Estimating the Effect of a Job Creation Programme on Female Labour Market Outcomes and Poverty in South Africa

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Abstract

This paper estimates the effect of a job creation programme on female labour market outcomes and poverty in South Africa, using datasets from the 2018 nationally representative General Household Survey (GHS). The paper employs propensity score matching techniques to balance pertinent pre-intervention characteristics between the treated and untreated groups, and compare employment outcomes and poverty status of adult females who participated in a job creation programme with those who did not participate. The key preliminary findings suggest that adult females who participated in the job creation programme are more likely to get an employment and work in the formal sector of the economy. However, participation does not decrease the likelihood of being poor, though participants are more likely to be 'happier' after the intervention. Thus, this study concludes that while a job creation intervention could be an effective tool for improving females' employment rates and transition to decent jobs, strengthening existing multi-sectoral policy interventions might prove beneficial to further reduce poverty among women.

Key words: Employment; female; labour; market; poverty

1 Background

High unemployment rates among the teeming South African youths, especially young adult females, have been of utmost concern to policy makers, researchers and other relevant stakeholders. The emergence of democracy undoubtedly brought about an enormous transformation in the country's socio-economic and political space. The government enacted several policies,reforms and programmes to address reduction in poverty and inequalities in access to economic resources, notably access to employment opportunities (Booysen, 2014). In keeping with the Sustainable Development Goals (SDGs) to achieve gender equality, full and productive employment, and decent work for all women and men by 2030, many national policies and programmes have been directed towards reducing gender gaps in employment, earnings and poverty, amongst others (Sinden, 2017; The United Nations, 2009, 2015*a*,*b*). One of such programmes is the expanded public works programme (EPWP).

The EPWP is one of government's key programmes aimed at providing poverty and income relief to the unemployed. it is a nationwide programme covering all spheres of government and state owned enterprises (SOEs). The programme provides an important avenue for labour absorption and income transfers to poor households, in the short to medium-term. EPWP projects employ workers on a temporary or ongoing basis with government, contractors, or other non-governmental organisations under the Ministerial Conditions of Employment for the EPWP or learnership employment conditions. The EPWP creates work opportunities in four sectors, namely infrastructure, non-State, environment and culture and social, by increasing the labour intensity of government-funded infrastructure projects, creating work opportunities through the Non-Profit Organisation programme and Community Work Programme, creating work opportunities in public environment and culture programmes, creating work opportunities in public social programmes. The EPWP also provides training and enterprise development support, at a sub-programme level. Since 2012/13, the EPWP has created 4 185 426 work opportunities(South Africa Government Department of Labour, 2016)

Notably, the post-apartheid period is characterised by 'equitable and interventionist' socio-economic policies targeted at reducing unemployment and poverty. Despite various post-apartheid social policies, gender inequalities persist in access to labour market opportunities and earnings (Govender and Penn-Kekana, 2008; Kruger et al., 2012; Patel, 2012; Statistics South Africa, 2012). A considerable number of empirical studies have been carried out on gendered labour market outcomes in South Africa (Bhorat and Mayet, 2012; Carlos, 2018; Gradín, 2012; Leibbrandt et al., 2010; Posel and Rogan, 2009; Reimers, 1983). Evidence suggests that although gender gap in employment seems to be closing, women are less likely to be employed than men, in spite of endowment. Moreover, women are less likely to transition out of unemployment into employment (Ebrahim and Lilenstein, 2019; Kimani, 2015). In summary, labour market participation and outcomes remain lower for women than for men. Moreover, poverty affects more women than men.

Against a backdrop of the many post-apartheid policies and reforms targeted at reducing gender gaps in employment and poverty, this paper complements previous and concomitant empirical studies, and thus contributes to the existing body of knowledge, by examining the effectiveness of a government job creation programme on female labour market outcomes and poverty alleviation in post-Apartheid South Africa. This is with a view to assessing the progress made in reducing gender gap in employment outcomes and poverty in South Africa. This paper thus provides a new evidence on the effect of a government intervention on improving female labour market outcomes and alleviating gendered poverty.

2 Methods

2.1 Data

Data comes from the 2018 General Households Survey (GHS) (Statistics South Africa, 2018). The GHS is a nationally representative household survey which collects information on multiple dimensions of well being of South Africans. It contains information on housing, labour market and socio-economic information relating to education, living standards, health and other pertinent information about South African population. Approximately 25,000 South African households are interviewed in each wave. Other socio-demographic information collected in the survey include age, race, province and metropolitan status. Units of analysis are restricted to adults between the ages of 15 and 64 years.

Most pertinent to this paper, there is a short series of labour market questions covering labour force participation, employment status, sector of organisation/business and monthly earnings, amongst others. In the survey, participation in a job creation programme is based on whether or not the respondent participated in a government or municipal job creation programme or expanded public works programme. Respondents were able to select from a binarycoded response, which is yes or no. Those who responded in the affirmative were classified as the treated group, while those who answered in the negative were categorised as the untreated group.

The outcome variables are employment status and poverty status. Employment status was measured by asking respondents if they were working for a wage, commission or salary, running own business. The respondents were also asked if their organisation or business was either formal or informal. Meanwhile, poverty status is based on the subjective wealth/poverty status of the respondents, by asking them to rate their present wealth/poverty status; responses were wealthy, very comfortable, reasonably comfortable, just getting along, poor and very poor. The responses were recoded to a binary variable. Moreover, the subjective well being of the respondents were checked by asking them if they feel happier, the same or less happy with life than you were ten years ago. Data was analysed using STATA.

2.2 Estimation strategy

Bearing in mind that the main objective of the research is to examine the effect of a government job creation programme on females's employment outcomes and poverty reduction, the estimation strategy employs a propensity matching technique (Dehejia and Wahba, 2002). Propensity score matching technique is a popular method to estimate causal treatment effects and make inference about the impact of a treatment or intervention on the outcome of an individual by speculating how the individual would have performed if he had not received the treatment (i.e by creating counterfactual). In order to apply the method, there should be a treatment, a treated group and an untreated group (Rajeev and Wahba, 1999). The method could be applied in this research because there is a treatment or intervention (a government job creation programme), a group of treated individuals (beneficiaries) and a group of untreated individuals (non-beneficiaries). Basically, the technique is a plausible solution to the problem of selection bias. Thus, using this technique would help to overcome and address the possible existence of selection bias which might arise as a result of differences in beneficiaries and non-beneficiaries' characteristics even in the absence of the intervention.

The technique involves finding a group of non-beneficiaries who are similar to the beneficiaries in all pertinent pre-intervention characteristics, X. Then, differences in outcomes of the non-beneficiary group and beneficiary group could be attributed to the programme or intervention. This will involve the use of balancing scores or propensity score, which is the probability of an individual participating in an intervention given his observed characteristics or covariates X, such that the conditional distribution of X is independent of assignment into the intervention.

A key identification strategy is the conditional independence assumption (CIA) which assumes that potential outcomes are independent of intervention assignment conditional on covariates X and the propensity score. Assuming that the outcome is Z, the treatment or intervention is T and the propensity score is $P(X)$, CIA will hold if:

$$\text{Z(0), Z(1)} \perp\!\!\!\perp \text{T|P(X),}$$

Another requirement is that common support or overlap condition should hold. This stipulates that individuals with the same X values have a positive probability of being both beneficiaries and non-beneficiaries, given in equation (2) as:

$$\text{0<P(T=1—X)<1}$$

Given that the two conditions above hold, the PSM estimator for average treatment effects on the treated (i.e the effect of the job creation programme or intervention on beneficiaries) could be expressed as:

$$\Psi_{ATT}^{PSM} = E_{P(X)|T=1)} = \{E[Z(1)|T = 1, P(X)] - E[Z(0)|T = 0, P(X)]\} \tag{1}$$

Simply put, the PSM estimator is the mean difference in outcomes appropriately weighted by the propensity score distribution of beneficiaries (Caliendo and Kopeinig, 2008). Given that the PSM technique is a two stage procedure. In the first stage, selection into the government job creation programme was modelled as a choice dependent variable using Probit model. In the second stage, ATT was estimated by matching each participant to non-participant condition on similar characteristics. Given that T_i is a dummy for selection into the job creation programme and X is a vector of pre-treatment covariates. Formally, the PSM model is specified as:

$$P(X) = Pr[T_i = 1|X] = E[T_i|X]; p(X) = F[h(X_i)] \tag{2}$$

$$P(X) = Pr(p = 1)|X \tag{3}$$

where F[..] is a Probit cumulative distribution. Equation 3 is the probability of receiving a treatment or propensity score. Formally, the average treatment effects on the treated, ATT, which is the effect of the job creation programme or intervention on beneficiaries, is specified as:

$$ATT = E\{[Y_i(1) - Y_i(0)|T_i = 1]\} = E\{[Y_i(1)/T_i = 1]\} - E\{[Y_i(0)/T_i = 1]\} \tag{4}$$

2.2.1 Estimating the propensity score

As stated earlier, the propensity score, which is the probability of participating in a job creation programme or intervention, is estimated using a discrete choice model, preferably Probit model. Given that the outcome variable must be independent of the intervention conditional on the propensity score, only covariates that concurrently influence the decision to benefit from the programme and the outcome variable are used to estimate the propensity score. These variables include age, race, province/location, being unemployed and willingness to work. Moreover, the choice of the covariates are based on theory and evidence related to benefit decision while the st and the outcomes,atistical significance of the covariates are confirmed. The kernel matching algorithm (with caliper 0.01) is used to contrast the outcomes of the beneficiaries with outcomes of non-beneficiaries. This algorithm is used because it is non-parametric matching estimator which employs weighted averages of all non-beneficiaries to construct the counterfactual outcome. Thus, it allows for the usage of more information from the control or non-beneficiaries' group. This usually yields a lower variance.

3 Results

3.1 Data description

Table 1 presents the summary statistics of the variables of interest for adult females who are in the treated group (those who participated in the government job creation programme) and the untreated group (those who did not participate in the government job creation programme). The result shows that the average age of females who participated in the government job creation programme is higher than those who did not participate. While the average age of females who participated in the programme is approximately 40 years, the average age of those who did not participate is about 36 years. This implies that, on average, older females participated in the programme than younger females. Nearly 8.7% of black Africans participated in the programme, while 8.3% did not participate. On average, approximately 10% and 12% of coloured females and those willing to work did not participate in the programme, respectively.

Table 1: Summary statistics.

	Treated (n=602)		***Untreated (n=23,152)***	
	Mean	***s.e***	***Mean***	***s.e***
Age	39,85	0,468	36,25	0,093
Black African	0,87	0,014	0,83	0,002
Coloured	0,11	0,013	0,10	0,002
Unemployed	0,12	0,013	0,15	0,002
Willingness to work	0,12	0,013	0,12	0,002
Western Cape	0,04	0,008	0,11	0,002
Eastern Cape	0,17	0,015	0,13	0,002
Northern Cape	0,12	0,013	0,05	0,001
Free State	0,08	0,011	0,06	0,002
KwaZulu Natal	0,19	0,016	0,18	0,003
Northwest	0,06	0,010	0,06	0,002
Gauteng	0,15	0,015	0,23	0,003
Mpumalanga	0,06	0,009	0,08	0,002

Notes: Data is from 2018 GHS data. No. of obs is 23,991. The sample is limited to adult females ages 15 to 65.

Among the unemployed, 15% of females did not participate, while 12% did participate. Across the provinces, KwaZulu-Natal (19%) had the highest average number of females who participated in the programme. This is subsequently followed by Eastern Cape (17%), Gauteng (15%) and Northern Cape (12%). Western Cape (4%) had the lowest average number of females who participated. Meanwhile, non-participation is highest in Gauteng (23%) and lowest in the Northern Cape (5%).

3.2 Distributions of propensity scores

As implied earlier, the propensity scores were estimated using a Probit model. Figure 1 illustrates the distributions of the propensity scores for the treated and untreated groups. The limits of 0 and 1 on the propensity score often make the distributions to be skewed. As a result, the log of the odds of the propensity score (namely the linear predictor) were graphed, rather than the propensity score itself, since it tends to be more normally distributed. Thus, Figure 1 presents a much more normal distribution in both groups. The result shows that distributions of the propensity scores tend to be higher in the treated group than in the untreated group.

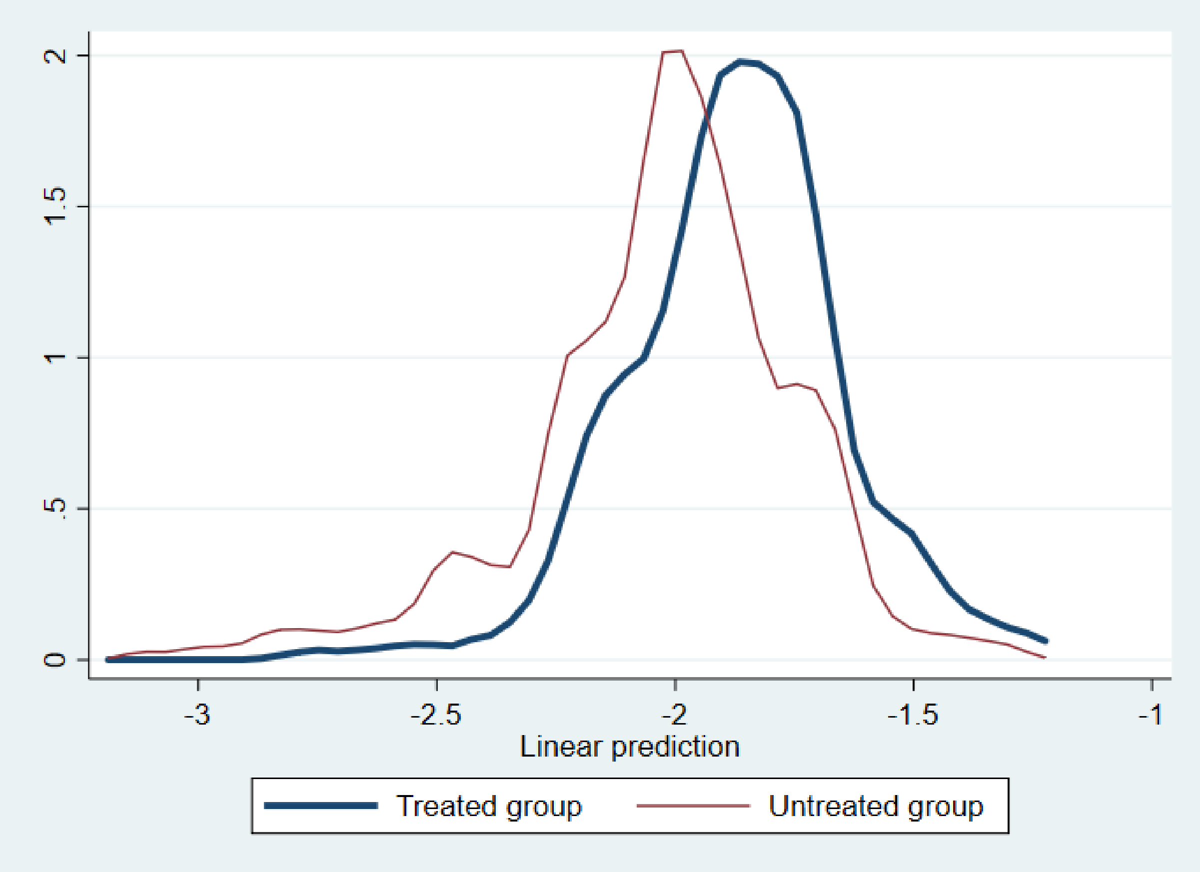

Figure 1: **Distributions of Log Odds of Propensity Score for the Treated and Untreated groups**

Figure 2 depicts the histograms checking for overlaps of the treated and untreated groups. The result shows that the treated and untreated groups do overlap, and thus provide a means to estimate the effect of the programme or intervention.

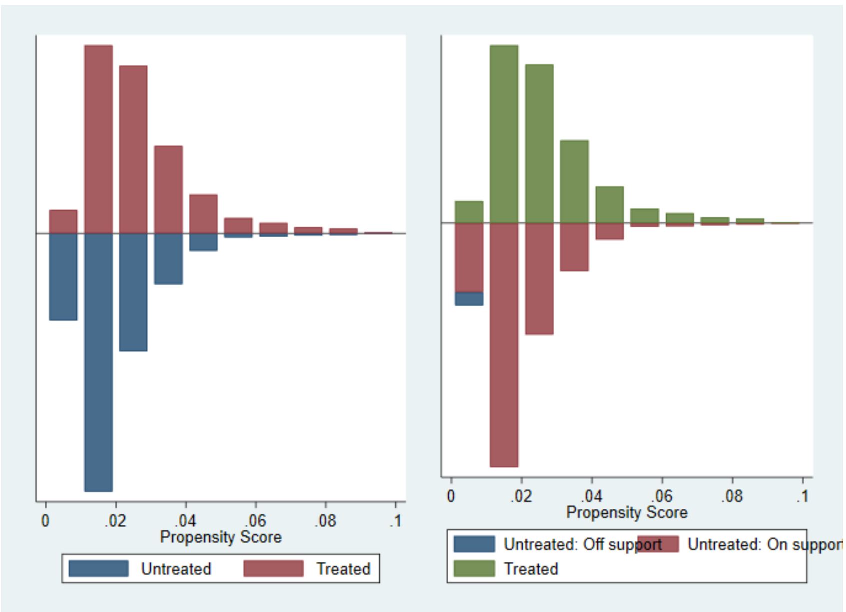

Figure 2: **Histograms checking for overlap**

Moreover, the matching of the covariates is of good quality, as shown in Figure 3. This implies that the covariates are properly matched for the treated and the untreated groups, with the exception of some few cases.

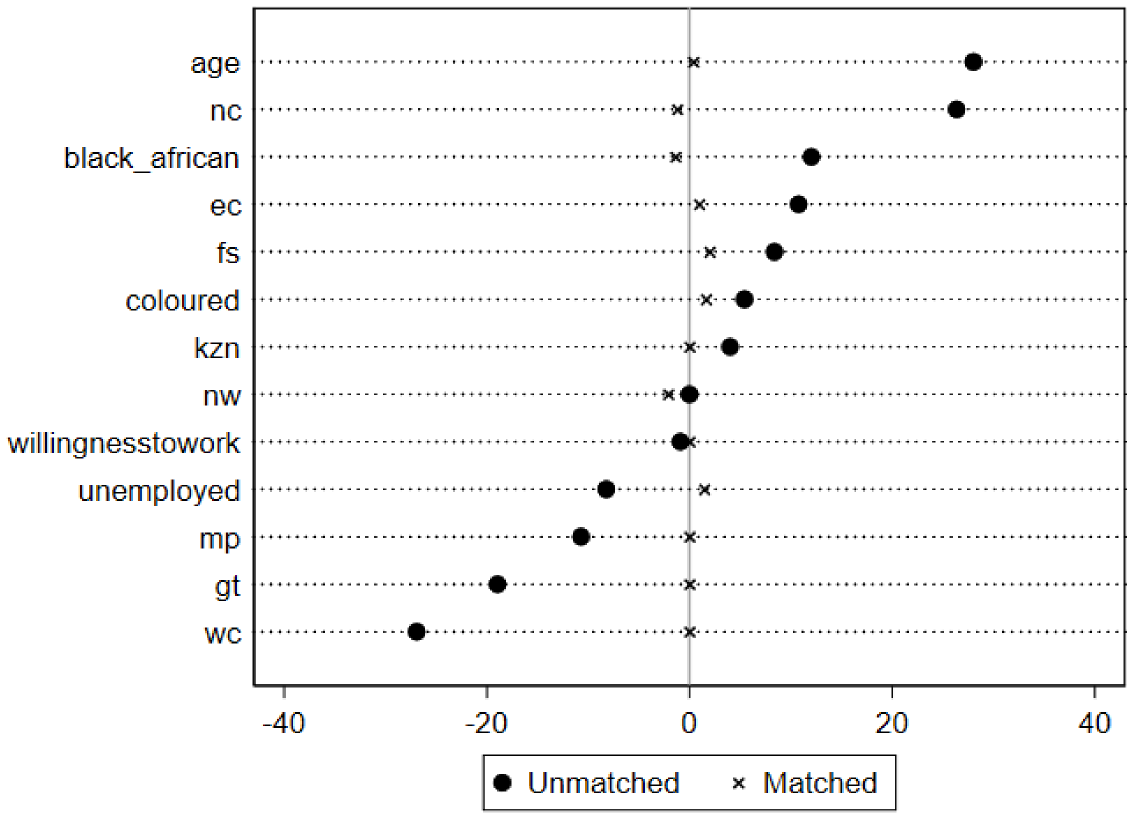

Figure 3: **Matching of the Covariates**

3.3 Estimating the effect of the programme/intervention

Table 2 presents the preliminary results for the effect of the job creation programme on outcome variables of interest (employment, sector of employment, poverty status and satisfaction). The preliminary result suggest that adult females who participated in the job creation programme are 9% more likely to get an employment and 27% more likely to work in a formal sector. On the contrary, participation does not decrease the likelihood of being poor, though participants are more likely to be 'happier' after the intervention. In fact, those who participated in the training are 7.2% more likely to be happier, while the effect on poverty status is not as expected. On the overall, participation in a the job creation programme/intervention increases the chances of females getting employed, working in a formal sector and feeling happier.

Table 2: Analysis of the effect of programmme/intervention

	Employment	***Sector of Employment (Formal)***	***Poverty status***	***Satisfaction***
ATT*	0.090	0.266	0.010	0.072
T-stat	(3.56)	(9.57)	(1.52)	(2.69)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: The sample is limited to adult females ages 15 to 65 in the GHS. ATT is Average Treatment Effect on the Treated.

4 Conclusion

In South Africa, evidence suggests that females are more likely to be employed and live in poverty than their male counterparts. In order to reduce gender gap in employment and poverty, several policies and programmes have been implemented. The paper thus examines the effect of a government job creation programme on female labour market outcomes in South Africa using data from the 2018 nationally representative General households Surveys (GHS). The paper employs propensity score matching techniques to balance pertinent pre-intervention characteristics between the treated and untreated groups, and compare employment outcomes and poverty status of adult females who participated in a job creation programme with those who did not participate. The key preliminary findings suggest that adult females who participated in the job creation programme are more likely to get an employment and work in the formal sector of the economy. However, participation does not decrease the likelihood of being poor, though participants are more likely to be ‘happier’ after the intervention. Thus, this study concludes that while a job creation intervention could be an effective tool for improving females’ employment rates and transition to decent jobs, strengthening existing multi-sectoral policy interventions might prove beneficial to further reduce poverty among women.

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