Journal of Economic Policy and Management Issues

ISSN: 2958-6313 Volume 3, Issue 2, 2024, pp. 14-25

An empirical analysis of gender disparities in employment in South Africa: A Yun decomposition approach

S. Chivasa[1]
Great Zimbabwe University, Zimbabwe
Email: shynet.chivasa5@gmail.com

P. G. Kadenge
Great Zimbabwe University, Zimbabwe
Email: pkadenge@gmail.com

G. Makuyana
Great Zimbabwe University, Zimbabwe
Email: grkmakuyana@gmail.com

Keywords:

- Labor force participation
- Yun Decomposition
- South Africa

Abstract

South Africa, the economic giant of Southern Africa, is still struggling to eliminate gender labour market inequalities, especially the gender employment gap, despite efforts made by the post-Apartheid government. This study aims to analyse the sources of gender labour inequalities in the South African labour market concerning labour force participation and employment. The sources of gender labour market inequalities were analysed using the cross-sectional data from South African labour Market Dynamics, the probit regression, the Yun (2005) decomposition techniques and the inverse Mill's ratio to control for sample selection bias. The study focused on observable and measurable factors only. The study's results revealed that marital status, education, age and province of origin were the major drivers of the female employment gap of 0.688 and 0.0451. Females in South Africa were also found to be subjected to female employment discrimination with a perceived discrimination likelihood of 0.0766 and 0.106 when using expanded and strict definitions of unemployment respectively. More of the female employment gap was attributed to differences in individual characteristics.

1. Introduction

Since South Africa's independence from the Apartheid regime in 1994, the Southern African economic giant has been battling gender labour market inequalities concerning labour force participation and gender employment (Mehembe, 2021). The challenge of labour market inequalities is exacerbated by skills mismatch (StatsSA, 2021; Leibbrandt, Woolard, McEwen, and Koep, 2020). These inequalities have pushed females to undesirable poverty levels and are a hindrance to the achievement of sustainable development goals and efforts to fight gender poverty. This is because most household's income is from the labour activities.

The Affirmative Action Act of 1998 was adopted to address disparities in the labour market. The act was meant to accord the previously disadvantaged groups an opportunity to participate in the labour market by eliminating unfair discrimination of individuals, including females. The effectiveness of Affirmative Action in reducing inequalities was affected by resistance, especially from the previously advantaged groups who view affirmative action as discrimination (Sheptone and Wylie, 2024). This could explain the perpetual existence of labour market inequalities, especially the employment gap. Other than facing resistance, the beneficiaries of Affirmative Action are reluctant to embrace the opportunities provided by the policy, such as education. The beneficiaries are approaching the school with laxity, thereby curtailing their ability to acquire the much-needed skills needed to participate in the labour market (Matambo and Ndubusi, 2015).

[1] PhD Candidate (Corresponding Author)

Even though South Africa is faced with the presence of gender inequalities in the labour market, the post-Apartheid government has registered a significant milestone in promoting gender equity. Female labour force participation increased from 37% in 1990 to 52% in 2020 (World Bank, 2023). Employment has, however, assumed a negative trajectory, decreasing from 30% in 1990 to 23% in 2020 (World Bank, 2023). This means that though the policies managed to improve labour participation, they have however failed to push individuals into employment (Gouzouis, Constantine, and Ajefu, 2023). This development has left South Africa faced with gender labour market inequalities, especially the female employment gap, decades after the collapse of the Apartheid regime. Thus, the research aimed at analysing the sources of the female employment gap in the South African labour market and the extent to which the identified sources contribute to the female employment gap. The subsequent sections focus on the literature review, methodology, result analysis and conclusions.

2. Related Literature Review

The study is framed on various theories that explain gender labour market inequalities. These theories include human capital theories by Becker 1975 (Weiss, 2015), discrimination theories (Phelps, 1972), segmentation theory (Polachek, 1981) and social preference theories. Human capital theories assert that the stock of human capital endowment determines an individual's participation in the labour force and employment. The stock of capital includes education, experience and skills (both ex-ante and post-ante skills). Thus, individuals with a high stock of capital are likely to be labour force participants and be employed.

Social preference theories suggest that woman's decision to participate in the labour market is influenced by the extent to which they take up parenthood responsibilities (Polachek, 1981). This implies that women might prefer employment with a low parenthood penalty. The social theories also suggest that females with high spousal income are reluctant to take up employment as they maximise utility subject to family income (Killingworth and Heckman, 1986). Gender labour market gaps such as employment gaps are attributed to segmentation (Doeringer and Piore, 1985). Segmentation theories assume that individuals are assigned to different sectors by an invisible force and the choice of the sector by an individual is determined by job characteristics and an individual's detest of risk (Dickens and Lang, 1987).

Other than job characteristics, at times the gap is due to discrimination. Discrimination can be statistical (Phelps, 1972), which is due to prescriptive stereotype beliefs when individuals are discriminated against based on the average characteristics of the group they fall under. Taste discrimination presumes that employers have a distaste for hiring female employees (Watson, 2010).

From the theories discussed above, it can be inferred that the female employment gap could be a result of individual social circumstances, differences in human capital endowment, and discrimination.

The challenge of gender labour market disparities is not peculiar to South Africa only. It is a global challenge. The Malawi labour market is characterised by the under-representation of women in the formal labour market (Nsanja, 2022). Namibia, twenty-six (26) years after independence is still faced with a female employment gap. Chivasa (2018), using a case study, found that women were less likely to participate in the formal labour market in Zimbabwe. In Israel, Roberts and Shoer (2021) found female discrimination when placing employees in ranks. Young (2021), using logistic regression, found that women's employment discrimination is rampant in the USA, with race as the main basis for discrimination.

Previous studies on South Africa revealed a female employment gap in South Africa (Ntuli, 2007; Serumaga-Zake and Naude, 2003; Ntuli and Kwenda, 2020; Ntuli and Wittenberg, 2013). Though these scholars focused on gender labour market inequalities, time and scope have changed. Ntuli (2007) used the quantile to capture the gender wage gap in South Africa. Serumaga-Zake and Naude (2003) focused only on the North-West province and applied the probit regression. Ntuli and Kwenda (2020) concluded the presence of female employment and the wage gap, and they focused on the review of studies on gender labour market inequalities. Ntuli and Wittenberg (2013) used probit regression and their study focused on the determinants of labour force participation. Casale (2004) used descriptive statistics to evaluate the effect of increased female labour force participation on female employment. All these studies found that males were better placed in the South African labour market than females. The current study used a more recent cross-sectional data set (2020) and applied a probit regression and the Maximum Likelihood technique to analyse female labour market disparities in labour force participation and employment. The Yun Decomposition technique was used to identify the sources of the female employment gap.

3. Methods

The study analysed employment using the strict definition of unemployment and the expanded definition of unemployment. The labour market is heterogeneous to gender, race, colour ethnic and class differences. For this analysis, heterogeneity was observed for gender. Key employment terms were defined as per the International Labour Organisation (ILO) guidelines (ILO, 2008). Thus:

Employed - An individual is considered employed if he is between the ages of fifteen and sixty-five years and, during the survey period, worked for a wage or salary or ran any form of business either as an individual or in partnership with others.

Unemployed - The individual is considered unemployed if they have actively looked for employment or tried to start up a business in the four weeks before the survey was conducted. This individual should be within the working age.

The **strict definition** of unemployment refers to searching for unemployment. These are individuals who would have taken steps to look for employment or try to be self-employed in the week preceding the survey.

The **expanded or broad definition** of unemployment incorporates individuals who would have given up searching for employment over and above the unemployed.

The study utilised data from the StasSA's South Africa Labour Dynamic Survey 2020. The study sample was derived from individuals between 16 and 65 years who had full economic information on the study variables. The estimation techniques used were the probit regression to analyse the gender labour force participation and employment. The Yun (2005) decomposition technique was used to assess the gender employment gap. The technique was appropriate as it counters the problem of non-linearity, which was countered by the usage of the Maximum likelihood Estimation (MLE) technique, while bootstrapping was used to counter the problem of inflated instrumental variables (Solberg, Brown, and Rutemiller, n.d). Labour force participation and employment are qualitative variables and dummies were used as (1) if one is a labour force participant and (0) otherwise. For employment, the dummy variables were used with (1) if one was employed and (0) otherwise.

The estimated labour force probit function was:

$$f(y_{iz}|X_{iz}),\beta = PrP[y_{iz}|X_{iz}^{I} * \beta] = \Phi\left[(y_{iz} - 1) * X_{iz\beta j}^{I}\right] \dots\dots\dots\dots (1)$$

$$where\ y_{iz}\ is\ 1\ if\ participating\ in\ the\ labour\ force\ and\ 0\ otherwise$$
$$y_{iz}\ is\ the\ dependent\ variable\ \ and\ X_{iz}\ is\ the\ independent\ variable:\ \ z \in \{male\ female\}$$

The estimated MLE function is given as:

$$\Pr = \Phi(Y_{i1},..Y_{iz}) = \Phi(\beta_0 + \beta_1 X_{iz} + \cdots \beta_{iz} X_{nz} \dots\dots\dots\dots (2)$$
$$= \sum_{i=1}^{n} Y_{iz}\, ln[\Phi(\beta_0 + \beta_1 X_{iz} + \cdots + \beta_z X_{nz})] + \sum_{i=1}^{n} (1 - Y_{iz}) \ln[1 - \Phi(\beta_0 + \beta_{iz} X_{iz} \dots +$$
$$\beta_{iz} X_{nz})] \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Equation 3 was estimated and the likelihood of male and female participation in the labour market was analysed comparatively.

The non-linear probit function and the maximum likelihood estimation technique were useful in estimating gender employment disparities. The nonlinear probit estimates were used in the Yun decomposition to analyse the sources of the gender employment gap (Yun, 2005).

The estimation entailed estimating the probit models of employment for each sex $z \in \{\text{male}\ \ \text{female}\}$ and forecasting the probability of employment for each individual *i* in the sample.

$$f(y_{iz}|X_{iz}),\beta = PrE[y_{iz}|X_{iz}^{I} * \beta] = \Phi\left[(y_{iz} - 1) * X_{iz\beta j}^{I}\right] \dots\dots\dots\dots (4)$$

The decomposition methods suffer sample selection bias as individuals move from the labour force into employment, especially in situations where unemployment is high. The inverse Mills ratio (IMR) was used to control for sample selection bias. The inverse Mills ratio was computed from labour force probit estimates as:

The estimations from labour force participation were used to estimate the inverse Mills ratio (λ) for selection into employment.

$$E(X|X>\propto) = \mu + \sigma \frac{\emptyset\left(\frac{\alpha-\mu}{\sigma}\right)}{1-\Phi\left(\frac{\propto-\mu}{\sigma}\right)} = \lambda \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where $\propto$ is a reserved chance of being in the labour force, and the probability of being employed is observed when $X > \propto$.

The high levels of unemployment in the country under study suggest that employed men and women represent a non-random subset of the labour force, implying that individuals are likely selected into employment.
The estimated inverse Mills ratio was included in the employment probit estimates:

$$\hat{E}_z = n_z^{-1} \sum_{i=1}^{n_z} \Phi\left(X_{iz}\hat{\beta}_z\right) \beta_\lambda \lambda \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

After the probit estimations, average predicted probabilities were estimated to obtain the percentage of sex *z* workers that were employed $(\hat{E}_z)$. This was computed as follows:

$$\hat{E}_z = n_z^{-1} \sum_{i=1}^{n_z} \Phi(X_{iz}\hat{\beta}_z)\beta_\lambda \lambda \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

where $\mathbf{x}_{iz}$ is a vector of observed characteristics defining individual *i* of sex *z*, $\hat{\beta}_z$ are the projected probit coefficients, λ is the inverse Mills ratio and Φ is the standard normal cumulative density function. The procedure then forecasted a counterfactual employment probability for females $\left(\hat{E}_f^m\right)$ based on their sample characteristics and men's coefficients:

$$\hat{E}_f^m = n_f^{-1} \sum_{i=1}^{n_z} \Phi\left(X_{if}\hat{\beta}_m\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

From equation 8, we can predict the probability of females being employed if they were male. The coefficients then help explain the difference in employment between males and females which then assists in assessing the sources of gender employment disparities in South Africa.
Labour market models usually suffer endogeneity problems, and this problem was countered by the use of instrumental variables (exclusion restrictions).

A detailed Yun's (2005) decomposition method, which is an extension of the Oaxaca decomposition technique, was used to identify the source of the gender employment gap. This is because Yun's decomposition method identifies the dummies and constant's contributions in the regression equation (Yun, 2005). The contribution of unobservable components such as social norms, which are critical in explaining gender labour market differences, could be picked through the constant when using the Yun decomposition techniques. The estimation of the difference between males' and females' average predicted employment probabilities $(EGAP)$ was predicted using equation (7).

$$\underbrace{\hat{E}_m - \hat{E}_f}_{Egap} = \left(\underbrace{\hat{E}_m - \hat{E}_f^m}_{Expalined\ gap}\right) + \left(\underbrace{\hat{E}_f^m - \hat{E}_f}_{Unexplained\ gap}\right) \quad (9)$$

In equation 9, the explained gap *(EXP)* denotes the share of $EGAP$ that is due to differences in men's and women's observed characteristics. The unexplained component of $EGAP$ *(UNEXP)* results from gender differences in estimated coefficients at given characteristics. *UNEXP* could be an outcome of gender differences in demand for employment, employment discrimination, or gender differences in unobservable factors that affect demand for employment.

The last step entails disintegrating *EXP* and *UNEXP* (using normalised regression coefficients as per Yun (2005) into portions attributable to disparities in the j[th] explanatory variable as follows:

$$EXP_j = [EXP]\left[\frac{(\bar{X}_m^j - \bar{X}_f^j)\hat{\beta}_m^j}{(\bar{X}_m - \bar{X}_f)\hat{\beta}_m}\right] \; and \; UNEXP_j = [UNEXP]\left[\frac{(\hat{\beta}_m^j - \hat{\beta}_f^j)\bar{X}_f^j}{(\hat{\beta}_m - \hat{\beta}_f)\bar{X}_f}\right] \ldots\ldots\ldots\ldots (10)$$

The decomposition equation (10) explains the probable presence of gender employment discrimination and highlights the factors that drive the gender employment gap.

4. Result Estimation and Interpretation

The study used the strict definition and the expanded definition of unemployment to check the robustness of the results. The composition of the labour force was identified by gender for both strict and expanded definitions. The labour force, employment rate and labour force participation rate by gender are presented in Table 1 below:

Table 1: Sample Analysis

Age:16-65 years	**South Africa**	
	Male	**Female**
Working age population	82717	93072
Expanded labour force	59308	55973
Strict labour force	54327	49090
Employed	41355	35134
Strict employment rate	76%	71.6%
Expanded employment rate	69.7%	62.8%
Expanded unemployed	17953	20839
Strict unemployed	12972	13956
Expanded participation rate	72%	60%
Strict participation rate	66%	53%
Employment rate	70%	63%
Working age population rate	47%	53%

Source: Own Calculations using South Africa Labour Market Dynamics (2020)

Table 1 above shows that there were more females of working age than males. They are 93072 females as compared to 82717 males; thus, females were more than males by 10354. Females constituted 53% of the working-age population. Despite females constituting a greater percentage of the working population, their labour force participation rate was less than that of their male counterparts. Concerning employment, the female employment rate is 63% while that of males is 70 %. The expanded and strict employment rates for females are 71.6% and 62.8%, while those for males are 76% and 69.7% respectively. This presents a gap between females and males of 4.5% points and 6.9% points when using strict and expanded employment rates, respectively.

5. Result Estimation

Labour force participation is defined as individuals between 16 and 65 years who are working and those currently seeking employment. Using Stata 14.2, the probit estimates of the labour force participation are shown in Table 2.

Table 2: Strict and expanded definitions probit estimation of labour force participation

Dependent Variable: LFP=1 if economically active, LFP=0 If not economically active Reference Groups: Age; 16-25, Gender; male, Education; No School, Marital status; Single, Geographical location; Rural; Province Western Cape						
	Total		Male		Female	
VARIABLES	LFP MEMs: Pooled - strict	LFP MEMs: Pooled - Expanded	LFP MEMs: Male -Strict	LFP MEMs: Male - Expanded	LFP MEMs: Female - Strict	LFP MEMs: Female -Expanded
Female	-0.141***	-0.109***				
	(0.00322)	(0.00286)				
Urban	0.172***	0.0876***	0.174***	0.0854***	0.156***	0.0802***
	(0.00396)	(0.00351)	(0.00547)	(0.00453)	(0.00550)	(0.00512)
Married	0.0241***	0.00994**	0.168***	0.124***	-0.0611***	-0.0607***
	(0.00425)	(0.00389)	(0.00667)	(0.00576)	(0.00572)	(0.00548)
Primary	0.0671***	0.0672***	0.0535***	0.0502***	0.0784***	0.0842***
	(0.00483)	(0.00422)	(0.00658)	(0.00543)	(0.00689)	(0.00631)
Secondary	0.220***	0.202***	0.183***	0.161***	0.244***	0.233***

	(0.00565)	(0.00506)	(0.00775)	(0.00660)	(0.00796)	(0.00747)
Tertiary	0.399***	0.343***	0.286***	0.225***	0.464***	0.426***
	(0.00817)	(0.00763)	(0.0123)	(0.0109)	(0.0106)	(0.0104)
age_26_35	0.430***	0.424***	0.418***	0.387***	0.418***	0.436***
	(0.00423)	(0.00382)	(0.00574)	(0.00497)	(0.00600)	(0.00565)
age_36_45	0.477***	0.434***	0.434***	0.375***	0.481***	0.458***
	(0.00491)	(0.00443)	(0.00683)	(0.00591)	(0.00681)	(0.00642)
age_46_55	0.393***	0.326***	0.321***	0.265***	0.411***	0.343***
	(0.00559)	(0.00491)	(0.00804)	(0.00677)	(0.00759)	(0.00698)
age_56_65	0.0985***	0.0176***	-0.0294***	-0.0581***	0.143***	0.0322***
	(0.00669)	(0.00552)	(0.00941)	(0.00739)	(0.00937)	(0.00817)
Eastern Cape (EC)	-0.102***	-0.0162**	-0.124***	-0.0253**	-0.0814***	-0.00912
	(0.00881)	(0.00783)	(0.0127)	(0.0106)	(0.0120)	(0.0113)
Northern Cape (NC)	-0.0170	0.0388***	-0.0219	0.0253*	-0.00978	0.0540***
	(0.0120)	(0.0107)	(0.0168)	(0.0141)	(0.0165)	(0.0155)
Free State (FS)	-0.0479***	0.0248***	-0.0626***	-0.0156	-0.0329**	0.0666***
	(0.00949)	(0.00852)	(0.0135)	(0.0114)	(0.0131)	(0.0124)
KwaZulu Natal (KZN)	-0.0869***	-0.00508	-0.103***	-0.0294***	-0.0717***	0.0189*
	(0.00852)	(0.00760)	(0.0122)	(0.0103)	(0.0116)	(0.0110)
North West (NW)	-0.0963***	0.0171**	-0.0744***	0.0223**	-0.123***	0.00734
	(0.00936)	(0.00834)	(0.0132)	(0.0111)	(0.0131)	(0.0122)
Gauteng Province (GP)	0.0151*	0.0600***	-0.00578	0.0378***	0.0321***	0.0788***
	(0.00804)	(0.00720)	(0.0116)	(0.00973)	(0.0110)	(0.0104)
Mpumalanga (MP)	-0.00801	0.0929***	-0.00979	0.0614***	-0.0100	0.119***
	(0.00906)	(0.00814)	(0.0129)	(0.0109)	(0.0125)	(0.0118)
Limpopo (LMP)	-0.0801***	0.0113	-0.0731***	-0.00582	-0.0904***	0.0253**
	(0.00907)	(0.00806)	(0.0130)	(0.0108)	(0.0125)	(0.0117)
Other household income	-2.34e-06***	-2.44e-06***	-2.38e-06***	-2.54e-06***	-1.86e-06***	-2.05e-06***
	(3.46e-07)	(3.48e-07)	(4.00e-07)	(3.35e-07)	(4.06e-07)	(4.02e-07)
Children < 6 Years	-0.0211***	-0.00991***	-0.0152***	-0.00832***	-0.0262***	-0.0122***
	(0.00184)	(0.00163)	(0.00283)	(0.00239)	(0.00237)	(0.00220)
Children > 6 Years	-0.0293***	-0.0211***	-0.0377***	-0.0239***	-0.0207***	-0.0160***
	(0.00164)	(0.00142)	(0.00249)	(0.00200)	(0.00216)	(0.00198)
Old men > 65 Years	-0.0610***	-0.0456***	-0.0461***	-0.0272***	-0.0550***	-0.0442***
	(0.00811)	(0.00686)	(0.0118)	(0.00942)	(0.0107)	(0.00959)
Old women > 65 Years	-0.121***	-0.0806***	-0.145***	-0.0844***	-0.101***	-0.0769***
	(0.00478)	(0.00404)	(0.00669)	(0.00537)	(0.00652)	(0.00578)
Observations	140,491	140,491	65,598	65,598	74,893	74,893
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1						

Table 2 presents the results of the female South African labour force participation decision. Ceteris peribus, for an average South African female, the likelihood of labour participation was statistically significantly

lower than male participation. Being female reduces the likelihood of being a labour force participant. Dwelling in an urban area increased the likelihood of participating in the labour market. Being married had a positive bearing for average men participating in the labour market while it had a negative bearing for average women in South Africa participating in the labour market. Educational attainment was crucial in determining whether or not individuals would participate in the labour market. In contrast to no schooling, primary, secondary and tertiary schooling influenced positively the likelihood of participating in the labour market for both males and females. Thus, the likelihood of both males and females' participation in the labour market is an increasing function of education levels. Strict and expanded definitions of unemployment revealed that females with tertiary education have a higher likelihood of participation of 0.464 as compared to their male counterparts with 0.286, 0.426 and 0.225 participation likelihood, respectively.

The age cohort effects were found to be statistically significant. For both males and females in the age cohorts: 26-35, 36-45, and 46-55, the likelihood of participating in the labour market increased relative to the youngest cohort aged between 16 and 25 years. On the other hand, for males in the age cohort 56-65, the probability of labour participation declines relative to the youngest cohort aged between 16 and 25 years, while for females in the same age cohort, the probability of labour participation increased, though it was less than the 46-55 age cohort. The probability of participation increases at the beginning of the age group and declines when an individual is advancing in age.

The household group of variables, 'the number of children' variables, 'the number of adults' variables and two household income regressors are all statistically significant. The likely gender bias on child rearing seems to be captured by all and the probability of labour participation declined. The presence of adults in the household was found to significantly increase the likelihood of female participation in the labour market. This could be because the presence of adult members of the household, especially female adults, may provide child-caring services that would encourage female labour force participation. The household variable effect on women's participation in the labour market is worsened by legal provisions which designate a mother as a primary guardian for children, thus legal discrimination.

Across all the provinces, using the strict definition, females were less likely to participate in the labour force. However, the position of female participation in the labour force was somehow different when using the expanded definition. In all provinces except the Eastern Cape, women were likely to participate in the labour force. In KwaZulu Natal and Limpopo provinces, males are less likely to participate in the labour market.

Finally, the household income variables are both significant across genders, with the same negative sign. The greater the value of other households' income available to an individual, male or female, in a household, the lower the probability of their participation in the labour market. Consequently, access to income within a household is an important determinant in an individual's decision to participate. However, the small but positive values on the other household income squared coefficients suggest that this effect is dampened as income increases.

6. Employment Function

After correcting for sample selection using the inverse Mills' ratio, the employment equation was estimated, and the results are presented in Table 3.

Table 3: Employment function with sample selection correction (strict and expanded definitions)

Employment function with sample selection correction: Reference groups: Gender: Male, Education: No school, Age: 16-24, Province: Western Cape, Marital Status: Single Employed =1 if employed, 0 Otherwise							
		Total		Male		Female	
Variable	Description	Employ MEMs: Pooled Strict	Employ MEMs: Pooled Expanded	Employ MEMs: Male Strict	Employ MEMs: Male Expanded	Employ MEMs: Female Strict	Employ MEMs: Female Expanded
	Female	-0.0707***	-0.0677***				
		(0.00516)	(0.00503)				
Residence	Urban	0.0892***	0.115***	0.0888***	0.119***	0.0871***	0.107***
		(0.00713)	(0.00586)	(0.00994)	(0.00852)	(0.0101)	(0.00806)
Marital Status	Married	0.118***	0.112***	0.264***	0.267***	0.000267	0.000417
		(0.00503)	(0.00493)	(0.00839)	(0.00848)	(0.00719)	(0.00709)

Education	Primary	-0.00381	0.00407	-0.0119	-0.00507	0.00685	0.0161
		(0.00726)	(0.00691)	(0.00968)	(0.00950)	(0.0110)	(0.0102)
	Secondary	0.0884***	0.0956***	0.0501***	0.0580***	0.138***	0.140***
		(0.00892)	(0.00902)	(0.0114)	(0.0118)	(0.0142)	(0.0141)
	Tertiary	0.232***	0.244***	0.133***	0.154***	0.328***	0.324***
		(0.0118)	(0.0119)	(0.0147)	(0.0150)	(0.0193)	(0.0192)
Age in years	age_26_35	0.328***	0.260***	0.267***	0.206***	0.401***	0.324***
		(0.0116)	(0.0140)	(0.0154)	(0.0192)	(0.0178)	(0.0209)
	age_36_45	0.467***	0.406***	0.357***	0.302***	0.577***	0.501***
		(0.0127)	(0.0145)	(0.0160)	(0.0192)	(0.0202)	(0.0221)
	age_46_55	0.521***	0.466***	0.331***	0.277***	0.685***	0.612***
		(0.0126)	(0.0133)	(0.0156)	(0.0178)	(0.0200)	(0.0198)
	age_56_65	0.519***	0.530***	0.292***	0.301***	0.705***	0.698***
		(0.0120)	(0.0111)	(0.0160)	(0.0156)	(0.0191)	(0.0163)
Province	Eastern Cape	-0.0365***	-0.0802***	-0.0407***	-0.0885***	-0.0256*	-0.0606***
		(0.0106)	(0.0109)	(0.0151)	(0.0156)	(0.0149)	(0.0153)
	Northern Cape	-0.0528***	-0.0789***	-0.00205	-0.0197	-0.0952***	-0.121***
		(0.0137)	(0.0145)	(0.0193)	(0.0206)	(0.0195)	(0.0205)
	Free State	-0.0484***	-0.0846***	-0.0178	-0.0346**	-0.0730***	-0.119***
		(0.0109)	(0.0116)	(0.0154)	(0.0166)	(0.0153)	(0.0164)
	KwaZulu Natal	0.0804***	0.0126	0.0862***	0.0335**	0.0809***	0.00519
		(0.0102)	(0.0104)	(0.0145)	(0.0150)	(0.0145)	(0.0147)
	North West	0.00249	-0.0720***	0.0406**	-0.0241	-0.0388**	-0.110***
		(0.0116)	(0.0117)	(0.0159)	(0.0165)	(0.0171)	(0.0165)
	Gauteng	-0.0592***	-0.0939***	-0.0297**	-0.0569***	-0.0731***	-0.110***
		(0.00879)	(0.00971)	(0.0123)	(0.0136)	(0.0126)	(0.0140)
	Mpumalanga	0.0157	-0.0483***	0.0291*	-0.0194	0.00630	-0.0630***
		(0.0106)	(0.0113)	(0.0150)	(0.0161)	(0.0150)	(0.0162)
	Limpopo	0.0883***	-0.00576	0.126***	0.0512***	0.0473***	-0.0508***
		(0.0115)	(0.0114)	(0.0162)	(0.0164)	(0.0164)	(0.0158)
	Inverse Mills ratio	0.242***	0.0677***	0.188***	0.0207	0.309***	0.124***
		(0.0167)	(0.0212)	(0.0218)	(0.0288)	(0.0260)	(0.0323)
Network	Proportion of other employed	0.419***	0.501***	0.455***	0.538***	0.399***	0.483***
		(0.00674)	(0.00716)	(0.00911)	(0.00971)	(0.0103)	(0.0109)
	Observations	**67,823**	**82,240**	**32,748**	**38.558**	**35,075**	**43,682**

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

An inspection of Table 3 reveals that females are less likely to be employed as compared to their male counterparts. Thus, being female reduces the likelihood of being employed across all definitions of unemployment. Urban dwellers were likely to be employed. In urban areas, males and females almost had the same likelihood of being employed. The high likelihood for both female and male employment is a testimony of narrowing gender employment and the effect of affirmative action and other laws. However, it is important to note that the likelihood of an urban dweller being employed is higher when using an expanded definition as

compared to a strict definition. Being married increased the likelihood of being employed. However, married females had a lower likelihood compared to males. This could be because of the network effect where working spouses may link their unemployed spouses with prospective employers.

Education was generally positively related to employment. However, males with primary education were less likely to be employed as compared to females in the same education category. As the level of education increases, the likelihood of being employed also increases, with tertiary education having the highest likelihood. At the tertiary level of education, comparing males and females, females have a higher likelihood of being employed.

As an individual's age progresses, the likelihood of being employed increases. Age could be a proxy for experience if we assume that an individual starts work at 16. Across the age cohorts, females were likely to be employed as compared to their male counterparts. This could be because of changes in social perception about women's position and roles of women in society and empowerment laws such as the Employment Act No 55 of 1998. Serumaga-Zake and Kotze D (2004) noted family responsibilities in the face of increased divorce rates and single parenthood and rising male unemployment (Casale, 2004) might be the key drivers of increased female employment. Across all the provinces, females were less likely to be employed except KwaZulu Natal. The residents of Limpopo also have a higher likelihood of being employed when compared with the Western Cape (reference group). The presence of other employed individuals in a household (network proxy) had a positive bearing on the likelihood of one being employed. Given the high levels of unemployment, it is likely that individuals use their networks to be linked with prospective employers; thus, the network affects employment.

The proportion of others employed in a household was found to increase the likelihood of being employed for both males and females. This means that individuals with networks were likely to be employed. The positive inverse Mills ratio for both males and females reflected that employed individuals in South Africa were selected for employment from the labour force. The study findings are similar to those of other researchers (Ntuli and Kwenda, 2020; Gradin, 2021and Leibbrandt, M., Woolard, McEwen, H and Koep, 2020).

7. Decomposing Gender Employment Gap

The gender employment gap was decomposed using the Yun (2005) decomposition approach. The results are shown in Table 4 below. Decomposition results reveal the variables that mostly accounted for the gender employment gap in South Africa for the period under review. The geographical location had an impact on the gender employment gap. Marital status, age, province and education levels were significant factors in explaining the gender employment gap.

The total explained difference of 0.00311 means that a small proportion of the difference in gender employment gap was explained by characteristics (age, marital status, age, education level, province and geographical location). The unexplained gap of 0.0658 explained the gender employment gap, which was not explained by the sample characteristics, which implied the presence of female employment discrimination. The value of the constant coefficient of 0.076 also attested to the presence of female employment discrimination in South Africa.

Table 4: Decomposition of the gender employment gap

	Total difference		Explained difference		Unexplained difference	
VARIABLES	Expanded Definition	Strict definition	Expanded Definition	Strict definition	Expanded Definition	Strict definition
Residence (rural; urban)			0.00081	0.00043***	0.00581	0.00131
			(0.00281)	(0.000156)	(0.00192)	(0.00300)
Marital status (single; married)			0.00660	0.00412***	-0.0562***	-0.0480***
			(0.00109)	(0.000431)	(0.00196)	(0.00223)
Education (No School; Primary; Secondary; Tertiary)			-0.00431	-0.00669***	0.00772***	0.00879***
			(0.0119)	(0.000560)	(0.00229)	(0.00245)
Age (16-25,……, 55-65)			-0.0072	-0.01140***	0.0381***	0.0357***
			(0.0126)	(0.00117)	(0.00440)	(0.00465)
Province (Eastern Cape,……, Mpumalanga)			-0.00559	-0.00131***	-0.0440*	-0.00529**

			(0.00417)	(0.000576)	(0.00245)	(0.00266)
IMR			0.00761	-0.01001***	-0.0546***	-0.0784***
			(0.0163)	(0.00224)	(0.0159)	(0.0150)
Network			0.00516	0.005091***	0.0195***	0.0133***
			(0.00983)	(0.00112)	(0.00239)	(0.00264)
Male	0.459***	0.597***				
	(0.00266)	(0.00272)				
Female	0.391***	0.552**				
	(0.00252)	(0.00270)				
Difference	0.0688***	0.0451**				
	(0.00350)	(0.00382)				
Explained difference	0.00311*	-0.0198***				
	(0.00291)	(0.00265)				
Unexplained difference	0.0658***	0.2601***				
	(0.00431)	(0.00431)				
Constant					0.0765***	0.106***
					(0.0215)	(0.0215)
Observations	82,240	67,823	82,240	67,823	82,240	67,823
Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1						

8. Conclusion

The study aimed at examining the sources of gender labour market disparities with reference to labour force participation and employment. The study brought out the current position of females in South Africa's labour market and the drivers of their position given the measures that have been put in place by the Post-Apartheid South African government. The study utilised the probit regression, the Maximum likelihood technique, to analyse factors affecting gender labour force participation and employment. Yun's (2005) decomposition technique was used to identify the source of the gender employment gap in South Africa. From the analysis of labour force participation, and employment, it was revealed that despite the different definitions of unemployment, female labour participation and employment lagged behind their male counterparts. Education, marital status and social responsibilities were found to weigh heavily on females as compared to males in South Africa. The decomposition of the employment function revealed that though observable characteristics such as marital status, education, age and province of origin contributed to the female employment gap, the gap was largely due to unobservable characteristics. This then led to the conclusion that employment discrimination (as measured by the constant) had a role in the female employment gap in South Africa. These findings underscore the need for authorities to reconsider existing discrimination laws and enhance their implementation and enforcement. Addressing these disparities is crucial not only for achieving gender equality but also for promoting broader economic growth and social justice in South Africa. Though the study revealed the source of the gender employment gap, the study did not consider socio-political-economic factors which have a bearing on an individual's decision to participate in the labour market. Again, the study focused on one-time data, which might not reflect sources of gender labour market disparities over time.

References

Becker, G. S. (1975). Human capital: *A Theoretical and Empirical Analysis, with Special Reference to Education* (2nd ed.). New York: National Bureau of Economic Research.

Casale, D. (2004). What has feminisation of the labour market brought women in South Africa? Trends in labour force participation, employment and earnings 1995-2001. *Development Research Unit Working Paper Series.*

Chivasa, S. (2018). An investigation into the extent of gender formal employment gap in Zimbabwe. A case study of Bulawayo Metropolitan. *Zimbabwe Journal of Applied Research,* 1, 1-13.

Dickens, W. T. and Lang, L. (1987). *Labour Economics. Problems in Analysing Labour Markets.* Kluweer Academic Publishers.

Doeringer, P. B. and Piore, M. J. (1985). *Internal Labour Markets and Manpower Analysis.* Sharpe Publishers.

Gouzouis, G., Constantine, C. and Ajefu, J. (2023). Economic and political determinants of South African labour share 1971-2019. *Economic and Industrial Democracy*, 184-207.

Gradin, C. (2021). Occupational gender gender segregation in post apartheid South Africa. *Feminist Economics, 27*(3), 102-133.

ILO. (2008). *Guide to International Labour Standards.* Turin: International Training Centre of the International Labour Organisation.

Killingworth, M. R. and Heckman, J. J. (1986). *Female Labour Supply. A Survey. Handbook of Labour Economics,*. BV: Elsevier Science Publishers.

Leibbrandt, M., Woolard, I., McEwen, H. and Koep, C. (2020). Employment and Inequality Outcomes in South Africa. Southern Africa Labour Development Research Unit, School of Economics, University of Cape Town.

Matambo, E. and Ndubusi, C. A. (2015). Endorsing Intellectual development in South Africa's Affirmative action. *Journal of Third World Studies*, 279-291.

Mehembe, E. (2021). *Macroeconomic and Sectorial Dimensions. Unemployment in South Africa. Background Paper for the National Human Development Report.* Pretoria: United Nations Development Programme.

Nsanja, L., (2022). Effects of education on fertility and labour supply. Evidence from Malawi. *African Journal of Economic Review,* 10(4), 63-84.

Ntuli, M. (2007). *Ex*ploring Gender Wage Discrimination in South Africa. A Quantile Regression Approac*h.* Michigan: IPC Working Paper Series.

Ntuli, M. and Kwenda, P. (2020). Gender Gap in Employment and Wages in Sub-Saharan Africa. A Review. In *Women and Sustainable Human Development, Gender and Social Change* (pp. 183-203). Bonn German: Institute of Labour Economics.

Ntuli, M. and Wittenberg, M. (2013). Determinants of black women's labourforce particpation in post apartheid South Africa. *Journal of African Economics, 22*(3), 347-374.

Phelps, S. E. (1972). The statistics theory of racism and sexism. *American Economic Review*, 659-661.

Polachek, S. W. (1981). Occupational selection. a human capital approach to sex differences in occupational structure. *Review of Economics and Statistics*, 60-69.

Roberts, G. and Shoer, V., (2021). Gender based segregation in education, jobs, and earnings in South Africa. *World Development Perspectives,* 23(100348), 1-13.

Serumaga-Zake, A. E. and Kotze, D. (2004). Determinants of labour force participation of married women in South Africa. *Studies in Economics and Econometrics* 28(3):99-111

Serumaga-Zake, A. E. and Naude, W. A. (2003). Determinants of labour force participation in the North West Province of South Africa. *Development Southern Africa*, 503-514.

Sheptone and Wylie. (2024, January 4). *Labour Guide*. Retrieved from Labourguide.co.za: labour guide.co.za/general/affirmative-action-and-employment-act

Solberg, E., Brown, G., and Rutemiller, H. (n.d). General diagnostic tests for crossectional data dependence in panels.

StatsSA. (2020). Labour Market Dynamics in South Africa. Pretoria: Statistics South Africa.

StatsSA. (2021). *Labour Market Dynamics in South Africa*. Pretoria: Statistics South Africa.

Watson, I. (2010). Decomposing gender pay gap in australian managerial labour market. *Australian Journal of Labour Economics*, 49-79.

Weiss, Y. (2015). Gary becker on human capital. *Journal of Demographic Economics*, 27-31.

Worldbank. (2023, November 23). Gender Data Portal. Retrieved from Worldbank.org: genderdata.worldbank.org/countries/botswana/

Young, P., (2021). Race, Gender and perceived employment discrimination. *Journal of Black Studies*, 52(2), 509-527.

Yun, M. S. (2005). Decomposing differences in first moments. *Economic Letters, 82*(2), 275-280.