Trends in the gender wage gap and gender discrimination among part-time and full-time workers in post-apartheid South Africa

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Abstract

Using nationally representative household survey data from 1995 to 2006 this paper explores the gender wage gap among part-time and full-time salaried workers in post-apartheid South Africa, considering specifically how the magnitude of the gender-wage gap and the factors contributing to this gap have changed over time. The results, which are robust to the imputation of values for missing earnings information, provide evidence of a gender gap in wages among both part-time and full-time workers that persists once measurable differences between men and women are accounted for. In addition, the magnitude of the total gender wage differential for both groups has fallen over the years, with the greatest reduction visible for those working part-time. This finding is potentially explained by a decline in discrimination that is greater among part-time workers than among those working full-time. The inability to control for sample selection bias or for unobservable differences between men and women that may affect earnings does, however, complicate the interpretation of the results.

JEL classification: C20; J16; J31

1. Introduction

Investigating and explaining gender wage differentials and gender discrimination is a key area of analysis in the international labour market literature. Extensive research has revealed that women are typically paid less than men, and that the gender wage gap has narrowed over time (Blau and Kahn 1992, 1997, 2000, 2007, Hersch 1991, Bernhardt *et al* 1995, Brainerd 2000, Manning and Robinson 2004). In South Africa, research documenting gender differences in pay and the effects of gender-based labour market discrimination is more limited, with much of the literature focusing rather on racial wage gaps. Using data from the October Household Surveys a few studies have, however, documented evidence of gender discrimination in wages – particularly among Whites and Africans (Hinks 2002, Rospabé 2001 and Grün 2004). Most recently, Ntuli (2007) uses quantile regression techniques to explore the gender wage gap measured at different points in the distribution of wages among formally employed Africans. Surprisingly, she finds an increase in the gender wage gap from 1995 to 2004.

This study contributes to the small (but growing) body of literature on gender wage gaps in the country, using data from the 1995 and 1999 October Household Surveys (OHSs) and from the September 2001 and 2006 Labour Force Surveys (LFSs). The study explores changes in the gender wage gap among the wage employed in post-apartheid South Africa, distinguishing between part-time and full-time employment.

Inequalities in wages, by both gender and race, are affected by government policy. Following the election of the African National Congress as South Africa's ruling party in 1994, various pieces of protective labour legislation (including the Labour Relations Act of 1995, the 1997 Basic Conditions of Employment Act and the 1998 Employment Equity Act) were introduced by the government in order to address racial and gender inequalities in both job access and pay, and to improve the conditions of employment of workers more generally. This legislation, if effective, should have significant implications, not only for earnings disparities by race, but also for earnings differentials between men and women. Furthermore, unskilled jobs and other occupations traditionally associated with women, such as domestic work, are likely to be specifically influenced by legislation as a result of their exceedingly poor employment conditions and low pay. These occupations are overrepresented in female part-time employment in South Africa (Posel and Muller 2007). It may therefore be expected that any decline in the gender wage gap would be more pronounced among those working part-time.

Using the Oaxaca-Blinder decomposition technique (OB), both local and international studies investigating wage gaps at the cross-section have distinguished between two key factors accounting for any wage differential, namely differences in the productive characteristics of men and women, and differences in how these characteristics are valued. Researchers typically find that a significant portion of any wage differential remains 'unexplained' and it is this portion that is usually attributed to the effects of labour market discrimination. Along with the OB, which is used to decompose the gender wage differential within each group at the cross-section, this study utilises the Juhn Murphy Pierce technique (JMP) to decompose the *change* in the estimated gender wage gap over time into various components. The JMP attributes a portion of the change in the wage gap to changes in gender specific factors such as discrimination and relative levels of labour market skills. In addition, it accounts for the effect that changes in the overall structure of wages (in terms of changes in the market rewards to observed and unobserved skills and rents) may have on the gender wage differential (Juhn *et al* 1993, Blau and Khan 1997, Brainerd 2000).

The results from the cross-sectional decompositions in 1995 show that among both part-time and full-time workers the total gender wage differential is negative, implying a wage gap that favours women. There are good reasons, however, to suspect that this finding is biased due to an under-sampling of relatively low paid African women employed as domestic workers in this year. For the remaining data sets analysed, the results of this study provide consistent evidence of a gender gap in wages among both part-time and full-time workers that persists once measurable differences between men and women are accounted for. Furthermore, the magnitude of the total gender wage differential in both groups has fallen over the years, with a greater decline among those working part-time.

These findings are robust to the imputation of values for missing earnings information and also for missing values in the various explanatory variables considered. Identifying the key factors contributing to the reduction in the gap in these groups over time is complicated by the inability to control for sample selection bias and unobservable differences between men and women that could potentially affect earnings. Nevertheless, the decomposition of the change in the gender wage gap over the years suggests that gender discrimination may have declined more among part-time workers than among those working full-time. This finding is consistent with improvements in labour legislation impacting particularly upon part-time work where unskilled jobs usually associated with women (such as domestic occupations), are overrepresented.

The next section reviews the various explanations for why a gender gap in wages may be expected and outlines key findings from both the international and local literature. Key aspects of selected protective labour market policies, introduced by the South African government since 1995, are also highlighted. In section three, the data utilised in the study are briefly discussed and problems with the comparability of the various data sets are outlined. This section also compares the individual and labour market characteristics of the men and women analysed in each sample. In section four, the estimation and decomposition methods used to compare the returns to employment for men and women are explained and evaluated, and the results (including those where missing values have been imputed) are presented. Section five concludes with a brief review of the findings.

2. Context

Gender differences in wages may partly reflect gender differences in skills and qualifications. If women anticipate shorter and more discontinuous working lives because of household commitments, then they may invest less in formal education and on-the-job training than men, and even avoid occupations where human capital investments are required (Mincer and Polacheck 1974). In this case, lower human-capital investments by women[1] will reduce their earnings capabilities relative to those of men. Furthermore, employers who anticipate that women will participate in the labour market intermittently may offer women lower wages (Blau and Kahn 2000).

Labour market discrimination may also account for part of the gender wage gap. According to Oaxaca (1973:695) "discrimination against females can be said to exist whenever the relative wage of males exceeds the relative wage that would have prevailed if males and females were paid according to the same criteria". Labour market discrimination can manifest in two forms. Job discrimination occurs when women are segregated into occupations/establishments that pay lower wages. This may be the result of either the initial matching of individuals with jobs, and/or with the process through which promotions are obtained once individuals are employed. Women's exclusion from 'male' jobs may culminate in an excess supply of women in 'female' jobs (overcrowding) and lower returns in these occupations. Wage discrimination occurs when, in a given job

[1] Women's attainment of human capital may itself be related to discrimination (Peterson and Morgan 1995). This 'pre-entry' discrimination occurs outside of the labour market and can result in women's average productivity being lower than that of men.

and within a given establishment, women receive lower wages than men who are equally productive.

Gender differences in skills/occupations, and labour market discrimination are typically referred to as the gender specific factors which may account for the wage differential. Wage structure (unrelated to gender) may also influence the magnitude of the gender gap in pay. Blau and Kahn (1997:2) describe wage structure as "the array of prices set for various labor market skills (measured and unmeasured) and the rents received for employment in particular sectors of the economy". Human capital theory, for instance, predicts that men have more employment experience than women. Therefore, regardless of gender, the higher the return to experience, the larger the gender wage differential will be. Similarly, if discrimination results in women working in different occupations to men, then the higher the return received by workers (both male and female) employed in predominantly male occupations, the larger the gender pay gap (Blau and Kahn 2000).

International evidence on the gender pay gap suggests that although the adjusted gap in wages declines as observable differences between men and women are accounted for, a substantial portion of the pay gap (up to 40 percent) remains unexplained and potentially the result of discrimination (see, for instance, Blau and Kahn 2000). In addition, many studies, particularly for developed countries, have reported a decline in the differential over time (Hersch 1991, Wellington 1993, Blau and Kahn 2000). Using data from the Michigan Panel Study of Income Dynamics for 1979 and 1988, Blau and Kahn (1997) show that the gender wage differential in the United States (US) declined by about 0.15 log points from 0.47 log points in 1979 in spite of changes in wage structure that adversely affected low-wage earners. According to Blau and Kahn, improvements in gender-specific factors (which resulted in a reduction of the gender wage gap of between 0.22 and 0.26 log points) outweighed the changes in both measured and unmeasured prices (implying an increase in the pay gap of between 0.07 and 0.11 log points) working against women over the period.

More recently, Brainerd (2000) utilised household survey data from seven formally socialist countries to examine the effect of market reforms on the relative position of working women in these countries. Her findings suggest a narrowing of the gender wage differential of between 0.03 and 0.14 log points in all six of the East European countries. Like for the US, Brainerd attributes the improvement in women's position in these countries to better gender-specific factors and, in particular, to a reduction in gender-based labor market discrimination.

Few studies have examined changes in the gender wage differential among part-time and full-time workers. Using data from 1990 and 1998, Preston (2003) compared the gender earnings gap among part- and full-time workers in Australia in order to determine the effect of decentralised wage bargaining (adopted in 1991) on the pay position of women. Her results show greater convergence in the part-time gender wage gap than in the full-time gender wage gap, a finding attributed largely to the entry of less qualified and less experienced males into part-time employment.

In South Africa, only a small number of studies have investigated gender wage differentials[2] and none has compared the gender gap in wages among part-time and full-time workers. The available evidence does suggest, however, that having controlled for differences in a range of observable characteristics, women earn less than men. Using data from the 1995 OHS, Hinks (2002) provides evidence of gender wage gaps among all population groups except Africans, and attributes the absence of a gender differential in wages among the African population group to an under-representation of low-paid female domestic workers in the 1995 sample (Hinks 2002:2046). The largest differential is found among the White sample, with White women earning nearly 30 percent less than a non-discriminatory white worker[3] and White men earning approximately 19 percent more. Using data from the 1999 OHS, Rospabé (2001) finds an overall gender wage gap of about 25 percent, more than half of which cannot be explained by productivity/observable differences between men and women. Within population groups, Rospabé finds that Whites experience the greatest gender wage differential (about 35 percent) and the greatest degree of discrimination (with more than 65 percent of the gap remaining unexplained). Among Africans the gender wage differential is estimated at 34 percent, with approximately 54 percent of this gap remaining unexplained. Most recently Ntuli (2007) uses quantile regression techniques to explore gender wage discrimination among formally employed Africans over the 1995 to 2004 period. Her results reveal that the gender wage gap is typically larger at the bottom of the wage distribution, suggesting the existence of a 'sticky floor' in the South African labour market. Unexpectedly, she also finds that the magnitude of the gender wage gap increased from 1995 to 2004, and attributes this (in part) to highly paid women facing more discrimination over the period.

This study extends existing research on gender wage differentials in South Africa, first by considering evidence of gender wage gaps among part-time and full-time workers estimated at particular points in time, and second, by investigating how the gender wage gap within these groups has evolved over the years. In addition, the study investigates whether the measurement and decomposition of the gender gap in wages is sensitive to the treatment of missing earnings data.

There have been a number of legislative changes over the period under consideration in this study. These include the introduction of the 1995 Labour Relations Act, which provided guidelines for the resolution of employer/employee disputes and secured the rights of workers to unionize and the 1997 Basic Conditions of Employment Act (BCEA), which aimed to regulate working hours, overtime pay and basic employment conditions, and which also permits the Minister of Labour to determine minimum wages for employees by sector. In 1998 the Skills Development Act (SDA) and the Employment Equity Act (EEA) were introduced. The SDA aims to improve the skills of the workforce by raising the level of investment and education in the labour market. Although not

[2] A number of papers have examined racial wage differentials and discrimination in the South African labour market - see for example Mwabu and Schultz 2000, Erichsen and Wakeford 2001 and Rospabé 2002.

[3] Rather than using the male wage structure for each population group as the non-discriminatory (competitive) wage structure, Hinks (2002) assumes that the total within-population group wage structure is the competitive wage structure.

specific to addressing racial and gender disadvantages in the labour market, the SDA is linked to the EEA, which compels employers to implement and extend training measures to individuals from previously disadvantaged groups (including women). The EEA also seeks to ensure equal opportunities in the workplace for both men and women by specifically eliminating unfair discrimination in policy and practice and enforcing affirmative action. In addition, the EEA explicitly states that employers should take action to reduce disproportionate income differentials.

The collective implication of these policies should see a reduction of the gender wage gap in South Africa over time as employers increase compliance and strive to reduce gender discrimination in the workplace. In occupations typically associated with women, such as domestic work and in other unskilled jobs, the impact of protective labour legislation ought to result in an improvement in both working conditions and pay for these workers. These occupations are overrepresented in female part-time employment in South Africa, and the decrease in the gender wage gap should therefore be more pronounced among those working part time.

3. Data and descriptive statistics

3.1 Data and issues of comparability

This study uses nationally representative household survey data from the 1995 and 1999 OHSs and from the 2001 and 2006 September LFSs to investigate changes in the gender wage differential over time in South Africa. As with any research involving a comparison of data from different years and from different survey instruments, issues of comparability (in terms of what information is collected, as well as how information is collected) arise and must be highlighted.

Concerns about comparability, specifically regarding what information is collected in the national household surveys, stem mostly from the use of the 1995 OHS. In the first instance, the 1995 OHS is the only survey used which fails to distinguish between actual and usual hours worked. This study therefore uses *actual* working hours to calculate hourly earnings and to distinguish part-time from full-time workers in all the surveys utilised[4]. The second problem with using the 1995 OHS is that it fails to capture information on employees' receipt of benefits (such as medical aid and pension fund contributions) and firm size and it also does not permit a distinction between individuals employed in the formal and informal sectors. As a result, the 1995 and 1999 comparisons exclude variables controlling for these characteristics. A third concern with the 1995 OHS is that African female domestic workers appear to be under-represented in the sample (Hinks 2002). As will be shown later, this is likely to significantly affect the estimation of the gender wage gap in 1995 as well as the estimation of the change in the gap over the years.

[4] There is no significant difference (using a 95 percent confidence interval) between the mean actual and usual hours worked by either men or women wage employees in the 1999 OHS or in the LFSs utilised.

A more general concern about comparability, applicable to all the surveys utilised, involves differences in how information is collected over time. Over the years, and particularly with the move from the OHSs to the LFSs, Statistics South Africa has improved the design of the survey instruments, with a view to capturing more information on irregular work. Although these changes are likely to influence measures of self-employment in particular, it is possible that the measures of wage employment may also be affected. To help reduce the potential bias that inconsistencies in the survey instruments may have the econometric analysis is divided into two parts: a 1995 and 1999 comparison, and a 2001 and 2006 comparison.

3.2 Describing part-time and full-time wage employment by gender

Table 1 describes wage employment in South Africa from 1995 to 2006. Over the period, total wage employment grew by more than 25 percent (more than two million jobs), with nearly seventy percent of this increase accounted for by the growth in women's employment. Of the increase in women's wage employment, more than twenty percent can be attributed to the growth in part-time wage employment. In addition, the proportion of the part-time employed who are women increased steadily from 1995 to 2001, with women comprising more than 65 percent of part-time workers in 2006. In contrast, men's employment grew by less than women's (in both absolute and percentage terms), with the increase in men's part-time work accounting for only about 6 percent of the total increase in male employment over the period.

Tables 2 and 3 describe differences in the average characteristics of part-time and full-time workers in each year. There are clear and significant differences in the characteristics of men and women working part-time. In 1995 in particular, a significantly greater proportion have completed matric or have a tertiary education - consistent with an under-sampling of low-skilled women in this year. Overall, female part-time workers tend to be older than male part-time workers, are more likely to be white and to live in households where children also reside. In addition, women working part-time are typically significantly more likely than men to be divorced or widowed.

Among the full-time employed a significantly larger proportion of women than men report having completed tertiary education in all years bar 2006. In addition, women are significantly less likely to report marriage or cohabitation than men, and are more likely to report never having married or being widowed or divorced.

Figures 1-4 show that there are also marked differences in the characteristics of part-time and full-time wage employment by gender in terms of sector of employment and occupational category.

Men employed part-time are overrepresented in elementary occupations in all years with between 21 and 42 percent of men across the years working in these jobs. With the exception of 1995, women working part-time predominate in domestic occupations. In addition, from the 2001 and 2006 data, women working part-time are more likely than men working part-time to be employed in the informal sector. Men working full-time are

overrepresented in craft jobs and as plant and machine operators across all the years, and, as among part-time workers, women are overrepresented in domestic occupations. In addition, men working full-time are more likely than their female counterparts to work in the formal sector.

What is important to note in these figures is the 1995 OHS appears to have under-sampled domestic workers in comparison to the other years. Only about 10 percent of women employed either part-time or full-time were reported to work in domestic occupations in 1995. In the other years, in contrast, domestic work accounted for between 35 and 45 percent of part-time female wage employment and about 18 percent of full-time female wage employment. This is likely to have significant implications for the measurement of the gender wage gap in 1995, as well as the estimation of the change in the gender wage differential from 1995 to 1999.

Table 4 shows differences in the conditions of work experienced by men and women working full-time and part-time. Only estimates for 2001 and 2006 are provided, as the 1995 and 1999 OHSs did not capture this information.

Some of the benefits of legislative changes over the period are clearly reflected in the estimates (although these gains do not appear to be disproportionately in favour of the part-time employed). An increasing proportion of men and women working both part-time and full-time report having written contracts with their employers, and almost all the wage employed report receiving Unemployment Insurance Fund (UIF) contributions from their employers in 2006. In other aspects, however, the conditions of employment faced by South Africa's workers have worsened over time. There has been a fall in the proportions of part-time and full-time workers whose employment is permanent, and a decreasing proportion of the wage employed report receiving medical aid contributions from employers. In addition, union density, which is significantly lower among the part-time employed, has declined among both part-time and full-time workers over the years.

Table 4 also reveals that despite some of the gains made by both men and women in securing better conditions of employment from 2001 to 2006, in both part-time and full-time work women still face inferior employment conditions in comparison to men. In addition, In 2006, for instance, only seven percent of women working part-time reported receiving medical aid contributions from their employer (compared to ten percent of men working part-time), and among the full-time employed only 45 percent of women reported receiving pension fund contributions, compared to fifty percent of men. In addition, among both part-time and full-time workers, women are less likely to be unionised than men.

Not only are women significantly more likely than men to face poor conditions of employment, but Tables 5 and 6 show that among both the full-time and the part-time employed, women also typically earn significantly less than men on average (in terms of both hourly and monthly wages). The 1995 estimates for both the full-time and the part-time wage employed appear to be outliers, consistent with low-wage women being undersampled in 1995. Excluding 1995, the average gender-wage ratio has increased over

the years among those working full-time, indicative of a narrowing in the (mean) gender gap in hourly wages. This trend is noisier among part-time workers, first falling from 1999 to 2001 and then increasing from 2001 to 2006. Due to consistency in the survey instruments, however, it is likely that the 2001 to 2006 comparison is more robust. A comparison of the part-time and full-time gender-wage ratio over this period is also suggestive of a larger decline in the gender wage gap among the part-time employed with the increase in the gender-wage ratio among those working part-time exceeding that among those working full-time.

To investigate the gender gap in wages among part-time and full-time workers further this study uses multivariate estimations to control for differences in the observed characteristics of men and women.

4. Estimating and decomposing the gender gap in wages

4.1 Econometric framework

As in many international studies investigating gender wage gaps the multivariate framework begins by using Ordinary Least Squares (OLS) regression to estimate separate human capital regressions for men and women (the process described below is repeated for the respective part-time and full-time samples).

$$\ln(W_i^M) = \alpha^M + \beta X_i^M + \varepsilon_i \quad (1)$$

$$\ln(W_i^F) = \alpha^F + \beta X_i^F + \varepsilon_i \quad (2)$$

W_i represents the real hourly wages of individual i, X_i is a vector of individual, job and industry parameters, and ε_i is the error term. Initially, W_i includes only those observations where hourly earnings are non-missing.

The Oaxaca-Blinder (OB) decomposition technique is used to identify what portion of any wage gap, estimated at each cross section, is due to differences in observable characteristics, and what portion may be the result of differences in the returns to these characteristics.

$$\overline{\ln(W^M)} - \overline{\ln(W^F)} = \sum_i \hat{\beta}^M (\overline{X}_i^M - \overline{X}_i^F) + \{(\hat{\alpha}^M - \hat{\alpha}^F) + \sum_i \overline{X}_i^F (\hat{\beta}^M - \hat{\beta}^F)\} \quad (3)$$

The first term on the right-hand side of the above equation represents the portion of the wage differential attributable to gender differences in endowments. The remaining terms together reflect the "unexplained" part of the differential, captured by differences in the intercepts of the two earnings equations and in the estimated coefficients (differences in the rate at which measured characteristics are remunerated). In the literature, it is the unexplained component of the decomposition analysis that is typically attributed to discrimination, although this residual gap may also be the result of mis-specification of the earnings equation or unobservable characteristics.

Of particular interest in this study is whether the magnitude of the gender gap in wages among part-time and full-time workers has risen or fallen over time, and what factors may account for any change observed. When attempting to establish how the gender wage gap, net of differences in observable characteristics, has changed over the years it is not possible to simply compare the magnitudes of the adjusted differential estimated at each cross-section. This is because the magnitude of the adjusted (residual) gender gap in wages depends not only on gender differences in returns, which can change over time, but also upon $\overline{X}_i^F$, which too can change. For example, a decline in the magnitude of the unexplained gap over time could be the result of women's returns improving relative to men's or it could be the result of women's observable characteristics worsening over the years. Consequently, interpreting any change in the magnitude of the adjusted wage gap as evidence of a decline (rise) in the portion of the gender wage gap which remains having controlled for differences in observable characteristics would be misleading as part of what may change, $\overline{X}_i^F$, can in fact be accounted for.

This study therefore uses a method developed by Juhn *et al* (1991) [5] (hereafter JMP) and subsequently implemented by (amongst others) Blau and Kahn (1997) and Brainerd (2004) to decompose the *change* in the gender wage differential from one year to the next. The JMP method also provides a way of illustrating how unobservable differences between men and women affect the gender wage gap.

To start, the male wage equation in period *t* is written as:

$$W_{Mt} = X_{Mt}\beta_t + \sigma_t \vartheta_{Mt} \tag{4}$$

where the dependent variable W_{Mt} is the natural logarithm of real hourly wages and, as above, X_{Mt} is a vector of explanatory variables and β is a vector of coefficients. The standard deviation of the residual from the male wage equation is represented by σ_t, and θ_{Mt} is the standardised residual of the male wage regression, with a mean 0 and variance 1. The residual therefore consists of two components: θ_{Mt} reflects the percentile that a particular individual occupies in the residual distribution and σ_t reflects the spread of the residual distribution.

This distinction in the components of the residual is exploited by Juhn *et al* in their decomposition technique. Following Brainerd (2004:153), the gender wage gap in *t* may be written as:

$$D_t \equiv W_{Mt} - W_{Ft} = (X_{Mt} - X_{Ft})\beta_t + (\theta_{Mt} - \theta_{Ft})\sigma_t \tag{5}$$

[5] Smith and Welch (1989) propose a further a method to decompose changes in wage differentials, which is essentially a double application of the Oaxaca-Blinder decomposition. Their approach yields results identical those of Juhn *et al* (1993) bar for their decomposition of the change in the residual wage gap, which is instead decomposed into a portion attributable to changes in observable characteristics, and a portion due to changes in returns. See also Heckman *et al* (2000).

Note that $\theta_{Ft} = (W_{Ft} - X_{Ft}\beta_t)/\sigma_t$, which reflects the wage that women would earn if their characteristics were rewarded at the same rate as those of men (deflated by the male standardised residual). The gender wage differential at a particular point in time therefore comprises a portion due to differences in observed characteristics between men and women (weighted by the return to men's characteristics), and a portion resulting from differences in the standardised residual, weighted by residual male inequality.

The change in the wage gap from *t* to *t'* can then be written as:

$$D_{t'} - D_t = [(X_{Mt'} - X_{Mt}) - (X_{Ft'} - X_{Ft})]\beta_{t'} + (X_{Mt} - X_{Ft})(\beta_{t'} - \beta_t) + [(\theta_{Mt'} - \theta_{Ft'}) - (\theta_{Mt} - \theta_{Ft})]\sigma_{t'} + (\theta_{Mt} - \theta_{Ft})(\sigma_{t'} - \sigma_t) \quad (6)$$

The first term, referred to as the "Observed X's effect" in the literature, reflects changes in the wage gap that result from changes in gender differences in observed characteristics from *t* to *t'*. The second term, the "Observed prices effect", reflects the contribution of changes in the way observed characteristics of men are rewarded in the labour market, holding constant measurable differences between men and women. As Blau and Kahn (1997:7) note, the gender wage gap would rise if, for instance, men's return to experience increased and women have less experience than men. The third term, or the "Gap effect", represents the contribution of changes in women's position in the male residual distribution. Should women's unobserved labour market skills improve relative to men's, or should labour market discrimination against women decline, they will move up this distribution. Finally, the fourth term, or the "Unobserved prices effect", measures the change in the gender wage gap resulting from the widening (or narrowing) distribution of male wage residuals while holding constant the gender gap in unmeasured skills.

It is possible to aggregate the Observed X's effect and the Gap effect to derive the full-effect of gender-specific differences in observable characteristics and gender differences in wage rankings at a particular level of observed characteristics. Similarly, the Observed and Unobserved prices effects together reflect changes in wage structure, i.e. the result of changing returns to both observed and unobserved characteristics.

It is important to note that the interpretation of both the Observed and Unobserved prices effects may be complicated by the presence of labour market discrimination. If, over time, women are crowded into certain sectors, and relative wages in these sectors are depressed (even for men), then the Observed prices effect may reflect both job discrimination as well as changes in men's rewards for productive characteristics and rents. Furthermore, in the presence of discrimination, the Unobserved prices effect "in part reflects the interaction between year 0's level of discrimination (which pushes women down the distribution of male wage residuals) and the change in the overall level of inequality, which determines how large the penalty is for that lower position in the distribution" (Blau and Kahn 1997:8).

4.2 Potential concerns

When estimating (and decomposing) an earnings function for any group it is important to recognise that parameter estimates based solely on a sample of the employed may be biased if the sub-sample is not representative of the entire sample. This could occur, for example if women (men) working part-time differ not only from those women (men) working full-time, but also from those women (men) who are unemployed or who are economically inactive. Addressing this issue of sample selection bias is typically accomplished using a variation of the Heckman two-step procedure. This involves calculating a sample selection correction term (the inverse of the Mill's ratio or lambda), based on the probability that an individual participates in the labour market[6]. This ratio is included as an explanatory variable when estimating the probability that an individual gains employment and a second lambda term is calculated. Incorporating this second lambda term into the estimation of the wage equation provides a means of controlling for bias introduced through sample selection.

The Heckman procedure has, however, come under increasing criticism in the literature (Manski 1989, Deaton 1997, Kennedy 1998). According to Kennedy (1998:256), for example, it can often "do more harm than good" and may introduce a measurement error problem as an estimate of the expected value of the error term is used in the second (and the third) stage. Furthermore, it is typically difficult to identify (separate) instruments that are correlated with labour force participation and with employment, but that are not correlated with earnings (as is required by the procedure for identification purposes). This problem is exacerbated in this study, where controlling for selection bias would require a further round of selection equation estimations and the generation of a third lambda term for inclusion in the wage equation to account for the possibility that part-time and full-time workers differ in terms of both measurable and unmeasured characteristics. As such, no explicit attempt has been made to address the selection issue here. Using the male earnings function to perform the decompositions (rather than a female or a pooled wage equation) may, however, serve to reduce concerns about the influence of unmeasured characteristics and, in particular, the influence of changes in the unmeasured selectivity of female labour force participants. This is because male labour force participation in South Africa over the period under consideration has been significantly more stable than female labour force participation.

A further problem for the exploration of wage determinants and the estimation of wage gaps is that the wage data captured in household surveys are typically plagued by missing data[7]. While the frequency of missing wage information is reduced by the presence of

[6] International studies typically treat labour force participation as synonymous with employment. As such, the Heckman procedure in these studies would involve calculating the inverse Mills ratio based on a single probit equation estimating the probability of employment and then utilising this ratio to control for selection bias in the wage equation.

[7] Another potential concern involves suspect earnings information. Individuals who are working for pay may report false zeroes, for example. In this study, individuals with a zero value reported for earnings are included in the estimates. In 2001 and 2006, more than eighty percent of men and women working either part-time or full-time who had zero reported for earnings worked without pay in a family business. It is

wage brackets in household surveys (including in the surveys used in this study) it is not completely eliminated (Posel and Casale 2005). The implication of missing wage data for an analysis of gender wage differentials depends on the number of observations affected, the underlying 'true' value of wages, and the distribution of missing wage information across men and women. For example, should observations with missing wage information comprise a disproportionately large number of men who are true high-wage earners then the magnitude of the gender wage gap at the cross-section will be underestimated.

Recent developments in the econometric literature have seen the introduction of various statistical procedures that can be utilised by researchers to address the issue of missing data. One such correction is to use sequential multiple regression imputation (SMRI) techniques in order to impute values for those missing in dependent variables (see for instance, Van Buuren 1999 and Ardington *et al* 2006). In this study the SMRI technique is used to impute values for missing wage information in both the 2001 and 2006 LFS data. The results estimated when including these imputed values are then compared to those generated when missing wage information is ignored.

A final potential issue which concerns both decomposition procedures is that earnings equations for men and for women are estimated and decomposed without restricting the comparison to only those individuals whose characteristics are comparable. This issue is typically referred to in the literature as a failure to recognise "*gender differences in the supports*", and may result in an either an underestimation or an overestimation of the portion of the gap attributable to differences in the returns to individual characteristics[8]. One possible solution to this problem is found in the program evaluation literature where gender is considered as a treatment and matching is used to select sub-samples of men and women with identical observable characteristics (see, for example, Ñopo 2004). While such a non-parametric procedure may assist in solving the gender differences in supports problem and is also useful for exploring the distribution of unexplained differences in wages, it is limited in its ability to control for the many explanatory factors that may influence earnings and earnings differences and is therefore not utilised here.

4.3 Results

4.3.1 Estimates conditional on non-missing hourly earnings

Tables 7 and 8 show the decomposition results[9] from 1995 to 1999 for the separate samples of part-time and full-time workers, while Tables 9 and 10 provide decomposition results for the part-time and full-time samples from 2001 to 2006. The first column of results (I) in each table includes controls for age, race, education, marital status and the

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likely that reports of zero earnings may therefore be legitimate in the sense that unpaid family workers might receive payment for their labour in kind, rather than as a monetary reward.

[8] An overestimation (underestimation) of the unexplained wage gap would occur if matched males (i.e. men for whom it is possible to find women with comparable characteristics) typically have wages which are, on average, lower (higher) than those for unmatched males. See Ñopo 2004 for further detail.

[9] Detailed regression output is available from the author on request.

presence of children in the household, while the in the second column (II), additional variables controlling for occupation, industry, and the number of years employed in current occupation are included. The additional column (III) in Tables 9 and 10 includes further controls for conditions of employment and also distinguishes between employment in the formal and informal sectors.

Among both part-time and full-time workers in 1995 the total gender wage gap is negative, implying a wage differential *in favour* of women. This finding stands in contrast to those from the other years, where in all cases, the wage gap is positive. Given the extension of legislation that promotes gender equity over the period, it seems implausible that the gender wage gap would have increased so considerably from 1995. Rather, the 1995 findings seem to be biased by the under-sampling of low-paid African women employed as domestic workers in this year.

Once differences in observable characteristics are accounted for, women in all the years are found to earn less than men among both the part-time and full-time cohorts. Furthermore, the inclusion of controls for both industry and occupation reduces the magnitude of the residual (unexplained) portion of the wage gap in almost all cases (an exception is among the full-time employed in 1995), indicative that gender differences in industry and occupational access account for a substantial portion of the gender wage gap. In 2001 and 2006, controlling for differences in conditions of employment (see III) further reduces the magnitude of the residual gap in wages among both part-time and full-time workers (particularly in 2006).

The cross-sectional decomposition results also show that, in all years and in all specifications, the magnitude of the (unadjusted) gender gap in wages is greater among part-time than among full-time workers. These results may seem surprising in light of Posel and Muller's (2007) finding that among women there is a premium to part-time employment. However, the premium to men in part-time employment is in fact even larger[10].

Once gender differences in observable characteristics (including occupation and industry differences) are accounted for, the residual gap among the full-time employed in 1999 and in 2006 exceeds that estimated among the part-time employed. This is potentially indicative of greater reductions in wage-based gender discrimination among part-time than among full-time workers. To explore these findings further, the JMP technique is used to decompose the change in the gender wage gap over the years.

The decomposition results for 1995 to 1999 point to a worsening of the gender gap in wages among employees working both part-time and full-time. The growing gender gap in wages is explained primarily by deterioration in women's observable characteristics (as shown by the positive sign on the Observed X's effects) over the period. Again, this finding is consistent with an under-sampling of domestic workers in 1995. Given the

[10] Estimates of the premium to male part-time employment for 2001 and 2006 are available from the author on request.

problems with using 1995 as the base year for a study of changes in gender wage gaps, the remainder of the discussion focuses on the 2001 to 2006 decomposition.

From 2001 to 2006 there has been reduction in the total gender wage gap among both the part-time and full-time wage employed. Among part-time workers, the gender wage gap fell by approximately 0.15 log points in all specifications (roughly 34 percent), and exceeded the magnitude of the decline in the wage gap among those working full-time (between 0.037 and 0.047 log points, or 18 and 22 percent).

The JMP decomposition technique makes it is possible to identify the main sources of the narrowing of the gender wage gap within each group. Looking first among part-time workers: the Observed X's effect suggests that between 27 (specification I) and 147 percent (specification III) of the reduction in the gender wage gap among part-time workers can be attributed to an improvement in women's observable characteristics. In all specifications, the negative sign on the Gap effect shows that women's position in the residual male wage distribution improved over the period, indicative of a decline in discrimination against women in the labour market and/or improvements in women's levels of unobserved skills relative to men's. Taken together, the Observed X's and Gap effect reinforce each other and reveal an overall improvement in gender-specific factors for women working part-time, accounting for between 150 (specification I) and 300 percent (specification III) of the change in the wage gap over time.

While these improvements in gender specific factors worked to reduce the gender gap in wages among those working part-time, a deteriorating wage structure worked to increase the gender wage gap. This is indicated, in part, by the positive signs observed on the Observed prices effects, suggesting that the prices of skills or rents have changed so as to increase the male-female wage gap among part-time workers in South Africa. This finding may also reflect increased occupational crowding among women working part-time. As a result, despite women's position in the part-time male residual wage distribution typically improving from 2001 to 2006 (as shown by the negative sign on the Unobserved prices effect in specifications I and II), the overall widening of the part-time wage distribution over the period worked to offset the gains made in gender-specific factors by between 0.07 and 0.3 log points.

Among full-time employees the results of the decomposition of the change in the gender wage gap over time are similar to those among part-time workers. Gender specific factors are shown to account for between about 90 and 143 percent of the reduction in the gender wage differential among full-time workers, with a worsening wage structure offsetting some of these gains. Overall, however, a far greater improvement in gender specific factors is to be found among those working part-time than among those working full-time. In particular, the contribution of the Gap effect (which illustrates changes in discrimination and/or unobservable characteristics) to the reduction of the gender wage differential is larger among those working part-time, where it accounts for more than 115 percent of the decline in all specifications, than among the full-time wage employed, where it accounts for less than 90 percent of the decline (in specifications II and III). This finding is consistent with improvements in labour legislation impacting particularly upon

part-time workers and where a reduction in discrimination may be greater than among those working full-time. It is possible, though, that this result is also capturing the effects of larger improvements in the unobservable characteristics of women working part-time as compared to those of women working full-time over the period.

4.3.2 The effect of imputing values for individuals with missing earnings information

The empirical analysis thus far has estimated gender wage gaps among workers for whom non-missing wage information was reported. This section considers whether the findings in section 4.3 are robust to imputing values where earnings information is missing. Should earnings information be missing then the magnitude of the unadjusted wage differential, along with its composition, may be affected.

Table 11 presents estimates of the number and proportion of both the part-time and full-time wage employed reporting missing earnings in both 2001 and 2006 by gender. The results show that the proportion of both the part-time and the full-time samples affected by missing earnings information is small (between about 1 and 3 percent). Nevertheless, up to 45 percent of part-time and full-time workers with earnings information missing are reported to have completed either matric or tertiary level education, suggesting that these workers may be relatively high income earners, on average. In addition, among both groups, a far higher proportion of women than men are reported to have completed tertiary education. Although only a small proportion of observations are affected by missing earnings data, it is possible that excluding these individuals from an estimation of earnings and the subsequent decomposition analysis could result in an overestimation of the gender gap in wages (depending on the true value of earnings for these individuals as well as on their respective weights in the sample).

In this study, SRMI is used to impute earnings values for individuals with missing earnings information recorded in both the 2001 and 2006 data. For a comprehensive discussion on the implementation of SRMI see Van Buuren *et al* (1999) and Ardington *et al* (2006), and for a recent application of SRMI using LFS data see Vermaak (2008). Table 12 compares estimates of real average monthly and hourly earnings for the full sample of part-time and full-time workers by gender in 2001 and 2006 calculated from the imputed data, with those generated when ignoring missing values.

The results show that for men and women in both the part-time and the full-time samples average hourly and monthly earnings estimates increase when values are imputed for those observations where missing values were recorded. Among men working part time, average hourly earnings grew by 2.2 percent in 2001 and by more than 4 percent 2006, while women's average earnings were nearly 9 percent higher in 2001 and a little over 2 percent higher in 2006. Among male full-time workers, estimates of mean hourly earnings calculated including imputed values are roughly 9 percent higher than those estimated without the imputations in both 2001 and 2006, while among women mean hourly earnings are 6.7 percent higher in 2001 and about 9.2 percent higher in 2006. The differences between both the mean hourly and monthly earnings estimates obtained from

imputation, and those calculated excluding missing values are not significant, however. This is unsurprising as uncertainty, introduced by the imputation procedure into the estimates containing imputed values, is reflected in the standard errors of the estimates calculated using the imputed data.

A rerun of the decomposition analysis including imputed values may nevertheless be informative, not just because of the additional earnings information obtained, but also because missing values in the independent variables from each cross-sectional regression have been imputed as part of the SRMI procedure to replace missing wage data. These results are shown in Tables 13 and 14.

The inclusion of additional information into the estimation and decomposition procedure through imputation does little to change the key findings discussed earlier. From Tables 13 and 14 it is still clear that the magnitude of the gender wage gap among those working part-time exceeds that estimated among those working full-time and that the decline in the gender wage gap is greatest among part-time workers. In comparison to the previous estimates (see Tables 9 and 10), however, the imputation of missing earnings data, along with the imputation of missing information for the additional explanatory variables used in the analysis, has had the effect of reducing the magnitude of the unadjusted gender wage gap among both part-time and full-time workers (in all specifications and in both years). Consider specification II in 2001 for example: the unadjusted differential estimated without imputing for missing values was 0.457 log points for part-time workers and 0.203 log points for full-time workers. With imputation, the unadjusted differential for both groups declined to 0.429 for part-time workers and 0.201 log points for those working full-time. In addition, for all specifications, using imputed values serves to increase the portion of the gender gap in wages (for both the part-time and full-time samples) which remains unexplained once observable differences between the genders are considered.

Using the imputed data the decline in the wage gap for part-time workers (between 0.124 and 0.139 log points) is smaller than when missing values are ignored (between 0.149 and 0.152 log points). Like the estimates containing no imputations, the imputed estimates also attribute most of the reduction in the part-time wage differential to improvements in the gender specific characteristics of women as compared to men (specifically in specifications II and III).

For full-time workers, the change in the gender wage gap as estimated using the imputed data is larger (between 0.044 and 0.051 log points) than when excluding the missing observations (between 0.037 and 0.047 log points). In addition, the imputed estimates also attribute most of the reduction in the full-time wage differential to an improvement in women's gender specific characteristics (particularly in specifications II and III).

5. Conclusion

Prior studies investigating gender wage gaps in South Africa have examined only the composite wage differential, not distinguishing between part-time and full-time

employment. This study presents evidence of a gender gap in wages in South Africa that is considerably higher among part-time wage employees than among those working full-time.

When examining how the gender wage gap has changed over the years it is not appropriate to use the 1995 OHS as a base year for comparison as domestic workers appear to have been undersampled in this year. Changes in the gender wage gap from 2001 to 2006 are likely to be more robust due to consistency in the survey instruments over these years. The results show that from 2001 to 2006 the gender wage gap declined among both part-time and full-time workers. However, the fall has been more pronounced in part-time employment. These findings are robust to imputing values for data missing in both earnings and in the various explanatory variables considered.

Identifying the primary source of the decline in the gender wage differential over time is complicated by the inability to account unobservable differences between men and women along with other issues of potential selectivity bias. Nevertheless, the results of the JMP decomposition suggest that improvements in gender specific factors have been more pronounced among those working part-time. In particular, the magnitude of the Gap effect, which may reflect changes in discrimination and/or unobservable characteristics, is larger among those employed in part-time jobs. Although there is descriptive evidence suggesting that certain employment benefits (such as medical aid and pension fund contributions) have been lost by workers over the years as others (like unemployment insurance fund contributions) have been gained, this finding is consistent with employer's increasing compliance with the legislative changes implemented over the period.

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Table 1. Wage employment ('000s)[1] by gender in South Africa

	1995	1999	2001	2006
Total wage employment (women)	2 829	3 632	3 795	4 323
	(29)	(31)	(46)	(63)
Women's part-time[2] wage employment	279	552	573	583
	(10)	(16)	(20)	(25)
Proportion of part-time wage employed who are women	51.5	58.1	60.1	65.4
	(1.3)	(1.2)	(1.4)	(1.7)
Proportion of employed women who work part-time	9.9	15.2	15.1	13.6
	(0.3)	(0.4)	(0.5)	(0.6)
Total wage employment (men)	5 325	4 986	5 310	6 016
	(36)	(39)	(52)	(75)
Men's part-time wage employment	263	397	380	309
	(10)	(14)	(15)	(18)
Proportion of employed men who work part-time	4.9	8.0	7.2	5.2
	(0.2)	(0.3)	(0.3)	(0.3)

Source: OHS 1995 and 1999; LFS 2001:2; LFS 2006:2.

Notes to table: The data are weighted and counts are in thousands. Standard errors are in parentheses. 1. All employment estimates (total and part-time) are for employed individuals aged 15 years and older and for whom information on hours worked is neither missing nor zero. Individuals who reported working in excess of 112 hours a week were also excluded from the sample. 2. Individuals are employed part-time if the number of weekly hours worked in their main job is less than 35.

Table 2. Characteristics of part-time wage employees by gender: 1995-2006.

	1995		1999		2001		2006	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Mean age	35.95	36.10	35.09	37.11*	36.36	38.50*	37.81	39.96
	(0.45)	(0.41)	(0.47)	(0.38)	(0.26)	(0.20)	(0.38)	(0.23)
Matric or equivalent	0.17	0.24*	0.20	0.18	0.23	0.17*	0.21	0.18
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Postsecondary education	0.19	0.30*	0.12	0.17	0.11	0.19*	0.12	0.16
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)
Married or cohabiting	0.55	0.60	0.49	0.51	0.54	0.47	0.48	0.49
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Widowed or divorced	0.03	0.08*	0.05	0.13*	0.03	0.16*	0.18	0.22*
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
Never married	0.40	0.31*	0.45	0.34*	0.41	0.35	0.46	0.34*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
White	0.08	0.28*	0.12	0.18*	0.13	0.14	0.10	0.15
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
African	0.77	0.55*	0.73	0.63*	0.72	0.67	0.77	0.71
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Children < 7 years	0.40	0.48*	0.41	0.44	0.37	0.49*	0.33	0.46*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)
Children 7-14 years	0.45	0.49	0.43	0.49	0.38	0.49*	0.34	0.46*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)

Source: OHS 1995, OHS 1999, LFS 2001:2, LFS 2006:2

Notes: The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Standard errors are in parentheses. * indicates that proportions of men and women in each year are significantly different (using a 95 percent confidence interval).

Table 3. Characteristics of full-time wage employees by gender: 1995-2006.

	1995		1999		2001		2006	
	Men	Women	Men	Women	Men	Women	Men	Women
Mean age	36.80	35.30*	36.53	35.82*	37.09	36.74	36.79	36.96
	(0.09)	(0.12)	(0.11)	(0.14)	(0.06)	(0.07)	(0.07)	(0.08)
Matric or equivalent	0.21	0.28*	0.22	0.24*	0.23	0.25	0.28	0.30
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Postsecondary education	0.12	0.20*	0.11	0.16*	0.13	0.20*	0.14	0.21
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married or cohabiting	0.69	0.53*	0.65	0.48*	0.65	0.48*	0.58	0.46*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Widowed or divorced	0.03	0.12*	0.03	0.11*	0.03	0.13*	0.03	0.11*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Never married	0.27	0.34*	0.30	0.39*	0.30	0.37*	0.37	0.41*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
White	0.17	0.24*	0.15	0.18*	0.15	0.19*	0.13	0.15
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
African	0.66	0.57*	0.68	0.63*	0.67	0.62*	0.72	0.67*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Children < 7 years	0.40	0.43*	0.36	0.40*	0.37	0.43*	0.35	0.43*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Children 7-14 years	0.44	0.51*	0.36	0.45*	0.33	0.45*	0.31	0.42*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Source: OHS 1995, OHS 1999, LFS 2001:2, LFS 2006:2

Notes: The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Standard errors are in parentheses. * indicates that proportions of men and women in each year are significantly different (using a 95 percent confidence interval).

Table 4. Conditions of employment, 2001-2006

	Part-time				Full-time			
	2001		2006		2001		2006	
Proportion of all wage employed	Men	Women	Men	Women	Men	Women	Men	Women
Written contract	0.35	0.31	0.45	0.43	0.58	0.49*	0.74	0.71*
	(0.02)	(0.02)	(0.03)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)
Work is temporary or casual	0.49	0.51	0.55	0.51	0.14	0.16	0.20	0.21
	(0.02)	(0.02)	(0.03)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)
Receive pension fund contribution	0.32	0.20*	0.22	0.15	0.56	0.47*	0.55	0.50*
	(0.02)	(0.01)	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Receive medical insurance contribution	0.16	0.12*	0.11	0.07*	0.32	0.28*	0.26	0.25
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Receive paid leave	0.33	0.29	0.25	0.29	0.63	0.59*	0.63	0.61
	(0.02)	(0.01)	(0.02)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)
UIF contribution	0.37	0.30*	0.99	0.99	0.62	0.54*	0.99	0.99
	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Member of a trade union	0.25	0.13	0 .13	0.07*	0.39	0.31*	0.33	0.29*
	(0.02)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Source: LFS 2001:2, LFS 2006:2

Notes: The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Standard errors are in parentheses. * indicates that proportions of men and women in each year are significantly different (using a 95 percent confidence interval).

Table 5. Average wages (2000 prices) and working hours among the part-time wage employed by gender, 1995-2006

	1995		1999		2001		2006	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Monthly wage	2290.45	2337.83	1799.01	1581.88	1884.52	1257.25*	1557.49	1534.79
	(115.77)	(81.98)	(124.19)	(190.19)	(65.84)	(29.89)	(62.60)	(108.55)
Hours worked	22.60	22.56	18.16	19.99 *	19.65	20.62	21.00	21.77
	(0.33)	(0.29)	(0.34)	(0.26)	(0.18)	(0.14)	(0.23)	(0.14)
Hourly wages	28.43	28.71	28.66	20.30*	26.33	15.53*	20.00	16.90
	(2.17)	(1.44)	(1.92)	(1.76)	(0.97)	(0.40)	(0.89)	(1.18)
Hourly wage ratio (%) (Women/Men)	100.98		70.83		58.98		84.50	

Source: OHS 1995, OHS 1999, LFS 2001:2, LFS 2006:2

Notes: Average earnings are in 2000 prices. The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Standard errors are in parentheses.

* indicates that means for men and women are significantly different within each year (using a 95 percent confidence interval).

Table 6. Average wages (2000 prices) and working hours among the full-time wage employed by gender, 1995-2006

	1995		1999		2001		2006	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Monthly wage	3213.96	2662.63*	3355.72	2463.36*	2967.45	2317.99*	3265.34	2614.20*
	(37.94)	(34.53)	(112.34)	(91.95)	(33.61)	(25.72)	(36.11)	(32.60)
Hours worked	46.25	43.66*	50.00	47.44*	50.03	47.56*	48.09	45.56*
	(0.08)	(0.10)	(0.13)	(0.14)	(0.06)	(0.07)	(0.07)	(0.08)
Hourly wages	16.29	14.25*	16.60	12.80*	14.52	12.08*	16.56	13.92*
	(0.19)	(0.17)	(0.60)	(0.47)	(0.15)	(0.13)	(0.18)	(0.17)
Hourly wage ratio (%) (Women/Men)	87.47		77.10		83.19		84.05	

Source: OHS 1995, OHS 1999, LFS 2001:2, LFS 2006:2

Notes: Average earnings are in 2000 prices. The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Standard errors are in parentheses.

* indicates that means for men and women are significantly different within each year (using a 95 percent confidence interval).

Table 7. Decomposition of the gender wage differential, 1995 to 1999 (Part-time wage employed)

	I				II			
	1995		1999		1995		1999	
	Men	Women	Men	Women	Men	Women	Men	Women
Number of observations	843	933	815	1273	768	886	765	1216
R^2	0.30	0.30	0.30	0.41	0.45	0.39	0.45	0.52
Total (unadjusted differential)	-0.035		0.428		-0.037		0.402	
Quantity effect	-0.307 (877)		-0.122 (-28)		-0.253 (683)		0.291 (72)	
Residual gap	0.272 (-777)		0.551 (128)		0.216 (-583)		0.111 (38)	
Change in total differential	0.463				0.439			
Change in quantity effect	0.185 (40)				0.545 (124)			
Change in residual gap	0.278 (60)				-0.105 (-24)			
Observed X's effect	0.183 (40)				0.344 ((78.4)			
Observed prices	0.001(0.2)				0.200 (45.5)			
Gap effect	0.192 (41.5)				-0.107 (-24.4)			
Unobserved prices effect	0.085 (18.3)				0.002 (0.5)			

Table 8. Decomposition of the gender wage differential, 1995 to 1999 (Full-time wage employed)

	I				II			
	1995		1999		1995		1999	
	Men	Women	Men	Women	Men	Women	Men	Women
Number of observations	15861	8220	9901	6881	15098	7827	9209	6470
R^2	0.58	0.52	0.48	0.54	0.72	0.64	0.60	0.66
Total (unadjusted differential)	-0.020		0.245		-0.030		0.239	
Quantity effect	-0.230 (114)		-0.067 (-27)		-0.244 (813)		0.042 (18)	
Residual gap	0.209 (-14)		0.312 (127)		0.214 (-713)		0.196 (82)	
Change in total differential	0.266				0.270			
Change in quantity effect	0.162 (61)				0.287 (106)			
Change in residual gap	0.103 (39)				-0.017 (-6)			
Observed X's effect	0.137 (51.5)				0.304 (112.6)			
Observed prices	0.025 (9.4)				-0.017 (-6.3)			
Gap effect	0.063 (23.7)				-0.050 (-18.5)			
Unobserved prices effect	0.041 (15.4)				0.032 (11.9)			

Source: 1995 OHS, 1999 OHS

Notes (Tables 7 and 8): The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Estimates as a percentage of the unadjusted differential or the change in the unadjusted differential are in parentheses. Percentages may not sum to 100 due to rounding.

Table 9. Decomposition of the gender wage differential, 2001 to 2006 (Part-time employed)

	I				II				III			
	2001		2006		2001		2006		2001		2006	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Number of observations	768	1301	650	1315	697	1208	627	1260	621	1111	619	1245
R^2	0.42	0.51	0.29	0.52	0.54	0.63	0.52	0.65	0.61	0.66	0.56	0.66
Total (unadjusted differential)	0.451		0.298		0.457		0.307		0.447		0.296	
Quantity effect	-0.139 (-31)		-0.053 (-18)		0.177 (39)		0.220 (72)		0.166 (37)		0.244 (82)	
Residual gap	0.591 (131)		0.352 (118)		0.280 (61)		0.087 (28)		0.280 (63)		0.052 (18)	
Change in total differential	-0.152				-0.149				-0.150			
Change in quantity effect	0.086 (-57)				0.042 (-28)				0.077 (-52)			
Change in residual gap	-0.239 (157)				-0.192 (128)				-0.228 (152)			
Observed X's effect	-0.042 (27.6)				-0.184 (123.5)				-0.221 (147.3)			
Observed prices	0.128 (-84.2)				0.227 (-152.3)				0.299(-199.3)			
Gap effect	-0.187 (123)				-0.175 (117.4)				-0.229 (152.7)			
Unobserved prices	-0.051 (33.6)				-0.017 (11.4)				0.001 (0.7)			

Table 10. Decomposition of the gender wage differential, 2001 to 2006 (Full-time employed)

	I				II				III			
	2001		2006		2001		2006		2001		2006	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Number of observations	10463	7432	10615	7498	9993	7133	10443	7353	9154	6600	10217	7216
R^2	0.54	0.61	0.50	0.55	0.69	0.74	0.62	0.70	0.72	0.77	0.67	0.73
Total (unadjusted differential)	0.209		0.172		0.203		0.159		0.209		0.162	
Quantity effect	-0.097 (-46)		-0.085 (-49)		0.013 (7)		-0.009 (-6)		0.024 (11)		0.015 (9)	
Residual gap	0.306 (146)		0.257 (149)		0.188 (93)		0.169 (106)		0.185 (89)		0.147 (91)	
Change in total differential	-0.037				-0.044				-0.047			
Change in quantity effect	0.012 (32)				-0.024 (55)				-0.009 (19)			
Change in residual gap	-0.049 (132)				-0.020 (45)				-0.038 (81)			
Observed X's effect	0.013 (-35.1)				-0.024 (54.5)				-0.025 (53.2)			
Observed prices	-0.002 (5.4)				0.001 (-2.3)				0.016 (-34.0)			
Gap effect	-0.046 (124.3)				-0.027 (61.4)				-0.042 (89.4)			
Unobserved prices	-0.003 (8.1)				0.007 (-15.9)				0.004 (-8.5)			

Source: LFS 2001:2, LFS 2006:2

Notes (Tables 9 and 10): The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week and for whom earnings information is not missing. The data are weighted. Estimates as a percentage of the unadjusted differential or the change in the unadjusted differential are in parentheses. Percentages may not sum to 100 due to rounding.

Table 11. Part-time and full-time wage employed with missing earnings, 2001 -2006

Part-time	2001		2006	
	Men	Women	Men	Women
Total with earnings information missing	56	69	20	28
Percentage of all part-time wage employed	2.51	3.10	0.99	1.39
Average years of schooling	9.92	11.03	8.75	10.23
Percentage with:				
Matric education	33.96	22.95	25.00	28.57
Tertiary education	20.75	36.07	5.00	17.86
Full-time	**2001**		**2006**	
	Men	**Women**	**Men**	**Women**
Total with earnings information missing	599	464	513	360
Percentage of all full-time wage employed	3.11	2.41	2.69	1.89
Average years of schooling	10.57	11.18	10.76	11.56
Percentage with:				
Matric education	37.08	37.95	39.57	45.56
Tertiary education	20.74	29.02	18.52	27.78

Source: LFS 2001:2, LFS 2006:2

Notes: The sample is restricted to persons older than 15 years with wage employment who reported non-zero working hours of less than 113 hours a week. The data are unweighted.

Table 12. Comparison of average monthly and hourly wages (in 2000 Rands) – with and without imputations, 2001 -2006.

	2001				2006			
	Men		Women		Men		Women	
Part-time	**No imputation**	**Missings imputed**	**No imputation**	**Missings imputed**	**No imputation**	**Missings imputed**	**No imputation**	**Missings imputed**
Monthly wage	1884.52	1934.26	1257.25	1336.29	1557.49	1595.66	1534.79	1550.4
	(65.84)	(155.13)	(29.89)	(76.92)	(62.60)	(155.69)	(108.55)	(235.92)
Hourly wages	26.33	26.92	15.53	16.87	20.00	20.86	16.90	17.29
	(0.97)	(2.24)	(0.40)	(1.09)	(0.89)	(2.31)	(1.18)	(2.54)
Hourly wage ratio (%) (Women /Men)	**No imputation**		**Missings imputed**		**No imputation**		**Missings imputed**	
	58.98		62.66		84.50		82.88	
Full-time	**No imputation**	**Missings imputed**	**No imputation**	**Missings imputed**	**No imputation**	**Missings imputed**	**No imputation**	**Missings imputed**
Monthly wage	2967.45	3235.22	2317.99	2472.81	3265.34	3571.04	2614.20	2854.11
	(33.61)	(103.49)	(25.72)	(79.21)	(36.11)	(140.96)	(32.60)	(135.71)
Hourly wages	14.52	15.81	12.08	12.89	16.56	18.03	13.92	15.21
	(0.15)	(0.49)	(0.13)	(0.41)	(0.18)	(0.70)	(0.17)	(0.73)
Hourly wage ratio (%) (Women /Men)	**No imputation**		**Missings imputed**		**No imputation**		**Missings imputed**	
	83.19		81.53		84.05		84.35	

Source: LFS 2001:2, LFS 2006:2

Notes: Average earnings are in 2000 prices. The sample is restricted to persons older than 15 years with wage employment who reported non-zero working hours of less than 113 hours a week. The data are weighted. Standard errors are in parentheses. * indicates whether imputed estimates are significantly different from averages calculated without imputations (using a 95 percent confidence interval). The results presented are based on five imputations with 10 switching cycles in each.

Table 13. Decomposition of the gender wage differential, 2001 to 2006 (Part-time employed – imputed estimates)

	I				II				III			
	2001		2006		2001		2006		2001		2006	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total (unadjusted differential)	0.433		0.296		0.429		0.305		0.433		0.293	
Quantity effect	-0.147 (-34)		-0.059 (-20)		0.159 (37)		0.223 (73)		0.159 (37)		0.252 (86)	
Residual gap	0.580 (134)		0.356 (120)		0.270 (63)		0.081 (27)		0.273 (63)		0.040 (14)	
Change in total differential	-0.136				-0.124				-0.139			
Change in quantity effect	0.087 (-64)				0.063 (-51)				0.092 (-66)			
Change in residual gap	-0.223 (164)				-0.188 (151)				-0.232 (166)			
Observed X's effect	-0.037 (27.2)				-0.155 (125)				-0.191 (137.4)			
Observed prices	0.124 (-91.2)				0.219 (-176.6)				0.284 (-204.3)			
Gap effect	-0.162 (119.1)				-0.169 (136)				-0.228 (164)			
Unobserved prices	-0.060 (44.1)				-0.018 (14.5)				-0.003 (2.2)			

Table 14. Decomposition of the gender wage differential, 2001 to 2006 (Full-time employed – imputed estimates)

	I				II				III			
	2001		2006		2001		2006		2001		2006	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Total (unadjusted differential)	0.207		0.162		0.201		0.153		0.205		0.153	
Quantity effect	-0.102 (-49)		-0.094 (-58)		0.001 (0.5)		-0.020 (13)		0.014 (7)		0.003 (2)	
Residual gap	0.309 (149)		0.257 (158)		0.199 (99)		0.174 (113)		0.190 (93)		0.150 (98)	
Change in total differential	-0.044				-0.047				-0.051			
Change in quantity effect	0.007 (-16)				-0.021 (45)				-0.011 (22)			
Change in residual gap	-0.051 (116)				-0.025 (53)				-0.039 (77)			
Observed X's effect	0.005 (-11.3)				-0.029 (61)				-0.032 (62)			
Observed prices	0.002 (-4.5)				0.007 (-14.9)				0.020 (-39.2)			
Gap effect	-0.047 (106.8)				-0.032 (68)				-0.045 (88.2)			
Unobserved prices	-0.003 (6.8)				0.006 (-12.7)				0.005 (-9.8)			

Source: LFS 2001:2, LFS 2006:2

Notes (Tables 13 and 14): The sample is restricted to persons older than 15 years with wage employment, who reported non-zero working hours of less than 113 hours a week. The results presented are based on 5 imputations with 10 switching cycles in each. The data are weighted. Estimates as a percentage of the unadjusted differential or the change in the unadjusted differential are in parentheses. Percentages may not sum to 100 due to rounding.

Figure 1. Distribution of part-time and full-time wage employment by occupation and gender, 1995

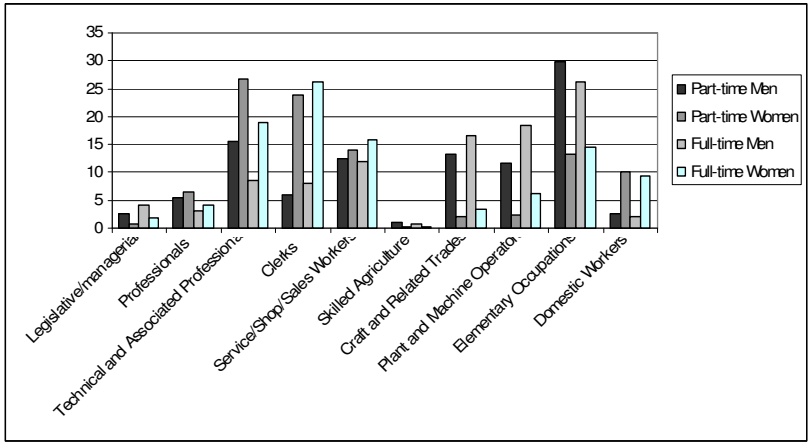

Figure 2. Distribution of part-time and full-time wage employment by occupation and gender, 1999

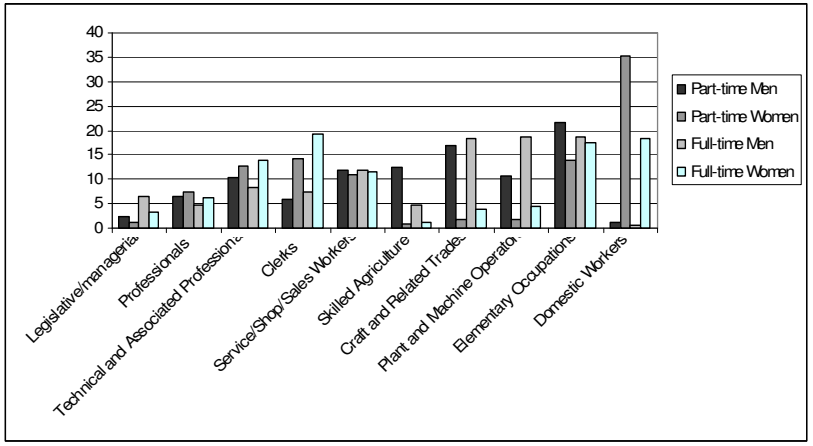

Figure 3. Distribution of part-time and full-time wage employment by occupation, sector and gender, 2001

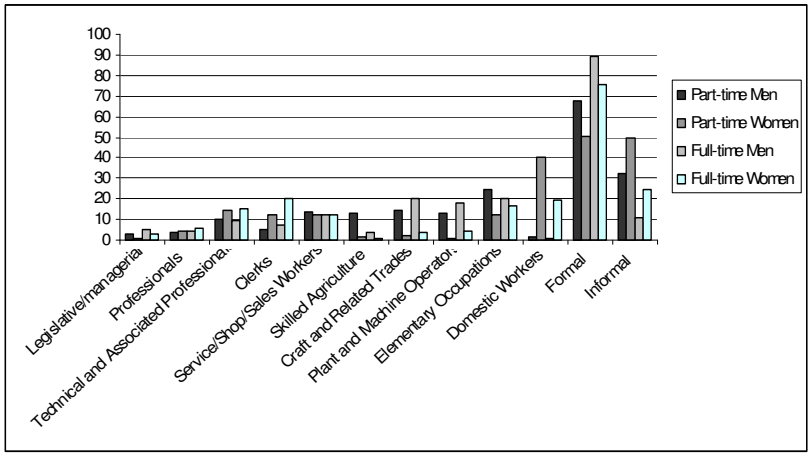

Figure 4. Distribution of part-time and full-time wage employment by occupation, sector and gender, 2006