

Unemployment and Stock Market Development: Empirical Evidence from Africa

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Abstract:

The unemployment rate in Africa is on the escalating trend and is becoming a socio-economic threat to the general economic stability of the region. Furthermore, the aftershock of the 2008 global financial crisis exacerbates the poor development of the financial markets with an attendant decrease in capitalization and market liquidity. Efforts of the previous policies to promote stock market development and restore investors' confidence did not yield significant outcome as the stock markets did not recover to their pre-crisis period. This paper empirically examines the long-run relationship between unemployment and stock market development in Africa, using a pooled mean group (PMG) model for the sample period of 1996 to 2016. The findings reveal that unemployment has a positive and statistically significant impact on the stock market development. The findings go in line with the notion that unemployment can help forecast stock market thus policymakers should rely on the unemployment announcement as an avenue for promoting stock market development.

Keywords: Africa, Financial Crisis, Pooled Mean Group, Unemployment, Stock Market.

1. Introduction:

The stock market is an essential segment of the financial market that gauges the economic strength of nations. The market mirrors changes in investors' prospects towards potential factors affecting future price of equities. Therefore stock markets are reflections of the changes in investors' prospect about the future value of factors that influence stock prices (Trahan and Krantz, 2011). Thus, economic stability is crucial in turning nations into an attractive investment destination for both local and foreign investment. The stock market provides opportunities for investors but is most often affected by the changes of other economic agents. Yartey (2010), states that stock markets are major channels for foreign capital flows to transition economies.

The African region has a diverse financial system and is the most economically underdeveloped with many untapped investment opportunities (Allen et al., 2010). Despite the crucial role of stock markets globally in financing and developing business activities, this segment of the financial market has not been given priority in Africa. In other words, the equity markets in the developed nations are used as a medium for obtaining long-term financing by corporate organizations and government agencies. However, the African stock markets face serious challenges regarding their market capitalization (size), liquidity and volume. That is, most of the markets are small, illiquid and market capitalization is mostly dominated by few firms.

The socio-economic factors have been a major setback to the development and growth of African financial system. The persistent level of unemployment and poverty in the continent is having an adverse effect on economic growth. Thus, they are expected to have an effect on investment and the overall development of the stock market. The recent report from World Bank states that Sub Sahara Africa is a home of at least 30 percent of the world poorest people and Africa has six out of the ten most unequal countries in the World (World Bank Group, 2015). In fact, the scourge of poverty and unemployment has ravaged almost all nations in different dimensions (Akwaru *et al.*, 2013). According to Ojeaga (2014), Africa has the highest population living below the poverty line while Castells-quintana and Royuela (2012) observe that when unemployment becomes high and persistent, there are economic costs that can become detrimental to long-term growth. Therefore, the level of unemployment may have an effect on stock market development through a decrease in the nations' aggregate income and investment.

However, the persistent rise in unemployment can diminish investors' confidence and creates panic for expected changes in interest rates which traditionally, can have a negative effect on stock returns. In addition, Birz and Dutta (2016) assert that the employment/unemployment news announcement is among the most crucial announcements affecting stock markets. However, Farmer (2015) found a significant link between unemployment and the stock market crash in the United States. The author further attributes the market crash to a self-fulfilling crisis of confidence that shift economies from low to high unemployment equilibrium. In spite of the effort by government and private sectors, the unemployment in Africa is on the escalating trend and is becoming a socio-economic threat hence the growing number of the unemployed citizens cannot be absorbed by the available job opportunities.

Needless to say, however, the 2008 global financial crisis is among the major factors causing the decline in growth of stock markets and the entire economic activities. It is an event associated with large variations in the volume of credit and asset prices with a severe disruption in financial intermediation (Claessens and Kose, 2013). Specifically, it is observed that the 2008 financial crisis was a major interruption to the financial intermediation of many economies (Schwert, 2011). Therefore it necessitates for an urgent response in the financial sector through policies and diversification. Öztekin and Öcal (2017), states that investors apply different portfolio diversification tactics to mitigate risk due to uncertainty in future outcomes.

Therefore, the global financial crises and unstable economic fundamentals become a major source of concern to the international portfolio investors seeking diversification opportunities in Africa. Moreover, these factors create uncertainty in the minds of investors and if not addressed will further aggravate its adverse effect on African portfolio diversification. Beck *et al.* (2011) observe that the African capital market experienced a rapid decline in capital flows which dampens the stock market indexes throughout the continent and constrains the government and firms to cancel bond and stock issues. Hence, uncertainty generally intensifies economic disorder and thus heightens stock market investment risk (Tsai, 2017)

Despite the several intervention programs launched to mitigate the rising trend of unemployment in Africa and its attendant consequences, the rate kept increasing to an unacceptable level. The available statistics from the African Development Bank (AFDB, 2016) report reveals that the African continent has about 420 million youth where one-third of the aforesaid population are unemployed, another third are vulnerably employed with only sixteen percent (one six) engaging in wage employment. Hence the increase in the working age population without a corresponding job and employment opportunities is a major source of concern to the policymakers in the region. However, the escalating trend needs an urgent policy reform and government attention to avoid its degeneration of crisis and political instability. Baah-boateng (2016) observes that without sufficient job opportunities, the increasing number of the educated unemployed youth could be detrimental and a source of conflict to Africa while Ilo (2015) asserts that unemployment has been prohibitively high in Nigeria since the adoption of the structural adjustment program and has contributed to

low economic growth. Also, Asaju et al (2014) disclose that corruption and industrial decay are responsible for the escalating level of unemployment.

However, empirical findings on the relationship between unemployment and stock market development are very scarce especially with respect to the African literature. Most of the available literature that investigate unemployment-stock market relationship are mostly done on United States market and few other developed economies that accomplish all aspects of economic development and stability (See Tapa *et al.*, 2016; Farsio & Fazel, 2013; Poitras, 2004). Therefore, an adaptation of results from industrialized economies to the present study that focused on Africa may not be rational due to the difference in economic development.

To the best of knowledge, there are no existing panel studies in Africa on how unemployment relates to stock market development. It is still not clear in Africa how the unemployment rate predicts stock market development despite the Birz and Dutta (2016) assertion that employment/unemployment news announcement is among the most crucial announcements affecting stock markets. Hence this paper attempts to bridge the existing literature gap by investigating whether the high level of unemployment in the African countries contributes to the inefficiency and low development of the stock markets using the pooled mean group (PMG) model. The remaining part of the paper is organized in the following order: section two reviews previous empirical literature, section three describes data and methodology, section four discusses empirical finding while section five is for conclusion and policy implications.

2. Review of the Related Literature:

However, the existing empirical studies provide inconclusive evidence on the relationship between the stock market and unemployment in spite of the significance of their findings. Some studies found a causal relationship between the variables (Kilic & Wachter, 2016; Medovikov, 2014). Surprisingly, these studies show a unidirectional causality from the stock market to unemployment. It is the variation in stock markets that determine the level of unemployment, as market return increases it will bring about business expansion and this may need additional manpower to handle new areas thus causing reduction in the level of unemployment. Additionally, Holmes and Maghrebi (2016); Fritsche and Pierdzioch (2016) and Rahman (2009) observe that there is a positive link between stock market fluctuation and unemployment rate. Intuitively, the stock market is forward looking because the expectation about future is mirrored in equity prices and deviation from such anticipation results to market volatility.

Furthermore, other studies found the existence of a positive relationship (Belo et al., 2014; Ganzalo & Taamouti, 2014; Mustafa et al., 2015; Pan, 2018). The studies suggest that as unemployment news is made public, there is an expectation that government will cut down interest rates which will further lead to increase in future cash flows and stock market returns. On the contrary, a significant negative nexus is reported between the variables from other literature (Ilo, 2015; Gatti & Vaubourg, 2009; Taulbee, 2001; McQueen & Roley, 1993). These studies argue that as unemployment news is announced, it may create panic in public and reduce investors' confidence in market leading to a reduction in future equity returns. The second argument is that rising unemployment leads to a decline in demand for goods and services which reduce revenue and profit leading to falling in the stock prices.

Although the link between stock market and unemployment is one of the major research areas in financial economies, some studies could not find an evidence of a significant relationship between the variables (Tapa *et al.*, 2016; Farsio & Fazel, 2013; Poitras, 2004). This means that unemployment data may not help investors in predicting future market returns as they are independent of each other. Therefore the above evidence suggests a weak-form efficient market and this makes unemployment news announcement irrelevant as far as future stock price is a concern. However, Farmer (2015) found a significant link between unemployment and

the stock market crash in the United States. The level of unemployment in U.S. rises as a result of the contagion and this spreads to the global market affecting nations in different phases. Additionally, mixed findings are reported on the relation between the variables in business cycle period as Cakan (2010), Bestelmeyer and Hess (2010) Boyd *et al.* (2005), and Boyd *et al.* (2002) found significant positive link during economic expansion and negative in the recession period.

Other studies examine the relationship between United States unemployment news and international stock prices and found a significant nexus between the variables (Birz & Dutta, 2016; and Lahaye *et al.*, 2011). The findings support the argument that domestic economic news would affect international stock prices. Therefore, it is plausible to state that the United States economic factors comprise global economic information as it is a trading partner for many countries around the globe.

Although some economic news may not be useful in predicting market returns, the U.S. unemployment news is among the most critical factors that can cause changes in the global capital market. It is due to the interdependence between the United States and the global market that spread the consequence of the global financial crisis with varying level of damages including on African countries. Additionally, the financial liquidity of firms can contribute to their level of employment and other market activities as Rendón (2000) found evidence of a significant positive link between financial squeeze and job creation. This clearly signifies that the financial squeeze hinders the creation of permanent jobs for small companies that seem to be productive. Intuitively, an active financial market creates employment opportunities as job seekers will be engaged by the economy and this will have a long-run positive impact on the companies' productivity.

Despite the impact of unemployment on the stock market as shown in the previous literature, there are no existing panel studies for Africa. Thus understanding how the stock market responds to changes in the unemployment announcement can be used to plan for future investment and this calls for a further study to investigate whether unemployment predicts stock market development in the African region.

3. Data and Empirical Method:

The research data was obtained from the World Development Indicators (WDIs, 2016) database and the Financial Development and Structure (FDS) database of Beck *et al.* (2010). The annual sample period is from 1996 to 2016 with 12 African countries which comprise 240 numbers of observations. However, the countries selected are based on data availability using unemployment as an independent variable while exchange rates, interest rates and the structural break represent the control variables. Furthermore, the dependent variable of stock market development was a composite index constructed using the principal component analysis which comprises the market capitalization ratio, turnover ratio and the stock traded value. The wisdom behind the application of the composite index was due to the multidimensional nature of the stock market development thus employing a single measurement cannot capture the entire development of the market. Levine and Zervos (1998), contend that using each of these indicators (capitalization, turnover and stock traded) separately has a shortcoming and does not represent the entire development of the market.

However, the expected theoretical relationship between the selected variables and stock price also need important consideration. The paper hypothesized a negative relationship between the unemployment and stock market development in line with some previous literature ((Ilo, 2015; Gatti & Vaubourg, 2009; Taulbee, 2001; McQueen & Roley, 1993). These studies argue that as unemployment news is announced, it may create panic in public and can erode the investors' confidence in the market and this could lead to a reduction in future equity returns. The second argument is that rising unemployment leads to a decline in demand for goods and services which reduce the revenue and profit leading to a fall in stock price. The control variables of the model are also considered in the theoretical prediction. For example the paper expects a positive nexus between exchange rate and stock market while both interest rates and the structural break due to the global

financial crisis (GFC) of 2008 are assumed to have a negative nexus with the dependent variable supporting some existing empirical findings (Alam & Uddin, 2009; Lin & Fu, 2015; Tay et al., 2016).

The Pooled mean group (PMG) model of Pesaran *et al.*, (1999) was employed to examine the dynamic relationship between unemployment and stock market development in Africa. This technique (PMG) has several advantages over traditional/static models. Due to the common features of the African economies, the model is suitable as the similarity is expected to impact on the long-term coefficient in a similar way. Also, it has an additional advantage over other heterogeneous models as it constrains the long-run estimates to be similar regardless of the order of integration of the variables. Furthermore, the estimates of PMG seem quite robust to misspecification bias, outliers and lag order selection. Thus equation 1 is specified as the initial model for this paper which includes the dependent variable, independent variable and a set of control variables as follows:

$$SMD_{it} = \alpha_0 + \alpha_1 UN_{it} + \alpha_2 ER_{it} + \alpha_3 IR_{it} + \alpha_4 CR_{it} + \alpha_5 BRK_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where SMD stands for stock market development, UN is for unemployment, ER is a symbol of exchange rates, and IR represents interest rates while BRK stands for structural change due to the global financial crisis. The epsilon ε means error term, whereas i represent country and t denotes the period of time. However, $i = 1, 2, 3 \dots 12$ for the selected African countries while $t = 1, 2, 3 \dots 21$ is for the number of years to be covered. Therefore, the unrestricted PMG model specification is shown below:

$$SMD_{it} = \sum_{n=1}^r \theta_{ij} SMD_{i,j-e} + \sum_{n=1}^s \gamma'_{ij} C_{i,g-1} + \delta_i + \varepsilon_{it} \quad (2)$$

Where SMD is the dependent variable representing stock market development, $X_{i,t-j}$ is the vector of explanatory variables of the model (Unemployment, Exchange rates, Interest rates and Break) for country i . The subscript, $t = 1, 2, 3 \dots T$ for time t and $i = 1, 2, 3 \dots N$, for countries in the sample. The symbol δ_i represents country-specific effects while μ_i denotes fixed effect parameterization. Similarly, the Equation can be rewritten as a VECM model as shown in Equation 2

$$\Delta SMD_{it} = \gamma_i (SMD_{it} - SMD_{i,t-1} - \delta_i' C_{i,g-e} + \delta_i + \varepsilon_{it}) + \sum_{n=1}^{r-1} \theta_{ij} \Delta \rho_{i,g-e} + \sum_{n=1}^{s-1} \gamma'_{ij} \Delta C_{i,g-e} + \varepsilon_{it} \quad (3)$$

Where γ_i represents the error correction term coefficient and δ_i represents long-run parameters, which are assumed to be common across entities. The primary interest is the speed of adjustment, γ_i and coefficient of long-run estimates. The model is estimated using pooled maximum likelihood estimation to compute the average long-run estimates and group-specific short-run coefficients. Therefore, the coefficient of γ_i is expected to be negative and statistically significant if the model exhibits a usual return to long-run equilibrium. Accordingly, the estimates of PMG parameters are consistent and asymptotically normally distributed for both stationary and non-stationary regressors (Pesaran *et al.*, 1999).

4. Empirical Findings:

The results of the Im Pesaran and Shin (2003) unit root test uncovers only the SMD and ER that are having unit root problem while the UN, IR and Break are stationary at level. To confirm stationarity of the series, the t-statistic in each case should be greater than critical value at all levels of significance (1%, 5% and 10%). However, the variables with unit root problem become stationary after first difference.

Table2: Stationary Test Results:

Variables	Im, Pesaran and		Shin	
	I(0) Constant	Constant &Trend	I(1) Constant	Constant &Trend
SMD	-1.253	-1.701	-2.987***	-2.998***
UN	-2.249**	-2.615**	-4.963***	-5.030***
ER	-1.282	-1.805	-3.248***	-3.239***
IR	-1.981**	-1.859*	-3.744***	-4.013***
BRK	-0.809	-2.089**	-4.359***	-4.235***

Note: *, ** and *** indicate rejection of null hypothesis at 1%, 5% and 10% levels of significance, respectively.

The mix-order integration of the series satisfies the requirement for modeling the pooled mean group (PMG) as presented in Table 2 in order to determine how much of equilibrium is being corrected every year, as well as to examine the long-run relationship among the variables.

Table 2: Pooled Mean Group Estimates

Dependent Variable=SMD

Variable	Coefficient	Std. Error	Z-Statistic	Prob.
Long Run Equation				
UN	0.079	0.03	2.56	0.010
ER	0.0032	0.0011	2.92	0.003
IR	-0.052	0.016	-3.21	0.001
BRK	-1.33	0.369	-3.63	0.000
ECT	-0.150	0.062	-2.40	0.016

Number of observations: 240
Number of groups: 12
Log-likelihood: 655.044



The results in Table 2 reveal that the coefficient of the error correction term (ECT) is negative and statistically significant in line with the Im et al (2003) requirement for the speed of adjustment towards equilibrium annually. This is a necessary condition that indicates the rate of convergence to the long-run relationship. Hence the coefficient of -0.150 discloses that 15 percent of the disequilibrium is been corrected every year. Furthermore, the coefficient of the unemployment (UN) shows a statistically significant relationship. The magnitude explains that a one percent increase in UN will result in an increase in stock market development (SMD) by 0.079 percent. Although the positive relationship is contrary to the theoretical assumption of this paper, it is in line with the prediction of Boyd et al. (2005) that the unemployment announcement can be good for stock market development. The author further states that the unemployment-stock market nexus depends on the state of the economy with positive relationship during economic expansion and negative relationship in the recession period.

Additionally, there other empirical studies (Belo *et al.*, 2014; Ganzalo & Taamouti, 2014) that found the existence of a positive relationship. These studies attribute the positive nexus between the variables to monetary policy intervention after making unemployment announcement. In other words, when the unemployment news is made public, there is an expectation that government will cut down interest rates which will further lead to increase in future cash flows and stock market returns as investors are motivated to borrow at a lower rate and make a long-term investment. Similarly, the existence of the significant relationship between the series is supported by Pan (2018) study that in developing countries, unemployment is useful for forecasting stock prices. Therefore the stock market is forward looking as future expectation can be reflected in equity markets.

The findings further reveal the presence of a statistically significant relationship between the stock market development and the control variables. As depicted in the table, the structural break (BRK) exerts a negative impact on the SMD. In other words, the financial crisis is eroding investors confidence leading to divestment and panic trading which further sends a bad signal to prospective investors. These findings are in line with the previous literature on the devastating effect of the financial crisis on stock market. For example, Blanchard et al. (2010) argued that the collapse of trade and decline of financial flows in the crisis period are among important transmission channels to other countries. Therefore, the confidence of investors is crucial as far as the development of the financial market is a concern. The reason is not farfetched as when the investors' confidence decline; it will further have a negative effect on their spending and risk- taking. Similarly, the interest rate-stock market development nexus is found a negative and statistically significant in line with the previous findings previous literature. (Khurshed et al., 2014; Alam & Uddin, 2009). Traditionally, when an interest rate is adjusted upward, investors switch from the stock markets to banks and their movement can cause a decline in stock prices. On the other hand, when the rate declines, they move their money from savings to stock markets in anticipation of better returns.

Moreover, there is a positive and statistically significant link between exchange rates and the stock market development in line with the flow oriented model. According to the flow-oriented approach, the exchange rate depreciation would affect stock prices by increasing the firm's competitiveness which in turn, raises the company's profitability (Dornbusch and Fischer, 1980). Since stock price is the present value of future cash flows, exchange rate fluctuation affects the international competition via variations in real income and output thus exchange rate causes changes in equity prices.

5. Conclusions and Policy Implications:

This paper examines the relationship between unemployment and stock market development with evidence from Africa. The findings reveal a positive and statistically significant nexus between the variables. This positive link can be explained that with a quick monetary policy intervention, the unemployment rate

announcement can be good for stock market investors. The intervention due to escalating unemployment trend comes in form of reduction of interest rates to induce borrowing and further investment to boost economic activities including stock market investment. Hence the stock market is forward looking as future expectations can be reflected in equity prices. This further clarifies the assertion of Boyd et al. (2005) and Mustafa et al. (2015) that the impact of unemployment on stock market is predisposed to the prevailing economic condition of the countries. However, the investors withdraw their capital when the rate is adjusted upward and this could affect stock prices negatively. A surprise easing of monetary policy due to unemployment lowers risk premium and increases stock prices while a tight policy raises equity risk premium and lowers their price. Needless to say, however, the nature of the stock market reaction to unemployment announcement reveals the expectation of the market regarding economic expansion and contraction. Thus both investors and policymakers in the African region should study unemployment news announcement with caution to improve the efficiency and development of the stock market in the region.

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