The Six Linkages between Foreign Direct Investment, Domestic Investment, Exports, Imports, Labor Force and Economic Growth: New Empirical and Policy Analysis from Nigeria

Sayef Bakari and Mohamed Mabrouki and Abdelhafidh Othmani

LIEI, Faculty of Economic Sciences and Management of Tunis (FSEGT), University Of Tunis El Manar, Tunisia., MACMA, Higher Institute of Companies Administration University of Gafsa, Tunisia, PS2D, Faculty of Economic Sciences and Management of Tunis (FSEGT), University Of Tunis El Manar, Tunisia.

The Six Linkages between Foreign Direct Investment, Domestic Investment, Exports, Imports, Labor Force and Economic Growth: New Empirical and Policy Analysis from Nigeria

Sayef Bakari [a], Mohamed Mabrouki[b], Abdelhafidh Othmani [c]

[a] Department of Economics Science, LIEI, Faculty of Economic Sciences and Management of Tunis (FSEGT), University Of Tunis El Manar, Tunisia.

Department of Economics Science, MACMA, Higher Institute of Companies Administration University of Gafsa, Tunisia

[c] Department of Economics Science, PS2D, Faculty of Economic Sciences and Management of Tunis (FSEGT), University Of Tunis El Manar, Tunisia.

Abstract:

The contribution of this study is to search the six linkages between Foreign Direct Investment, Domestic Investment, Exports, Imports, Labor Force and Economic Growth in Nigeria by using vector error correction model for the period 1981 – 2015. The empirical results indicate that there is no relationship between the six variables in the long run. In the short run imports cause economic growth and domestic investment; exports and FDI cause labor; and labor causes FDI. These findings present the critical situation of Nigeria, which requires an entry of urgent economic reforms.

Keywords: Economic Growth, Domestic investment, FDI, Labor, Exports, Imports, VECM, Nigeria.

JEL Classification: E22; F14; J 21; O16; O47; O55; N77

I. Introduction:

In the past two decades, the Nigerian arena has witnessed a series of political and social upheaval. The question of whether this great African country can survive and maintain the shape of a federal union has been legitimate. How many were surprised by the transfer of power from the military to the civilians in 1999, but this search became a mirage after the situation intensified and the pace of unrest, as it took only a few days to take over President Olusegun Obasanjo until the country began to rise from the depths of many clashes

Sectarianism, tribalism and politics. In dealing with such a phenomenon, the magnitude of contradictions and differences must be taken into account. The Nigerian model can be rightly called the "state of blatant contradictions". It is a society with a vast diversity of environment, territory, social organization, economic situation, lifestyle, sectarian and ethnic affiliation, the prevailing order, culture, problems, issues and special costumes. The tribal structure is evident, with tribal and ethnic groups of more than 250 national groups living on the land of Nigeria. There is no doubt that successive disturbances are a natural result of these contradictions, but we cannot ignore other factors and new variables whose repercussions and complications have exacerbated the situation and the continued political turmoil in the country. There are disorders arising from the state of crisis and frustration experienced by the people as a result of poverty and underdevelopment and the deterioration of economic and living conditions, where the wide gap between the affluent and the disadvantaged classes, poverty has become a phenomenon and widespread unemployment and manifestations of misery and poverty among the population, per capita GDP does not exceed, annually The World Bank estimates that the number of people living on $ 1 a day is about 80% of the population, meaning that the number of poor people exceeds 100 million people. In poor economic conditions, the government has announced a 200% increase in fuel prices, causing riots, violence and protests across the country, led by trade unions. As well as the slow pace of development and the spread of corruption under a government pledged to fight it and the absence of serious and genuine treatments to combat the phenomenon, in addition to the allegations of a number of officials on corruption cases large.. All this generated a state of anger and anger at the current administration and form a natural entry exploited by elements and parties opposed to the events Tensions and disorders. With oil prices falling, inflation and insecurity in the south, the humanitarian crisis in the north and power shortages, Nigeria's economy collapsed for 15 months, losing its first economic position in Africa and its status as the continent's first oil exporter. President Muhammadu Buhari told in news conference in Abuja, attended by UN representatives "Nigeria has suddenly become a poor country". He said also "Before I took over my job, oil was sold for about $ 100 a barrel, and then its price dropped to $ 37, and today it is between $ 40 and $ 45 a barrel". In addition, the objective of this work is to study and reinvest the determinants of economic growth in Nigeria by including a broad set of key explanatory variables for growth. These variables are domestic investment, foreign direct investment, exports, imports and the labor force. Otherwise, we also try to determine the six links between these variables and economic growth to better explain and understand the economic situation of Nigeria based on the phenomenon

of cointegration based on Sims Model. To achieve this objective the paper is structured as follows. In section 2, we present the literature survey. Secondly, we discuss the Methodology Model Specification and data used in this study in Section 3. Thirdly, Section 4 presents the empirical results as well as the analysis of the findings. Finally, Section 5 is dedicated to our conclusion.

II. Literature Survey

Relation between trade openness and economic growth always stays complicated more and more. As we know and in some cases imports present a source of economic growth by developing the productivity of investment when the majority of imported goods are machines and technology well innovated, also imports are also benefic for economic when the imported goods will be less expensive of the cost of their production. But, in the basic case, the currency flows hurt the trade balance which lead to the reduction of economic growth, also imports in some case make the nation more lazy for making all the its requirement by itself. Indeed, exports are an outlet for local goods and services, a source of foreign exchange inflows to cope with imports, and revenue for governments to finance national economies. In addition, a decrease in exports may procure to increased unemployment and poverty, reduced government revenues, and limited capacity for imports of capital goods and inputs needed for production activity, which could hamper economic growth of the countries. However, Exports can be presented as a barrier of attainted economic growth in the absence of effective opening strategies. Among the studies that have shown that an expansion of trade has a significant positive impact on economic growth are Michaely, (1977); Balassa, (1978, 1989 and 1995); Tyler, (1981); Rahman (1993); Savvides, (1995); Asmah, (1998); Edward, (1998); Ram, (1987); Bakari (2017a); Bakari and Mabrouki (2017). On the other hand, others have concluded that the positive relationship between international trade and economic growth does not exist during certain periods for certain countries, among these studies we can cite Tyler (1981); Helleiner (1986); Ahmad and Kwan (1991); Bakari (2017b); Bakari (2017c); Bakari and Krit (2017). Concerning the nexus between domestic investment and economic growth, it seen that a strong economically country must have a robust domestic investment which make the nation lead its economic to the top on neglected all helps form others whom make it restricted to many of the obligations that concern her well-being. In these context many studies have confirmed the role of domestic investment on stimulating economic growth like Romer (1986); Lucas (1988); Barro (1991); Rebelo (1991); Fischer (1993); Bakari (2017a). For some reasons like corruption, mismanagement, natural disasters and

other problems, domestic investment cannot be the saver and the sponsor to create economic growth. This situation is base on the results of many studies which proved that domestic investment may not necessarily have a favorable impact on economic growth like Khan (1996), Devarajan and al (1996), Bakari (2017b), Bakari (2017c). The relationship between foreign direct investment and economic growth has been addressed and has been the research theme for many economists because of different points of view. In this context foreign direct investment can bring with them several factors that can affect and stimulate in a direct way (new technology, innovation, infrastructure, currency) or indirectly (reduction of unemployment, reduction of poverty, export growth ...) economic growth, among these that have proved this linkage we can cited Borensztein et al (1998); Zhang (2001); Bengoa and Sanchez-Robels (2003). However, the effect of foreign direct investment may not be favorable or benefic for economic growth if these investments bring many problems and many disasters like: imposing its productive, operational and marketing orientations and imposing its conditions which aim to achieve the greatest amount of profits above any other goal; dealing with resources irrationally depletion and the transfer of their resources to the mother country, which destroys the host country at the remote level; the volume of money transferred abroad has grown as a results of a negative impact on the balance of payments..; and these is proved by many economists like Carkovic and Levine (2002); Katerina et al (2004); Adams (2009). It remains very important whether there is any causal link between population growth and economic growth, not only for demographers and economists but also for policy makers. However, this relationship has long been contentious. Numerous studies have found a negative association between these two variables Galor and Weil (2000) and Li and Zhang (2007). In contrast, contradictory results also exist in the previous studies Dasgupta (2000); Drèze and Murthi (2001); Huang and Xie (2013) and Yao et al (2013). An others studies try to study the linkage between many of these variables together. Apergis and Payne (2009) examined the nexus between energy consumption and economic growth in six Central America Countries for the period 1980 – 2004 by using cointegration analysis and the Granger Causality tests. In their research they used domestic investment and labor force as control variables. Empirical analyses show that energy usage, domestic investment and labor force have a positive impact on economic growth; economic growth cause domestic investment; energy usage and the labor force have positive effect domestic investment; economic growth and domestic investment have positive effect on labor force. Paudel and Perera (2009) studied the nexus between foreign Debt, trade openness, labor force and economic growth in Sri Lanka for the period 1950 – 2006. By using Cointegration analysis,

empirical analysis suggest that in the long run there is a positive cointegration relationship between exports, imports, labor force, domestic investment and economic growth. Bhatt (2013) examined the causal relationship between exports, FDI and economic growth in the case of Vietnam by using VAR model and the Granger Causality Test. Empirical results show that FDI cause exports; economic growth cause exports and FDI. Omri and Kahouli (2014) investigated the nexus between FDI, domestic investment and economic growth in 13 MENA countries by using GMM model during the period 1990 – 2010. Empirical analyses show that FDI cause domestic investment; there is bidirectional causality between FDI and GDP; and there is bidirectional causality between domestic investment and GDP. Tan and Tang (2016) examined the causal linkage among domestic investment, FDI, trade, interest rate and economic Growth in ASEAN-five countries (Indonesia, Malaysia, Philippines, Singapore and Thailand) in the period 1970 – 2012. To attempt their goal, they used cointegration analysis and Vector Error Correction Model. Empirical analysis show many results. For the case of Indonesia in the long run, they found that economic growth cause FDI and interest rate; domestic investment cause FDI and interest rate; exports and imports cause FDI and interest rate. However in the short run, they found that there is bidirectional causality between economic growth and domestic investment, and between FDI and Trade (Exports and Imports); and economic growth cause FDI and interest rate. For the case of Malaysia, they have found in the long run that trade cause domestic investment and FDI; economic growth cause domestic investment, FDI and interest rate; bidirectional causality between domestic investment and FDI. However in the short run, they found that trade cause domestic investment and interest rate; domestic investment cause FDI; FDI cause economic growth; bidirectional causality between trade and FDI; bidirectional causality between GDP and trade and bidirectional causality between domestic investment and economic growth. For the case of Philippines, they have found in the long run that domestic investment cause economic growth, FDI and trade; bidirectional causality between economic growth and FDI; bidirectional causality between FDI and trade; bidirectional causality between trade and economic growth. However in the short run, they found that FDI cause domestic investment and trade; bidirectional causality between FDI and economic growth; bidirectional causality between trade and economic growth; bidirectional causality between trade and domestic investment; bidirectional causality between domestic investment and economic growth. For the case of Singapore, they have found in the long run that trade cause FDI, domestic investment and economic growth; bidirectional causality between economic growth and FDI, bidirectional causality between economic growth and domestic investment; and bidirectional

causality between FDI and domestic investment. However in the short run, they found that domestic investment cause economic growth and trade; bidirectional causality between domestic investment and FDI; bidirectional causality between economic growth and trade. Finally and for the case of Thailand they have found in the long run that there is bidirectional causality between all variables. However in the short run they have found that trade cause economic growth; FDI cause domestic investment; bidirectional causality between trade and FDI; bidirectional causality between trade and domestic investment; and bidirectional causality between economic growth and domestic investment. Keho (2017) examined the nexus between trade and economic growth in Cote d'Ivoire for the period 1965–2014. He used domestic investment (capital) and labor as control variables. The results of Toda and Yamamoto Granger causality tests show that trade and economic growth cause capital; capital and economic growth cause labor force and trade. Bakari (2017d) investigated the three-way linkages between export, import and economic growth in Tunisia using annual time series data for the period 1965 – 2016 by implementing cointegration analysis and error correction model. The empirical results show that in the long run imports have positive effect on economic growth and exports; economic growth has positive effect on exports and exports have negative effect on economic growth. In the short run, empirical analysis prove that exports cause imports; imports cause economic growth and there is bidirectional causality between exports and economic growth.

III. Data and methodology

The empirical investigation in this research paper consists in studying the order of integration of each variable by using the stationary tests. In our case, we will apply the two stationary tests ADF and PP to ensure the robustness of the stationarity of each variable. As soon as the order of integration of each variable is indicated, we will perform the cointegration analysis using the Johanson test, which aims to specify and select the suitable and compatible model in our estimation. In the case of an existing of a cointegration relation, the error-correction model will be retained. On the other hand, if the Johanson test indicates the absence of a cointegration relation, the VAR model will be retained. And of course, we will finish our empirical analyzes by diagnostic tests to verify the quality of our model and the robustness of our estimation. Early empirical formulations tried to capture the causal link between trades, domestic and foreign investments and GDP growth by incorporating exports and imports into the aggregate production function (Balassa, 1978; Sheehey, 1992), and dividing capital into domestic investment and foreign direct investment (Sumei Tang and al (2008), Adams

Samuel (2009), omri and kahouli (2014)). The augmented production function including domestic investment, foreign direct investment exports and imports is expressed as:

$$Y = F[(DI, FDI, L); X, M]$$

To make the model linear and to avoid heteroskedasticity problem, all variable are converted into logarithm.

$$\log(Y)_t = \beta_0 + \beta_1 \log(DI)_t + \beta_2 \log(FDI)_t + \beta_3 \log(L)_t + \beta_4 \log(X)_t + \beta_5 \log(M)_t + \varepsilon_t$$

Where:

- Y_t: Dependent Variable "GDP"
- β_0 : The constant term.
- β_1: coefficient of variable (DI: Domestic Investment)
- β_2: coefficient of variables (FDI: Foreign Direct Investment)
- β_3: coefficient of variable (L: Labor)
- β_4: coefficient of variable (X: Exports)
- β_5: coefficient of variable (M: Imports)
- t: The time trend.
- ε: The random error term assumed to be normally, identically and independently distributed.

In addition, and concerning the secondary data of our investigation research for period 1981-2015 is collected from WDI (2015).

IV. Empirical Analysis

1- Tests for unit roots

Table 1 shows the results of the unit root tests ADF and PP, of which we find that all the variables are integrated in order (1).

Table 1: Unit root tests: ADF and PP

Unit Roots Tests	ADF	
	Constant	***Constant, Linear Trend***
Y	(1.596213)	(2.067917)
	[4.337156]***	[4.912168]***
DI	(0.296918)	(3.185653)
	[3.183360]**	[2.928990]
FDI	(1.480274)	(2.890992)
	[11.04092]***	[10.85290]****
L	(0.807501)	(4.050637)**
	[3.739487]**	[3.706612]***
X	(0.037805)	(3.193739)
	[8.329482]***	[8.340532]***
M	(1.252159)	(3.358683)*
	[5.068201]***	[5.091219]***

******; ** and * denote significances at 1%; 5% and 10% levels respectively***
( ) denotes stationarity in level
[ ] denotes stationarity in first difference

2- Lag order selection criteria

According to Table 2, the majority of information selection criteria assert that the amount of optimal delay between the different variables that will be used in our model is equal to 1.

Table 6: Lag order selection Criteria

VAR Lag Order Selection Criteria						
Lag	**Log L**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	220.5881	NA	6.03e-14	-13.41176	-13.13693	-13.32066
1	290.9759	109.9809	7.34e-15	-15.56099	-13.63722*	-14.92332
2	336.8361	54.45905*	5.12e-15*	-16.17726*	-12.60453	-14.99300*

*** indicates lag order selected by the criterion**
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

3- Cointegration Analysis

The application of the Johanson test in table 3 shows the existence of 4 cointegration relations. So in this case, it can be said that the error-correction model will be retained.

Table 3: Johanson Tests

Unrestricted Cointegration Rank Test (Trace)				
Hypothesize No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.877252	177.2732	95.75366	0.0000
At most 1 *	0.785163	112.2469	69.81889	0.0000
At most 2 *	0.656225	64.57277	47.85613	0.0007
At most 3 *	0.436474	31.47194	29.79707	0.0318
At most 4	0.255142	13.69214	15.49471	0.0918
At most 5 *	0.136810	4.560743	3.841466	0.0327

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

*** denotes rejection of the hypothesis at the 0.05 level**

****MacKinnon-Haug-Michelis (1999) p-values**

4- VECM estimation

In the estimation of the vector error correction model, the relationship between the independent variables and the long-term and short-term dependent variable can be checked. The six equations of the estimation of the vector error correction model and which include the cointegration equilibrium relation of the error correction model are found:

- Influence of domestic investment, foreign direct investment, exports, imports and labor on economic growth:

$$\begin{aligned}\mathbf{D(DLOG(GDP))} = {} & \mathbf{C(1)} * (\mathbf{DLOG(GDP(-1))} + \mathbf{0.174028431582} * \mathbf{DLOG(INVESTMENT(-1))} + \mathbf{0.310250258471} * \mathbf{DLOG(FDI(-1))} \\ & + \mathbf{2.25661433071} * \mathbf{DLOG(EXPORTS(-1))} + \mathbf{1.12203147869} * \mathbf{DLOG(IMPORTS(-1))} - \mathbf{218.511628316} \\ & * \mathbf{DLOG(LABOR(-1))} + \mathbf{5.47864394087}) + \mathbf{C(2)} * \mathbf{D(DLOG(GDP(-1)))} + \mathbf{C(3)} * \mathbf{D(DLOG(GDP(-2)))} + \mathbf{C(4)} \\ & * \mathbf{D(DLOG(INVESTMENT(-1)))} + \mathbf{C(5)} * \mathbf{D(DLOG(INVESTMENT(-2)))} + \mathbf{C(6)} * \mathbf{D(DLOG(FDI(-1)))} + \mathbf{C(7)} \\ & * \mathbf{D(DLOG(FDI(-2)))} + \mathbf{C(8)} * \mathbf{D(DLOG(EXPORTS(-1)))} + \mathbf{C(9)} * \mathbf{D(DLOG(EXPORTS(-2)))} + \mathbf{C(10)} \\ & * \mathbf{D(DLOG(IMPORTS(-1)))} + \mathbf{C(11)} * \mathbf{D(DLOG(IMPORTS(-2)))} + \mathbf{C(12)} * \mathbf{D(DLOG(LABOR(-1)))} + \mathbf{C(13)} \\ & * \mathbf{D(DLOG(LABOR(-2)))} + \mathbf{C(14)}\end{aligned}$$

- Influence of economic growth, foreign direct investment, exports, imports and labor on domestic investment:

$$D(DLOG(INVESTMENT)) = C(15) * (DLOG(GDP(-1)) + 0.174028431582 * DLOG(INVESTMENT(-1)) + 0.310250258471 * DLOG(FDI(-1)) + 2.25661433071 * DLOG(EXPORTS(-1)) + 1.12203147869 * DLOG(IMPORTS(-1)) - 218.511628316 * DLOG(LABOR(-1)) + 5.47864394087) + C(16) * D(DLOG(GDP(-1))) + C(17) * D(DLOG(GDP(-2))) + C(18) * D(DLOG(INVESTMENT(-1))) + C(19) * D(DLOG(INVESTMENT(-2))) + C(20) * D(DLOG(FDI(-1))) + C(21) * D(DLOG(FDI(-2))) + C(22) * D(DLOG(EXPORTS(-1))) + C(23) * D(DLOG(EXPORTS(-2))) + C(24) * D(DLOG(IMPORTS(-1))) + C(25) * D(DLOG(IMPORTS(-2))) + C(26) * D(DLOG(LABOR(-1))) + C(27) * D(DLOG(LABOR(-2))) + C(28)$$

- Influence of economic growth, domestic investment, exports, imports and labor on foreign direct investment:

$$D(DLOG(FDI)) = C(29) * (DLOG(GDP(-1)) + 0.174028431582 * DLOG(INVESTMENT(-1)) + 0.310250258471 * DLOG(FDI(-1)) + 2.25661433071 * DLOG(EXPORTS(-1)) + 1.12203147869 * DLOG(IMPORTS(-1)) - 218.511628316 * DLOG(LABOR(-1)) + 5.47864394087) + C(30) * D(DLOG(GDP(-1))) + C(31) * D(DLOG(GDP(-2))) + C(32) * D(DLOG(INVESTMENT(-1))) + C(33) * D(DLOG(INVESTMENT(-2))) + C(34) * D(DLOG(FDI(-1))) + C(35) * D(DLOG(FDI(-2))) + C(36) * D(DLOG(EXPORTS(-1))) + C(37) * D(DLOG(EXPORTS(-2))) + C(38) * D(DLOG(IMPORTS(-1))) + C(39) * D(DLOG(IMPORTS(-2))) + C(40) * D(DLOG(LABOR(-1))) + C(41) * D(DLOG(LABOR(-2))) + C(42)$$

- Influence of economic growth, domestic investment, foreign direct investment, imports and labor on exports

$$D(DLOG(EXPORTS)) = C(43) * (DLOG(GDP(-1)) + 0.174028431582 * DLOG(INVESTMENT(-1)) + 0.310250258471 * DLOG(FDI(-1)) + 2.25661433071 * DLOG(EXPORTS(-1)) + 1.12203147869 * DLOG(IMPORTS(-1)) - 218.511628316 * DLOG(LABOR(-1)) + 5.47864394087) + C(44) * D(DLOG(GDP(-1))) + C(45) * D(DLOG(GDP(-2))) + C(46) * D(DLOG(INVESTMENT(-1))) + C(47) * D(DLOG(INVESTMENT(-2))) + C(48) * D(DLOG(FDI(-1))) + C(49) * D(DLOG(FDI(-2))) + C(50) * D(DLOG(EXPORTS(-1))) + C(51) * D(DLOG(EXPORTS(-2))) + C(52) * D(DLOG(IMPORTS(-1))) + C(53) * D(DLOG(IMPORTS(-2))) + C(54) * D(DLOG(LABOR(-1))) + C(55) * D(DLOG(LABOR(-2))) + C(56)$$

- Influence of economic growth, domestic investment, foreign direct investment, exports and labor on imports:

$$D(DLOG(IMPORTS)) = C(57) * (DLOG(GDP(-1)) + 0.174028431582 * DLOG(INVESTMENT(-1)) + 0.310250258471 * DLOG(FDI(-1)) + 2.25661433071 * DLOG(EXPORTS(-1)) + 1.12203147869 * DLOG(IMPORTS(-1)) - 218.511628316 * DLOG(LABOR(-1)) + 5.47864394087) + C(58) * D(DLOG(GDP(-1))) + C(59) * D(DLOG(GDP(-2))) + C(60) * D(DLOG(INVESTMENT(-1))) + C(61) * D(DLOG(INVESTMENT(-2))) + C(62) * D(DLOG(FDI(-1))) + C(63) * D(DLOG(FDI(-2))) + C(64) * D(DLOG(EXPORTS(-1))) + C(65) * D(DLOG(EXPORTS(-2))) + C(66) * D(DLOG(IMPORTS(-1))) + C(67) * D(DLOG(IMPORTS(-2))) + C(68) * D(DLOG(LABOR(-1))) + C(69) * D(DLOG(LABOR(-2))) + C(70)$$

- Influence of economic growth, domestic investment, foreign direct investment, exports, imports on labor:

$$D(DLOG(LABOR)) = C(71) * (DLOG(GDP(-1)) + 0.174028431582 * DLOG(INVESTMENT(-1)) + 0.310250258471 * DLOG(FDI(-1)) + 2.25661433071 * DLOG(EXPORTS(-1)) + 1.12203147869 * DLOG(IMPORTS(-1)) - 218.511628316 * DLOG(LABOR(-1)) + 5.47864394087) + C(72) * D(DLOG(GDP(-1))) + C(73) * D(DLOG(GDP(-2))) + C(74) * D(DLOG(INVESTMENT(-1))) + C(75) * D(DLOG(INVESTMENT(-2))) + C(76) * D(DLOG(FDI(-1))) + C(77) * D(DLOG(FDI(-2))) + C(78) * D(DLOG(EXPORTS(-1))) + C(79) * D(DLOG(EXPORTS(-2))) + C(80) * D(DLOG(IMPORTS(-1))) + C(81) * D(DLOG(IMPORTS(-2))) + C(82) * D(DLOG(LABOR(-1))) + C(83) * D(DLOG(LABOR(-2))) + C(84)$$

Otherwise, and to better clarify and explain the results of this estimate, these six equations were extracted to analyze the long-term and short-term effect.

Table 4: Granger Causality test results based on Vector Error-Correction Models (VECMs)

Independent Variables	GDP	Dependent Variables				
		DI	FDI	X	M	L
GDP	-	(0.6185)	(0.6674)	(0.6356)	(0.0824)***	(0.2849)
DI	(0.8197)	-	(0.4534)	(0.4677)	(0.1444)	(0.2858)
FDI	(0.8255)	(0.3279)	-	(0.9594)	(0.9463)	(0.0931)***
X	(0.3173)	(0.6951)	(0.1800)	-	(0.1846)	(0.0336)**
M	(0.0919)*	(0.0084)***	(0.4268)	(0.3640)	-	(0.2432)
L	(0.7024)	(0.4064)	(0.0247)**	(0.9312)	(0.7810)	-
Lagged ECT	**[-0.03062]**	**[-0.06047]**	**[-0.08941]**	**[-0.18310]**	**[-0.17923]**	**[0.000108]**

*****; ** and * indicate significance at 1%, 5% and 10%, respectively**

( ) denotes the value of the probability of the variables in the short term

[ ] denotes the significance of long-term cointegration equations

Table 4 shows that the long-run equilibriums equations are not significant. So we can say in this case that there is no relationship on the long term between economic growth, foreign direct investment, domestic investment, exports, imports and labor force. Also, according to the results of the granger causality test in the short term; there is bidirectional causality between imports and economic growth, and between foreign direct investment and labor. However, there is unidirectional causality from domestic investment to imports and from exports to labor force.

5- Analyzing of Diagnostic Tests

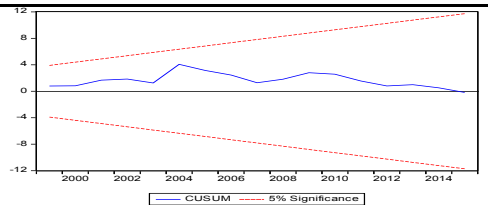
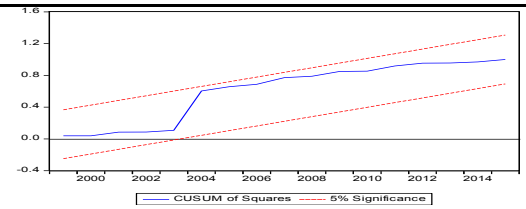
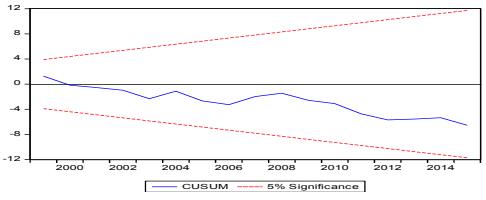
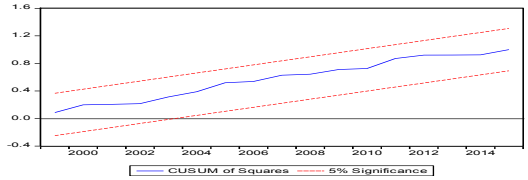
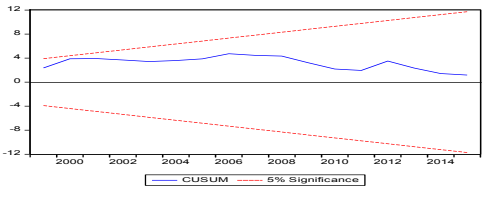
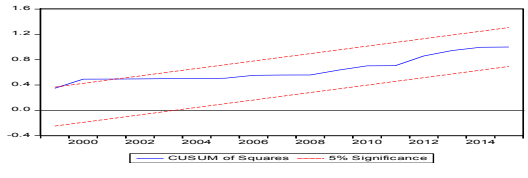
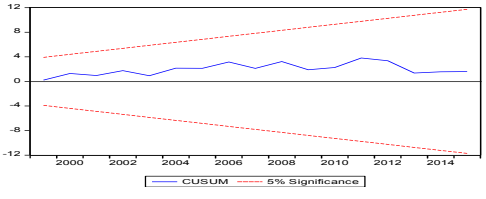
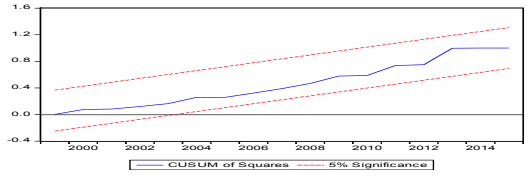
Table 5 includes a set of diagnostic tests to verify the quality of our model and the robustness of our estimate. The heterodasticity test and serial correlation LM are greater than 5%. The coefficient of R and the probability of Fisher's statistics indicate that our model is generally satisfactory. Finally, to check the stability of our VAR model, we apply the custom test and

the Cusum square test. These last two indicate that our model is sand since they are significant.

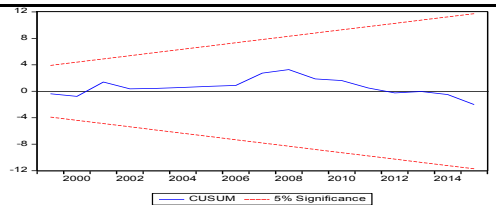
Table 5: Diagnostic Tests

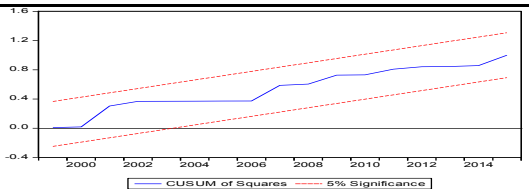
Diagnostics Tests	VECMs Models Diagnostic					
	GDP	**DI**	**FDI**	**X**	**M**	**L**
R^2	0.510	0.755	0.878	0.659	0.648	0.975
F-statistic	1.361	4.051	9.439	2.533	2.413	52.65
Probability (F-statistic)	0.271	0.004	0.000	0.037	0.045	0.000
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.125	0.536	0.997	0.276	0.668	0.910
Heteroskedasticity Test: Harvey	0.763	0.441	0.602	0.366	0.209	0.595
Heteroskedasticity Test: Glejser	0.226	0.414	0.975	0.498	0.522	0.894
Heteroskedasticity Test: ARCH	0.158	0.522	0.492	0.519	0.304	0.262
Breusch-Godfrey Serial Correlation LM Test:	0.542	0.527	0.250	0.226	0.613	0.972
Jarque-Bera	0.487	0.776	0.845	0.507	0.624	0.550

6- VAR Stability

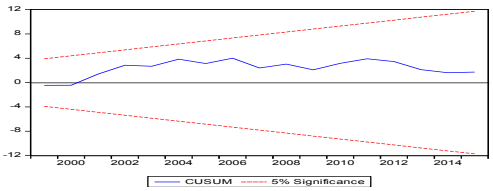
Dependent Variables	CUSUM Tests	CUSUM SQUARE Tests
GDP		
DI		
FDI		
X		

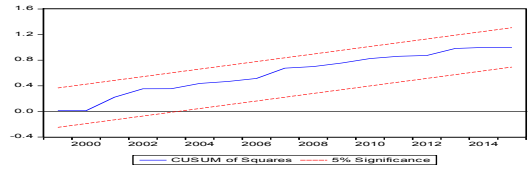
M





L





V. Conclusion

The aim of this paper is to determinate the direct and the indirect linkages between economic growth, domestic investment, labor, exports, imports and economic growth in Nigeria since it is never studied before by applying Cointegration Analysis based on Vector Error Correction Model for the period 1981 - 2015. Empirical results show that in the long run there is a negative relationship between all variables but there all insignificants. In the short run we found that; there is bidirectional causality between imports and economic growth, and between foreign direct investment and labor. However, there is unidirectional causality from domestic investment to imports and from exports to labor force. In addition, we didn't find any direct and indirect effect between all variables to stimulate economic growth. These results can be explained economically:

First in the short run:

- Imports are necessary for the operation of domestic investments when they carry a large part of the equipment, machinery and equipment, leading to an increase in productivity and therefore an increase in economic growth. This explains the impact of imports on domestic investment and economic growth;
- Otherwise, generally Nigeria's main products are agricultural products, due to dependence on the oil sector only. Sometimes, to get rid of problems and protests that call for food security, the state is forced to import agricultural products;
- The large census of the population in Nigeria is the envy of foreign investors seeking to get workers cheaply. Otherwise, the large number of foreign investments leads to an increase in the labor force (which explains the two-way causal relationship between FDI and the labor force);

- Otherwise the increase in exports leads to the need for labor to ensure trade with other countries (which explains the causality of exports to the labor force);

Second in the long run, the absence of a causal relationship between economic growth, foreign direct investment, domestic investment, labor force, imports and exports is usually explained by:

- The corruption of governors;
- The low profitability of the workers;
- Poor management of natural resources,
- The dependence of a single sector leads to several economic catastrophes when it fails or encounters several problems such as the oil crises;
- The absence of clear economic policies;
- the increase in the unemployment rate and especially the unemployment of young graduates;
- Increases in civil wars, popular protests and vandalism lead to the flight of foreign investors and bankruptcy of foreign and domestic assets;
- The low added value of exportable products and the high value of importable products;
- The absence of innovations in domestic investments;

It is true that Nigeria's current economic situation is aggravated by many factors. But it is not dangerous to the point of despair, The Nigerian government and people must unite to promote their country, abandoning their wishes and personal interests, keeping in mind that the future of their nation is above all else. This is achieved by:

- The announcement of clear plans and specific timetables for institutional and structural reform, with a precise identification of the role of the state makes them conducive to economic activity;
- To provide the appropriate environment for the private sector and the public sector in areas that enjoy the advantages and qualifications of its work, while adhering to clear plans to bring about a radical change in the administrative system of the government and reduce bureaucracy;
- Raise efficiency of work in government agencies that deal with investors, importers and exporters such as: taxes, customs and licensing authorities;

- The abolition of economically unjustified government monopolies to encourage the private sector and attract more investments, in order to maximize the contribution of the private sector in creating employment opportunities;
- The need to make decisions based on a sound and accurate analysis of reality;
- Taking into account the preservation of the environment in all economic activities;
- Establish an effective mechanism for settling economic disputes between investors;
- Encouraging innovation and attracting investment for R & D;

Reference

1. Adams, S. (2009). Foreign direct investment, domestic investment and economic growth in Sub-Saharan Africa. Journal of Policy Modeling, 31, 939–949.
2. Ahmed. J and Kwam, ACC (1991). Causality between Exports and Economic Growth: Empirical Evidence from Africa. Economic Letters, vol, 37. 242-248.
3. Apergis, N and Payne, J.E (2009). Energy Consumption and Economic Growth in Central America: Evidence from a Panel Cointegration and Error Correction Model. Energy Economics 31 (2009) 211–216.
4. Asmah. E.E,. (1998). Export performance and Economic Growth: Empirical Evidence from Ghana 1966-1996. M. Phil. Thesis. University of Cape Coast.
5. Bhatt,P.R (2013). Causal Relationship between Exports, FDI and Income: The Case of Vietnam. Applied Econometrics and International Development Vol. 13-1 (2013).
6. Bakari, S (2017a). The Impact of Domestic Investment on Economic Growth: New evidence from Malaysia. Journal of Smart Economic Growth, , vol. 2(2), Pages 105-121.
7. Bakari, S,. (2017b). "The Long Run and Short Run Impacts of Exports on Economic Growth: Evidence from Gabon," Economic Research Guardian, Weissberg Publishing, vol. 7(1), pages 40-57, June.
8. Bakari, S,. (2017c). "Appraisal of Trade Potency on Economic Growth in Sudan: New Empirical and Policy Analysis," Asian Development Policy Review, Asian Economic and Social Society, vol. 5(4), pages 213-225, December.
9. Bakari, S (2017d). " The Three-Way Linkages Between Export, Import, and Economic Growth: New Evidence From Tunisia," Journal of Smart Economic Growth. Volume 2, Number 3, Year 2017.

10. Bakari, S. and M. Krit, (2017). The Nexus between exports, imports and economic growth: Evidence from Mauritania. International Journal of Economics and Empirical Research, 5(1): 10-17.
11. Bakari, S and Mabrouki, M (2017). "Impact Of Exports And Imports On Economic Growth: New Evidence From Panama," Journal of Smart Economic Growth, , vol. 2(1), pages 67-79, March.
12. Balassa, B., 1995. Export, Policy Choices and Economic Growth in Developing Countries after the 1973 Oil Shock. Journal of Development Economics, vol. 18.pp. 23-35.
13. Balassa, B., 1989. Outward Orientation. In: Handbook of Development Economics, vol.2.
14. Balassa, B., 1978. Exports and Economic Growth: Further Evidence. Journal of Development Economics, vol.5, 181-189.
15. Barro, R. J. (1991) Economic Growth in a Cross Section of Countries. Quarterly Journal of Economics. 106, 407–444.
16. Bengoa, M., & Sanchez-Robels, B. (2003). Foreign direct investment, economic freedom and growth: New evidence from Latin America. European Journal of Political Economy, 19, 529–545.
17. Borensztein, J., De Gregorio, J., & Lee, J. (1998). How does foreign direct investment affect economic growth? Journal of International Economics, 45, 115–135.
18. Carkovic, M., & Levine, R. (2002). Does foreign direct investment accelerate economic growth? University of Minnesota working paper.
19. Dasgupta, P. (2000). Population and Resources: An Exploration of Reproductive and Environmental Externalities. Population and Development Review, 26: 643–689.
20. Devarajan, S., V. Swaroop, and Heng-fu Zou (1996) The Composition of Public Expenditure and Economic Growth. Journal of Monetary Economics 37, 313–344.
21. Drèze, J. and Murthi, M. (2001). Fertility, Education, and Development: Evidence from India. Population and Development Review, 27: 33–63.
22. Edwards, S., (1998). "Openness. Productivity and Growth: What Do We Really Know?" *Economic Journal*, 108.
23. Fischer, S. (1993) The Role of Macroeconomic Factors in Growth. National Bureau of Economic Research. (Working Paper No. 4565).

24. Galor, O., Weil D. (2000). Population, technology and growth: from Malthus stagnation to the demographic transition and beyond, American Economic Review, 90, 806-828.
25. Helleiner, G. K., (1986). Outward Orientation, Import Instability and African Economic Growth: An Empirical Investigation, In: Theory and Reality in Development Essays in Honour of Paul Steeton Ed. S. Lall and F. Stewart, Macmillan, London
26. Huang, T-H., Xie Zixiong. (2013). Population and economic growth: a simultaneous equation perspective, Applied Economics, 45, 3820-3826.
27. Katherina, L., John, P., & Athanasios, V. (2004). Foreign direct investment and economic growth in transition economies. South Eastern Europe Journal of Economics, 2, 97–110.
28. Keyo, Y (2017). The impact of trade openness on economic growth: The case of Cote d'Ivoire. Cogent Economics & Finance (2017), 5: 1332820 https://doi.org/10.1080/23322039.2017.1332820
29. Khan, M. S. (1996) Government Investment and Economic Growth in the Developing World. The Pakistan Development Review 35, 419–439.
30. Li, H, Zhang, J. (2007). Do high birth rates hamper economic growth? Review of Economics and Statistics, 30, 67-80.
31. Lucas Jr., R. E. (1988) On the Mechanics of Economic Development. Journal of Monetary Economics 22, 3–42.
32. Michaely, M., (1977). Export and Growth: An Empirical Investigation. Journal of Development Economics. 3 vol. 4, 49-53.
33. Omri A and Kahouli B (2014). The nexus between foreign investment, domestic capital and economic growth: empirical evidence from the MENA region. Research in Economics 68 (2014) 257–263.
34. Paudel, R. & Perera, N. (2009). Foreign Debt, Trade Openness, Labor Force and Economic Growth: Evidence from Sri Lanka. The ICFAI Journal of Applied Economics, 8 (1), 57-64.
35. Rahman, M. A., (1993). Export and Economic Development of Bangladesh. Dhaka: Young.
36. Ram, R,. (1987). Exports and Economic Growth in Developing Countries: Evidence from Time-series and Cross-section Data. Economic Development and Cultural Change, vol. 33, 415-425.

37. Rebelo, S. (1991) Long-Run Policy Analysis and Long-Run Growth. Journal of Political Economy 94:5, 56–62.
38. Romer, P. M. (1986) Increasing Returns and Long-Run Growth. Journal of Political Economy. 94:5 (October), 1002–1037.
39. Savvides, A., 1995. Economic Growth in Africa, World Development, 23 (3).
40. Sheehey, E.J (1992), 'Exports and Growth: Additional Evidence', *Journal of Development Studies,* Vol.28, No.4.
41. Sumei Tang, E. A. Selvanathan and S. Selvanathan (2008).Foreign Direct Investment, Domestic Investment and Economic Growth in China: A Time Series Analysis. The World Economy. Volume 31, Issue 10 October 2008. Pages 1292–1309.
42. Tan, B.W and 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 and Financial Issues, 2016, 6(1), 214-220.
43. Tyler, W. (1981). Growth and Export Expansion in Less Developed Countries: Some Empirical Evidence. Journal of Development Economics, 9, 121-130.
44. Yao, W., Kinugasa, T., Hamori, S. (2013). An empirical analysis of the relationship between economic development and population growth in China, Applied Economics, 45, 4651-4661,
45. Zhang, K. H. (2001). Does foreign direct investment promote economic growth: Evidence from East Asia and Latin America. Contemporary Economic Policy, 19, 175–185.