Youth Unemployment and Economic Growth: Lesson From Low-Income Countries in Sub-Saharan Africa

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Abstract

The paper examines the empirical relationship between youth unemployment rate and economic growth rate in low-income countries in Sub-Saharan Africa (SSA). To achieve the objectives of the paper, Panel Least Squares and Ordinary Least Squares techniques were adopted to estimate the model using annual data from 1991 to 2013. The paper found that the average GDP growth rate for low-income countries in SSA within the period of the study was 3.8 % while that of average youth unemployment rate was 9.4%. It was observed there exists negative relationships between youth unemployment and economic growth variables inthe panel result while in the individual countries cases some countries were found to have positive relationship between the two variables of unemployment and economic growth rates indicating a case of non existence of Okun's law. Hence, the negative coefficients observed indicated the existence of Okun's law in some low-income countries. The findings, therefore, suggest that individual countries should create more jobs based on labour intensive industries, that the governments of these low-income countries should promote youth empowerment schemes by creating the needed policy environment, that the ratio of output growth needed to maintain stable level of youth unemployment rate could be sustained when there are boost in economic activities that will encouraged investment and employment. Few countries that exhibited positive relationship between youth unemployment rate and economic growth rate should focus more on how to increase the level of economic activities through the application of policy mix that would generate more investment in these countries.

Keywords: Panel Least Squares, Low-income countries, Youth unemployment, Economic growth.

1. Introduction

The region of Sub-Saharan Africa (SSA) has a rapidly growing population of youth with an average age of 18 years, but it is as low as 15 years in some countries like Niger and Chad. The SSA population below the age of 15 years grew by 150 percent between 1970 and 2005 and about 170 percent in 2011(United Nations, Population Division, 2011). In 2013, youths in the Sub-Saharan Africa were twice likely to be unemployed compared to other age cohort.(World Bank, 2013).

Madito & Khumalo (2014) described the high unemployment rate and slow growth as the two challenges facing every nation regardless of the state of their economic and social development. The rate of unemployment has comparatively been high since the 1980s, as a result of the periods of unsteady economic growth which has been acknowledged as the major driver that had led to an increase in the rate of unemployment especially in SSA countries over the years. The high rate of unemployment has been found to affect the rate of GDP growth rate negatively; hence it also serves as a sign of the country's state of the economy as it determines how well the economy utilizes her human resource as well as other resources in the long-run.

Ebaidalla (2013) believed that the high youth population makes the situation of unemployment in general even more dangerous and complicated, as such a population structure has prompted the need to restructure the labour market in order to create more jobs which is expected to pose more pressure in the future, as demand for jobs in the SSA countries will continue to rise.

The national economic objectives towards which the macroeconomic policies are directed in the long-run in an economy include the attainment of full employment, which is a reduction of unemployment to a minimum level, the rapid economic growth over time, as well as a rising standard of living for the citizens (Obadan and Iyaho, 1996).

According to the United Nations (2015) the 2030 Agenda for sustainable development, the broad objective of Goal 8 is to promote an inclusive and sustainable economic growth, full and productive employment as well as decent work for all. Some of specific objectives include:

> 8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries
>
> 8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training
>
> 8. 8 By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

The Goal of the United Nation 2030 Agenda for sustainable development is centered on youth empowerment in order to achieve and sustainable development; this would be achieved when the SSA governments provide the enabling macroeconomic environment for investments for both local and foreign investors.

In the Sub-Saharan Africa economic growth rates are still not high enough to make true impact in the pervasive unemployment rates that will enable these countries of the Sub-Saharan Africa region to catch up with other developing countries (Nkurunziza and Bates, 2004). According to the World Bank Development Indicators (2014), low-income countries in SSA are: Burundi, Burkina Faso, Chad, Congo Democratic Republic, Gambia, Guinea-Bissau, Guinea, Ethiopia, Liberia, Mali, Malawi, Niger, Sierra-Leone, Tanzania, Uganda, Kenya, Benin, Central African Republic, Mozambique, Togo, Madagascar, Comoros and Zimbabwe.

To examine how economic cycle influences unemployment, there is a need to have an understanding of the relationship between unemployment and economic growth as empirically examined by the American economist Arthur Okun in a seminal paper in 1962, He found out that there exist a negative relationship between unemployment and economic growth . This inverse relationship between unemployment and economic growth is identified as the Okun's law. Okun's analysis was on United States data for the period 1947-1957. He postulated that a one percent increase in unemployment would result in more than three percent loss in economic growth.

The present economic circumstances of the low-income countries in Sub-Saharan Africa are marred with high youth unemployment rate owing to the activities of political leaders as a result of mismanagement of resources and adverse macro-economic policies of various governments, by not channeling human and natural resources into profitable investment that are needed to yield the maximum economic growth. As a result some of the countries of Sub-Saharan Africa have been faced with severe economic and social costs that are connected with youth unemployment. The unemployed youth are more likely to engage in criminal activities, particularly armed robbery, as evidenced by events in some countries. Also, high risk and self-destructive activities as terrorists and suicide bombers as well as the recruitment of young combatants for armed conflicts, which are harmful to the Sub-Saharan Africa economies in general (Obadan, 1997 and Fosu, 2005).

Although the empirical study of Okun's has indeed blossomed, especially in most studies of the developed countries, little attention has been paid to study whether Okun's type relationship is applicable within low income countries in Sub-Saharan Africa. These previous studies before now

did not consider the connection between youth unemployment rate and economic growth rate of low income countries in Sub-Saharan Africa based on the World Bank classification of countries into different income groups. Hence, there appears to be a serious knowledge gap that calls for research studies in Sub-Saharan Africa region using low income countries. Based on this statement of the problem and the identified research gap, the objective of the paper is to determine the relationship between youth unemployment and economic growth. In addition, the paper sought to determine minimum growth rate that is needed to sustain minimum level of youth unemployment rate. The paper divided into the following sections: introduction, literature review in section two, section three theoretical framework and methodology, while section four presents the empirical results its analyses. Section five contains the summary, conclusion and recommendations of the paper.

2. Literature Review

2.1 Empirical Literature Review

Okun (1962) used data on the quarter to quarter growth rate of the real gross national product (GNP) and quarter to quarter difference in the unemployment rate from 1947 to 1960. According to Okun (1962), he estimated that if real GNP growth were held at zero the unemployment rate would grow at 0.3 percentage points, on average, from one quarter to next. Also, for each one percentage-point increase in real GNP growth, the unemployment rate would decrease by 0.3 percentage points. Reversing the causality, a 1 percent increase in unemployment will mean roughly more than three percent loss in GDP growth.

Smith (1975), Gordon (1984), Prachowny (1993), Weber (1995), Lee (2000) & Freeman (2001) re-estimated the Okun's relations based on US data and other countries data such as that of Lee (2000) who did a comprehensive study on Okun's law in terms of the number of countries, model specification, and econometric technique confirmed the negative relationship between unemployment rate and that of the output growth. Kaufman (1988), Lee (2000) & Moosa (1999) examined the Okun's relationship to ascertain the robustness based on a cross-country that is six industrial countries, sixteen organizations of economic cooperative development (OECD) countries and G7 countries.

Grant (2002) & Moosa (1997) examined the sign and the magnitude of Okun's coefficient in different specifications and for different countries. They found that there exists several strategies to decompose output into its trend and cyclical component, and they yielded different quantitative estimates.

Salman (2012) believed that the relationship between real GDP and unemployment is determined by such factors as technological change, laws,

labour market politics and transitions, demand, welfare benefits, population change, global competition and privatization, it is believed that the Okun's coefficient changes over time. Some economists have shown that GDP fluctuations have considerable consequences on the unemployment rate in a given economic environment. As opined by Lee (2000), these consequences are expected to be different in industrialized countries and in the United States. However, it now appears that Okun's law might actually be quite a vital instrument in making good comparisons across countries overtime.

Some studies have contrasting results to Okun's law such as that of Tingi & Lingi (2011) for Malaysia and Habees & Rumman (2012) for Arabian countries and Jordan that indicated that there is no absolute relation between unemployment and growth. Again, Lal, Muhammad, Jalil & Hussain (2010) in their studies of some developing Asian countries indicated that Okun's law is not applicable. There are several other disagreements among several economists concerning the test of Okun's law applicability, as observed by Bankole & Fatai (2013) who estimated that the hypothesis is invalid for Nigeria. Contrary to their findings, Amossoma and Nwosa (2013) found that the Okun's law was valid for Nigeria. In terms of the application of the Okun's law to age group in terms of young population and old population in Euro zone from the work of Hutengs & Stadtmann (2012), it was observed that there exist a strong validity for young population and weak validity for old population. The strongest decline in Okun's coefficient is observed among young people of age1 5-24 years. This indicates that young people are indeed most vulnerable to unemployment problem.

Salman (2012) agreed that there is a statistical and negative relationship that existed and the items of unemployment such as total unemployment, male and female unemployment based on the Swedish data.

Saint-Paul (1993) argued that there is a positive relationship between unemployment and productivity growth. While Davis & Haltiwanger (1992) suggested that there exist some possibility of a positive long-run relationship between growth and unemployment, since they showed that periods of high unemployment tend to be periods of high job-turn-over at the establishment level.

Caballero (1993) in his studies revealed that there exists a weak positive relationship between growth and unemployment in the UK and US between 1966 and 1989. High unemployment may have an adverse effect on growth in the presence of a learning-by-doing, reduction of the pool saving available for investment in physical or human capital activities.

Again ILO (2011) report highlights that there is a vicious cycle of a weaker economy affecting job and society, in turn depressing real investment and consumption, thus economy and so on. Yet, the report also states, not

enough attention has been paid to jobs as a key driver of the growth of the economy.

Knotek (2007) examined the constancy of the Okun's relationship and found that there is an asymmetric behavour with output effect being more severe upon unemployment when the economy is in depression. Moazzami and Dadgostar (2009) examined the essential distinction between short-term and long-term effects of Okun's relationship; they found out that the short run effects are in general weaker than the long-term ones.

3. Theoretical Framework and Methodology

3.1 Theoretical Framework

The relationship between economic growth and the unemployment rate based on theoretical linkage could be traced to one school of economic thought to another. The classical economist's school of thought believed that the connection between economic growth and unemployment is a one-way linkage that exists between the inputs of labour to economic growth. According to Kaldor (1967) as cited in Obadan & Odusola (2000) in invoking the Verdoorn's law states that faster growth of output is responsible for a faster growth of productivity.

The positive relationship that exists between employment and economic growth was also confirmed by Dernburg & McDougall (1985). Also from the view of the classical economists referring to Cobb-Douglas production function based on the technical links between output and the inputs such as labour and capital. The model indicated that the level of labour force assuming other variable is assumed to be constant help to determine the growth rate of output.

From the Keynesian economists' angle, the issue of output (economic growth) and unemployment is explained in terms of aggregate demand. The Keynesians believed that the demand for labour as a case of derived demand. The Keynesian theoretical linkages for economic growth and unemployment as analyzed by Hussain & Nadol (1997), Thirlwal (1997) and Grill and Zanalda (1995) states that increase in employment, technological change and capital stock are largely endogenous.

In a nut-shell, the growth of employment/unemployment is the determinants of long term increase in economic growth influenced by the level of unemployment/employment rate of a country.

The theoretical connection of economic growth and unemployment began with the works of Harrod (1936), Domar (1947) & Solow (1956) in their investigation of the issue of the long-run unemployment in influencing the level of economic growth. The extention of the Keynesian model could be found in the studies of Okun (19962). Theoretically Okun's law establishes the linkages between economic growth rate and unemployment

rate, which he ascertained empirically to be negative. Okun's law is seen as a benchmark for determining the economic well-being of a country.

3.2 Methodology

This section provides an estimation approach that captures the relationship that exists between economic growth rate and youth unemployment rate. The paper estimation is based on data from a cross section of low-income countries in Sub-Saharan Africa with respect to the classification of the World Bank Development Indicators (2014) of countries into income groups. In order to examine the relationship between youth unemployment rate and economic growth rate within low-income countries in Sub-Saharan Africa, the paper used annual time series data in line with the studies of Moosa (1997) & Viren (2001). Hence based on this study, empirical analyses would be done on annual data of twenty-three (23) low-income countries in Sub-Saharan Africa for the period 1991-2013.

3.2.1 Model Specification

The first difference version model of Okun's used the first difference of GDP growth rate and that of unemployment rate. The difference version has purely statistical and simple calculations which can be directly evaluated from the available empirical data. (Hilmer and Hilmer 2014). Hence, based on the knowledge gained from theoretical and empirical literature, this study will adopt the first difference version model of Okun's equation. The interest of the paper is to determine how change in unemployment rate affects economic growth rate in low-income countries in SSA.

According to Barreto & Howland (1993) believed that the direction of the regression, that is economic growth regressed on unemployment or unemployment regressed on economic growth is determined by the researcher research question.

The standard first difference version of Okun's equation is given as follows:

$$U_t - U_{t-1} = \alpha + \beta\left(Y_t - Y_{t-1}\right) + e_t \quad (1)$$

This can again be expressed as:

$$U_{i,t} - U_{i,t-1} = \alpha + \beta\left(Y_{i,t} - Y_{i,t-1}\right) + e_{i,t} \quad (2)$$

Where $_i$ = 1, 2, 3, 4 - - - m, countries.

t = 1, 2, 3, - - - n, years.

Where: $U_{i,t}$ = the observed youth unemployment rate of countries i.

$Y_{i,t}$ = the GDP growth rate (economic growth rate) of low-income countries within the Sub-Saharan Africa.

α = the intercept, which indicates the average economic growth of full-employment output (potential output). β = the Okun's coefficient,

which was estimated by Okun to be negative (β<0). The term β shows the variation in changes in economic growth rate as a result of a unit change in unemployment rate.

$e_{i,t}$ = error term. The error term is assumed to contain some different information such as factors affecting the dependent variable that are not used as the independent variables, specification errors, and the issues concerning the inherent randomness in human character (Hilmer *etal*, 2014)

The rate of output growth needed for a stable unemployment rate will be determined based on the formula: Rate of output ratio $= -\left(\frac{\alpha}{-\beta}\right)$ (3)

Equation (3) indicates the ratio of how much the economy of a country must grow to sustain a stable level of unemployment rate.

The value $\frac{\alpha}{\beta}$ is the minimum level of output growth needed to reduce the unemployment rate (Knotek, 2007).

Therefore the empirical model for the paper is expressed as follows:

$$YUN_{i,t} - YUN_{i,t-1} = \alpha + \beta\left(GGR_{i,t} - GGR_{i,t-1}\right) + e_{i,t} \quad (4)$$

Where: YUN= youth unemployment rate

GGR= GDP growth rate

e_t = the error term.

β<0 that is the expected a priori in the above equations 4-5 are expected to be negative respectively.

4. Data Analyses and Presntation of Results

4.1 Descriptive Statistics

Table 4.1.1 below shows the summary statistics of variables used in the paper study for low-income countries in SSA based on the World Bank classification of countries into income groups. The descriptive statistics results revealed that on average, the GDP growth rate (GGR) for low income countries stood on average at 3.82, the mean for youth unemployment was 9.38. The result imply on average that the GDP growth rate for low income countries within the Sub-Saharan Africa grow low and within the sample period.

Table 4.1.1 Descriptive Statistics for Low Income Countries in SSA

	GGR	***YUN***
Mean	3.82	9.38
Standard Deviation	8.14	4.22
Number of Observations	529	529
Number of Countries	23	23

Source: Author's Estimation Result (2017)

Based on the correlation matrix results presented in Table 4.1.2 below which depicts correlation among the variables. As expected, the youth unemployment variable and economic growth rate variable revealed a negative relationship which therefore shows that there exists an inverse connection between youth unemployment rate and economic growth rate in low-income countries in SSA as expected based on Okun's law (1962). The negative value of the correlation matrix also implies that movements of all the variables tend to be in the same.

Table 4.1.2: Correlation Matrix for 23 low-Income Countries in SSA (1991-2013)

	GGR	*YUN*
GGR	1	-0.0889
YUN	-0.0889	1

Source: Author's Correlation Results (2017)

4.2 Presentation of Empirical Results.

This paper section examines the degree to which the independent variable (economic grate rate) impacted on youth unemployment rate. Generally, the results will help to depict a significant inverse relationship between two variables based on panel data set from 1991 to 2013. The overall sample comprises 23 low-income countries in SSA. The calculations of the rate of the output growth rate needed to maintain stable youth unemployment were done for all countries within the sample period. EView 8.0 computer econometric software was employed in running the estimation results.

Table 4.2.1: Panel Least Squares Estimation Results for the overall sample of SSA countries. Youth unemployment rate (YUN) as the dependent variable and Economic growth rate (GGR) as the independent Variable.

Category of Countries	*AGGR*	*AYUN*	α	β	t-stat	Prob. Value	*R*
23 Low-income	3.8	9.4	5.423	-0.171	-2.049**	0.041	31.71

Source: Author's Estimation Results (2017)

Note: AGGR = Average GDP growth rate, AYUN = average youth unemployment rate**,** α =intercept, β =Okun's coefficient, R=rate of output ratio= $-\left(\frac{\alpha}{-\beta}\right)$

***/**/* represents significance at 1%, 5% and 10% level.

Table 4.2.1 above represents the average statistics values and panel estimation results for the relationship between economic growth rate and youth unemployment rate in low-income countries in SSA. The average youth unemployment rate (AYUN) is 9.4 and average GGR is 3.8 for low income countries within the timeframe of the paper study. The estimation results based on panel least squares revealed that the t-statistic value for low income countries was significant at 5% level. The Okun's coefficient (β) was observed to have a negative sign indicating that a unit reduction in youth unemployment rate would result in 0.171percent economic growth rate in low income countries of SSA and the calculated rate of output growth required to have a stable youth unemployment rate was observed to be 31.71 percent. The result for the Okun's coefficient for the youth or young population disagreed with the previous results obtained by Zanin (2014) who observed that there exists a higher Okun's coefficient for youth unemployment. However, the various estimated average statistical value indicated that young people are more vulnerable to unemployment problem in low-income countries in SSA. The main reason for the low Okun's coefficient in the low-income countries in SSA is due the high rate of youth unemployment rate and low GDP growth rate as against that of the developed countries with higher GDP growth rate and moderate level of youth unemployment rate.

Table 4.2.2: OLS Estimation Results for Low-Income Countries in SSA. Youth unemployment rate (YUN) as the dependent variable and Economic growth rate (GGR) as the independent variable.

Countries	*AYUN*	*AGGR*	α	β	t-stat	Prob. Value	*R*
Burundi	10.9	1.2	100.73	-9.17	-2.95**	0.008	10.99
Burkina Faso	4.5	5.7	9.72	-0.89	-0.95	0.354	10.92
Chad	10.7	6.0	296.88	-27.16	-9.27***	0.000	10.93
Congo D. R	15.0	0.6	259.04	-17.24	-26.71***	0.000	15.03
Gambia	10.8	3.4	215.48	-19.64	-8.03***	0.000	10.97
Guinea-Bissau	10.9	1.8	242.85	-22.22	-9.52***	0.000	10.93
Guinea	2.0	3.3	1.73	0.78	1.06	0.300	2.22
Ethiopia	9.2	6.4	3.53	0.31	0.54	0.593	11.39
Liberia	4.8	8.9	242.93	-48.66	-0.81	0.425	4.99
Mali	10.8	4.6	4.28	0.03	0.01	0.991	142.67
Malawi	13.5	4.1	272.25	-19.88	-21.55***	0.000	13.70
Niger	6.8	3.6	200.43	-29.00	-5.22***	0.000	6.91
Sierra-Leone	12.7	2.6	-9.25	0.93	1.98**	0.062	9.95
Tanzania	6.8	5.2	9.60	-0.64	-2.34**	0.029	15.00
Uganda	5.4	6.8	7.26	-0.09	-0.22	0.828	80.67
Kenya	17.1	3.4	270.76	-15.62	-11.20***	0.000	17.33
Benin	1.5	4.3	6.07	-1.20	-1.93**	0.068	5.06
Central African Republic	10.9	1.4	249.4	-22.77	-13.30***	0.000	10.95

Mozambique	14.3	6.7	195.43	-13.22	-10.42***	0.000	14.78
Togo	10.9	2.8	270.60	-24.68	-8.61***	0.000	10.96
Madagascar	4.6	2.7	5.34	-0.59	-0.91	0.374	9.05
Comoros	10.6	2.2	339.71	-31.73	-5.27***	0.000	10.71
Zimbabwe	11.1	0.02	-6.89	0.63	0.96	0.346	10.94

Source: Author's Estimation Results (2017)

Where: ***/**/* represents significance at 1%, 5% and 10% level.

AYUN= average youth unemployment rate

AGGR= average economic growth rate

$\alpha =$ Intercept term

β = Okun's coefficient

$$\text{Rate of output growth } (R) = -\left(\frac{\alpha}{-\beta}\right)$$

In order to ascertain whether the youth populations are more affected with unemployment in SSA countries especially among the low-income countries in SSA, the empirical relationship between economic growth and youth unemployment variables were determined.

Table 4.2.2 above shows 23 low income countries in SSA. The Okun's coefficients of 18 out of the 23 countries revealed the existence of the negative relationship between economic growth rate and youth unemployment rate. While countries such as Guinea, Ethiopia, Sierra-Leone, Zimbabwe and Mali were found to have positive coefficients which indicated the non-existence of Okun's relationship between economic growth rate and youth unemployment rate in these countries indicated a case of non-inclusive growth without development in these countries. The individual countries OLS estimation results revealed that 14 countries individual t-statistic results were found to be statistically significant either at 1%, 5% or 10% levels. The Okun's coefficient values were observed to vary significantly among the low-income countries. Countries such as Burkina Faso, Guinea, Ethiopia, Mali, Sierra-Leone, Tanzania, Uganda, Madagascar and Zimbabwe had a very low magnitudes of the Okun's coefficients indicating that a unit reduction in youth unemployment rate would result approximately 0.96 percent economic growth for Zimbabwe, while in Mali would result in 0.03 percent.

Within the low-income countries some of them were observed to have higher Okun's coefficients such as Gambia, Guinea-Bissau, Malawi and Central African Republic as shown in table 4.2.2. The calculated rate (R) of output growth needed to maintain a minimum level of a stable youth unemployment rates were observed to be very high for these low-income countries as shown in table 4.2.2 above. The highest rate was observed in Uganda with 80.67 percent while other countries need an average range of 11% to sustain a stable rate of youth unemployment rate. As shown in table

4.2.1 the average youth unemployment rate for low-income countries is 9.4 percent, but countries such as Burundi, Gambia, Mali, Sierra-Leone, Central-African Republic, Mozambique and Togo had their average youth unemployment to be higher than the overall average of youth unemployment rate for low-income countries. While countries such as Burkina-Faso, Guinea, Liberia, Niger, Uganda, Benin and Madagascar had low average youth unemployment rates as shown in table 4.2.2.

5.0 Summary, Conclusions and Recommendations

The paper explored the relationship between economic growth rate and youth unemployment rate in low-income countries in SSA by estimating Okun's coefficients. The data used covered a time frame of 1991 to 2013 period on annual basis and 23 low-income countries within SSA region were considered; it employed panel least squares and ordinary least squares empirical techniques to determine the relationship between economic growth and youth unemployment. The various statistical as well as empirical results were quite revealing indicating the inverse relationship between economic growth rate and youth unemployment rate in some cases, which further indicated the existence of Okun's law and its applicability within some low-income countries in SSA. The paper indicated that the Okun's coefficients vary across countries in terms of its coefficient magnitude.

The findings, therefore, presents a policy challenge considering the huge economic, political and as well as social costs associated with youth unemployment problems in low-income countries in SSA. These challenges can best be handled on individual countries as well as regional basis by the creation of more jobs based on labour intensive industries in these low-income countries in SSA, that the governments of these low-income countries should promote youth empowerment schemes by creating the needed policy environment, that the ratio of output growth needed to maintain stable level of youth unemployment rate could be sustained when there are boost in economic activities that will encouraged investment and employment. Few countries that exhibited positive relationship between youth unemployment rate and economic growth rate should focus more on how to increase the level of economic growth rate.

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