sets that the racial composition of the South African labour market continues to struggle with change[2] with little if any improvement for economically active Blacks[3]. Indeed the evidence provided by Allanson and Atkins (2003) for racial wage differentials and Hinks and Brookes (2003) for racial employment differentials indicates that (1) the wage of the average Black worker has not significantly improved between 1993 and 2001 compared with the average White wage and (2) the likelihood of being employed gap between Whites and Blacks has not significantly declined between 1995 and 2002. These studies have looked at the broad South African labour market, but have not analysed the possibility of deeper racial differences in the work force. It is to this end that this report identifies the racial composition of permanent and non-permanent employment contracts.

The focus of this paper is to understand the extent of secure jobs in South Africa for 2002 and to estimate the determinants of who gets these jobs. The analysis will estimate the number of workers by employment contract, age group and racial group. By undertaking separate analyses by racial group it will be possible to estimate the extent of dualism in the South African labour market across purely racial lines. This is not to accept as given that dualism in South Africa is purely racial. Research indicates that dualism across skills and education lines are also apparent. In order to consider these skills differences, the analysis will also test whether racial differences are significant in determining who is employed on a permanent contract and who is not. The objective of the paper is to understand who have the decent jobs, the extent to which pre-1994 workers are in permanent employment and the implications of this for current labour market legislation.

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[1] For example, see Business Report, Thursday January 22, 2004, pp.5.

[2] Hinks and Brookes (2003a, b).

[3] Blacks is a generic term which means Africans, Coloureds and Indians, and is taken from Chapter 1.1 (definition section) of the Employment Equity Act (1998).

II Data

We use the September 2002 Labour Force Survey (LFS). The survey design of the data sets was based on a sample of 30,000 dwelling units drawn from 3000 primary sampling units, meaning 10 dwelling units per enumeration area. The weighting of the 2002:6 LFS is based on the 1996 Population Census[4]. The samples were stratified by province and rural-urban location. Following previous studies, the sample was reduced in size by only retaining those broadly economically active individuals between the ages of 15 and 65 years.

The broad definition of unemployment is used instead of the official or narrow definition since research by Kingdon and Knight (2001) finds strong evidence of no differences in the happiness of the non-seeking unemployed and the seeking unemployed. Thus there is no difference in disillusionment between these two groups of unemployed people. Klasen and Woolard (2000) make the related argument that *willingness* to work amongst the economically active is the most important concern when estimating unemployment.

The economically active population group and the number of employed persons are provided through official coding. These form the basis for the definitions of the employment rates for the respective years. Further cleaning was undertaken that reduced the sample size as missing information on relevant variables resulted in dropping of observations. Agricultural workers and those who served in the defense forces were also rejected for reliability issues[5]. The self-employed are also removed from the sample since there is no information of the employment contracts these workers have. The very nature of self-employment though means that jobs are never permanent.

A final issue to resolve is whether to include informal sector workers in the analysis, and indeed the reliability of information concerning informal sector workers. The LFS allows for a far more credible estimate of an informal worker, since there is information on whether a firm is registered, pays value add tax (VAT), contributes to the unemployment insurance fund (UIF) and whether the business is located in the public or private sector. These characteristics will all be considered when identifying a permanent and non-permanent contracted worker. The study will thus include informal sector workers, but these will not be classed as 'secure' workers.

[4] It is expected that the LFSs will soon be available with weightings based on the 2001 Population Census.

[5] There is now a well-known and accepted problem with the LFSs counting of agricultural workers in South Africa. Devey et al (2003) found that agricultural employment varied dramatically between 2000 and 2002. This is confirmed by analysing the composition of workers in this industry sector and findings that the estimated number of informally self-employed workers drives the fluctuation.

III Method

Firstly a detailed description of the South African labour force will be undertaken. This will focus on the demographic and racial characteristics of the work force in South Africa. Particular reference will be made to those workers who have more than 8 years job tenure in their current job. This will enable us to present evidence of the percentage of workers who began employment in their current job before the apartheid regime officially ended and distinguish between White and Black groups. This could be reason enough for the apparent failure of affirmative action legislation in South Africa.

Following a discussion of the descriptive results, the impact of racial group on employment likelihood, and on the likelihood of having a permanent contracted position in the work force will be estimated. This will involve using simple discrete-choice models based on probit analysis and on the Heckman probit model. The model is based on a priori assumptions of what characteristics a 'secure' job has and can be criticised on these grounds. Previous work on segmented labour markets in the 1970s and 1980s used a priori assumptions when estimating separate earnings equations based on industrial and occupational sector and on earnings levels[6]. These were subsequently criticised since they failed "to account for the endogeneity of an individual's labour market segment" (Leontaridi, 1998, pp.84). However this study aims only to explain the determinants of who is employed in the formal sector with a permanent employment contract, with this being assumed to represent 'secure' work. By narrowing the sample to just economically active, working-age males we aim to make any racial differences in the likelihood of secure work as conservative as possible.

The probit model has just two outcomes 0 and 1, representing unemployed and employed in this analysis. Based on the normal distribution the probit model is represented by,

$$\Pr ob(Y = employed) = \int_{-\infty}^{\beta' x} \phi(t)dt \,. \qquad (1)$$

$$= \Phi(\beta' x) \cdot$$

The probit model is used instead of the logit model for purely practical reasons based on previous work in this area.

In order to provide consistent, asymptotically efficient estimates of the likelihood of being formally employed and having a permanent employment contract the Heckman probit model is adopted. This procedure is necessary to overcome the selection problem of whether deciding to work or not that would occur if a probit model were used instead[7]. This is controlled for in the underlying probit by a selectivity variable.

Formally the Heckman probit model (or a probit model with a sample selection) assumes an underlying relationship,

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[6] For an excellent review of segmentation theory see Leontaridi (1998).

[7] For a more detailed discussion of the Heckman probit, Heckman 2-step and other nested bivariate analysis see Maddala (1990), Heckman (1979) and for an application of interpretation Oaxaca and Neuman (2002).

$$y_j^* = x_j\beta + u_{1j} \quad (2)$$

such that we only observe the binary outcome,

$$y_j^{probit} = (y_j^* > 0) \quad (3)$$

or, substituting (2) into (3),

$$y_j^{probit} = (x_j\beta + u_{1j} > 0) \quad (4)$$

Equation (4) is the probit equation.

The dependent variable in (4) is not always observed though, with the dependent variable (whether a formal worker with a permanent contract=1, or whether all other employees=0) only being observed if,

$$y_j^{select} = (z_j\gamma + u_{2j} > 0) \quad (5)$$

where, u_1 and u_2 are normally distributed N(0,1) and $corr(u_1, u_2) = \rho$. Equation (5) represents the sample selection rule as to whether we observe somebody being employed. From this we calculate individual inverse Mills ratios (IMR) that provides the expected (mean) of the error term in the underlying probit given that this error term is greater than the selectivity condition given by equation (5). If the IMR is not included in the primary model then potentially biased estimates that determine the likelihood of being securely employed are given. If the coefficient on the IMR is negative then there is a negative correlation between the error term in the selection model and the error term in the model we are ultimately concerned with.

Equation (5) represents an employment likelihood model that takes a value of 1 when the individual is employed and 0 when the individual is unemployed.

Thus, interpretation of the coefficients estimated using the Heckman probit model in equation (4) must be tempered by the fact it is *given that* the individual is employed in the first place.

The variables in the model again follow previous studies, with education, age, firm size, occupation, industry, province, marital status, number of children and number of elderly in the household all being controlled for in the models. The initial selection or employment model in the Heckman probit is identified by household variables such as marital status, number of children and number of elderly. This simply means these variables are not included in the probit model of whether formally employed and contracted permanently.

IV Results: descriptive statistics of the labour force and work force by age cohort and racial group

Since we will eventually be concerned with type of employment contract workers have, the analysis does not include any discussion of the self-employed. However other studies have looked at the self-employed and employees separately with academic rigor (e.g. see Rospabe, 2003: Hinks and Brookes, 2003). Table 4.1 gives a breakdown of the estimated number of employees by racial group and by economic sector (formal or informal). It will be noted that 2 definitions of formal-informal worker are used. This is to simply test the robustness of the information contained within the Labour Force Survey. It is noticed that definition (II) (Rows 10-15) gives lower employee estimates than definition I. This is entirely due to cleaning the data of vague responses to key questions that necessarily reduces the number of observations. However despite a loss of information, the estimated number of formal and informal employees is more robust[8].

The share of employees by racial group remains identical for both definitions of economic sector. Whites comprise 20 per cent of employees in South Africa. The share of formal sector workers is slightly greater using definition II rather than definition I, however there are few informal sector White employees, with virtually all White employees (98 per cent) being employed in the formal sector. Between 14 and 17 per cent of the 80 per cent of Black employees are found in the informal sector.

[8] The debate about which definition of formal and informal sector should be used is a useful one, since it raises the issue of how data sets are cleaned. In the above example it could be argued that those employees who do not know whether the company they work for is registered or not should be included as informal sector workers, instead of being dropped from the analysis. The key issue though is to inform the researcher of exactly how the data set is being cleaned.

Table 4.1 Estimated Number of Employees by Racial Group and Economic Sector, September 2002

	Estimated Number of Employees	Percentage of All Employees (Row 1)
(1) All Employees	**7,794,716**	
(2) Employee and White	1,516,189	19.45
(3) Employee and Black	6,278,527	80.55
(4) Formal Employee (I)*	6,461,397	82.89
(5) Informal Employee (I)	1,333,319	17.11
(6) Formal Employee and White (I)	1,489,957 (98%)	19.11
(7) Informal Employee and White (I)	26,232 (2%)	0.34
(8) Formal Employee and Black (I)	4,971,440 (79%)	63.78
(9) Informal Employee and Black (I)	1,307,087 (21%)	16.77
(10) All Employees (II)**	**7,334,201**	
(11) Employees and White (II)	1,440,986	19.65
(12) Employees and Black (II)	5,893,215	80.35
(13) Formal Employee (II)	6,290,672	85.77
(14) Informal Employee (II)	1,043,529	14.23
(15) Formal Employee and White (II)	1,432,946	19.54
(16) Informal Employee and White (II)	8,039	0.11
(17) Formal Employee and Black (II)	4,857,726	66.23
(18) Informal Employee and Black (II)	1,035,490	14.12

Note: * (I) indicates the use of a formal sector worker using information on question q4.18.

** (II) indicates the use of a definition of formal worker derived from questions 4.17a-d, q4.18 and q4.14. These questions identify whether the organisation the employee works for is registered, pays VAT, pays Unemployment Insurance Fund (UIF) contributions, is in the public sector and is in the 'formal' sector.

This illustrates the racial division of informal sector employment in South Africa, with hardly any White employees working in this sector. This characteristic is a direct result of the apartheid period, where Blacks had to find work in order to survive but is also a characteristic of many African countries. Whites on the other hand had significant protection in the formal sector labour market through colour-barring and job reservation policies prior to 1994. Even those White workers with few (if any) skills were guaranteed employment in the formal labour market.

In order to gain more information about the composition of South African employees in 2002, the age distribution of these workers is revealed. This will give an idea as to the extent of over-representation and under-representation by racial group in different age groups. Of the total number of formal sector employees, 23 per cent are White. When the White share of formal sector employees is reported by age group, a U-shaped curve is found (see Figure 4.1). This is somewhat surprising. It is expected that an upward sloping curve would instead be found, with White worker share increasing with age since older age groups benefited from job protection in the formal sector[9]. What is not expected is the above average share of White

[9] It could also be argued that the number of Black employees diminishes faster than the number of White employees as age increases due to racial differences in health. This argument maybe particularly relevant to the case of South Africa where the current pandemic of HIV/Aids is likely to effect Blacks more than Whites. However a more concrete argument requires extensive research in this area.

formal sector employees in the 15-25 year old age category. Since the Employment Equity Act of 1998, affirmative action employment policies have meant to improve the relative position of Black workers. Figure 4.1 indicates that this is not the case for the youngest of Black workers.

Table 4.2 provides detailed evidence of the composition of South African employees by racial group, age group and economic sector. The bold and italic figures are those used in Figure 4.1.

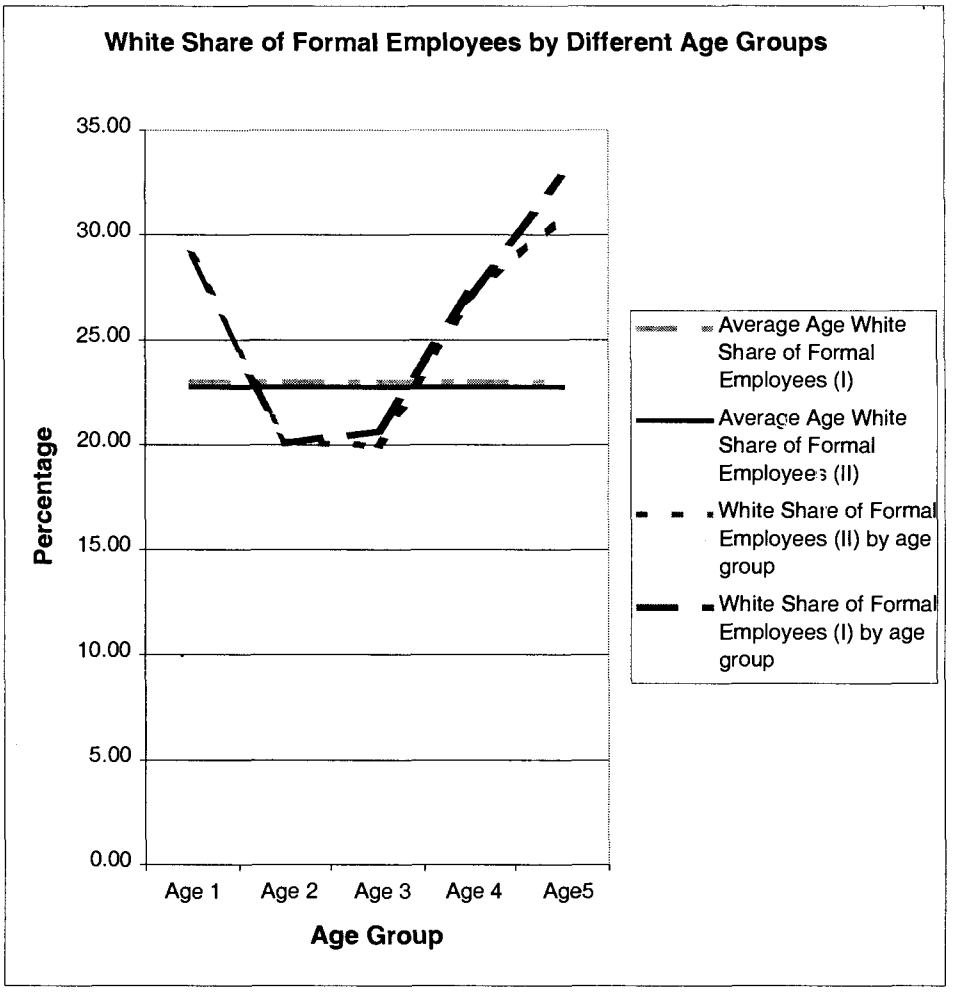


Figure 4.1

Table 4.2 Estimated Number and Percentage of Employees by Economic Sector (Formal-Informal), Racial Group and Age Group, September 2002

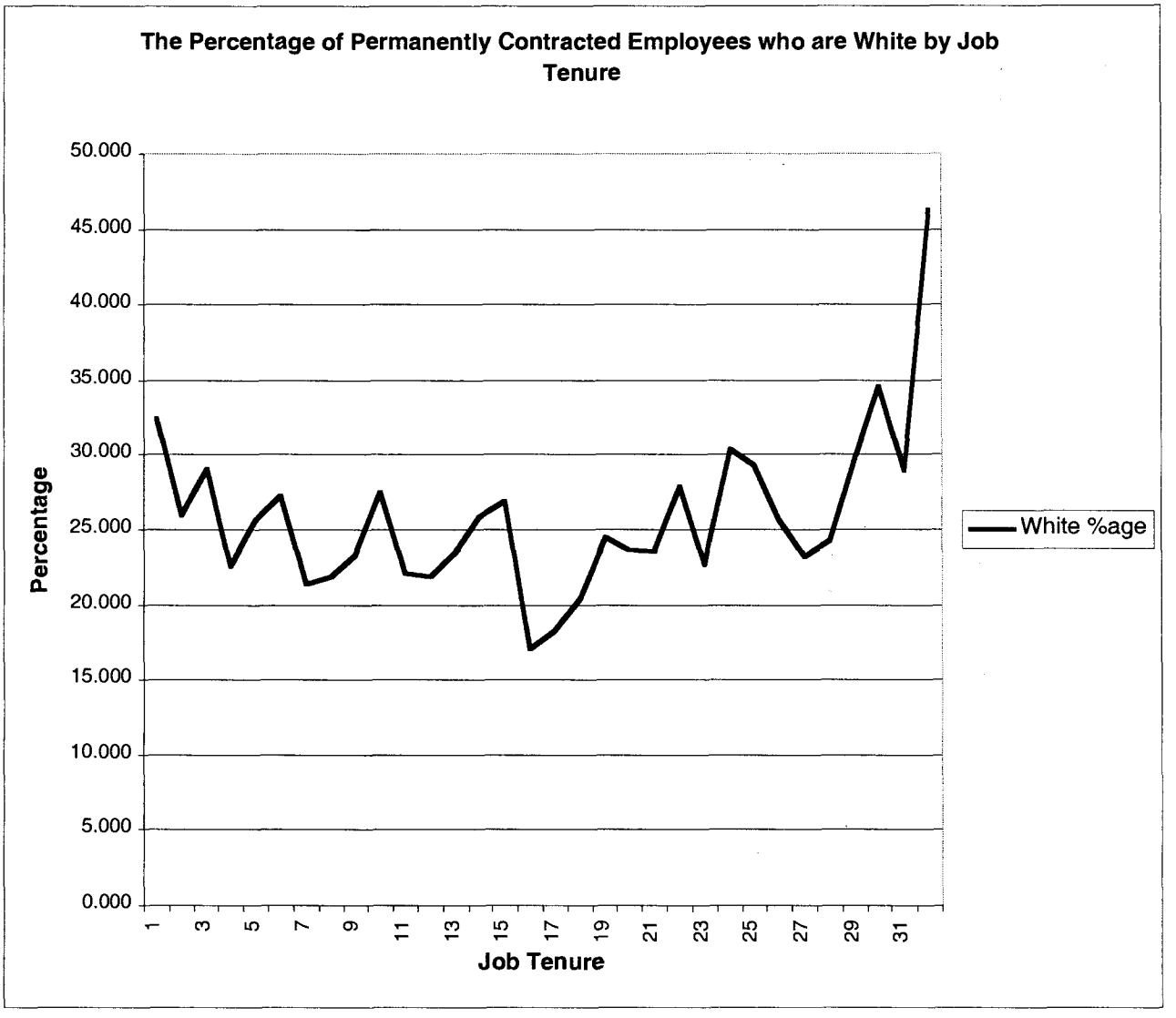
	Formal I					Informal I				
	All	**White**	**Black**	**% White**	**% Black**	**All**	**White**	**Black**	**% White**	**% Black**
15-25	616,805	177,289	439,516	***28.74***	71.26	135,875	6,313	129,562	4.65	95.35
26-35	2,253,789	453,612	1,800,177	***20.13***	79.87	394,177	9,230	384,948	2.34	97.66
36-45	2,063,404	426,385	1,637,019	***20.66***	79.34	415,356	6,619	408,737	1.59	98.41
46-55	1,181,056	319,592	861,464	***27.06***	72.94	286,855	4,071	282,784	1.42	98.58
56-65	346,343	113,078	233,265	***32.65***	67.35	101,056	0	101,056	0.00	100.00
Total	**6,461,397**	**1,489,956**	**4,971,441**			**1,333,319**	**26,233**	**1,307,087**		
	Formal II					**Informal II**				
	All	**White**	**Black**	**% White**	**% Black**	**All**	**White**	**Black**	**% White**	**% Black**
15-25	593,398	171,866	421,532	***28.96***	71.04	104,600	1,962	102,638	1.88	98.12
26-35	2,184,536	441,794	1,742,742	***20.22***	79.78	296,021	2,498	293,522	0.84	99.16
36-45	2,006,568	401,552	1,605,016	***20.01***	79.99	330,764	1,554	329,210	0.47	99.53
46-55	1,161,357	310,893	850,464	***26.77***	73.23	233,176	2,025	231,151	0.87	99.13
56-65	344,813	106,842	237,971	***30.99***	69.01	78,968	0	78,968	0.00	100.00
Total	**6,290,672**	**1,432,947**	**4,857,725**			**1,043,529**	**8,039**	**1,035,489**		

Note: The percentages sum horizontally and represent the racial share of Formal of Informal employees in each age group.

In order to investigate security of employment the analysis shifts to the type of employment contract formal employees possess. The length of time employees have been in their current job will also be considered, with separate analysis being undertaken for those workers who were employed in their current job before 1994 and those employed in their current job after 1994. This will give an idea as to what (if any) changes have occurred in the post-apartheid formal South African labour market. Table 4.3 confirms previous findings with there being a relatively large share of White permanent and non-permanent contracted employees in the 15-25 year age group, declining between the ages of 26-45, before increasing again from 46 years of age onwards. The U-shaped curve across different age groups for White employees in the formal sector is more pronounced for non-permanent workers.

When job tenure is considered in the analysis, it is found that those workers employed before 1994 (who have over 8 years of tenure) represent 34 per cent of current formal sector employees, with the remaining 66 per cent having been employed for less than 9 years. When the percentage of permanently employed workers is estimated for the two tenure groups, it is found that approximately 25 per cent of these workers are White. When the number of permanent workers is estimated for each year of current job tenure, a significant gap initially emerges between Whites and Blacks, with this gap declining as job tenure increases. The declining gap is due to sharp reductions in the number of permanently employed Blacks. Figure 4.2 reveals that the share of Whites who are permanently contracted employees follows a U-shape across job tenure. However the minimum share occurs at 17 years of job tenure which does not support the hypothesis that *all* Whites prior to 1994 enjoyed relatively more 'secure' employment than after 1994. In order for greater accuracy, Figure 4.3 estimates the share of Whites in secure employment across job tenure categories, in order to give a smoother representation of Figure 4.2. The U-shaped profile is evident with the minimum occurring within the 15-19 year tenure group.

Figure 4.2



What is emerging then is that relatively more White employees are more secure in work as they get older, than Black employees. The share of formal White employees with a permanent job is 93 per cent, compared with an equivalent figure for Blacks of 81 per cent. When these figures are decomposed into age groups, the tails of the White sample (by which we mean the youngest and oldest age group) are proportionally larger than those of the Black sample. Figure 4.3 does suggest that, ceteris paribus, the share of Blacks who are both secure and have long job tenure will increase since they have relatively high shares in the 5-20 year tenure categories. The reasoning for this is at present unclear, since the analysis thus far is purely descriptive and anecdotal.

Moving to the number of secure jobs amongst employees, Table 4.4 illustrates that Whites are over-represented in secure jobs characterised by having a permanent contract and working in the formal sector. As a share of the total number of secure jobs available by age group, Whites again have a U-shaped relationship, with the very young and older age groups having a higher percentage of such jobs than 26-45 year olds. Explanations for this U-shape may be related to the historic advantages of Whites over Blacks and demographic factors

related to the AIDS epidemic. As to why 15-25 year old Whites are still over-represented in secure jobs in a period of transition there are potentially a number of demand-side and supply-side explanations. Within employment racial discrimination, racial human capital qualitative and quantitative differentials, statistical discrimination, internal labour markets and dualistic/segmented labour markets could all offer explanations for the U-shaped curve across the age groups. These explanations require formal testing to provide any robust conclusions and are beyond the scope of this paper. However through estimating the likelihood of being formally employed and on a permanent basis, and through age-group specific analysis a clearer understanding of what is driving the racial composition of the South African employee labour market can be made. Firstly however, the unemployment rate by racial group and by age group is estimated.

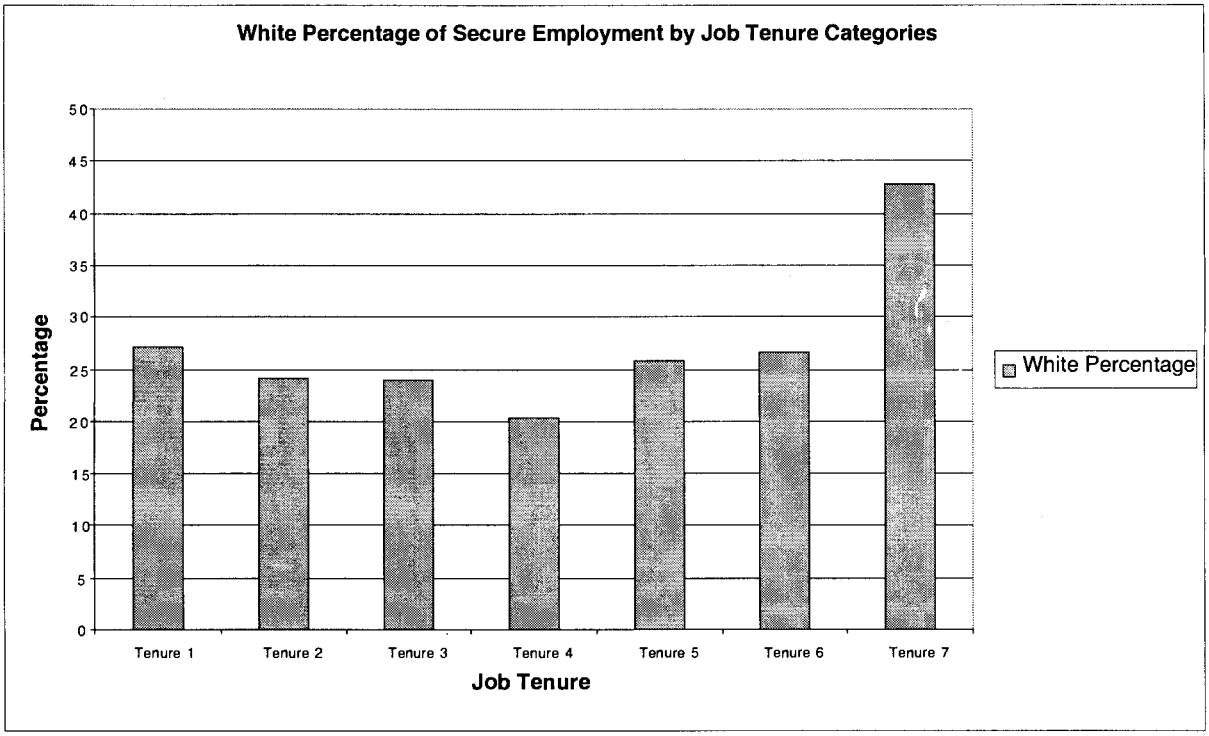


Figure 4.3

Note: Tenure1=0-4 years in current job, Tenure 2=5-9 years in current job, Tenure 3=10-14 years in current job, Tenure 4=15-19 years in current job, Tenure 5=20-24 years in current job, Tenure 6=25-29 years in current job, Tenure 7=30 or more years in current job.

Figure 4.4 reveals that the unemployment rate as expected is highest for the youngest age group and decreases as age increases. The racial unemployment rate difference is also apparent from Figure 4.4, with the largest gap of 56 per cent occurring in the 15-25 year old category. This racial gap consistently and constantly declines for each of the remaining age categories. The lowest racial gap was amongst 56-65 year olds, estimated to be 13.8 per cent in favour of Whites.

It is clear that there is still a large racial difference in the unemployment rates in South Africa. Figure 4.4, indicates that whilst the unemployment rate between Whites and Blacks declines with age, the racial gap in unemployment rates is still very high. Of most concern is the 56 per cent unemployment rate racial gap amongst the 15-25 year olds, with the broad

unemployment rate amongst Blacks being 78 per cent. It would perhaps be expected with affirmative action legislation that young economically active Blacks would benefit relative to equivalent Whites. However this is not at all apparent from the above. The findings are even more bleak when the unemployed are categorised by age group. Given the share of the unemployed amongst younger workers is expected to be higher than other groups for reasons of (1) high reservation wages, (2) a higher degree of job mobility (3) demonstrative effect of seeing same-aged workers unemployed and (4) ability to be unemployed because of fewer financial constraints, the remaining share of the unemployed are far more evenly spread across the remaining 4 age groups for Whites than Blacks.

Figure 4.4

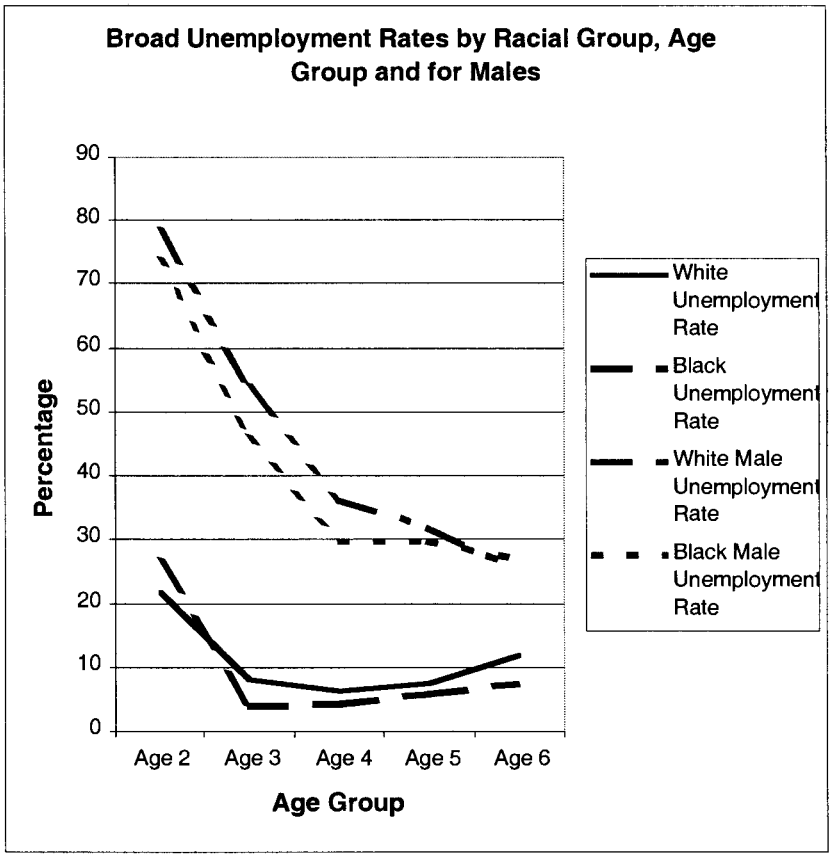


Table 4.3 Share of the Unemployed, September 2002

Age Group	Share of White Unemployed	Share of Black Unemployed	Share of White Male Unemployed	Share of Black Male Unemployed
15-25	29.17	***32.28***	43.11	34.03
26-35	23.34	***38.36***	14.07	36.64
36-45	17.95	18.61	16.19	17.11
46-55	17.32	8.69	16.71	9.34
56-65	12.22	2.06	9.92	2.88

The majority of total Black and White unemployment is found within the 15-35 year old age category. However whilst this share is just over 50 per cent for Whites, the figure is over 70 per cent for Blacks. Table 4.3 indicates that the share of unemployment amongst Blacks increases at an increasing rate between the ages of 15 and 35, with the percentage of the Black unemployed peaking in the 26-35 year age group. When the equivalent share of unemployment is undertaken for males only, there is little change amongst Blacks, but a significant change amongst Whites. Whilst 34 per cent of total Black male unemployment is found amongst the 15-25 year old category, the equivalent figure for White males in this age group is 43 per cent. This could be the first indication of affirmative action hiring policies beginning to impact on the labour market with young White males the principle losers.

Table 4.4 Estimated Number and Percentage of Formal Sector Employees by Racial Group, Age Group and Whether Permanently Employed, September 2002

	Formal (I) and Permanent Work					Formal (I) and Non-Permanent Work				
	All	White	Black	% of White	% of Black	All	White	Black	% of White	% of Black
15-25	397,594	136,453	261,141	34.32	65.68	218,648	40,273	178,375	18.42	81.58
26-35	1,804,816	427,318	1,377,498	23.68	76.32	448,559	26,294	422,262	5.86	94.14
36-45	1,815,746	403,145	1,412,601	22.20	77.80	245,595	22,645	222,950	9.22	90.78
46-55	1,075,017	307,026	767,992	28.56	71.44	105,431	12,567	92,864	11.92	88.08
56-65	309,583	105,518	204,065	34.08	65.92	36,760	7,561	29,199	20.57	79.43
Total	**5,402,756**	**1,379,460**	**4,023,297**			**1,054,993**	**109,340**	**945,653**		
	Formal (II) and Permanent Work					**Formal (II) and Non-Permanent Work**				
	All	White	Black	% of White	% of Black	All	White	Black	% of White	% of Black
15-25	378,664	131,763	246,902	34.80	65.20	214,171	39,540	174,631	18.46	81.54
26-35	1,748,640	417,686	1,330,954	23.89	76.11	435,481	24,107	411,374	5.54	94.46
36-45	1,760,560	381,097	1,379,464	21.65	78.35	244,203	20,455	223,747	8.38	91.62
46-55	1,055,228	298,227	757,001	28.26	71.74	105,998	12,666	93,332	11.95	88.05
56-65	306,771	99,865	206,906	32.55	67.45	38,042	6,977	31,065	18.34	81.66
Total	**5,249,863**	**1,328,638**	**3,921,227**			**1,037,895**	**103,745**	**934,149**		

V Estimations of what determines being securely employed by age group and race

In order to predict the likelihood of an employee being securely employed or not it must first be established that the underlying model follows a priori economic theory. In order for robustness both a probit model and a Heckman probit model will be estimated. The former will use only the sample of known *male* employees, whilst the latter will adopt a two-stage method that allows for selection into being an employee. Females are dropped from the analysis since in order to avoid gender-specific differences that could bias predictions. A discussion of the estimates will be undertaken. Following this, the predicted likelihoods of being a secure employee will be calculated using the probit and Heckman probit models and compared with the observed probabilities. Using the 'pooled' estimations the predicted likelihoods of White and Black employees being securely employed will be calculated in order to provide evidence as to the unexplained and explained racial differentials. It is expected that economically active Whites are more likely to be secure employees than equivalent Blacks. In order to test the effectiveness of affirmative action legislation in South Africa, predicted probabilities are calculated for different age cohorts, in order to establish whether racial differences are narrower for younger age groups than older age groups.

Determinants of employee security

Table 5.1 presents the results for the Heckman probit and the probit estimation model. The dependent variable for these models is a permanent, formal sector (secure) employee. These models include racial dummy variables in order to illustrate the impact race plays in both employment likelihood and likelihood of being employed securely. When age-group specific models are estimated the racial terms are dropped from the analysis, with these pooled estimations then used to calculate the predicted likelihood of being a secure employee. The selection model essentially represents an employment model, with the dependent variable representing whether a male is economically active and *employed* formally or economically active and *unemployed.* Only if a individual is formally employed will the probit equation be estimated.

When the rho term is statistically significant from zero, then standard probit techniques that do not control for sample selection will yield biased results. The Wald test of rho equals 11.64 and is statistically significant indicating that the Heckman probit technique is more appropriate than the simple probit model. The estimates in the selection model follow expected theory, with quantity of education having a strongly positive and significant impact on being formally employed with this likelihood increasing with more education. The expected racial hierarchy of employment likelihood is found in the selection model, with Africans least likely to be formally employed followed by Coloureds, Asians and Whites. The number of children and elderly in the household significantly reduces the likelihood of formal employment, through reducing job search radius. Residing in an urban area positively effects job likelihood, whilst age also impacts positively and significantly at a decreasing rate. Western Cape residents are significantly more likely to be employed relative to equivalent residents in Eastern Cape, Kwazulu-Natal, Gauteng and the Northern Province. Again this is largely consistent with previous studies.

When the probit model *with* selection considered is analysed and compared with the estimated probit model *without* selection correction some clear differences occur amongst those variables included in the Heckman probit model and the probit model. These

differences are expected since some of these variables are also included in the selection (employment) model. Firstly whilst secondary educated formal employees and further educated formal employees are both significantly more likely to be 'secure' employees relative to formal employees with no education in the Heckman probit and probit estimations, highly educated employees are only significantly more likely to be 'secure' employees in the Heckman probit at the 10 % level of significance. This can be explained by the selection model, that illustrates further and higher educated individuals are significantly more likely to be formal sector employees than uneducated job-seekers. This impact is being masked in the non-selection probit model, explaining why the estimated coefficients are positive and significant for secondary educated formal sector employees and above[10]. The findings for racial group are similar. The estimated coefficients on the non-selection probit model for all three racial groups are negative and significant, but are larger than equivalent estimates for the Heckman probit model. Again, this is due to racial group having an impact not just on whether an employee is secure or not but on the likelihood of being employed in the first place.

The effect of where economically active males live impacts far more on employment likelihood than on whether an employee is 'secure" or not in employment. The estimations for the Heckman probit reveals that only male employees living in Gauteng are significantly more likely to be 'securely' employed than equivalent males in Western Cape. Taken with the selection model, this reveals that males in Gauteng whilst significantly less likely to be employed relative to Western Cape males are more likely to be 'secure' formal sector employees compared to their Western Cape equivalents *given* they are employed in the first place. Such information is masked in the non-selection probit model. According to Table 5.1, the location of males in urban areas rather than rural areas significantly increases the likelihood of being a secure employee in the non-selection probit model, but not in the Heckman probit model. Again, the selection model reveals that urban workers are more likely to be employees compared with being unemployed than rural workers, with this explaining the lack of significance of the term in the subsequent probit model.

The remaining estimations of the explanatory variables are similar for both the Heckman probit and probit models reflecting a priori expectations since none of these variables appear in the selection model. Male employees in large firms (comprising of 50 or more regular workers) are not significantly more likely to be 'securely' employed than equivalent males in medium sized firms (10-49 regular workers), but those in small firms are significantly less likely to be securely employed than either medium or large firm employees. The latter finding is consistent with a priori expectations with easier monitoring of employees in small firms a reason to not offer secure employment, with any job 'shirking' penalised with firing. Many small enterprises though will be in the informal sector which by definition cannot offer 'secure' employment, whilst small formal enterprises have more flexible employment practices than larger firms since they are more vulnerable to exogenous forces.

[10] A vital component not included in these discrete choice models is that of schooling/educational quality. This is because such information is not easily available. However studies by Case and Deaton(1998), Mwabu and Shultz (1996), Chamberlain and van der Berg (2002) all conclude that schooling quality in South Africa explains a significant amount of wage determination and employment likelihood with the inclusion of these terms having a significant impact on the returns to racial group. All of the studies find that racial wage/earnings discrimination and racial employment discrimination is significantly reduced when quality of education is controlled for in the model.

As expected tenure in current job has a positive and significant effect on being in secure employment, with this increasing at a decreasing rate. This confirms that workers who are more senior in firms (insiders) have a far greater likelihood of being 'secure' employees since they have a proven track-record with the company and are expensive to replace relative to newcomers (outsiders) who have low job tenure. Job security can be thought of as a non-pecuniary benefit to insiders in the workplace which is only earned after a period of time (probationary period) in which workers prove their productivity worth in the workplace. According to numerous other studies from low-income to high-income countries, insiders are also more likely to be paid significantly more than outsiders[11].

Workers employed in high-skilled jobs (managers, professionals, associate professionals) are significantly more likely to be securely employed than either skilled or low-skilled workers and in the case of South Africa this is as expected. South Africa faces a serious supply constraint of high-skilled workers with evidence indicating a shift in the demand of labour away from traditional low-skilled and semi-skilled workers towards more skilled and high-skilled labour as companies switch from labour intensive to capital intensive production with high-skilled labour complementing capitalisation (Bhorat, 1999; Edwards, 2003; Fedderke et al, 1999). Since high-skilled workers are in such scarce supply and since increasing this supply can only occur in the medium to long-run, companies presently encounter a relatively inelastic labour supply curve. In order to be competitive in this labour market companies compete for workers through pecuniary and non-pecuniary means. It could be argued that it is a 'sellers' labour market with such workers able to pick and choose jobs with little risk. This is reversed in the low-skilled (operator, elementary and domestic worker) labour market where competition for jobs is fierce, and as a result prospective/current employers do not have to compete for services. The estimations in Table 5.1 indicate that low-skilled workers are *not* significantly less likely to be 'securely' employed than skilled workers when this would perhaps be expected. Upon closer examination this was found to be entirely due to the definition of who was categorised as high-skilled, skilled and low-skilled. When clerks were included as high-skilled workers and skilled agricultural workers were included in the low-skilled definition then the estimated coefficients were positively and negatively significant respectively relative to skilled workers[12]. What we can say with robustness is that the South African labour market is not homogenous, and that there exists at least a dualistic labour market with there being a strong possibility of multi-segmented labour markets across skill categories.

When groups of industry are considered in the analysis it is found that workers in secondary2 (construction and transport industries) and tertiary2 (retail and domestic industries) are both less likely to be in secure employment relative to workers in tertiary1 (utility, finance and service). Those workers in the mining and manufacturing sectors are as likely/unlikely to be securely employed as those workers in tertiary1[13]. The construction,

[11] See for example Hinks et al (2002).

[12] Since agricultural sector workers are excluded from the analysis due to data collection problems, the above model was applied with skilled agricultural workers dropped from the analysis. The result was that while the unskilled coefficient was negative and significant, the coefficients on the education dummy variables were all insignificant. With the majority of skilled agricultural workers being employed in either the domestic or service sector and with the majority of these workers having no formal level of education it is apparent that they are largely responsible for the significant education coefficients in the Heckman probit, and brings into question the significance of education in obtaining formal secure employment in South Africa.

[13] A previous study found that workers in the mining sector were more likely to be 'typically' employed than other workers with this definition of 'typical' employment considering amongst other things the number of hours worked in the previous seven days, whether the employee has a written contract, has a pension scheme and pays

transport, retail and domestic industries are characterised by relatively poor non-pecuniary benefits and to this extent the results confirm our expectations. Manufacturing and mining sector workers have relatively high unionisation rates and when we control for trade union status we find this term to be positive and strongly significant. When the trade union dummy is removed from the model we find that mining and manufacturing workers *are* significantly more likely to be 'secure' employees than tertiary1 workers. A possible problem in including the union dummy variable is that a causality problem occurs with formal employees with a permanent employment contract being more likely to be union members or union members being more likely to be formal employees with a permanent employment contract.

The estimations in Table 5.1 and the interpretation of these results provides an abundance of information as to the nature of the South African labour market at the beginning of the 21st century. Issues of labour market heterogeneity, educational differentials, industry specific characteristics and racial group have all been analysed with some clear and some not so clear explanations provided. The next part of the analysis estimates the predicted and actual likelihoods of being a 'secure' employee by racial group and by age cohort. This will provide evidence as to the extent to which the South African labour market demographics are responsible for the continued racial disparities in finding secure employment.

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into the unemployment insurance fund (UIF). Department of Labour Report on Casualisation in the South African Labour Market, forthcoming.

Table 5.1: Estimated Heckman Probit and Probit Models of Likelihood of being a "secure" employee, September 2002

Heckman Probit	Coeff	t-test	Selection Model	Coeff	t-test	Probit	Coeff	t-test
Primary	0.147	1.122	African	-0.994*	-16.724	Primary	0.106	0.783
Secondary	0.277*	3.199	Colour	-0.576*	-7.708	Secondary	0.257*	2.841
Further Education	0.271*	2.235	Asian	-0.258*	-2.685	Further Education	0.342*	2.776
Higher Education	0.262***	1.780	Primary	-0.071	-0.883	Higher Education	0.351*	2.329
African	-0.610*	-6.632	Secondary	0.097	1.680	African	-0.764*	-9.680
Colour	-0.399*	-3.875	Further Education	0.690*	8.894	Colour	-0.499*	-5.049
Asian	-0.349*	-2.867	Higher Education	0.897*	8.164	Asian	-0.365*	-2.930
Urban	0.074	1.351	Children	-0.112*	-13.821	Urban	0.145*	2.797
Eastern Cape	-0.009	-0.091	Elderly	-0.491*	-14.781	Eastern Cape	-0.101	-1.094
Northern Cape	-0.149	-1.367	Urban	0.188*	6.297	Northern Cape	-0.164	-1.454
Free-State	-0.003	-0.028	Eastern Cape	-0.430*	-7.282	Free-State	-0.003	-0.030
Kwazulu-Natal	-0.015	-0.175	Northern Cape	-0.050	-0.724	Kwazulu-Natal	-0.076	-0.859
North-West	0.082	0.874	Free-State	-0.041	-0.633	North-West	0.081	0.830
Gauteng	0.151**	1.868	Kwazulu-Natal	-0.204*	-3.442	Gauteng	0.130	1.558
Mpumalanga	0.011	0.109	North-West	0.013	0.214	Mpumalanga	-0.002	-0.019
Northern Province	-0.012	-0.110	Gauteng	-0.192*	-3.400	Northern Province	-0.084	-0.751
Large Firm	0.062	1.204	Mpumalanga	0.007	0.104	Large Firm	0.057	1.063
Small Firm	-0.505*	-10.191	Northern Province	-0.311*	-4.670	Small Firm	-0.525*	-10.454
Tenure	0.154*	16.096	Age	0.181*	25.130	Tenure	0.168*	20.842
Tenure Squared	-0.004*	-13.650	Age-Squared	-0.002*	-20.650	Tenure Squared	-0.004*	-16.205
High-skilled	0.163*	2.261	Constant	-2.644*	-17.035	High-skilled	0.186*	2.532
Unskilled	-0.049	-1.076				Unskilled	-0.049	-1.035
Primary	0.126	1.277				Primary	0.162	1.596
Secondary (1)	0.014	0.217				Secondary (1)	0.017	0.255
Secondary (2)	-0.400*	-6.634				Secondary (2)	-0.411*	-6.567
Tertiary (2)	-0.204*	-3.473				Tertiary (2)	-0.218*	-3.585
Union Member	1.037*	17.026				Union Member	1.086*	18.766
Constant	0.434*	2.856				Constant	0.259	1.721
athrho	-0.403*	-3.411						
rho	-0.382					F(27, 8735)	52.300	
						Raised sample	3,973,652	
Wald Test	11.640					Obs	8,762	
Obs	16,174							
Censored	7,412							
Uncensored	8,762							
Wald chi(2)	836.910							
Log-like	-5372900							

Note: * significant at 1% level, ** significant at 5% level, *** significant at 10% level.

Predicted and Actual Likelihoods of being a Secure Employee in South Africa

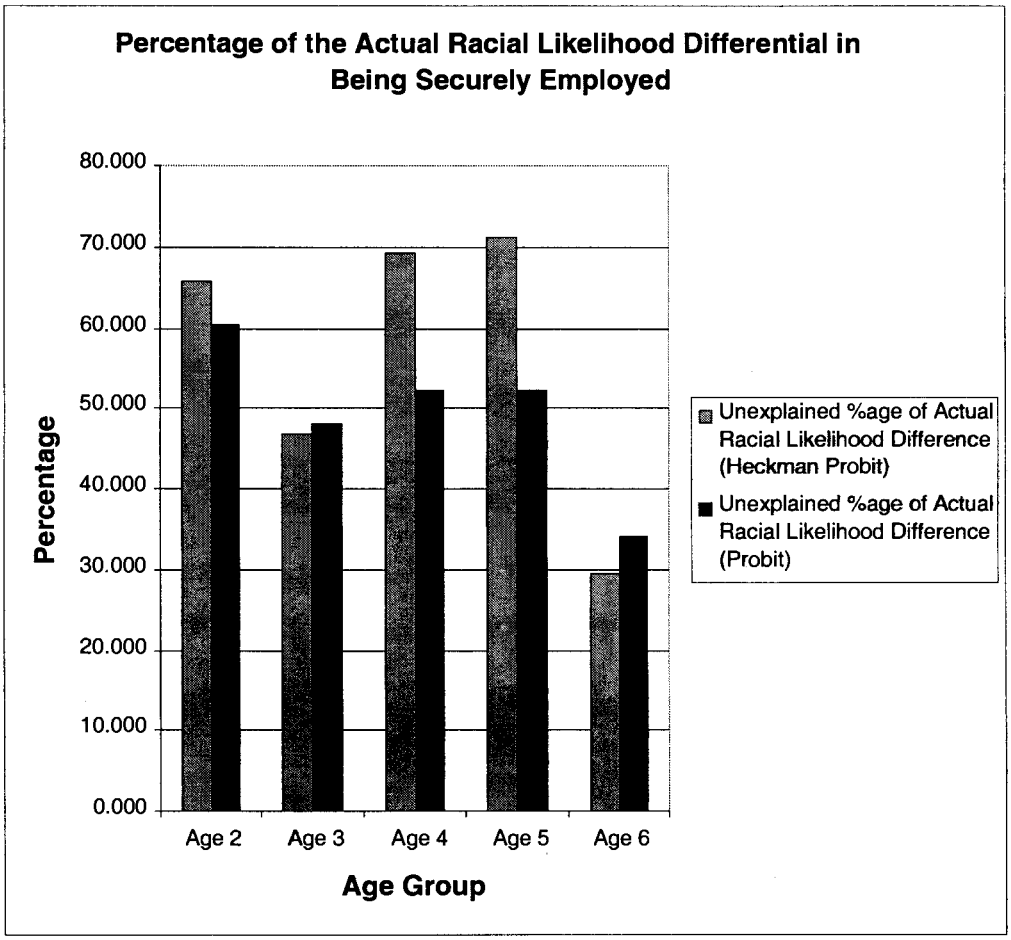
Table 5.2 illustrates that actual racial likelihood gaps in being a secure employee declines between 15-24 year olds and 25-34 year olds, with this decline then mirrored by an increase between 35-44 year olds and 54-65 year olds. This pattern is not found when we look at the predicted racial likelihood gap using either the Heckman probit estimations or the probit estimations. Comparing both of the predicted (explained) likelihood gaps, reveals that whilst they follow a similar pattern with the 26-35 year old category having the most explained component, that for the 36-55 year old groups the explained component declines. Figure 5.1 presents the percentage of the actual racial probability gap that is unexplained for the five age categories and finds that between 36 and 55 year olds the unexplained component increases. This increase is particularly prevalent when using the Heckman probit model. The difference in size between the Heckman probit and probit profiles reflects the importance of considering the selection model.

Table 5.2 Actual and Predicted Likelihood Differentials of being a Secure Employee by Age Group and Broad Racial Group

Type of Model	All	15-25	26-35	36-45	46-55	56-65
Probit						
Pooled	0.702	0.489	0.669	0.751	0.766	0.701
White ($\hat{P}^{\Pr obit}_{w,p}$)	0.814	0.591	0.802	0.855	0.878	0.883
Black ($\hat{P}^{\Pr obit}_{b,p}$)	0.683	0.465	0.648	0.736	0.743	0.656
Heckman Probit						
Pooled	0.736	0.606	0.657	0.822	0.841	0.646
White ($\hat{P}^{Heck}_{w,p}$)	0.836	0.694	0.794	0.889	0.908	0.841
Black ($\hat{P}^{Heck}_{b,p}$)	0.718	0.585	0.635	0.812	0.827	0.599
Actual						
Pooled	0.673	0.502	0.658	0.717	0.708	0.659
White (P_w)	0.910	0.760	0.914	0.934	0.944	0.936
Black (P_b)	0.631	0.442	0.616	0.685	0.662	0.592
Racial Differentials						
$P_w - P_b$	0.280	0.319	0.297	0.249	0.282	0.344
$\hat{P}^{Heck}_{w,p} - \hat{P}^{Heck}_{b,p}$	0.118	0.109	0.158	0.077	0.081	0.243
$\hat{P}^{\Pr obit}_{w,p} - \hat{P}^{\Pr obit}_{b,p}$	0.131	0.126	0.154	0.119	0.135	0.226
$(P_w - P_b) - (\hat{P}^{Heck}_{w,p} - \hat{P}^{Heck}_{b,p})$	0.162	0.210	0.139	0.172	0.201	0.101
$(P_w - P_b) - (\hat{P}^{\Pr obit}_{w,p} - \hat{P}^{\Pr obit}_{b,p})$	0.149	0.193	0.143	0.130	0.148	0.117

According to Figure 5.1 the upper limit on racial discrimination in being a secure employee in South Africa is largest amongst both the 36-45 year age group and the 46-55 year age group. This is consistent with the view that this kind of discrimination is larger in older age cohorts than younger age cohorts since many of the older workers would have been hired during the apartheid period. However this opinion is at best tentative, since the oldest age group has the lowest unexplained share, and the youngest cohort has a very large unexplained share of racial differences making any conclusions less than robust. The youngest cohort is particularly interesting since it would be expected, ceteris paribus, that (1) the racial differential in this group would be relatively low and (2) the unexplained component would be low relative to other groups since affirmative action legislation has been in place for 4 years. Whilst it is too soon to claim that the Employment Equity act is not working, it could be that specific youth labour market legislation is required to reduce this apparently large gap. However future research concentrating on the youth labour market is required before any policy implications are suggested.

Figure 5.1


Percentage of the Actual Racial Likelihood Differential in Being Securely Employed
80.000
70.000
60.000
50.000
40.000
30.000
20.000
10.000
0.000
Percentage
Age 2
Age 3
Age 4
Age 5
Age 6
Age Group
Unexplained %age of Actual Racial Likelihood Difference (Heckman Probit)
Unexplained %age of Actual Racial Likelihood Difference (Probit)

Conclusion

The aim of this paper was to explore in more detail the characteristics of the South African labour market with particular reference to demographic differences, unemployment, secure work and racial composition. Using both a descriptive and econometric methodology, differences in being securely employed were estimated for economically active males and for different age groups. The determinants of being a secure employee (i.e. somebody who is employee in the formal sector with a permanent employment contract) were estimated and the associated predicted likelihoods of being a secure employee calculated.

The descriptive analysis revealed that Whites were over-represented in secure jobs relative to Blacks, with few Whites working in the informal sector. Twenty three per cent of formal sector employees are White, with the White share of such employees in the 15-25 year old age group being relatively high. Older age groups of Whites are more secure in work relative to younger age groups, but there is some evidence that the share of Black secure employees will increase in older age groups and longer tenure groups over time.

The majority of total Black and White unemployment is found within the 15-35 year old age category. However whilst this share is just over 50 per cent for Whites, the figure is over 70 per cent for Blacks. Whilst 34 per cent of total Black male unemployment is found amongst the 15-25 year old category, the equivalent figure for White males in this age group is 43 per cent. This could be the first indication of affirmative action hiring policies beginning to impact on the labour market with young White males the principle losers. However the sheer scale of the unemployment rate amongst Black and White youths reveals that Whites are relatively far better off.

Racial group, level of education, job tenure, industry, occupation and region were all found to be significant to varying degrees in determining the likelihood of being employed in a secure job. The model chosen was found to be significant in this analysis, with the correct model revealing more information about the importance of variables in firstly being employed and then being employed in a secure job or not. Whilst such models are far from perfect suffering from omitted variable bias which results in upward biases in the estimations, they do confirm several a priori expectations. Firstly that size of employer effects the likelihood of being securely employed with smaller organisations significantly less likely to offer secure employment relative to medium and large companies. Secondly the type of occupation a worker finds himself in has a significant impact on secure employment with high-skilled workers benefiting from this. This is consistent with labour market dualism and segmentation in which the high-skilled workers have potentially excessive power whilst the remaining encounter competitive labour markets that favour employer power. Racial group significantly effects both the likelihood of being employed and, once employed, the chances of being securely employed. African, Coloured and Asian males are all significantly less likely to be employed and securely employed than Whites reflecting the continuing racial inequalities of the past. A secondary education or more, significantly increases the likelihood of both being employed and once employed being an employee who is secure reflecting the importance of quantity of education in being successful in the South African labour market. Unsurprisingly the length of time in a job positively effects the chances of being securely employed reflecting insider power in the workplace. Workers in the construction and transport and retail and domestic industries are all less likely to be in secure employment relative to workers in the utility, finance and service sectors. Manufacturing and mining sector workers have relatively

high unionisation rates and when we control for trade union status we find this term to be positive and strongly significant. When the trade union dummy is removed from the model we find that mining and manufacturing workers *are* significantly more likely to be 'secure' employees than all other sector workers.

When the predicted likelihood of being securely employed were undertaken, separate models were run for each of the age groups in order to reveal any demographic differences that were consistent with the argument that older White workers have it easier than younger White workers. The evidence was largely inconclusive. The unexplained (racial discrimination) component of the racial difference in being securely employed or not was largest amongst the 36-45 year old and 46-55 year old age categories. However amongst the oldest group of workers the unexplained component was the lowest of all five age groups. Three of the five age groups, including the 15-25 age group did have an unexplained term that contributed over 60 per cent of the actual racial differential. The hypothesis that older groups of Whites (Blacks) are still benefiting (suffering) from apartheid era jobs cannot be clearly rejected or supported.

The paper's findings support the need for long-term supply-side policies that empower individuals when they enter the labour market. Policies that improve geographical and financial access to quality education institutions are necessary so that more learners advance in school and have greater access to higher and further education opportunities in later life. The improvement of current schooling infrastructures (e.g. sanitation, buildings, chairs, desks, books and stationery) must be improved and continue to improve for current and future generations. This is of particular relevance to state-owned schools. Evidence regarding quality of education indicates that this substantially increases earnings levels in the labour market (Chamberlain and van der Berg, 2002). Whilst little research has been explicitly undertaken on the impact schooling quality has on employment likelihood and on quality of job it is reasonable to assume that the effect will be positive and significant. The various training centres recently introduced by the Department of Labour (Sectoral Education and Training Authorities, SETAs) for different sectors represents a positive active labour market initiative but such schemes require efficiency of resources and a coherent communication system in place between employers/prospective employers and the relevant authorities. Training and re-training schemes in Europe have on numerous occasions failed due to lack of funds and inefficiencies in solving the disequilibrium skills-gap. Given the current climate within the public sector labour force of further large-scale retrenchments in 2004 due to modernisation of government departments (e.g. Department of Public Affairs) there should be concern about the efficiency of the SETAs with skill-gaps within government itself. Those SETAs that do not survive will be merged into those that are successful. However there is then a potential problem of large SETAs focussing too broadly on education and training programmes that fail to meet the demands of industry. These are concerns that require vigilance by applied social science researchers.

Without active pre-labour market and labour market policies the dualistic nature of the South African labour market across largely racial, class and skill lines will persist. The current government continues to commit to the long-term supply-side policies that are required to tackle this division of labour and it is acknowledged here that such policies will take years to feed into the labour market. Simultaneously this paper and several other studies find that problems of discrimination still persist in the South African labour market and without the credible enforcement of affirmative action labour hiring/promotional policies and black economic empowerment such inefficiencies will continue. Imperfect information and

possible monopsony power of firms allows the race of an individual to still be an important element in employability, earnings levels and in job security. Such explanations for the persistence of racial disparities in the labour and work forces require different initiatives. Statistical discrimination (Arrow, 1969; Phelps, 1972) provides a theoretical explanation for why discrimination can persist in the long-run based on imperfect information held by employers. These subjective beliefs are based not on any 'taste' for discrimination but on previous experience. This experience can result in the employer forming a micro-institutional perspective of workers from different racial groups that can result in hiring inefficiencies. In order to change these attitudes the employer must be made aware of other experiences of employers that are different from his/her own, that may well be caused by experiences based on different labour 'pools'. Increasing the quality of Black workers is likely to significantly contribute to the reduction of this type of discrimination too.

The issue of monopsony power can be related to the existence of the Blanchflower and Oswald 'Wage Curve' in South Africa. Work by Kingdon and Knight (2000) confirms that local unemployment rates and wage levels in South Africa are negatively related to each other. This pre-requisite means that firms in high unemployment areas have all of the power in hiring workers and can openly discriminate by preferring a certain racial group over another in terms of employment likelihood and earnings. Under such circumstances 'tastes' for discrimination by employers can persist without effective *monitoring* and *enforcement* of current labour market legislation. These attitudes are more likely to persist in labour markets that have abundant supply as well as being characterised by low-productivity (e.g. unskilled and semi-skilled labour markets in South Africa). That this paper illustrates the strong relationship between decent jobs and trade union membership in the manufacturing and mining sectors indicates a method whereby such attitudes are less likely to persist. Unionisation then maybe a tool by which discrimination in the workplace can be eradicated. However the dualistic nature of the South African labour market and the apparent skill-shortage in highly-skilled and skilled areas means that the above persistence of discrimination only exists in low-skilled and semi-skilled markets where supply is abundant and demand is diminishing. Within skilled and high-skilled labour markets there is greater labour bargaining power and any employer discrimination is less likely to persist since it would be financially inefficient. This outcome is reliant on the emergence of a skilled and highly-skilled Black labour force in South Africa as well as current labour market legislation being enforced.

Without considering the nature of being employed and unemployed in South Africa there are significant problems in studying which workers have the better job security. This study does not consider gender in the formal analysis in order to give a conservative measure of racial problems in South Africa. Future research will specifically consider gender and racial issues. There appears to be no advantage or disadvantage in being a young White South African or an old White South African in the labour market, but there is still a massive advantage in being White relative to being Black in entering the formal labour market, being employed in the formal labour market and being employed in a secure job in the formal labour market. Unless the lot of the Black worker in South Africa improves, then the labour market will continue along its dualistic path and economic and social segregation will persist for the majority of South Africans.

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