

**An empirical evaluation of gender discrimination in employment,
occupation attainment and wage in South Africa in the late
1990s**

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Abstract

Using the data collected in the OHS 1999, this paper analyses three forms of women's disadvantages in the labour market — namely in the access to employment, in the occupational distribution and at last in wages — and attempts to take into account the racial component of these gender inequalities. The methodology follows three steps. First, some stylised facts on women's disadvantage are presented for each labour outcome of interest. Then, in order to understand the main determinants of these labour outcomes, as well as their differing impact between genders, some econometric estimates are displayed. Finally, using the residual difference methodology, the three gender labour gaps of interest are decomposed to isolate the presence of discrimination, for the whole population as well as for each race group. It is found that there are substantial gender inequalities in labour market outcomes, which can only be partly explained by gender differences in endowments of productive characteristics suggesting that gender discrimination is a prevalent feature of the South African labour market. Moreover, the patterns of gender inequality and discrimination appear to be very different from one racial group to another.

JEL Classification

J71, J31

1. Introduction.

So far, the attention given to discrimination in the South African labour market has focused almost exclusively on its racial dimension while the gender component remained largely unexplored. Indeed, whereas South Africa's history of apartheid favoured an important empirical research on racial discrimination — Allanson *et al.* (2001), Erichsen & Wakeford (2001), Knight & McGrath (1987), Moll (1991), (2000) and Rospabé (2001a) — only a few studies were devoted to gender discrimination, analysing mainly its wage aspect — Casale (1998), Isemonger & Roberts (1999) and Winter (1997). They all reveal that South African women are subject to unequal underpayment. Moreover, a few findings seem to indicate that female disadvantages go beyond the wage area and concern their access to the labour market as well as their occupational distribution (Standing *et al.*, 1996).

The aim of this paper is to analyse gender differences in the labour market outcomes. To what extent do they reflect differences in individual productive characteristics? Is there any evidence of gender hiring, occupational or earnings discrimination? In light of the national commitment to equal opportunities and equity, these issues are of particular relevance for South Africa today. The definition of targets, established through the estimates of various forms of gender discrimination existing in the labour market, seems to be a prerequisite for any feasible policy interventions in this area. Furthermore, this paper considers the race dimension of gender issues by evaluating the extent to which female disadvantage varies from one racial group to another.

In order to do so, the paper uses the residual difference method of decomposing group wage differences (Oaxaca, 1973), applying it to discrete choice models whenever it is required (Gomulka and Stern, 1990). This methodology allows one to determinate which part of the gender gaps in the labour market outcome of interest is due to gender differences in the individual endowments of productive abilities and which part is attributed to some form of labour discrimination. The preliminary step is thus to identify the determinants of the labour market outcomes under consideration, namely the probability of employment, the occupational attainment, and the earnings. The data set used is the *October household Survey* (OHS) 1999.

The analysis below proceeds as follows. Section 2 outlines the methodology used in the remainder of the paper. Section 3 investigates the extent of gender discrimination in the access to the labour market, while first analysing the determinants of employment. Similarly, sections 4 and 5 respectively consider occupational and earnings discrimination. Conclusions and policy implications are drawn in section 6.

2. The methodology²

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

² See appendix 1 for further details.

(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 multinomial logit model (to estimate employment and occupational discrimination), the principle of the decomposition is the same. It consists in decomposing the male/female gap in the labour market outcome under consideration into an explained and an unexplained components in the following way:

$$\bar{L}_m - \bar{L}_f = \underbrace{[\bar{L}(\beta^* X_m) - \bar{L}(\beta^* X_f)]}_{\text{PRODUCTIVITY}} + \underbrace{[\bar{L}(\beta_m X_m) - \bar{L}(\beta^* X_m)]}_{\text{MALE ADVANTAGE}} + \underbrace{[\bar{L}(\beta^* X_f) - \bar{L}(\beta_f X_f)]}_{\text{FEMALE DISADVANTAGE}}$$

DISCRIMINATION

Where \bar{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 particular 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 males and females. 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) males (females) 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-entry discrimination — for instance in schooling (quality of education in particular) — 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 residue, misspecification of the employment, 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 gender discrimination in employment, occupational discrimination and finally wage discrimination in South

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) and Oaxaca & 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.

Africa in the late 1990's. In each case, the preliminary step consists in estimating the determinants of the labour market outcome under consideration.

3. Gender discrimination in employment.

This section focuses on gender discrimination in employment. Rather than simply estimating hiring discrimination — which occurs when subjective non-economic criteria participate in the employer's recruitment decision —, this section also deals with gender discrimination in self-employment — which appears when males and females with the same productive abilities don't get the same opportunity to establish themselves as self-employed workers.

The section starts with the presentation of a few descriptive statistics. Then, we seek to identify the characteristics of individuals that make them more likely to participate in the labour market, either in employment or in self-employment, using a multinomial logit model predicting the employment status of individuals. Results are differentiated according to gender⁴. Finally, the nature of the gender gaps in the probabilities of being employed and self-employed is investigated in order to approximate the degree of employment discrimination.

3.1. A few descriptive statistics.

Table 1 below presents some figures on labour force participation by gender, for each race group.

Table 1. Repartition of labour force participation, by gender and race

		Labour force participation rate ^a	Unemployment rate ^b	Employment rate ^c	Self-employment rate ^c
Total	Male	68.1%*** ^d	30.0%***	58.9%***	10.4%***
	Female	56.1%	43.2%	48.1%	8.0%
African	Male	65%***	36.7%***	54.5%***	8.3%
	Female	54.8%	51.9%	39.6%	7.9%
Coloured	Male	76.5%***	19.3%***	74.0%**	5.8%***
	Female	62.9%	28.4%	68.7%	2.5%
Indian	Male	78.2%***	17.8%*	64.5%	17.2%***
	Female	51.1%	23.8%	67.5%	8.4%
White	Male	77.9%***	6.3%	70.0%***	22.8%***
	Female	60.7%	7.3%	78.1%	13.5%

Source: OHS 1999 (weighted data)

Notes: ^a Labour force includes people between the age of 15 and 65 who are either working or unemployed. It doesn't take into account unpaid family workers.

⁴ This study complements and updates previous analysis done on probit model of employment and unemployment (Fallon & Lucas, 1997, Kingdon & Knight, 2000a and Borat & Leibbrandt, 2001b)

^b According to the broad definition given by Statistics South Africa. Unemployed are those people who did not work during the seven days prior to the interview, want to work and are available to start work within a week but had not taken active steps to find work in the four weeks prior to the interview. This definition, including discouraged job seekers, can be perceived as the more relevant (see Kingdon and Knight, 2000a).

^c Employment can be either full time, part time or casual. Employment and self-employment can be either formal or informal.

^d An adjusted Wald test has been run to test the significance of the mean differences between males and females, for each population group. *** Statistically significant at the 1% level, ** the 5% level, * the 10% level.

Even if our main focus is on employment and not on labour force participation, it is worth briefly noting the gender differences in the participation rates observed in the South African labour force. As shown in table 1 above, about 68 percent of men are either working or looking for work, compared to 56 percent for women. Even if the last decades have witnessed a continued feminisation of the labour force (Standing et al, 1996 and Casale & Posel, 2001), women still participate clearly less than men to the labour force. This result holds for each of the four racial groups.

Participation in labour force can be spread among unemployment, employment and self-employment. The repartition of the population among these three categories hides large discrepancies between genders.

First, table 1 shows that the incidence of unemployment is unequally distributed between males and females. Women suffer more than men from unemployment, as 43 percent (30 percent) of the female (male) labour force is unemployed. However, some authors underline that this differential is likely to be somehow overestimated as women employment in the subsistence farming sector is not efficiently captured in the current national statistics (See Standing *et al.* 1996, Posel & Casale, 2001 and Klasen & Woolard, 1999). One can further observe that the gender differences in unemployment rates vary substantially between racial groups. African females suffer from the highest disadvantage, whereas white female unemployment rate is found to be not significantly different from male unemployment rate.

Of course, one can wonder to what extent unemployment in South Africa is voluntary. Unemployment can be voluntary when alternative source of income can induce the individuals to choose not to work. Standing *et al.* (1996) and Rospabé (2000) explore this possibility without however producing firm conclusions. Kingdon & Knight (2000b) present evidences making it implausible that much unemployment in South Africa is voluntary.

The other part of the labour force is divided between employment and self-employment. These two categories cover a very wide variety of situations, as employed and self-employed can work in micro-enterprises, in formal or informal activities⁵ and can be badly or highly remunerated. As displayed in table 1, 59 percent of males are employed whereas this figure decreases to 48 percent for females. Turning to self-employment, the percentage of workers in this category is about 10 percent for males and 8 percent for

⁵ In the OHS 1999, 17% of the employed declare to be engaged in informal activities, whereas this percentage increases to 70% when self-employed are considered.

females. Thus, the gender gap in employment appears to be higher for the employed than the self-employed.

These stylised facts don't remain always accurate when each racial group is considered separately. For instance, there is no significant difference between Indian male and Indian female employment rates. Besides, the percentage of White females in the employed category is larger than for White males. One should also note that the African male self-employment rate is not significantly different from the female self-employment rate.

Regarding these evidences, one can question the reasons underlying such gender differences in the employment and self-employment rates. Do they reflect disparities in individual productive abilities, differences in preferences or discrimination? The next sections attempt to address this issue. The following one starts with an analysis of the determinants of employment for male and female individuals.

3.2. The determinants of employment.

3.2.1. The data

The data are derived from the *October Household Survey (OHS) 1999* which covers 30000 households. The sample is limited to male and females between the age of 16 and 65 for which employment attributes are available, restricting the sample size to 38 833 observations.

In order to produce efficient statistics and econometric estimates, the analysis takes into consideration the features involved in the sample design. These features include stratification, clustering and sampling weights⁶.

3.2.2. The results

Table 2 displays the results of the multinomial logit estimates of the determinants of employment, taking into account the survey design, for females and males in 1999⁷. Note that the dependent variable is a discrete variable equal to 1 if the individual is unemployed (broad definition), 2 if he (she) is employed by someone else and 3 if he (she) is self-employed.

⁶ A two-stage sampling procedure was applied in which the first stage units are Enumerated Areas (the clusters) and the second stage, households. The sampling procedure involved stratification by province and area type (urban/rural). The 1996 population census (adjusted for growth) was used as a basis for the weighting.

⁷ Estimates for each racial group are available from the author.

Table 2. The determinants of employment.

	Males				Females			
	Employed		Self-employed		Employed		Self-employed	
African ⁸	-1.174***	(-7.92)	-1.851***	(-11.5)	-1.877***	(-15.5)	-2.433***	(-15.2)
Coloured	-0.368**	(-2.23)	-1.550***	(-7.14)	-0.965***	(-7.01)	-2.952***	(-12.0)
Indian	-0.642***	(-3.28)	-0.894***	(-3.78)	-1.046***	(-4.60)	-1.662***	(-5.05)
Primary schooling spline	-0.022*	(-1.72)	0.031	(1.45)	-0.031***	(-2.68)	-0.052**	(-2.96)
Secondary schooling spline	0.039**	(2.88)	0.032	(1.40)	0.086***	(6.53)	-0.051**	(-2.17)
Tertiary schooling spline	0.446***	(5.56)	0.422***	(4.96)	0.764***	(9.05)	0.636***	(6.13)
Age	0.085***	(6.32)	0.068**	(2.65)	0.103***	(7.67)	0.106***	(4.21)
Age squared	-0.001***	(-5.96)	-0.0004	(-1.52)	-0.000***	(-3.41)	-0.0004	(-1.34)
Urban	-0.084	(-1.35)	-0.541***	(-5.42)	-0.177***	(-2.85)	-0.527***	(-5.27)
Married	0.643***	(11.03)	0.375***	(4.20)	-0.019	(-0.38)	0.267***	(3.23)
Headship of the family	1.453***	(24.13)	1.905***	(17.70)	0.896***	(14.73)	0.888***	(9.59)
Number of children	0.005	(0.20)	0.136**	(2.42)	-0.167***	(-6.34)	0.025	(0.63)
Other employed in the family	0.284***	(4.94)	0.303***	(3.64)	0.402***	(6.93)	0.352***	(3.58)
Other unemployed in the family	-0.800***	(-15.5)	-1.038***	(-12.5)	-0.749***	(-14.5)	-0.844***	(-9.16)
Ownership status	-0.606***	(-10.9)	0.221**	(2.57)	-0.378***	(-7.31)	0.310***	(3.21)
Distance from phone	-0.114***	(-6.92)	-0.148***	(-4.51)	-0.139***	(-8.05)	-0.070**	(-2.32)
Eastern Cape ^a	-0.695***	(-5.63)	-0.347**	(-1.97)	-0.710***	(-6.89)	-0.849***	(-4.33)
Northern Cape	0.071	(0.47)	-0.167	(-0.80)	-0.644***	(-5.20)	-1.311***	(-4.83)
Free State	-0.171	(-1.27)	-0.600**	(-3.08)	-0.478***	(-4.20)	-1.160***	(-5.70)
Kwazulu Natal	-0.195	(-1.57)	0.010	(0.05)	-0.385***	(-3.66)	-0.308	(-1.60)
North West	-0.084	(-0.67)	-0.416**	(-2.06)	-0.699***	(-6.42)	-1.506***	(-6.33)
Gauteng	-0.208*	(-1.78)	-0.159	(-0.95)	-0.665***	(-7.04)	-1.005***	(-5.37)
Mpumalanga	-0.170	(-1.30)	-0.366**	(-1.96)	-0.571***	(-4.93)	-0.571**	(-2.84)
Northern Province	-0.484***	(-3.60)	-0.472**	(-2.33)	-1.064***	(-8.87)	-1.253***	(-5.69)
Intercept	0.201	(0.70)	-1.964***	(-3.44)	-0.025	(-0.09)	-1.511**	(-2.90)
N	19920				18913			
F stat	67.77				61.70			
% of N correctly predicted	71.31%				67.28%			

Source: OHS 1999

Notes: Normalizing category: unemployed.

*** 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, Africans, Coloureds and Indians, females and males, have a lower probability of being employed and self-employed (compared to unemployed) than Whites. This finding, other things being equal, reinforces the observations made above from simple descriptive statistics.

⁸ See appendix 2 for details on the construction of each variable

To test how the employer's hiring choice and worker's decision to enter the labour market are affected by the individual's endowment of human capital, 3 splines of education are introduced⁹. For both males and females, an additional year of tertiary education increases the probability of being employed or self-employed. Turning to secondary education, results are more mitigated. Men and women who have benefited from an extra year of secondary schooling are more likely to be employed than unemployed. However, it doesn't help the men to get into self-employment and it eventually hampers the entry of women into self-employment. In any case, does primary schooling favours the finding of a job. People with an extra year of primary education have a lower probability of being in the labour market than unemployed. These results indicate that formal education starts playing a role in the finding of a job only at high school level.

The influence of age on the probability of employment is significantly positive for males and females. However, diminishing returns are observed only for the employed category. Rates of participation are low amongst the youngest age cohort, rise and then decline as workers approach retirement age. As Kingdon and Knight (2000a) note, younger people have a lower chance of getting a job because of their higher degree of job mobility. According to them, there is also evidence that younger people are more likely to enter unemployment voluntarily. However, it seems that the reservation wages may fall with age or with time spent in unemployment.

Turning to the variables linked to the individual's family background, it is found that being married or the head of the family favours the access to labour market. On the supply side, it partly reflects the fact that greater family responsibilities induce entry in labour market. On the demand side, it may also indicate employer's preferences for workers with higher probabilities of staying with current employers. However, one should note that married women don't have a higher probability of being employed than unemployed. The number of children under the age of 6 affects differently the male and female probability of getting a job. Women with greater child-care responsibilities are less flexible labour force participants and thus, have a lower probability of being employed. However, these responsibilities don't prevent them from being self-employed. Indeed, taking care of children is not incompatible with self-employment especially if the later occurs at home. Meanwhile, men employment by someone else is not affected by this number of dependent. However, it increases their probability of being self-employed. Greater family responsibility acts as an incentive for male self-employment. 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 renders the job search efforts of the family's members costly¹⁰.

⁹ See Moll (2000) and Mwabu and Schultz (2000) for the use of similar variables.

¹⁰ It would have been interesting to introduce a family income variable to test its influence on employment decisions. However, the survey only provides for an income bracket variable and not the actual income, which prevents computing the family income.

As no variable for network was available in the survey, the presence of other employed in the family was used as a proxy. Results show that this variable significantly rises the probability of employment for both males and females.

Housing tenure lowers the chance of getting a job from an employer for both males and females. This negative effect occurs if homeowners are less mobile than tenants or if housing ownership acts as a proxy for wealth and the level of the reservation wage (Kingdon and Knight, 2000a). On the contrary, home-ownership increases the probability of being self-employed. This finding can be explained by the fact that home is often the workplace for self-employed.

Being far from a phone (proxy for the isolation of the community and the cost of job search) hinders the finding of a job, as an employee or a self-employed, for both males and females.

Considering the impact of localisation on the employment probability, results show that living in an urban area significantly reduces the women access to the labour market. This outcome, consistent with those found by Borat & Leibbrandt (2001b) and Kingdon & Knight (2000a), is somehow counter-intuitive as employment opportunities are higher in the cities. The two first authors explain this result by mentioning 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. One should note that the urban localisation of men doesn't significantly influence their probability of being employed by someone else.

Finally, living in a province other than the Western Cape decreases the chance of getting a job for males and females. However, this effect is more significant among females than males.

3.3. An estimate of gender discrimination in employment.

Figure 1 below reports the results obtained from the decomposition of the gender differential in employment for the whole population and each of the 4 racial groups¹¹.

¹¹ Detailed results are displayed in the appendix 3.

Figure 1. Decomposition of the gender gap in employment



Source: Own computations from OHS 1999.

Let's observe first the result of the decomposition for the whole population, irrespective of the racial belonging. Figure 1 indicates that whether one considers the employee or the self-employed status, about two thirds of the gender gap is explained by differences in individual productive characteristics. However, further evidence indicates that men employment enhancing abilities are not always in excess over women ones. For instance, the percentages of individuals with tertiary education are higher among employed women than among men¹². This last finding is rather surprising as pre-labour market discrimination is often perceived as a factor of reduction of women's human capital investment by affecting their quality of schooling, fields of study and access to higher education (Blank & Altonji, 1999). Furthermore, the standard model of human capital investment predicts that investments in education (and general training) will be lower for persons who work fewer hours and fewer years over their career (which is generally the case of women). One explanation for this empirical finding might be that the standards of

¹² 19.4 (14.4) percent of employed women (men) have tertiary education. It also appears that endowments in secondary education are not significantly different between employed women and men.

recruitment are higher for men than for women. Indeed, we observe that the level of education among self-employed is lower for women than for men. Alternatively, women might decide to invest more in education in an attempt to overcome the barriers they face to enter the labour market.

40 (28) percent of the gender gap in employment (self-employment) remains unexplained by individual characteristics and reflects differences in the coefficients of male and female employment equations. On a supply side, this gap can reflect differences in men and women preferences (Altonji and Blank, 1999). People might differ in their preferences for market versus non-market work or leisure. The two authors consider pre-market gender discrimination in child-rearing practices or in the educational system as one source of differences in preferences. Indeed, the differential treatment of boys and girls may be a rational response by parents to market discrimination. On a demand side — the aspect emphasized in this paper — the residual can be cautiously attributed to discrimination. Thus, our findings first suggest that the employers' recruitment procedure is only partly objective and that hiring discrimination hampers female entry on the labour market. Without discrimination — if the pooled sample is perceived as the non-discriminatory norm —, the gender gap in employment would be reduced from 11 to 6.7 per cent. On another hand, how can we explain gender discrimination in the setting up as self-employed? According to Coate and Tennyson (1992), discrimination within the labour market can spread on other markets affecting self-employment (as 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.

The results of the decomposition of the gender gap in employment appear to be strongly heterogeneous among the four racial groups.

First, the gender employment gap for Africans is larger than for the whole population and explained in a slightly lower extent by individual characteristics (53 percent). This means that hiring discrimination against African women is somewhat higher than against the "average" woman. The African gender gap in the probability of being self-employed is very small and it seems difficult to infer convincing conclusions — especially because the gender differential in the average probabilities of being self-employed was not statistically significantly different from zero (see table 1).

Turning to the results for Coloureds, the gender gap in the probabilities of being employed is lower than the average and hiring discrimination appears slightly less severe. However, gender discrimination in the setting up as self-employed seems to be more pronounced than on average.

The picture for Indian people is once again different. Indeed, Indian women benefit from a higher rate of employment than Indian men, as 67 (65) percent of women (men) are employed. However, as this difference is not significantly different from zero (see table 1), its decomposition appears to be difficult to comment. The decomposition of the gender gap in the probabilities of self-employment exhibits a slightly different pattern than the average, as 38 percent of it is explained by discrimination.

Finally, results for Whites display a fourth type of behaviour. Like Indian women, White women enjoy a higher rate of employment than White men. Therefore, the male/female employment is negative. Figure 1 shows that even in the absence of discrimination, women would keep their advantage as they have better productive characteristics than men. However, the preferential treatment of women accounts for 67 percent of the negative gender gap. The White gender gap in the probabilities of self-employment is larger than the average and a greater part remains unexplained by individual capacities (46 percent).

A greater equity in the access to the labour market is the first step towards the improvement of women economic condition. However, there is international evidence that women are often confined on specific segments of the labour market or particular occupations that prevent them to enjoy the same working conditions, wages, fringe benefits as men. The following section investigates the extent to which the occupational distribution is different between males and females. Furthermore, it attempts to analyse whether the gender differences in occupational attainment result from disparities in individual characteristics, preferences or discrimination.

4. Gender discrimination in occupation attainment.

Occupational discrimination is observed when equally productive workers are assigned to unequally skilled occupations, on the basis of non-economic characteristics, as race or gender for example. The analysis of gender occupational discrimination in South Africa is of particular interest as the government recently voted a law that promulgates affirmative action for previously disadvantaged population groups, females being one of them (*Employment Equity Act*, 1998). One aim of this law is to ensure that females are equitably represented at the high occupational levels. As reduction of occupational discrimination would participate to the achievement of this goal, it seems relevant to try to estimate its magnitude in order to better correct it.

A first section displays some descriptive statistics on the distribution of occupations among gender and racial group. The determinants of occupational attainment are next investigated, separately for males and females, using a multinomial logit model predicting the job category of individuals. Finally, the nature of the gender gaps in occupational attainments is analysed in order to approximate the degree of gender job discrimination.

4.1. A few descriptive statistics.

Table 3 below presents some figures on the occupational attainment of males and females, disaggregated by racial group. Occupations are grouped into three broad categories for consistency with the following econometric analysis¹³. The aim of the following table is not to inform about the gender and race composition of each

¹³ The too small number of observations in some of the 11 selected occupations doesn't allow one to run a multinomial logit model. We were thus constrained to regroup these occupations into broader category, which implied a loss of information.

occupational category¹⁴ but to display how each population group is distributed among these categories.

The first striking feature of this occupational distribution is the high percentage of women working in high-skilled jobs (23 percent). Actually, it exceeds the percentage of the male workers employed in the same occupational category (19.7 percent). However, further investigation (see appendix 4) shows that this rather surprising finding is explained by the great percentage of women working in the semi-professional and technician occupations (13 percent, whereas the equivalent figure is 8.6 percent for males). If one considers the manager category, only 3 percent of women reach this level, which is half of the corresponding male percentage.

The percentage of women in the semi-skilled and unskilled occupational level is higher than for men (42 percent compared to 37.7 percent). This result can be partly accounted for by the large proportion of women working as domestics (21 percent).

If we turn to the analysis of the occupational attainment among each racial group, the findings are quite different from those for the entire population. Only African women benefit from a higher occupational attainment than men as 18 percent of them reach a high skill occupation, whereas 11.5 percent of men do. However, only 0.9 percent of African women are working as managers. Gender differences in the proportions of Indians and coloureds in the high skill occupational category don't appear to be significantly different from zero. A great proportion of White women get to the top of the hierarchical ladder (45 percent) but still in a lower percentage than men (53.5 percent). Furthermore, detailed statistics show that the proportion of White women in managerial position is half the one of men.

African women are in higher proportion than men found in the semi-skilled and unskilled occupational category as a large percentage of them works in the domestic service sector. This finding is also found for Coloureds, though, in their case, the gender differences are not significant. The configuration is different among Indians and Whites as women are less likely than men to work in the bottom skill category. However, this gap is not found to be significantly different from zero for Indian workers.

¹⁴ This kind of information is available in the Employment Equity Report (Department of Labour, 2001). Also, see <http://www.labour.gov.za>.

Table 3. Occupational attainment, by gender and racial group.

		High skilled	Skilled	Semi-skilled & unskilled
Total	Male	19.7%***	42.6%***	37.7%***
	Female	23.2%	34.9%	41.9%
African	Male	11.5%***	44.5%***	43.9%***
	Female	18.1%	27.1%	54.8%
Coloured	Male	14.6%	40.9%	44.5%
	Female	14.5%	38.9%	46.6%
Indian	Male	32.2%	43.9%*	23.9%
	Female	28.8%	50.9%	20.3%
White	Male	53.7%***	36.3%***	10.0%***
	Female	44.6%	52.8%	2.6%

Source: OHS 1999 (sample of employee and self-employed)

Notes: 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.

An adjusted Wald test has been run to test the significance of the mean differences between males and females, for each population group. *** Statistically significant at the 1% level, * the 10% level.

The few statistics displayed in table 3 expose the existence of significant gender gaps in occupational attainment, particularly large when each racial group is considered separately. The next step of the analysis is to investigate the reasons underlying these differentials. It starts with a study of the determinants of the occupational distribution.

4.2. The determinants of occupational attainment.

Table 4 below presents the results of the multinomial logit estimates of occupational attainment run separately for men and women¹⁵. They both take into account survey design.

¹⁵ Estimates for each racial group are available from the author.

Table 4: Determinants of occupational attainment

	Males				Females			
	Skilled workers		Semi-skilled & unskilled workers		Skilled workers		Semi-skilled & unskilled workers	
African ¹⁶	0.850***	(8.30)	1.724***	(12.5)	0.014	(0.12)	2.444***	(10.0)
Coloured	0.333***	(2.69)	1.175***	(7.08)	0.013	(0.08)	2.106***	(8.11)
Indian	0.248	(1.47)	0.772***	(3.19)	-0.077	(-0.37)	1.503***	(4.70)
Primary schooling spline	-0.033	(-0.83)	-0.021	(-0.54)	-0.103	(-1.51)	-0.058	(-0.88)
Secondary schooling spline	-0.427***	(-12.3)	-0.597***	(-16.8)	-0.411***	(-8.87)	-0.790***	(-16.6)
Tertiary schooling spline	-0.965***	(-12.0)	-1.181***	(-5.82)	-0.989***	(-9.85)	-1.852***	(-5.05)
Experience	-0.019***	(-3.56)	-0.013**	(-2.27)	-0.020***	(-3.37)	-0.014**	(-2.04)
Tenure	-0.017**	(-2.84)	-0.024***	(-3.69)	-0.027***	(-4.04)	-0.043***	(-5.97)
Married	-0.161	(-1.58)	-0.220**	(-2.09)	-0.216**	(-2.10)	-0.396***	(-3.80)
Headship status	-0.231**	(-2.25)	-0.270**	(-2.39)	-0.433***	(-3.80)	-0.321**	(-2.63)
Number of dependent children	0.011	(0.35)	-0.004	(-0.11)	-0.018	(-0.55)	-0.095**	(-2.80)
Formal sector	-1.124***	(-4.93)	-0.821***	(-3.51)	-0.845***	(-4.15)	-1.931***	(-9.75)
Urban	0.053	(0.49)	0.064	(0.55)	0.095	(0.81)	0.003	(0.03)
Agriculture ^a	0.290	(1.24)	0.904***	(3.94)	2.082**	(2.83)	2.525***	(3.40)
Mining	0.954***	(4.22)	0.350	(1.49)	0.491	(0.97)	-0.249	(-0.36)
Utility	0.879**	(3.07)	-0.024	(-0.08)	-0.065	(-0.08)	-0.704	(-0.62)
Construction	1.204***	(4.44)	-0.485*	(-1.71)	0.774*	(1.72)	-0.356	(-0.67)
Trade	0.528***	(3.65)	-0.783***	(-5.04)	0.732***	(3.96)	-1.221***	(-5.69)
Transport	0.223	(1.19)	0.319*	(1.71)	0.498	(1.62)	-0.287	(-0.67)
Finance	-0.020	(-0.14)	-1.991***	(-10.8)	-0.101	(-0.59)	-0.961***	(-4.70)
Services (including domestic)	-0.210*	(-1.78)	-1.616***	(-12.6)	-1.246***	(-7.81)	-1.149***	(-6.65)
Intercept	3.957***	(9.28)	3.729***	(8.42)	5.089***	(9.38)	5.233***	(8.83)
N	11521				8858			
Pseudo R ²	49.2				57.77			
% of N correctly predicted	65.53%				75.31%			

Source: OHS 1999

Notes: Normalizing category: highly skilled workers.

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.

*** Statistically significant at the 1% level, ** the 5% level and * the 10% level. Absolute value of t-statistics in parenthesis.

^a Reference category: manufacturing. Owing to lack of observations, domestic services had to be included in the service sector.

To start with, it appears from table 4 that race doesn't always play a significant role in explaining the occupational status of workers. In the case of male workers, most of the time, being non-white increases the probability of being in the two bottom skill categories. However, Indians don't have a higher probability than Whites to be in a skilled occupation (rather than high-skilled). Turning to female workers, results are quite different. Race doesn't explain significantly the probability of getting a skilled job instead of a high skilled one. In other words, there is no evidence of racial discrimination among female workers in their allocation in the high skilled occupational category relative to the

¹⁶ See appendix 2 for details on the construction of each variable

skilled one. This finding doesn't hold when one considers the results for the unskilled category. Indeed, being black increases the probability of being in the bottom skill occupations.

Table 4 displays several common features between genders in the determinants of occupational attainment.

First, as expected, the estimated coefficients of the human capital variables are all negative. More precisely, for both males and females, an additional year of secondary and tertiary education decreases the probability of being in skilled or unskilled occupations, relative to a high skilled job. However, an extra year of primary education doesn't help to reach the top of the hierarchical ladder. People with greater experience and tenure are less likely to get a skilled or unskilled job. One should note here that experience is determined as "age – years of education – 6" and could appear as a poor proxy of real experience as it doesn't take into account years of unemployment, which are likely to be important in South Africa. Moreover, it also doesn't reflect the fact that women are likely to leave the labour market during their childbearing years.

Secondly, the family background also influences in a similar way the males' and females' occupational distribution. Being married or the head of the household negatively affects the probability of employment in the two bottom skill categories. These results are in accordance with the fact that family responsibilities might encourage the worker to look for a better occupational position, usually associated with higher earnings. The number of dependent children (under the age of 15) is barely significant, though, it significantly decreases the probability of being semi or unskilled, compared to highly skilled.

Third, the dummy for the formal nature of employment sector has a significant negative effect in both the male and female occupational attainment estimates. Workers employed in the formal sector are less likely to hold a skilled or unskilled position reflecting the evidence that the informal rather gathers "petty jobs".

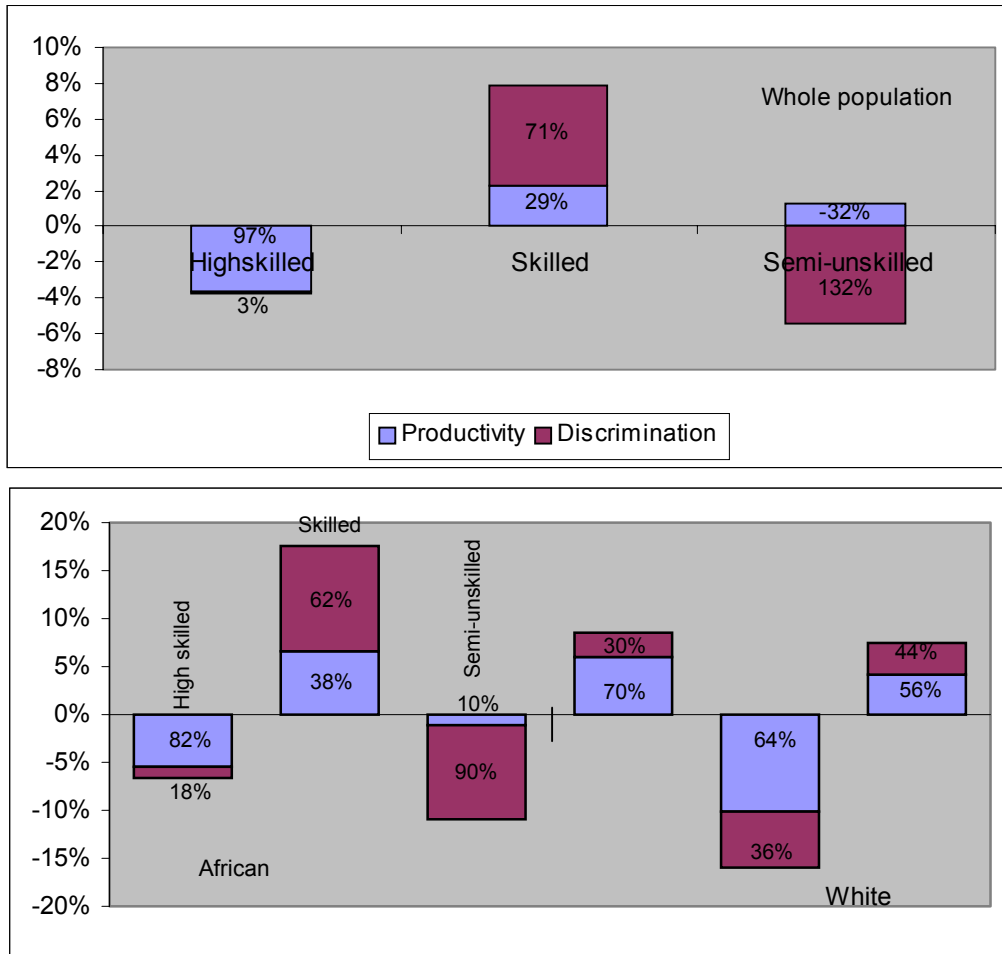
Turning to the influence of economic sectors, table 4 shows a great heterogeneity in the results. However, one can find a few similarities between males' and females' estimates. For instance, working in the agricultural sector, compared to the manufacturing sector, significantly increases the probability of getting a skilled or unskilled job for both groups of workers. People being in the construction or trade sectors (relatively to the manufacturing sector) are more likely to be skilled than high skilled but less likely to be unskilled than high skilled.

4.3. An estimate of gender occupational discrimination.

Figure 2 below presents the results obtained from the decomposition of the gender differential in occupational attainment for the whole population and separately for White and African workers¹⁷.

¹⁷ Detailed results are displayed in appendix 3. The small number of observations in the sub-sample of Indian workers prevents us to present truthful results for this population group. Furthermore, as gender

Figure 2. Decomposition of the gender gap in occupational attainment



Source: Own computations from OHS 1999.

First, if one considers the whole population, figure 2 exhibits various decomposition patterns depending on which occupational category is considered.

As the probability of reaching top skilled occupations is higher for females than for males, the gender gap is negative. The decomposition of this differential shows that it is almost entirely explained by the higher endowments of productive characteristics for women. Put differently, their better access to high skill occupations is accounted for by their individual features and not by the way their characteristics are rewarded by the market. Thus, women don't seem to benefit from any favouritism from the employers as far as their access to high skill occupational category is concerned.

If one concentrates on the opposite skill category, it appears that the gender gap in the probability of getting a low skill occupation remains more than totally unexplained by the

differences in the average probabilities of attaining the different occupational categories are not different from zero for Coloured workers, presenting the decomposition don't make statistical sense.

differential in individual characteristics¹⁸. On the supply side, differences in preferences might influence this finding as men and women can differ in their choices of particular types of works. Indeed, it might occur either because social norms regarding appropriate occupations may vary between groups or because legal and institutional constraints may limit access of certain groups to some occupations (Altonji & Blank, 1999). However, it is also likely that occupational discrimination greatly affects the allocation of women into bottom skill occupational categories. Thus, in a non-discriminatory background, it seems that there would be more men than women in a semi skilled or unskilled occupation. This finding would mean that the segregation of women into bottom skill category is largely due to employers' subjective criteria¹⁹.

The analysis changes a bit turning to the observation of the African and White population groups.

First, results for African workers are quite similar to the entire population's findings. However, the unexplained part of the gender gap in the probabilities of working in a high skilled (skilled) occupation, 18 (38) percent, is slightly higher than for the average worker. As for the whole population, the gender differential in the bottom skill category remains mostly attributed to discrimination (and differences in preferences).

The decomposition of gender differences in occupational distribution among Whites displays very distinctive features from the African race group. First, as seen in the section on descriptive statistics, males have a higher probability of being in a high skill job than women. Hence, the gender gap is positive. More than two thirds of this gap is explained by gender differences in productive characteristics. 30 percent of the gender gap in the probability of reaching the top of the hierarchical ladder remains unexplained, which means that the removal of discrimination will only partly reduce the gap. Turning to the bottom of the skill hierarchy, as underlined before, surprisingly, males have a higher probability of being in a semi skilled or unskilled occupational category than women. Hence, the gender gap is positive. Slightly more than 50 per cent of it are explained by gender disparities in individual characteristics. The rest can be attributed, with the usual precaution, to occupational discrimination.

One of the main reasons for analysing these gender disparities in occupational distribution is that they are likely to strongly affect gender wage differences and thus, the unequal poverty incidence observed between males and females (Bhorat & Leibbrandt, 2001a). The aim of the next section is to investigate the origin of the gender wage differences. Do they reflect mainly differences in productive characteristics (occupational level being one of them) or wage discrimination?

5. Gender discrimination in wages.

Wage discrimination is the form of discrimination the most analysed in the literature. All the studies in this area are based on the same principle: highlighting, within wage

¹⁸ Misspecifications of the model can account for a part of this result, if pertinent explanatory variables are missing.

¹⁹ For a theoretical perspective, see Johnson & Stafford (1998) who analyse the role of employer discrimination, preferences, human capital and social pressure on occupational exclusion.

inequalities between two population groups (males/females, whites/blacks), the part that can be explained by differing productive characteristics, in order to isolate a “residual”, cautiously attributed to market discrimination. However, they may differ following their assumptions on the non-discriminatory norm (see footnote 3), the integration or not of selection bias issues and the differentiation between job discrimination and within-wage discrimination — Brown *et al.* (1980).

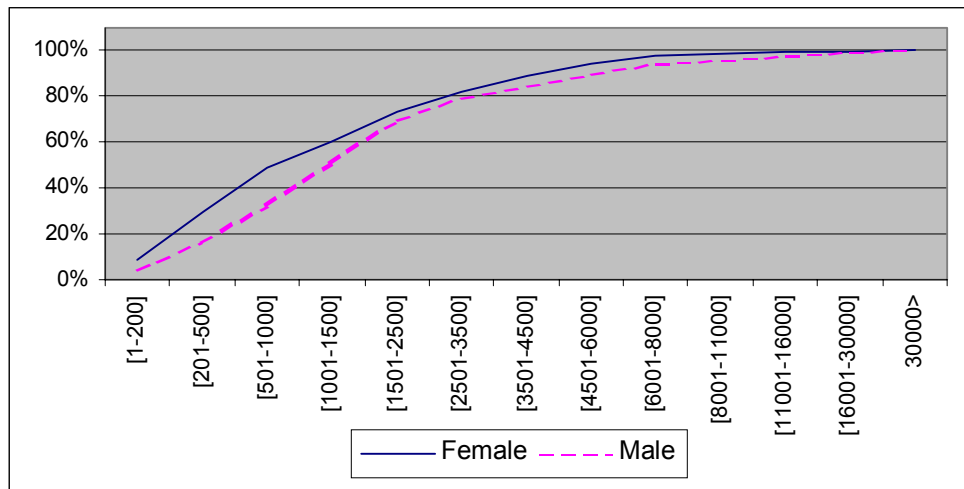
Up to now, wage discrimination is the only form of gender discrimination that has been estimated in South Africa. However, it didn’t receive much attention as only two studies — Winter (1997) and Isemonger & Roberts (1999) — used the residual difference methodology to estimate gender wage discrimination²⁰. The section attempts to update their findings using the OHS 1999 and assuming a different non-discriminatory norm.

The first section presents a few descriptive statistics on wages. The determinants of earning are analysed next, separately for males and females, using interval regressions. The final section focuses on the estimate of wage discrimination.

5.1. Income descriptive statistics.

The nature of the income data in the OHS 1999, a mixture of points and intervals, prevents us from computing ordinary mean or median by gender. However, as shown by Borhat and Leibbrandt (2001a), an alternative to deal with earnings inequalities is to draw cumulative income distributions. Figure 3 below presents the cumulative distribution functions for males and females²¹.

Figure 3: Earnings distribution by gender



Source: Own computations from OHS 1999.

²⁰ Furthermore, they obtained very different results. Winter (1997), using male coefficients as the non-discriminatory norm, decomposed the gender wage differential by race group obtained from the OHS 94 and finds that the discrimination component varies from 72% of the wage differential for Africans to 100% for White workers. Isemonger & Roberts’ (1999) estimates, using the PSLSD 93 data set, are much higher.

²¹ See appendix 5 for the cumulative distribution of income by gender for each racial group.

The figure above firstly illustrates that the cumulative distribution of female workers is first-order dominated by the distributions of income for male workers. Put differently, it means that across all income bands, the probability of male workers obtaining a higher real wage exceeds that of females.

5.2. The determinants of income.

Results of the income interval regressions for males and females in 1999 are summarised in table 5²². They take into account the survey design and correct for heteroscedasticity when necessary.

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 is recommended estimating an interval regression model, which is a generalisation of the tobit model²³. 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.

²² Estimates for each racial group are available from the author. Note that, because of lack of observations, two changes in the variables have been made when estimating wages for each race group. Occupations were grouped in three broad categories and the domestic sector was included in the service sector.

²³ For further details, see Stata (vs. 7) manuals. (Stata, 2001) and Maddala (1983).

Table 5. The determinants of individual income

Independent variable	Males		Females	
	Coefficients	t-student	Coefficients	t-student
African	-0.655***	(-14.77)	-0.478***	(-10.54)
Coloured	-0.487***	(-9.71)	-0.344***	(-6.87)
Indian	-0.415***	(-6.01)	-0.106	(-1.48)
Primary schooling spline	0.027***	(4.70)	0.030***	(4.27)
Secondary schooling spline	0.091***	(12.20)	0.111***	(11.72)
Tertiary schooling spline	0.176***	(9.86)	0.153***	(6.97)
Experience	0.021***	(6.05)	0.023***	(6.48)
Experience squared	-0.0003***	(-4.61)	-0.0002***	(-4.33)
Tenure	0.019***	(7.91)	0.018***	(5.02)
Tenure squared	-0.0003***	(-5.05)	-0.0003**	(-2.89)
Urban	0.148***	(4.57)	0.218***	(6.56)
Married	0.166***	(6.78)	0.059**	(2.48)
Formal sector	0.240***	(6.37)	0.224***	(5.56)
Union	0.189***	(7.57)	0.271***	(8.16)
Manager ^a	0.432***	(7.20)	0.585***	(5.12)
Professional	0.393***	(6.25)	0.638***	(6.85)
Technician	0.287***	(5.55)	0.537***	(6.70)
Clerks	-0.010	(-0.21)	0.288***	(3.71)
Sale person	-0.174***	(-4.11)	0.037	(0.44)
Skilled agricultural worker	-0.169**	(-2.64)	0.106	(0.94)
Operator	-0.127***	(-3.63)	0.077	(1.02)
Elementary worker	-0.226***	(-6.10)	0.001	(0.01)
Domestic worker	-0.446***	(-3.52)	0.208	(1.55)
Agriculture ^b	-0.767***	(-15.97)	-0.426***	(-6.20)
Mining	-0.043	(-0.90)	0.102	(0.36)
Utility	0.181**	(2.09)	0.725***	(5.84)
Construction	-0.125**	(-2.29)	0.201**	(2.22)
Trade	-0.205***	(-5.20)	-0.153**	(-2.87)
Transport	-0.027	(-0.69)	0.043	(0.30)
Finance	-0.020	(-0.46)	0.148**	(2.57)
Services	0.069*	(1.84)	0.124**	(2.48)
Domestic	-0.309***	(-3.53)	-0.476***	(-3.81)
Eastern Cape ^c	-0.456***	(-8.37)	-0.488***	(-9.69)
Northern Cape	-0.219***	(-3.55)	-0.429***	(-5.82)
Free State	-0.546***	(-10.53)	-0.789***	(-14.29)
Kwazulu Natal	-0.151***	(-3.46)	-0.318***	(-5.96)
North West	-0.259***	(-5.25)	-0.325***	(-5.82)
Gauteng	-0.113**	(-2.89)	-0.048	(-1.07)
Mpumalanga	-0.197***	(-3.97)	-0.296***	(-5.78)
Northern Province	-0.217***	(-3.31)	-0.241***	(-4.02)
Intercept	1.668***	(16.78)	0.924***	(8.39)
N	9913		7651	
F stat	167.79		193.23	
R squared	Not computable with interval reg.		Not computable with interval reg.	

Source: OHS 1999

Notes: *** Statistically significant at the 1% level, ** the 5% level and * the 10% level.

Reference categories: ^a artisan, ^b manufacturing, ^c Western Cape

For these regressions, the omitted (base) variables correspond to a single white worker, residing in a rural area in the Western Cape, non-unionised, employed in the informal sector as a artisan in the manufacturing industry.

Coefficients of racial dummies are almost all significant (except for Indian women) and display the expected order. Other things being equal, Africans earn less than White workers, followed by Coloureds and Indians, corroborating similar results found by Hofmeyr (2000) and Borat & Leibbrandt (2001b), and consistent with South Africa's racially divided past.

The wage premium received by workers with an additional year of schooling increases with the level of education for both males and females. This upshot is in accordance with Mwabu & Schultz (2000) estimates — who concentrate on African workers — 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 Africans' acquisition of more advanced education and thus, allowed them to receive "excess" return.

As expected, experience and tenure have positive and decreasing returns on wages. In other words, having more experience and tenure increases wages up to a certain point of the life cycle but after this peak, an additional year of experience or tenure decreases earnings.

The results for the locational variables were also expected to some extent. Firstly, living in an urban area increases earnings. Secondly, the outcomes for provincial dummies show that earnings are lower for workers who are located in any other province than the Western Cape.

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

Turning to the impact of sectors on earnings, estimates show that 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. If we consider the results for industrial sectors, it can be observed that a few sectors provide significantly higher wages than manufacturing, exemplified by the utility and service sectors (construction and finance in the female regression). However, other industries such as agriculture, trade and domestic services (construction in the male regression) pay less than the manufacturing sector. The coefficients for mining and transport are not significantly different from zero at the conventional 10% level.

Union members earn significantly more than non-union members do. This result is common in the literature on the union wage premium and highlights the strong bargaining power of South African unions over wages. Similar results have already been found in

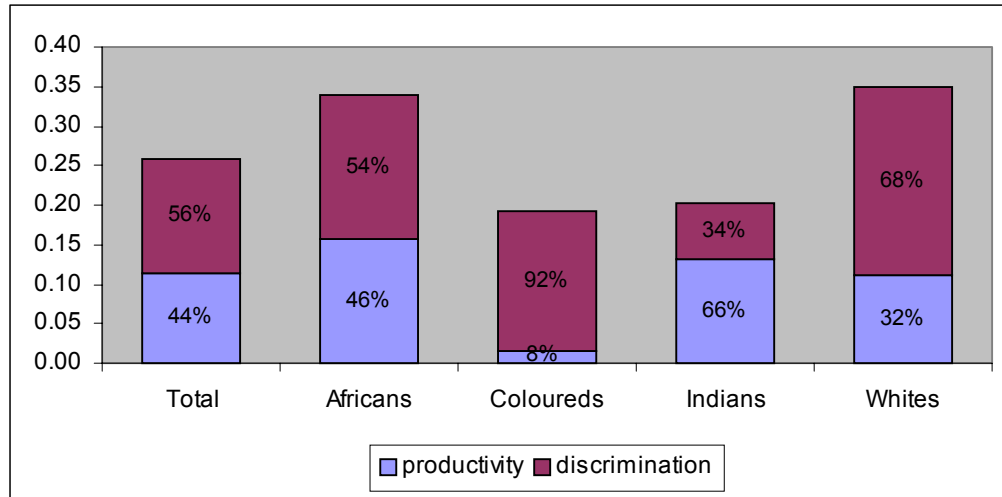
previous studies, though for African workers only²⁴. As far as white workers are concerned, the premium is often found to be insignificant.

The results for the block of occupational dummies also display the expected wage hierarchy, where artisans were used as the base category. Estimates show that managers, professionals, technicians and clerks (only in the female regression) earn significantly more than artisans, whereas workers perceived as less skilled receive lower wages.

5.3. The estimate of gender wage discrimination.

Figure 4 below presents the results obtained from the decomposition of the gender wage differential (in logarithm) for the whole population and each racial group²⁵.

Figure 4. Decomposition of the gender gap in predicted wage



Source: Own computations from OHS 1999.

The results displayed in figure 4 reveal that the gender wage differential and its decomposition are quite different among the racial groups.

The estimated average earnings gap between male and female workers is about 29 percent²⁶. However, this global figure hides large discrepancies between races. The estimated gender wage differential is the highest for Whites, followed by Africans, Asians and Coloured. White, African, Asian and Coloured male workers respectively earn 42, 40, 22 and 21 percent above the wage received by their female counterparts. An interesting result is that even it is among White workers that the highest incomes are observed, it is also among them that the gender inequalities are the largest.

²⁴ See Moll (1993), Hofmeyr and Lucas (1998), Mwabu and Schultz (1998), Butcher and Rouse (2001), Michaud and Vencatachellum (2001), Rospabé (2001b)

²⁵ Detailed results are displayed in appendix 3.

²⁶. $\ln w_m - \ln w_f = 0.257$ So, $\frac{w_m - w_f}{w_f} = 0.293$

Of the whole gender wage gap, 44 percent can be explained by productivity differences between males and females. In other words, it reflects the women's lower amount of experience and tenure and the different family responsibilities, occupational attainment, sectoral repartition and geographical localisation that the average female worker achieved relative to the average male. However, one should keep in mind that these differences often result from discrimination "prior to the labour market" as well as from forms of labour discrimination, other than wage discrimination.

The remaining 56 per cent of the gender wage differential result from the fact that males' and females' productive characteristics are not rewarded in the same way by the market. One explanation might be provided by the theory of compensating wage differential. The different wage returns of employment in a particular occupation between males and females can originate from diverse working conditions, or firm sizes, that are not taken into account in our model because of lack of data. However, a great part of this unexplained component can be perceived as wage discrimination.

If one considers the decomposition for each race, large disparities are observed. The males benefiting from the largest discriminatory overpayment are Coloured workers, with 92 per cent of the gender gap being attributed to the "unexplained" component. White males also appear to be unfairly privileged as discrimination accounts for 68 per cent of the white gender wage gap. In the case of African workers, the gender wage differential is attributable to male overpayment for 54 per cent. At last, the lowest gender wage discrimination is found among the Indian workers with some 34 per cent of the wage gap resulting from different returns to characteristics.

These few results show that, whatever be the race group considered, on average, women's incomes are substantially lower than men's. This result added to the findings of the previous section suggest that occupational segregation combined with unequal wages creates the greatest income inequality between the genders. Furthermore, wage discrimination is also found to contribute significantly to the women's wage disadvantage.

6. Conclusions and policy implications.

Using the data collected in the OHS 1999, this paper analyses three forms of women disadvantages in the labour market — namely in the access to employment, in the occupational distribution and at last in wages — and determines to which extent these disadvantages might be attributed to discrimination towards women. Furthermore, it also attempts to take into account the racial dimension of these gender labour market inequalities.

First, it is observed that women suffer from a disadvantage in the entry to the labour market, stronger in employment than in self-employment. Further investigations show that around one third of the gender gap in these two types of employment can't be explained by differences in endowments of productive characteristics and thus, might be attributed, in a large extent to employer discrimination. African women seem to suffer the

most from gender hiring discrimination, whereas women disadvantage in the establishment as self-employed appear to be the largest among Whites.

Secondly, turning to the occupational distribution, it looks that women have a great access to highly skilled occupations — technicians and semi-professionals in particular — but are still confined in a large extent, at the bottom end of the skill categories. If the findings for African women match with this average pattern, the opposite occurs for White workers. Furthermore, the confinement of women at the bottom of the hierarchical ladder remains entirely unexplained by the gender disparities in individual characteristics. If differences in “preferences” between women and men certainly contribute to explain this unequal occupational distribution, a great part might still be accounted for by discrimination.

Finally, large wage inequalities seem to prevail between men and women workers, especially among African and White workers. Decomposition of the average gender wage gap highlights that more than half of it might result from employer discrimination.

Large interrogations remain about the origin of this gender discrimination. Several theories of discrimination, focusing mostly on wages, have been developed since the 1970s and offer some answers. Discrimination can be either intentional or the result of imperfect information. Becker’s (1971) theory of taste for discrimination, the theory of labour market segmentation (Doeringer & Piore, 1971) and the Bergmann’s (1974) “crowding hypothesis” range among the former. Whereas statistical discrimination theories — the pioneering papers being Phelps, 1972 and Aigner & Cain, 1977) — attempt to rationalize unequal wages paid 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. The choice of theories able to explain the persistence of gender discrimination in South Africa deserves further investigations.

Many of these gender inequalities and discrimination in the labour market can be affected by policy. Indeed, public policy can influence everything from the educational choices made by individuals to the behaviour of firms towards their workers (Altonji & Blank, 1999). In South Africa, through NEDLAC (National Economic Development and Labour Council), employers, trade unions and government contribute to making public policy. Several policy measures and laws have been adopted in the past few years to address the issue of gender (and racial) inequalities and discrimination in the labour market.

Upstream the labour market, the *Skill Development Act 1998* aims at improving the skills of the workforce, for instance, by increasing the level of investment in education and training in the labour market. By itself, this law does not make explicit references to gender. However, its influence on gender inequality is linked to the *Employment Equity Act 1998*, which compels employers to implement appropriate training measures for people from disadvantaged groups (women being one of them) in terms of the *Skill Development Act*. More broadly, the *Employment Equity Act 1998* seeks to promote equal opportunity in the workplace to males and females “by eliminating unfair discrimination in any employment policy or practice” and furthermore, by enforcing affirmative action. It has been shown, in other countries, that this policy might help the improvement of women’s conditions (see Holzer and Neumark, 1999). However, one shouldn’t neglect its

latent detrimental influence on economic efficiency if recruitment standards are reduced. More recently, the *Promotion of Equality and Prevention of Unfair Discrimination Act 2000*, prohibits unfair discrimination on a larger ground than the labour market. As far as this study is concerned, the interesting point of this act is that it prohibits “any conduct or policy that unfairly limit access of women to finance [...] and to services” which could hamper the establishment of women as self-employed. Furthermore, it also prevents “discrimination on the ground of pregnancy” and “limiting access to benefits”. Note that these two laws place the burden of proof on the employer.

Wage discrimination is not really addressed in these two pieces of legislation. The *Employment Equity Act 1998* only specifies that disproportionate income differentials should be reduced by the employers. Thus, there is still a lot to do in this area. Comparable worth policy could tackle the issue of under evaluation of women’s occupations by doing a job evaluation of each job and setting pay so that jobs with comparable skill requirement have comparable wage levels (Altonji & Blank, 1999). The analysis of the advantages, disadvantages and real impact of this policy has given rise to many studies (see Sorenson, 1994).

Finally, it should be noted that other forms of women’s disadvantage than the three analysed in this paper, might hinder the achievement of equitable labour relations, for instance, the women’s concentration in a few industrial sectors, their different work status (casual jobs, sub-contracts), their lower unionisation rates etc. (see Standing *et al.*, 1996). Thus, our analysis could be extended to other fields of gender inequalities in the labour market.

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APPENDIX 1
METHODOLOGY

1. Estimate of employment discrimination²⁷.

The first step consists in making a choice between the different econometric tools allowing estimating the access to employment. The easiest solution would have been to retain a probit of participation (employed or not), however, the availability of detailed survey data favours the adoption of a multiple-choices model in order to keep the highest amount of information. Individuals declare to be either unemployed, employed or self-employed. The employment status depends on the individual characteristics and on the employer's hiring policy.

If employment status are indexed by s ($s = 1, 2, 3$), the probability that an individual i of gender j ($j = m, f$) with a vector a characteristics $Z_{ij}=(1, Z_{2ij}, Z_{3ij}...)$ will be assigned to employment status k is:

$$p_{kij} = \frac{\exp(\alpha_{kj}Z_{ij})}{\sum_{s=1}^M \exp(\alpha_{sj}Z_{ij})} \quad (k=1, 2, 3) \text{ and } (j=m, f)$$

(A1)

where α_{sj} is the vector of coefficients corresponding to the s th employment status for gender j .

The average predicted probability of assignment in employment status k for each gender j is then:

$$\bar{p}_{kj} = \frac{1}{N_j} \sum_i p_{kij}$$

(A2)

The second step lies in decomposing the gender differences in the average employment probabilities $(\bar{p}_{km} - \bar{p}_{kf})$ ²⁸.

Define \bar{p}_{kj}^* as the proportions of individuals of gender j who would be in employment category k if there were no employment discrimination.

$$\bar{p}_{kj}^* = \frac{1}{N_j} \sum_i p_{ikj}^* \text{ where } p_{ij}^* = \frac{\exp(\alpha_k^* Z_j)}{\sum_{s=1}^M \exp(\alpha_s^* Z_j)}$$

(A3)

²⁷ The same methodology is applied for the estimate of occupational discrimination.

²⁸ One feature of the multinomial logit 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.

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 probabilities that males and females attain the employment status k is decomposed as follows:

$$\bar{p}_{km} - \bar{p}_{kf} = \underbrace{(\bar{p}_{km}^* - \bar{p}_{kf}^*)}_P + \underbrace{(\bar{p}_{km} - \bar{p}_{kf}^*)}_D + (\bar{p}_{km}^* - \bar{p}_{kf})$$

(A4)

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

2. Estimate of wage discrimination.

Usually, the first step consists in estimating, by using ordinary least squares, separate semi-logarithmic wage functions for each gender j , such as:

$$\ln W_{ij} = \beta_j X_{ij} + \mu_{ij}$$

(A5)

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: $\ln \bar{W}_j = \bar{X}_j \hat{\beta}_j$

However, in practice, OLS estimations of (A5) 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 estimator²⁹.

After a few developments, the gender wage differential can be written as:

$$\ln(\bar{W}_m) - \ln(\bar{W}_f) = \underbrace{\hat{\beta}^* (\bar{X}_m - \bar{X}_f)}_P + \underbrace{\bar{X}_m (\hat{\beta}_m - \hat{\beta}^*) + \bar{X}_f (\hat{\beta}^* - \hat{\beta}_f)}_D$$

(A6)

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 male and female workers³⁰.

²⁹ For more details on interval regression, see Stata (vs. 7) manual and Daniels & Rospabé (2001). Estimates show that $\ln \bar{W}_j \approx \ln \tilde{W}_j$, where $\ln \tilde{W}_j = \bar{X}_j \tilde{\beta}_j$ where tildes denote the generalised Tobit estimates. Thus, the wage decomposition shouldn't be affected by this other method of estimation. (See Allanson *et al.*, 2001, for further details)

³⁰ $\hat{\beta}$ should be replaced by $\tilde{\beta}$ in the case of generalised Tobit estimates.

APPENDIX 2

THE VARIABLES

Variable	Determination
<u>Dependent:</u>	
Employment status	= 1 if unemployed, = 2 if employee and = 3 if self-employed
Occupational category	= 1 if high skilled, = 2 if skilled and = 3 if semi & unskilled
Earnings	Mixture of points and interval of the hourly earnings (in log)
<u>Independent:</u>	
Race group	= dummy variable: African, Coloured, Indian, <i>White</i>
Primary schooling spline ^a	$\begin{cases} x, & 0 \leq x \leq 7 \\ 7, & x > 7 \end{cases}$ where x = years of schooling
Secondary schooling spline	$\begin{cases} 0, & x \leq 7 \\ x - 7, & 7 < x \leq 12 \\ 5, & x > 12 \end{cases}$ where x = years of schooling
Tertiary schooling spline	$\begin{cases} 0, & x \leq 12 \\ x - 12, & x > 12 \end{cases}$ where x = years of schooling
Age	= age
Age squared	= age squared
Experience	= age - years of schooling - 6
Experience squared	= experience squared
Tenure	= years of seniority within the present firm
Tenure squared	= tenure squared
Married	= 1 if married, civilly, traditionally
Headship status	= 1 if the head of the family
Number of children	= number of children under 6
Number of dependent children	= number of children under 15
Other employed in the family	= if people (other than the individual) in the household are employed
Other unemployed in the family	= if people (other than the individual) in the household are unemployed
Ownership status	= 1 if owner of its housing
Union	= 1 if union member
Distance from the phone	= 1 if 0-5 mns, = 2 if 6-15 mns, = 3 if 16-30 mns, = 4 if 31-60 mns, = 5 if 1-2 hours and = 6 if over 2 hours
Formal sector	= 1 if works in the formal sector (fiscal registration of the employer)
Urban	= 1 if lives in a urban area
Economic sector	= dummy variables : agriculture, mining, <i>manufacturing</i> , electricity, construction, trade, transport, finances, services, domestic.
Occupation	= dummy variables: managers, professionals, semi-professionals & technicians, clerks, salesperson & skilled service workers, skilled agricultural workers, <i>artisans</i> , operators, routine workers and domestic workers.
Regions	= dummy variables : <i>Western Cape</i> , Northern Cape, Eastern Cape, Free State, Kwazulu Natal, North West, Gauteng, Mpumalanga, Northern Province

APPENDIX 3

DECOMPOSITION OF THE GENDER GAP IN LABOUR OUTCOMES

Table 1A Decomposition of the gender differential in the employment probabilities

	Whole population		African		Coloured	
	Employee	Self-employed	Employee	Self-employed	Employee	Self-employed
Observed probability						
* Men	0.592	0.104	0.545	0.083	0.744	0.060
* Women	0.481	0.081	0.395	0.079	0.687	0.026
Predicted probability ^a				0.085		
* Men	0.571	0.101	0.511	0.077	0.735	0.052
* Women	0.504	0.084	0.431		0.696	0.035
<hr style="border-top: 1px dashed black;"/>						
Observed differential	0.110	0.023	0.150	0.003	0.057	0.035
Explained	0.067	0.016	0.080	0.008	0.039	0.017
(<i>P</i>)	(60.4%)	(71.6%)	(53.2%)	(232.5%)	(68.1%)	(48.6%)
Unexplained	0.044	0.006	0.070	-0.004	0.018	0.018
(<i>D</i>)	(39.6%)	(28.4%)	(46.8%)	(-132.5)	(31.9%)	(51.4%)
Men advantage	0.021	0.003	0.034	-0.002	0.009	0.008
	(18.8%)	(13.4%)	(22.6%)	(-63.9%)	(15.1%)	(24.4%)
Women disadvantage	0.023	0.003	0.036	-0.002	0.009	0.009
	(20.8%)	(14.9%)	(24.2%)	(-68.6%)	(16.7%)	(27%)

	Indian		White	
	Employee	Self-employed	Employee	Self-employed
Observed probability				
* Men	0.653	0.161	0.706	0.229
* Women	0.672	0.083	0.789	0.136
Predicted probability ^a				
* Men	0.671	0.148	0.731	0.210
* Women	0.646	0.100	0.758	0.160
<hr style="border-top: 1px dashed black;"/>				
Observed differential	-0.019	0.078	-0.083	0.093
Explained	0.025	0.048	-0.028	0.050
(<i>P</i>)	(-131.2%)	(61.7%)	(33.2%)	(53.6%)
Unexplained	-0.045	0.030	-0.056	0.043
(<i>D</i>)	(231.2%)	(38.3%)	(66.8%)	(46.4%)
Men advantage	-0.018	0.012	-0.025	0.019
	(95.2%)	(15.8%)	(29.7%)	(20.6%)
Women disadvantage	-0.026	0.018	-0.031	0.024
	(136.0%)	(22.5%)	(37.1%)	(25.8%)

Source: OHS 1999

Note: ^a without discrimination (mlogit estimation using the pooled sample of men and women)

Table 2A Decomposition of the gender differential in occupational attainment

	Whole population		
	High skilled	Skilled	Semi & unskilled
Observed probability			
* Men	0.196	0.428	0.376
* Women	0.234	0.349	0.418
Predicted probability ^a			
* Men	0.197	0.404	0.399
* Women	0.233	0.381	0.386
<hr/>			
Observed differential	-0.037	0.079	-0.041
Explained	-0.036	0.023	0.013
(<i>P</i>)	(96.9%)	(29%)	(-32.1%)
Unexplained	-0.01	0.056	-0.055
(<i>D</i>)	(3.1%)	(71%)	(132.1%)
Men advantage	0.000	0.024	-0.023
	(1.3%)	(30.2%)	(56.1%)
Women disadvantage	-0.001	0.032	-0.032
	(1.8%)	(40.8%)	(76%)

	African			White		
	High skilled	Skilled	Semi & unskilled	High skilled	Skilled	Semi & unskilled
Observed probability						
* Men	0.116	0.446	0.438	0.535	0.366	0.098
* Women	0.182	0.270	0.547	0.450	0.526	0.024
Predicted probability ^a						
* Men	0.121	0.402	0.478	0.523	0.394	0.083
* Women	0.175	0.336	0.489	0.464	0.495	0.041
<hr/>						
Observed differential	-0.066	0.176	-0.109	0.085	-0.160	0.074
Explained	-0.055	0.066	-0.011	0.060	-0.101	0.042
(<i>P</i>)	(82.4%)	(37.5%)	(10.3%)	(70.2%)	(63.5%)	(55.9%)
Unexplained	-0.012	0.110	-0.098	0.025	-0.058	0.033
(<i>D</i>)	(17.6%)	(62.5%)	(89.7%)	(29.8%)	(36.4%)	(44.1%)
Men advantage	-0.005	0.044	-0.040	0.012	-0.028	0.016
	(7.1%)	(25.3%)	(36.2%)	(14.1%)	(17.3%)	(20.9%)
Women disadvantage	-0.007	0.065	-0.058	0.013	-0.031	0.017
	(10.5%)	(37.2%)	(53.4%)	(15.7%)	(19.2%)	(23.2%)

Source: OHS 1999

Note: ^a without discrimination (mlogit estimation using the pooled sample of men and women)

Table 3A Decomposition of the gender wage gap.

	Whole population	African	Coloured	Indian	White
Observed wage					
* Men	2.057	1.776	1.979	2.630	3.268
* Women	1.799	1.436	1.788	2.428	2.919
Predicted wage ^a					
* Men	1.995	1.701	1.898	2.600	3.155
* Women	1.882	1.545	1.883	2.467	3.042
<hr/>					
Observed differential	0.257	0.340	0.192	0.202	0.349
Explained	0.114	0.156	0.015	0.133	0.113
(P)	(44.2%)	(46%)	(7.6%)	(65.9%)	(32.3%)
Unexplained	0.144	0.183	0.177	0.069	0.236
(D)	(55.8%)	(54%)	(92.3%)	(34.1%)	(67.7%)
Men advantage	0.061	0.074	0.082	0.030	0.113
	(23.8%)	(21.9%)	(42.6%)	(15%)	(32.4%)
Women disadvantage	0.082	0.109	0.095	0.039	0.123
	(32%)	(32.1%)	(49.7%)	(19.1%)	(35.3%)

Source: OHS 1999

Note: ^a without discrimination (earnings regression on the pooled sample of men and women workers).

APPENDIX 4

OCCUPATIONAL DISTRIBUTION, BY GENDER AND RACE.

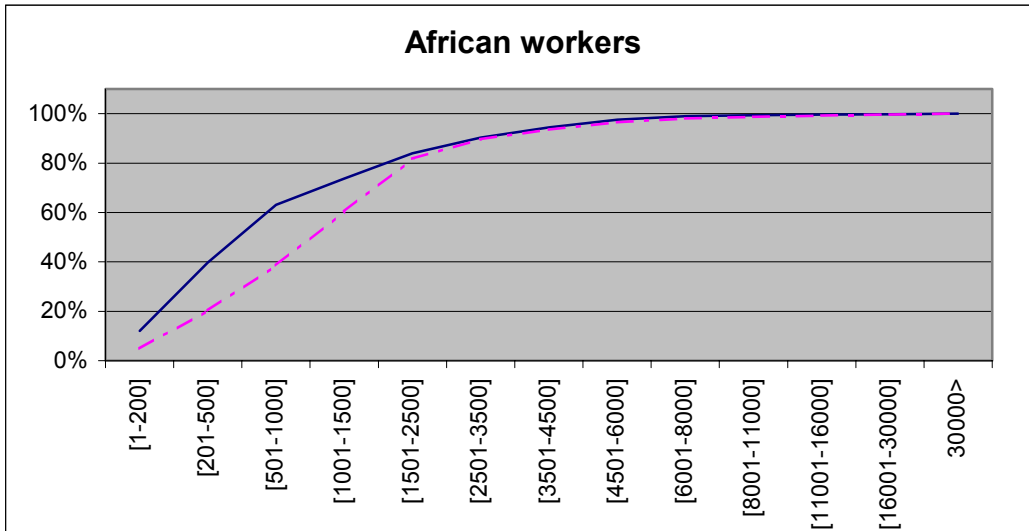
	Male					Female				
	Total	African	Coloured	Indian	White	Total	African	Coloured	Indian	White
Managers	6.1%	2.4%	4.8%	10.2%	21.0%	3.1%	0.9%	2.2%	3.5%	10.2%
Professionals	5.0%	3.1%	3.0%	6.5%	14.0%	6.4%	4.2%	2.6%	9.7%	15.0%
Semi-profess & Tech	8.6%	6.0%	6.9%	15.5%	18.7%	13.8%	12.9%	9.7%	15.6%	19.4%
Clerks	7.2%	6.1%	7.3%	17.9%	9.4%	18.6%	10.6%	19.5%	35.9%	39.5%
Salesperson	12.0%	13.0%	7.7%	12.7%	11.2%	11.4%	10.8%	13.1%	11.2%	12.0%
Skilled agric workers	5.2%	6.4%	6.1%	0.2%	0.6%	1.2%	1.4%	2.2%	0.0%	0.2%
Artisans	18.3%	19.0%	19.8%	13.2%	15.1%	3.7%	4.4%	4.1%	3.8%	1.2%
Operators	18.1%	21.9%	15.3%	16.9%	5.7%	4.1%	3.7%	7.3%	12.7%	1.1%
Elementary	18.9%	21.2%	28.7%	7.1%	4.4%	17.1%	21.7%	21.8%	6.2%	1.3%
Domestic workers	0.7%	1.0%	0.6%	0.0%	0.0%	20.8%	29.4%	17.5%	1.5%	0.2%

Source: OHS 1999

APPENDIX 5

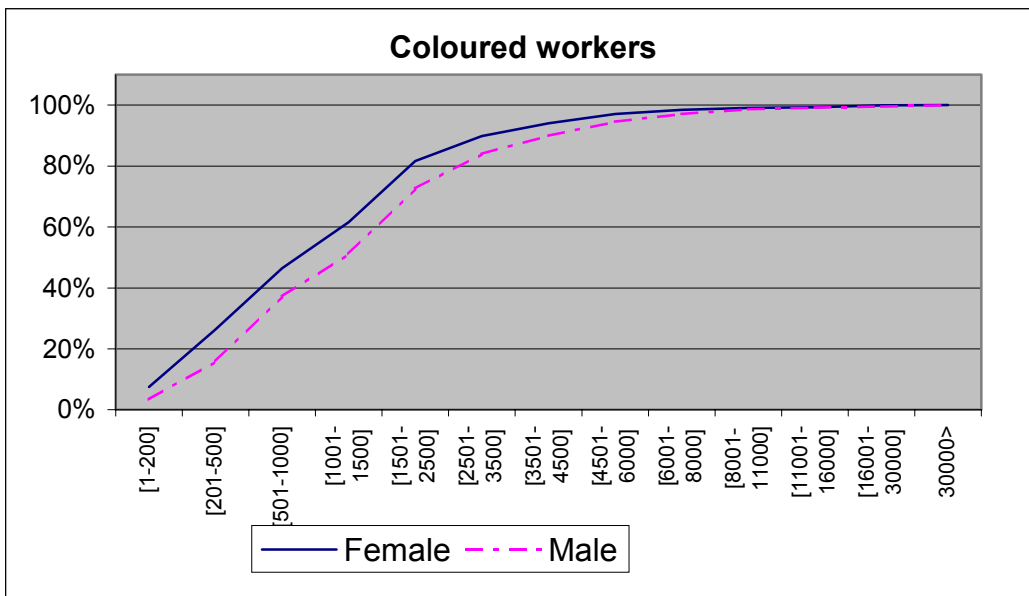
CUMULATIVE EARNINGS DISTRIBUTION, BY GENDER AND RACE GROUP.

Fig 1A. Cumulative earnings distribution by gender, African.



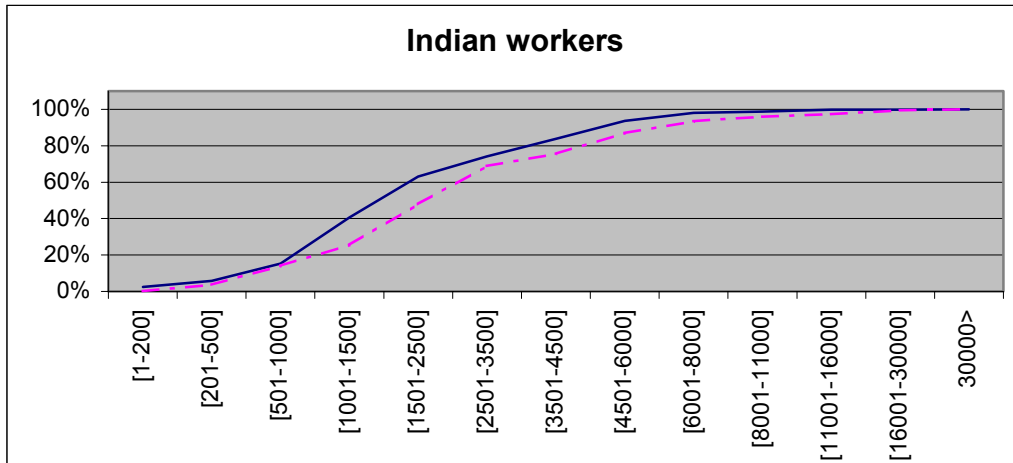
Source: OHS 1999

Fig 2A. Cumulative earnings distribution by gender, Coloured.



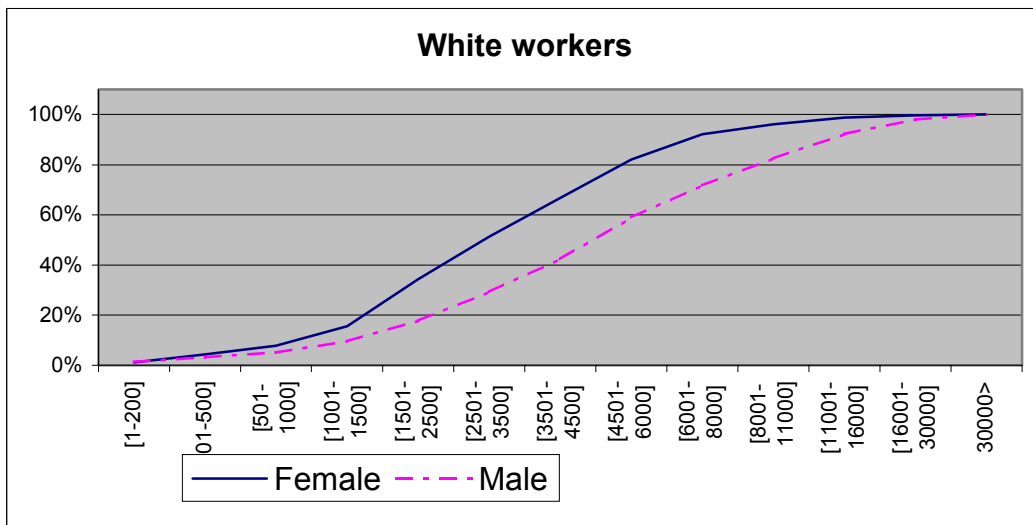
Source: OHS 1999

Fig 3A. Cumulative earnings distribution by gender, Indian.



Source: OHS 1999

Fig 4A. Cumulative earnings distribution by gender, White.



Source: OHS 1999