

1-30-2020

## Capital Market and Financial Development on Growth: A Panel ARDL Analysis

Michael Appiah

*Jiangsu University (Ghana)*, dorscon2017@gmail.com

Derrick Yaw Idan Frowne

*Jiangsu University (Ghana)*

Derrick Tetteh

*Jiangsu University (Ghana)*

Follow this and additional works at: <https://scholarhub.ui.ac.id/icmr>



Part of the [Business Commons](#)

---

### Recommended Citation

Appiah, Michael; Frowne, Derrick Yaw Idan; and Tetteh, Derrick (2020) "Capital Market and Financial Development on Growth: A Panel ARDL Analysis," *The Indonesian Capital Market Review*. Vol. 12 : No. 1 , Article 3.

DOI: 10.21002/icmr.v12i1.12050

Available at: <https://scholarhub.ui.ac.id/icmr/vol12/iss1/3>

This Article is brought to you for free and open access by the Faculty of Economics & Business at UI Scholars Hub. It has been accepted for inclusion in The Indonesian Capital Market Review by an authorized editor of UI Scholars Hub.

# INDONESIAN CAPITAL MARKET REVIEW

## Capital Market and Financial Development on Growth: A Panel ARDL Analysis

<sup>1,3</sup>Michael Appiah\*, <sup>2</sup>Derrick Yaw Idan Frowne, <sup>3</sup>Derrick Tetteh

<sup>1</sup>School of Finance & Economics, Jiangsu University, China

<sup>2</sup>Department of Accounting, University of Cape Coast, Ghana.

<sup>3</sup>Dorstell Consult Ltd., Koforidua, Ghana.

(Received: January 2020/ Revised: February 2020/ Accepted: May 2020 / Available Online: June 2020)

*This study evaluates the influence of capital market development and financial development on growth in the three West African countries. Data used for the research is from the World Bank and Pen World Table (PWT). This research uses the Panel ARDL test to examine the long-term relationship, as well as the error correction model to analyze the existence of a short-term relationship. The results show that in both the long term and short term, there is a negative influence of capital market development on economic growth. On the same line, in the long term, financial development is also negatively associated with growth and has no significant impact on economic growth. The ECM results indicate that there is a long-run causality effect between capital market development, financial development, and economic growth.*

**Keywords:** Economic Growth, Capital Market Development, Financial Development, Panel ARDL, Error Correction Model

**JEL Classification:** O11, O16, R53

---

## Introduction

In the mid-1990s, most Sub-Saharan Africa (SSA) countries introduced major economic recovery and development programs to meet the Millennium Challenge Account (MCA). The principal objective of these programs is to make funds accessible to investors entering into long term businesses (Ouandlous, 2010). Capital market development and financial sector development were among the programs rolled out. The objective of the financial sector development reform was to improve upon the work of the banking institutions for improvement in

deposit mobilization and funds allocation to the private sector for investment and growth of the economy. In the same way, capital market development exists to offer mechanism, whereby those supplying capital will quickly and easily restore their liquidity (Kyereboah-Coleman & Agyire-Tettey, 2008).

The introduction of financial sector development and capital market development as an economic recovery program has led to more literature investigation in recent years. Most researchers are into looking at the finance-growth nexus in Africa. Adusei (2013) with the application of the dynamic GMM Model ob-

---

\* Corresponding author's email: dorscon2017@gmail.com

serve the finance-growth nexus with panel data (1981-2010) from 24 African countries. His proof proposes that there is a positive affiliation between finance and economic growth as well as a bi-directional causal relationship between finance and economic growth. Ahmed (2016) in the same way applied the dynamic GMM Model in 30 SSA countries. The result proves that financial development influences growth in a positive direction. (Assefa & Molllick, 2017; El Menyari, 2019) supports the positive connection between financial development and growth.

Studies on the link between capital market development and economic growth proceed to stimulate interest among economists, on both the theoretical and empirical basis. Without a doubt, capital market development is an imperative factor within the development of the economies of developing countries. Most of these authors such as (Cooray, 2010; Tachiwou, 2010) support that capital market development exerts a positive influence on economic growth. Bill, Hasan, and Ofori (2015) examines the influence of the development of capital markets on growth in Africa and records a significant increase in growth (GDP per capita) after stock exchanges are recognized. In the same way, Khetsi and Mongale (2015) studies on the capital market-growth nexus and stated categorically that there is a positive link between growth and capital markets in South Africa. In addition to the above, (Njemcevic, 2017; Obiakor, 2016) also researched on the subject matter in the African context.

The authors of this study are motivated to look at the effects of both capital market development and financial development on growth. Most studies in the African context are on either on capital market-growth nexus or the finance-growth connection individually. This study typically intends to ascertain the impact of capital market development and financial development together on growth by applying the panel ARDL estimation method in Sub-Sahara Africa. Again, the study extends the literature on the capital market-finance-growth nexus in the African context.

For nations like Tanzania and Uganda, for

example, the stock market is an ongoing development. In any case, a look at the role of capital market development and financial development on growth in Cote d'Ivoire, Ghana, and Nigeria will yield helpful exercises for other Sub-Saharan Africa (SSA) nations with comparative economic circumstances.

The rest of the paper is as follows: The next section highlights some literature on capital market development, financial development, and its impacts on growth. Section 3 discusses the research methods with the data, empirical model specification and empirical strategy inclusive. Section 4 presents in-depth results and discussion. Section 5 discusses the conclusion including policy implications.

## Literature Review

Sustainable economic growth requires capital collection for investment and proficient activation of economic resources in the economy. Financial foundations and financial markets assume a major job with the assistance of a financial exchange (Seven & Yetkiner, 2016). Over the period, specialists investigated the effects of financial development and capital market development on economic growth considering either bank-based or market-oriented financial development. A gathering of specialists contends and underline that market-based financial development requires a productive stock market, this takes into consideration the enhancement of risk in investments with a proficient activation of capital among economic operator see, for instance, (Antonios, 2010; Nazir, Nawaz, & Gilani, 2010; Owusu & Odhiambo, 2014). Financial development and capital market development are a significant determinant of economic growth (Aghion, Howitt, & Mayer-Foulkes, 2005; Bill et al., 2015). Notwithstanding, due to its expansive definition and association with different circles of economic development, its consequences on economic growth are misty. Exact investigations intermittently reconsider the connection between financial development and capital market development separately on economic growth as new theories, datasets, and empirical devices become accessible.

## Studies in Finance & Growth relationship

The costs of information, contract implementation, and transactions make further stimuli for the rise of financial agreements and markets. Various sorts and mixes of information, authorization, and exchange costs related to various legal, regulatory, and tax frameworks have inspired unmistakable financial agreements, markets, and delegates crosswise over nations and since forever.

In arising to improve upon the market frictions, financial developments and its systems, of course, influence the distribution of resources crosswise over existence (Anwar & Nguyen, 2011; Zhang, Wang, & Wang, 2012). For example, to improve the distribution of funds and credits, the establishment of banks has been a major contributory agent in the distribution.

Besides, investors are certain about the payment of their dividends by organizations and companies. As a precedent, the increase in liquid stocks and bonds implies that now individuals will be in the liberty to invest in stocks and bonds rather than normal savings.

A considerable assemblage of empirical studies on finance and growth evaluates the effect of the activity of the financial development and system on economic growth. Regardless of whether the effect is economically huge, and whether certain segments of the financial development and system, e.g., Banks and stock markets, assume an especially significant role in encouraging growth at specific phases of economic development. This segment sorted around econometric ways to deal with analyzing the connection between finance and growth. The media through which financial development adds to economic growth have broadly talked about in the literature. Related theories can portray by hopeful and incredulous methodologies. As indicated by the previous studies most authors are of the view that financial development has a positive and long relationship with growth (Hassan, 2016; Nazir et al., 2010; Zhang et al., 2012).

Hassan (2016) found a positive connection between financial development and growth in emerging countries. Also, they recorded that

short-run multivariate investigation gives mixed outcomes just as a two-way causal connection between finance and growth in most regions and single directional causality between growth & finance for two least fortunate regions. Besides, they expressed that different variables from the real sector, for example, trade and government consumption, assume a significant job in clarifying economic growth. In conclusion, they reasoned that it appears that a well-functioning financial system is important, however, not an adequate condition to achieve consistent economic growth in emerging countries.

Again, a study by Nazir et al. (2010) uses the Geweke decomposition assessment on pooled information of 109 emerging and developed countries from 1960 to 1994 to take a look at the course of causality between financial development and growth. The results on finance and growth, they gave was the following:

- (1) Financial development, for the most part, prompts economic growth
- (2) Financial development Granger causes economic growth and the vice versa
- (3) Financial development contributes more to the causal connections in the emerging nations than in the industrial nations
- (4) The more drawn out the sampling interim, the bigger the impact of financial development on economic growth

Kim, Lin, and Suen (2010) push economic growth through both an increasingly fast capital gathering and product development, with the last channel being the strongest.

Furthermore, Carbó Valverde, López del Paso, and Rodríguez (2007) in their study talked about a cross-country examination and recommended that finance and growth are significantly linked. The examination expressed that the characteristics and geographical scope of this relationship have turned out to be fundamental to clarify contrasts in economic improvement and financial exclusion. These studies record that the concepts are profoundly applicable in this specific situation.

Results from Zhang et al. (2012) distinguished that both traditional cross-sectional relapses and first-difference system GMM esti-

mators for dynamic panel data recommend that most customary variables of financial development are decidedly correlated with growth.

Other authors argue that financial development (FD) and economic growth (EG) are negatively correlated. An empirical study by Sassi and Goaid (2013) in light of the estimation of a dynamic panel model with system GMM estimators and turned out with discoveries that there is a negative direct impact of finance on growth. They further clarify the ambiguous relationship might be connected to numerous phenomenon's yet there are not yet clear clarifications of this riddle.

In the same vein, Andersen and Tarp (2003) going to the empirical proof, demonstrated that the supposed first-order impact whereby financial development causes growth is not satisfactorily upheld by econometric work. The empirical proof of the finance-growth relationship does not yield any obvious picture.

Speaking on the same issue, empirical results from Abu-Bader and Abu-Qarn (2006) show weak support for a long-run connection between financial development and growth, and for the hypothesis that finance leads to growth. They further found that in situations where cointegration is distinguished, Granger causality was either bidirectional or it kept running from yield to financial development.

Ductor and Grechyna (2015) in their discoveries additionally, propose that the impact of financial development on growth moves toward becoming negative if there is a fast growth in private credit not joined by growth in genuine yield. Their results give empirical proof with hypothesizing the presence of the optimal dimension of financial development given by the qualities.

The results from Estrada, Park, and Ramayandi (2010) additionally shown that the impact of financial development on the growth is not discernibly quite the same as somewhere else, and the impact has weakened since the Asian financial emergency. By and large, their proof backings the thought that further development of the financial sector matters for continuing building up Asia's growth in the post-crisis period. Nevertheless, the primary job of financial

sector development in growth is probably going to move far from preparing savings, hence augmenting the amount of investment toward improving the efficiency of investment, and along these lines adding to higher economy-wide productivity.

### **Studies on Capital Market Development & Growth nexus**

Capital market development has throughout the years demonstrated to be of high respect in Sub-Sahara Africa (Khetsi & Mongale, 2015; Obiakor, 2016). Sub-Sahara Africa's novel dimension of growth, structures, some portion of the quickest creating nations in Africa in the whole mainland. The gross domestic product (GDP) of the study countries is to a great extent represented by its stock market, which far surpasses that of the other, creating economies which likewise have economies that are becoming great (Phiri, 2015). Some researchers such as (Cooray, 2010; Tachiwou, 2010) have indicated their support of capital market development has a significant influence on growth. Most of these studies proxied capital market development as Stock Market Capitalization to GDP and came out with some outstanding outcomes in support of the current hypothesis.

Tachiwou (2010) characterize size as the offer of market capitalization over GDP and liquidity as the volume of offer traded over GDP and discovered that stock market development emphatically influences growth in the West African monetary union in both the short term and long-term.

Again, a study by Nazir et al. (2010) investigates the connection between the stock market development and economic growth in Pakistan for the time of 1986 to 2008. They researched the stock market development and economic growth relationship by utilizing the two noteworthy proportions of stock market development, to be specific: size of the market and liquidity predominant in the market as far as market capitalization. The outcome uncovered was that economic growth is achieved by expanding the size of the stock markets of a nation.

Augmenting the Fischer (2011) model by a

Table 1. Variables and Data Sources

Variable	Unit/ Proxy	Source
Economic Growth (GDP)	Current USD, Gross Domestic Product	World Development Indicators
Inflation (INF)	Percentage, Consumer Price Index	World Development Indicators
Capital Market Development (CMD)	Percentage, Stock Market Capitalization to GDP	Penn World Table
Trade Openness (TRADE)	Percentage, Trade	World Development Indicators
Financial Development (FIN)	Percentage, Domestic Credit Provided By Financial Sector (% Of GDP)	World Development Indicators
Foreign Direct Investment (FDI)	Percentage, Foreign Direct Investment, Net Inflows	World Development Indicators
Labor (LAB)	Labor Force	World Development Indicators

Source: Computed by authors, 2019

factor for the stock market, a study by Cooray (2010) discovers the help for the stock market augmented method for a cross-section of 35 emerging economies. In the end, it is noticed that policy estimates taken to build the size, liquidity, and action of the stock market will further upgrade growth. The results indicated by Khetsi and Mongale (2015) states that there is a positive bond between growth and capital markets. Ake (2010) explores the consequences of the investigation and proposes a positive interface between the stock market and economic growth nations for which the stock market is liquid and very dynamic. Nevertheless, the causal relationship is rejected for the states with less liquid stock market.

Some writers like (Lenee & Oki, 2017 ; Okoye, Modebe, Taiwo, & Okorie, 2016) have argued other works on the issue of the capital market, having a significant impact on growth. Okoye et al. (2016) employing the econometric methodology of the VECM model, showed that in the short-term, market capitalization ratio and income ratio have a statistical negative impact on aggregate national output (GDP). The result shows by Nwaolisa, Kasie, and Egbunike (2013) recorded that while total market capitalization and all offer indexes apply a positive impact on the GDP growth rate, the complete estimation of stock hurts the GDP growth rate, and none is significant. The investigation later in this way prescribes the government ought to portray deliberate exertion and truthfulness of direction in the capital market development. Lenee and Oki (2017 ) in their study hypothesized and uncovered that the number of recorded securities is the most factor affecting capital market development measures on the growth of

the MINT countries as a group. This outcome apparently was negative and significantly identified with GDP, however positive and significantly identified with other variables.

## Research Methods

### Data

The main phase of data gathering included the download of quantitative data from the databases of the World Bank Development indicators and PWT (2015) online. The study mainly examines the effects of capital market development, financial development on economic growth. It again deals with exploring the connections between them over the period from 1992 to 2012 in three West African states (Ghana, Ivory Coast, and Nigeria). The study employed capital market development (CMD) proxies as Stock Market Capitalization to GDP and sourced from Penn World Table (PWT, 2019) and financial development proxied as Domestic credit provided by financial sector (% of GDP) sourced from the World Development Indicators (WDI, 2019) as explanatory variables. The selection of the data period and country is based on the availability of data. Gross Domestic Product (GDP) as a measure of Economic growth, which is the dependent variable with the capital market and financial development as independent variables. The variables left are considered as control variables. To evaluate the quality of the connection between capital market development, financial development, and economic growth, the examination control three macroeconomic covariates in the regressions that are likewise generally utilized in the

related writing.

To begin with, the investigation incorporates the inflation rate (INF), which is the growth rate of the consumer price index (CPI). Secondly, labor is incorporated given that employment growth is broadly utilized in the growth regressions. The study again considers the use of trade openness and foreign investment in the estimation. Table 1 gives a summary of the data and data sources used in the examination.

## Methodology

The main objective of the study is to develop an empirical strategy that would enable the estimation of the effects of capital market development, financial development on economic growth and sustainability. The main regression model developed for the estimation is as follows:

$$\text{GDP} = F(\text{Inflation (INF)}, \text{Capital Market Development (CMD)}, \text{Trade Openness (TRADE)}, \text{Financial Development (FIN)}, \text{Foreign Direct Investment (FDI)}, \text{Labor (LAB)} \dots \text{EQ} \quad (1)$$

*An econometric model is developed from equation 1 and expressed as*

$$\text{GDP} = a + \beta_1 \text{INF}_{it} + \beta_2 \text{CMD}_{it} + \beta_3 \text{TRADE}_{it} + \beta_4 \text{FIN}_{it} + \beta_5 \text{INV}_{it} + \beta_6 \text{LAB}_{it} + \varepsilon_{it} \quad (2)$$

Where (INF) is Inflation  
(CMD) is Capital Market Development  
(TRADE) is Trade Openness  
(FIN) is Financial Development  
(FDI) is Foreign Direct Investment  
(LAB) is Labor

*A natural log is estimated on all variables in equation 2 and developed into a model expressed in equation 3 below*

$$\ln \text{GDP} = a + \ln \beta_1 \text{INF}_{it} + \ln \beta_2 \text{CMD}_{it} + \ln \beta_3 \text{TRADE}_{it} + \ln \beta_4 \text{FIN}_{it} + \ln \beta_5 \text{INV}_{it} + \ln \beta_6 \text{LAB}_{it} + \varepsilon_{it} \quad (3)$$

Where  $\ln$  is the natural log,  $a$  is the intercept, subscript  $i$  and  $t$  is the country and time respectively with  $\varepsilon$  treated as the error term.  $\beta_1, \dots, \beta_6$  are the coefficients to be assessed. It is expected that the explanatory variables, thus the capital market development and financial development would have a significant effect.

## Panel Unit root tests

For researching the connection between capital market development, financial development, and economic growth, the study initially breaks down the stationary properties of the series by utilizing the first-generation test of the panel unit root of (Pesaran, Shin, & Smith, 1999). The second-generation test of the panel unit root of Pesaran et al. (1999) which gives robust results and avoid spurious results over the other customary unit root tests for little samples. These tests are not so much prohibitive, but rather more dominant than the tests created by (Breitung, 2001; Levin, Lin, & Chu, 2002). The strength of some unit root tests for panel data as indicated by Baltagi and Moscone (2010) don't take into consideration heterogeneity in the autoregressive coefficient.

The tests proposed by the IPS grant illuminating Levin and Lin's serial correlation issue by accepting heterogeneity between units in a dynamic panel system. The fundamental equation for the panel unit root tests for IPS is as pursues:

$$\Delta y_{i,t} = \alpha_i + \rho_i y_{i,t-1} + \sum_{j=1}^p \varphi_{ij} \Delta y_{i,t-j} + \varepsilon_{i,t}; \quad i = 1, 2, \dots, N; t = 1, 2, \dots, T, \quad (4)$$

Where  $\Delta_{y_{i,t}}$  represents each variable under discussion in the model.  $\alpha_i$  is the single fixed effect and  $\rho$  is designated for making the residuals uncorrelated above time with the null hypothesis stating that  $\rho_i = 0$  for all  $i$  between the alternative hypothesis, also stating that  $\rho_i < 0$  for some  $i = 1, \dots, N-1$  and  $\rho_i = 0$  for  $i = N-1 + 1, \dots, N$ .

## Panel ARDL Test

The panel ARDL method is chosen to research the long-term and short-term cointe-

gration connections between the variables and concentrate on the ECM (error correction model) of the panel qualities to recognize the short-term dynamic.

Likewise, substitute cointegration methods were utilized to achieve comparative findings, just like the conventional Johansen and Juselius (1990) techniques. Notwithstanding, the panel autoregressive distributed lag technique was favoured over cointegration in light of the extra advantages it gives. This type of model can accept very general lag structures and can easily be stretched to integrate panel data. Even though the customary cointegration approach evaluates the long-term connection inside the arrangement of equations in the unique circumstance, the panel ARDL approach utilizes an individual informed the type of equation (Pesaran et al., 1999).

$$\Delta Y_{l;it} = \alpha_{li} + \gamma_{li} Y_{l;it-1} + \sum_{i=1}^p \gamma_{li} X_{l;it-1} \sum_{j=1}^{p-1} \Delta Y_{l;it-j} + \sum_{i=1}^{p-1} \sum_{j=2}^k \delta_{lij} \Delta X_{l;it-j} + \varepsilon_{l;it} \quad (5)$$

Where  $Y_l$  represents the dependent variable with  $X_l$  is the exogenous variable, as well as  $l = 1, 2, 3, 4, 5, 6, 7$ .  $\varepsilon_{lit}$  is the error term, and  $\Delta$  is the first difference operator. In the study GDP is the dependent variable, the ARDL model is developed as follows:

$$\begin{aligned} \Delta \ln GDP_{l;it} = & \alpha_{li} + \gamma_{1i} \ln GDP_{l;it-1} + \gamma_{2i} \ln INF_{l;it-1} \\ & + \gamma_{3i} \ln CMD_{l;it-1} + \gamma_{4i} \ln TRADE_{l;it-1} \\ & + \gamma_{5i} \ln FIN_{l;it-1} + \gamma_{6i} \ln FDI_{l;it-1} \\ & + \gamma_{7i} \ln LAB_{l;it-1} + \sum_{i=1}^p \gamma_{li} \ln INF_{l;it-1} \\ & + \sum_{i=1}^{p-1} \delta_{1ij} \Delta \ln GDP_{l;it-j} \\ & + \sum_{i=0}^k \delta_{2ij} \Delta \ln INF_{l;it-j} \\ & + \sum_{i=0}^k \delta_{3ij} \Delta \ln CMD_{l;it-j} \\ & + \sum_{i=0}^k \delta_{4ij} \Delta \ln TRADE_{l;it-j} \\ & + \sum_{i=0}^k \delta_{5ij} \ln FIN_{l;it-j} \\ & + \sum_{i=0}^k \delta_{6ij} \Delta \ln FDI_{l;it-j} \\ & + \sum_{i=0}^k \delta_{7ij} \Delta \ln LAB_{l;it-j} + \varepsilon_{l;it} \quad (6) \end{aligned}$$

The selection of lag variables is based on the (SBC: Schwarz Bayesian Criterion).

According to Equation (5), the panel ARDL approach could be utilized with the concentrated factors paying little mind to whether they were I (0), I (1), or both I (0) and I (1) (Su-

laiman, Bala, Tijani, Waziri, & Maji, 2015). In Equation (6), panel ARDL with different variables can incorporate different lags, which are inapplicably utilizing the standard cointegration test. Additionally, utilizing panel ARDL, both long-term and short-term coefficients are given on the double (Sheng & Guo, 2016). In the end, the ARDL approach could be connected with confined simple data where the gathering of essential estimations was improved (Narayan & Narayan, 2005).

In the second step, the study based on the assumption that all variables are heterogeneous and such the ECT estimations are suitable for the establishment of a long-run cointegration between capital market development and financial development with the dependent variable thus economic growth (GDP). If the cointegration connections are set up, the long-term equation can be evaluated.

### Error Correction Term Test

In the third step, we acquire a short-term dynamic relationship by evaluating an error correction model (ECM). The ECM is characterized as pursues:

$$\Delta Y_{l;it} = \alpha_{li} + \sum_{j=1}^{p-1} \beta_{lij} \Delta Y_{l;it-j} + \sum_{j=1}^{p-1} \sum_{l=2}^K \beta_{lij} \Delta X_{l;it-j} + \mu_{li} ECT_{l;it-1} + \varepsilon_{lit} \quad (7)$$

With which the residuals  $\varepsilon_{lit}$  ( $l = 1, 2, 3, 4, 5, 6, 7$ ) are independent and normally spread with the zero mean and constant variance and ECM,  $t-1 = (1, 2, 3, 4, 5, 6, 7)$  is the error correction term (ECT) well-defined by the long-term association. The parameter  $\mu_{li}$  designates the speed of adjustment to the equilibrium level. On top of it all, GDP is the dependent variable; the ECM model is defined as follows:

$$\begin{aligned} \Delta \ln GDP_{l;it} = & \alpha_{li} + \sum_{j=1}^{p-1} \beta_{1ij} \Delta \ln GDP_{l;it-j} \\ & + \sum_{j=0}^{p-1} \beta_{2j} \Delta \ln INF_{l;it-j} \\ & + \sum_{j=0}^{p-1} \beta_{3ij} \Delta \ln CMD_{l;it-j} \\ & + \sum_{j=0}^{p-1} \beta_{4ij} \Delta \ln TRADE_{l;it-j} \\ & + \sum_{j=0}^{p-1} \beta_{5ij} \Delta \ln FIN_{l;it-j} \\ & + \sum_{j=0}^{p-1} \beta_{6ij} \Delta \ln FDI_{l;it-j} \\ & + \sum_{j=0}^{p-1} \beta_{7ij} \Delta \ln LAB_{l;it-j} \\ & + \mu_{li} ECT_{l;it-1} + \varepsilon_{lit} \quad (8) \end{aligned}$$



Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lngddp	63	23.863990	1.1210170	22.3293000	26.856560
lninf	63	3.734296	0.9743470	1.0322290	4.823359
lncmd	63	2.305794	0.9603786	-0.9423344	3.578950
lntrade	63	4.272970	0.2352226	3.7449970	4.754008
lnfin	63	3.108266	0.3937936	1.5911530	3.838155
lnfdi	62	20.205460	1.4574280	16.9290300	22.902680
lnlab	63	16.380710	0.8307866	15.3981600	17.771160

Source: Computed by authors on the data from PWT & WDI, 2019

Table 3. Correlation Matrix

Variables	lngddp	lninf	lncmd	lntrade	lnfin	lnfdi	lnlab
lngddp	<b>1.0000</b>	0.4494	0.3202	-0.4659	-0.3431	0.8994	0.8095
lninf	0.4494	<b>1.0000</b>	0.1224	0.2958	-0.1049	0.3694	-0.0227
lncmd	0.3202	0.1224	<b>1.0000</b>	0.0630	-0.2875	0.3532	0.3403
lntrade	-0.4659	0.2958	0.0630	<b>1.0000</b>	0.2051	-0.4216	-0.5393
lnfin	-0.3431	-0.1049	-0.2875	0.2051	<b>1.0000</b>	-0.2327	-0.2958
lnfdi	0.8994	0.3694	0.3532	-0.4216	-0.2327	<b>1.0000</b>	0.7997
lnlab	0.8095	-0.0227	0.3403	-0.5393	-0.2958	0.7997	<b>1.0000</b>

Source: Computed by authors on the data from PWT & WDI, 2019

### Panel ARDL-PMG & MG Tests

As recently referenced, the estimators of the ARDL model and all parameters are from utilizing the PMG technique, as treated by (Pesaran et al., 1999). This estimation system dependent on the maximum likelihood technique is considered the most predictable because it represents the individual characteristics (country, region, and so forth.) and gives a superior assessment of the long-term relationship. In this manner, the PMG estimators acquired are asymptotically and normally conveyed, as expressed by (Pesaran et al., 1999).

Even though the MG (mean group) approach proposed by expect heterogeneity of the coefficients, the adjustment parameter errors and variances in both the short-and long-term, the PMG approach accept heterogeneity of the short-term coefficients, though the long-term coefficients are thought to be indistinguishable and homogeneous for all variables in the panel.

The decision of such a system is particularly supported when there is motivation to trust that over the long-term, homogeneity can be credited with the impact of various elements, for example, macroeconomic factors, financial development, and the capital market development that was available in all African countries in the study. Therefore, the study incorporates the hypothesis imposed by the PMG approach, stating

that coefficients are the same for each country for long-term relationships.

### Hausman Specification Test

Hausman (1978) test the hypothesis of homogeneity of the long-term policy parameters cannot be accepted a prior. The impact of heterogeneity on the means of the coefficients can be dictated by the Hausman-type test. If the parameters are in certainty homogenous, the PMG regressors are more efficient than MG. In other words, the efficient regressors under the null hypothesis, which is PMG is favoured. Nevertheless, on the off chance that the null hypothesis is rejected, at that point, the efficient estimator MG is accepted.

## Results and Discussions

Table 2 gives a descriptive statistic on the variables by estimating the mean, median including measurements like standard deviation, with the highest and lowest mean being 23.86399 and 2.305794 respectively will observation of 63 for all variables except foreign direct investment. A standard deviation of the high value of 1.457428 and a lower value of 0.2352226.

Table 3 gives empirical results on the correlations between all variables. The data set

Table 4. Unit Root Results

Im-Pesaran-Shin unit-root test		Level		1 <sup>st</sup> Difference	
Variables	T. Statistics	Prob	T. Statistics	Prob	
lngdp	3.0157	0.9987	-5.1058	0.0000***	
Lninf	-2.5378	0.0056***	-3.9351	0.0000***	
lncmd	-2.4043	0.0081***	-5.3555	0.0000***	
Intrade	-1.7280	0.0420**	-4.5835	0.0000***	
Lnfin	-1.6174	0.0529*	-2.6339	0.0042***	
Lnfdi	-0.5701	0.2843	-3.5970	0.0002***	
Lnlab	4.6075	1.0000	-0.3830	0.0509*	

NB \*, \*\*, \*\*\* is significant at 10%, 5% and 1% significant level. Source: Computed by authors on the data from PWT & WDI, 2019

Table 5. Panel ARDL-PMG &amp; MG results

Method Variables	PMG Estimations		MG Estimations	
	Long Run Results	Short Run Results	Long Run Results	Short Run Results
lninf	0.5280153 (0.2231811) [2.37]**	0.4975314 (0.2785395) [1.79]**	11.94488 (11.71836) [1.02]	-0.3484325 (0.1454328) [-2.40]**
lncmd	-0.1050174 (0.0602307) [-1.74]**	0.0193077 (0.0287282) [0.67]	0.0370024 (0.1386276) [0.27]	0.0012223 (0.0574206) [0.02]
Intrade	-0.6443649 (0.4468133) [-1.44]	-0.4400416 (0.3002264) [-1.47]	0.8996968 (1.359276) [0.66]	-0.2926255 (0.2236125) [-1.31]
lnfin	-0.0823344 (0.1255319) [-0.66]	0.0991803 (0.0895528) [1.11]	0.2999995 (1.135809) [0.26]	0.1445719 (0.2460434) [0.59]
lnfdi	0.2074551 (0.1303922) [1.59]	0.0415545 (0.0954816) [0.44]	-0.5253948 (0.7026967) [-0.75]	0.0389723 (0.1117199) [0.35]
Lnlab	3.060834 (0.7503304) [4.08]***	2.692304 (5.434844) [0.50]	-12.88979 (16.55325) [-0.78]	2.165059 (8.942304) [0.24]
ECT		-0.4034119 (0.1865654) [-2.16]**		-0.5526145 (0.209123) [-2.64]***

NB ( ) is Std. Error, [ ] is T. Statistics and \*, \*\*, \*\*\* is significant at 10%, 5% and 1% significant level. Source: Computed by authors on the data from PWT & WDI, 2019

demonstrates that the variables of interest thus capital market development (CMD) and financial development (FIN) are positively and negatively related to growth individually. Most macroeconomic variables have a normal relationship sign with growth: growth is negatively corresponded with trade and positively connected with inflation, foreign investment, and labor.

Table 4 talks of the Im, Pesaran & Shin unit root test hold that most variables under considerations are stationary i.e. (no unit root) at level except economic growth (GDP), Foreign Direct Investment (FDI) and Labor Force (LAB). However, all of them are stationary after the first difference. This existence of a mixed order of integration endorses to use panel ARDL model, which furnishes accurate results, unlike

simple cointegration tests.

The condition for the ARDL model is the presence of a long-term association. The basis for this is the coefficient of the error correction term must be negative and not lower than  $-2$  with the results at  $-0.4034119$  and significant at a 5% significance level. This is the fundamental necessity for the validity, consistency, and efficiency of a long-term relationship between the variables of discussion. Table 3 delineates the pooled error coefficient and the relating standard error. It is noted that the pooled error correction term falls inside the dynamically stable extent because of the PMG and MG estimates.

Table 5 presents the outcomes of both the Pooled Mean Group (PMG) and Mean Group (MG). The results delineate the long run and short-run effects of both methods. According

Table 6. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.01	6	0.9852

Source: Computed by authors on the data from PWT & WDI, 2019

to the Hausman test, the Pooled Mean Group (PMG) method is the appropriate method for the investigation.

From the results, it posits that capital market development coupled with financial development has a negative relationship with growth. Statistically, the effect of capital market development is significant while the effect of financial development is insignificant.

In explaining the result, it proves that a percentage increase in the level of the capital market development will lead to a decrease in the economic growth of more than 10%. The negative and reducing effects of capital market on growth are consistent with the studies of (Lenee & Oki, 2017 ; Okoye et al., 2016). This current results, in the same way, contrast that of (Cooray, 2010; Tachiwou, 2010). These authors in their studies opined that capital market proxied as stock market capitalization influences growth positively.

The outcomes of the influence of financial development on economic growth presented above indicate that financial development – a measure of domestic credit to private sector by banks – negatively and insignificantly affects economic growth. This shows that an increase in the domestic credit does not exert a contributory role in economic growth. For a clear understanding, there is a reduction in economic growth of around 8% when financial development increases. (Andersen & Tarp, 2003; Ductor & Grechyna, 2015; Sassi & Goaid, 2013) supported the outcomes on the financial development. (Hassan, 2016; Nazir et al., 2010; Zhang et al., 2012) at the same time disputes the outcome hypothesizing that financial development increases growth.

The results above also proved that an increase in inflation raises growth. It's recorded that, with the values coefficients there is a direct relationship and the impact of inflation on growth. The magnitude of the coefficient posits the influence of inflation and appears to be significant at a 5% significance level. (Appiah,

Amoasi, & Frowne, 2019; Jones & Manuelli, 1995; Osuala, Osuala, & Onyeike, 2013) confirms this result stating that inflation increases growth. Again, (Gokal & Hanif, 2004; Pollin & Zhu, 2006) gives a contrasting outcome on the effects of inflation on growth indicating that inflation reduces growth.

According to PMG regression above, trade has a negative relationship with growth. It is recorded based on the values of the coefficients that a unit increase in trade to the three countries under discussion will cause a significant reduction in growth. This has mostly resulted from the over the importation of goods and services by these countries. Most African countries import more than export due to lack of funds, equipment, and expertise in the processing of raw materials for exportation. (Lindert & Williamson, 2003; Zahonogo, 2018) indicated this result in their studies.

Besides, foreign investment including the labor force recorded positive connections with growth. The outcomes show that a percentage increase in foreign investments and labor force in these countries will equally result in an increase of about 20% and 100% on the average respectively. (Appiah, Li, & Korankye, 2019; Zahonogo, 2018) asserts the results of the positive association between investment and growth. These studies figured out that foreign investment positively affects growth when employing panel ARDL analysis and dynamic GMM method respectively. Investigations by (Kapsos, 2005; Khan, 2005) confirmed the outcomes of the labor force and growth. These authors hypothesized that increases in labor directly increases growth accordingly.

Finally, the outcome shows a long-run causality effect between capital market development, financial development, and economic growth. Statistically, it is recorded that any deviation is corrected by a 40.3% speed of adjustment among them.

Table 6 outlines the concerns of the Hausman tests. The Hausman test estimate with the

null hypothesis of no systematic differences between the coefficient of the PMG and MG. It deals with a more efficient model against a less efficient yet steady model to guarantee that the efficient model gives predictable outcomes.

The Hausman test statistic and the relating p-values of the coefficients in Table 6 where the null hypothesis states the long-run homogeneity restriction is tested against the alternative hypothesis. This examination found out that the Hausman test rejected the long-term homogeneity restriction, at the conventional levels of significance, supporting the suitability of the PMG estimates for this situation. The Prob > chi2 is equivalent to 0.9852, which is bigger than 0.05. The P-value happens to be insignificant and along these lines, the PMG is a suitable model for estimation. Since the Hausman tests affirm the PMG estimates, that is, the panel is heterogeneous in the short term and homogeneous in the long term, explanations are made on the PMG estimators.

## Conclusion

This study analyses the impact relationship among capital market development, financial development and GDP growth for the three rising west African nations covering the period in the range of 1992 and 2012. The ARDL-PMG approach is utilized to test the short-and long-run interrelations among the variables (GDP, INF, CMD, TRADE, FIN, FDI, and LAB). To begin with, the aftereffects of the whole error correction model, uncover the presence of a long-run relationship among these variables.

Secondly, the long-term estimation records that inflation; foreign investment and labor are positively associated with growth and statistically significant at 5%. Trade openness statistically displays an insignificant position.

Thirdly, there are long-term causalities among capital market development, financial development, and economic growth, which support the initial expectation of the study. Estimating the variables of interest individually, there is a long-run unidirectional causality between capital market, financial development, and growth.

## Implication

The development of capital markets is exceedingly significant in sustaining superior economic development. Notwithstanding, capital market development as estimated by stock market capitalization, affects economic growth. Also, the improvement of the labor force likewise has a solid positive association with the economic growth of the three West African nations. Accordingly, there are a few recommendations proposed to the financial administrators and economic experts of the three West African nations by the present investigation. Even though the stock markets of 3 west African nations are growing and developing during the last few decades, this growth in the stock markets should be that as it may, go to the industrial and the assembling growth of the nation. There exists a solid requirement for executing the productive monetary regulations that could add to the transparency and viability of stock markets.

The role of capital market development in advancing economic growth over the long run is not affirmed by this study. Also, the negative outcomes of financial development on growth, in the long run, have been documented. It is consequently critical to creating strategies and programs to guarantee access to long run credit by small and medium measured endeavours that experience drawbacks in bringing capital in the post-change period.

To guarantee fairness and equity as far as access to credit by the public, there is the need to set up different Consumer Bills of Rights as started in the US. This will shield the public from uncalled for practices of the banking sector in stretching out credit to the private sector. The sanctioning of the Equal Credit Opportunity Act, for instance, will apply weight on financial institutions to receive a uniform and straightforward standard for screening loan applications for credit expansion to business enterprises

The presentation of the different capital market and financial development items, for example, mutual funds, unit trusts, government, and corporate bonds will expand prospects for portfolio diversification and in this way improve the

engaging quality of the stock and bond markets in these nations. These aggregate investment instruments would likewise draw in little investors who will be unable to put resources into individual stocks that require more salary and more refinement that is prominent and risk fixa-

tion.

The foundation of small business development focuses and ensure business and project advances will improve the possibilities of small businesses to acquire loans for productive exercises in the economy.

## References

- Abu-Bader, S., & Abu-Qarn, A. (2006). Financial development and economic growth nexus: Time series evidence from Middle Eastern and North African countries. *Monaster Center for Economic Research*(06-09).
- Adusei, M. (2013). Finance-growth nexus in Africa: a panel generalized method of moments (GMM) analysis. *Asian Economic Financial Review*, 3(10):1314-1324.
- Aghion, P., Howitt, P., & Mayer-Foulkes, D. (2005). The effect of financial development on convergence: Theory and evidence. *The Quarterly Journal of Economics* 120(1), 173-222. <https://doi.org/10.1162/qjec.2005.120.1.173>
- Ahmed, A. D. (2016). Integration of financial markets, financial development and growth: Is Africa different? *Journal of International Financial Markets, Institutions Money* 42, 43-59. <https://doi.org/10.1016/j.intfin.2016.01.003>
- Ake, B. (2010). The role of stock market development in economic growth: evidence from some Euronext countries. *International Journal of Financial Research*, 1(1), 14-20. <https://doi.org/10.5430/ijfr.v1n1p14>
- Andersen, T., & Tarp, F. (2003). Financial liberalization, financial development and economic growth in LDCs. *Journal of International Development*, 15(2), 189-209. <https://doi.org/10.1002/jid.971>
- Antonios, A. (2010). Financial development and economic growth a comparative study between 15 European Union member-states. *International Research Journal of Finance Economics Letters*, 35, 143-149.
- Anwar, S., & Nguyen, L. (2011). Financial development and economic growth in Vietnam. *Journal of Economics Finance* 35(3), 348-360. <https://doi.org/10.1007/s12197-009-9106-2>
- Appiah, M., Amoasi, R., & Frowne, D. I. (2019). Human Development and Its Effects on Economic Growth and Development. *International Research Journal Of Business Studies*, 12(2), 101-109. <https://doi.org/10.21632/irjbs.12.2.101-109>
- Appiah, M., Li, F., & Korankye, B. (2019). Foreign investment & growth in emerging economies: panel ardl analysis. *Journal of Economics, Business, Accountancy Ventura*, 22(2), 274-282. <https://doi.org/10.14414/jebav.v22i2.1819>
- Assefa, T. A., & Mollick, A. V. (2017). Financial development and economic growth in Africa. *Journal of African Business* 18(3), 320-339. <https://doi.org/10.1080/15228916.2017.1301162>
- Baltagi, B., & Moscone, F. (2010). Health care expenditure and income in the OECD reconsidered: Evidence from panel data. *Economic Modelling*, 27(4), 804-811. <https://doi.org/10.1016/j.econmod.2009.12.001>
- Bill, B. F., Hasan, I., & Ofori, E. (2015). Investor protections, capital markets, and economic growth: The African experience. *International Corporate Governance*, 18, 239-272. <https://doi.org/10.1108/S1569-373220150000018008>
- Breitung, J. (2001). The local power of some unit root tests for panel data. In *Nonstationary panels, panel cointegration, and dynamic panels* (pp. 161-177): Retrieved from <https://edoc.hu-berlin.de/bitstream/handle/18452/3936/69.pdf?sequence=1>.
- Carbó Valverde, S., López del Paso, R., & Rodríguez, F. (2007). Financial innovations in banking: Impact on region-

- al growth. *41*(3), 311-326. <https://doi.org/10.1080/00343400600928350>
- Cooray, A. (2010). Do stock markets lead to economic growth? *Journal of Policy Modeling*, *32*(4), 448-460. doi:<https://doi.org/10.1016/j.jpolmod.2010.05.001>
- Ductor, L., & Grechyna, D. (2015). Financial development, real sector, and economic growth. *International Review of Economics Finance*, *37*, 393-405. <https://doi.org/10.1016/j.iref.2015.01.001>
- El Menyari, Y. (2019). Financial Development, Foreign Banks and Economic Growth in Africa. *African Development Review* *31*(2), 190-201. <https://doi.org/10.1111/1467-8268.12377>
- Estrada, G. B., Park, D., & Ramayandi, A. (2010). Financial development and economic growth in developing Asia. **Asian Development Bank Economics Working Paper, (233)**. <https://doi.org/10.2139/ssrn.1751833>
- Fischer, M. (2011). A spatial Mankiw–Romer–Weil model: theory and evidence. *The Annals of Regional Science*, *47*(2), 419-436. doi:<https://doi.org/10.1007/s00168-010-0384-6>
- Gokal, V., & Hanif, S. (2004). *Relationship between inflation and economic growth*: Economics Department, Reserve Bank of Fiji.
- Hassan, S. (2016). Speculative Capital Flows, Exchange Rate Volatility and Monetary Policy: South African Experience. In *Contemporary Issues in Development Economics* (pp. 136-162): [https://doi.org/10.1057/9781137529749\\_9](https://doi.org/10.1057/9781137529749_9).
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the Econometric Society* 1251-1271. <https://doi.org/10.2307/1913827>
- Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics Statistics*, *52*(2), 169-210. <https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x>
- Jones, L., & Manuelli, R. (1995). Growth and the effects of inflation. *Journal of Economic Dynamics Control*, *19*(8), 1405-1428. [https://doi.org/10.1016/0165-1889\(94\)00835-6](https://doi.org/10.1016/0165-1889(94)00835-6)
- Kapsos, S. (2005). *Employment Intensity of Growth, The Trends and Macroeconomic Determinants*. *Employment Strategy Papers 2005/12*: International Labour Organization.
- Khan, A. R. (2005). Growth, employment and poverty: An analysis of the vital nexus based on some recent UNDP and ILO. *SIDA Studies, Paper prepared under the joint ILO-UNDP programme on Promoting Employment for Poverty Reduction, United Nations Development Programme-New York International Labour Office, Geneva*.
- Khetsi, Q. S., & Mongale, I. P. (2015). The impact of capital markets on the economic growth in South Africa. *Journal of Governance Regulation* *4*(1-2), 154-163. [https://doi.org/10.22495/jgr\\_v4\\_i1\\_c1\\_p6](https://doi.org/10.22495/jgr_v4_i1_c1_p6)
- Kim, D.-H., Lin, S.-C., & Suen, Y.-B. (2010). Are financial development and trade openness complements or substitutes? *Southern Economic Journal* *76*(3), 827-845. doi:<https://doi.org/10.4284/sej.2010.76.3.827>
- Kyereboah-Coleman, A., & Agyire-Tettey, K. F. (2008). Impact of macroeconomic indicators on stock market performance. *The Journal of Risk Finance* *9* (4), 365-378 <https://doi.org/10.1108/15265940810895025>
- Leney, T., & Oki, J. (2017). Capital Market Development and Economic Growth: Evidence from the Mint Countries. *Journal of Economics and Sustainable Development, Vol.8, No.2*(ISSN 2222-2855 (Online)).
- Levin, A., Lin, C.-F., & Chu, C.-S. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics*, *108*(1), 1-24. doi:[https://doi.org/10.1016/S0304-4076\(01\)00098-7](https://doi.org/10.1016/S0304-4076(01)00098-7)
- Lindert, P. H., & Williamson, J. G. (2003). Does globalization make the world more unequal? In *Globalization in historical perspective* (pp. 227-276): University of Chicago Press.
- Narayan, S., & Narayan, P. (2005). An empirical analysis of Fiji's import demand function. *Journal of Economic Studies*, *32*(2), 158-168. <http://dx.doi.org/10.1108/01443580510600931>
- Nazir, Nawaz, & Gilani. (2010). Relationship between economic growth and stock market

- development. *African Journal of Business Management*, 4(16), 3473-3479.
- Njemcevic, F. (2017). Capital Market and Economic Growth in Transition Countries: Evidence from South East Europe. *Journal of International Business Research and Marketing*, 2(6), 15-22. <https://doi.org/10.18775/jibrm.1849-8558.2015.26.3002>
- Nwaolisa, E., Kasie, E., & Egbunike, C. (2013). The impact of capital market on the growth of the Nigerian economy under democratic rule. *Oman Chapter of Arabian Journal of Business Management Review* 34(983), 1-10. <https://doi.org/10.12816/0002371>
- Obiakor, R. (2016). Does Capital Market Development Spur Economic Growth?: A Look At Africa's Largest Economy. *The International Journal of Social Sciences & Humanities Invention* 3(7), 2397-2406. <https://doi.org/10.18535/ijsshi/v3i7.05>
- Okoye, L., Modebe, N., Taiwo, & Okorie, U. (2016). Impact of capital market development on the growth of the Nigerian economy. *Research Journal of Financial Sustainability Reporting*, 1(1), 24-32.
- Osuala, A. E., Osuala, K. I., & Onyeike, S. C. (2013). Impact of inflation on economic growth in Nigeria—A causality test. *Journal of Research in National Development*, 11(1), 206-216.
- Ouandlous, A. (2010). Capital Markets And Economic Development: A Framework For Newly Liberalized Economies. *Journal of Business Economics Research*, 8(6), 9-16. <https://doi.org/10.19030/jber.v8i6.728>
- Owusu, & Odhiambo. (2014). Stock market development and economic growth in Ghana: an ARDL-bounds testing approach. *Applied Economics Letters*, 21(4), 229-234. <https://doi.org/10.1080/13504851.2013.844315>
- Pesaran, Shin, & Smith. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446), 621-634. <https://doi.org/10.1080/01621459.1999.10474156>
- Phiri, A. (2015). Asymmetric cointegration and causality effects between financial development and economic growth in South Africa. *Studies in Economics Finance* 32(4), 464-484. <https://doi.org/10.1108/SEF-01-2014-0009>
- Pollin, R., & Zhu, A. (2006). Inflation and economic growth: A cross-country nonlinear analysis. *Journal of Post Keynesian Economics*, 28(4), 593-614. <https://doi.org/10.2753/PKE0160-3477280404>
- Sassi, S., & Goaid, M. (2013). Financial development, ICT diffusion and economic growth: Lessons from MENA region. *Telecommunications Policy*, 37(4-5), 252-261. doi:<https://doi.org/10.1016/j.telpol.2012.12.004>
- Seven, Ü., & Yetkiner, H. (2016). Financial intermediation and economic growth: Does income matter? *Economic Systems*, 40(1), 39-58. doi:<https://doi.org/10.1016/j.eco-sys.2015.09.004>
- Sheng, P., & Guo, X. (2016). The long-run and short-run impacts of urbanization on carbon dioxide emissions. *Economic Modelling*, 53, 208-215. doi:<https://doi.org/10.1016/j.econ-mod.2015.12.006>
- Sulaiman, C., Bala, U., Tijani, B. A., Waziri, S. I., & Maji, I. K. J. S. O. (2015). Human capital, technology, and economic growth: Evidence from Nigeria. 5(4), 2158244015615166. <https://doi.org/10.1177/2158244015615166>
- Tachiwou, A. (2010). Stock market development and economic growth: the case of West African monetary union. *International Journal of Economics Finance* 2(3), 97-103. doi:<https://doi.org/10.5539/ijef.v2n3p97>
- Zahonogo, P. (2018). Globalization and economic growth in developing countries: evidence from Sub-Saharan Africa. *The International Trade Journal* 32(2), 189-208. <https://doi.org/10.1080/08853908.2017.1333933>
- Zhang, Wang, & Wang. (2012). Financial development and economic growth: Recent evidence from China. *Journal of Comparative Economics* 40(3), 393-412. <https://doi.org/10.1016/j.jce.2012.01.001>