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Impact of Globalization on Unemployment in Sub-Saharan African (SSA) Countries

PETER ADAMU[a*], SHIVEE RANJANEE KALIAPPAN[a], YASMIN BANI[a] AND NORASHIDAH MOHAMED NOR[a]

[a]*Faculty of Economics and Management, Universiti Putra Malaysia, Malaysia*

ABSTRACT

This study examined the impact of globalization on unemployment in 35 countries in Sub-Saharan African for the period 2007-2014. The study period and number of countries used are based on data availability. The system generalized method of moments estimation technique was applied because unemployment is considered a dynamic phenomenon. The empirical findings shows that aggregated globalization measures (economic, social and political) significantly impact unemployment rate in SSA while among the components of globalization, only political globalization reduces unemployment. Economic growth rate and labour market regulations are significant and negatively related to unemployment while wage rate and inflation increases the rate of unemployment. Maintaining a low level of inflation is key to address the unemployment problems because the results suggest that stagflation exist in the case of SSA at the moment. Therefore, policies aimed at reducing the rate of unemployment should focus on low inflation rate, political globalization, labour market regulation and economic growth. Policies should also ensure that the regulations of the labour market are more flexible so as to benefit from globalization which can impact significantly on unemployment rate.

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* Corresponding author: Email: peteradamu@gmail.com

INTRODUCTION

The Heckscher-Ohlin (HO) theory suggest that both trade and foreign direct investment (FDI) should utilize the abundant labour in developing countries to trigger a trend of specialization in domestic labour-intensive activities which would result in an expansion of domestic employment. On the contrary, recent empirical literature supports that the employment impact of increasing trade is not necessarily positive for developing countries, especially if the hypothesis of homogeneous production functions across different countries is relaxed and the possibility of multiple equilibria is allowed (Grossman and Helpman, 1991). If globalization increases the total factor productivity of the developing countries, the employment enhancing competitive effect has to be compared with the direct labour-saving effect of the imported technologies (Haddad and Harrison, 1993; Coe, Helpman and Hoffmaister, 1997; Aitken and Harrison, 1999; Kathuria, 2001). This implies that the impact of increasing trade due to globalization on employment depends solely on the interaction between output growth and productivity growth in both the tradeable and non-tradeable sectors in the developing countries. However, the final outcome cannot be evaluated for the following reasons: on the one hand, export may involve a demand-led economic and employment growth while import may displace previously protected domestic firms and this might induce labour redundancy (unemployment). However, in the advent of supply challenges such as scarcity of skilled labour, inefficient labour market, poor infrastructure and under investment, the exporting sector can still have productivity growth more than output growth and this can be to the detriment of job creation (Lee and Vivarelli, 2004). In addition, domestic protected sectors such as agriculture, government establishments, construction, and non-traded service may act as labour sinks, often implying hidden unemployment and underemployment in the informal labour market (Reddy, 2004; Fosu, 2004).

Theoretically, capital accumulation and technological progress are seen as the major driving forces of economic growth. Capital flows not only directly increase capital accumulation in a host country, it also improve productivity through technology transfer. Therefore, capital flows plays a vital role in economic growth and development of a country. However, the rhetorical question is: where does capital flow to? The answer is provided in the neoclassical production function with diminishing marginal productivity of capital which suggests that capital should flow from capital-abundant rich countries to capital-scarce poor countries. Lucas (1990) argued that the reverse is the case because capital predominantly flows to the rich countries. The inconsistency between the theoretical prediction and the data is referred as the Lucas Paradox. Recently, the argument has shifted to ascertain whether globalization is attracted/distracted by institutional quality or not. Bergh and Nilsson (2014) found that economic and social globalization have positive correlation for developed countries and negative for poor countries. This suggests that better institutions attract promote globalization and vice versa. This assertion will not be tested in this study because of limited theory to back the interactive impact of globalization and institution on unemployment.

Some other studies have attempted to explain the effects of economic globalization on economic performance (see Dreher, 2006; Broda and Weinstein, 2006; Dutt and Mukhopadhyay, 2005; Dreher et al., 2008) and the labour market (see Davidson et al., 1999; Davidson and Matusz, 2004; Moore and Ranjan, 2005; Mitra and Ranjan, 2010). However, most of these studies used foreign direct investment (FDI) and trade openness as the proxies for economic globalization while others only provided the theoretical illustrations on the effects of globalization. With these issues, Dreher (2006) concluded that the impact of globalization on economic performance is likely to be wrongly estimated. This is because FDI and trade openness are only fractions of economic globalization, whereas the concept encompasses other factors such as income payments to foreign nationals; portfolio investment; and other cross-border transactions of goods and services. Consequently, the investigation of the impact of globalization on macroeconomic variables requires improvement in terms of the measurements used.

Since the overall impact of trade and FDI (i.e. globalization) on unemployment is uncertain from a theoretical point of view, it has become imperative to conduct empirical studies to ascertain the direct and indirect effects of globalization on unemployment of a globalizing SSA. In this study, we investigate the effects of globalization on unemployment by treating globalization as a complex as well as a multi-faceted concept. Globalization is most commonly defined strictly as an economic path, but it is somehow an ambiguous concept having several dimensions (Rodrik, 2000; Vamvakidis, 2002; Aramberri, 2009). To examine the several aspects of globalization, this study used

a broad index developed by Dreher et al. (2014) called the KOF index. The KOF index of globalization captures three main measurements known as economic, social and political globalization.

This paper contributes to the existing literature in a number of ways. Primarily, we examined the hypothesis that globalization could serve as a means for job creation or destruction. First, we test the impact of globalization on unemployment using each of the broad globalization indexes and not the FDI or trade openness as found in a number of literature. Secondly, the labour market regulations which is a very relevant variable to explain unemployment have been reduced to theoretical argument over the years. Recently, data on this variable have been made available by Economic freedom database and this study captures it empirically. Thirdly, empirical literature on the subject matter in SSA is scanty and this study intends to fill the gap in literature. Finally, a dynamic econometric approach is applied to capture in dynamism inherent in the model as unemployment is a dynamic phenomenon where previous rate affects current rate.

The paper is organized into 5 sections with section 1 as the introduction, Section 2 discusses the trend of unemployment in SSA and Section 3 presents the empirical review. Section 4 presents and discusses results and section 5 concludes the study.

Globalization and unemployment trend in SSA

Africa has been at the margins of the global economy for much of the post-independence period. In terms of trade, it has been one of the least integrated regions of the world. Africa's share of world trade has actually dropped from 4% to 1.5% over the last 40 years (Moss, 2009). Economic growth have being very slow through the 1970s, '80s and '90s. The continent has not being able to attract capital flow because investors think less of it as an investment destination. This situation was noticed during the recent global financial crisis which impact less on most of the countries in the region because it is just not integrated into the global financial markets. However, the last five years have seen average economic growth rates at about 5% (IMF, 2016). The flow of capital has increased not only into the oil and mining sectors, but other areas such as infrastructural development and manufacturing sector. The current global economic situation for the continent shows a more and more integrated African into the world economy. The empirical literature on the globalization-unemployment nexus has been mixed for both developing and developed countries. In the case of Africa, despite the recent improvement in capital flow into the continent, the rate of unemployment is high (figure 1).

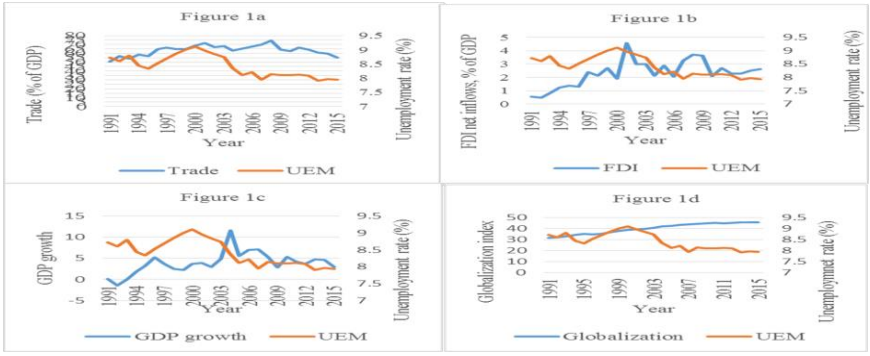

Figure 1 Multiple graphs showing the nexuses between Trade (1a), FDI (1b), GDP growth (1c), Globalization (1d) and Unemployment rate in SSA
Source: Author's computation, data from WDI, 2015.

The components of globalization which are trade and FDI revealed interesting trends in figure 1. For trade and unemployment rate, increase in trade openness is associated with an increasing rate of unemployment for the period 1991-1999. A sharp decline in unemployment rate is recorded for the period 2000-2005 for an increasing trade openness but beyond this period, a deceasing trend in trade is accompanied by a decreasing rate of unemployment. A similar trend is presented for the FDI and unemployment nexus. An increasing trend was shown for the period 1991-2000 while a decreasing trend was reported for the period 2001-2006 and thereafter, the relationship became constant with only a slight decrease. In the case of economic growth, the line graph shows that the variables flow in the same direction. The trend is positive at the early stage up to the year 2004 and start falling beyond that period for both of them. In

summary, figure 1 suggests that an increase in FDI, trade openness and economic growth is accompanied by a corresponding increasing in unemployment with little exception for trade openness-unemployment nexus. The aggregated globalization trend with unemployment rate shown in figure 1b suggest that the nexus is positive from 1991-2000 but thereafter, the trend shows that improvement in globalization is associated with a falling rate of unemployment. Despite these interesting relationship shown in the figure 1 which are based on aggregated data, the disaggregated data might reveal more interesting results on the basis of multivariate regression. Therefore, the study attempt to investigate the impact of globalization on unemployment on unemployment using both aggregated and disaggregated data.

REVIEW OF LITERATURE

Studies that have applied globalization index to direct or indirectly examine impact on unemployment rate are very scanty. For the few that have attempted to explore this nexus, mixed findings have been reported. Hasan et al. (2012) argued that the ambiguity might be due methodological inappropriateness or choice of the globalization proxy. Dutt et al. (2009) believes that trade openness improve aggregate labour productivity and consequently reduce unemployment rate because it result in more job creation and job search. Matusz (1996) suggest that trade improves productivity in a country and reduces the unemployment rate. Similarly, Felbermayr et al. (2011) found a negative relationship between the unemployment rate and economic openness for 20 OECD countries.

On the contrary, Helpman and Itskhoki (2010) argued that lower trade barriers can lead to an increase in unemployment. This is because a reduction in trade barriers improves the profitability of exporting firms, thus leading to an expansion of the trading sector. If this sector is characterized by labour market friction, unemployment will increase when a mismatch in skill requirements exists, leaving unskilled workers unemployed. Janiak (2013) also demonstrated that higher trade exposure is associated with a higher level of equilibrium in unemployment. The reason is that job destruction, resulting from the movement of small low-productivity firms, exceeds job creation by large high-productivity firms because larger firms will extract higher rents by limiting the level of job creation.

Sener (2001) and Moore and Ranjan (2005) concluded that trade liberalization result to an increase in the unemployment of unskilled workers. Sener (2001) argued that trade liberalization increases the profitability of innovation activity by raising the profit margin of the exporting firms. Consequently, more firms will engage in research and development, resulting in an increase in the demand for skilled labour (Sener, 2001). On the other hand, a higher frequency of innovations increases the turnover rate of unskilled workers by speeding up the creative destruction process and increasing the frictional unemployment rate of unskilled workers.

Hoekman and Winters (2007) shows that trade integration is a potential for job creation but skill-biased technical change dominates. Zaki (2011) finds that exports have a positive and significant effect on employment. A number of studies have shown that export orientation is positively related to job creation in the manufacturing sector especially for female (Seguino, 2000; Heintz, 2006; Özler, 2007). Also, Klein and Weirowski (2011) find that exports have a significantly negative impact on unemployment rates in Germany. Similarly, Görg and Görlich (2012) concluded that the probability of switching into unemployment is positively correlated with the export share in Germany. That is, individuals in industries with high export shares are more likely to lose their jobs. In the case of Korean manufacturing sector, Hahn and Park (2011) suggest that export promote employment of the skilled workers but had a less beneficial effect on the unskilled workers since the country increased its pace of globalization in the 1990s. Iapadre (2011) concluded that trade specialization plays a positive role in sustaining the growth of employment in the previous decade, offsetting the negative impact of the competitive pressure from developing countries and of production off-shoring by Italian firms. Kiyota (2011) finds that the demand for employment from exports has increased since 1985 both in manufacturing and non-manufacturing.

Kim (2011) finds that an increase in trade leads to higher aggregate unemployment for 20 OECD countries as it interacts with rigid labor market institutions, while it is likely to reduce aggregate unemployment if the labor market is characterized by flexibility. Also, Goldberg and Pavcnik (2007) and Revenga (1997) show an increase in worker displacement (unemployment) after trade liberalization while Krugman (1993), Mussa (1993) and Attanasio et al.

(2004) claim that trade does not affect the rate of unemployment. The study by Thompson et al. (2012) for Australia concluded that trade liberalization causes relocation of jobs and this leads to a decrease in employment in the manufacturing sector but increase in mining and services sectors. Aswicahyono et al. (2011) investigated the impact of exports on employment in Indonesia using the input–output and found that fewer jobs were created through exports in manufacturing industries in 2005 than before the crisis but jobs were created in the service sector. The analysis of French manufacturing firms by Biscourp and Kramarz (2007) shows that importers of finished goods shed more jobs than importers of intermediate inputs. Conversely, exports of finished goods have a positive employment effect and exports of other goods have negative effects. In the case of Africa, Anyanwu (2014) studied intra-African trade and found that this type of trade reduces youth unemployment in the region. Hence, the effects of trade liberalization on the aggregate unemployment rate are ambiguous.

From the literatures reviewed, it is clear that studies on effect of globalization youth unemployment are very scanty, particularly in Sub-Saharan Africa. Also, the findings seems to vary for country specific studies, cross-section and firm-level studies. Further, the results differ between developed and developing countries. In light of these gaps, this study attempts to investigate the impact of globalization on unemployment in SSA.

DATA AND METHODS

The data used in this study were obtained from three sources. The time period covered for this study is 2007-2014 for 35 countries. The choice of the study period and number of countries were based on the availability of data on relevant variables. Data on globalization was retrieved from the KOF globalization index (Dreher et al. 2014), while the data on labour market regulation was extracted from the economic freedom of the world by Gwartney et al. (2014). Data on unemployment rate, GDP per capita and inflation rate (measured in GDP deflator) and real wages proxied by GDP per employed person were obtained from the World Development Indicators (2015). The index for labour market regulations contains six sub- indicators that measures the effect of hiring regulations and minimum wages; hiring and firing regulations; centralized collective bargaining; regulation of working hours; mandated costs of worker dismissal; and conscription. The various aspect of labour market regulations infringe upon the economic freedom of employees and employers. The labour market regulation index captures the presence of infringements. The indicators are normalized to range from 0 to 10, with higher scores representing higher economic freedom and less regulation. The aggregate index is calculated as the arithmetic mean of the ratings for all six sub-indicators.

This study adapted the model by Felbermayr et al. (2011) and Awad and Youssof (2016) and extended it to include relevant variables that explains the nexus between globalization and unemployment in SSA. Based on this, the model for the study is specified as:

$$UEM_{i,t} = \beta_1 GLO_{i,t} + \beta_2 LMR_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 INF_{i,t} + \beta_5 WAGE_{i,t} + \nu_i + \nu_t + \varepsilon_{i,t} \quad (1)$$

Where UEM represents total unemployment, GLO denote the components of globalization indexes such as economic (actual flow, trade restrictions), social (personal contact, information flows and cultural proximity) and political globalization. GLO is used as aggregate and it components used in disaggregate form in the analysis. LMR is labour market regulation, GROWTH represents gross domestic product per capita, INF denote inflation rate and WAGE is gross domestic product per employed person. Equation 1 is further transformed into a dynamic model since unemployment is a dynamic phenomenon. The dynamic model is specified as:

$$UEM_{i,t} = \beta_0 UEM_{i,t-1} + \beta_1 GLO_{i,t} + \beta_2 LMR_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 INF_{i,t} + \beta_5 WAGE_{i,t} + \nu_i + \nu_t + \varepsilon_{i,t} \quad (2)$$

Equation 2 capture the dynamism in the relationship between the variables based on the fact that the lagged value of the dependent variable form part of the explanatory variables. However, the model has a potential problem of endogeneity as well as reverse causality because of the relationship between the lagged dependent variable and the error term. To overcome this problems, the generalized method of moments (GMM) estimator specifically developed

by Arrelano and Bond (1991), Arrelano and Bover (1995), and Blundell and Bond (1998) for dynamic panel data modelling was applied. Specially, to control for country unobserved effects, these estimator applied the differencing procedure for the variables or used instruments. Again, the lagged dependent variable and previous information of the explanatory variables are used as internal instruments. To eliminate unobserved specific effects, the first difference of equation (2) is presented as:

$$UEM_{it} - UEM_{i,t-1} = \lambda(UEM_{it-1} - UEM_{it-2}) + \alpha_1(GLO_{it} - GLO_{it-1}) + \alpha_2(GDP_{it} - GDP_{it-1}) + \alpha_3(INF_{it} - INF_{it-1}) + \alpha_4(RWG_{it} - RWG_{it-1}) + \alpha_5(LMR_{it} - LMR_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1}) \quad (3)$$

It is worthy to note that by differencing, variables that are constant over time are eliminated. The internal instruments are needed to remove the likely endogeneity of the independent variables and the problem that might arise when the newly constructed error term $\varepsilon_{it} - \varepsilon_{it-1}$ is correlated with the lagged dependent variable $UEM_{it} - UEM_{it-1}$. The instruments utilizes the powers of the panel structure of the data in that they comprise of previous information or observation of the independent and lagged dependent variables. However, this method allows for current and future values of the independent variables to be affected by shocks emanating from unemployment rate. It is this kind of endogeneity problem that the GMM is designed to handle. If it is established that the error term is not serially corrected and the independent variables are weakly exogenous, the GMM panel estimator considers the following conditions of moment:

$$E\left[UEM_{it-2}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0 \quad (4)$$

$$E\left[GLO_{it-1}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0 \quad (5)$$

$$E\left[GDP_{it-1}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0 \quad (6)$$

$$E\left[INF_{it-1}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0 \quad (7)$$

$$E\left[RWG_{it-1}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0 \quad (8)$$

$$E\left[LMR_{it-1}\left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right)\right] = 0 \quad (9)$$

In theory, the potential set of internal instruments emanates from all sufficiently large observations (instruments grows with time period, T). However, if the sample is not sufficiently large, it is more efficient to use a restricted set of moment conditions so as to avoid overfitting bias (see Arrelano and Bond, 1991; Roodman, 2007, 2009). This study falls under this situation and uses only one lag of each time-varying independent variables. The GMM estimator which is shown in equation 3 is called the difference GMM. Despite its advantages in favour of a simpler panel data estimator, the difference GMM has some statistical problems. This is because the persistence of the explanatory variables over time renders the lagged levels of these variables weak instruments in the difference GMM (Blundell and Bond, 1998; and Alonso-Borrego and Arrelano, 1999). The presence of weak instruments in the difference GMM regression equation affects it asymptotic and small sample performance to produce inefficient and biased coefficients. Therefore, to reduce the possible biases and inefficiencies associated with the difference GMM, an estimator that put together the difference and level equation into a system of equation is considered for this study. The method is known as the system GMM developed by Arrelano and Bover (1995) and Blundell and Bond (1998). The findings of this study are based on the results of sys-GMM.

RESULTS AND DISCUSSION

The discussion of the results of this study commenced by explaining the descriptive statistics of each variable used (Table 1). On an average, the rate of unemployment in SSA is 9.55 which is above the natural rate of unemployment.

This implies that a large percentage of the labour force in the region are without jobs. From a scale of 100, the aggregate globalization index is 45.7 and this suggest that globalization is yet to manifest it full presence in SSA. While economic globalization stood at 48.1, social globalization shows an average of 27.6. The presence of political globalization in SSA is more because the average from a scale of 100 is 67.1. This suggest that the presence of globalization in SSA is more to political than social and economic standpoint. The economic growth rate is low with an average of 2.33% and this implies that the average growth rate for the region is creeping. As for real wage represented by GDP per employed person, the average wage is 10184 USD with a larger standard deviation of 13507 USD. This shows the presence of wide discrepancy or inequity between countries in the region. The rate of inflation in the region stood at a single digit but a maximum value of 104 reported and this was for Zimbabwe who encountered the worst economic problem in the region in recent times. The average labour market regulations stood at 6.2 from a scale of 10 with a maximum of 9.12. The result suggest that economic freedom is somewhat high in the SSA region.

Table 1 Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Total unemployment rate	280	9.55	7.87	0.60	37.6
Inflation rate (GDP deflator %)	280	7.42	9.97	-20.63	103.82
Real wage (USD)	280	10184.43	13507.69	1311.97	63381.53
GDP per capita growth (%)	280	2.33	4.18	-37.93	18.06
Aggregate globalization index	280	45.68	7.72	30.19	69.37
Economic globalization index	280	48.09	12.95	20.95	87.22
Social globalization index	280	27.62	9.77	14.04	64.49
Political globalization index	280	67.18	12.21	33.93	90.94
Labour market regulation	280	6.20	1.57	2.76	9.12

Table 2 presents the correlation matrix. The variables that produced a positive nexus with unemployment rate are aggregated globalization, inflation rate, wage rate, economic globalization, social globalization, and all other components of economic and social globalization which are actual flow and trade restrictions for economic globalization and personal contact, information flows and cultural proximity for social globalization. On the other hand, the variables that shows a negative nexus are economic growth (GDPCG), labour market regulation (LMR) and political globalization.

Table 2 Correlation Matrix

	UEM	GLO	GDPG	INFC	WAGE	LMR	EGL	SGL	PGL	AFW	TRS	PAC	INF	CUP
LUEM	1													
LGLO	0.35	1												
GDPCG	-0.08	0.07	1											
LINFC	0.03	-0.06	0.17	1										
WAEG	0.47	0.73	0.03	-0.05	1									
LLMR	-0.05	0.19	0.19	0.32	0.37	1								
LEGL	0.44	0.83	0.04	-0.06	0.68	0.13	1							
LSGL	0.33	0.82	-0.01	-0.12	0.72	0.19	0.64	1						
LPGL	-0.21	0.21	0.06	0.05	-0.13	-0.03	-0.21	-0.1	1					
LAFW	0.49	0.68	-0.02	-0.2	0.6	-0.07	0.88	0.5	-0.24	1				
LTRS	0.11	0.6	0.14	0.21	0.37	0.29	0.64	0.47	-0.06	0.24	1			
LPAC	0.24	0.62	0.02	-0.14	0.59	0.12	0.48	0.85	-0.16	0.37	0.33	1		
LINF	0.37	0.74	-0.09	-0.16	0.64	0.12	0.65	0.85	-0.13	0.56	0.42	0.52	1	
LCUP	0.17	0.51	0.1	0.2	0.37	0.17	0.3	0.67	-0.02	0.07	0.52	0.48	0.45	1

UEM=unemployment rate, GLO=Aggregate globalization index, GDPCG=Economic growth, INFC=Inflation rate, WAGE=Real wage, LMR=Labour market regulation, EGL=Economic globalization, SGL=Social globalization, PGL=Political globalization, AFW=Actual flow, TRS=Trade restriction, PAC=Personal contact, INF=Information flow, CUP=Cultural proximity. All variables are logged.

Table 3 Sys-GMM result, Dependent variable: Total Unemployment (UEM)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
L.LUEM	0.834***	0.839***	0.837***	0.805***	0.834***	0.713***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
LGLO	-0.118***					
	(0.03)					
GDPCG	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.003*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LINFC	0.006***	0.007***	0.007***	0.009***	0.009***	0.021***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
LWAGE	0.100***	0.079***	0.088***	0.092***	0.077***	0.138***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.02)
LLMR	-0.118***	-0.098***	-0.137***	-0.148***	-0.104***	-0.302***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.08)
LEGL		0.013				
		(0.02)				
LSGL			-0.030			
			(0.03)			
LPGL				-0.125***		
				(0.02)		
LAFW					0.032***	
					(0.01)	
LTRS					-0.033**	
					(0.01)	
LPAC						-0.056**
						(0.02)
LINF						0.157
						(0.08)
LCUP						0.020
						(0.02)
Constant	0.113	-0.251	-0.133	0.362***	-0.174***	-0.549**
	(0.07)	(0.03)	(0.02)	(0.13)	(0.05)	(0.21)
AR1	0.257	0.253	0.255	0.258	0.256	0.253
AR2	0.253	0.353	0.353	0.358	0.355	0.357
Hansen	0.355	0.467	0.245	0.351	0.603	0.561
No. of Instruments	33	33	33	33	34	27

Note: *, ** & *** signifies significance at 10%, 5% & 1% respectively. Values in parenthesis are standard errors. All variables are in log except GDP growth.

Table 3 shows the results for the sys-GMM estimation. A total of six models were analyzed by incorporating various types of globalization indexes and were treated separately to uncover meaningful findings. In all the models, the coefficients of the lagged dependent variable are less than one and this is in line with the conditions to perform a GMM estimation. Similarly, the diagnostic tests for the entire models shows that none of the model have the problem of autocorrelation at first or second order and the test of over-identification restrictions revealed that the results are robust for all models. Generally, the results indicate that, aggregate globalization, economic growth and labour market regulation have a negative and significant impact on unemployment rate in SSA but the rate of inflation and wage increases unemployment (see model 1). Specifically, model 1 and 2 shows that economic and social globalization are not significantly related to unemployment but political globalization reduces unemployment significantly in SSA.

However, actual flow which is a component of economic globalization increases the rate of unemployment significantly but trade restrictions shows a significantly negative effect on unemployment. In the case of the sub component of social globalization, personal contact significantly reduces unemployment while information flow and cultural proximity are not significantly related to unemployment in SSA. In terms of the variable of interest which are the aggregated globalization index and it disaggregated components (economic, social and political globalization), economic and social globalization are not significant in explaining unemployment and this finding is consistent with those of Attanasio et al. (2004), Helpman and Itskhoki (2010) and Hasan et al. (2012) but inconsistent with the conclusions by Dutt et al. (2009), Felbermayr et al. (2011) and Awad and Youssof (2016). The results confirms a significant relationship between economic growth and unemployment in all models and this establishes the existence of the law of Okun (1962) (improvement in economic growth reduces unemployment) for SSA. Similarly, the result of the labour market regulations is shown as an effective tool in reducing unemployment in SSA because from the baseline model, one percentage increase in labour market regulation leads to a 0.118 decrease in unemployment rate. This is observed in other five models. These results are in line with those obtained by previous studies such as Scarpetta,

(1996); Nickell, (1997); Blanchard and Wolfers, (2000); Bassanini and Duval, (2006), which concluded that labor market institutions are key determinants of unemployment outcomes. The outcomes of this study calls for better policies for unemployment reduction in SSA.

CONCLUSION

The general objective of this study is to investigate the impact of globalization and unemployment in 35 countries in Sub-Saharan African for the period 2007-2014. Aside globalization, some other factors such as economic growth, inflation, wage rates, and labour market regulation also affects unemployment rate. These factors are captured in the empirical estimation. The empirical findings shows that aggregate globalization (economic, social and political) exert significant impact on unemployment rate in SSA but among the components of globalization, only political globalization is unemployment reducing. The growth rate of the economy is an important determinant of unemployment and labour market regulation is among the most effective unemployment reducing agent as reported in the results of this study. The rate of inflation and wage tend to aggravate the rate of unemployment in the region. Maintaining a low level of inflation is key to the fight of unemployment problems because the results of this study suggest that stagflation exist in SSA countries at the moment. Therefore, policies aimed at reducing the rate of unemployment should be focused on low inflation rate, political globalization, labour market regulation and economic growth. Policies should also ensure that the regulation of the labour market are more flexible so as to benefit from globalization which can impact significantly on unemployment rate. This study is limited because of data availability below the time period covered for some relevant variables. Future study should consider re-estimating this nexus if better proxies can be obtained. The rate of unemployment considered in this study are aggregate and this might not reveal the actual nature of unemployment especially among skilled and unskilled person separately. Therefore, future studies are needed in this direction.

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