WHY ARE MORE WOMEN LOOKING FOR WORK? A STUDY OF FEMALE LABOUR SUPPLY IN SOUTH AFRICA, 1995-1999.

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Abstract

Between 1995 and 1999, there was a significant rise in the labour force participation of women in South Africa. In 1995, 48 percent of all women of working age were working or willing to work; in 1999, this had increased to some 61 percent. Although there has been a modest growth in women's recorded employment over the same period, this has been considerably smaller than the increase in labour supply, resulting in rising rates of female unemployment. In addition, available data suggest that the increase in women's employment has taken place mainly in self-employment in the informal sector. In this paper, we explore for the period 1995 to 1999 why more women are wanting to work in spite of the high probability of unemployment or of having to 'make work' for themselves in the informal sector. Because no appreciable increase in the demand for female labour has been observed over the period, we focus in particular on the likely supply-side factors driving the increase in female labour force participation. Using the 1995 and 1999 October Household Survey data, we investigate, in a multivariate context, the effect of particularly education, marital status, household composition and income on female participation. We also decompose the increase in women's labour force participation over the period into the change associated with the characteristics of the population and the change associated with the underlying structure of participation.

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1. INTRODUCTION

Between 1995 and 1999, there was a considerable increase in the proportion of all working age women in South Africa who were working or wanting to work. This change in female labour supply, however, was far less than the rise in reported employment over the same period. As a result, female rates of unemployment also increased. Of the total number of jobs in the economy, an increasing proportion in 1999 were occupied by women. But a large part of the change in recorded female employment reflects the growth of self-employment in the informal sector, employment associated typically with low earnings, little protection and insecure working conditions.

In this paper, we explore why female labour force participation rates have been increasing in South Africa. Rising rates of unemployment for women and the considerably smaller growth in the demand for female labour suggest that the increase in female labour supply is unlikely to be driven by demand-side factors. We therefore examine changes on the supply-side of the labour market that may account for why more women want to work.

A likely supply-side factor emphasised in the international literature is increased education. As education levels rise, so expected employment opportunities and earnings also increase, which would raise the opportunity costs for women of having children. Higher levels of education for women therefore are associated with higher rates of female labour force participation. There is clear evidence that in South Africa, average levels of education among women have increased between 1995 and 1999, and furthermore, that women who are more educated are more likely to participate in the labour market. However, labour force participation rates have also risen among women who have no or primary school education.

A further possible explanation for why more women are entering the labour force is a change in women's access to resources outside the labour market. Between 1995 and 1999, a growing number of women in South Africa lived without men, and particularly men with employment. These changes in household composition and women's marital status would be expected to decrease women's access to traditional forms of income support, forcing or encouraging more women to enter the labour market. Labour force participation rates among women who are not married are considerably higher than rates among women who are married, and in 1999, a growing proportion of women in South Africa reported not being married.

Although more difficult to investigate empirically, the increase in female labour supply may also reflect a change in women's relationship to the labour market because of shifts in societal norms about the appropriate economic roles for men and women, and a change in expectations on the part of women. Furthermore, it is probable that these attitudes and expectations are themselves shaped by the increase in female labour force participation.

In the next section of this study on female labour supply, we sketch changes in women's labour force participation using data provided by the 1995 and 1999 national October Household Surveys. In section three, we describe correlates of women's increased labour supply, looking particularly at changes in education, women's marital status and household composition. We then use a probit analysis in the fourth section to test the determinants of female labour force participation in the two years

under review. In the last part of the study we decompose the increase in labour force participation into the change arising from movements in the characteristics of the population, and that arising from the underlying structure of participation.

2. LABOUR MARKET TRENDS IN SOUTH AFRICA

a) An Increase in Female Labour Force Participation

Since the 1960s, in particular, women's participation in the labour force has been increasing, and at a faster rate than men's participation. Standing, Sender and Weeks (1996: 60) in the International Labour Office (ILO) review of the South African labour market, present data from the five-yearly Population Census that show the extent of this increase. In 1960 women accounted for 23 percent of the labour force (or the economically active population) in South Africa, by 1985 they made up 36 percent and by 1991 this figure had reached 41 percent[2]. This dramatic increase led Standing *et al* (1996: 60) to remark that "(p)erhaps the most important change in labour supply over recent years has been the rising labour force participation rate of women."

This trend continued into the latter half of the 1990s. Using data from the October Household Surveys (OHSs) of 1995 and 1999, we find a considerable increase in the proportion of women of working age (defined here as 15-65 years) who reported that they worked or wanted to work. The data on changes in labour force participation rates are summarised in Table 1.

Table 1: The working age population and labour force participation

	Female		**Male**	
	1995	**1999**	**1995**	**1999**
working age population	12 686 000	13 656 000	11 545 000	12 607 000
strict labour force	4 857 000	6 375 000	6 771 000	7 708 000
broad labour force	6 067 000	8 287 000	7 606 000	8 904 000
strict participation rate	38.3	46.7	58.6	61.2
broad participation rate	47.8	60.8	65.9	70.7
share of working age population	52.4	52.0	47.6	48.0
share of strict labour force	41.8	45.3	58.2	54.7
share of broad labour force	44.4	48.2	55.6	51.8

(source: OHS 1995, OHS 1999)

[2] Note that these figures do not take into account the TBVC states (Transkei, Bophuthatswana, Venda and Ciskei). Also, because there is a strict and a broad definition of unemployment, the latter including those discouraged work-seekers who do not engage in active job search, there is also a strict and a broad definition of economic activity. It is not clear which definition of participation is reflected in these figures, making then incomparable to the data presented below from the October Household Surveys. Nonetheless, they give us some sense of the increase in women's economic activity in South Africa over this earlier period.

According to the strict definition of economic activity, some 38 percent of all women of working age were economically active in 1995, while nearly 47 percent were active in 1999. In terms of the broad definition this increase is more pronounced: approximately 48 percent of all women of working age were economically active in 1995, by 1999 close to 61 percent were part of the economically active population. This translates into an additional 2.2 million women between the ages of 15 and 65 years either working or willing to work. Labour force participation rates for men also increased between 1995 and 1999, but by proportionately less than for women. As a result, the proportion of all economically active individuals who were women (or women's share in the labour force) also increased. In 1999, close to half of all those recorded as working or willing to work were women.

b) An Increase in Unemployment

Between 1995 and 1999 reported employment increased, but by far less than the increase in labour supply. As a result, unemployment rates rose for both men and women. In 1995, some 38 percent of all economically active women were broadly unemployed; in 1999, this had increased to 47 percent (see Table 2). Broadly defined, the number of unemployed women grew by around 1.6 million between 1995 and 1999, approximately 45 percent of which represents an increase in the number of women who reported wanting to work but not having actively looked for work in the past four weeks. The proportion of economically active men who were broadly unemployed also rose, from 23 percent in 1995 to 32 percent in 1999. This change amounts to an additional 1.1 million unemployed men in 1999, roughly one third of whom were reported as "discouraged".

Table 2: Employment and unemployment by gender

	Female		**Male**	
	1995	**1999**	**1995**	**1999**
Employed	3 785 000	4 368 000	5 858 000	6 022 000
Strictly unemployed	1 071 000	2 006 000	913 000	1 686 000
Broadly unemployed	2 282 000	3 918 000	1 748 000	2 882 000
Share of employment	39.3	42.0	60.7	58.0
Share of strict unemployment	54.0	54.3	46.0	45.7
Share of broad unemployment	56.6	57.6	43.4	42.4
Strict unemployment rate	22.1	31.5	13.5	21.9
Broad unemployment rate	37.6	47.3	23.0	32.4

(source: OHS 1995, OHS 1999)

c) An Increase in Employment

The OHS data suggest that there was some increase in employment over the period, albeit small in relation to the growth in labour supply. Total recorded employment grew by approximately 750 000 jobs between 1995 and 1999, close to eighty percent of which reflects greater female employment. Women's share of employment therefore also increased over the period. In 1995 the proportion of the employed who

were women was approximately 39 percent; by 1999 this had risen to 42 percent (see Table 2).

The small growth in total reported employment, however, derives principally from a considerable growth in the number of people who are self-employed. As Table 3 illustrates, much of this self-employment is in the informal sector. For both men and women, the number of people reported with unregistered self-employment more than doubled, but the change was considerably larger for women. More than half of the growth in female employment between 1995 and 1999 can be attributed to the growth in women 'making work' for themselves in the informal sector. Registered self-employment also increased dramatically and particularly for women, but from a much smaller base.

Table 3: Distribution of employment[3]

	Female		Male		% Change	
	1995	**1999**	**1995**	**1999**	**F**	**M**
All employees	2 631 000	2 764 000	4 603 000	4 752 000	5.1	3.2
Informal self-employed	178 000	487 000	214 000	525 000	173.5	145.2
Formal self-employed	65 000	127 000	237 000	360 000	93.9	51.7
Domestic workers	696 000	767 000	93 000	41 000	10.2	-55.9
Unskilled agriculture	215 000	220 000	711 000	337 000	2.3	-52.6
Total*	3 785 000	4 365 000	5 858 000	6 015 000	15.3	2.7

(source: OHS 1995, OHS 1999)

* The total employment figures do not correspond exactly to those in Table 2 because of missing values for sector and type of employment.

There has also been a net increase in the number of 'employees' (excluding domestic workers and unskilled agricultural workers) in the economy over the period, but this has been relatively small. Unfortunately, we cannot tell how much of the increase is due to a greater demand for female labour in the formal or informal sectors, because the 1995 OHS did not distinguish between those working for registered versus unregistered businesses (see also Bhorat, 1999).[4] Numerous studies, however, have documented the growing practice of outsourcing and the informalisation of work, and particularly of women's work (Orr, 2001; Skinner and Valodia, 2001), which would suggest that the composition of this employment is shifting over time.

[3] There were also a small number of workers who said that they worked for someone else *and* for themselves. They constitute only around one percent of the total number of workers in both the 1995 and 1999 sample, and therefore did not warrant a separate category. We included them in the 'employee' category, as it is likely that they are either formal or informal sector workers predominantly, engaging in own-account activities on the side to supplement their income (Bhorat and Leibbrandt, 2001: 76).

[4] According to the 1999 OHS, however, approximately 90 percent of people recorded as employees in that year had employment in the formal sector, employment that would presumably be subject to labour legislation.

d) Some Measurement and Data Concerns

Although the evidence provided above shows a definite increase in female labour force participation over the period, the data need to be viewed with some caution. We have done all we can to make our definitions of employment and unemployment consistent, and the data comparable across the years[5], but some problems remain. As already mentioned, we cannot identify shifts in the demand for labour by formal and informal businesses between 1995 and 1999. Also, it is possible that some of the observed increase in informal sector self-employment reflects the better capture of data rather than an actual change in this type of work. As Statistics South Africa (Stats SA) has sought to improve data collection over the 1990s, so there has been more attention paid to the capture of informal sector activities. The 1999 OHS was perhaps more explicit than the 1995 survey in identifying to respondents what counts as employment.

Nonetheless, it is unlikely that better data capture alone accounts for the dramatic increase in reported self-employment in the informal sector[6]. A number of other studies have pointed to the growing importance of the informal sector in recent years (Barker, 1999; Skinner and Valodia, 2001). It is also probable that informal sector activities remain under-estimated in 1999, partly due to ambiguities on the part of the respondent about what counts as employment[7]. Because women are more likely than men to be self-employed in the informal sector, the likely implication of this bias is that female labour force participation and women's share of employment (and of informal sector employment in particular) are underestimated.

A further significant source of underestimation in labour market measures produced by the OHSs, is the undercount of small-scale and own-account agriculture (see Standing *et al*, 1996). This has been confirmed by the results from the new twice-yearly Labour Force Survey (LFS), introduced by Stats SA in February 2000 to replace the OHS. One of the main objectives of this survey is to ensure the more efficient capture of all kinds of work, and in particular, of small-scale and subsistence farming, through the introduction of "more probing questions" (Stats SA, 2001a). The results from these surveys show a considerable 'increase' in this type of activity, and particularly for women. The more efficient capture of subsistence farming would also substantially increase labour force participation and employment rates for women in particular (see Posel and Casale, 2001 for a more extended discussion).

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[5]Attempts have been made by Statistics SA to improve the OHS questionnaire, and particularly the worker module, with each subsequent survey. This creates problems of comparability when trying to study changes over time. Furthermore, Statistics SA has not been consistent over the years in how they have defined and derived statistics on employment and unemployment from the various questions relating to employment status. It was therefore necessary to recreate employment and unemployment variables for 1995 and 1999 to ensure, as far as possible, that the data measures are consistent over the two surveys and that the observed increase in measures of economic activity represent real changes in the economy. See Casale and Posel (2001) for details of the adjustments that were made.

[6] It could be argued that the observed 'feminisation' of the labour force over this period is simply a product of the better collection of informal activities in 1999. We have shown however, that while there were 2.2 million more women as part of the broad labour force in 1999, the increase in women in informal self-employment amounted to just over 300 000. Even if all of these 'new' jobs were only a result of the more efficient capture of informal activities, a strong increase in female labour supply would still be recorded.

[7] This suggestion is corroborated by the findings from the recently released Time Use Study for 1999 (Stats SA, 2001b: 52).

3. WHY IS FEMALE LABOUR FORCE PARTICIPATION INCREASING? A DESCRIPTIVE ANALYSIS

The picture that emerges from these descriptive statistics is that a significantly larger proportion of women was available for work in 1999 than in 1995, but that many more women were looking for work than were finding work. While there has been some increase in the number of women who have employment, this has been relatively small and mostly in informal sector self-employment. The question we seek to answer in the remainder of this paper is: "Why are more women wanting to work over this period?" It is useful heuristically to start by distinguishing between demand- and supply-side factors that could influence labour force participation, although the distinction in practice may be less clear-cut. In this section we examine possible changes in the demand for, and the supply of, female labour that may account for rising participation rates.

a) Changes in Demand

A key reason given in the international literature for why there has been an observed increase in female labour force participation and in women's share of employment around the world, is the growth in the demand for female labour (Standing, 1989; 1999; Bakker, 1988; Cagatay and Ozler, 1995). In a study of the labour force participation of women in a number of developing and developed countries for which there were data, Standing (1999) identifies two broad changes in the demand for female labour that are likely to be driving this increase. First, there has been a shift towards female-employing industries, 'pulling' women into the workforce. "With industrialisation based on textiles, garments, electronics and other "light" industry, female participation and employment has tended to rise sharply" (Standing, 1999: 587).

Second, growing labour market flexibility and the rise in informal work has been associated with the substitution of female for male labour (Standing, 1989, 1999). This 'flexibilisation' and 'informalisation' of work includes the outsourcing and subcontracting of work and the employment of labour that is unprotected by labour regulations. There are a number of possible explanations for why these changes in the nature of employment have increased female employment in particular. It may be that women are more 'willing' than men to accept insecure, low-wage employment (Chen *et al*, 1999). Informal sector employment (such as home-based work) may also offer women greater flexibility in combining income-generating work with household and child-rearing responsibilities. Employers may also prefer to employ women in this kind of work, perhaps because it may be easier to justify paying low wages to women, who traditionally have not been viewed as primary breadwinners.

Due to the constraints imposed by the OHS data, we cannot examine empirically whether there has been a substitution of female for male labour through the informalisation of work. We have observed that the increase in women's employment is associated largely with the growth in informal sector work, but this is specifically in self-employment. Although aggregate data on the number of 'employees' (whether employed in the formal or informal sectors) may mask shifts between the two sectors, the net increase in the number of employed women is very small. Furthermore, unlike in the countries surveyed by Standing (1999), female unemployment rates in South

Africa have not been falling. Rather, as we have shown, female unemployment rates continued to rise between 1995 and 1999. At the level of aggregation imposed by the OHS data, therefore, there is no strong evidence that women are being 'pulled' into the labour market by an increase in the demand for female labour.

b) Changes in Supply

i) The role of education and the number of children

The increase in female labour force participation may also reflect changes on the supply side of the labour market. Two likely (and related) changes include an increase in female education and a decrease in fertility rates. Rising levels of education among women increase employment opportunities as well as earnings in the labour market. This in turn raises the opportunity cost of having children. Higher average education and a decrease in fertility rates therefore have been associated with the growth in women's labour force participation[8].

There is evidence from other data sources that fertility rates in South Africa have been declining steadily (Barker, 1999:53). We cannot examine whether women are having fewer children over time with the OHS data because it is not possible to assign children living in the household to their respective biological parents. However, we can establish that women's average education has been increasing and that this change has been associated with rising labour force participation rates.

Table 4 below provides mean years of education for men and women in 1999 in the various age cohorts. It shows that the older age cohorts (both male and female) have less education on average than the younger age cohorts, indicating that levels of education have been rising in South Africa over time[9]. Average years of education among women have increased faster and from a lower base than among men, such that younger women may even be slightly more educated than younger men.

Table 4: Mean years of education by age cohort and gender in 1999

Age cohort	Men	Women	African Men	African Women
15-19	7.8	8.4	7.5	8.1
20-24	9.7	10.0	9.4	9.7
25-29	9.6	9.6	9.2	9.3
30-34	9.0	8.8	8.5	8.3
35-39	8.5	8.1	7.7	7.5
40-44	7.8	7.2	6.8	6.2
45-49	7.3	6.8	5.9	5.4
50-54	7.1	6.6	5.4	5.0
55-59	6.5	5.6	4.6	4.1
60-64	5.9	4.8	3.6	3.4

(Source: OHS 1999)

[8] This trend may be offset however if a decrease in the number of children is associated with an increase in investment in children (Mlatsheni and Leibbrandt, 2001; Lam and Duryea, 1998).

[9] Men and women in the younger age cohorts may still be acquiring education, accounting for the lower average years of education among 15 to 19 year-olds.

Table 5 compares female labour force participation rates across different levels of education in 1995 and 1999 for those women who had completed their education. As expected, in each year both strict and broad labour force participation rates are higher among women with more education than among women with less education. However, the table shows also that between 1995 and 1999, labour force participation rates have been rising across all educational levels. Even among women with little or no education, an increasing proportion was reported as being economically active in 1999.

Table 5: Female Labour Force Participation Rates by Education Level

	1995				**1999**			
	All Women		African Women		All Women		African Women	
	Strict	Broad	Strict	Broad	Strict	Broad	Strict	Broad
None	33.1	47.6	32.8	48.1	41.3	59.4	40.6	59.5
Gr.1-7	43.9	59.5	43.2	60.4	51.5	73.0	51.2	74.3
Gr. 8- 11	51.8	66.5	51.2	70.0	60.7	81.7	60.4	85.3
Matric	65.8	76.7	63.3	82.4	72.6	87.9	69.6	93.5
Degree/diploma	84.2	86.3	89.6	92.9	87.2	91.1	91.0	97.3

(source: OHS 1995, OHS 1999)

That more women at all levels of education are entering the labour market (and despite the rising probability of not being able to find regular employment) suggests that there may be changes on the supply-side that are pushing, rather than pulling, women into the labour market. One broad change in particular is a fall in women's access to resources outside the labour market. We consider some of the factors that could be causing this decline in resources below.

ii) Changes within the household

Between 1995 and 1999, a decreasing proportion of women lived with employed men. In 1995 the percentage of all females between the ages of 15 and 59 years living with at least one employed male of working age in the household was 54 percent; in 1999 this had fallen to 45 percent (Table 6). [10]

Table 6: Proportion of women living with at least one employed male

	1995	**1999**
All women of working age	54.2	45.2
African women of working age	47.8	36.9

(source: OHS 1995, OHS 1999)

This finding can be attributed readily to the dramatic increase in the number of unemployed men in the economy over this period. According to the broad definition of unemployment, in 1999 there were approximately 1.1 million more unemployed

[10] From here on women of working age are defined as those between the ages of 15 and 59 years, while for men the working age range is 15 to 64 years. Although Stats SA uses 15 to 65 years for both men and women, we use these slightly different definitions for the sake of comparability with the econometric analysis in which we wish to isolate the effect of the state pension.

males than in 1995. As unemployment rates for men have been growing, there has been a fall in the average number of employed men of working age per household, and for African households in particular (Table 7). When women are living with men, therefore, it is less likely that these men will have employment. This erosion in the household's resource base, as well as increasing job and income insecurity associated with rising levels of unemployment, are likely to place increased pressure on women to earn or generate an income.

Table 7: Average number of employed men (15-64) per household

	1995	**1999**
All households	0.67	0.55
African households	0.62	0.47

(source: OHS 1995, OHS 1999)

However, the decrease in the proportion of women living with employed men is explained not only by an increase in male unemployment. It reflects also a fall in the proportion of women who are living with men (any men) (Table 8).[11] In 1995 some 83 percent of women between the ages of 15 and 59 years were living with at least one male of working age in their household. By 1999 this had fallen to approximately 77 percent. An important factor accounting for this change in women's co-residence with men is a decrease in the proportion of females who were married over this period. Table 9 shows that the percentage of all women of working age who were married fell from 38.7 percent in 1995 to 34.5 percent in 1995. This decline was observed across all the age cohorts, but was largest among women between the ages of 25 and 34 years.

Table 8: Proportion of working age women living with at least one man

	1995		**1999**	
At least one man:	All Women	African Women	All Women	African Women
over the age of 15	85.3	83.7	79.5	76.7
of working age (15-64)	82.8	81.1	77.2	74.3

(source: OHS 1995, OHS 1999)

Table 9: Proportion of women in each age cohort who are married

	1995		**1999**	
	All Women	African Women	All Women	African Women
15-24	7.7	6.0	6.3	5.4
25-34	43.5	37.1	38.1	32.2
35-44	64.3	59.2	58.0	52.8
45-54	66.5	61.6	60.6	53.6
55-59	61.2	57.4	57.0	53.2
Average	38.7	33.2	34.5	29.4

(source: OHS 1995, OHS 1999)

[11] These descriptive statistics do not include all migrant household members. The OHSs only collect information in the household roster on an individual 'who normally resides at least four nights a week' in the household.

We do not examine comprehensively here why proportionately fewer women are married in 1999 than in 1995. However, an important change seems to be that an increasing proportion of women are 'choosing' to remain unmarried and are rather living with men or are not forming any permanent attachments with men. The OHS data show an increase across all the age cohorts of the proportion of women who are either living together with a partner or who have never been married.

The decrease in marital rates has also paralleled an increase in the proportion of all households headed by women. This trend has been documented in earlier work (Posel and Todes, 1995) and has continued into the latter half of the 1990s. The OHSs show that the percentage of household heads between the ages of 15 and 59 years who are female increased from 26 percent in 1995 to approximately 32 percent in 1999. African households are more likely than other households to be headed by females. In 1999, some 37 percent of all African households reported a female head. Most female household heads are not married or living with a partner: in both 1995 and 1999, more than sixty percent of women reported as household heads were either widowed, divorced or never married.

Table 10 shows that labour force participation rates, both strict and broad, are significantly higher among women who are not married than among women who are[12]. According to the broad rate, only 56.7 percent of all married women were economically active in 1995, compared to 69 percent of women who had been previously married (i.e. divorced, separated or widowed) and 71 percent of all women who had never been married. In 1999, a similar pattern emerges.

Table 10: Female Labour Force Participation Rates (25-59) by Marital Status

	1995				**1999**			
	All Women		African Women		All Women		African Women	
	Strict	Broad	Strict	Broad	Strict	Broad	Strict	Broad
Married	47.8	56.7	44.8	57.2	56.4	70.7	53.2	72.7
Previously married	59.9	69.0	59.1	70.5	65.0	75.6	64.0	76.4
Never married	54.2	71.1	51.5	70.1	65.9	85.0	63.9	84.8
Living together	49.3	60.5	46.0	58.6	60.8	80.4	58.4	81.0
Average	51.0	62.3	48.7	63.2	60.7	76.5	58.8	78.3

(source: OHS 1995, OHS 1999)

Not only are labour force participation rates higher among married women than among unmarried women, but they have also increased across all types of marital status. The increase in the labour supply of married women in particular may be partly reflecting that women are less likely to be married to men with employment. This argument may also apply to women who are living together with men, although it would not account for the considerably larger increase in the labour force participation rate of women living with, but not married to, their partners.

Clearly, the reasons for an increase in female labour force participation rates cannot be explained by identifying only one set of changes at a time. In the next section, we test more rigorously, and in a multivariate context, the determinants of

[12] The analysis in Table 10 is restricted to women between the ages of 25 and 59. This is to reduce the downward bias that would occur in participation rates for women who have never married, if a large number of individuals in the age cohort 15-24 who are still engaged in schooling were included.

female labour supply in 1995 and 1999. In the final part of the paper, we use decomposition analysis to try and understand which determinants were predominantly responsible for the increase in women's economic activity between the years.

4. ESTIMATING PARTICIPATION

a) The Model

We estimate separate labour force participation equations for women for 1995 and 1999. The sample for the estimations is restricted to African women between the ages of 15 and 59 years. Women qualify for a state pension from the age of sixty onwards and so theoretically should not be considered part of the working age population. We have also excluded[13] from the sample those 15 to 59 year old women who classified themselves as still being in education, retired or permanently disabled[14]. This leaves a sample of women in each year who were either working or wanting to work, or not working and not wanting to work. The majority of those women who were not working and not wanting to work classified themselves as homemakers. By restricting the sample in this manner we seek to explore specifically the decision by women of whether or not to move out of the household and into the labour market[15].

To test the determinants of female labour force participation we use a probit model that takes the following form:

$$\Pr(y_{it} = 1 \mid X_{it}) = \Phi(\alpha, X_{it}) \qquad (1)$$

where X_{it} is a vector of observed characteristics for individual i in period t, y_{it} is a binary categorical variable which takes the value 1 if the individual is a participant, and Φ is the standard cumulative normal distribution. X_{it} consists of the 'standard' set of explanatory variables used in participation equations estimated for South Africa (Bhorat and Leibbrandt, 2001; Mlatsheni and Leibbrandt, 2001), but with some variations discussed below. Identical equations for the two years are necessary to carry out the decomposition analysis, and as such, our choice of variables and the ways in which they are defined were restricted by the availability of comparable data for 1995 and 1999.

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[13] A small number of women placed themselves in the category 'other'. These women have been excluded as well.

[14] These individuals are not really *potential* labour market participants and the factors affecting their decision not to participate are quite specific and different to the ones that we are interested in here. It is possible that some young adults are only staying in education because they perceive employment opportunities in the labour market to be quite dismal and if conditions were to improve they would start looking for work. However, as Bhorat and Leibbrandt (2001: 115) point out "given South Africa's high repetition rates and educational backlogs, the routine school-leaving age is also well above sixteen years".

[15] One could also argue that those women who reported themselves as retired are choosing not to move into the labour market but rather to stay within the household, and that they could re-enter at some point. One of the most important determinants of early retirement though is other unearned income in the household, which is not available in the 1995 OHS. In any case, these individuals make up only a small percentage of the inactive female population.

The individual characteristics in the regressions included a set of age dummies, a set of educational level dummies, and a dummy equal to one if the woman was married. The equations also contain a set of locational variables made up of provincial dummies and a variable equal to one if the woman lived in an urban area. The remaining variables take into account household composition and income. We capture household composition by including the number of children under seven years of age, the number of children between the ages of seven and fourteen, the number of men of working age (15-64 years), the number of women of working age (15-59 years), the number of men over the age of 64 years and the number of women over the age of 59 years in the household. These last two variables also provide a proxy for pension income. Unfortunately disaggregated data on all sources of unearned income are not available in both the 1995 and the 1999 OHSs.

The income data in the OHSs are particularly problematic. Not all respondents reported an absolute income figure and these missing values had to be substituted with the mid-point of their income bracket if this was available, introducing possible measurement error. In addition, in 1999 Stats SA only asked for the gross income of the self-employed and not for their expenses. Rather than excluding household income altogether from the equations, we include other wage income in the household and other gross self-employment income in the household separately in the regressions. The inclusion of gross income generated through self-employment assumes that the ratio of gross income to expenses is the same across all types of self-employment. The most we could do in the face of limited data was to enter other gross self-employment income in the household as two variables in the regressions, one for informal self-employment and one for formal self-employment. The regressions also contain the square of each income variable.[16]

Another qualification that needs to be made, and that has generally been underplayed in the literature, is the problem of endogeneity in the labour supply decision. For example, we would expect that women who are not married are more likely than married women to participate in the labour market. But, it is also possible that women who participate in the labour market are less likely to be married. Including 'other household income' in the regressions does not really address the problem adequately. Women may enter the labour market because other household income is low; but it seems equally plausible to argue that because women are in the labour market, this acts as a disincentive for other people in the household to be in the labour market, and therefore household income is low. Another potential source of endogeneity lies with household size and composition: we could argue that women who live in certain households are more likely to participate but we could equally argue that because women participate in the labour market they are more likely to live in certain kinds of households. This might be particularly problematic for African

[16] We had to drop from our sample in both years any household whose members had missing age, gender or income information. The income data, as expected, had the greatest number of missing values, and there were also a significantly larger number of missing income values in 1999 than in 1995. This would only bias the results if those with missing income data have a certain set of characteristics that is not representative of the sample as a whole, for example, if they are all from low income families. This did not seem to be the case, however. An examination of the occupational distribution of these individuals found that they were well spread out across the different occupational levels. Nonetheless, this needs to be investigated further and the potential bias needs to be kept in mind when considering the results.

households where other relatives or individuals not related to the household members, join the household if it contains an employed individual.

The effect of endogeneity is that the estimators obtained will be biased and inconsistent. Nonetheless, there is little we can do to address this concern because we cannot identify any independent variables in the data with which to instrument for endogenous variables that are not already part of the participation equation.

b) The Results

The results of the estimations are presented in Table 11 below. We have run the regressions for both the strict and the broad rates of economic activity, taking into account clustering and weighting of the sample[17]. For the dummy variables in the regressions, the omitted categories are 15-24 years, rural, not married, no schooling and living in the Western Cape[18].

In the strict participation regressions, all the coefficients on the age dummy variables are positive and significant in both 1995 and 1999, suggesting that the probability of either working or actively searching for work is greater for all the age cohorts compared to the youngest age cohort (15-24 years). In the broad participation regression for 1995, similar results are obtained except that the coefficient on the oldest age cohort (54-59 years) is no longer significant and has the opposite sign. In 1999 only the coefficients on the two youngest age cohorts are positive and significant, while those on the dummies 45-54 years and 54-59 years are negative and significant. Bhorat and Leibbrandt (2001: 118) make the following observation on their results using the 1995 data: "the fact that this (positive) age effect strengthens with a move to the narrow definition of unemployment is alarming, as it suggests that a significant proportion of the youth cohort are discouraged work-seekers." The negative coefficients on the two oldest age cohorts in 1999 (compared to just the oldest in 1995) would support this further, as it perhaps highlights the effects of high and sustained unemployment rates over a long period in South Africa.

For both years and for both the strict and broad definition of economic activity, the coefficients on the four education dummies are positive and highly significant as expected, pointing to the important role of education in determining whether or not a woman is a labour market participant. Furthermore, the likelihood of participation increases as completed levels of education increase.

Marital status is also an important determinant of the probability that women will be working or wanting to work. In all four regressions, the coefficient on the married dummy is negative and highly significant. We also ran another set of regressions, with a group of disaggregated marital status dummies for those women who had never married, those who had been previously married, and those who were living together with a partner. We chose not to use this specification for further analysis, because of multicollinearity between the set of marital status variables, the age dummies and the variable 'number of adult men in the household'. But the results for this disaggregation are worth mentioning.

[17] We have not accounted for stratification here as it is not clear how the sample was stratified in 1995. Accounting for stratification does not affect the point estimates though, and usually results in smaller standard errors, so we have produced conservative estimates of significance here.

[18] A table of the mean values and standard errors of the variables is included in the Appendix.

Table 11: Strict and Broad female participation regressions for 1995 and 1999

	Strict Participation		Broad Participation	
	1995	**1999**	**1995**	**1999**
25-34	0.33077 * (9.54)	0.35758 * (10.37)	0.30106 * (8.20)	0.23287 * (5.01)
35-44	0.54081 * (13.57)	0.59406 * (15.41)	0.35153 * (8.90)	0.27504 * (5.53)
45-54	0.51330 * (11.50)	0.44745 * (10.36)	0.18415 * (4.13)	-0.10513 *** (1.89)
55-59	0.40100 * (6.48)	0.21939 * (3.57)	-0.06044 (0.98)	-0.52423 * (7.60)
Gr 1-Gr7	0.14390* (3.90)	0.18767 * (4.58)	0.11133 * (2.90)	0.22011 * (5.09)
Gr 8-Gr11	0.22958* (5.68)	0.31107 * (7.19)	0.23542 * (5.59)	0.40409 * (8.51)
Matric	0.56790* (10.82)	0.52669 * (9.97)	0.60811 * (10.86)	0.71233 * (10.24)
Diploma/degree	1.49879* (17.17)	1.34357 * (16.54)	1.25953 * (12.62)	1.60100 * (9.19)
Married	-0.33706 * (11.92)	-0.32200 * (11.35)	-0.47228 * (15.91)	-0.51137 * (14.77)
No. children under 7	-0.07046 * (5.62)	-0.08873 * (6.11)	-0.05166 * (3.99)	-0.09419 * (6.05)
No. children 7-14	-0.02472 * (2.27)	-0.04645 * (3.77)	-0.01582 (1.41)	-0.01131 (0.80)
No. men 15-64	-0.04695 * (4.12)	-0.02828 ** (2.12)	-0.02962 * (2.54)	-0.02379 (1.57)
No. women 15-59	0.00783 ** (0.63)	0.04160 * (3.14)	0.05716 * (4.42)	0.05136 * (3.10)
No. men over 64	-0.19159 * (4.27)	-0.17917 * (3.25)	-0.17012 * (3.71)	-0.15109 * (2.54)
No. women over 59	-0.08307 * (2.45)	-0.14091 * (3.47)	0.01012 (0.29)	0.10708 ** (2.04)
Wage income	-0.00002 (1.36)	6.45e-06 (1.63)	-0.00010 * (4.83)	-0.00002 ** (2.25)
(Wage income)²	1.41e-09 (0.78)	-3.91e-12 (0.76)	6.46e-09 ** (2.25)	1.34e-10 *** (1.70)
Income from informal s/e	-0.00001 (0.66)	0.00003 (0.96)	-0.00002 (1.11)	-0.00001 (0.38)
(Income from informal s/e)²	2.31e-10 (0.37)	-6.29e-10 (0.89)	1.19e-10 (0.19)	-1.30e-10 (0.21)
Income from formal s/e	-0.00002 (1.53)	6.77e-06 (0.28)	-0.00004 *** (1.86)	-0.00006 *** (1.81)
(Income from formal s/e)²	8.27e-10* (2.09)	-1.05e-10 (0.15)	1.20e-09 (1.50)	1.62e-09 (1.19)
Urban	0.30581 * (8.76)	0.33876 * (8.83)	0.40373 * (10.43)	0.41262 * (9.74)
Constant	-0.08616 (0.90)	-0.02458 (0.24)	0.46118 * (4.11)	0.56600 * (4.65)
No. of observations	18991	16694	18991	16694
Predicted probability	0.52905	0.60737	0.71048	0.85485
Observed probability	0.52887	0.60721	0.71082	0.85494

Absolute t-statistics are shown in brackets.
* significant at the 1 percent level
** significant at the 5 percent level
*** significant at the 10 percent level

We found, as in the descriptive statistics, that in both years those who had been previously married and those who had never married were significantly more likely to participate relative to married women. In 1995, there was no significant difference in the likelihood that a woman living with a partner, relative to a married woman, would supply labour, but this was not the case in 1999. We do not have a rigorous explanation for why women living together with men are (now) making different labour market decisions relative to married women. Intra-household resource allocations may have changed, and may be different in households where partners are married compared to households where they are not. But it may also be that those women who are living with their partners are also those women who are more likely to be working or wanting to work, raising again the complication of endogeneity for the interpretation of the results.

In their study of labour force participation, Bhorat and Leibbrandt (2001: 119) report that "it is clearly established that the greater the number of children under the age of seven or between the ages of eight and fifteen, the less the probability of their (women's) participation in the labour market". We find this to be the case for the number of children under the age of seven years in 1995 and 1999, and for both definitions of economic activity. However, we find that while the number of children between the ages of 7 and 14 years have a negative and significant effect on strict participation, for the broad definition the number of these children has no effect on participation in both years (and particularly in 1999). This would suggest that children between the ages of 7 and 14 years only act as a constraint on *active* job search. [19]

As expected the number of men of working age has a negative effect on a woman's probability of participating in the labour force, according to both the strict and broad definitions. Significance levels in 1999, however, are not as strong as in 1995; in the strict participation regression the coefficient is significant at the 5 percent level and for the broad participation regression it is significant at just over the 10 percent level. This may be caused by multicollinearity with the marital status variable – when we exclude the married dummy, the significance improves to well below the one percent level.[20] The number of women of working age in the household has a positive effect on both strict and broad female participation in 1995 and 1999. This might be because some adult women in the household are engaged in home production, freeing up the time of other female adults to work or search for work. Where other women in the household have employment, then our findings would also be consistent with the argument that social networks reduce women's barriers to entry into the labour market (Wittenberg, 1999). [21]

For both the strict and broad definitions of economic activity in 1995 and 1999, the number of men over the age of 64 years significantly decreases a woman's probability of participating in the labour market. This is in all likelihood highlighting

[19] As noted earlier, an important qualification is that we cannot establish biological ties between women and children within a household from the OHS data. It may be that one's own-children have a different effect on the labour supply decision than do the children of others.

[20] We also tried to include a dummy variable equal to one if the woman was the head of her household. The coefficient on this dummy was positive and significant but similar problems of multicollinearity were encountered and so it was decided to exclude this variable from the regressions.

[21] Unfortunately we couldn't disaggregate these variables further into the number of employed and unemployed or inactive males and females in the household to test the effect of male income support in particular on participation, because of the collinearity between the number of employed males and females and the other household income variables.

the importance of the social pension in African households. The number of female pensioners in the household (women of 60 years and older) has a negative and significant effect on a woman's decision to work or actively look for work in both years. But when discouraged work-seekers are included as participants, female pensioners have no effect on female labour supply in 1995 and a positive and significant effect in 1999. We can think of no obvious reason for why women are more likely to discouraged, and in 1999 specifically, when they live with female pensioners.

Conventionally, other household income is expected to act as a deterrent on individual female labour supply, with the square of income showing a positive effect, indicating that as income increases its effect is dampened. These findings are reported by Bhorat and Leibbrandt (2001:121) for example, in their study of participation in 1995: "the greater the value of other household income available to an individual, male or female, in a household, the more likely it is to reduce the probability of their participation in the labour market. In other words, access to income within a household is an important determinant in an individual's decision to participate". Bhorat and Leibbrandt's results hold for both the strict and the broad definition using wage income and net self-employment income combined. In our regressions, where we enter these variables separately, we would expect that wage income would have a stronger disincentive effect than self-employed income, and particularly income from informal self-employment, because of the difference in the variability and security of these different types of income[22].

Our results, however, are not all as anticipated. In both 1995 and 1999, other household wage income and other household income from formal self-employment have a negative and significant effect in the *broad* female participation regressions (with the latter variable having a less strong effect). In the strict participation regressions, wage income is negative but not significantly different from zero in 1995, and positive and (very) weakly significant in 1999. It is possible that income loses significance and influence because of measurement error and 'noise' in these data in particular[23], although this would not explain why these same variables then prove significant across both years in the regressions on broad participation. It may also be that other household income has counteracting influences on the labour supply decisions of women. Women are less likely to be working when there is more income in the household, but among women who want to work, other household income may facilitate *actively* looking for employment.

[22] Mlatsheni and Leibbrandt (2001) find the opposite relationship: participation increases when other household income increases. This could be reflecting the effect of social networks (Wittenberg, 1999) or of income available to finance job searching (Kingdon and Knight, 2000). (which K&K? –need to reference)

[23] We also tried to proxy for income using household composition variables. The number of employed, unemployed and inactive males and females in the household were included as variables, but proved to be no better at predicting participation. The direction and significance of the signs were also not robust to changes in the specification. This is probably due, once again, to the problem of (non-linear) multicollinearity between this set of variables as well as with variables such as marital status. Another possible reason for these results is the problem of endogeneity. For example, we would expect the number of unemployed males in a household to positively affect a woman's decision to participate in the labour market, but the number of unemployed males in the household could also be affected by the presence of a female labour market participant.

The final set of variables included in the estimation regressions capture the effect of location and region on women's labour supply decisions. Not surprisingly, we find that the probability of labour force participation is positively and significantly affected by whether a woman lives in an urban area. There are also strong differences across the provinces, although we have not reported these results in Table 11. The coefficients on the group of province controls indicate a number of changes between the years and between the strict and broad rates of participation, but no discernible pattern emerges. It is likely that these controls are picking up changes in infrastructure making it easier for inhabitants of certain provinces to search for work; as well as changing wage opportunities across the provinces, but we do not explore this further.

5. DECOMPOSING THE CHANGE IN PARTICIPATION

a) The Method

Having estimated the participation equations for 1995 and 1999, we now investigate what is driving the change over the years. Using the standard method of decomposition of a probit model outlined below (Even and Macpherson, 1993; Gomulka and Stern, 1990), we decompose the increase in labour force participation into the change associated with changes in the observed characteristics of the population, and that caused by changes in the model, i.e. the estimated coefficients. Using the notation from Equation 1 above, the predicted change in participation between 1995 (period 0) and 1999 (period 1) is computed as follows:

$$\Delta\hat{y} = \hat{y}_1 - \hat{y}_0 = \overline{P}(\hat{\alpha}_1, X_1) - \overline{P}(\hat{\alpha}_0, X_0) \qquad (2)$$

Using the year 1995 as the reference group and with $\overline{P}(\hat{\alpha}_t, X_t)$ representing the average across the sample X_t of the predicted probabilities using the estimated coefficients $\hat{\alpha}_t$, the following is obtained:

$$\hat{y}_1 - \hat{y}_0 = \{\overline{P}(\hat{\alpha}_1, X_1) - \overline{P}(\hat{\alpha}_0, X_1)\} + \{\overline{P}(\hat{\alpha}_0, X_1) - \overline{P}(\hat{\alpha}_0, X_0)\} \qquad (3)$$

The first term on the right-hand side of Equation 3 represents the change that arises due to the changing coefficients, i.e. the change in participation that occurs if the sample is held constant and only the estimated coefficients change from period 0 to 1 values. The second term describes the change arising from the changing characteristics of the population, i.e. the change in participation that occurs if the coefficients are held constant and only the sample's characteristics change from period 0 to 1 values.

b) Results

We have chosen to decompose only the strict labour force participation regressions here as we are interested primarily in what has pushed women into entering the labour market and into actively searching for work. The results from the decomposition analysis of the strict participation regression are presented in Table 12 below.

Table 12: Decomposition of the total change in strict participation

	Reference group			
	1995		**1999**	
	Absolute	%	Absolute	%
Change due to the coefficients	6.0	76.4	6.2	79.3
Change due to the characteristics	1.8	23.6	1.6	20.7
Total change	**7.8**	**100**	**7.8**	**100**

The results seem to suggest that it is predominantly the change due to the coefficients that is driving the overall growth in female labour force participation between 1995 and 1999. The change in the coefficients is responsible for 76.4 percent of the total increase using 1995 as the reference group, and 79.3 percent using 1999 as the reference group. In other words, it is the change "in the function describing the underlying relation" that is contributing the most to the increase in participation (Gomulka and Stern, 1990: 173). Women in 1999 are more likely to participate in the labour market than women in 1995 with the same characteristics.

Having found that the change in the coefficients is responsible for most of the overall change in participation, it would be useful to explore which coefficients, or groups of coefficients, carry the greatest weight in the decomposition. Formally, this involves decomposing further the first term on the right-hand side of Equation 3 as follows:

$$\overline{P}(\hat{\alpha}_1, X_1) - \overline{P}(\hat{\alpha}_0, X_1) = \{\overline{P}(\hat{\alpha}_1, X_1) - \overline{P}(\hat{\alpha}_{h1}, X_1)\} + \{\overline{P}(\hat{\alpha}_{h1}, X_1) - \overline{P}(\hat{\alpha}_0, X_1)\} \qquad (4)$$

where $\hat{\alpha}_{h1}$ represents the vector of estimated coefficients containing all the coefficients from year 1 except for those of group *h* where the year 0 coefficients are used (Gomulka and Stern, 1990) Practically, the estimation requires calculating the mean of the predicted probabilities using the sample for the one year with its associated estimated coefficients, except for those on the variable or groups of variables of interest, which take on the value of the estimated coefficient/s associated with the other year under review.[24] The results for this decomposition are shown in Table 13 below.

[24] The results from this decomposition should not be given the same legitimacy as that of the overall decomposition (see Gomulka and Stern, 1990: 175).

Table 13: Decomposition of the change in coefficients

	Reference group			
	1995		1999	
Change due to:	Absolute	%	Absolute	%
Age dummies	0.2	3.3	0.2	3.2
Education dummies	1.2	20.0	1.2	19.4
Married	0.2	3.3	0.2	3.2
No. of children	-1.5	-25.0	-1.5	-24.4
No. of males (15-64)	0.8	13.3	1.0	16.1
No. of females (15-59)	2.5	41.7	2.6	41.9
No. of pensioners	-0.3	-5.0	-0.3	-4.8
Other household income	0.7	11.7	0.9	14.5
Urban	0.5	8.3	0.5	8.1
Province	-0.3	-5.0	-1.0	-16.1
Constant	2.0	33.3	2.2	35.5
Total change	**6.0**	**100**	**6.2**	**100***

* These figures do not add up exactly to the totals due to rounding errors

Excluding the effect of the constant, those variables that had the highest positive contribution to the change in structure are the number of females of working age in the sample, the educational level dummies, the number of males of working age and other household income, in that order. The change in the structure in relation to the educational variables suggests that women are not simply more educated on average in 1999 compared to 1995, but that women in 1999 are more likely than equally educated women in 1995 to enter the labour market. This seems plausible in the environment of the latter half of the 1990s in South Africa, in which policies such as affirmative action would be expected to raise women's perceptions of employment opportunities.

Similarly, even if the number of males in the household had not been decreasing, the way in which the presence of males of working age in the household relates to female participation has changed. Perhaps with the increase in male unemployment there is less security attached to having an adult male in the household. The same could be said of other household income, but it would be unwise to place too much emphasis on these variables because of the possibility of large measurement errors in the data.

While the large contribution of education, male household members and even other household income to the change in female labour supply would be expected in light of the descriptive statistics of Section 3, the large structural effect of the number of females in the household on women's participation is perhaps surprising. It is not clear what this result is picking up, making it difficult to assign a particular change in the structure of participation to this variable. It could be that subsumed within these estimated coefficients are changes in social norms that might increase women's participation in the labour market. More generally, as Gomulka and Stern (1990: 172) point out, part of the overall change could also be "due to other factors which are not included in our specification and are reflected in our models through changes in their coefficients. These changes may be associated with any aspects of behaviour or the

environment, economic or otherwise, that we have not been able to capture adequately in our model." [25]

6. CONCLUDING COMMENTS

We have shown for the period 1995 to 1999 that female labour force participation rates increased in South Africa. This increase in female labour supply, however, was not coupled with any substantial increase in the demand for female labour. As a result, unemployment rates increased rapidly over the period. Also, the comparatively small rise in employment captured in the October Household Survey data derives primarily from an increase in self-employment in the informal sector, an activity usually associated with low earnings and little security.

In light of this, it is unlikely that the increase in female labour force participation over the period has been driven by an increase in the demand for female labour. In this paper, we therefore explored the likely determinants of the increase in participation by focussing particularly on factors on the supply-side of the labour market. Some of the possible determinants highlighted in our descriptive analysis were the increasing levels of education among women over the period, the decline in the number of married women, and the fall in the proportion of women living with men in the household (and employed men in particular), the latter two changes being suggestive of a fall in women's traditional forms of income support within the household.

While a number of problems were encountered when attempting to test the determinants of labour supply more rigourously using a probit analysis, the data nonetheless produce generally sensible results. Women who are more educated, not married, not living with adult men either of working or pension age, and located in urban areas, are more likely to participate in the labour market. The decomposition analysis, however, showed that it is not simply the average characteristics of women (and the households in which they live) that have changed, but also that there has been a change in the way the probability of female labour force participation is determined. The variables found to be capturing most of the change in the underlying structure of participation were the number of men and women of working age in the household, the education levels of women and other income in the household. One of the main problems limiting the interpretation of our findings, however, is measurement error, particularly in the data for income. It is possible that our results reflect not only real changes but also the noise induced by the quality and comparability of the data over the two years under review.

[25] The large contribution of the coefficient on the constant term might also be a product of this.

APPENDIX

Means/Proportions and Standard Errors of the Variables in the Probit[a]

	1995		1999	
	Mean/Prop	**Std error**	**Mean/Prop**	**Std error**
25-34	0.368	0.0044	0.367	0.0044
35-44	0.267	0.0040	0.249	0.0038
45-54	0.140	0.0027	0.130	0.0027
55-59	0.043	0.0016	0.046	0.0018
Gr 1-Gr7	0.316	0.0057	0.318	0.0050
Gr 8-Gr11	0.346	0.0057	0.346	0.0051
Matric	0.139	0.0041	0.170	0.0042
Diploma/degree	0.059	0.0033	0.053	0.0027
Married	0.448	0.0058	0.381	0.0056
No. children under 7	0.958	0.0157	0.980	0.0168
No. children 7-14	1.109	0.0158	1.130	0.0196
No. men 15-64	1.435	0.0157	1.228	0.0155
No. women 15-59	2.207	0.0204	2.085	0.0220
No. men over 64	0.090	0.0035	0.075	0.0036
No. women over 59	0.184	0.0054	0.1627	0.0049
Wage income [b]	1823.53	44.5707	2817.054	299.855
Wage income sq	6714172	437531	4.182e+08	2.23e+07
Income from informal s/e	1039.73	109.3137	1755.642	342.7433
Income from informal s/e sq	4215693	1170607	23521357	1.48e+07
Income from formal s/e	3468.88	3449.725	16474.66	6454.294
Income from formal s/e sq	27341275	3.84e+07	3.369e+0.8	1.34e+08
Urban	0.433	0.0135	0.498	0.0056
Eastern Cape	0.154	0.0077	0.151	0.0086
Northern Cape	0.010	0.0017	0.009	0.0013
Free State	0.077	0.0053	0.075	0.0056
KwaZulu-Natal	0.228	0.0110	0.225	0.0118
North West	0.102	0.0075	0.099	0.0067
Gauteng	0.201	0.0137	0.185	0.0106
Mpumalanga	0.080	0.0059	0.082	0.0059
Northern Province	0.115	0.0078	0.139	0.0087

a Weighting and clustering taken into account.
b For the income variables the mean of all non-zero values is shown.

REFERENCES

Bakker, I (1988) 'Women's Employment in Comparative Perspective", in J. Jenson, E Hagen and C Reddy (eds) *Feminization of the Labour Force. Paradoxes and Promises.* Oxford: Polity Press.

Bhorat, H (1999) 'The October Household Survey, Unemployment and the Informal Sector: A Note', *The South African Journal of Economics*, 67(2), 320-326.

Bhorat, H and Leibbrandt, M. (2001) 'Correlates of Vulnerability in the South African Labour Market', in H Bhorat, M Leibbrandt, M Maziya, S van der Berg, and I Woolard, *Fighting Poverty. Labour Markets and Inequality in South Africa*. Cape Town: UCT Press.

Casale, D and Posel, D. (2001) 'The Continued Feminisation of the Labour Force in South Africa: An Analysis of Recent Data and Trends', Paper presented at the Economics Society of South Africa Jubilee Conference, Johannesburg.

Cagatay, N and Ozler, S. (1995) 'Feminization of the Labor Force: The Effects of Long-Term Development and Structural Adjustment', *World Development*, 23(11), 1883 – 1894.

Chen, M; Sebstad, J and O'Connell, L. (1999) 'Counting the Invisible Workforce: The Case of Homebased Workers', *World Development*, 27(3), 603-610.

Even, W.E and Macpherson, D.A. (1993) 'The Decline of Private-Sector Unionisn and the Gender Wage Gap', *The Journal of Human Resources*, 28(2), 279-296.

Gomulka, J and Stern, S. (1990) 'The Employment of Married Women in the United Kingdom 1970-83', *Economica*, 57, 171-199.

Kingdon, G. and Knight, J. (2000) 'Unemployment in South Africa: the nature of the beast', Paper presented at the TIPS Annual Forum, Johannesburg.

Lam, D. & Duryea, S. (1998). 'Effects of Schooling on Fertility, Labour Supply, and Investments in Children, with Evidence from Brazil'. *The Journal of Human Resources,* 34(1), 160-92.

Mehra, R and Gammage, S. (1999) 'Trends, Countertrends, and Gaps in Women's Employment', *World Development*, 27(3), 533-550.

Mlatsheni, C and Leibbrandt, M (2001) 'The role of education and fertility in the participation and employment of African women in South Africa', Paper presented at The Sixth Annual Conference on Econometric Modelling for Africa, Pretoria

Orr, L (2001) 'Women's work and globalisation trends: the South African picture', *Agenda*, 48, 31-37.

Ozler, S. (2000) 'Export Orientation and Female Share of Employment: Evidence from Turkey', *World Development*, 28(7), 1239 - 1248.

Posel, D and Casale, D. (2001) 'Gender aggregates: women subsistence farmers affect the unemployment count', *Agenda*, 49, 82-88.

Posel, D and Todes, A. (1995) 'The Shift to Female Labour in KwaZulu-Natal', *The South African Journal of Economics*, 63(2), 225-246.

Skinner, V and Valodia, I (2001) 'Globalisation and women's work in South Africa: national and local approaches to economic transformation'. *Agenda*, 48, 75-89.

Standing, G, Sender, J. and Weeks, J. (1996) *Restructuring the Labour Market: the South African Challenge. An ILO Country Review.* International Labour Office. Geneva.

Standing, G. (1989) 'Global Feminization through Flexible Labour', *World Development*, 17(7), 1077-1095.

Standing, G. (1999) 'Global Feminization Through Flexible Labor: A Theme Revisited', *World Development*, 27(3), 583-602.

Statistics South Africa (2001a) 'Comparative labour statistics. Labour force survey: first round pilot February 2000'. Discussion paper 1, March.

Statistics South Africa (2001b) 'A survey of time use. How South African women and men spend their time.'

Wittenberg, M. (1999). 'Job Search and Household Structure in an Era of Mass Unemployment: A Semi-Parametric Analysis of the South African Labour Market', Working Paper, No. 22: South African Network for Economic Research, Potchefstroom.