

The Causal Linkage between Foreign Direct Investment, Trade and Economic Growth in Mali: An Application of the ARDL bound Testing Approach

KanKou Hadia Fofana^{1*}, Enjun Xia², Mamadou Bado Traore^{1,2}

¹ Business and Management and Beijing Institute of Technology, Beijing Haidian, China.

² Schools of Management and Economics and Beijing Institute of Technology, China.

* Corresponding author. Tel: 008618811789563; email:fofanakankouhadia@yahoo.fr

Manuscript submitted January 22, 2018; accepted October 12, 2018.

doi: 10.17706/ijeeee.2019.9.4.296-305

Abstract: The aim of this paper is to develop a foreign direct investment inflows(FDI) and evaluate its relationship between trade openness and economic growth for Mali by using Autoregressive distributed Lag approach (ARDL) models over the period of 1980 to2016.The first results indicate that the uni-directional causality relationships between FDI, economic growth and trade. Furthermore, the empirical results show FDI inflows affects economic growth positively in the short and the long run while trade openness positively affects economic growth in the short run and negatively in the long run. While previous literature review focuses on attract foreign direct investment, this paper evaluates the impact of FDI and trade openness on the economic growth. This result shows the evidence of uni-directional causality between FDI and trade on economic growth offer new insights into Mali's openness policy for enhancing growth of FDI inflows and trade.

Key words: Foreign direct investment, economic growth, trade, Mali, ARDL cointegration.

1. Introduction

The Foreign direct investment (FDI) and trade openness have been broadly recognized as important catalysts for economic growth. The debate on the potential benefits of FDI inflows to influence economic growth, including those in Africa had remained unresolved among economists. While authors like [1], [2], among others, had showed evidence the existence of a positive impact of FDI on economic growth, [3] on the other hand had proved that a negative influence of FDI on economic growth. In the same manner, previous research dealt with trade openness positively on economic growth has been extensively discussed with mixed results. For instance, [4] opined that trade has positively impacted economic growth in in a host economy, [5] are of the view that the coefficient of trade openness index impacts negatively on economic growth in the long run. As argued by [6], [7], FDI inflows constraints deter poor countries from maximizing the advantages of technology transfer, natural resource depletion and pollution and for consequence, if a host government does not have sufficient capacities to manage their resources efficiently. This position was further advanced by [8] who observed that economies with advanced FDI inflows tend to grow faster and expand trade. Thus, FDI inflows is both advantage-growth and advantage trade. This notwithstanding, an opposing view exists among researchers stressing that economic growth, trade openness and FDI inflows do evolve independent of others [9].

This recent years, Mali has recognized FDI as a key way to transform its economic growth, efforts have been made put in place measures that tend to promote economic growth. Some of the efforts include aggressive campaign towards attracting FDI, creation of export processing zones to boost exports, privatization of publicly owned enterprises, trade liberalization policy and promoting the financial sector development, and producing encouraging environments for foreign investment. Foreign direct investment like FDI inflows, bring technological and managerial know-how, major source of capital accumulation, were aimed at increasing access to financial resources by the private sector so as to boost economic growth and development. What role can FDI and trade play in Mali to meet the challenges that the coup d etad of 2012, engendered?

The motivation for this work, despite its importance, FDI, trade openness and economic growth in many emerging and developing countries, there is little empirical work on this subject in Mali. Considering that Mali being the recipient of the largest inflow of FDI among all Economic Community of West African States (ECOWAS) countries and locates in central West Africa. This research will build on the existing literature in this area. Firstly, the Granger method is used to test the direction of causality and the maximum likelihood technique of [10] for test the co-integration (the long-run) relationships among FDI, economic growth and trade openness. Secondly, Conditional on finding co-integration, they must have an error correction representation wherein an error correction term (ECT) which is obtained from the estimated residuals of the co-integrated model and incorporated in the model [11]. The advantage of ARDL can identify a small sample size and can distinguish between a long-run and a short-run relationship in the series. This step is fundamental to investigate the short-run dynamics and the long-run equilibrium. The large volume of FDI is crucial for the statistical analysis in order to minimize the potential bias from single investment projects.

The rest of the article is organized as follows. Section 2 contains a theoretical and empirical review of literature. Section 3 describes the used data, while Section 4 deals with the estimation technique and the empirical analysis of the results. Section 5 presents the conclusion and some policy recommendations of the article.

2. Literature Review

Over the past decade, several studies examining the relationships among economic growth and FDI, on the one hand, and the relationship between economic growth and trade openness, on the other hand, the relationship among the two coefficients of literature has not been closely studied, especially using data sourced from developing economies like Mali. This study attempts to use autoregressive distributed lag (ARDL) model to examine the relationship between these three control variables so as to aid policy formulation. The country choice is motivated by Mali being the recipient of the largest inflow of FDI among all the Economic Community of West African States (ECOWAS).

At the developing countries, several studies provide evidence of FDI accelerate economic growth in host economy in the long run. For example, [2] found that FDI may affect growth positively due to country growth can determine and be determined by FDI inflows. FDI not only directly promotes economic growth by itself but also indirectly the level of labor force, trade restrictions and friendly investment climate. These elements will influence FDI into the country and potentially stimulate economic growth through FDI inflows, according to a dynamic relationship between FDI and economic growth. Relying on a variety of generalized method of moment (SYS-GMM) for testing the impact of FDI inflows on economic growth in the African region, [1] found that FDI inflows had a significant positive impact on economic growth, while the low level of human resources did not limit the impact of FDI.

However, some studies shows evidence of Trade openness promotes foreign direct investment and economic growth in host economy in the long run. [12] studied the relationship between trade openness

and economic growth in Kenya using the Granger methodology during the period 2000-2012. Their results supported a long-run relationship going from trade openness to investment and statistically insignificant relationship on the rate of economic growth in Kenya, with the promotion of trade openness attracting investment and increasing GDP in Kenya. They concluded that the growth process help explain the changes that occur in the trade openness. For Coted'Ivoire, [13] used the auto regressive distributed lag (ARDL) bounds test and the Toda and Yamamoto Granger causality model to examine the trade openness –economic growth nexus based on annual data sourced from 1965 to 2014, and observed that trade openness is the prime mover of economic growth both in the short and long run. Furthermore, the study established the existence of a positive and strong complementary relationship between trade openness and capital formation in promoting economic growth.

Furthermore, several studies provide evidence of FDI and trades accelerate economic growth in host economy in the long run. For example, by using panel-VAR methods, [14] emphasized relationships between economic growth, foreign direct investment (FDI) and trade openness in OECD countries: Austria, Canada, Finland, Iceland, Ireland, Japan, Norway, Spain, Switzerland and the USA, between 1970 and 2010. They found that FDI has a positive effect on economic growth in OECD countries, suggesting the presence of long run equilibrium relationships between them. [15] examined the relationship between economic growth, FDI and trade openness for the Tunisian economy using ARDL bounds and Granger causality Models to analyze data sourced from 1970 to 2008. The results observed that a long-run equilibrium relationship existed between the variables specified in the model when FDI is the dependent variable. Furthermore, it was observed that no evidence Granger causality runs from FDI and trade openness to economic growth indicators. For 45 African countries, [16] tested the relationship between FDI, trade openness and economic growth from the period 1990 to 2014 and observed that the Bhagwati hypothesis predicts growth enhancing effects of trade (exports) and FDI interaction. The author also support for the Bhagwati hypothesis and shows that in both the short and long run improvements in trade serve as an important channel through which FDI exerts its largest impact on economic growth. However, some empirical studies shows evidence that there was a negative impact of FDI and trade openness on economic growth in the long run. [3] examined the relationship between FDI, trade openness and economic growth in Ghana economies using annual time series instrumental variables and bounds testing (ARDL) approach to analyses data from 1970– 2002 and observed that foreign direct investment (FDI) impact economic growth negatively while trade openness significantly affects economic growth positively. For India, [5] examined the link between trade openness and economic growth using the ARDL model and rolling window regression method and observed that a negative relationship existed between trade openness and economic growth in the long run. The authors also noted the validity of trade openness-led growth and human capital-led growth hypothesis in the short run and long run.

3. Data and Methodology Specification

3.1. Data Sources and Model Construction

This article employed annual time series data from 1980 to 2016 sourced from World Bank Database (<http://www.worldbank.org>). The real GDP per capita (Y) in each successive time period was used as proxy for economic growth, while foreign direct investment inflows is the value of net inflows (FDI), The labor force (L) is measured as the volume of the total labor force, capital investment (K) is measured by the real value of gross fixed capital formation (GFCF constant 2000 US), The coefficient of trade, is total of export and import (TRADE) as a percentage of GDP, was used as the proxy for trade openness and Exchange Rate (EXR) of the Malian Franc CFA against dollar US. For good heteroscedasticity, all the variables were calculated as a

percentage of GDP except the FDI variable and all variables were transformed into natural logarithms (L). This study used E-views9.5.Statistical packages for analysis. Equation (1) represents the Foreign Direct investment-economic growth–trade openness nexus.

$$FDI_t = \beta_0 + \beta_1 Y_t + \beta_2 K_t + \beta_3 L_t + \beta_4 TRADE_t + \beta_5 EXR_t + \mu_t \tag{1}$$

3.2. Methodology Specification

In choosing an ARDL model, several steps of the procedure have to used, to investigate the relationship between FDI, trade openness and economic growth in Mali. This study used the recently developed autoregressive distributed lag (ARDL) bounds testing approach to cointegration developed by [17]. The technique has several advantages over other estimation techniques like [11] and [18]. First, we use the conventional augmented Dickey–Fuller (ADF) and the Phillips–Perron test following Phillips and Perron to detect the level of stationarity either at I(0) or I (1) [19], [20] therefore is an rule for ARDL bounds test. In time series data, before we proceed with the ARDL bounds test, stationarity tests are conducted to determine the stationarity of variables. Second; we test the co-integration (the long-run) relationships among the variables. After, we apply the autoregressive distributed lag (ARDL) cointegration technique, which is used to capture cointegrating non-stationary time series. For so doing, the ARDL modeling approach was used for first by [21] and extended by [22]. The bound test approach was chosen as it can be used in our study small sample sizes, estimates long-run and short-run relationships simultaneously, and allows the test on existence of relationships among variables for stationary data at various levels, I (0) and I(1) or both. The ARDL procedure can determine the cointegration relation in small samples, whereas Johansen’s cointegration procedure requires larger sample sizes [23].

$$\begin{aligned} \ln FDI_t = & \beta_1 + \delta_2 \ln FDI_{t-1} + \delta_3 \ln Y_{t-1} + \delta_4 \ln TR_{t-1} + \delta_5 \ln Lab_{t-1} + \delta_6 \ln K_{t-1} + \delta_7 \ln EX_{t-1} \\ & + \sum_{i=1}^p \alpha_1 \ln Y_{t-1} + \sum_{i=1}^p \alpha_2 \ln FDI_{t-1} + \sum_{i=1}^p \alpha_3 \ln TR_{t-1} + \sum_{i=1}^p \alpha_4 \ln Lab_{t-1} + \sum_{i=1}^p \alpha_5 \ln K_{t-1} + \sum_{i=1}^p \alpha_6 \\ & \ln EX_{t-1} + \varepsilon_t \end{aligned} \tag{2}$$

$$\begin{aligned} \ln Y_t = & \beta_1 + \delta_2 \ln Y_{t-1} + \delta_3 \ln FDI_{t-1} + \delta_4 \ln TR_{t-1} + \delta_5 \ln Lab_{t-1} + \delta_6 \ln K_{t-1} + \delta_7 \ln EX_{t-1} \\ & + \sum_{i=1}^p \alpha_1 \ln Y_{t-1} + \sum_{i=1}^p \alpha_2 \ln FDI_{t-1} + \sum_{i=1}^p \alpha_3 \ln TR_{t-1} + \sum_{i=1}^p \alpha_4 \ln Lab_{t-1} + \sum_{i=1}^p \alpha_5 \ln K_{t-1} + \sum_{i=1}^p \alpha_6 \\ & \ln EX_{t-1} + \varepsilon_t \end{aligned} \tag{3}$$

$$\begin{aligned} \ln TR_t = & \beta_1 + \delta_2 \ln TRADE_{t-1} + \delta_3 \ln FDI_{t-1} + \delta_4 \ln Y_{t-1} + \delta_5 \ln Lab_{t-1} + \delta_6 \ln K_{t-1} + \delta_7 \ln EX_{t-1} \\ & + \sum_{i=1}^p \alpha_1 \ln Y_{t-1} + \sum_{i=1}^p \alpha_2 \ln FDI_{t-1} + \sum_{i=1}^p \alpha_3 \ln TR_{t-1} + \sum_{i=1}^p \alpha_4 \ln Lab_{t-1} + \sum_{i=1}^p \alpha_5 \ln K_{t-1} + \sum_{i=1}^p \alpha_6 \\ & \ln EX_{t-1} + \varepsilon_t \end{aligned} \tag{4}$$

On the left-hand side, the expression from δ_2 to δ_7 to depicts the long-run relationship between the variables, while the expression from α_1 to α_6 with the summation signs corresponds to the short-run dynamics of the variables. On the other hand, β_0 represents drift constant and ε_t is Gaussian white noise. The complete results for short-run and long-run dynamics through ARDL bounds testing are obtained through several steps and procedure. The first step, Eq. (4) will be estimated through ordinary least square

(OLS) method and F-test will be conducted to test the existence of long run relationship among the variables of Eq. (3). The null hypothesis in Eq.(4) is $H_0 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$.

This means the nonexistence of long run relationship.

While the alternative is $H_1: \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq \delta_7 = 0$.

The result is calculated F-statistics value is compared with upper and lower critical values which are given by [24]. If calculated F-value exceeds the upper critical value, then null hypothesis of no cointegration will be rejected irrespective of whether the variable are I(0) or I(1). In second step, we will estimate long run relationship using the selected ARDL model through R2 criterion, Hannan Quinn Criterion, Akaike Information Criterion (AIC) and Schwarz Criterion (SBC). Finally error correction model result indicates the speed of adjustment back to long run equilibrium after a short run shock. Several diagnostic tests are conducted to ensure the goodness of fit of the model. These tests examine the serial correlation, functional form, normality and heteroscedasticity associated with the selected model. Thus, [25] suggest using [26] stability test to check the stability of the coefficient of the regression. The technique is also known as cumulative(CUSUM) and cumulative sum of squares (CUSUMSQ). If the plots of CUSUM and CUSUMSQ statistics stay within the critical bounds of 5% level of significance, the null hypothesis of all coefficients in the given regression which is stable cannot be rejected.

4. Results and Discussion

Table 1 presents the descriptive statistics results of the variables used in the current paper. According to the Jarque– Bera test, these statistics reveal that all the series such as (trade, FDI, labor, capital investment, exchange rate and economic growth) have normal distributions.

Table 1. Descriptive Statistics and Correlation Matrix Results

Variable	Y_t	K_t	Lab_t	FDI_t	TR_t	
EXR_t						
Mean	1.4367	1.6523	6.4745	21.5824	1.2834	
1.2925						
Median	1.4464	1.6888	6.5824	2.2477	1.3000	
1.4424						
Maximum	1.7626	1.9000	7.7423	390.35	1.9999	
2.0110						
Minimum	0.8849	1.2545	5.2333	-195.94	0.0000	
-1.6923						
Std. dev.	0.1926	1.1656	0.5435	58.83	0.3145	
0.5723						
Y_t	1000					
K_t	0.4632	1000				
Lab_t	0.3026	0.5545	1000			
FDI_t	-0.00	0.3004	0.4723	1000		
TR_t	-0.3420	-0.1387	-0.1625	0.000	1000	
EXR_t	-0.1823	-0.1454	-0.3334	0.2523	0.520	1000

4.1. Stationary and Co-integration Tests

Table 2 shows the results of ADF and P.P unit root tests indicate that all the variables set are integrated of I(0) or I(1) (see Table 2). These results clearly show that the H0 of unit root tests are rejected at 1%, 5% and 10% significance levels. Therefore, if all the variables are stationary at I (0), I (1) or both, the bounds testing approach would be used and are the major advantages of using the ARDL estimators. Generally, none of the data series are I (2) or above. In our estimation, Table 3 divulges the results of the co-integration among the variables. The result shows that the H0 of no co-integration among the variables in the (trade, FDI, labor, capital investment, exchange rate and economic growth) models are rejected at 5% significance level, evidencing a variables strong correlation in long run. Generally, the results of this test

confirmed that the relationships among FDI, export and economic growth are co-integrated, which means that the variables included in the model are shared long-run relationships among themselves.

Table 2. Results of Unit Roots Tests

Variable	ADF		PP		Order of integration
	Level	1st Dif.	Level	1st Dif	
TR_t	-2.59188*	-2.9484*	-3.6267**	-2.9484***	I(0)
EX_t	-3.6267*	-2.9484**	-2.6115*	-2.9484**	I(0)
Lab_t	-3.6329*	-2.9484**	-2.9458***	-2.6128*	I(1)
$CFDI_t$	-3.6267**	-2.9484**	-2.6115*	-2.6128***	I(1)
K_t	-3.6888**	-2.8556	-2.6723***	-2.7534**	I(1)
Y_t	-3.6956*	-2.2678**	-2.8711*	-2.0726*	I(1)

Note: *, **, *** indicate 10%, 5% and 1% level of significance.

4.2. Long-Run Relationship Analyses

Table 5 and table 6 presents the estimation of the long run and short-run relationships between the variables based on Schwarz Bayesian criterion (SBC). From ADRL results suggest that significant positively relationship exists between FDI inflows and economic growth both in the long and short run when foreign direct investment is the dependent variable at 5% significance level. This implies that 1% increase in FDI inflows receipts leads to 5.58% increase in real per capita GDP (economic growth) in the long run in Mali. This is in line with the findings of [27] who documented that FDI inflow has a positive effect on economic growth for Vietnam. However, the findings contradict the results of [3] who noted that a negative impact between FDI and economic growth for Ghana. The results also show that a positive and significant relationship exists in the long run but is insignificant short run between FDI and domestic investment, implies that 1% increase in FDI receipts leads to 0.03% increase in domestic investment in the long run. The results of our study are in line with the recent empirical studies, for example [16], who noted that a significant relationship existed between FDI inflows and domestic investment for host economy. The ADRL results indicate that a positive and significant relationship exists both in the long run and short run between FDI inflows and exchange rate. These results are consistent to [28]. The relationship between FDI and Trade openness is negative and not significant in the long run but positive and not significant in the short run, implying that the trade openness may have some positive impacts on attracting FDI in Mali but calls for caution in handling trade policy. This is a departure from the reviewed literature as it contradicts the findings of [29] who argued that a positive relationship exists between FDI and trade openness. On the contrary, the relationship between FDI and labor force is negative at 5% significance level. Furthermore, several studies is indicative of the growing unemployment problem and the low productivity of labour in the host country [3]. Thus, the rise of economy is based on land intensive agriculture is leading to a decrease in inflows of FDI in the host country [3]. In the economic growth is the dependent variable, the results report that there is a positive relationship between FDI, economic growth and trade openness at 10% significance level, which means that an increase of economic growth would definitely lead to increasing the FDI inflows, domestic investment and labour force as well in the Malian economy. The results of the present study are consistent with [30], who have a stance of growth led economic hypothesis. In the trade openness is the dependent variable, the results report that there is a positive relationship between FDI, economic growth and trade openness at 10% significance level. The results of the present study are consistent with [15], [31], which confirmed long run relationship between the variables.

4.3. Short-Run and ECMt – 1 Results

Define After the long run results, the short-run analyze is estimated and the results are presented in Table V. These results indicated that at 5% and 10% significance levels, the error-correction terms from economic

growth, trade openness to FDI are positively. In addition, the coefficients of $ECMt - 1$ are significant with appropriate signs for all models (FDI, real GDP per capita, exchange rate, capital, labor and trade openness). $ECMt-1$ high coefficient of significance implies a relative speed of achieving the long-run equilibrium. Specifically, FDI, economic growth and trade models reported the highest $ECMt -1$ coefficient in absolute value among other models with -106% , -0.50% and -0.54% respectively. This implies that these models FDI are corrected from the short-run towards the long-run equilibrium by 106%, 50% and 54%. Also, this means that the long-run would be shortly corrected back by 1.4 years for the FDI models, while the trade openness and economic growth model would be corrected back to the long run equilibrium in the current year. Therefore, the results of short-run and $ECMt-1$ show that there is a significant relationship among FDI inflows, economic growth and trade in Mali. The long-run results conclude that FDI inflows increase with higher real GDP per capita, exchange rate and domestic investment indicators, which are supported by the $ECMt - 1$ coefficient of the FDI model, giving an adjustment speed from the short-run towards the long-run equilibrium. However, these results are consistent with the findings by [15] for Tunisia; [3] for Ghana, [32] for Malaysia.

Table 3. Long-Run ARLD

Variable	Coefficient	SE	T-ratio	Prob
Constant	7.498	9.271	0.808	0.426
Y_t	5.589	2.120	2.635	0.0142
lab_t	- 4.082	2.652	-1.539	0.136
K_t	0.039	0.0159	2.491	0.019
TR_t	-0.185	2.259	-0.081	0.935
EXR_t	4.496	1.314	3.419	0.0022
Diagnostic test statistics (p-values)				
χ^2 (normality)				8.813
χ^2 (heteroscedasticity)				0.2635
χ^2 (functional form)				0.5243
χ^2 (serial correlation)				0.5245

Table 4. Short-Run and $ECMt - 1$ ARLD Result

Variable	Coefficient	SE	T-ratio	Prob
ΔY_t	5.973	2.421	2.467	0.0208
K_t	0.0106	0.0078	1.3490	0.1894
ΔTR_t	3.6063	2.5521	1.4130	0.1700
ΔK_t	-0.0132	0.0077	-1.721	0.097
ΔLab_t	-4.363	2.829	-1.542	0.135
ΔEXR_t	4.805	1.497	3.208	0.0036
$ECMt_{-1}$	-1.068	0.210	-5.079	0.0000

4.4. Granger Causality Analyses

In the ARDL cointegration test, the direction of causality is not clear between form FDI capital investment, trade, labor force, economic growth and exchange rate. In this paper, there is significant Granger unidirectional and neutral causality among the variables. On the other hand, the results also reported evidence of unidirectional causal relationships from FDI to economic growth variables. The causality from FDI to economic growth confirms previous findings which stated that foreign investors tend to motivate domestic firms. This is consistent with the results of [33]. Turning to the results indicated that there is evidence of a unidirectional causal relationship from FDI export variables, as well as the unidirectional causal relationship existed from labor force to economic growth variables. [34] showed that the direction of causality is from economic growth to trade in some south Mediterranean countries. The results also showed evidence of unidirectional causal relationships from export to economic growth, from export to labor force, and from rate exchange to export implies that FDI and export promotes mostly import. Besides,

the results pointed out that there are no evidence of causal relationships among FDI to domestic investment in Mali. We can conclude that capital investment promotes export, FDI and economic growth in the short run, and is the main driver of economic growth in Mali.

5. Conclusion and Recommendation

This article examined the long run and short run relationship of foreign direct investment, trade openness and economic growth of Mali for the period 1980-2016. The ARDL model is used to examine the existence or otherwise of long-run and short-run relationships among the variables. The ARDL results show that FDI inflows affect economic growth positively in the short and the long run. But the Trade openness has a negative effect in the long run and positive effect in the short run.

While FDI an inflow has had a positive impact on economic growth in the short and the long run. This may be on account of reducing government bureaucracy, accelerating administrative reform, creating a good macroeconomic environment and other aspects of sustaining social and political stability that had a p that one unit increase in the trade openness reduces economics growth by over 18% is very worrying. The analysis brings to the fore the trade openness has made certain indirect contributions to Mali economic growth and again from image of Mali as a dynamic exporting country such as improving the country's current account. However, this does not imply that trade openness does not play any important role in Mali's economic growth. Therefore, trade openness development is good but not sufficient to promote economic growth. In fact, in Mali over the last few years, the trade sector has been developed and represented by the increasing share of trade in GDP. Apart from trade development policy, the policy-makers can use changes in the real sector or economic growth to determine the direction of growth and promote of both FDI inflows and the domestic investment sector into the national economy. If Mali wants to achieve sustainable economic growth in the future, significant reforms are necessary for the foreign trade strategy.

Acknowledgment

The authors would like to thank the China Scholarship Council (CSC) for their technical and financial supports of this research. Hospitality of the Department of Management and Economics is gratefully acknowledged.

References

- [1] Gui-Diby, S. L. (2014). Impact of foreign direct investments on economic growth in Africa: Evidence from three decades of panel data analyses. *Research in Economics*, 68, 248-256.
- [2] Iamsiraroj, S. (2016). The foreign direct investment–economic growth nexus. *International Review of Economics & Finance*, 42, 116-133.
- [3] Magnus, J. F., & Otengabayie, E. F. (2006). Bounds testing approach: An examination of foreign direct investment, trade, and growth relationships. *American Journal of Applied Sciences*, 3, 1510-1516.
- [4] Were, M. (2015). Differential effects of trade on economic growth and investment: A cross-country empirical investigation. *Journal of African Trade*, 2, 71-85.
- [5] Hye, Q. M. A., & Lau, W. Y. (2015). Trade openness and economic growth: empirical evidence from India. *Journal of Business Economics & Management*, 16, 188-205.
- [6] Acharyya, J. (2009). FDI, growth and the environment: Evidence from India on CO2 emission during the last two decades. *Journal of Economic Development*, 34, 43-58.
- [7] Tan, B. W., & Tang, C. F. (2016). Examining the causal linkages among domestic investment, FDI, trade, interest rate and economic growth in ASEAN-5 countries. *International Journal of Economics &*

Financial Issues, 6.

- [8] Adams, S. (2009). Foreign direct investment, domestic investment, and economic growth in Sub-Saharan Africa. *Journal of Policy Modeling*, 31, 939-949.
- [9] Balasubramanyam, V. N., Salisu, M., & Sapsford, D. (2002). Foreign direct investment and growth in EP and IS countries. *Working Papers*, 106, 92-105.
- [10] Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration — With applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52, 169-210.
- [11] Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: Journal of the Econometric Society*, 251-276.
- [12] Musila, J. W., & Yiheyis, Z. (2015). The impact of trade openness on growth: The case of Kenya. *Journal of Policy Modeling*, 37, 342-354.
- [13] Keho, Y. (2017). The impact of trade openness on economic growth: The case of Cote d'Ivoire.
- [14] Pradhan, R. P., Bagchi, T. P., Chowdhury, K., & Norman, N. R. (2012). Growth, foreign investment and trade-openness interactions in ten OECD countries: A panel-VAR approach. *International Journal of Banking Accounting & Finance*, 4, 273-293.
- [15] Belloumi, M. (2014). The relationship between trade, FDI and economic growth in Tunisia: An application of the autoregressive distributed lag model. *Economic Systems*, 38, 269-287.
- [16] Sakyi, D., & Egyir, J. (2017). Effects of trade and FDI on economic growth in Africa: An empirical investigation. *Transnational Corporations Review*, 1-22.
- [17] Pesaran, M. H., & Shin, Y. (1995). An Autoregressive distributed lag modelling approach to cointegration analysis. *Department of Applied Economics*, 1-24.
- [18] Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica*, 59, 1551-80.
- [19] Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 335-346.
- [20] Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 1057-1072.
- [21] Hendry, D. F. (1995). *Dynamic Econometrics*. Oxford University Press on Demand.
- [22] Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16, 289-326.
- [23] Narayan, P. K. (2005). The saving and investment nexus for China: evidence from cointegration tests. *Applied Economics*, 37, 1979-1990.
- [24] Pesaran, H. M., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Econometrics*, 5, 289-326.
- [25] Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. *Econometrics and Economic Theory in 20th Century*.
- [26] Brown, R., Durbin, J., & Evans, J. M. (1975). Techniques for testing the constancy of regression relations over time. *Journal of the Royal Statistical Society*, 37, 149-163.
- [27] Anwar, S., & Nguyen, L. P. (2011). Foreign direct investment and trade: The case of Vietnam. *Research in International Business and Finance*, 25, 39-52.
- [28] Mohamed, M. R., Singh, K. S. J., & Liew, C. Y. (2013). Impact of foreign direct investment and domestic investment on economic growth of Malaysia. *Malaysian Journal of Economic Studies*, 50, 21-35.
- [29] Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century ☆. *Journal of Financial Economics*, 69, 5-50.
- [30] Beck, T. (2002). Financial development and international trade. *Journal of International Economics*, 57, 107-131.

- [31] Liu, X., Burrridge, P., & Sinclair, P. J. N. (2002). Relationships between economic growth, foreign direct investment and trade: evidence from China. *Applied Economics*, 34, 1433-1440.
- [32] Baharom, A. H., Habibullah, M. S., & Royfaizal, R. C. (2008). The relationship between trade openness, foreign direct investment and growth: Case of Malaysia. *Mpra Paper*.
- [33] Bekhet, H. A., & Al-Smadi, R. W. (2015). Determinants of Jordanian foreign direct investment inflows: Bounds testing approach. *Economic Modelling*, 46, 27-35.
- [34] Hisarciklilar, M., Kayam, S. S., Kayalica, M. O., & Ozkale, N. L. (2006). *Foreign Direct Investment and Growth in Mediterranean Countries*.



Kankou Hadia Fofana is Ph.D. student in Business and Management, Beijing Institute of Technology, China. Currently, he is doing research in the area of foreign direct investment in West Africa under the supervision of the Prof. Enjun Xia of the Beijing Institute of Technology.