

The determinants of time-related underemployment in South Africa

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Abstract

South Africa is faced with an increasing trend of underemployment in all industries. Data with a sample of 8,3 million working age population from Quarterly Labour Force Survey (Q3:2012) collected by Statistics South Africa was used. The study only includes working age population (15-64 years). There was women (52.2%) and 60,2% were people between the age of 15-35 years. The study utilizes categorical covariates such as age, gender, population group, field of study, highest completed level of education, marital status, and province, contract duration, contract type, sector, occupation, and industry.

The aim of the study was to find determinates of time-related underemployment. All variables were significantly associated with underemployment at the univariate case. The multivariate logistic regression analysis shows that gender, sector, geography type, level of education completed, industry and contract type are significantly associated with underemployment at 5% significance level. Women are 1.59 times more likely to be underemployed compared to men. People with less education are likely to be underemployed compared to people with higher education.

Keywords: contract type, education, gender, geography, industry, multivariate logistic regression

1. Introduction

South Africa (SA) is a country situated in the southern part of Africa, within the Southern African Development Community (SADC) region. According to the 2011 Mid-year population estimates (statistical release P0302) released by Statistics South Africa (Stats SA), the total population was above 50 million. Twenty six million (48,2%) of the population are females and 24 million (51,8%) are males. Almost One-third (31,3%) of the population are younger than 15 years and 3,9 million (7,7%) are 60 years and older.

SA is faced with a difficult situation, in labour market, with high unemployment rate and an increasing number, of time-related underemployment, observed in all quarters of the year 2012. This situation is not only faced by the less educated persons but every individual living in SA. It is in the best interest of everyone living in SA and possible the entire world to know the characteristics of the underemployed persons. Time-related underemployment is derived from the following questions in the survey, if total hours usually worked is less than 35 and want to work more hours and is available to start work within the next four weeks.

In order to reduce unemployment, discouraged job-seekers as well as move towards reaching the set Millennium Development Goals (MDGs) i.e. Promote gender equality and empower women, Achieve universal primary education and Eradicate extreme poverty and hunger in the country. The government, private sectors, Non-Government Organisation (NGO) and the public domain knowing this factors then policies, strategies and investment will be channelled into most suitable areas in the country and the public consumers will be able to take an informed academic decision.

The study aims at establishing the determinants of time-related underemployment in South Africa using Quarter Labour Force Survey (QLFS) conducted by Statistics South Africa in all nine provinces in the country. Statistical packages, software's, will be used to carry out the study.

2. LITERATURE REVIEW

Sackey & Osei (2006) utilised Ghana Living Standards Survey (LSS) data 1998-1999 with a sample of 9 707 persons. Probit model analysis was used to conclude that demographics, locality and firm size were associated with time-related underemployment. Kjeldstad & Nymoen (2010) used Norwegian Labour Force Survey (LFS) data of 2005 with a sample of 24 000 persons aged 16-74 years to investigate the underemployment segregated by gender. Logistic regression model was used to conclude that demographic factors are statistically associated with time-related underemployed.

The study by Findeis, et al. (2009) agrees with other researchers that demographics are associated with underemployment. Other factors associated with time-related underemployment found by other researchers are as follows.

OTHER FACTORS

Occupations

Occupations such as domestic work, and sales and services enforce significant probabilities of underemployment five and seven times more on women compared to men respectively (Kjeldstad & Nymoen, 2010). Tam (2010) reviewed characteristics of underemployment in the United Kingdom 2000-2010 LFS data. It was found that the proportion of underemployment rate was higher amongst persons working in elementary, sales and customer services, and personal services occupations compared to managers and senior officials, and professionals occupations.

Contract Type

Wilkins (2004) studied the underemployment using Household Income and Labour Dynamics in Australia (HILDA) data 2001 with a sample size of 13 969 and probit model analysis was used to

establish that underemployment is associated with part-time or casual employment. Kjeldstad & Nymoen (2010) found that temporary work contract increases the probability of underemployment by 3.5(five times for men and three times for women) times on average more than that of permanent work contract. Tam (2010) established that the proportion of underemployment amongst the full-time workers was 5.9% compared to 20.9% of those working part-time jobs.

Sector

Sackey & Osei (2006) found that there is a strong (correlation coefficient of 0.76) relationship between underemployment and poverty amongst persons engaged in agricultural sector. It was also found that over 60% of the labour force in the agricultural sector work less than 40 hours per week. The probability of being underemployed (private formal sector employees) is reduced by 10%.

3. Methodology

The study utilizes Q3:2012 QLFS secondary data with a sample size of XXX. Working age population, between 15 and 64 years, was used. The response variable takes a binary form “1” and “0” which denotes underemployed and not underemployed respectively. The explanatory variables are categorical variables. The study utilizes categorical covariates such as age, gender, population group, field of study, highest completed level of education, marital status, and province, contract duration, contract type, sector, occupation, and industry.

Statistical packages such as STATA, Statistical Analytical System (SAS) and Statistical Package for Social Science (SPSS) will be used in carrying data analysis at 5% level of significance. Cross tabulation and descriptive statistics will be used to determine the characteristics of the population and describing covariates associated with time-related underemployment. Covariates with p value greater than or equal to 0.5(≥ 0.5) in the univariate case will be excluded from the multivariate analysis. Logistic regression will be used to identify covariates associated with time-related underemployment.

Dayton (1992) defines logistic regression analysis as a statistical technique which extends the techniques of multiple regression analysis to research situations in which the outcome variable is categorical. The covariates may be made for the dichotomous outcome of such as success/failure or improved/not improved. Dawson & Trap (2004:261) Logistic regression model gives the probability that the outcome occurs as an exponential function of the covariates. Logistic regression provides a way to obtain an odds ratio for a given risk factor that controls for or adjusted for, confounding variables. Vittinghoff, et al. (2005:45) the odds of an outcome occurring are computed as the probability of occurrence divided by the complementary probability that the event does not occur.

4. Results

4.1 The binary logistic regression model outcome

The aim of the study was to find the determinants of time-related underemployment. **The null hypothesis** of the study was that “*there are no determinates of underemployment*” and **the alternative hypothesis** was that “*there are determinates of underemployment*”. Using a cross tabulation, all variables were significantly associated with time-related underemployment. Gender, contract type, Geo-type, education, industry and sector were significantly associated with time-related underemployment and the model was significant with a Hosmer and Lemenshow test value of 0.091. log likelihood test value was higher than that of the other model when using backward conditional stepwise regression method. However, covariates such as population group, marital status, province and age were not significantly associated with time-related underemployment at 5% level of significance.

4.2 Odds ratios of the significance explanatory variables

4.2.1 Contract type

Holding other variables constant in the contract type, for one additional person with permanent contract, there will be 0.514 increases of time-related underemployment persons. People with permanent contract were 1.67[95% CI: 1.036; 2.70] times more likely to be underemployed compared to those that have limited and unspecified duration contracts.

4.2.2 Gender

Holding men constant, for one addition woman then there is 0.464 increases of underemployed women. Women were 1.59:1[95% CI: 1.15; 2.21] time more likely to be underemployed compared to men.

4.2.3 Geography type

Persons residing in urban settlements are more likely to be underemployed as compared to those residing in tribal and rural settlements. Holding other tribal and rural settlements constant, for one additional person in the urban formal and informal there is 0.14 and 0.41 increase of underemployed persons respectively.

4.2.4 Education

People with primary completed and lower education are likely to be underemployed as compare to those with secondary not completed and above. Holding other educational status constant, for one additional person with a tertiary qualification there will be 0.33 decreases of underemployed persons.

4.2.5 Industry

The chances of being underemployment are high in the community, social and personal services, financial intermediation, insurance, real estate and business services. For one addition person in the mining and quarrying, there will be 0.613 increases of underemployed persons.

5. Conclusions

- Gender, contract type, Geo-type, education, industry and sector are the determinants of time-related underemployment
- Educations is one of the factors which plays an important role in determining if a person will be affected by time-related underemployment. However, people with high education qualification (Tertiary) are less likely to be underemployed.
- Women are highly likely to be underemployed as compared to men. Women are in this situation because obtain lower education qualification compared to me.
- Industries, and sector which are not be affected by underemployment, are industries and sectors where people are not employed based on qualification like Agriculture and private households.
- Majority of people residing in the rural and tribal settlements have lower educational status compared to those that are living in the urban informal and formal settlements.

6. References

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Appendix

Table 1: Hosmer and Lemeshow Test

Step	Chi-square	df	p-value.
1	7.471	8	.487
2	7.462	8	.488
3	10.162	8	.254
4	7.854	8	.448
5	13.675	8	.091

Table 2: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1441.519 ^a	.078	.229
2	1441.519 ^a	.078	.229
3	1442.589 ^a	.078	.228
4	1444.109 ^a	.078	.227
5	1449.287 ^a	.077	.224

Table 3: Model if Term Removed

Variable	Model Log Likelihood	Change in -2 Log Likelihood	df	p-value
Step 5 GENDER	-728.618	7.949	1	.005
CONTRACT TYPE	-737.378	25.468	2	.000
Geography type	-728.222	7.157	3	.067
Education Status	-733.913	18.539	6	.005
Industry	-752.895	56.503	10	.000
Sector	-737.289	25.290	1	.000