FDI Outflows and Domestic Investment: Substitutes or Complements? Exploring the Indian Experience[1]

Nandita Dasgupta
Department of Economics,
University of Maryland, Baltimore County (UMBC)

Abstract

The recent phenomenon of rising outward foreign direct investment (OFDI) flows has raised serious policy concerns about its effects on the domestic investment and capital formation in the countries of origin of such FDI flows. Does OFDI stimulate domestic investment or does it crowd it out? The concern arises because OFDI activities could shift not only some of the production activities from home to foreign destinations but also could possibly threaten the availability of scarce financial resources at home by allocating resources abroad. All this have the potential to reduce domestic investment, thus lowering the long run sustainable economic growth and employment of the home economies. The central goal of this paper is to empirically explore the evidence of the macroeconomic relationship between OFDI and levels of domestic capital formation in India. Our study reveals that OFDI has long run strong positive causality with domestic investment and thus figures out to be a significant factor affecting domestic investment in India. It becomes imperative therefore that the nation make special effort to promote its OFDI through the designing of appropriate OFDI policies that would help stimulate its domestic investment now and in the future so as to sustain economic growth and development in the long run.

Key Words & Concepts: Domestic Investment, FDI Outflows, Structural Break, CMR Unit Root Test, ARDL Bounds Test

JEL Classifications: E22, F21, F23, C32

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The emerging economies are recently demonstrating increasing alacrity of foreign direct investment (FDI)[2] outflows to the rest of the world. It is common knowledge that outward FDI (OFDI) flows encourage economic cooperation and global integration between the source and host countries. They also result in technology and skill transfer, sharing of knowledge, access to international brand names and global markets and global resources and income generation for the host and recipient countries (UNCTAD, 2004). Despite the potential of developing a portfolio of such locational assets as a source of international competitiveness and visibility, the phenomenon of rising overseas FDI flows from emerging economies has raised serious policy concerns about their effects on the domestic investment in the countries of origin of such FDI flows. The question that naturally arises is that whether the current trend of overseas FDI outflows will be conducive for the economies to sustain long run economic development in the future, and if so, to what extent. Sustainable economic development depends crucially, among other things, on the extent of domestic investment undertaken by a country, as it is an effective instrument in the creation of national output and employment of an economy[3]. From a policy perspective, it is therefore important to understand the effect of OFDI flows from a country on its domestic capital formation.

A review of the available theoretical and empirical literature on the association between domestic investment and OFDI provides two distinct economic views regarding the effect of OFDI on the home country investment – substitutability and complementarity, each of which has its own implications on domestic economic growth and employment. Policy concerns become especially pronounced when OFDI tends to substitute those domestic investments that could have sustained and enhanced home productivity. The argument is that if overseas relocation of domestic production takes place because of reduced investment opportunities at home, then, such OFDI activities may not only shift some of the production activities from home to foreign destinations but also possibly threaten the availability of scarce financial resources at home by

[2] Foreign direct investment are the net flows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments (World Bank, 2012).

[3] The early growth models of Harrod (1939) and Domar (1946) assumed that output was proportional to capital and thus growth rate of output would be proportionally related to the growth rate of capital that is investment. Later on, the endogenous growth models of Romer (1986), Lucas (1988) etc. based on the Harrod-Domar assumptions of constant returns to capital, also conclude that higher investment rates lead to a higher growth rate of output (Agarwal, Sahoo, Dash, 2007).

allocating resources abroad (Stevens and Lipsey, 1992). This outflow of capital that would diminish net external finance for domestic investments would also tend to substitute those domestic investments that could have sustained and enhanced home productivity, thus leading to negative repercussions on the domestic economic growth and employment rates[4]. This has the potential to reduce the domestic productivity of home firms in the long run by lowering their rate of accumulation of physical capital, thereby impairing their domestic investment. This in turn affects the long run rate of economic growth and employment of the country (Al-Sadig, 2013).

On the other hand, it is also recognized that OFDI can actually be instrumental in fostering positive linkages with the country of origin through the employment of domestic inputs and promotion of domestic investment in the manufacturing and service (information technology, management etc.) sectors while producing outputs in the host country. Such an increase in OFDI activities by home country multinationals may promote higher domestic investment and output, leading to long run economic growth (Desai, Foley and Hines, 2005)[5]. This complementary association between OFDI and domestic investment could happen in situations of efficiency-seeking OFDI where the home and overseas production activities are deliberately combined by the investing firms to exploit the economies of scale, reduce costs and enhance the efficiency in domestic production and investment efforts.

In view of the controversies existing in the relevant theoretical and empirical literature about the potential impact of OFDI on domestic investment, the study of the association between these two macroeconomic variables becomes theoretically important and practically relevant because of the inherent growth and developmental implications of OFDI for the home countries and also for the rest of the world.

The existing economic literature on OFDI-domestic investment nexus has been directed predominantly towards the developed countries such as the U.S., Sweden, Germany and Japan presumably because of the sheer volume of their foreign investment that have attracted wide research (Kim, S., 2000). Seemingly because of the newness of this phenomenon in emerging economies and consequently, relatively lesser volume of OFDI activities in these countries, not much relevant literature could develop for the emerging nations. But, the OFDI-domestic investment literature for the advanced economies of the world may not be generally relevant for the emerging countries because the consequences of outward FDI may vary, for example, between capital-rich and capital-scarce OFDI-making countries[6]. Al-Sadig (2013) has recently accomplished a generic panel study on the relationship of OFDI with the domestic investment of 121 developing countries. However, OFDI, like any other macroeconomic variable, shows

[4] The literature review section in the paper will contain a detailed survey of the theoretical literature and the empirical findings.

[5] The current deceleration in the growth of the emerging economies has once again made this question relevant. While the emerging markets as a group was growing at about 7% before the crisis (2003-08), their post crisis growth rate fell to about 5 by the next 5 years. Such synchronized deceleration has raised concern among the economists of the emerging nations as well as those of the developed countries because of the potential adverse spillover effects through trade and finance at the global level and eventual spillbacks on the original source economies themselves (Blanchard, Faruqee, Das, 2010; Harding, 2014).

[6] This is because, OFDI outflows transfer part of private domestic savings abroad (Al-Sadig, 2013).

substantial cross country differences depending on the prevailing socioeconomic and political environment. There exists doubts therefore, as to whether the results of such generic studies which apply to the average country in the sample, are applicable to specific regions or nations.
This research aims to fill the void by choosing to concentrate only on a single emerging economy[7] -- India and explore the role of OFDI as stimulating or impairing its domestic investment in the long run for a period of 35 years from 1980 through 2014. The country-level analysis is very important, so as to identify the critical path of industrialization that each such country must adopt and implement in the present global economic environment and to define or redefine their engine of growth. Concern in India about the role of OFDI naturally got aggravated with the global economic crisis in 2008 when India, like other emerging economies, experienced acute capital withdrawal (Rajan, 2009) and decline in GDP growth.

Design of the study
This study is a time series analysis of the long run causality between OFDI and domestic investment for India over 1980-2014. The remainder of this paper is organized as follows. While Section 1 presents the introduction, section 2 documents the overall statistics of Indian OFDI and domestic investment. Section 3 delivers a review of the existing economic literature on this issue. In Section 4, we provide the details of the data, postulate the methodology, perform the econometric time series panel data analysis and analyze the empirical results. Section 5 which concludes the paper bears a summary of the findings and the relevant policy recommendation. We will try to keep all the technical discussions limited to the bare necessities for explaining the paper and instead provide the relevant references.

2. OFDI and Domestic Investment in India

OFDI
Leveraging FDI inflows for sustainable economic development has long been tested in India with mixed outcomes. However, the reverse trend towards OFDI flows is relatively new to the country. Since the 1980s, Indian firms were making overseas investment, albeit under restrictive regulations and subject to conditions of no cash remittance and mandatory repatriation of dividend from the profits from the overseas projects (Khan, 2012). The adoption of the economic liberalization policies in 1991 in areas such as industrial deregulation, trade liberalization and inward FDI relaxation have raised competitiveness of many Indian firms, thus encouraging many such firms to undertake OFDI flows in joint ventures and wholly owned subsidiaries. Together with private OFDI initiatives, Indian state-owned enterprises have been also getting involved in greenfield OFDI. In 1992, the 'automatic route' for overseas investments was introduced and cash remittances were allowed for the first time. Nonetheless, the total value was restricted to $2 million with a cash component not exceeding $0.5 million in a block of 3 years (Khan, 2012). India has experienced a steady rise in capital inflows, particularly in the second half of 2000s,

[7] The emerging countries are considered to be those nations with social or business activity in the process of rapid growth, restructuring and industrialization along market-oriented lines to offer a wealth of opportunities in trade, technology transfers, and FDI. For additional information, read Li (2010), Sauvant (2005), Grant (2010).

which led to a favorable overall foreign exchange reserve position. It is in this backdrop that the Indian government undertook further relaxation of the capital controls and also simplified the procedures for OFDI from India (Khan, 2012).

Till 1994, the approvals for OFDI were made by the Ministry of Commerce. It is from 1995, that a comprehensive policy framework was laid down and the task of OFDI approvals was undertaken by the Reserve Bank of India in order to provide a single window clearance mechanism. A fast track route was adopted where the upper limits were raised from $2 million to $4 million and linked to average export earnings of the preceding three years. Cash remittance continued to be restricted to $0.5 million. Beyond $4 million, approvals were considered under the 'Normal Route' approved by a Special Committee comprising the senior representatives of the Reserve Bank of India (Chairman) and the Ministries of Finance, External Affairs and Commerce (members). Investment proposals in excess of $15 million were considered by the Ministry of Finance with the recommendations of the Special Committee and were generally approved if the required resources were raised through the global depository route (GDR) route. Together with the exporters, the exchange earners were incorporated under the fast track route in 1997.

The Foreign Exchange Management Act (FEMA) was introduced in June 2000, expanding the scope for OFDI from India. Since then on, the OFDI policies have undergone massive overhauling. In 2002, the annual upper limit for automatic approval was raised to $100 million. In March 2003 the ceiling was further liberalized so that the Indian participants in the OFDI process could invest to the extent of 100% of their net worth. Since then the limit of outward FDI has been gradually increased to 400%, except under certain circumstances. The External Commercial Borrowing policy was modified and funding of joint ventures or wholly owned subsidiaries abroad was included as a permissible end-use of the funds raised in 2004. As of now, any Indian firm can make OFDI in any *bona-fide* activity except certain real estate activities and certain banking business. OFDI activities in the financial services sector can be pursued, subject to certain conditions stipulated by the Reserve Bank of India. Indian corporations were allowed to use special purpose vehicles in international capital markets to finance their cross-border acquisitions. This liberalized the access to international financial markets by the Indian companies (Khan, 2012).

It is evident from Figure 1 that India's total FDI outflows have shown spectacular rise from $4 million in 1980 to $24 million in 1992 to $514 million in 2000 to about $16 billion by 2009, although with some intermittent fluctuations (UNCTAD, 2015). After moderate outward FDI between 2003 and 2004, OFDI flows gradually started increasing, owing to the relaxations in overseas investment policy after 2004. Overseas FDI from India picked up significantly in 2007 and peaked in 2009 with investment of $19.37 billion. The gradual increase in outward investments also coincided with the time of financial crisis which first hit in 2007. Together with this, the overall foreign exchange reserve position provided comfort to progressive relaxation of the capital controls and simplification of the procedures for outbound investments from India. The year 2008 also witnessed appreciation of the currency with average exchange rate at Rs. 40.24 per dollar. The rising trend in India's OFDI was affected in 2010. Since then, the country has been experiencing a fall in these investments from $12.46 billion in 2011 to $8.5 billion in 2012 to $1.68 billion in 2013. The abnormal fall in OFDI in 2013 was presumably because of

macroeconomic uncertainties when some of the Indian multinationals divested. India's OFDI in 2014 was $9.8 billion marking an increase of 486% over 2013, although still lower than figures in 2009, 2010 and 2011 (UNCTAD, 2015).

Figure 1 about here

Nonetheless, India is now the largest outward investor among the countries affiliated to the South Asian Association for Regional Cooperation (SAARC) as per the data provided by the 2015 UNCTAD FDI Statistics, as shown in Figure 2. Figure 2 exhibits the OFDI flows of select SAARC countries -- India, Bangladesh, Pakistan and Sri Lanka. FDI statistics of the remaining SAARC nations – Bhutan, Nepal and Maldives over the entire time period – 1980 through 2014 is not provided by UNCTAD (2015) which naturally implies that the outward FDI is very likely to be negligible or close to zero.

Figure 2 about here

As is evident from above, the liberalization of the OFDI regime from regulatory protection and supportive industrial and technology policies, in the early 1990s played significant role in facilitating OFDI from India. However, even now, OFDI flows from India are small, relative to that from Russia and China (Figure 3), partially reflecting India's skepticism of allowing outward FDI on a larger scale. Recent acquisition of foreign firms by prominent Indian business houses such as the Tatas, Wipro, Infosys, etc. have ignited economic, political and academic interest on the nature of Indian OFDI flows. Indian companies have focused their attention to mergers and acquisitions on high technology based knowledge intensive industries such as pharmaceuticals and information technology services. Majority of India OFDI is in the developed world such as USA, Western Europe, Japan and Australia (Sauvant, Maschek, McAllister, 2009).

Figure 3 about here

Domestic Investment

We now take a look at the domestic investment in India over 1980 through 2014. The domestic investment-GDP ratio was moderate at 17.9% in 1980 (Table 2). As Panagariya (2003) points out, the process of relaxation of regulation of Indian industry began in the early 1970s and of trade in late 1970s. However, the pace of reform picked up significantly only in 1985 with major liberalizing steps taken during the second half of the 1980s. 1988-91 witnessed a high growth which Panagariya attributes to the freeing up of several sectors from investment licensing[8] that reinforced import liberalization and allowed faster industrial growth than in the past. He also maintains that, prior to 1990, significant liberalizing steps had been taken towards freeing up the large-sized firms by raising the asset limit defining the Monopolistic and Restrictive Trade Practices (MRTP) firms five-fold and opening a number of avenues for the license-free entry of MRTP firms in many sectors. Also, borrowing on the external front during this period, allowed investment to be maintained at levels higher than what was possible otherwise and high levels of

[8] 31 sectors had already been freed from industrial licensing by 1990 with 27 sectors remaining subject to it (Panagariya, 2003).

public expenditures helped boost the economy through the expansion of demand (Panagariya, 2003).

The economic reforms program adopted by the Indian government in 1991 abolished industrial licensing for all except a select list of hazardous and environmentally sensitive industries and did away with the MRTP restrictions altogether (Panagariya, 2003). Yet investment in India remained sluggish, because of some impediments to investment spanning multiple sectors. Some of these bottlenecks identified by the Investment Commission Report in 2006[9] are as follows:

1. Investment restrictions and/or entry route barriers in several sectors of significant investment potential/ investor interest.
2. Absence of long-term policies, non-implementation/reversal of policy and breach of contract.
3. Lack of level playing field - especially in sectors with public sector dominance.
4. Inflexible labor laws.
5. Many agencies engaged in doing the same or similar activities relating to FDI.
6. Bureaucratic delays, discretionary interpretation, vested interest, bias and subjective practices
7. Centre-State divergence on investment related policies.
8. High cost of entry, transactions and exit and ineffective dispute resolution
9. Poor infrastructure
10. Priority Sectors not clearly identified/specified.

In its 2006 Report referred to above, the Investment Commission has attempted to define the investment goals (to achieve India's economic and social objectives) and craft a strategy for achieving them. Based on the investment goals and the identified impediments, a set of broad recommendations have been made which could facilitate and improve the investment climate. The mandate of the Commission entailed identifying and interacting with investors, promoting investment opportunities in India, facilitating investors in their investments and recommending policy/implementation changes which would remove or reduce prevailing deterrents to higher levels of investment.

Domestic Investment in India is represented in this paper by the ratio of gross fixed capital formation (GFCF)[10] to GDP (the ratio is labeled I). We have only considered physical investment in this study. It is recognized that a country's infrastructure and manufacturing investment plays a major role in achieving its sustainable economic development goals. Figure 4 shows that India's domestic investment (GFCF-GDP) ratio was 17.9% in 1980 and was on a continued growth path, though sluggish, reaching nearly 29% in 2004. Even during the years of

[9] The Investment Commission was constituted in India in December 2004 with the objective of enhancing both foreign and domestic investment levels in the nation in order to support the GDP growth target of over 8% per annum, faster manufacturing growth, greater employment and better infrastructure.
Investment Strategy of India: Investment Commission Report, February 2006.
http://finmin.nic.in/reports/InvestmentCommissionReport.pdf

[10] Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation (World Bank, 2015).

global crisis that is, 2007 through 2009, India maintained an average of about 32% domestic investment-GDP. Domestic investment started slipping downwards thereafter and in 2014, I has slipped downwards to 28.5%. The slowdown in investment is critical because it could be largely instrumental for the declining industrial growth in future. With the objective of helping improve the domestic investment climate in the nation, the Reserve Bank of India has, in June 2015, lowered key interest rates[11], so that borrowing costs for firms get lowered, lightening the overall cost burden especially for manufacturing and infrastructure firms.

Figure 4 about here

We also find from Figure 5 that the investment targets of India over 2005-10, as set by the Investment Commission Report in 2006 and the actual domestic investment figures obtained from World Bank started to fall apart from 2008. The figure shows that from 2008 through 2010, the actuals have systematically fallen below the target level.

Figure 5 about here

3. Literature Review

Given the pattern of OFDI flows and domestic investments in India, we once again address the theoretical questions about the impact of OFDI on the economic growth and development for the economy. Does a fast growth of capital outflow in the form of OFDI imply that the domestic investment is losing attractiveness to the home country investors so that resources and consequently the economic activities are diverted abroad? Or whether the OFDI is actually a catalyst to domestic investment? The process of answering these questions leads us to a survey of the existing economic literature that points towards two opposite strands of thought in explaining the association between domestic investment and OFDI of the economies of origin – substitutability and complementarity. Rest of this section will explore the substitution and complementary association between the two variables both from the theoretical and empirical perspectives.

3.1 Substitution

Theoretical Literature

Economic literature predominantly indicates a relation of substitutability between OFDI and domestic investment and the resultant crowding out of investment in the home countries. This can happen in many ways. First, the domestic production of goods[12] could be shifted overseas due to the lower cost of capital abroad, the preferential tax treatment to foreign profits of home country corporations and other fiscal incentives (Stevens and Lipsey, 1992; Feldstein, 1995; Desai Foley and Hines, 2005 and Herzer and Schrooten, 2007). If the firms making such

[11]Repo rate is the rate at which commercial banks borrow from the central bank. A lower repo rate implies lower borrowing costs for the banks, which in turn means lower borrowing costs for the investors who borrow from the banks.

[12] OFDI in services would have either neutral or positive effects on the rate of domestic investment because such FDI would not substitute exports (Al Sadig, 2013).

overseas investment partly self-finance the OFDI there will occur a foreign transfer of at least a part of their domestic savings. This raises the domestic interest rate and crowds out domestic investment thus deterring the creation of new capital in the home economy. Thus, whether OFDI crowds out domestic investment also depends on how that FDI outflow was financed (Kim, 2000).

Second, when a firm builds a production base in a foreign country with low labor costs, there exists a possibility that it will in future continue to devote resources and create jobs in these foreign outlets to enjoy the advantages of low wage cost coupled with market penetration. This would in turn have unfavorable effects on home country investment, employment, growth and development.

Next, the segmentation of financial markets due to capital controls may also crowd out domestic investment. For example, in India, the capital control policies create a wedge between the capital cost of domestic versus foreign expansion because it is cheaper for Indian firms to secure debt for creation of foreign assets rather than domestic investment (Girma, Patnaik, Shah, 2010). This encourages shifting of domestic production overseas. Also, when capital market constraints do not allow firms to bring cheaper capital back to invest at home, gains from overseas production activity cannot be brought back to the home country and the growth in domestic investment could be slower (Girma, Patnaik, Shah, 2010).

Fourth, such crowding out might also be visible when domestic firms engage in offshore production with the primary objective of exporting back to home markets. Thus, foreign production through OFDI flows replaces the home country exports of that very product, leading to the crowding out of domestic investment through its export-replacing effect (Kim, 2000). Desai, Foley and Hines (2005) have argued that in the case of horizontal OFDI there is a possibility of the diversion of domestic investment provided the domestic production have been substituted by overseas production by the home country firms. However, in latter stages after the accomplishment of the initial horizontal cross-border investment, if the foreign operations utilize their domestic set-up, OFDI and domestic investments could become complementary to each other.

Also, substitutability could arise later in vertical OFDI when stages of the production process that were previously undertaken in the home country are now shifted to overseas locations. However, in such cases, where on the one hand, outward FDI displaces exports of finished products and on the other hand, promote exports of intermediate products from the parent or from other domestic firms in the home country to the firm's foreign affiliate, the net impact becomes unclear (Al-Sadig, 2013).

Empirical Findings

Feldstein (1995) derived robust results on substitutability from aggregate cross country data of major OECD countries during the 1970s and 1980s. He found a roughly one-to-one negative correlation[13] between OFDI and domestic investment indicating that outward investment and domestic investment are at least partial substitutes. One-to-one negative relation between OFDI

[13] This means that every dollar amount of OFDI causes one dollar to be less invested at home thus indicating a perfect substitutability between the two variables.

and domestic investment has also been confirmed by Sauramo (2008) in his macroeconomic study for Finland over 1965–2006. Desai, Foley, and Hines (2005a) have also supported negative association between OFDI and domestic investment for OECD-countries for the 1980s and 1990s in line with Feldstein but with a larger sample set of OECD economies. Such substituting relationship, although less than dollar to dollar negative association was also confirmed by Andersen and Hainaut (1998), employing data for the United States (US), Japan, Germany, and the United Kingdom (UK) spanning from the 1960s until the 1990s. That the OFDI by Swedish multinationals had a negative effect on the size of their home country's capital stock has been established by Svensson (1993). Herzer and Schrooten (2007) conducted a similar analysis for the US and Germany. They distinguished between the short-run and long-run effects of outward FDI on domestic investment in Germany and found that the long-run effect was negative for Germany.

3.2 Complements

Theoretical Literature

Positive or complementary association between OFDI and domestic investment could happen in situations of efficiency-seeking OFDI where the home and overseas production activities are deliberately combined by the investing firms to exploit the economies of scale, reduce costs and enhance the efficiency in domestic production and investment efforts. While foreign production through OFDI flows can replace the possibility of home country exports of that very product, such production could also be export-supporting in that it could generate demand for the tangible and intangible resources, such as capital goods or intermediate goods and services available to the domestic counterpart of the capital exporting firms. In other words, the internationally operating domestic firms may import significant amounts of inputs and technology (machinery and other capital equipment, domestically manufactured production inputs and specialized services, software, technical and managerial consultancy) from their parent companies as conduits of the initial FDI made from the home country. These products that may be provided by other parts of the parent company, its suppliers, or independent firms at home would possibly complement domestic investment (Kim, 2000) and thus generate increased economic activity and employment, as well as tax revenues, exports and also the spillover of imported technologies to the domestic firms. Such FDI where the production process is partly relocated to the home country, thus complementing exports of capital and intermediate goods and services are vertical (Braunerhjelm, Oxelheim and Thulin, 2006) and thus do not immediately reduce home country production (Al-Sadig, 2013).

Empirical Findings

Desai, Foley and Hines (2005) have suggested positive relationship between OFDI and domestic investment. Using time-series data on capital expenditures of US multinational companies they found a direct association between their capital expenditure abroad and their domestic capital spending, thus establishing the complementarity between OFDI and domestic investment of these US firms. Strong positive association has also been found by Stevens and Lipsey (1992) who have employed firm-level data involving the domestic and foreign operations of seven US MNEs for a period of 16 to 20 years. Complementarity is established in Faeth (2006) for Australian balance of payments data.

4. Data, Methodology, Analysis

4.1 Data

The study considers a comprehensive set of six relevant economic variables that could be expected to explain domestic investment. While gross fixed capital formation-GDP ratio (I) representing domestic investment is the dependent variable, we consider five macroeconomic variables as the determinants of I – OFDI, domestic credit availability to the private sector (DCP), per capita GDP (GDPPC), broad money supply (M2) and overall trade in the economy (TR)[14]. All variables except per capita GDP are measured as ratios to GDP. While, we are actually interested in the relation between OFDI and domestic investment, the other variables are the control variables of the model. These control variables are chosen from the literature on the determinants of domestic investment[15] (Luca and Spatafora, 2012; Lim, 2013). The definition of the variables as provided by the World Bank and UNCTAD as well as the direction of expected relationships of the control variables with I are presented in Table 1.

Table 1 about here

Data Source
All data are secondary. Data on OFDI are obtained from *UNCTAD Statistics*. The rest of the data are acquired from the World Bank's *World Development Indicators*. Because some of our data have negative values, we chose not to transform the data into natural logarithms. Notwithstanding the merits of natural logs, the transformation of the negative values into positive ones to accommodate natural logs would bring in artificiality in the data that is feared to vitiate the results.

4.2 Methodology and Results

The functional relationship between domestic investment (I), OFDI and other control variables is as shown in Equation 1:

$$I = f(OFDI, DCP, GDPPC, M2, TR) \quad (1)$$

In the light of the above discussion, we propose the following model for estimation and analysis:

$$I_t=\alpha+\beta_1 OFDI_t+\beta_2 DCP_t+\beta_3 GDPPC_t+\beta_4 M2_t+\beta_5 TR_t+\varepsilon_t \quad (2)$$
$$(+/-) \quad (+) \quad (+) \quad (+/-) \quad (+/-)$$

[14] Export + Import as a percentage of GDP.

[15] Economic literature on the determinants of domestic investment contains many other factors from which we selected a few, given the limited nature of the cross section and time series dimensions of our panel data on the BRIC countries.

where Ɛ is the stochastic disturbance term with a mean of zero and the subscript *t* is the index for the years. The signs below each variable indicate its expected relation with I. We have carried out the exercise in a number of steps[16]:

Unit Root Testing with Structural Breakpoints

Before we settle on an appropriate technique for measuring the relationship between OFDI and domestic investment in India, we need to first establish that our variables are stationary. Because our data spans across more than three decades, the failure to account for the effects of structural breaks during this long period can lead to biased outcomes. In fact, under some circumstance, the traditional residual based unit root tests such as the Augmented Dickey Fuller (ADF) test by Dickey and Fuller (1979), PP by Phillips and Perron (1988) and KPSS by Kwiatkowski, Phillips, Schmidt, Shin (1992) have been found to be biased toward non-rejection of the null hypothesis when the series under consideration has structural breaks.

To control for the biasedness, we need to apply unit root tests that incorporate structural breaks[17] in the series. For this purpose, we have employed the Clemente–Montanes–Reyes (CMR) (1998) unit root testing method which can identify up to two unknown structural breaks in the series at the same time. This grouping of structural break is derived from the study of Perron and Vogelsang (1992). We chose the double mean shift structural break unit root test. The CMR test is applied on series with two break dates. This test considers the null hypothesis of unit root with no break against the alternative of a stationary process with break(s). The main advantage of CMR unit root test is that it has the capability to endogenously determine the time of break and does not require an a priori knowledge of the structural break dates.

The CMR method gathers information about two unknown structural breakpoints in the series by offering two models – the additive outliers (AO) model and the innovational outliers (IO) model. The AO model informs about an abrupt and sudden change in the mean of a series and the changes are assumed to take place allowing for a break in the slope. AO models are more appropriate for testing structural changes where there is a one-time shock, which significantly affects the mean. An IO model indicates about the gradual steady shifts in the mean of the series that allow for a break in both the intercept and the slope. IO models are more appropriate when a one-time shock persists dynamically through the remainder of the series (Perron, 1990). Empirically, the IO model is more useful if we are trying to identify a policy regime change that persists in its effects beyond the initial shock. In general, most macroeconomic variables tend to adjust slowly with policy shifts. It is also evident from section 2 above that although the economic reforms process in 1991 triggered the rise in OFDI, the phased liberalization of OFDI has caused the gradual structural adjustments of the series following the break. For this reason, we have chosen to apply the IO model because it is more suitable for the variables having

[16] We will try to keep all the technical discussions limited to the bare necessities for explaining the paper and instead provide the relevant references. For detailed technical discussions, interested readers may contact the author at nandita@umbc.edu.

[17] Structural break tests are used to determine significant breakpoints in the variables. This will increase the overall accuracy and usefulness of the regression model since the breakpoints are endogenously obtained. The regression models will also supplement the breakpoint analysis by providing a multivariate test for structural break in each model.

gradual structural adjustments of the series following the break, as compared to sudden shifts. The results of the IO models indicate whether the process is non-stationary with structural breaks, when structural breaks occur and with what intensity and whether they are statistically significant. The CMR unit root test results at level and first difference as shown in Table 2 exhibits that all the variables are I(0).

The optimal breakpoints of each variable are also shown in Table 2. Although we have considered all the relevant breakpoints in our econometric exercise, in the paper, we are analyzing the breakpoints of the two prime variables – OFDI and I. It is evident from Table 2 that the breakpoints for OFDI are 2004 and 2009 at level and 2004 and 2008 at first difference. We know from section 2 that the introduction of FEMA in 2000 and subsequent revamping and liberalization of overseas FDI regulations, have led to gradual structural amendments in later years. This justifies the existence of structural breakpoints in the OFDI series in 2004, 2008 and 2009. The breakpoints for domestic investment are 1984 and 2002 for level and 2002 and 2006 at first difference. The piecemeal liberalization policies pursued by the Indian government in the 1980s, the overall economic reforms policies of the 1990s and the revamping of investment policies in 2004 (discussed in Section 2) rationalize the breakpoint dates.

Autoregressive distributed lag (ARDL) bounds test with Structural Break

Since our variables are all I(0) series[18], we have used the ARDL bounds test of cointegration developed by Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001) to estimate whether the involved economic variables have a stable and non-spurious, long run (cointegrating) relationship among themselves over the relevant time span. In other words, the ARDL method empirically explains the domestic investment I in terms of past values of I, as well as the current and past values of OFDI and other control variables -- GDPPC, DCP, M2 and TR. Pesaran and Shin have used a dynamic OLS estimation to delineate long-term trends between series of observations. The *ARDL-Bounds testing approach* to cointegration is chosen because it is more relatively more efficient in the case of small and finite sample data sizes, as is here the case. This test is based on the basic assumption that the variables are I(0) or I(1). In the presence of variables integrated of order two, we cannot interpret the values of F statistics provided by Pesaran, Shin and Smith. So, before applying the ARDL test, we have also checked that our variables are not I(2) using the CMR unit root test, so as to avoid spurious results.

Pesaran and Shin also note that unlike other methods of estimating cointegrating relationships, the ARDL representation does not require symmetry of lag lengths; each variable can have a different number of lag terms. Using maximum of 4 lags for the dependent variable, I and maximum of 3 lags for the regressors and following the Akaike Information Criterion, we are ultimately interested in finding out the long-run relationship of the variables of interest. From the 4096 models evaluated, with varying lag structures, the optimum lag structure for the variables is obtained as (4, 3, 3, 1, 3, 2) – 4 lags for the dependent variable I, 3 lags for OFDI, 3 lags for

[18] Traditional methods of estimating cointegrating relationships, such as Engle-Granger (1987) or Johansen (1991, 1995) method, or single equation methods such as Fully Modified OLS, or Dynamic OLS either require all variables to be I(1), or require prior knowledge and specification of which variables are I(0) and which are I(1). To alleviate this problem, Pesaran and Shin (1999) showed that cointegrating systems can be estimated as ARDL models, with the advantage that the variables in the cointegrating relationship can be either I(0) or I(1), without needing to pre-specify which are I(0) or I(1).

DCP, 1 lag for GDPPC, 3 for M2 and 2 lags for TR. We have included the BREAKIOI0 dummy variable (to indicate the structural breakpoint years from the CMR IO unit root testing model at level I(0)), as well as an intercept and linear trend as (fixed) regressors (that is, they would not be lagged). The R-squared is 0.99 and the probability of the F statistics is close to zero[19].
Since ARDL models are estimated by simple least squares, all of the views and procedures available to equation objects estimated by least squares are also available for ARDL models. The standard least squares output for the selected model is shown in Table 3. We observe that most of the regressors are statistically significant. The breakpoint dummy is not significant though. We also see that the coefficients on the one period and three period lags of the dependent variable, OFDI are very high at 5.67 and 5.93 respectively. This indicates strong lagged effect of OFDI on domestic investment, I.

Table 3 about here

Figure 6, which provides a graph of the AIC of the top twenty models, shows the relative superiority of the selected model against alternatives. It is evident from the figure that the selected ARDL (4, 3, 3, 1, 3, 2) model is better than other ARDL models. It is notable that 16 out of 20 top models use 4 lags of the dependent variable.

Figure 6 about here

One of the main purposes of estimating an ARDL model is to use it as the basis for applying the "Bounds Test" of cointegration, shown in Table 4. The Bounds Test displays the F statistic and the 10%, 5%, 2.5% and 1% bounds for both the all I(0) and all I(1) cases. Upper and lower critical bound values for an F-test have been provided by Pesaran and Shin (1999). The use of the Pesarans' bounds technique is based on three validations. First, they advocated the use of the ARDL model for the estimation of level relationships because the model suggests that once the order of the ARDL has been recognized, the relationship can be estimated by OLS. Second, the bounds test allows a mixture of I(1) and I(0) variables as regressors, that is, the order of integration of appropriate variables may not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, this technique is suitable for small or finite sample size (Pesaran, Shin and Smith 2001). However, the bounds technique is not applicable for I(2) variables. The Bounds Test approach confirms the existence of the long run relationship on the basis of an F-test, which determines if the coefficients of all explanatory variables are jointly different from zero. The null hypothesis is that there is no long-run relationship between the variables. Applying the ARDL procedure, we find cointegration result. The value of F statistics is 7.06, which clearly exceeds even the Pesaran 1% upper critical bound 4.63. Accordingly, we *strongly reject* the hypothesis of "no long run relationship". Results thus confirm that our model fulfills the criterion of cointegration or long run relationship of the dependent variables with I.

Table 4 about here

[19] Results will be shown up on request.

In the estimation results for our chosen ARDL model, we estimate the cointegration and long-run form of the model in Table 5. It is evident from the upper segment of the output of Table 5 that the cointegration coefficient is negative (-3.39), as required, and is statistically very significant (p value equal to zero). More importantly, the long-run coefficients are reported in the lower segment of Table 5, with their standard errors, t-statistics, and p-values. We observe that there is a statistically long-run equilibrium relationship between domestic investment, OFDI and other dependent variables as shown by the p values. Focusing our attention on OFDI, we find that a 1 unit rise in OFDI will raise the domestic investment by nearly 4 times. This shows that OFDI has a strong long run effect on domestic investment in India. We also find that a 1 unit rise in domestic credit availability increases I by about 1.1 units. Contrary to standard expectations, financial intermediation shows a negative relation with domestic investment in India. A unit rise in M2 leads to a less than 1 unit fall (coefficient is -0.95) in domestic investment. Trade (TR) also exhibits a small but negative relationship (coefficient is -0.23) with I.

Table 5 about here

The ARDL model derived above is stable because it satisfies the diagnostic test of stability (CUSUM test) shown in Figure 7. The CUSUM test (Brown, Durbin, and Evans, 1975) is based on the cumulative sum of the recursive residuals. This option plots the cumulative sum together with the 5% critical lines. The test finds parameter instability if the cumulative sum (shown by the blue line) goes outside the area between the two critical (red) lines. Since, in our model, the blue line lies between the two red lines, the ARDL model is stable.

Figure 7 about here

5. Summary and Conclusion

There exists a popular sentiment that India, being a developing country, should not promote OFDI activities because the outflow of capital diminishes net external finance for domestic investments and this would have negative repercussions on Indian economic growth rate via the effect on GDP. Such concern naturally got aggravated with the global economic crisis in 2008 when India, like other emerging economies, experienced acute capital withdrawal (Rajan, 2009). This study of OFDI-domestic investment nexus, engaged in the investigation of the impact of OFDI on domestic investment in India for the period 1980-2014 has, on the contrary, empirically established that OFDI has a strong and positive long run relationship with domestic investment. This implies that OFDI can actually be instrumental in promoting domestic investment in the manufacturing and service sectors that would lead to the rise in employment of domestic inputs and eventually lead to long run economic growth of the country.

The Government of India has taken various measures to promote FDI abroad. To enable domestic firms to expand abroad also to have a portfolio of locational assets so as to optimally structure their production process and reap efficiency-gains from production, the Indian government has eased OFDI procedures over time. Also, the government has concluded bilateral investment treatise (BITS) with nearly 70 nations where Indian firms can invest. To enable Indian firms raise capital abroad, the government has allowed unlisted companies to list on overseas markets without the need to be publicly traded on domestic exchanges. The RBI has

declared that Indian firms can invest up to 400% of their net worth outside India through External Commercial Borrowings. The India-UAE High Level Joint Task Force was created in April 2012 to address the existing investment related mutual issues and to facilitate and promote cross-border investments between the two countries. Special Economic Zones are opened up in nine provinces of South Africa to tap FDI from India.

Today India experiences substantial private OFDI initiatives in manufacturing such as agricultural machinery, organic chemicals, drugs, refined petroleum and service sectors like business services, data processing, financial services, architectural and engineering services. Indian public enterprises are also becoming involved in greenfield OFDI mainly in natural resources such as oil, coal and metals.

Policy Recommendations

The above discussion indicates the intensity and enthusiasm of India in expanding its outward FDI flows to the rest of the world. Nonetheless, as compared to the world, or at least the BRIC (Brazil, Russia, India, China) nations (Figure 3), India has still a long way to go, relative to the two recognized global powers -- Russia and China. Based on the findings, this research therefore makes several policy recommendations:

- To promote growth enhancing OFDI, the government in collaboration and engagement with the private sector needs to promote OFDI that would raise and sustain domestic investment. One way of achieving this could possibly be through the engagement in natural resource-seeking OFDI and importing raw materials such as oil, minerals and metals (for further processing and domestic use in production) and also by bringing back new technologies, brand names, export markets etc.

- India should also access superior technology in advanced countries which could be used at home to further domestic investment and growth.

- Indian multinationals need to be incentivized to remit their profits from their overseas investment and reinvest their remittances at home to stimulate economic growth.

- Improved access to domestic finance is necessary to keep Indian firms to expand international operations through OFDI. This requires the further development of private capital markets. High inflation prevents this process.

- While fostering OFDI that would crowd-in domestic investment, the nation has to carefully monitor that its OFDI policies do not crowd-out domestic investment.

- Even though both OFDI and domestic investment have increased together for India, as seen in Figures 1 and 4 respectively, Indian companies must maintain a balance between the benefits of overseas investments and the need for domestic capital formation, economic growth and employment. To achieve this balance, all stakeholders – the government, Reserve Bank of India, professional and industry bodies and domestic firms should constantly review the policies, procedures and Home Country measures (Sauvant, Economou, Gal, Lim, Wilinski, 2014) that would enable the nation to reap the benefits of

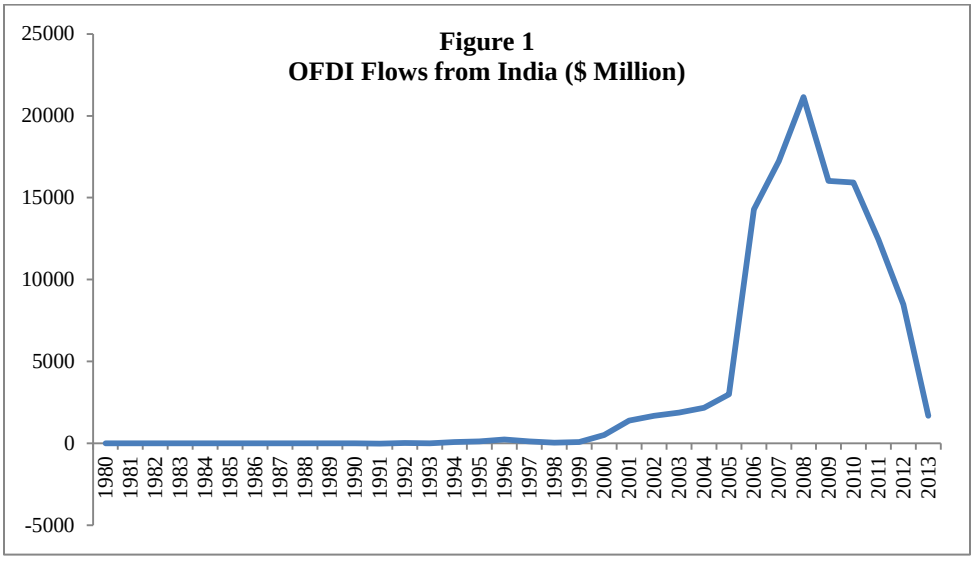
capital outflows in the form of OFDI without compromising national interests of higher domestic investment and economic growth, without which, the macroeconomic stability of the nation could be jeopardized.

- The government will also need to look more carefully at participating in double taxation treaties, BITS and other trade and investment agreements.

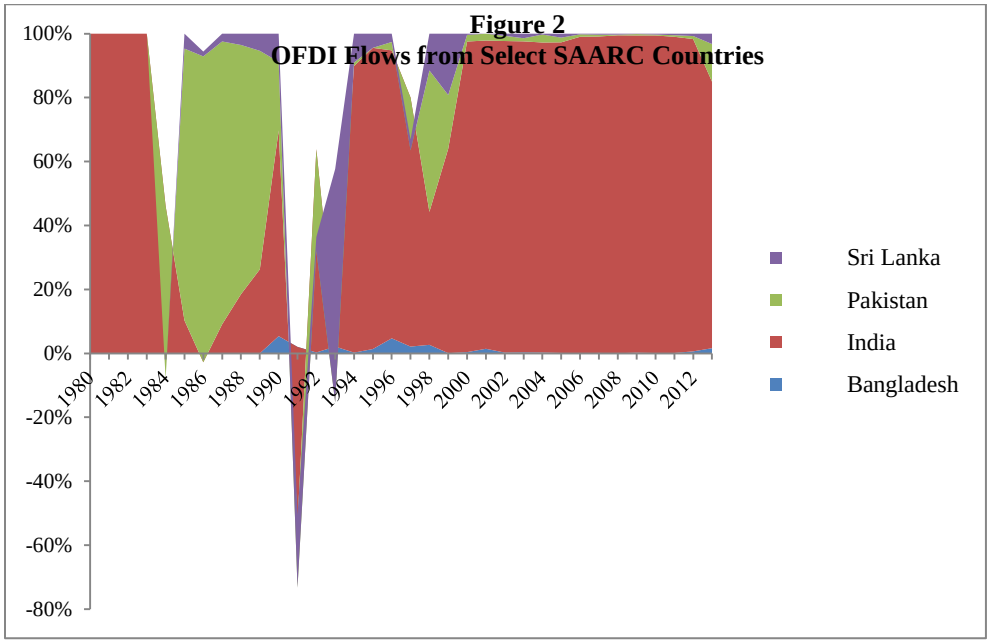
- In order to motivate more OFDI from India, the government should further simplify the approval process, raise the threshold value of projects for which approval is required, disseminate information on investment projects and on problems previously experienced and develop more succinct guidelines. This would provide a policy framework for increased guidance and support.

- However, all said and done, the Indian government should keep keen emphasis on reaping maximum gains from OFDI through the realization of positive spillovers of FDI outflows, which would ultimately result in raising its domestic investment and thereby its economic growth and development, to be sustained long time, deep in the future.

Figures and Graphs



Source: World Investment Indicators, World Bank.



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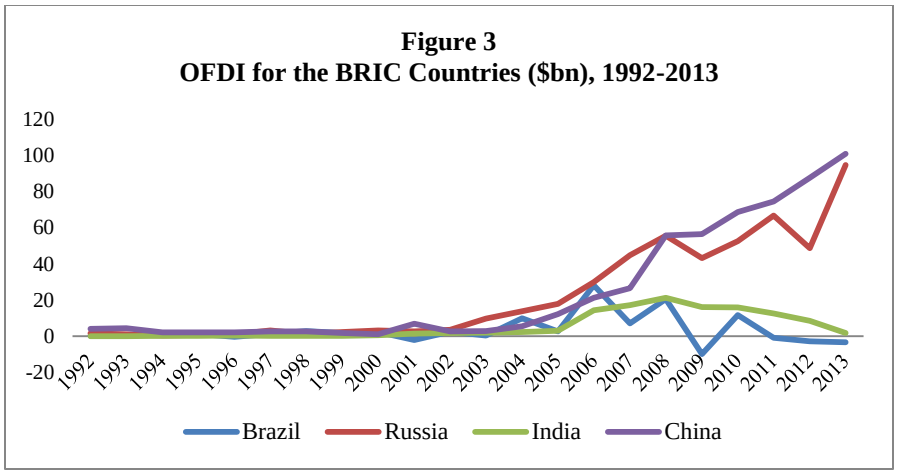

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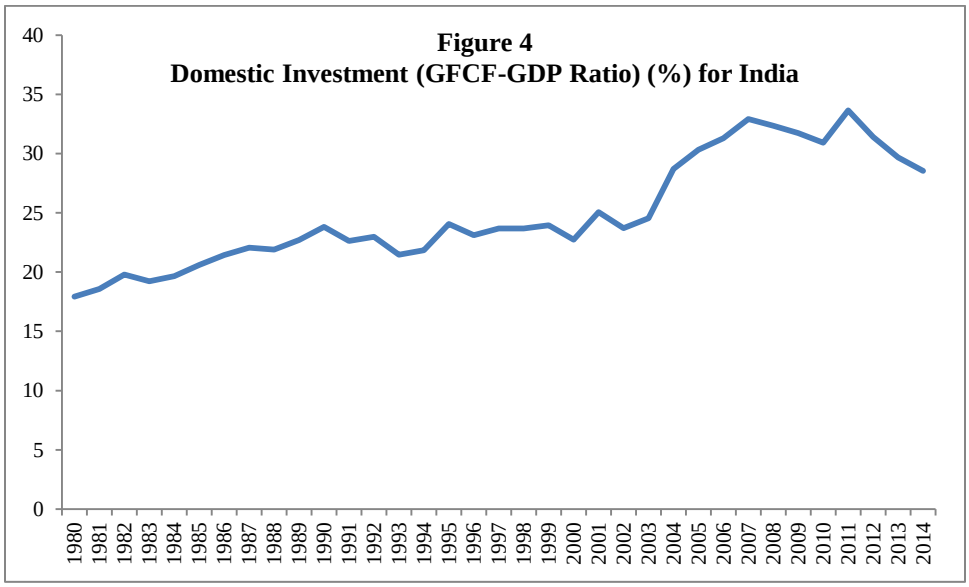

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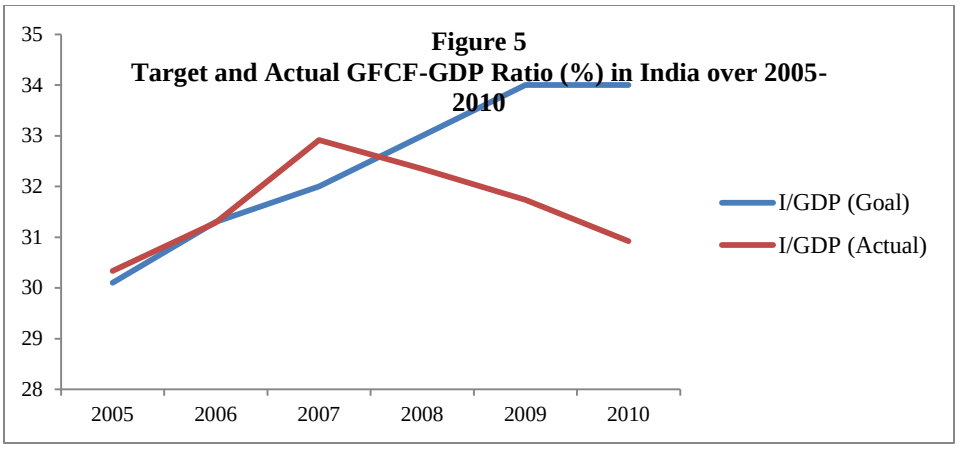


Note: The I/GDP (Goal) is the target set by the Investment Commission.
Source: World Investment Indicators, World Bank.

Table 1
Variables in the Study

Dependent Variable	Definition	
Gross Fixed Capital Formation (I)	Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. It is divided by GDP.	
Independent Variables	**Definition**	**Expected Direction of Relationship with GFCF**
Outward FDI Flows (OFDI)	Outflows of investment from the reporting economy to the rest of the world and is divided by GDP.	Economic Openness (>0 (complementarity), <0 (substitutability))
Domestic Credit to Private Sector (DCP)	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations* such as through loans, purchases of nonequity securities and trade credits and other accounts receivable that establish a claim for repayment. For some countries these claims include credit to public enterprises.	Indicates the potential impact of domestic conditions on the efficiency with which capital are invested. Increase in credit availability to the private sector facilitates financing and thus causes a rise in the level of private investment with favorable effect on the long term productive capacity of the economy (>0). (Asante,(2000); Frimpong and Marbuah (2010))
GDP per capita (GDPPC)	GDP divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	Economic theory suggests an increase in real GDP (aggregate demand) is expected to result in a greater amount of real private domestic investment to be undertaken (>0) (Blomstrom, Lipsey and Zejan, 1996; De Long and Summers, 1991)
Money and quasi money (M2)	Sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government. It is measured as a share of GDP.	Financial deepening/intermediation indicating the level of financial development – the liquidity available to finance investment (>0)
Trade (TR)	Sum of exports and imports of goods and services measured as a share of GDP.	Trade liberalization coefficient as an indicator of trade openness (>0) through technology and knowledge spillovers. An economy highly integrated to the world is expected to attract investments in tradable sectors in order to increase productivity and competitiveness (Balasubramanyam, Salisu and Sapsford, 1996). (<0) if consumers prefer imported products (Ndikumana, 2000).

Source: World Development Indicators, World Bank; UNCTAD FDI Statistics.
*The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds and foreign exchange companies.

Table 2
CMR Unit Root Test (IO Model) with Double Mean Shifts

Variable	Level		First Difference		Result
	Minimum t* (p value)	Optimal Breakpoints	Minimum t* (p value)	Optimal Breakpoints	
I	2.888 (0.007)	1984 2002	-4.090 (0)	2002 2006	I(0) & I(1)
OFDI	-3.921(0.017)	2004 2009	-8.530 (0)	2004 2008	I(0) & I(1)
DCP	5.758 (0)	1998 2003	-3.545 (0.001)	1998 2007	I(0) & I(1)
GDPPC	2.489 (0.019)	2002 2008	1.078 (0.291)	1992 2003	I(0)
M2	1.606 (0.020)	1998 2005	-1.740 (0.093)	1994 2011	I(0)
TR	3.197 (0.003)	1990 2002	-2.104 (0.073)	2002 2008	I(0)

Note: Minimum t is the smallest value of t derived from the process.
5% critical value for the two breaks is-5.490.
Author's calculations using STATA 13.

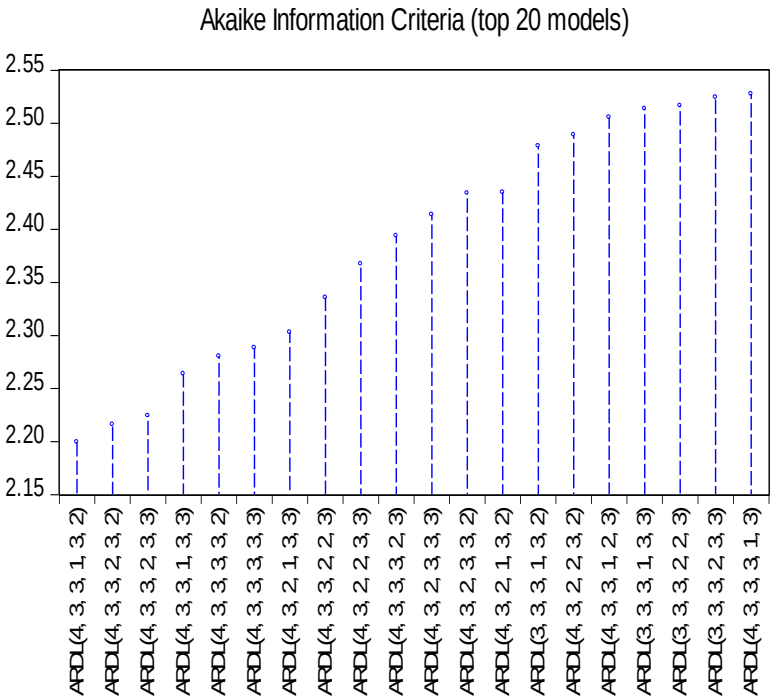
Table 3
ARDL Model – Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
I(-1)	-0.805471	0.275838	-2.920088	0.0223
I(-2)	-0.407880	0.212868	-1.916112	0.0969
I(-3)	-0.791995	0.275307	-2.876772	0.0238
I(-4)	-0.376448	0.222281	-1.693568	0.1342
OFDI	-3.471348	1.822510	-1.904707	0.0985
OFDI(-1)	5.674693	1.587275	3.575118	0.0090
OFDI(-2)	4.731917	2.169498	2.181111	0.0655
OFDI(-3)	5.927564	1.721207	3.443841	0.0108
DCP	1.242338	0.360635	3.444858	0.0108
DCP(-1)	1.613687	0.394861	4.086723	0.0047
DCP(-2)	1.226073	0.366521	3.345159	0.0123
DCP(-3)	-0.368321	0.235464	-1.564233	0.1617
GDPPC	-0.001681	0.005921	-0.283844	0.7847
GDPPC(-1)	-0.017911	0.006615	-2.707661	0.0303
M2	-1.130072	0.300607	-3.759295	0.0071
M2(-1)	-0.795822	0.269196	-2.956288	0.0212
M2(-2)	-0.805148	0.292778	-2.750033	0.0285
M2(-3)	-0.473631	0.223772	-2.116577	0.0721
TR	0.496687	0.152367	3.259801	0.0139
TR(-1)	-0.525348	0.163662	-3.209961	0.0149
TR(-2)	-0.748647	0.182607	-4.099782	0.0046
BREAKIOI0	-0.569138	0.484528	-1.174624	0.2786
C	95.61388	17.55850	5.445446	0.0010
@TREND	3.856128	0.808363	4.770293	0.0020

R-squared	0.993634	Mean dependent var	25.71531
Adjusted R-squared	0.972718	S.D. dependent var	4.269510
S.E. of regression	0.705208	Akaike info criterion	2.199663
Sum squared resid	3.481230	Schwarz criterion	3.309846
Log likelihood	-10.09477	Hannan-Quinn criter.	2.561555
F-statistic	47.50521	Durbin-Watson stat	2.955467
Prob(F-statistic)	0.000012		

*Note: p-values and any subsequent tests do not account for model selection.
Author's calculations using EViews 9.

Figure 6
Top 20 ARDL Models



Author's calculations using EViews 9.

Table 4
ARDL Bounds Test

Sample: 5 35
Included observations: 31
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	7.062508	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.49	3.38
5%	2.81	3.76
2.5%	3.11	4.13
1%	3.5	4.63

Author's calculations using EViews 9.

Table 5
ARDL Cointegrating and Long Run Form

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(I(-1))	1.576549	0.228764	6.891595	0.0002
D(I(-2))	1.159780	0.180430	6.427860	0.0004
D(I(-3))	0.381795	0.126522	3.017615	0.0195
D(OFDI)	-3.543526	0.710983	-4.983981	0.0016
D(OFDI(-1))	-10.657390	1.539238	-6.923811	0.0002
D(OFDI(-2))	-5.870828	0.831417	-7.061233	0.0002
D(DCP)	1.247493	0.167228	7.459853	0.0001
D(DCP(-1))	-0.848708	0.165661	-5.123154	0.0014
D(DCP(-2))	0.371802	0.108335	3.431964	0.0110
D(GDPPC)	-0.002022	0.002401	-0.842125	0.4275
D(M2)	-1.131352	0.137780	-8.211283	0.0001
D(M2(-1))	1.277481	0.164858	7.748984	0.0001
D(M2(-2))	0.472207	0.085871	5.498998	0.0009
D(TR)	0.497506	0.059974	8.295322	0.0001
D(TR(-1))	0.749839	0.097501	7.690537	0.0001
D(BREAKIOI0)	-0.657754	0.211955	-3.103278	0.0172
C	99.697470	9.952154	10.017678	0.0000
CointEq(-1)	-3.389213	0.339327	-9.988058	0.0000

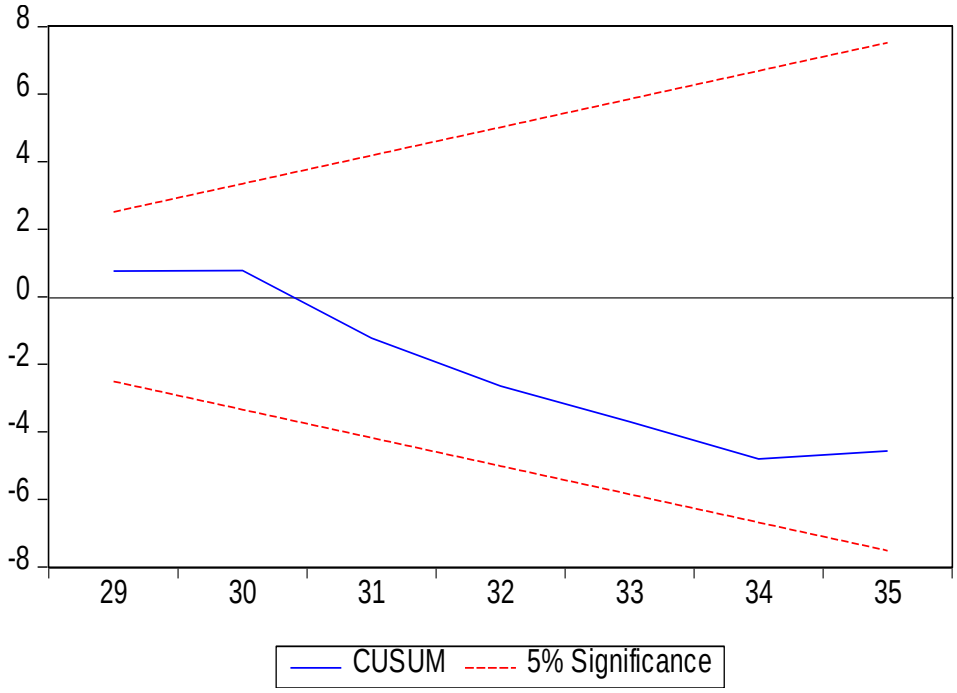
Cointeq = I - (3.8036*OFDIF + 1.0982*DCP -0.0058*GDPPC -0.9476*M2
-0.2299*TR -0.1683*BREAKNOLOGIOI0 + 1.1403*@TREND)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OFDI	3.803551	0.410352	9.268993	0.0000
DCP	1.098168	0.124346	8.831556	0.0000
GDPPC	-0.005793	0.001381	-4.196266	0.0041
M2	-0.947626	0.119582	-7.924484	0.0001
TR	-0.229851	0.045078	-5.098928	0.0014
BREAKIOI0	-0.168295	0.137911	-1.220318	0.2619
@TREND	1.140261	0.113794	10.020395	0.0000

Author's calculations using EViews 9.

Figure 7
CUSUM Test



Author's calculations using EViews 9.

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