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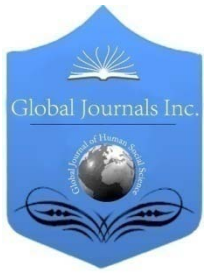

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By Dr. Okafor Ebele Igwemeka, Ezeaku Hillary Chijindu & Izuchukwu Ogbodo

Caritas University, Nigeria

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A Disaggregated Analysis on the Effects of Foreign Investment Inflows on Exchange Rate: Evidence from Nigeria

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I. Introduction

Nigeria, like most developing countries has benefited tremendously from capital flows. Foreign investment comes in two forms: Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI). The former entails a controlling authority over the concerned enterprise; at times it means setting up of new projects. Portfolio investment by contrast is essentially a financial transaction - purchase of stocks, bonds and currencies as assets. Many developing economies have over the years depended heavily on the attraction of financial resources from outside in different ways. Official and private capital flows including FDI and FPI as a way of accelerating their economic growth (Odozi, 1988; Ekpo, 1997; Uremadu, 2008). Some nations exhibited a choice for FDI since they regard it as an avenue for overcoming the slow trend in official and private portfolio capital flow (Uremadu, 2008). The need to draw foreign capital in non-debt constituting way is one of the reasons, why emerging economies wish to encourage private capital flows. Thus, there has been a dramatic increase in the magnitude of capital flows from countries in the North to emerging economies across the South where the need is high. According to Siamwalla (1999) the relative low yields in industrial countries together with impressive economic growth and attractive returns in developing, countries motivated investors to relocate their funds to direct investments. He assumes that the growth in international foreign investment inflow is an aftermath of good mixture of macroeconomic variables as well as the drift towards trade globalization, international financial linkages and expansion of production bases overseas. He further states that macroeconomic variables are indicators or main signposts indicating the current trends in the economy. Among the macroeconomic variables identified by Keynes (1930) that study foreign inflows into an economy is exchange rate.

Nigeria as an import dependent economy needs foreign investment to enhance her investment needs. That is why since the emergence of democratic governance in May 1999, she has embarked on some concrete means to encourage cross-border investors into her domestic economy. Some of these means are: the repeal of laws that are adverse to foreign investment increase, promulgation of investment laws, introduction of policies with favorable atmosphere like ease of businesses, fast export and import processing methods, fight against advanced fee frauds, instituting economic and financial crimes commission. These definite measures seem to have been making positive impact on Nigeria's foreign capital inflows (Uremadu, 2011). However, Nigeria's share in global flows is still grossly inadequate when compared to the net private capital flows for developing countries worth US$491.0 billion in 2005 (World Bank, 2006). The situation changed in the 1980s when capital flows took the form of foreign direct

Author α: Department of Banking and Finance, University of Nigeria Enugu Campus. e-mail: ebeleigwe@gmail.com
Author σ: Department of Banking and Finance, Caritas University Amorji-Nike, Enugu, Nigeria. e-mail: gijindu@gmail.com
Author ρ: Department of Banking and Finance, Enugu State University of Science and Technology (ESUT) Enugu, Nigeria. e-mail: izuogbodo@yahoo.com

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investment (FDI) and foreign portfolio investment (FPI). While portfolio investment has been a notable feature of developed economies, it is becoming a very important component of the balance of payments of many emerging economies, such as China, Hong Kong, India, Singapore, Taiwan, Brazil, South Africa etc. (Obadan, 2004). Recently, portfolio investment has gained prominence in Nigeria. Before the middle of 1980s, Nigeria did not record any figure on portfolio investment (inflow or outflow) in her balance of payment (BOP) accounts. This was traceable to the non-internationalization of the country's money and capital markets as well as the non-disclosure of information on the portfolio investments of Nigerian investors in foreign capital/money markets (CBN 1997:151).However, FDI dominated Nigeria's capital flows and its benefits are aptly captured by Sadik and Bolbol (2001) in their study. They argued that FDI is the least volatile of capital flows, and more important, can have direct and indirect effects on economic growth. The stability of FDI stems from the fact that direct investors have a longer-term view of the market, thus making them more resistant to herd behaviour, and from the sheer difficulty of liquidating assets at short notices.

With the introduction of various structural reforms, FDI has become a vital source of private external finance for developing countries. It is not like other major types of external private capital flows because it is motivated mostly by the investors long term prospects for making profits in production activities that they indirectly or directly control. Foreign bank lending and portfolio investment on the other hand are often motivated by short- term profit returns that can be determined by some factors, like interest rate, and are inclined to herd behavior. FDI represents investments in production facilities and so can contribute to investible resources and capital formation. Again, it is a way of transferring production technology, skills, innovative capacity, and organizational and managerial practices between locations, and also of procuring international market networks (Mallampally and Suavant, 1999). The international flow of capital is expected to benefit both the source as well as the host country.

The main intensions for countries to seek investments by multinational corporations (MNCs) are to obtain modern technology and knowledge. The assumption is that new technology and knowledge could transfer to domestic firms which will improve their output (Blomstrom and Kokko, 1998). These transfers or spillovers and externalities can occur through various ways.

Spillover may occur when well trained staffs of foreign firms' setup their own plants or become employed in locally owned firms. The operation of MNCs may lead to the dissemination of information on new technology and production methods also referred to as "the demonstration effect"

By associating with domestic firms, foreign associates may improve the production competence of the host country (Rodriquez Clare, 1996). There may be competition effect, where the emergent of foreign plants may accelerate competitions and so push domestic firms into being more effective and innovative (Doan*, et al,* 2010). Another reason why governments make efforts to attract FDI is that it creates employment and FDI may generate foreign exchange for the host country if the MNCs are export oriented. Summarily, in the long run, the transfer of technology and knowhow (indirect) by MNCs to domestic firms may be of more value than direct effects of FDI.

In sharp contrast to other forms of capital flows, FDI has proven to be resilient during financial crisis (Prakash and Assaf, 2001; Haussmann and Fernandez-Arras, 2000; Dudash, 2000 and Lipsey, 2001). The East Asian crisis of 1997-98, Mexican crisis of 1994-95 and the Latin American debt crisis of the 1980s all attest to this. Foreign portfolio investment (FPI) flows have been the most volatile component of capital flow in Nigeria and play an important role in determining the overall balance of payments. This is why Haussmann and Hernandez Arias (2000) further indicate that many host countries regard international debt flows, mostly the short-term ones as "bad cholesterol", because it is based on interest rate differentials and exchange rate expectations and not on long term considerations. The term "*exchange rate*" can be defined as the price of one country's currency in terms of another. Iyoha and Unugbro (2005) defined exchange rate as the domestic price of a unit of foreign currency. It refers to the cost of exchanging one country's currency for others. Exchange rates are an important yardstick for measuring economic performance, particularly, the impact on price signals, international trade and foreign direct investment. The maintenance of low inflation rates involves higher interest rates, and this leads to the appreciation of the country's exchange rate. Exchange rate regimes in Nigeria have gone through different levels of changes. As the Governor of the Central Bank of Nigeria observed (Sanusi, 2004, p.1), exchange rate arrangements in the country "shifted from a fixed regime in the 1960s to a pegged arrangement between the 1970s and the mid-1980s, and finally, to the various types of the floating regime since 1986, following the adoption of the Structural Adjustment Program (SAP)." A fixed exchange regime led to an overvaluation of the local currency (i.e., the *Naira*) and was supported by exchange control regulations that caused instability and distortions in the economy (ibid). On the other hand, floating exchange rates have induced unprecedented volatility in the economy (Olowe, 2009). A low rate of inflation affects economic growth and development negatively due to the immediate impact on investment demand. On the part of net-export, the appreciation of exchange rate hurts export and encourages imports. Nigeria operated

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a fixed exchange rate regime prior to the introduction of the SAP in 1986.

Since then, the value of the *Naira* to the US dollar has depreciated remarkably, reaching its lowest rate of over 150 *Naira* to one dollar in 2009. As argued by Sanusi (2004), the maintenance of a realistic exchange rate for the *Naira* is very crucial, given the structure of the economy, and the need to minimize distortions in production and consumption. However, the Nigerian foreign exchange market is peculiar in the sense that the country's foreign exchange earnings are more than 90 per cent dependent on crude oil export receipts (ibid). The fluctuations in the global oil market have direct impact on the supply of foreign exchange in Nigeria and revenue allocation to the three tiers of government in the country. This is because the oil sector contributes more than 80 per cent of government revenue (ibid). Increased price of crude oil at the global market brings in additional foreign exchange, which in turn induces an upward adjustment in revenue allocation to the three tiers of government in Nigeria. Empirical evidence shows that much of such revenues are utilized for consumption as opposed to production purposes. This, no doubt, pushes up aggregate demand including, imported goods and services. With a high import propensity in the country, the demand on foreign exchange has the impact of depleting the country's foreign reserve.

In many developing countries exchange rate issues have tended to influence macroeconomic policy discussions during the last few years. This is attributed to the amount of the effect which exchange rate has on decisions to save and invest as well as its being a major determinant of capital inflow and external competitiveness of a country.

In pursuing some economic goals such as the achievement of a balance of payment viability, the maintenance of internal payment, as well as the solutions to the problems of defining, measuring, detecting and correcting situations of real exchange rate misalignment and over valuation, the exchange rate can also be employed to entice new investors.

Exchange Rate Adjustment (ERA) has been undertaken by government for a number of years (Obaseki, 1991). When payments for transactions in a foreign currency are to be made, or received, the rate at which the two currencies change hands will be determined in the foreign exchange. Hence the market price is determined by supply and demand of foreign exchange. Exchange rate is a veritable instrument of economic management and important macro economic indicator used to assess the general performance of an economy (Ojo, 2003). It is noteworthy however, that despite the observed increasing inflows of foreign investments, there has not been any satisfactory attempt to assess its effect on exchange rate in Nigeria. In this study, we explore an econometric analysis of this issue using appropriate techniques. The rest of the paper is divided into sections as follows: section two comprises a brief survey of related literature and it addresses mainly the theoretical and empirical issues. Section three considers methodology and data while the fourth section is devoted to the empirical findings or results. Section five is the last section and is made of conclusion and recommendations.

II. Literature Review

The relationship between foreign investment and exchange rate has drawn attention from many studies both theoretical and empirical. The paradigm of Salter-Swan-Corden-Dorbusch by Corbo and Fisher (1995) serves as the theoretical underpinning to test empirically the incidence of capital flows on exchange rate in emerging economies. The model explains how a surge in capital flows would lead to an appreciation of real exchange rate (Carbo and Fisher, 1995). A rise in capital flows increase real wage, which in turn brings out the rise in domestic demand and hence in prices of non-tradable goods relative to tradable books that are exogenously priced. This is indicative of the presence of "Dutch-Disease Effects" which describes the side effects natural resource booms or increases in capital flows on the competitiveness of export oriented sectors and import competing sectors. However, different types of capital flows may have different effects on exchange rate because they affect it through different ways.

Exchange rate movement and exchange rate uncertainty seem to be important factors investors take into consideration in their decision to invest abroad. Foreign capital inflows are generally perceived as something desirable to the industrialized and developing countries. It can eliminate foreign exchange shortages, improve standard of living, deepen and broaden the financial markets. Capital inflows have also helped individual countries to absorb shocks either internal such as harvest failures to external such as fluctuations in commodity price or recessions in industrial economies (Unugbro, 2007). Since the world has moved towards higher integration, a degree of openness for foreign investments in many countries becomes higher. As both developed and emerging economies continue to open their markets to attract foreign capital flows and investors are becoming more interesting in diversifying their fund flows internationally the role of foreign investment is increasing important. International investors now have renewed interest in long term projects, that is, FDI and portfolio investment such as making a purchase or sale of financial assets across countries increase the emphasis of both FDI and FPI. Considering the major determinants of foreign investment, exchange rate risk is possibly seen as the most important determinant of foreign investment flows (Aranyarat, 2010).

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Phillips, et al, (2008) argues that the linkage between exchange rate risks and FDI can be classified into two major issues consisting of production flexibility and risk aversion. In the production flexibility approach, manufacturers commit to domestic foreign capacity ex ante and to employment decisions ex-post, after the realization of real stocks. Thus, the movements of exchange rate play no role in explaining the level of FDI. This argument is based on the assumption that firms can adjust their variable factors after the realization of exchange rate stocks, as a result, it would not be held if factors were fixed. With the risk aversion approach, the evidence could be grouped into two aspects. The first impact is derived from exchange rate steadiness. A stability of dollar matched with a rise in the level of total investment inflow suggests that international investments would be driven partly by variability of exchange rate. The study of Foad (2005) shows that under the condition of limited potential direct investment, FDI flows from the countries with high level of exchange rate risk into the countries with higher stability in currency. This finding is consistent with Dixit and Pindyck (1994) who shows that FDI in a country with a high level of currency risk provides an uncertain flow of expected return on investment. As a result, the link between FDI and exchange rate stability is positive. Another effect can be obtained through the marginal revenue and cost channels. That is, it focuses on the effect of exchange rate differentiating investment decision based on the loss and profit from the investment. As suggested by Goldberg and Karlstad (1995). Higher volatility in the exchange rate reduces the expected returns functions of firms that make investment decisions in the current period in order to realize profits in future periods. According to Campa (1993) risk neutral firms tend to postpone their decision to enter the foreign market in order to avoid high exchange rate variability and for Nucci and Pozzoco (2001) currency depreciation stimulates aggregate investment responses for Italian manufacturing firms through revenue channels and disincentive investment through cost channel. As long as FDI is somewhat irreversible, there is some positive value to holding off on this investment to acquire more information. Given that there is a finite number of potential direct investments, countries with a high degree of currency risk will lose out to countries with more stable currencies (Foad, 2005).

In the analysis of Aizenman (1992) the finding is that a fixed exchange rate regime is more convenient for FDI than a flexible exchange rate, not minding the type of shock hitting an economy. When there is monetary shock, the nominal shocks reduce expected profits from under a flexible exchange rates regime. For real shocks, flexible exchange rates are linked with higher employment volatility and lower expected returns. This arises because a country having a positive productivity shock usually experiences nominal and real appreciation which reduces the effect of employment expansion. For fixed exchange rates, the level of employment and production can be isolated from monetary shocks, and they are related to higher expected returns. These, in turn activate domestic investment and FDI. For real shocks under a fixed exchange rate, a positive productivity shock tends to expand employment and expected returns. So, in the face of productivity shocks, FDI flows will be more under a fixed than under a flexible exchange rate system.

The empirical research mostly finds that increased exchange rate uncertainty has a positive impact on FDI. In the work of Goldberg and Kolstad (1995) using quarterly data to analyze bilateral investment flows between the United States and the United Kingdom, Canada, Japan between 1978 and 1991. They find that exchange rate variability had a positive and statistical significant impact on four of the six bilateral FDI shares, and so real exchange rate variability increased the share of total U.S investment capacity located in Canada and Japan and increased the share of Canadian and U.K investment situated in the united state. Exchange rate variability was insignificant only in situation where problems arose in estimating the regression equations.

Again, Serve (2003) using GARCH model of volatility investigates exchange rate volatility and investment in developing countries and finds that exchange rate uncertainties negatively affect investment in developing countries. The study equally shows that financial systems and the degree of openness of a country are important in establishing the investment effect of exchange rate uncertainty. While more efficient financial system is positively related to investment.

In the case of FPI, Bigger (1979) shows that from international point of view, the overall rate of return from holding foreign financial assets consists of investment returns (dividends and capital gains) on the asset including gains and losses from the movement in exchange rate at the holding period. The volatility of exchange rate is an added source of uncertainty that may create both potential gains and losses to investors across countries. This also shows that the volatility of exchange rate quickly increases foreign investment risk in holding bonds and stocks, however the effect of exchange rate for volatility on international investment is significantly more than investment risk for stock because stocks are more volatile when compared to bonds.

Eun and Resnick (1988) investigate the effect of exchange rate volatility on the risk of foreign stock market investment and show that with the Modern Portfolio Theory (MPT) investors estimate the risk-return nature of financial assets when considering optimal portfolio. In such situation exchange rate volatility leads to portfolio risk. On the other hand, based on efficient

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international portfolio strategy, the volatility of exchange rate is rather essential to multinational investors because of its ability to get potential gains from international diversification. Again, they further examined that variability of exchange rate is seen to account for nearly fifty percent of the variability of dollar returns from equity investment in such major countries as Japan, Germany and the United Kingdom.

Corsetti Kondtntionu (2009) shows that the valuation effect of exchange rate volatility acts as fund transfer across countries, with the capital gains to U.S investors following depreciation in dollar balanced by capital losses for foreign investors. This shows that the welfare consequent of redistribution of wealth is actually considerable.

Gazionglu (2008) in a study of the effect of capital inflows and outflows on real exchange rates and the real stock market returns before and after the financial crisis in turkey, finds an asymmetric impact of capital on exchange rate and stock market returns.

III. Methodology

The study applies multiple regression models to investigate the relationship between total foreign capital inflows, disaggregated into foreign direct investment and foreign portfolio investment, and exchange rate in Nigeria. The work covered a period of 1987-2012 using annual data from Central Bank of Nigeria statistical bulletin. The choice of multiple regressions is based on the use of more than single dependent variable in a regression model.

a) Model Specification

The selection of the model is based on the theoretical perspectives of the nexus between foreign capital inflows, which maintains that such inflows have effect on exchange rate. The variables used in this study on the effect of foreign investment inflows on exchange rate in Nigeria are exchange rate (EXR), foreign direct investment (FDI), foreign portfolio investment (FPI). Thus, the growth model is specified as:

$$EXR = f(FPI, FDI) \quad - - - - - - - - - (1)$$

Therefore, mathematically, exchange rate is expressed as a function of foreign capital inflows thus;

$$E_t = f(FCI_t) \quad - - - - - - (2)$$

Where:

E_t = Exhcange rate at time t

FCI_t = Foreign Capital Inflows at time t

When equation (1) is expanded to accommodate indicators of Foreign Capital Inflows, we have:

$$EXT = \alpha + \beta_1 FDI + \beta_2 FPI + \mu \quad - - - - - - (3)$$

Where:

EXT = Exchange rate

α = Equation constant

FDI = Foreign Direct Investment

FPI = Foreign Portfolio Investment

μ = Error term

Meanwhile, we introduced log in the equation to improve the linearity of the equation

Meanwhile, we introduced log in the equation to improve the linearity of the equation

$$DLEXR = f(DLFPI + DLFDI) \quad - - - - - - (4)$$

i. *Unit root test*

Time series data are, if not stationary, prone to problems of spuriousness. Hence, we tested for the presence of unit root. This was necessitated because we wanted to ensure that the parameters estimated are stationary time series data. We utilized the Augmented Dickey-Fuller (ADF). To reject the null hypothesis that that the data are non- stationary, the ADF statistics must be smaller than the critical values.

Table 1 : Augmented Dickey-Fuller Unit Root Test

Null Hypothesis: D(EXR) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.781273	0.0009
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	
Durbin-Watson stat			1.994982

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Null Hypothesis: D(FDI) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.612410	0.0001
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	
Durbin-Watson stat			1.948740

Null Hypothesis: D(FPI) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.448983	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	
Durbin-Watson stat			1.998083

Source: Authors

Table 1 shows results of tests for stationarity and autocorrelation after transformation of the time series data. This is in effort to make sure that the outcome of the overall result will not be spurious, unreliable and misleading. The results in table 1 shows that the computed ADF test-statistics for all the variables (EXR, FDI and FPI) are smaller than the critical values at 1%, 5% and 10% significant levels and the Durbin-Watson statistics are very significant and approximately 2, which means there is no autocorrelation problems in the time series data and prove that the result is reliable.

IV. Analysis of Empirical Results

Table 2 : Regression Results

Dependent Variable: DLOG(EXR(-1))
Method: Least Squares
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.083467	0.087489	-0.954025	0.3527
DLOG(FDI(-1))	-0.017076	0.110509	-0.154521	0.8789
DLOG(FPI(-1))	0.068595	0.039857	1.721009	0.1024

R-squared	0.579323	Mean dependent var	3.791134
Adjusted R-squared	0.511003	S.D. dependent var	1.252650
S.E. of regression	0.529971	Akaike info criterion	1.676179
Sum squared resid	6.460000	Schwarz criterion	1.821344
Log likelihood	-0.49033	Hannan-Quinn criter.	1.717981
F-statistic	58.33370	Durbin-Watson stat	1.601374
Prob(F-statistic)	0.000400		

Source: Authors.

As shown in the table 2 the impact of foreign portfolio investment on exchange rate is positive and non-significant (coefficient of FPI = 0.069, t – value = 1.721). This indicates that a foreign portfolio investment inflow has positive but non-significant impact on exchange rate in Nigeria. The probability value of 0.1024 confirms the non-significance of the impact. Also, as shown from the table the impact of foreign direct investment inflow was negative and non-significant (coefficient of FDI = -0.017, t – value = -0.155). This

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indicates that foreign direct investment inflow has negative and non-significant impact on exchange rate of Nigeria. The probability value of 0.8789 > 0.05 confirms the non-significance of the impact. The coefficient of determination as revealed by R-square (R^2) indicates that 58% of the variations observed in the dependent variable were explained by variations in the independent variables. The probability of F-statistic (0.000400) shows reveals that the overall regression is significant and passes the goodness of fit test.

Table 3 : Granger Causality

Pairwise Granger Causality Tests
Sample: 1987 2012
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG(FDI(-1)) does not Granger Cause LOG(EXR(-1))	23	1.23495	0.3143
LOG(EXR(-1)) does not Granger Cause LOG(FDI(-1))		1.11989	0.3480
LOG(FPI(-1)) does not Granger Cause LOG(EXR(-1))	23	0.27720	0.7611
LOG(EXR(-1)) does not Granger Cause LOG(FPI(-1))		7.52987	0.0042

Source: Authors

The above table reveals that there is no causal relationship between FDI and exchange rate, and vice versa. However, while FPI does not granger cause exchange rate, the later granger causes FPI thereby indicating the existence of uni-directional causality between the variables.

V. Conclusion and Recommendations

The result above shows that foreign portfolio investment had positive and non-significant impact on exchange rate while foreign direct investment had negative and non-significant impact on exchange rate. The findings of this study follow the suggestion that the composition of foreign investment inflows matters in determining their impacts on exchange rate. Hence, our results show that FDI had negative and non-significant impact on exchange rate in Nigeria. This was confirmed in the studies of Darby, *et al*, (1999), Bryne and Davis (2003), Benassy-Querre, *et al,* (2001).This implies that base-broadening hypothesis holds (as the coefficient of FPI is positive); hence, the amount of FPI in the economy drives up exchange rate. The implication is that foreign portfolio investment has the potential to appreciate exchange rate.

The negative contribution of FDI to exchange rate improvement may be a reflection of Nigeria's poor business climate. There is need to consciously improve the business environment to enable foreign direct investments contribute positively to exchange rate by encouraging foreign investors in the non-oil sector for exports. This is because the country's foreign exchange earnings are more than 90 percent dependent on crude oil export receipts and the fluctuations in the global oil market have direct impact on the supply of foreign exchange in Nigeria.

FDI also increase the foreign exchange earnings of developing countries by generating new export products. If however FDI is focused on sectors where there are already competing domestic enterprises, this may erase investment opportunities for domestic investors. We thus suggest that foreign direct investors should be encouraged by sustainable government policies to invest in the manufacturing sector which will increase the export of finished products and thereby appreciate our exchange rate.

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