HOW DID LABOUR MARKET RACIAL DISCRIMINATION EVOLVE AFTER THE END OF APARTHEID?

An analysis of the evolution of hiring, occupational and wage discrimination in South Africa between 1993 and 1999.

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Abstract

This paper seeks to estimate the degree of racially discriminatory labour practices in South Africa and their development during the first five years in power of the multiracial government. It successively presents three econometric studies, which allow evaluating the extent of racial discrimination in labour participation, in the access to high skilled occupations and in earnings. It is shown that nowadays discrimination account for between 30 per cent and 40 per cent of the racial gaps, depending on the type of inequality regarded. Turning to the evolution of discrimination between 1993 and 1999, it appears that only discrimination in labour participation has decreased during the period considered whereas occupational and wage discrimination slightly strengthened.

INTRODUCTION

In 1994, the onset of democracy in South Africa formally ended several decades of discriminatory policies and legislation, which deeply affected the structure and the efficiency of the labour

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market. Hence, the legacy of apartheid is reflected by large racial inequalities in the access to the labour market in addition to a well-established racial occupational and wage hierarchy. Differences in human capital investment, as well as in other individual attributes, play a great role in explaining the varying incidence of unemployment across racial groups, the relatively small proportion of African workers in high-skilled jobs and their lower earnings. Furthermore, the continuance of discriminatory employers' behaviour, whether it is voluntary or not, is likely to reinforce these individual differences in productivity. As the fight against racial discrimination became a key aim of the new government's policy and legislation, it is worth investigating the degree of discriminatory labour practices and their development in the second half of the 90's.

First, this paper seeks to estimate the extent of racial hiring, occupational and earnings discrimination in the late 90s. The preliminary step is thus to identify the determinants of the labour market outcomes of interest, namely the probability of employment, the occupational attainment, and the earnings. The following stage is to explore the extent to which the race gaps respectively observed in the probability of getting a job, of reaching a high-skilled occupation and in average earnings are due to African group's inferior productive characteristics and to labour market discrimination. The paper is based on econometric estimates that adapt, whenever it is necessary, the residual difference method of decomposing group wage differences (Oaxaca, 1973) to discrete choice models. It focuses on two population groups, African and White males.

The second aim of the paper is to analyse how these three forms of discrimination evolved after the end of apartheid. For this purpose, we use two household surveys, namely the 1993 Project for Statistics on Living Standards and Development (PSLSD) and the 1999 October Household Survey (OHS). In doing so, this paper

expands the field of investigation and the period covered by previous studies focusing only on racial wage discrimination (Knight and McGrath, 1987, Moll, 1991 and 2000, Allanson et al, 2001) or on employment discrimination (Kingdon and Knight, 2000).

The analysis below proceeds as follows. Section 2 outlines the methodology used in the remainder of the paper. Section 3 investigates the extent of racial discrimination in labour force participation. It first estimates the determinants of employment and then concentrates on the measurement and evaluation of discrimination between 1993 and 1999. Similarly, sections 4 and 5 consider occupational and earnings discrimination respectively. Conclusions are drawn in section 6.

1.   THE METHODOLOGY[2]

The methodology employed to estimate the three forms of discrimination investigated in this paper is inspired by the Oaxaca's method of analysing group wage differences (Oaxaca, 1973). This residual difference methodology has been previously adapted to discrete choice models by Gomulka & Stern (1990) and Altonji & Blank (1999) in their decomposition of gender labour force differentials.

Whether we use a linear regression (to estimate wage discrimination) or a probit model (to estimate hiring and occupational discrimination), the principle of the decomposition is the same. It consists in decomposing the White/African gap in the labour market outcome under consideration into an explained and an unexplained components in the following way:

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[2] See appendix 1 for further details.

$$\overline{L}_a - \overline{L}_w = \underbrace{\left\lfloor \overline{L}(\beta^* X_w) - \overline{L}(\beta^* X_a) \right\rfloor}_{\text{PRODUCTIVITY}} + \underbrace{\underbrace{\left\lfloor \overline{L}(\beta_w X_w) - \overline{L}(\beta^* X_w) \right\rfloor}_{\text{WHITE ADVANTAGE}} + \underbrace{\left\lfloor \overline{L}(\beta^* X_a) - \overline{L}(\beta_a X_a) \right\rfloor}_{\text{AFRICAN DISADVANTAGE}}}_{\text{DISCRIMINATION}}$$

Where $\overline{L}$ is the mean of the labour market outcome currently being analysed (either the average probability of employment or the average probability of getting a high skill job or the average wage), X is the vector of individual productive characteristics introduced in the respective equations and β the associated vector of coefficients. β^* is the non-discriminatory set of coefficients, estimated from the "pooled" sample, following Neumark's assumption (Neumark, 1988)[3].

The first term (*Productivity)* represents the part of the gap explained by the differing productive characteristics of Africans and Whites. It is the predicted gap that would be observed within a non-discriminatory labour market using the "pooled" sample as the norm. The second term (*Discrimination)* is the component of the differential not explained on the basis of personal characteristics – the residual part – that can be cautiously assimilated to discrimination. It is made of two components, respectively the advantage (disadvantage) Whites (Africans) have relative to a non-discriminatory background. A number of important assumptions underlie the estimate of discrimination. Firstly, other forms of discrimination, such as pre-labour market discrimination in schooling (for instance in the quality of education) or housing discrimination, are not controlled for owing to lack of data. These omissions could result in over-estimating the level of labour market discrimination. Secondly, because discrimination is estimated as a

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[3] The choice of the non-discriminatory structure β^* is largely discussed in the literature on wage discrimination (see Oaxaca (1973), Cotton (1988), Neumark (1988) Oaxaca and Ransom (1994)). The "pooled" structure defined by Neumark and Oaxaca & Ransom appears to be the closest to the competitive structure. Moreover, it produces the smallest error standards for all estimated differentials.

residue, misspecification of the participation, occupational attainment or earnings equation, measurement errors in data, omission of relevant productive characteristics hardly observable or quantifiable, or unavailable, can induce bias into the discrimination estimates. Thirdly, it is assumed that the presence of discrimination only has distributional effects. In other words, the volume of employment and the level of wages are regarded as constant whether discrimination is present or not.

The next sections apply this methodology to estimate successively labour force participation discrimination, occupational discrimination and finally wage discrimination in South Africa during the second half of the 90's. In each case, the preliminary step consists in estimating the determinants of the labour market outcome under consideration.

3. THE EVOLUTION OF LABOUR FORCE PARTICIPATION DISCRIMINATION

South Africa suffers from one of the highest unemployment rate in the world, 36.2% in 1999 by the broad definition[4]. This global rate hides high discrepancies between the different racial groups since less than 7% of the White active population are unemployed whereas the same figure increases to more than 40% for Africans. The varying incidence of unemployment across the different population groups can be accounted for by many factors among them, the wage-setting machinery (Nattrass, 2000), the demographic structure of the active population, the legacy of the apartheid policy relative to the human capital acquisition and the geographical mobility. Hence, the disparities in the incidence of unemployment between Whites and Africans are likely to result in a great part from past discrimination. This section investigates to what extent present labour market discrimination also contributes to explaining the racial distribution of employment.

[4] South Africa Statistics (OHS1999).

We first seek to identify the characteristics of individuals that make them more likely to participate in the labour market using the OHS 1999. In doing so, we complement and update the existing studies done on this area (Fallon and Lucas, 1997, Kingdom and Knight, 2000, Bhorat and Leibbrandt, 2001). Secondly, we focus on the nature of the racial gap in the probability of employment and investigate which proportion of individual determinants of employment is able to explain the differences observed between White and African workers. The unexplained part will give an indication of the degree of racial hiring discrimination in South Africa. These estimates, run for 1993 and 1999, extend to a more recent period the results found by Kingdom and Knight in 1994 (Kingdom and Knight, 2000).

The determinants of labour force participation[5].

Table 1 displays the results of the probit estimates of labour participation, taking into account the survey design, for African and White males in 1999[6].
Note that the dependent variable is a discrete variable equal to 1 if the individual is either employed by someone else or self-employed.

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[5] The sample is limited to White and Africans males between the age of 16 and 65 for which employment attributes are available, restricting the sample size from 17609 to 16750 observations.

[6] The same analysis has been conducted in 1993, using the PSLSD. Results are available from the author.

Table 1. The determinants of labour force participation (OHS 1999)

Independent variable	African males	White males
Years of schooling	0.014***	0.155***
	(3.55)	(5.42)
Age	0.049***	-0.033
	(5.79)	(-0.94)
Age squared	-0.0005***	0.0003
	(-4.83)	(0.82)
Married	0.405***	0.205
	(11.37)	(1.19)
Headship of the family	0.836***	0.792***
	(23.11)	(5.74)
Number of children	-0.012	0.035
	(-1.20)	(0.61)
Other unemployed in the family	-0.447***	-1.071***
	(-14.15)	(-6.49)
Ownership status	-0.361***	0.260**
	(-9.98)	(2.29)
Distance from phone	-0.076***	-0.137**
	(-7.32)	(-2.18)
Urban	-0.077**	-0.099
	(-2.02)	(0.573)
Eastern Cape [a]	-0.447***	0.389*
	(-4.36)	(1.74)
Northern Cape	0.075	0.708*
	(0.55)	(1.92)
Free State	-0.151	-0.014
	(-1.44)	(-0.07)
Kwazulu Natal	-0.120	0.154
	(-1.17)	(0.67)
North West	-0.085	0.286
	(-0.83)	(1.17)
Gauteng	-0.154	0.237
	(-1.57)	(1.35)
Mpumalanga	-0.115	0.421*
	(-1.11)	(1.95)
Northern Province	-0.280**	0.369
	(-2.64)	(1.20)
Intercept	-0.550**	-0.300
	(-2.99)	(-0.42)
N	14585	2165
F stat	138.37	11.56
% of N correctly predicted	76.8%	94.8%

Notes: *** Statistically significant at the 1% level, ** the 5% level and * the 10% level.
Absolute value of t-statistics in parenthesis. [a] Reference category: Western Cape

As expected, the employer's hiring choice and worker's decision to enter the labour market are positively affected by the individual's level of schooling for both groups of workers. The influence of age is only significant for Africans. Their probability of employment increases with age but at a diminishing rate. It points towards the large number of young Africans who are unemployed.

Turning to the variables linked to the individual's family background, it is found that being married and being the head of the family favour the access to labour market. It reflects the fact that greater family responsibility induces labour market participation. The number of children doesn't significantly affect the probability of getting a job, which can be explained by the restriction of the sample to males only. This variable would be expected to have more influence on female labour participation. In other respects, having unemployed members in the family decreases the probability of an individual participation in the labour market suggesting that the precariousness of the household deserves the job search, the individual being caught in a kind of "social mesh".

Housing tenure lowers the chance of getting a job for Africans but improves it for Whites. The negative effect appears if homeowners are less mobile or if housing ownership acts as a proxy for wealth and the level of the reservation wage. On the contrary, a positive effect is expected if stability is sought by the employer (to reduce is turnover) or if the individual has strong incentives to work to finance his housing. These results are consistent with those found by Kingdom and Knight (2000).

Being far from a phone (proxy for the isolation of the community and the cost of job search) hinders the finding of a job for both African and White people.

Considering the impact of localisation on the employment probability, results show that living in an urban area doesn't

significantly influence the access to the labour market of White people but negatively affect the employment probability for Africans. This last finding, coherent with those of Bhorat & Leibbrandt (2001) and Kingdom & Knight (2000), is somehow counter-intuitive as employment opportunities are higher in the cities. The two first authors explain this result by the fact that the effect of the urban-rural dummy variable is based on an average set of characteristics of the combined urban and rural sample. The average worker for whom the probability of employment is estimated has less favourable attributes than the average urban workers and for such a person, rural areas might offer a higher probability of employment.

Finally, living in a province other than the Western Cape decreases the chance of getting a job for Africans only though this influence is hardly ever significant. In contrast, Whites' labour force participation seems to be higher (however barely significantly) in any provinces other than the WC.

Decomposition of the racial differential in labour participation.

Figure 1 reports the results for the decomposition of the White/African differential in labour participation for 1993 and 1999[7].

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[7] These results are based on the estimates of the determinants of labour force participation for 1993 (PSLSD) and 1999 (OHS). Further details are displayed in appendix 2.

Figure 1. Decomposition of the White/African gap in labour participation
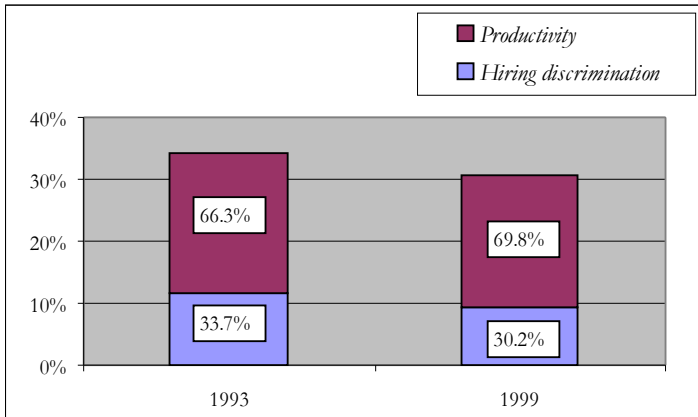
Source: Own computations from PSLSD and OHS 1999.

First, figure 1 highlights a slight decrease in the racial gap in labour participation between 1993 and 1999. This is the result of both a decrease in the White employment rate from 95.5% to 93.5% and an increase in the African employment rate from to 61.5% to 62.7%. This variation, however marginal, reflects the fact that jobs have been created in the South African economy, in contradiction to the notion of "jobless growth", and that African males have benefited the most from this creation. One can also perceive this finding as the very first effects of the affirmative action policy aiming at giving jobs in priority to the "previously disadvantaged groups".

Turning to the decomposition of the White/African gap in labour participation, the results show that two thirds of it are accounted for differences in observed characteristics between the two racial groups. The major reason explaining why Whites have better job opportunities is their higher levels of employment-enhancing features such as education, their better family background as well as their location in areas of lower unemployment. However, one can observe that the differences in some of these characteristics

between Whites and Africans could reflect, in some respect, pre-labour discrimination. Indeed, the segregation of the educational system under Apartheid prevents black people from getting the same level of education as Whites and from accessing the same quality of education[8]. Furthermore, the policies of "influx control" and "Homelands" have hindered the mobility of Africans and constrained them to live in areas with low employment opportunities.

One third of the racial gap in employment rate remains unexplained by the measured characteristics and can be cautiously attributed to discrimination[9]. Indeed, the omission of certain variables (unavailable in the surveys used), such as social network, skills and behaviours might lead to an overestimation of the extent of employment discrimination. Recall that employment includes employment by someone else and self-employment. It means that discrimination, as it is measured here, reflects both hiring discrimination and discrimination in the setting up as self-employed. How can these two forms of discrimination be explained? Frijters (1999) seeking to account for discrimination at job-entry in a South African firm observes that hiring decisions are consistent with expected productivity. The observed screening out of African workers at job-entry could be explained by statistical discrimination, i.e., the actual productivity of African workers in the firm was found to be significantly lower than the productivity of workers of other ethnic backgrounds. Thus, if in the past, hiring discrimination in South Africa could be perceived as voluntary, there is some evidence that it is now more related to imperfect information. Discrimination in the establishment as self-employed can also be

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[8] Quality of education is perceived as a determinant factor of schooling outcome for Africans (Case and Deaton, 1999).

[9] One should note that Kingdon and Knight (2000) find much lower discrimination when analysing the racial unemployment gap in 1994. This difference can mainly be attributed to alternative choice for the non-discriminatory employment structure.

explained by some forms of statistical discrimination. According to Coate and Tennyson (1992), discrimination within the labour market can spread to other markets affecting self-employment (as in the credit market for example), and creates statistical discrimination. They show that when capital lenders can't observe the entrepreneurship aptitude of individuals, borrowers from disadvantaged groups will be charged higher interest rates. The discounted return on self-employment is lower for these groups. Consequently, people from discriminated against groups have less incentives than the others to become self-employed. Applying this theoretical argument to South Africa could contribute to account for discrimination in the probability of being self-employed. Furthermore, Whites' advantage can be explained by their direct privileged access to the credit market, or their highest opportunity of sub-contracting while set up as self-employed.

Finally, one can observe from figure 1 that discrimination in the labour participation slightly decreased between 1993 and 1999. While it accounted for 33% of the racial employment gap in 1993, it contributed 30% to this gap in 1999. This decrease, though marginal, is an encouragement for the policy of "deracialisation" of the labour market led by the government since 1994.

The evolution towards greater objectivity in employers' recruitment procedures is a first step in the improvement of Africans position in the labour market. It should reach the point where an African and a White with similar productivity will have the same probability of getting a job. However, the second step is that once evenly productive Africans and Whites are hired, they should be positioned at the same hierarchical level. Evidence shows that it is far from being always the case. The next section seeks to estimate the extent and the evolution of racial occupational discrimination in South Africa.

THE EVOLUTION OF OCCUPATIONAL DISCRIMINATION

Racial job segregation is one of the most visible features of the South African labour market. Either horizontal – segregation between the economic sectors – or vertical – segregation between occupational categories – it leaves African workers in the less skilled and less remunerated activities. In 1999, only 12% of African wage earners had access to highly skilled occupations whereas 54% of Whites were on the top of the hierarchical ladder[10]. The racial occupational structure largely reflects the consequences of the apartheid policy, "job reservation" notably but also the separated education and training policy. However, one can wonder to what extent this legacy might be reinforced by an actual discriminatory behaviour, voluntary or not, of the employers. The analysis of racial occupational discrimination in South Africa is particularly interesting, as the government recently voted a law that promulgates affirmative action for previously disadvantaged population groups (The *Employment Equity Act 1998*). Estimation of the level of this form of discrimination will give an idea of the gap the South African employers has to fill at the present time to comply with the law. As far as we know, only Moll (2000) tried to estimate this type of racial discrimination in South Africa using two data sets from 1980 and 1993. He shows that whereas more and more African workers hold skilled jobs, surprisingly, occupational discrimination against Africans has increased during the considered period.

A first section presents the estimates of the determinants of getting a high-ranking job in 1999. The evolution of White/African occupational discrimination during the first five years in power of the multiracial government is analysed next.

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[10] Own computations from the OHS1999.

The determinants of occupational attainment[11].

Table 2 displays the results of the probit estimates of getting a high-ranking job, taking into account the survey design, for African and White males in 1999[12].
Note that the dependent variable is a discrete variable equal to 1 if the individual holds a high skilled job (managers, professionals, semi-professionals and technicians).

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[11] The sample is restricted to White and African males regular workers between the age of 16 and 65 for which employment attributes are available, reducing the sample size to 9361 observations.
[12] The same analysis has been conducted in 1993, using the PSLSD. Results are available from the author.

Table 2. The determinants of the probability of reaching a high skill job (OHS 1999)

Independent variable	African males	White males
Years of schooling	0.201***	0.356***
	(11.95)	(9.51)
Experience	0.014***	0.010**
	(3.68)	(2.26)
Married	0.065	0.212*
	(1.00)	(1.73)
Headship status	0.054	0.349**
	(0.77)	(2.80)
Number of young	0.008	-0.046
	(0.42)	(-1.01)
Urban	-0.082	0.099
	(-1.16)	(0.62)
Formal sector	0.588***	0.321
	(4.06)	(1.03)
Agriculture[a]	-0.238*	-0.129
	(-1.77)	(-0.55)
Mining	-0.106	-0.532**
	(-0.62)	(-2.90)
Utility	-0.109	-0.361
	(-0.56)	(-1.23)
Construction	-0.314	0.058
	(-1.58)	(0.17)
Trade	0.087	-0.302**
	(0.83)	(-2.08)
Transport	0.069	-0.190
	(0.52)	(-1.21)
Finance	0.248**	0.535***
	(2.49)	(3.78)
Services (including domestic)	0.792***	0.013
	(10.17)	(0.10)
Intercept	-4.218***	-5.225***
	(-14.68)	(-8.48)
N	7939	1422
F stat	31.51	13.83
% of N correctly predicted	91.6%	71.7%

Notes: *** Statistically significant at the 1% level, ** the 5% level and * the 10% level. Absolute value of t-statistics in parenthesis. [a] Reference category: manufacturing

The main common features between the results of the probit estimates for the two population groups relate to the impact of the

schooling and experience variables. As expected, their estimated coefficients are positive, which indicates that the higher levels of schooling and experience the individual reaches, the more likely he is to get a highly skilled occupation.

The influence of the family background is significant only for White workers. Being married positively affects the occupational choice. Being the head of the household positively influences the probabilities of being in the high skilled occupational category. Finally, the number of dependent children in the family doesn't appear to play a role in determining occupational attainment. These results seem to indicate that the worker's family background is a less important determinant of the occupational choice than it is for the labour participation decision.

The dummy for the formal nature of employment sector has a significant positive effect only in the case of African workers, meaning that Africans employed in the formal sector are more likely to hold a high-skilled position whereas the informal rather gathers "small jobs".

Turning to the influence of economic sectors, results in table 2 show that being employed in the finance sector, compared to the manufacturing sector, increases the probability of getting a high skill job for both groups of workers. The same result applies to the service sector (representing mainly the public sector) but for Africans only.

The main result underlined by these estimates is that the investment in human capital plays the most important role in determining worker's occupational attainment. However, the lack of variables doesn't allow us to capture the impact that parents' occupation and education or vertical mobility might have on the individual occupational attainment.

Decomposition of the racial differential in occupational attainment.

Figure 2 presents the results of the decomposition of the White/African gap in the probabilities of getting a high skill job for 1993 and 1999[13].

Figure 2. Decomposition of the White/African high-ranking occupation gap
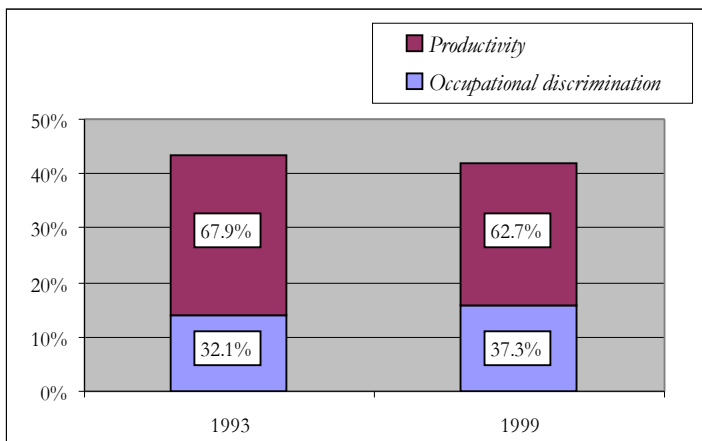
The gap between the probabilities Whites and Africans have to access to the occupations of managers, professionals and technicians is slightly higher than 40% and remains constant between 1993 and 1999. However, this global trend hides discrepancies between the respective occupational progression of White and African workers. In 1993, 50% of the White workers have a highly skilled job whereas, in 1999, this percentage increases up to 53%. Conditions are much less favourable for African workers since only 7% of them have attained the top of the

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[13] These results are based on the estimates of the determinants of occupational attainment for 1993 (PSLSD) and 1999 (OHS). Further details are displayed in appendix 2.

hierarchical ladder in 1993. However, their average probability to get a highly skilled job largely increases in 6 years, to reach 12% in 1999.

Figure 2 also shows that the gap in the opportunities of getting highly skilled jobs between White and African workers is justified, to a large extent, by differing economic characteristics: 68% of the observed gap in 1993 and 63% in 1999 are "objectively explained." However, one should keep in mind that these differences often result from discrimination "prior to the labour market". The unexplained part of the differential can be interpreted, with the usual reserve, as occupational discrimination. The outcomes indicate that racial discrimination in the access to the high-skilled jobs slightly increased between 1993 and 1999. These findings show that even if the proportion of African workers in managerial/professional/technical occupations increased between 1993 and 1999, they still suffer from at least, the same amount of discrimination as before. The implementation of the *Employment Equity Act* is likely to confirm and increase the African move up along the occupational ladder and hence to reduce inequalities between White and African workers. However, this law doesn't offer any guaranty that pure racial discrimination will be reduced.

This section attempted to determine to what extent the unequal access of African workers to the high-ranking occupations is due to racial discrimination and how it evolved during the first 5 years in power of the new multiracial government. There is still, at least, one more form of labour discrimination to explore, namely wage discrimination: do two equally productive White and African representative workers employed in similar occupation earn the same wage and if not, how large is the differential? The following section tries to address this issue.

THE EVOLUTION OF WAGE DISCRIMINATION

Racial wage inequalities are a well-defined aspect of the South African labour market. Despite their substantial decrease during the three past decades, in 1999, African male workers still earned about one fifth of White males' wage[14]. The previous section suggests that occupational segregation contributes to these wage disparities. More generally, Africans earn less than White workers do because they don't have the same individual productive characteristics. However, a few studies also highlight the role played by discrimination in explaining the White/African wage gap. Despite the use of different approaches (various non-discriminatory norms, integration or not of the occupational repartition), major findings have been similar. Wage discrimination against African workers seems to have decreased during the 80's and the first half of the 90's (Knight and McGrath, 1987, Moll, 2000, Allanson et al., 2001, Rospabé, 2000). However, one work from Erichsen and Wakeford (2001) reports a slight increase in wage discrimination between 1993 and 1995. The aim of this section is to carry on these works and analyse the evolution of racial wage discrimination during the second half of the 90s.

The first section displays the results of the earnings regressions for White and African workers in 1999. Then, is analysed the evolution of White/African wage discrimination between 1993 and 1999.

The determinants of individual income[15].

Results of the income interval regressions for African and White males in 1999 are summarised in table 3. They take into account the survey design and correct for heteroscedasticity when necessary[16].

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[14] In terms of hourly gross earnings (own computations from the OHS 1999)

[15] The sample is restricted to White and Africans males regular workers between the age of 16 and 65 for which wage determinants and earnings are available, reducing the sample size to 8117 observations.

Note that information on earnings relates to total salary/pay, including overtime, allowances and bonuses before tax. The worker is asked to give either the precise amount of their salary or the income interval in which it fits. Thus, the observations for the dependent variable consist of a mixture of point and interval data. In this case, it recommended estimating an interval regression model, which is a generalisation of the tobit model[17]. Moreover, to abstract from the effect of variations in hours worked, the earnings data were converted into hourly data using the information given by the workers on the number of hours they usually work per week.

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[16] The same analysis has been conducted in 1993, using the PSLSD. Results are available from the author.

[17] For further details, see Stata (vs. 7) manuals.

Table 3. The determinants of individual income (OHS 1999)

Independent variable	African males	White males
Primary schooling	0.028***	-0.274**
	(4.59)	(-2.69)
Secondary schooling	0.093***	0.069**
	(10.99)	(2.64)
Tertiary schooling	0.243***	0.149***
	(8.42)	(6.17)
Experience	0.024***	0.042***
	(5.68)	(4.23)
Experience squared	-0.0003***	-0.0008***
	(-4.81)	(-3.91)
Tenure	0.024***	0.010*
	(7.21)	(1.92)
Tenure squared	-0.0003***	-0.0001
	(-3.93)	(-1.21)
Urban	0.147***	0.055
	(4.26)	(0.50)
Married	0.141***	0.144**
	(4.86)	(2.19)
Formal sector	0.375***	0.327**
	(9.94)	(2.41)
Union	0.253***	-0.011
	(8.60)	(-0.19)
Highly-skilled[a]	0.477***	0.801***
	(9.31)	(9.08)
Skilled	0.078**	0.395***
	(3.12)	(4.37)
Agriculture[b]	-0.754***	-0.581***
	(-14.41)	(-3.99)
Mining	-0.064	0.088
	(-1.25)	(0.77)
Utility	0.261**	-0.098
	(2.49)	(-0.62)
Construction	-0.033	-0.457
	(-0.64)	(-1.60)
Trade	-0.234***	-0.377***
	(-4.98)	(-4.18)
Transport	-0.047	-0.021
	(-0.97)	(-0.23)
Finance	-0.160**	-0.018
	(-2.89)	(-0.21)
Services (including domestic)	-0.015	-0.224***
	(-0.34)	(-2.81)
Eastern Cape[c]	-0.490***	-0.309**
	(-6.65)	(-3.56)

Northern Cape	-0.158*	-0.302**
	(-1.66)	(-2.50)
Free State	-0.547***	-0.221*
	(-8.70)	(-2.41)
Kwazulu Natal	-0.209***	-0.182*
	(-4.00)	(-1.75)
North West	-0.240***	-0.218
	(-4.17)	(-1.78)
Gauteng	-0.129**	-0.088
	(-2.57)	(-1.27)
Mpumalanga	-0.225***	-0.062
	(-3.89)	(-0.59)
Northern Province	-0.304***	-0.323**
	(-5.03)	(-2.50)
Intercept	0.639***	3.499***
	(6.83)	(4.92)
N	7001	1116
F stat	103.21	18.60
R squared	Not computable with interval reg.	Not computable with interval reg.

Notes: *** Statistically significant at the 1% level, ** the 5% level and * the 10% level. Absolute value of t-statistics in parenthesis.
Reference categories: [a] semi-skilled & unskilled, [b] manufacturing, [c] Western Cape
Highly skilled workers: managers, professionals, semi-professionals and technicians. Skilled workers: Clerks, salesperson and skilled service workers, skilled agricultural workers and artisans. Semi-skilled and unskilled: Operators, routine workers and domestic workers.

The results for educational splines are slightly different for the two racial groups. The wage premium received by African men with an additional year of schooling increases with the level of education. This upshot is in accordance with Mwabu & Schultz (2000) estimates but in contradiction with the law of diminishing returns to the formation of human capital. These two authors explain this unconventional result by the fact that the apartheid government rationed their acquisition of more advanced education and thus, allowed them to receive "excess" return. White men evidence negative returns to primary schooling. This result can be accounted for by the very low number of Whites with less than a complete primary education (only ten in the sub-sample) and thus doesn't

appear to be reliable. However, White workers receive a premium for additional year of secondary and post-secondary schooling.

As expected, experience and tenure have positive and decreasing returns on wages, for both racial groups (note however the insignificancy of the quadratic term for tenure in the Whites' regression).

Being married (included as a proxy for factors such as stability, motivation and discipline) confers some earnings advantages to African and White workers, which indicates that this variable could be a motivational signal for employers.

Whites and Africans don't benefit in the same way from their unionisation. Only African union members earn significantly more than non-union members do. There is no evidence of union wage premium for White workers. This result, which highlights the strong bargaining power of unions over African wages only, is common in the literature on the union wage premium in South Africa[18].

The results for the block of occupational category dummies display the expected wage hierarchy, where unskilled occupations were used as the base category.

Turning to the impact of sectors on earnings, estimates show that African and White workers in the formal sector earn higher wages than in the informal sector. This result is not unexpected as the formal dummy also reflects the effects of firm size and welfare contributions, which are likely to be larger in the formal sector. Results for industrial sectors show that, other thing being equal, almost no sector seems to provide significantly higher wages than manufacturing (the reference sector).

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[18] See Moll (1993), Mwabu & Schultz (1998), Hofmeyr & Lucas (1998), Butcher and Rouse (2001), Michaud & Vencatachellum (2001) and Rospabé (2001).

The results for the locational variables first show that living in an urban area increases earnings. However, surprisingly, it is not significant for white workers. This result could be explained by the fact that around 90% of White earners are urban and thus, that the sample to base the estimate of rural earnings is quite small. Finally, the outcomes for provincial dummies, when significant, show that earnings are lower for workers who are located in any province other than the Western Cape.

Decomposition of the racial wage gap.

Figure 3 presents the results of the decomposition of the White/African wage gap (in logarithm) for 1993 and 1999[19].

Figure 3. Decomposition of the White/African earnings gap.
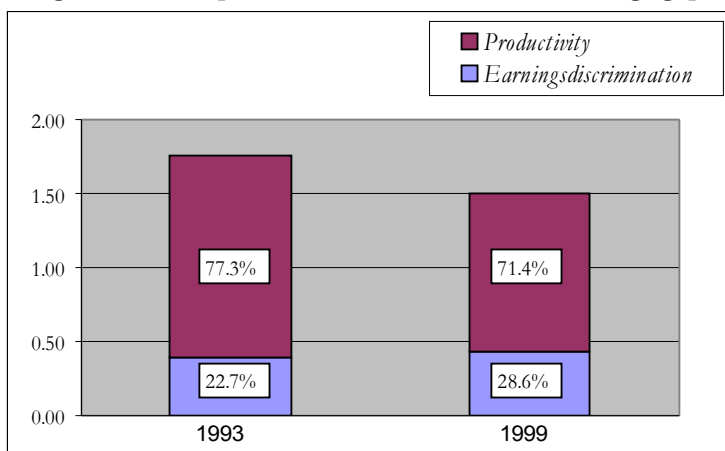
Source: Own computations from PSLSD and OHS 1999.

First, figure 3 shows that the gross earnings differential between Whites and Africans decreased between 1993 and 1999. More

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[19] These results are based on the estimates of the determinants of individual income for 1993 (PSLSD) and 1999 (OHS). Further details are displayed in appendix 2.

detailed figures reveal that this reduction mainly results from an improvement in African remunerations as the mean African log hourly earnings increase from 1.45 in 1993 up to 1.74 in 1999, whereas White earnings remain roughly stable.

Of this gross logarithmic earnings gap, between 70% and 80%, depending on the year considered, can be explained by differences in productive characteristics. In other words, the earnings differential mostly reflects the lower amount of education, the different occupational attainment and geographical localisation that the average African worker achieve relative to the average White worker. The remaining part of the gross wage differential can be interpreted as discrimination. Put differently this discrimination arises because an additional year of schooling, of experience or of tenure is not remunerated by the same amount for African workers as for Whites or because their employment in such occupational category is not rewarded in the same way. This last comment stresses that the way the wage gap has been decomposed here doesn't distinguish between job and wage discrimination. However, applying Brown et al. (1980) methodology to South African data, some authors (Moll, 2000 and Rospabé, 2000) previously found that job discrimination doesn't account for a substantial part in the explanation of the African/White wage gap.

If we now consider the evolution of wage discrimination during the 6-year period analysed, results underline a slight increase in this component of the White/African earnings gap, from 23% to 28.5%. Though one has to be very cautious while comparing the results of studies using different methodologies, our outcome contradicts the argument that in South Africa, the long trend term has been declining discrimination (Moll, 2000, Alanson et al. 2001). However, our findings are consistent with the recent work done by Erichsen & Wakeford (2001), which also comes across the fact that discrimination increased between 1993 and 1995.

Thus, our findings point to a slight improvement in African remunerations in absolute terms and in relative terms, compare to White earnings. There is evidence that this trend mainly results from enhanced productive characteristics for African workers rather than a decrease in racial wage discrimination.

CONCLUSIONS.

Based on the results of the PSLSD (1993) and the OHS 1999, this paper has presented a comparison of different labour outcomes achieved by two racial groups, namely Africans and Whites, in order to analyse various aspects of racial discrimination in the South African labour market.

The first contribution of this paper has been to put into evidence the improvement of Africans' condition between 1993 and 1999 in respect to their employment participation rate, their access to highly-skilled occupations and their wages. Thus, even if the White/African gaps in labour participation, in high-ranking occupational attainment and in earnings remain substantial, each of them experienced a decline during the 6-year period considered.

Turning to the analysis of the explanation of these racial labour market inequalities, it appears that differences in productive characteristics between White and African workers account for the largest part of the differentials, between 65% and 80% depending on the nature of the racial gap under consideration. More precisely, it appears that one of the major factors of labour inequality is racial differences in human capital endowments. This finding comes to reinforce an already well-known need for further investments in the field of education and training to correct the disadvantages experienced by Africans. Several policy measures and laws already seek to address these issues, as the *National Education Policy Act 1996* and the *Skill Development Act 1998*. However, their real benefits might only be visible in the labour market in at least one generation.

The original aim of the paper was to estimate the extent of White/African hiring, occupational and earnings discriminations and their evolution between 1993 and 1999. Our results show that discrimination account for between 30% and 40% of the racial gaps, depending on the type of inequality regarded. Only discrimination in labour participation seems to have decreased during the period considered whereas occupational and wage discrimination slightly strengthened. One can wonder what the origin of this labour market discrimination is. Theories of discrimination can shed light on this issue. If the theories of institutional discrimination (Marshall, 1974) and taste for discrimination (Becker, 1971) seemed to find an application in South Africa during the apartheid era, their relevance is less obvious now. Several findings suggest that racial labour discrimination can be better explained nowadays by statistical discrimination theories (Frijters, 1999, Azam & Rospabé, 1999)[20]. However, this area remains largely unexplored in South Africa and deserves further investigations.

The removal of racial discrimination in South Africa involves the participation of several actors, namely employers, trade unions and the government. So far, through NEDLAC – National Economic Development and Labour Council – they all contributed to the formation of two laws against discrimination in the labour market, the *Employment Equity Act 1998* and the *Promotion of Equality and Prevention of Unfair Discrimination Act 2000*. However, it is still too early to judge the effectiveness of these two pieces of legislation. On an other hand, beyond their implication in the legislative process, trade unions also seem to play a more "direct" role in the reduction of racial wage discrimination (Rospabé, 2001). It could be valuable to encourage their actions in this field. One could also

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[20] These theories are able to rationalize unequal treatments to equally productive workers when the employer faces a situation of imperfect information on the workers' characteristics and is then confronted with a problem of adverse selection. See Arrow (1973), Phelps (1972) and Aigner & Cain (1977) for the first studies and Lundberg & Startz (1983), Oettinger (1996) for later developments.

further think of a comparable worth policy, however costly and time consuming, as implemented in Canada and the United States, to fight racial wage discrimination. These few results and comments highlight that there is a need for considering further areas of intervention in order to make the South African labour market more equitable.

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APPENDIX 1 (METHODOLOGY)

1. **Estimate of hiring discrimination[21].**

The first step consists of estimating the probability that Africans and Whites have to access to the labour market.

Let y_{ij} be an unobservable variable which measures the net utility gain of finding a job for an individual i of race j ($j = a$ for Africans, w for Whites).

$$E_{ij}^{*} = X_{ij}\alpha_{ij} + \varepsilon_{ij} \tag{A1}$$

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[21] The same methodology is applied for the estimate of occupational discrimination.

Where, X is a vector of determinants of the labour market participation, α is an associated vector of coefficients and ε is a mean zero-error term.

We observe the individual's work decision, denoted by E_{ij} according to the following rule:

$$E_{ij} = \begin{cases} 1, & \text{if } E_{ij}^{*} > 0 \\ 0, & \text{otherwise} \end{cases} \tag{A2}$$

The estimated probability that individual i of race j be employed is:

$$p_{ij} = P(E_{ij} = 1) = F(X_{ij}\hat{\alpha}_{j}) \tag{A3}$$

Where $F(.)$ denote the value of the cumulative distribution function of ε_{ij} at $(.)$ and $\hat{\alpha}_{j}$ denotes the probit estimate of the parameter vector α_{j}.

The average predicted probability of employment for each racial group j is then:

$$\bar{p}_{j} = \frac{1}{N_{j}} \sum_{i} p_{ij} \tag{A4}$$

The second step lies in decomposing the racial differences in the average employment probabilities ($\bar{p}_{w} - \bar{p}_{a}$)[22].

Define p_{j}^{*} as the proportions of people of race j who would be employed if there were no hiring discrimination.

$$\bar{p}_{j}^{*} = \frac{1}{N_{j}} \sum_{i} p_{ij}^{*} \quad \text{where } p_{ij}^{*} = F(X_{ij}\hat{\alpha}^{*}) \tag{A5}$$

As specified in the core of the article, the participation structure derived using the pooled sample is taken as the non-discriminatory setting.

Finally, the differential in the White and African average employment probabilities is decomposed as follows:

$$\bar{p}_{w} - \bar{p}_{a} = \underbrace{(\bar{p}_{w}^{*} - \bar{p}_{a}^{*})}_{P} + \underbrace{(\bar{p}_{w} - \bar{p}_{w}^{*}) + (\bar{p}_{a}^{*} - \bar{p}_{a})}_{D} \tag{A6}$$

Explanations of this equation are provided in the core of the paper.

2. Estimate of wage discrimination.

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[22] One feature of probit analysis is that, unlike OLS, the actual mean of the dependent variable and the predicted mean are not exactly the same. However, they are close enough to enable us not to distinguish them in the following analysis.

The first step consists in estimating, by using ordinary least squares, separate semi-logarithmic wage functions for each racial group j, such as:

$$\ln W_{ij} = \beta_j X_{ij} + \mu_{ij} \qquad (A7)$$

Where X is a vector of worker characteristics and β is a vector of group-specific coefficients. Thus, the estimate of the natural logarithm of group j mean wage is given by: $\ln \overline{W}_j = \overline{X}_j \hat{\beta}_j$

In practice, OLS estimations of (A7) will be infeasible with the OHS 99 data set since some observations on earnings take the form of interval data, when the respondent only gives the earnings category into which his wage falls. In these circumstances, estimation may be accomplished by use of a generalised Tobit estimator[23].

After a few developments, the wage differential between White and African workers can be written as:

$$\ln(\overline{W}_w) - \ln(\overline{W}_a) = \underbrace{\hat{\beta}^*(\overline{X}_w - \overline{X}_a)}_{P} + \underbrace{\overline{X}_w(\hat{\beta}_w - \hat{\beta}^*) + \overline{X}_a(\hat{\beta}^* - \hat{\beta}_a)}_{D} \qquad (A8)$$

Where $\hat{\beta}^*$ refers to the estimated vector of coefficients describing the non-discriminatory wage structure and is estimated running an earnings regression using the whole sample of White and African male workers.

APPENDIX 2

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[23] For more details on interval regression, see Stata (vs. 7) manual and Daniels & Rospabé (2001).

Table 1 Decomposition of the racial differential in the employment probabilities, 1993 and 1999.

	1993	1999
Observed probability * White	0.955	0.935
* African	0.615	0.627
Predicted probability[a] * White	0.864	0.857
* African	0.638	0.642
Observed differential	0.341	0.308
	(100%)	(100%)
Explained	0.226	0.215
(P)	(66.3%)	(69.8%)
Unexplained	0.115	0.093
(D)	(33.7%)	(30.2%)
White advantage	0.092	0.078
	(27.0%)	(25.4%)
African disadvantage	0.023	0.015
	(6.7%)	(4.8%)

<u>Note</u>: [a] without discrimination (probit estimation on the pooled sample of White and African males).

Table 2. Decomposition of the racial differential in the probabilities of getting a high skilled job, 1993 and 1999.

	1993	1999
Observed probability * White	0.502	0.536
* African	0.069	0.117
Predicted probability[a] * White	0.401	0.412
* African	0.107	0.149
Observed differential	0.433	0.419
	(100%)	(100%)
Explained	0.294	0.263
(P)	(67.9%)	(62.7%)
Unexplained	0.139	0.156
(D)	(32.1%)	(37.3%)
White advantage	0.100	0.124
	(23.2%)	(29.6%)
African disadvantage	0.039	0.032
	(8.9%)	(7.7%)

<u>Note</u>: [a] without discrimination (probit estimation on the pooled sample of White and African males).

Table 3 Decomposition of the racial wage gap, 1993 and 1999.

	1993	1999
Observed wage * White	3.204	3.241
* African	1.451	1.739
Predicted wage[a] * White	2.901	2.888
* African	1.546	1.816
Observed differential	1.753	1.501
	(100%)	(100%)
Explained	1.355	1.072
(P)	(77.3%)	(71.4%)
Unexplained	0.398	0.430
(D)	(22.7%)	(28.6%)
White advantage	0.303	0.353
	(17.3%)	(23.5%0
African disadvantage	0.095	0.077
	(5.4%)	(5.1%)

Note: [a] without discrimination (earnings regression on the pooled sample of White and African males).