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Working Paper

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Copenhagen Discussion Papers, No. 2016-59

Provided in Cooperation with:
Asia Research Community (ARC), Copenhagen Business School (CBS)

Suggested Citation: Dasgupta, Nandita (2016) : FDI Outflows and Domestic Investment: Substitutes or Complements? Exploring the Indian Experience Nandita, Copenhagen Discussion Papers, No. 2016-59, Copenhagen Business School (CBS), Asia Research Centre (ARC), Frederiksberg, https://hdl.handle.net/10398/9294

This Version is available at:
https://hdl.handle.net/10419/208657

59 2016 April

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

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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

FDI Outflows and Domestic Investment: Substitutes or Complements?

Exploring the Indian Experience

The emerging economies are recently demonstrating increasing alacrity of foreign direct investment (FDI)[1] 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[2]. 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

[1] 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).

[2] 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).

complementarity, each of which has its own implications on domestic economic growth and employment. Controversies exist in the relevant theoretical and empirical literature about the potential impact of OFDI on domestic investment. Policy concerns become especially pronounced when OFDI tends to substitute those domestic investments that could have sustained and enhanced home productivity. It becomes theoretically important and practically relevant therefore, to study the association between these two macroeconomic variables, 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). Also, these are the countries that published detailed data on outward FDI already from an early stage of global capital flows, from the 1970s and onwards. For the emerging nations, however, not much relevant literature on OFDI has developed. There could be some understandable reasons for this. First, the phenomenon of OFDI is relatively new for the emerging economies and hence the consequently volume of OFDI activities in these countries is relatively less. And, for the same reason, contrary to the developed countries, the emerging economies naturally, could not generate data on outward FDI since the 1970s. But, the existing robust 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[3].

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

The rising prominence of OFDI from the emerging economies has generated the importance of investigating the bearing of OFDI on such home countries. Economists and policy-makers are increasingly focusing their attention on exploring the relationship between OFDI and domestic investment of OFDI-originating emerging economies either for individual countries (Kim, 2000; Girma, Patnaik, Shah, 2010; Goh and Wong, 2012, 2014; Hsu and Cleggs, 2015), or for a panel of countries (Page and te Velde, 2004; Al-Sadig, 2013; Dasgupta, 2014). With panel data analysis, question arises as to whether the results of the generic studies[4] which apply to the average country in the sample, are also applicable to specific regions or nations. This is because, OFDI, like any other macroeconomic variable, shows substantial cross country differences depending on the prevailing socioeconomic and political environment. Thus, country-specific study is more suitable if our objective is to estimate the relationship between outbound FDI and the home country investment of a particular economy of interest. 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.

Accordingly, the present research chooses to concentrate only on a single emerging economy[5] -- 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. 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. Also, the recent acquisition of foreign firms by prominent Indian business houses

[4] Al-Sadig (2013) has recently accomplished a generic panel study on the relationship of OFDI with the domestic investment of 121 developing countries.

[5] 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).

such as the Tatas, Wipro, Infosys, etc. have ignited economic, political and academic interest on the nature of Indian OFDI flows.

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 paper is divided into five sections that include this introduction (Section 1) and a conclusion (Section 5) bearing a summary of the findings, the relevant policy recommendations and the future research agenda. 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 analysis and analyze the empirical results. 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 (Chakraborty and Mukherjee, 2012; Dolly, 2015). 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 raised competitiveness of many Indian firms, thus encouraging many of those 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, 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 (RBI) 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 RBI (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). 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. From that time, the limit of outward FDI has been gradually increased to 400% under the automatic route, except for energy and natural resources sectors (oil, gas, coal and mineral ores) where the Indian companies are allowed to invest, in excess of the current limits with the prior approval of the RBI (Hattari and Rajan, 2010)[6].

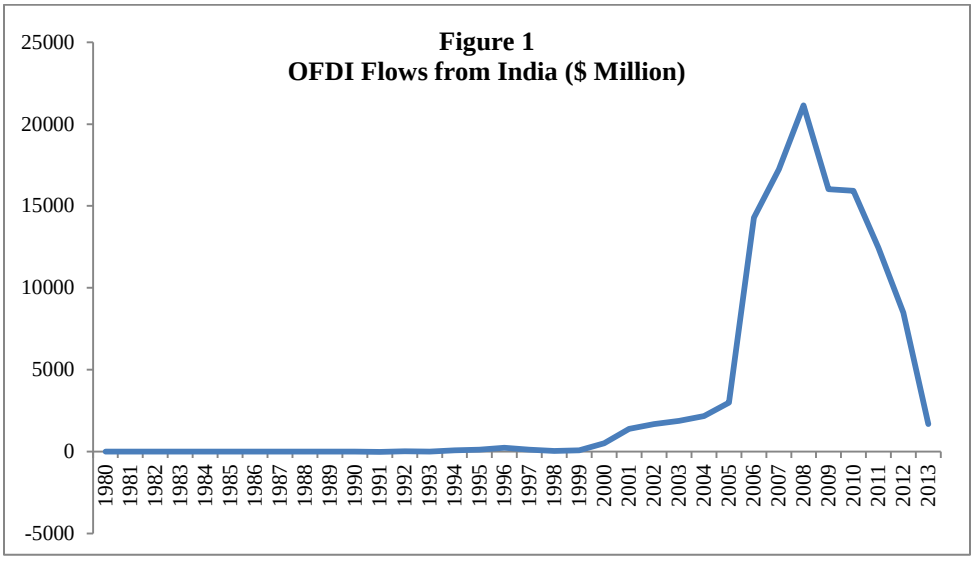
In 2004, the External Commercial Borrowing policy was modified and funding of joint ventures or wholly owned subsidiaries abroad was included as a permissible end-use of the funds raised. The RBI raised the annual overseas investment ceiling from $75,000 to $125,000 to establish joint ventures and wholly owned subsidiaries[7]. 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 RBI. 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

[6] This exception for resource-seeking OFDI makes sense for an emerging economy like India with its ongoing structural changes in the social and economic sectors. With limited supply of natural resources and growing demand, it needs more energy and resources to maintain its rapid development speed and hence the OFDI in these sectors.

[7] "Indian Investment Abroad – Overseas Direct Investment by Indian Companies", Indian Brand Equity Foundation, July 2015.
http://www.ibef.org/economy/indian-investments-abroad

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).



Source: World Investment Indicators, World Bank.

From 2003 through 2014, India has made 3436 greenfield investments and 1730 mergers or acquisitions (World Investment Report, 2015, Annex Table 12, 16) overseas in a wide range of sectors including information technology, pharmaceuticals, automotive, manufacturing, telecom, financial services, steel, financial, business and software services. Majority of India's OFDI is in the developed world such as USA, Western Europe, Japan and Australia (Sauvant, Maschek, McAllister, 2009).

Domestic Investment

We now take a look at the domestic investment situation in India over 1980 through 2014. The domestic investment in India is represented in this paper by the ratio of gross fixed capital formation (GFCF)[8] to GDP (the ratio is labeled I). We have only considered physical investment in this study. This is because, it is recognized that a country's infrastructure and manufacturing investment plays a major role in achieving its sustainable economic development goals. GFCF is measured by the total value of a producer's acquisitions, less disposals of fixed assets during the accounting period, plus certain additions to value of non-produced assets (such as subsoil assets or major improvements in quantity, quality, or productivity of land) and it may be used as proxy for private investment[9].

As Panagariya (2003) points out, the process of relaxation of regulations in the 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[10] 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 domestic

[8] Gross fixed capital formation (GFCF --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).

[9] World Development Indicators, World Bank.
http://datahelp.imf.org/knowledgebase/articles/536206-where-do-i-find-data-on-private-investment

[10] 31 sectors had already been freed from industrial licensing by 1990 with 27 sectors remaining subject to it (Panagariya, 2003).

investment to be maintained at levels higher than what was possible otherwise and high levels of public expenditures helped boost the economy through the expansion of demand (Panagariya, 2003).

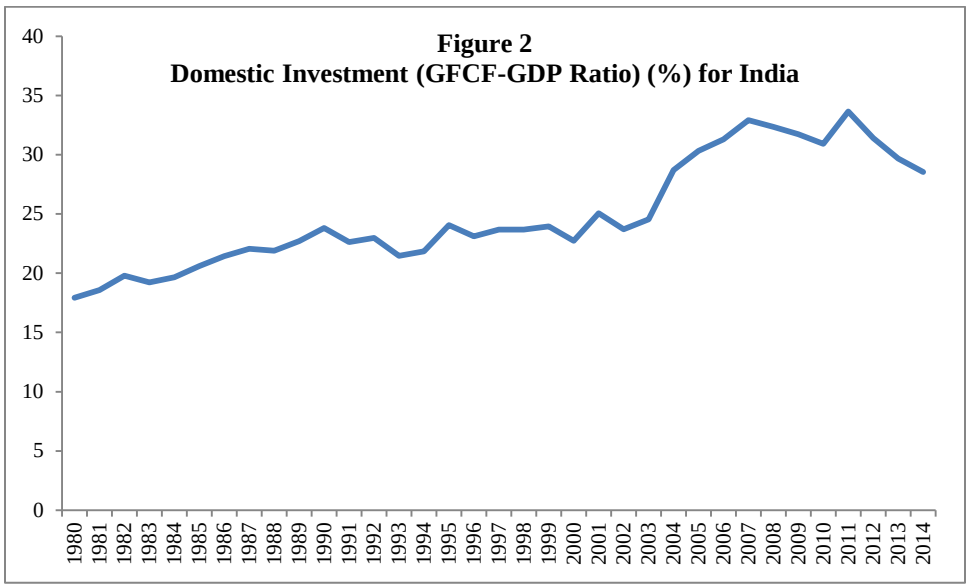
The economic reforms program adopted by the Indian government in 1991 abolished industrial licensing for all except a select list of hazardous and environmentally sensitive industries and did away with the MRTP restrictions altogether (Panagariya, 2003). Yet investment in India remained sluggish, because of some impediments to investment spanning multiple sectors. Some of these bottlenecks identified by the Investment Commission Report in 2006[11] 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.

Figure 2 reveals that India's domestic investment (GFCF-GDP) ratio was moderate (17.9%) in 1980 but was on a continued growth path, though sluggish, reaching

[11] *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

nearly 29% in 2004. Even during the years of global crisis that is, 2007 through 2009, India maintained an average of about 32% domestic investment-GDP ratio. Domestic investment started slipping downwards thereafter and in 2014, it has slipped downwards to 28.5%. The slowdown in investment is critical because it could be largely instrumental for the declining future industrial growth. With the objective of helping improve the domestic investment climate in the nation, the RBI has, in June 2015, lowered key interest rates[12], so that borrowing costs for firms get lowered, lightening the overall cost burden especially for manufacturing and infrastructure firms.

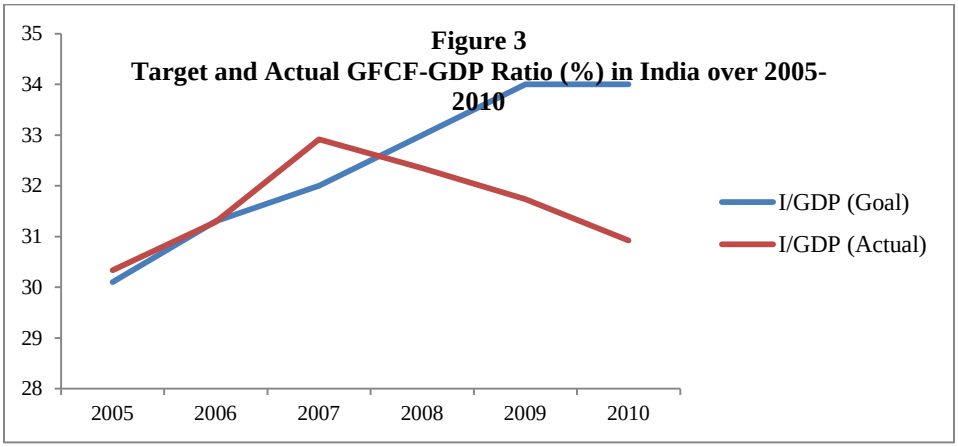


Source: World Investment Indicators, World Bank.

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. However, the investment targets over 2005-10, as set by the Investment Commission Report started to fall apart from the

[12]*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.*

actual domestic investment figures obtained from World Bank from the year 2008. This is shown in Figure 3.



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

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 that is crucial for sustaining economic growth. 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.

Going back to the official statistics of OFDI-GDP ratio for India as obtained from UNCTAD (Figure 1) and that of domestic investment-GDP ratio obtained from the World Development Indicators (Figure 3), we find that domestic investment was far higher than OFDI all through. This phenomenon is understandable because of the higher infrastructure expenditure over time[13] on the one hand and of governmental

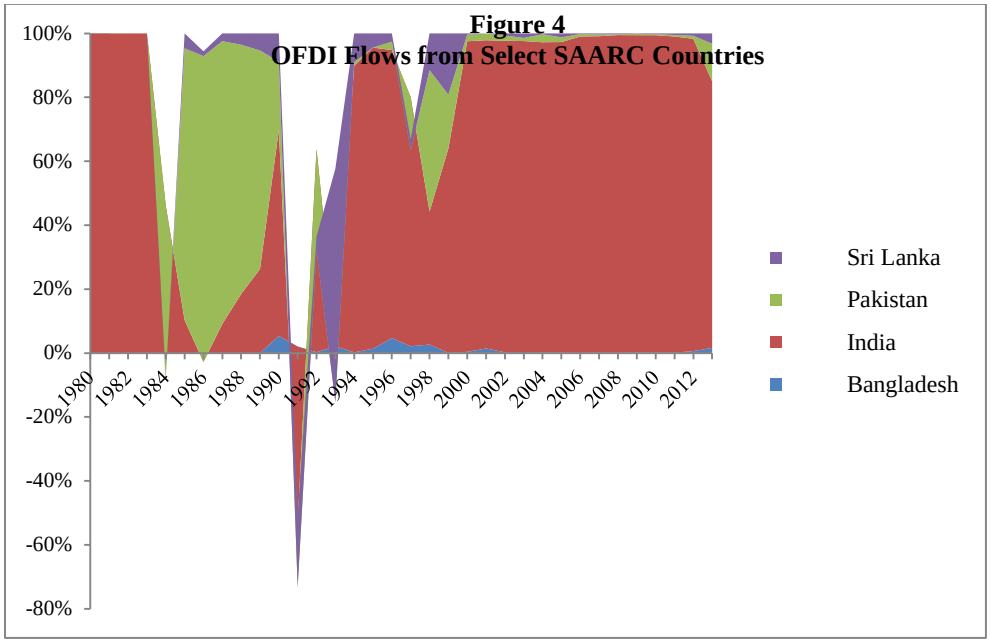
[13] *"Domestic Investment in India", Indian Brand Equity Foundation, October 2015. http://www.ibef.org/economy/domestic-investments*

controls on foreign exchange outflows and late advent of corporate globalization of Indian firms, on the other.

India's Position Relative to the World

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. 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. This is shown in Figure 4 that 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 from these countries is very likely to be negligible or close to zero.

Figure 4
OFDI Flows from Select SAARC Countries



Source: World Investment Indicators, World Bank.

In order to comprehend India's relative position in the global arena as an outward FDI-making economy, we further examine Table 1 that compares OFDI-GFCF ratio for India with select OECD countries in Europe and the United Kingdom (UK). We find that in these countries, OFDI corresponds to a large share of total domestic investment – in some cases up to one-third. Spectacularly high ratios (around 80% or more) were observed in 2000 with Finland, Netherlands, Sweden and the UK and 65% for Switzerland. This rise in OFDI-GFCF ratio in 2000 for these economies could be attributable to the historically high levels of OFDI in the service sector influenced by global privatization trends (Christiansen and Bertrand, 2004). During 1990-2000, the ratio for India was abysmally low, signifying very low OFDI in relation to the nation's domestic investment. However, from 2001, while the European countries witnessed a sharp fall in their OFDI-domestic investment ratio, India experienced a gradual rise in this ratio, reaching as high as 5.5% in 2008 – the year of severe global crisis. This phenomenon in India can be explained by the introduction of FEMA in 2000 and extensive revamping in OFDI policies since then by the gradual liberalization of the capital account. 2005-2008 have been buoyant years for OFDI in India; according to Kumar (2008), OFDI from India rose remarkably from 2005 as shown by the increase in the number of approved projects from 220 in 1990-1991 to 395 in 1999-2000 and to 1,595 in 2007-2008. Although the ratio declined in 2012 and 2013, there has been a marginal recovery in 2014. Also, comparing India with China in Figure 5, we see that from 1990-2001, China had a low and declining OFDI-GFCF ratio, although more or less high than that of India. But from 2002 through 2010, the ratio has consistently fallen for China, compared to India. Even though since 2011 the ratio is higher for China, the gap between the two countries has been narrowing over the years. This overall growing trend of the OFDI-GFCF ratio of India in the global scenario draws our attention to the study of the trend of Indian OFDI and its impact on home country investment.

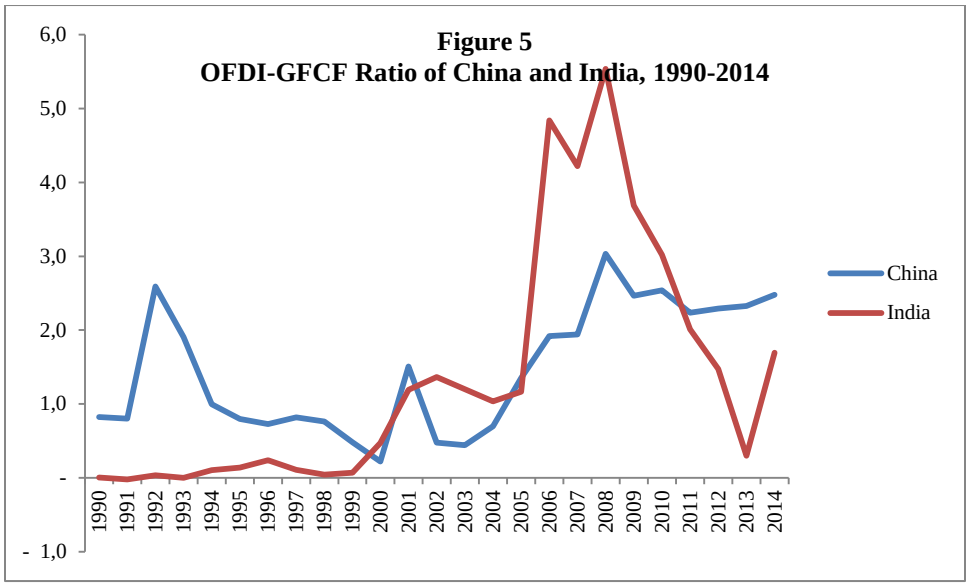
Table 1

OFDI-GFCF Ratio for Select Countries including India, 1990-2014

Year	Finland	Netherlands	Sweden	Switzerland	United Kingdom	India
1990	4.8	19.4	20.7	8.9	6.4	0.0
1991	- 0.3	18.2	10.4	8.4	6.3	- 0.0
1992	- 2.8	16.2	0.7	8.4	7.1	0.0
1993	9.0	13.0	3.4	13.2	12.1	0.0
1994	22.9	21.6	15.4	14.6	14.2	0.1
1995	5.4	20.1	21.8	14.1	18.0	0.1
1996	12.8	31.8	8.7	20.2	12.9	0.2
1997	19.1	27.0	24.2	25.7	22.6	0.1
1998	62.3	37.9	44.5	25.6	41.7	0.0
1999	21.8	55.4	37.9	45.8	67.2	0.1
2000	82.7	79.7	71.3	64.9	79.3	0.5
2001	28.3	52.9	13.5	26.7	20.2	1.2
2002	24.3	32.3	18.5	11.1	16.2	1.4
2003	- 6.1	47.1	30.0	18.3	19.0	1.2
2004	- 2.5	28.2	27.0	27.3	24.1	1.0
2005	9.0	77.0	32.2	51.3	18.0	1.2
2006	9.7	47.6	27.6	72.4	16.1	4.8
2007	11.7	30.8	33.3	43.6	58.3	4.2
2008	13.4	33.1	24.3	34.0	37.4	5.5
2009	9.9	14.5	27.3	21.5	5.5	3.7
2010	18.7	41.3	18.7	64.6	12.1	3.0
2011	8.2	19.2	23.4	29.6	25.8	2.0
2012	13.2	3.3	23.5	27.6	6.8	1.5
2013	- 13.3	36.5	22.5	6.4	- 3.4	0.3

2014	1.1	25.2	9.2	10.1	- 11.9	1.7

Source: World Investment Report, 2015, Table 6.



Source: Developed by the author, based on World Investment Report, 2015, Table 6.

3. Literature Review

Given the pattern of OFDI flows and domestic investments in India, we 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 – substitutability and complementarity -- in explaining the association between domestic investment and OFDI of the economies of origin. 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, overseas relocation of domestic production may take place because of reduced investment opportunities at home. 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 allocating resources abroad (Stevens and Lipsey, 1992). This outflow of capital that may diminish net external finance for domestic investments would also tend to substitute those domestic investments that could have sustained and enhanced home productivity. 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, which, in turn is detrimental to the long run rate of economic growth and employment of the country (Al-Sadig, 2013).

Second, the domestic production of goods[14] 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 in the host countries (Stevens and Lipsey, 1992; Feldstein, 1995; Desai Foley and Hines, 2005 and Herzer and Schrooten, 2007). If the firms making such 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,

[14] *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).*

whether OFDI crowds out domestic investment also depends on how that FDI outflow was financed (Kim, 2000).

Next, 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 (Girma, Patnaik, Shah, 2010).

Also, the capital control policies of a country may create a wedge between the capital cost of domestic versus foreign expansion and thus crowd out domestic investment. For example, in India, because it is cheaper for Indian firms to secure debt for creation of foreign assets rather than for domestic investment (Girma, Patnaik, Shah, 2010), more and more firms tend to be encouraged to shift their domestic production overseas with relatively lower interest rates. Thus OFDI substitutes domestic investment. But the lower rate of interest in the home country may attract more FDI from abroad and thus increase the capital availability that would consequently lower the price of capital. In this case, OFDI and domestic investment would have a complementary (positive) association. Thus the effect of OFDI on domestic investment could be ambiguous in the long run.

Girma, Patnaik, Shah (2010) refer to “peculiar features of capital controls” in India where foreign debt capital is cheaper to raise, provided it would be employed for OFDI rather than for domestic investment. This creates a difference between the cost of capital for domestic versus foreign expansion and thus could possibly boost the growth of OFDI at the cost of home country investment.

Crowding out of domestic investment 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.

Finally, substitutability could also 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[15] between OFDI and domestic investment indicating that outward investment and domestic investment are at least partial substitutes. One-to-one negative relation between OFDI 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

[15] *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.*

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

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)[16]. 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-

[16] *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).*

supporting in that it could generate demand for the tangible and intangible resources, such as machinery and other capital equipment, raw materials, stores and spares, software technology and technical and managerial consultancy services from the domestic counterpart of the capital exporting firms. In other words, the overseas subsidiaries of home country firms may import significant amounts of inputs and technology 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. Moreover, the returns from overseas subsidiaries like dividends and interests may also enable Indian parent firms to expand in the long run leading to more employment opportunities (Pradhan, 2008).

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 eventually reduce home country production (Al-Sadig, 2013). Thus, what initially started as horizontal investment (export-replacing) may also have strong positive effects on domestic investment by the generation of vertical links between domestic and foreign production via the demand for capital or intermediate goods and services by the foreign affiliates of the domestic companies.

Also, OFDI-making firms from emerging economies may undertake natural-resource-seeking FDI outflows and export part or whole back to the home country to ensure a steady supply of inputs at stable prices that would be essential to their production processes at home (Anwar, Hasse, Rabbi, 2008; UNCTAD, 2005, Buckley, et al. (2007)).

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

While gross fixed capital formation-GDP ratio (I) representing domestic investment is the dependent variable, the study considers a comprehensive set of five relevant macroeconomic variables that could be expected to explain domestic investment. OFDI and TR (export plus imports indicating overall trade in the economy) are the indicators of openness[17]; domestic credit availability to the private sector (DCP) and broad money supply (M2) are the indicators of financial deepening; and per capita GDP (GDPPC) signifies the aggregate demand conditions in the economy.

[17] *We have not included current account balance which serves as a direct measure of openness because the data for World Development Indicators of the World Bank provide current account balance data for India only from mid-1990s.*

We have also deliberately excluded FDI inflows as another openness factor determining domestic investment. This is because of the possible existence of multicollinearity between OFDI and FDI since more OFDI by home country firms could encourage greater levels of FDI into the home country, as there is greater awareness and appreciation of the economy's potential and inherent strengths by the rest of the world (Pradhan, 2008)

Another, equally convincing reason for not including FDI as a determinant of domestic investment is that there is an ambiguity as whether or not FDI is already included in the GFCF data. To clarify, while GFCF consists of outlays on additions to the fixed assets of the economy, FDI relates to financing, that is the purchase of shares in foreign companies where the buyer has a lasting interest (10 percent or more of voting stock). FDI can be used to finance fixed capital formation; however, it can also be used to cover a deficit in the company or paying off a loan. Thus, one cannot clearly conclude that FDI is always included in GFCF data.
https://datahelpdesk.worldbank.org/knowledgebase/articles/195312-is-foreign-direct-investment-fdi-included-in-gro

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[18] (Luca and Spatafora, 2012; Lim, 2013).

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.

Outward FDI (OFDI)

It measures the outflows of investment from the reporting economy to the rest of the world. OFDI is a measure of economic openness of the country. As discussed above, if OFDI is a substitute of domestic investment then the relationship between the two variables ought to be negative. In case of complementarity between OFDI and domestic investment, the relationship is supposed to be positive.

Overall Trade (TR)

It is the sum of exports and imports of goods and services (World Bank, 2015). It is another indicator of trade openness 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). However, if the openness rises due to consumers preferring imported goods and services then domestic investment could fall (Ndikumana, 2000).

[18] *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.*

Domestic Credit (DCP)

Domestic credit to private sector refers to the financial resources provided to the private sector by financial corporations[19] such as through loans, purchases of nonequity securities and trade credits and other accounts receivable that establish a claim for repayment (World Bank, 2015). Volume of domestic credit available to the private sector is considered to be an important source of credit for private investment activity in the developing countries and is expected to have a positive influence on the domestic investment (Oshikoya, 1994; Asante, 2000; Ajide and Lawanson, 2012). It indicates the potential impact of domestic conditions on the efficiency with which capital are invested. Private sector credit -- the value of credits specified by financial intermediaries invested in private sector -- is an indicator of financial intermediation and financial development. Domestic credits to private sector can show the confidence of local banks to invest their money on local projects and market segments. Also, more credits to investors imply more confidence for the return on investments.

If however, private sector credit shows a negative association with private investments, this could indicate that the funds to the private sector do not go to finance new investments but is channelized to finance other matters like education, healthcare and basic necessities. This is possible in economies ridden with poverty.

Money and Quasi-Money (M2)

Also called 'broad money supply', it is the 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

[19] *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.*
World Development Indicators, World Bank.

(World Bank, 2015). Broad money supply is conventionally used as an indicator of financial sector deepening. It measures the liquidity available to finance investment. A rise in the supply of money will ease the financing conditions on the economy, leading to lower lending rates, which in turn will increase the availability of credit to households and firms, thus stimulating domestic investments. Thus, broad money supply is expected to be positively related to domestic investment (Eshun, Adu and Buabeng, 2014). However, money supply can have a negative effect on domestic investment via inflation and the resultant fall in the value of money and rise in the rate of interest.

Real GDP Per Capita (GDPPC)

Per capita real GDP is calculated as real GDP divided by midyear population (World Bank, 2015). Economic theory suggests an increase in real GDP (indicating market size or aggregate demand) is expected to result in a greater amount of real private domestic investment to be undertaken (Blomstrom, Lipsey and Zejan, 1996; De Long and Summers, 1991).

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:

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

$$(+/-) \quad (+/-) \quad (+) \quad (+/-) \quad (+/-)$$

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[20]:

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 while checking for stationarity, 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), the Phillips and Perron (1988) test and the test 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[21] 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.

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[20] As mentioned in the introduction, we will try to keep all the technical discussions limited to the bare necessities for explaining the paper and instead provide the relevant references.

[21] 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.

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 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). Table 2 also shows the optimal breakpoints of each variable.

Table 2 about here

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[22], we have used the ARDL[23] 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, dynamic long run (cointegrating) relationship among themselves over the relevant time span. In other words, the ARDL method empirically explains the dynamic dependent variable (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

[22] 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).

[23] An ARDL is a least squares regression containing lags of the dependent and explanatory variables. ARDLs are usually denoted with the notation ARDL($p,q_1,q_2,\ldots,q_k$), where p is the number of lags of the dependent variable, q_1 is the number of lags of the first explanatory variable, and q_k is the number of lags of the k-th explanatory variable.

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. Another beauty of the Pesaran and Shin ARDL model is 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.

The basic framework for our ARDL model is as follows:

$$\Delta I = a_0 + \sum_{j=1}^{n} b_j \Delta I_{t-j} + \sum_{j=0}^{n} c_j \Delta OFDI_{t-j} + \sum_{j=0}^{n} d_j \Delta DCP_{t-j} + \sum_{j=0}^{n} e_j \Delta GDPPC_{t-j} + \sum_{j=0}^{n} e_j \Delta M2_{t-j} + \sum_{j=0}^{n} f_j \Delta M2_{t-j} + \sum_{j=0}^{n} g_j \Delta TR_{t-j} + \beta_1 I_{t-1} + \beta_2 OFDI_{t-1} + \beta_3 DCP_{t-1} + \beta_4 GDPPC_{t-1} + \beta_5 M2_{t-1} + \beta_6 TR_{t-1} + \xi_t \quad (3)$$

The parameters β_i (i = 1, 2, 3, 4, 5, 6) are the corresponding long-run multipliers, while the parameters b_j, c_j, d_j, e_j and f_j are the short-run dynamic coefficients of the underlying ARDL model.

The null hypothesis (i.e. H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$, implying no cointegration) in the first step is tested by computing a general F statistic using all the variables.

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 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[24].

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 positive lagged effect of OFDI on domestic investment, I.

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

[24] *Results will be shown up on request.*

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

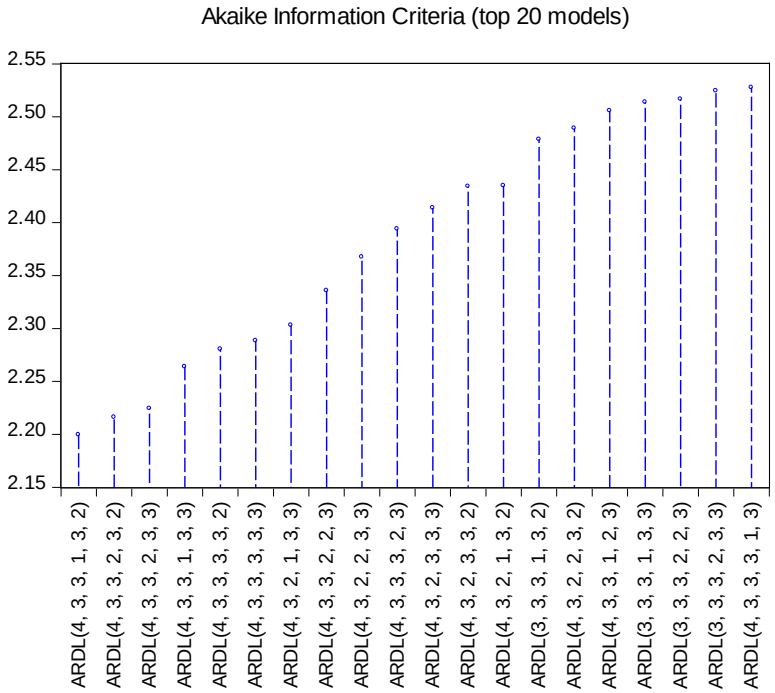
R-squared	0.993634	Mean dependent var	25.71531
Adjusted R-squared	0.972718	S.D. dependent var	4.269510
S.E. of regression	0.705208	Akaike info criterion	2.199663
Sum squared resid	3.481230	Schwarz criterion	3.309846
Log likelihood	-10.09477	Hannan-Quinn criter.	2.561555
F-statistic	47.50521	Durbin-Watson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

*Note: p-values and any subsequent tests do not account for model selection.

Figure 7, 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 7

Top 20 ARDL Models



Author's calculations using EViews 9.

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, Pesaran and Shin 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).

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.

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 rise in OFDI will raise the domestic investment by nearly 4 times. This shows that OFDI has a strong positive long run effect on domestic investment in India indicating complementarity between OFDI and domestic investment in India.

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

	-10.65739			
D(OFDI(-1))	0	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	99.69747 0	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

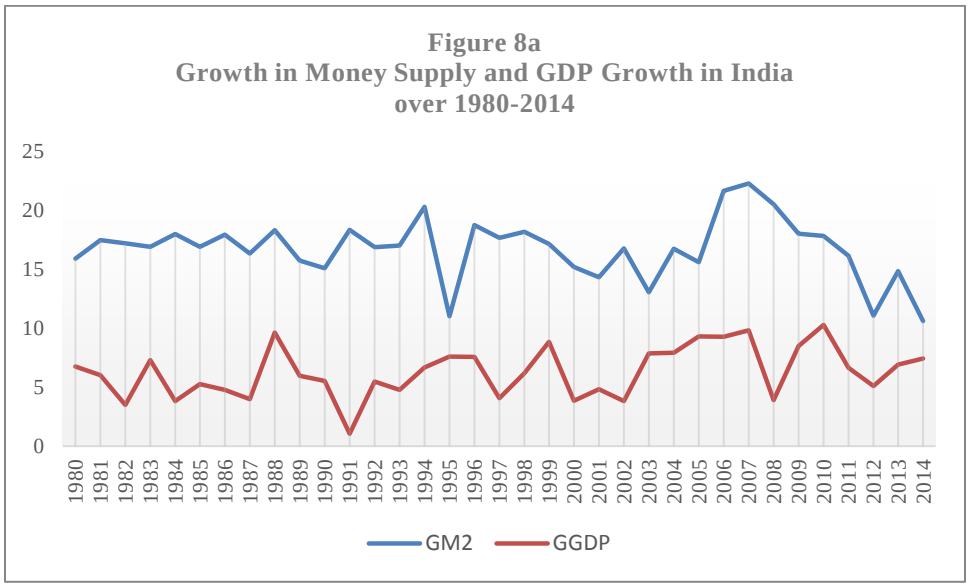
Variable	Coefficient	Std. Error	t-Statistic	Prob.
OFDI	3.803551	0.410352	9.268993	0.0000
DCP	1.098168	0.124346	8.831556	0.0000
GDPPC	-0.005793	0.001381	-4.196266	0.0041

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

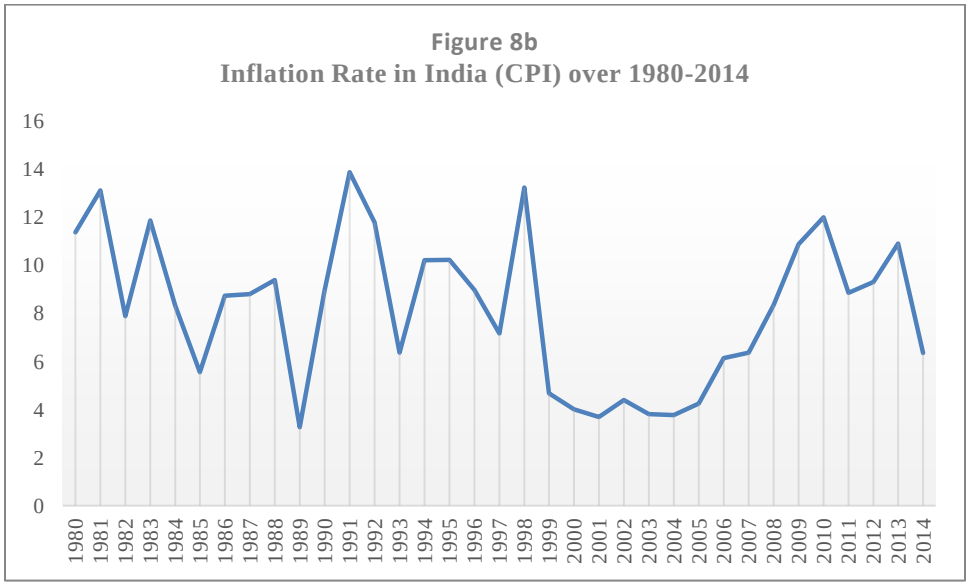
Author's calculations using EViews 9.

We also find that a $1 rise in domestic credit availability increases domestic investment, I by about $1.1. 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 (Frimpong and Marbuah, 2010). Thus, the positive relationship concurs with the standard expectations. It is also evident that a dollar rise in M2 leads to a less than 1 dollar fall (coefficient is -0.95) in domestic investment. Although, this contradicts standard expectations, it is perfectly explicable in the Indian situation since the growth in money supply (M2) has consistently exceeded the GDP growth rate (Figure 8a), leading to a high inflation rate (Figure 8b) over the period[25].Trade (TR) exhibits a small but negative relationship (coefficient is -0.23) with I. This is obvious, since Indian imports have consistently dominated exports (Figure 9), thus justifying the contention of Ndikumana (2000) that if the openness of an economy increases due to consumers preferring imported goods and services then domestic investment could fall.

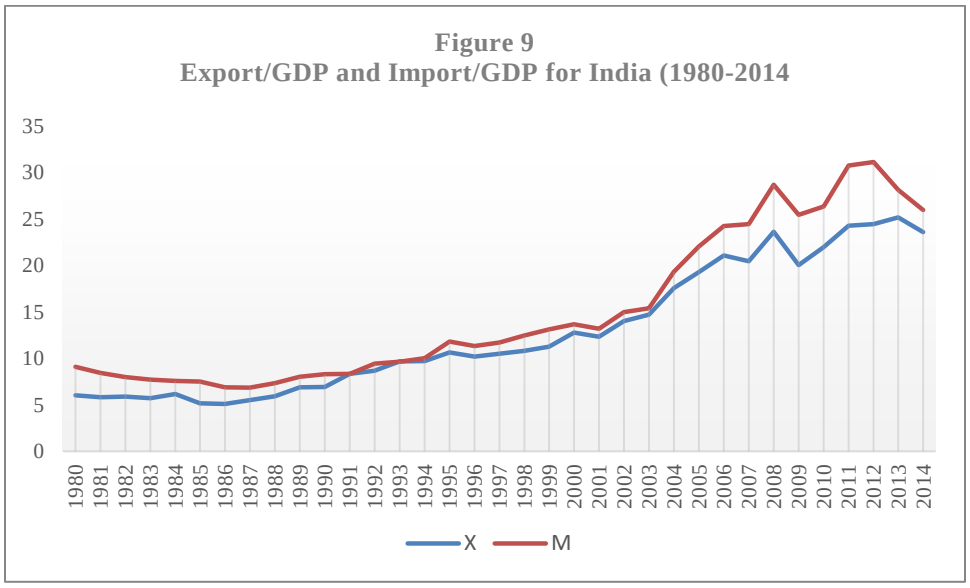
[25] *It is common knowledge derived from macroeconomics theory that if the money supply of an economy grows much faster than the economy itself, then that causes rapid inflation. The value of money falls and this reduces the effectiveness of money as a store of value. Also, the continuous rise in prices makes money ineffective as a unit of account. Higher interest rates are charged for loans and credit to compensate lenders for the declining value of money, which consequently tends to restrict investment and spending.*



Source: World Development Indicators, World Bank.



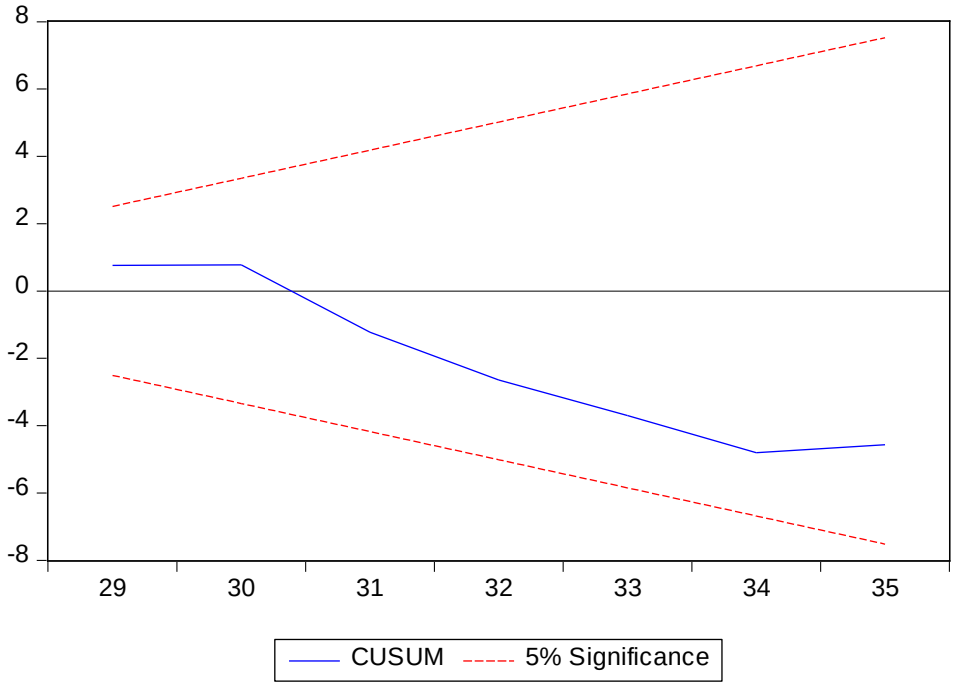
Source: World Development Indicators, World Bank.



The ARDL model derived above is stable because it satisfies the diagnostic test of stability (CUSUM test) shown in Figure 10. 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 10

CUSUM Test



Author's calculations using EViews 9.

5. Summary and Conclusion

This research 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 empirically established that OFDI has a strong and positive long run relationship with domestic investment. Because the study extends over long 35 years from 1980 through 2014, we chose to gather information on the unknown structural breakpoints using the CMR unit root testing method which can identify up to two unknown structural breaks in the series at the same time. We chose to apply the IO model which is more useful if we are trying to identify a policy regime change that persists in its effects beyond the initial shock, as compared to sudden policy shifts. It is evident 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. The optimal breakpoints of OFDI and

domestic investment are justified by phased domestic and overseas liberalization policies and gradual structural amendments by the Government of India. The CMR unit root test results at the level and first difference have exhibited that all the variables are I(0). We have then applied the ARDL bounds test of cointegration to estimate whether the involved economic variables have a stable and non-spurious, long run (cointegrating) relationship among themselves over the specified time period. Our results indicate a statistically long-run equilibrium relationship between domestic investment and OFDI and other dependent variables as shown by the p values. A unit rise in OFDI is found to raise the domestic investment by nearly 4 times, confirming that OFDI has a strong positive (complementary) long run effect on India's domestic investment. This implies that OFDI can actually be instrumental in promoting domestic investment in the manufacturing and service sectors that would help a 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 enable domestic firms to expand abroad and also to have a portfolio of locational assets so as to optimally structure their production process and reap efficiency-gains from production. It has eased OFDI procedures over time. 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. 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 information technology (IT) firms such as Tata Consultancy Services (TCS) and Infosys have established major global sourcing bases in China and Tata Motors has acquired Daewoo Heavy Vehicles of Korea in 2005 as a part of regional production networking strategy demonstrating efficiency seeking OFDI by Indian

companies (Hattari and Rajan, 2010). In recent years, Indian public enterprises like ONGC Videsh Ltd, Oil India Limited, Coal Videsh Limited etc. have made greenfield OFDI mainly in natural resources such as in the extraction of crude petroleum, oil and gas, metals and minerals. Such OFDI can be critical to support rapid economic growth in the home country by ensuring long-term, stable supply of natural resources to the country in the face of increasing commodity prices (Khan, 2012).

Policy Recommendations

Based on the findings, this research therefore makes several policy recommendations so that OFDI stimulates domestic investment and thereby enhances economic growth of the country in future:

- To promote growth enhancing OFDI, the government in collaboration and engagement with the private sector needs to pursue OFDI policies 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.

- 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, RBI, 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.

- 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.

- 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.

- 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.

Future Research Agenda

The macroeconomic analysis of the relationship between OFDI and domestic investment of India gives us an estimate of the aggregate association between the two major variables of the country. We however recognize that industry or sector level analysis is also critically important and valuable for emerging markets. In our future research we would want to explore whether we can see any impacts of sectoral OFDI of multinational companies on their home country investment decisions. In much of the firm level discussions about effects of OFDI on domestic investment, employment, or production, it has been accepted that the alternative to OFDI is typically not “business as usual”. Instead, in many cases, the alternative is substantially weaker competitiveness. If the individual firm refrains from the potential benefits provided by OFDI, while all its competitors decide to invest abroad for getting access to cheaper production factors or for larger foreign market shares, then the likely result is severe loss of competitiveness. Eventually, the firm would lose market shares at home, with declining home investment as a result. If this is the alternative scenario, how should we interpret the outcome of the complement-substitute debate at the micro level? This is one of the areas of analysis that we would like to consider in our future research on the home country effects of OFDI by the Indian corporations.

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