International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

Foreign Direct Investment And Economic Growth In Nigeria: An Analysis Of The Endogenous Effects

Tubo P. OKUMOKO[1] , Tamarauntari M. KARIMO[2]

[1&2] Department of Economics Niger Delta University, Wilberforce Island,

Bayelsa State – Nigeria

Email: pearcetubo@yahoo.com

ABSTRACT

This study examined the nexus between FDI and growth for possible endogenous effects. Relevant time series data spanning the period 1981 – 2013 were collected from the Central Bank of Nigeria Statistical Bulletin, 2013. Monetary policy rate (MPR) was proxy for interest rate (INTR), foreign direct investment (FDI) and real gross domestic product proxy for growth. Both the Philips – Peron (PP) and the Kwiatkowski-Philips-Schmidt-Shin (KPSS) tests for unit root showed all the variables to be integrated of order one, I(1) and the Johansen's test for cointegration showed no cointegrating vector in level form. Using a Structural Vector Autoregressive (SVAR) Model on the first differenced variables and the long-run structural restrictions that FDI does not respond to nominal shocks in the short-run, and that growth does not respond to nominal and external shocks in the short-run the study concludes that growth is contemporaneously influenced by FDI but growth does not attract FDI. This study therefore showed no evidence supporting the endogenous effect hypothesis in Nigeria. It was therefore recommended that there should be concerted efforts to attract foreign direct investment into the country.

KEYWORDS: Endogeniety, FDI, Growth, Nigeria, VAR

INTRODUCTION

No country can be said to be an Island of its own in terms of needed resources to meet domestic investment needs. Domestic savings often times fall short of investment requirements. This underscores why nations especially, developing countries have from time to time make recourse to attract foreign capital. Foreign Direct Investment (FDI), a component of foreign private capital has been favoured over other forms of foreign private capital because it is less volatile and comes with the advantage of technology spillover. The case of Nigeria is not quite different. Ajayi (2006) noted that the savings rate in Nigeria is lower than that of most other countries and far lower than the required investments that can induce growth rates that are capable of alleviating poverty. Little wonder government has put in efforts over the years to whore foreign investors into the country.

Prior to the 1970s, Foreign Direct Investment (FDI) was not seen as an instrument of economic development. The perception of FDI as parasitic and retarding the development of domestic industries for export promotion had engendered hostility to multi-national companies and their

International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

direct investments in many countries. However, the consensus now is that FDI is an engine of growth as it provides the much needed capital for investment, increases competition in the host country industries and aids local firms to become more productive by adopting more efficient technologies or by investing in human and/or physical capital.

While the FDI-growth nexus is still ambiguous, most studies nevertheless support the notion of a positive role of FDI within particular economic conditions. Proponents of this school of thought argued that there are three main channels through which FDI can bring about economic growth. The first is through the release it affords from the binding constraint of domestic savings. In this case, foreign direct investment augments domestic savings in the process of capital accumulation. Second, FDI is the main conduit through which technology spillovers lead to increase in factor productivity and efficiency in the utilization of resources, which leads to growth. Third, FDI leads to increase in exports as a result of increased capacity and competitiveness in domestic production. This linkage they further argued is dependent on the "absorptive capacity" of the economy that is, the level of human capital development, type of trade regimes and degree of openness (Ajayi, 2006; Borensztein, E., J. Gregorio and J. Lee, 1998).

There has also been the argument in the literature that foreign investors do not lead but follow growth. The issue then is, in the context of Nigeria which of these arguments holds sway? Is it foreign direct investment (growth) that leads to growth (foreign direct investment? Or that FDI leads growth and growth attracts FDI? In other words, is FDI and growth endogenously determined in Nigeria? Providing empirical answers to these questions is the concern of this study.

This study is justified particularly for the following reasons. The study recognizes the growing evidence from cross-country studies that the relationship between FDI and economic growth is endogenous. That is, FDI engender growth and growth attracts FDI. The study does not simply assume endogeniety, but actively tests for endogeniety using appropriate econometric methodologies. The study is also significant because it differs from all other studies in scope (1981-2013). This gives the study an edge because it examines the FDI-growth relation in the near contemporary context, taking account of past trends and recent developments in the global financial market for capital flows.

LITERATURE REVIEW

There is a preponderance of empirical studies on the FDI-growth nexus and the determinants of FDI inflows. Early empirical works on the FDI-

growth nexus modified the growth accounting method introduced by Solow (1957).

This approach defined an augmented Solow model with technology, capital, labour, inward FDI and a vector of ancillary variables such as import and export volumes. Following this theory, most of the empirical works on the effects of FDI, focused on their impacts on output and productivity, with a special attention on the interaction of FDI with human capital and the level of technology (Vu and Noy, 2009). However, recent empirical works have been influenced by Mankiw, G., D. Romer and N. Weil, (1992) pioneering research which adds education to the standard growth equation as a proxy for human capital. Blomstrom, M., R.E. Lipsey and M. Zejan, (1994) and Coe, D.T., E. Helpman and A.W. Hoffmaister, (1997) found that for FDI to have positive impacts on growth, the host country must have attained a level of development that helps it reap the benefits of higher productivity. In contrast, De Mello (1997) finds that the correlation between FDI and domestic investment is negative in developed countries.

Li and Liu (2005) found that FDI not only affects growth directly, but also indirectly through its interaction with human capital. Further, they find a negative coefficient for FDI when it is regressed with the technology gap between the source and host economy using a large sample, Borensztein *et al*. (1998) found similar results i.e. that inward FDI has positive effects on growth with the strongest impact, coming through the interaction between FDI and human capital.

De Mello (1997) found positive effects of FDI on economic growth in both developing and developed countries, but concludes that the long-run growth in host countries is determined by the spillovers of knowledge and technology from investing countries to host countries. Similarly, Balasubramanyam, V.N., M.A. Salisu and D. Sapsford, (1996) found support for their hypotheses that the growth effect of FDI is positive for export promoting countries and potentially negative for import-substituting ones.

Alfaro, L., A. Chanda, S. Kalemli-Ozcan and S. Sayek, (2004) and Durham (2004) focused on the ways in which the FDI effect depends on the strength of the domestic financial markets of the host country.

They both found that only countries with well-developed banking and financial systems benefit from FDI. In addition, Durham (2004) found that only countries with strong institutional and investor-friendly legal environments are likely to benefit from FDI inflows. In another work, Hsiao and Shen (2003) add that a high level of urbanization is also conducive to a positive impact of FDI on growth.

Comparing evidence from developed and developing countries, Blonigen and Wang (2005) argued that mixing wealthy and poor countries is inappropriate in FDI studies. They note that the factors that affect FDI flows are different across the income groups. Interestingly, they find evidence of beneficial FDI only for developing countries and not for the developed ones, while they find the crowding-out effect of FDI on domestic investment to hold for the wealthy group of nations.

Recently, Vu and Noy (2009) carried out a sectorial analysis of foreign direct investment and growth in developed countries. They focused on the sector specific impacts of FDI on growth. They found that FDI has positive and no statistically discernible effects on economic growth through its interaction with labour.

Moreover, they found that the effects seem to be very different across countries and economic sectors. Carkovic and Levine (2005) argue that the positive results found in the empirical literature are due to biased estimation methodology. When they employed a different estimation techniques i.e. Arellano-Bond Generalized

Moment of Methods (GMM), they found no robust relationship between FDI inflows and domestic growth.

In line with the notion that there is an endogenous relationship between FDI and economic growth, Ruxanda and Muraru (2010) investigated the relationship between FDI and economic growth in the Romanian economy, using simultaneous equation models. They obtained evidence of the bi-directional connection between FDI and economic growth, meaning that incoming FDI stimulates economic growth and in its turn, a higher GDP attracts FDI.

In a paper most similar to this work, Li and Liu (2005) investigated the relationship between FDI and economic growth based on a panel of 84 countries, using both single equation and simultaneous equation systems.

They found that FDI affects growth indirectly through its impact on human capital. This work is similar to their own in that we use both single equation and simultaneous equation systems. However, our work is different in that it is country specific (Nigeria) and involves a longer time frame (1970-2008).

The consensus in the literature seems to be that FDI increases growth through productivity and efficiency gains by local firms. The empirical evidence is not unanimous, however. Available evidence for developed countries seems to support the idea that the productivity of domestic firms is positively related to the presence of foreign firms (Globerman, 1979; Imbriani and Reganati, 1997).

The results for developing countries are not so clear, with some finding positive spillovers (Blomstrom and Sjoholm, 1999; Kokko, 1994) and others such as Aitken, B., G.H. Hansen and A. Harrison, (1997) reporting limited evidence. Still others find no evidence of positive short-run spill-over from foreign firms.

Some of the reasons adduced for these mixed results are that the envisaged forward and backward linkages may not necessarily be there (Aitken *et al.,* 1997) and that arguments of MNEs encouraging increased productivity due to competition may not be true in practice (Ayanwale, 2007). Other reasons include the fact that MNEs tend to locate in high productivity industries and, therefore, could force less productive firms to exit (Smarzynska, 2002).

Caves (1996) also postulates the crowding out of domestic firms and possible contraction in total industry size and/or employment. However, crowding out is a more rare event and the benefit of FDI tends to be prevalent (Cotton and Ramachandran, 2001). Further, the role of FDI in export promotion remains controversial and depends crucially on the motive for such investment (World Bank, 2009). The consensus in the literature appears to be that FDI spillovers depend on the host country's capacity to absorb the foreign technology and the type of investment climate (Obwona, 2004). The review here and in the references provided, shows that the debate on the impact of FDI on economic growth is far from being conclusive. The role of FDI seems to be country specific and can be positive, negative or insignificant, depending on the economic, institutional and technological conditions in the recipient countries.

Most studies on FDI and growth are cross-country evidences, while the role of FDI in economic growth can be country specific. Further, only a few of the country specific studies actually took conscious note of the endogenous nature of the relationship between FDI and growth in their analyses, thereby raising some questions on the robustness of their findings.

Finally, the relationship between FDI and growth is conditional on the macroeconomic dispensation the country in question is passing through. In fact, Zhang (2001) asserts that "the extent to which FDI contributes to growth depends on the economic and social condition or in short, the quality of the environment of the recipient country". In essence, the impact FDI has on the growth of any economy may be country and period specific and as such there is the need for country specific studies. This discovery from the literature is what provides the motivation for this study on the relationship between FDI and economic growth in Nigeria.

International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

THE FDI-GROWTH RELATION IN NIGERIA:

There are several Nigeria-specific studies on the relationship between FDI and economic growth in Nigeria. Some of the pioneering works include Aluko (1961), Brown (1962) and Obinna (1983). These authors separately reported that there is a positive linkage between FDI and economic growth in Nigeria. Edozien (1968) discussed the linkage effect of FDI on the Nigerian economy and submits that these have not been considerable and that the broad linkage effects were lower than the Chenery-Watanabe average.

Oseghale and Amonkhienan (1987) found that FDI is positively associated with GDP, concluding that greater inflows of FDI will spell a better economic performance for the country.

Odozi (1995) placed special emphasis on the factors affecting FDI flows into Nigeria in both pre and post Structural Adjustment Programme (SAP) eras and found that the macro policies in place before SAP where discouraging investors. This policy environment led to the proliferation and growth of parallel markets and sustained capital flight. Adelegan (2000) explored the Seemingly Unrelated

Regression model (SUR) to examine the impact of FDI on economic growth in Nigeria and found out that FDI is pro-consumption, pro-import and negatively related to gross domestic investment.

In another paper, Ekpo (1995) reported that political regime, real income per capita, inflation rate, world interest rate, credit rating and debt service were the key factors explaining the variability of FDI inflows into Nigeria. Similarly, Ayanwale and Bamire (2001) assessed the influence of FDI on firm level productivity in Nigeria and reported positive spillover of foreign firms on domestic firm productivity.

Ariyo (1998) studied the investment trend and its impact on Nigeria's economic growth over the years. He found that only private domestic investment consistently contributed to raising GDP growth rates during the period considered (1970-1995). Furthermore, there is no reliable evidence that all the investment variables included in his analysis have any perceptible influence on economic growth. He therefore suggested the need for an institutional rearrangement that recognizes and protects the interest of major partners in the development of the economy.

A common weakness that has been identified in most of these studies is that they failed to control for the fact that most of the FDI inflows to Nigeria has been concentrated on the extractive industry (to oil and natural resources sector). According to Ayanwale (2007), these works invariably assessed the impacts of FDI inflows to the extractive industry on Nigeria's economic growth.

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Akinlo (2004) specifically controlled for the oil, non-oil FDI dichotomy in Nigeria. He investigated the impact of foreign direct investment (FDI) on economic growth in Nigeria, using an error correction model (ECM). He found that both private capital and lagged foreign capital have small and not a statistically significant effect on economic growth. Further, his results support the argument that extractive FDI might not be growth enhancing as much as manufacturing FDI.

Examining the contributions of foreign capital to the prosperity or poverty of LDCs, Oyinlola (1995) conceptualized foreign capital to include foreign loans, direct foreign investments and export earnings. Using Chenery and Stout's two-gap model (Chenery and Stout, 1966), he concluded that FDI has a negative effect on economic development in Nigeria. Further, on the basis of time series data, Ekpo (1995) reported that political regime, real income per capita, rate of inflation, world interest rate, credit rating and debt service were the key factors explaining the variability of FDI into Nigeria.

Anyanwu (1998) paid particular emphasis on the determinants of FDI inflows to Nigeria. He identified change in domestic investment, change in domestic output or market size, indigenization policy and change in openness of the economy as major determinants of FDI inflows into Nigeria and that it effort must be made to raise the nation's economic growth so as to be able to attract more FDI.

Ayanwale (2007) investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria and also examined the determinants of FDI inflows into the Nigeria economy. He used both single-equation and simultaneous equation models to examine the relationship. His results suggest that the determinants of FDI in Nigeria are market size, infrastructure development and stable macroeconomic policy. Openness to trade and human capital were found not to be FDI inducing. Also, he found a positive link between FDI and growth in Nigeria.

3. METHODOLOGY

3.1 Data

Relevant time series data were collected from the Central Bank of Nigeria Statistical Bulletin, 2013 edition. The data collected include monetary policy rate (MPR) proxy for interest rate (INTR), foreign direct investment (FDI) and real gross domestic product proxy for output. The dataset covered the period 1981 to 2013.

3.2 Model Specification

For the purpose of analyzing and forecasting macroeconomic activities and tracing the effects of policy shocks and external stimuli on the

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||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

economy, researchers have found that simple, small-scale VARs without a possibly flawed theoretical foundation have proved as good as or better than large-scale structural equation systems. In addition to forecasting, VARs have been used for two primary functions, testing Granger causality (weak exogeneity) and studying the effects of policy through impulse response characterisation. Further, in a world where everything causes everything a model that assumes all the variables to be endogenous is more appropriate. This study therefore estimated a three variable structural vector autoregressive (SVAR) model to: (i) trace the responsiveness of growth to nominal and external shocks; (ii) examine the direction of causality between FDI and growth. The generalised VAR model is specified as:

$$y_t = \mu + A_1 y_{t-1} + A_2 y_{t-2} + \ldots + A_k y_{t-k} + \epsilon_t \quad . \quad . \quad . \quad (1)$$

Where y_t is a column vector of three (3) variables, that is y_t = [MPR, log(FDI), log(GDP)]' modelled in terms of its past values. A_i are k x k matrix of coefficients to be estimated, μ is a k x 1 vector of constants and ϵ_t is a vector of white noise processes with the following properties

$$E(\epsilon_t) = 0 \; for \; all \; t \qquad E(\epsilon_t \epsilon_s') = \begin{cases} \Omega & s=t \\ 0 & s \neq t \end{cases}$$

where the covariance matrix, Ω is assumed to be positive definite. Thus the $\epsilon's$ are serially uncorrelated but may be contemporaneously correlated. The lag length, k is determined empirically. To avoid the omission of relevant information estimation was done by iteration starting with the maximum lag length identified using the information criteria until the optimum model is arrived at-that is until the model becomes stable (no modulus or eigenvalue lies outside the unit circle). MPR is monetary policy rate, FDI is foreign direct investment and GDP is real gross domestic product.

Although the study uses the Granger Causality test to establish instantaneous (short-run) relationship between real GDP and the other endogenous variables the study identified nominal and external shocks that affects economic growth through the use of the impulse response function and the forecast error variance decomposition (see Greene, 2002 and Johnston & Dinardo 1996). Eqn. (1) assumes that the time series are stationarity. But there is no such guarantee that the variables in this study will all be stationary at level. This study therefore taking cognizance of this, estimated the unrestricted VAR model using the first difference of the variables. The first difference VAR representation is appropriate when the variables are non-stationary and their level forms are not cointegrated. Thus the variables were first tested for stationarity using the Philips – Peron (PP) and the Kwiatkowski-

International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

Philips-Schmidt-Shin (KPSS) tests for unit root be eqn. (2) was estimated.

$$\Delta y_t = \mu + B_1 \Delta y_{t-1} + B_2 \Delta y_{t-2} + \ldots + B_k \Delta y_{t-k} + \varepsilon_t \quad . \quad . \quad . \quad (2)$$

Where other variables remain as previously defined, Δ is first difference operator. B_i and ε are the new vector of coefficients and error terms respectively. Whereas PP tests the null the the variable is non-stationary against the alternate that it is stationary KPSS tests the null the variable is stationary against the alternate that it is non-stationary. For the model to be identified the long-run structural restrictions that FDI does not respond to nominal shocks in the short-run and that output does not respond to nominal and external shocks in the short-run were imposed on eqn. (2).

4. RESULTS AND DISCUSSION

The results for the unit root tests are presented on Table1. Both the PP and KPSS showed all the variables to be stationary at first difference and the Johansen's cointegration test on Table 2 showed that the level form of the variables are not cointegrated as indicated by both the Trace and Max-Eigen statistics thus satisfying the sufficient condition for the use of the first differenced VAR representation. Although the VAR lag order selection criteria all agreed on lag order of zero (0) (see Table 3), a VAR(1) model was estimated. This is because without lags the model is no longer VAR. It turns out that this model was dynamically stable as indicated by the inverse roots of the characteristic polynomial where all the characteristic roots were within the unit circle (see Figure 1). The individual as well as the joint effects of the first lags of the endogenous variables were all statistically significant except for the individual effect of MPR (see Table 4). Granger causality test results showed that in the short – run only the effects of MPR on FDI and FDI on GDP were statistically significant (Table 5), indicating that causality runs in one direction from interest rate to foreign direct investment and from foreign direct investment to growth. Thus there is no evidence of endogeneity. This implies that the effect of interest rate on growth is indirect through foreign direct investment. This study identified three shocks via the nominal (NM), external (XX) and supply side shocks. The accumulated impulse responses showed that if there is a NM shock of one structural standard deviation such as a contractionary monetary policy the effect is first on MPR. MPR responds positively to this shock and in the 10^{th} forecast horizon increases by 2.83 structural standard deviations. In a world of perfect capital mobility if the new equilibrium interest rate is higher than the world's interest rate it becomes more profitable to invest in the domestic economy. This will generate some external shocks of about 2.15

structural standard deviations in the 10th horizon thereby whoring foreign investors into the domestic economy thus FDI inflow increases. This increase in FDI inflow causes some supply side shocks in the domestic economy. Because growth responds positively to supply shocks RGDP rises. Thus the effect of a standard deviation structural innovation in monetary policy ultimately leads to growth indirectly through FDI. The Variance decomposition showed that nominal shocks explained only about 10 percent of the movements in FDI in the long-run. While 26 percent of these shocks was explained by supply side structural innovations external shocks had a better part of the share explaining about 63.48 percent. Nominal shocks explained only about 2.73 percent of the structural innovations in growth. Whereas external shocks explained 44.88 percent of these shocks, supply side structural innovations explained 52.38 percent. These results revealed that external and supply side shocks are more important to growth and capital mobility. Also, the indirect effects of nominal shocks on growth through capital mobility are more important than the direct effects.

5. CONCLUSION AND RECOMMENDATIONS

The conclusions from this study are: (i) FDI flow to Nigeria is influenced by interest rate; (ii) Growth is contemporaneously influenced by FDI flow and; (iii) Growth does not influence FDI flow to Nigeria. This study therefore showed no evidence supporting the endogenous effect hypothesis between FDI and growth in Nigeria. Findings from this study are similar to that of Ayamwale (2007) who showed that growth does not induce FDI but that FDI influences growth positively.

This study therefore recommend as follow:

1. There should be concerted efforts to attract foreign direct investment into the country.
2. Though there may be some short term negative effects, efforts to attract foreign direct investment into the country should focus on appropriate policy measures that will increase interest rate over and above the world interest.

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APPENDIX

Table 1: Philips – Peron and Kwiatkowski-Philips-Schmidt-Shin Tests for Unit root

Variable	PP-Statistic		KPSS-Statistic		Lag(s)	Model	~I(d)
	Level	1st Difference	Level	1st Difference			
Log(GDP)	-1.7275	-4.3557***	0.2091**	0.0680	0	Trend	I(1)
Log(FDI)	-0.5752	-2.4029**	0.1382*	0.1151	0	None	I(1)
MPR	-2.8771	-7.6106***	0.1840**	0.0821	0	Trend	I(1)

*(**)*** significant at the 10% (5%)1% levels

International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

Source: Author's Computation

Table 2: Johansen's Cointegration Rank Tests

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.290198	17.77964	29.79707	0.5824
At most 1	0.201972	7.153810	15.49471	0.5598
At most 2	0.005144	0.159869	3.841466	0.6893
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.290198	10.62583	21.13162	0.6845
At most 1	0.201972	6.993941	14.26460	0.4899
At most 2	0.005144	0.159869	3.841466	0.6893

* denotes rejection of the hypothesis at the 0.05 level

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

Source: Author's Computation

Table 3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-70.20575	NA*	0.026432*	4.880384*	5.020503*	4.925209*
1	-62.01366	14.19963	0.028027	4.934244	5.494723	5.113546
2	-57.62822	6.724331	0.038950	5.241882	6.222720	5.555660

* 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

Source: Author's Computation

Table 4: VAR Lag Exclusion Wald Test

Chi-squared test statistics for lag exclusion:

Numbers in [ ] are p-values

International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

	D(MPR)	D(LOG(FDI))	D(LOG(RGDP))	Joint
Lag 1	2.468668	7.398463	8.343543	19.40006
	[0.480980]	[0.060226]	[0.039420]	[0.021998]
df	3	3	3	9

Source: Author's Computation

Figure 1: Inverse Roots of AR Characteristic Polynomial

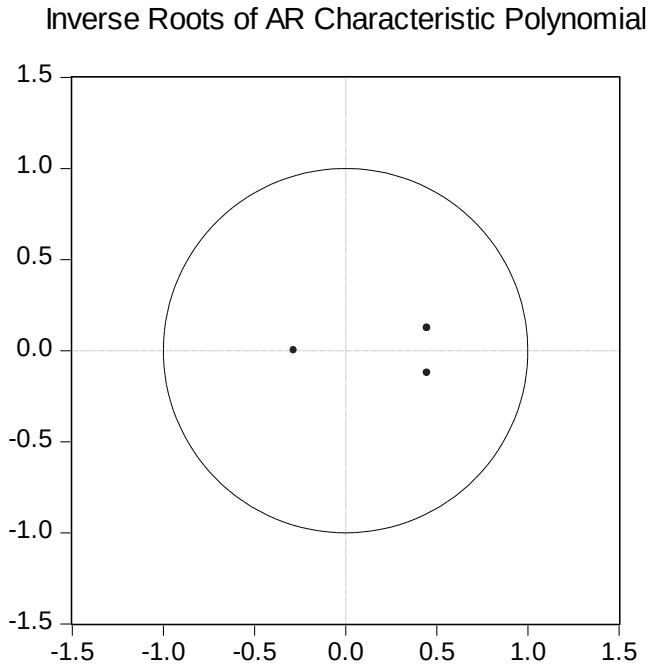

Table 5: VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: D(MPR)

Excluded	Chi-sq	Df	Prob.
D(LOG(FDI))	0.107667	1	0.7428
D(LOG(RG	0.155204	1	0.6936

DP))			
All	0.243600	2	0.8853

Dependent variable: D(LOG(FDI))

Excluded	Chi-sq	Df	Prob.
D(MPR)	4.716282	1	0.0299
D(LOG(RGDP))	0.266223	1	0.6059
All	4.891258	2	0.0867

Dependent variable: D(LOG(RGDP))

Excluded	Chi-sq	Df	Prob.
D(MPR)	0.171208	1	0.6790
D(LOG(FDI))	2.817777	1	0.0932
All	3.269588	2	0.1950

Source: Author's Computation

Table 6: Accumulated Impulse Response Function

Accumulated Response of D(MPR):

Period	NM	XX	SS
1	3.585087	-0.886853	-0.473054
2	2.537560	-0.717194	-0.683890

3	2.849583	-0.942264	-0.833463
4	2.783550	-1.020164	-0.904290
5	2.818520	-1.086748	-0.940471
6	2.818505	-1.116802	-0.956186
7	2.823825	-1.132977	-0.962854
8	2.824957	-1.139961	-0.965322
9	2.825851	-1.143014	-0.966124
10	2.826117	-1.144161	-0.966301

Accumulated Response of D(LOG(FDI)):

Period	NM	XX	SS
1	0.376336	0.946320	0.686740
2	0.088863	1.604699	1.017305
3	0.068534	1.901012	1.155359
4	0.022409	2.049650	1.210456
5	0.010875	2.111726	1.229218
6	0.003323	2.137264	1.234347
7	0.001075	2.146169	1.234824
8	0.000119	2.148792	1.234159
9	-9.07E-05	2.149172	1.233454
10	-0.000117	2.148958	1.232967

Accumulated Response of D(LOG(RGDP)):

Period	NM	XX	SS
1	-0.002018	-0.026023	0.022671
2	0.004447	-0.025107	0.039864

3	0.002660	-0.016399	0.050632
4	0.001923	-0.009419	0.056502
5	0.001009	-0.004862	0.059457
6	0.000529	-0.002334	0.060833
7	0.000245	-0.001039	0.061429
8	0.000108	-0.000428	0.061665
9	4.33E-05	-0.000159	0.061748
10	1.57E-05	-4.98E-05	0.061772

Factorization: Structural

Source: Author's Computation

Table 7: Forecast Error Variance Decomposition

Variance Decomposition of D(MPR):

Period	S.E.	NM	XX	SS
1	3.723323	92.71241	5.673375	1.614212
2	3.877329	92.79269	5.423099	1.784208
3	3.899240	92.39314	5.695499	1.911357
4	3.901220	92.32803	5.729592	1.942379
5	3.902112	92.29383	5.756087	1.950087
6	3.902260	92.28685	5.761584	1.951562
7	3.902303	92.28501	5.763176	1.951811
8	3.902310	92.28468	5.763475	1.951844
9	3.902311	92.28462	5.763532	1.951847
10	3.902311	92.28461	5.763540	1.951847

Variance Decomposition of D(LOG(FDI)):

Perio	S.E.	NM	XX	SS

International journal of management and economics invention
||Volume||1||Issue||1||Pages-45-64||March-2015|| ISSN (e): Applied
www.rajournals.in

d				
1	1.228317	9.387084	59.35475	31.25816
2	1.460869	10.50866	62.27265	27.21870
3	1.497134	10.02415	63.20952	26.76632
4	1.506210	9.997497	63.42395	26.57856
5	1.507649	9.984268	63.47242	26.54331
6	1.507893	9.983546	63.48057	26.53588
7	1.507921	9.983397	63.48170	26.53490
8	1.507924	9.983401	63.48177	26.53483
9	1.507924	9.983400	63.48176	26.53484
10	1.507924	9.983399	63.48175	26.53485

Variance Decomposition of D(LOG(RGDP)):

Period	S.E.	NM	XX	SS
1	0.034572	0.340766	56.65832	43.00092
2	0.039160	2.991293	44.21529	52.79341
3	0.041575	2.838617	43.61499	53.54639
4	0.042570	2.737441	44.28856	52.97400
5	0.042924	2.737740	44.68651	52.57575
6	0.043023	2.737608	44.82616	52.43623
7	0.043048	2.738835	44.86559	52.39557
8	0.043053	2.739177	44.87490	52.38592
9	0.043054	2.739281	44.87679	52.38393
10	0.043054	2.739303	44.87711	52.38359

Factorization: Structural

Source: Author's Computation