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**Outward FDI from India: A macro level examination in the presence
of structural breaks**

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Outward FDI from India: A macro level examination in the presence of structural breaks

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Abstract

The surge in outward foreign direct investment from emerging markets has made it imperative to examine the phenomenon from both macro level (i.e. direct effect of home country) and micro level (i.e. indirect effect of home country) (Gammeltoft et al., 2010; Cuervo-Cazurra, 2011). The paper adopts macro level approach in the examination of relationship between OFDI flows from India during the period 1984 to 2015, and home country characteristics such as, macroeconomic environment, financial development, trade and investment policy and the knowledge- based factors. Incorporating the structural breaks in the empirical model, results suggest the existence of long-run relationship between OFDI flows and selected home country factors. Financial market development- both stock market and banking sector, liberalized trade and investment policy regime significantly affect the quantum of India's OFDI flows. Policy implications are discussed.

JEL Classification: F41

Keywords: OFDI, Emerging Economies, Home Country Characteristics, Structural Breaks

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Outward FDI from India: A macro level examination in the presence of structural breaks

Introduction:

The rising outflows of foreign direct investment from emerging markets from last two decades have attracted the attention of academicians and policy makers alike. From an average of 11 per cent during the 1990s, the share of emerging markets in global OFDI flows has surged to 21 per cent during the period 2000 to 2015 mainly led by emerging Asian economies and more particularly by the BRIC nations that together accounts for more than half of OFDI flows from emerging markets since 2000. While OFDI is not a new phenomenon for Indian firms that started investing outside in 1950s and 1960s, the real takeoff is witnessed in the decade following 2000 when India invested USD 95 billion in foreign markets as compared to USD 700 million in 1990s. Despite registering a slowdown in the period following 2010 owing to the global financial crisis, India's OFDI has been resilient as its OFDI stock registered positive CAGR of 6 percent (2011-2015) in contrast to negative CAGR registered by other members of the bloc, such as Brazil and Russia.¹ The investment promotion agency survey pegged India as sixth among the most promising outward direct investors in 2014-16 (UNCTAD, 2015).

The momentum of outward FDI from emerging markets, including India, have made it imperative to examine the phenomenon from both macro level (i.e. direct effect of home country) and micro level (i.e. indirect effect of home country) (Gammeltoft et al., 2010; Cuervo-Cazurra, 2011; Hobdari et al., 2017). At micro level, researchers have examined the indirect role played by home country, in driving internationalization of Indian MNEs, through its impact on shaping firms' ownership advantages (Pradhan, 2004; Kumar, 2006; Das and Kapil, 2015; Buckley et al., 2015, 2016) and ownership characteristics (Bhaumik et al., 2010; Gaur et al., 2014; Chittoor et al., 2015). However, outward FDI from India remains understudied from the macro-level. Relatively little is known about how home country characteristics (macroeconomic and institutional) directly affect the quantum of OFDI flows from India (Verma and Bernnan, 2013). The present study, therefore adopts macro level approach, with the objective of examining the direct effect of home country characteristics on outward FDI flows from India. In doing so, the paper builds upon Dunning's investment development path (IDP) hypothesis and examines the effects of home macroeconomic environment, financial development, foreign trade and investment related policy and knowledge based factors.

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Employing recent time series econometric techniques and while accounting for the structural breaks, paper confirms the existence of long-run relationship between OFDI flows from India and selected home country characteristics. Financial sector development and liberalized trade and investment policy of the Government determines the quantum of OFDI flows. The study adds to the scanty literature on Outward FDI from India being examined at the macro level from home country perspective. More particularly, the results empirically validate the facilitating role played by home financial market development in driving OFDI flows, as stock market and banking sector reforms constituted an important component of structural reforms initiated in 1991. By doing so, the paper attempts to advance the understanding on relatively understudied dimension of Dunning's OLI paradigm- the "L" advantages (Andersson et al., 2011) and especially the understudied home country "L" advantages (Hobdari et al., 2017). The contribution of the study to the literature also lies in the application of recent time series econometric techniques that takes into consideration the structural breaks experienced by Indian economy during the period 1984 to 2015. Empirical analysis done without considering such structural breaks – as is done in the present studies examining India's OFDI flows from macro perspective- is likely to produce misleading results and conclusion on the nature of and relationship between the underlying time-series variables.

The paper is structured as follows. Section 2 lays down the present state of art. Section 3 presents the model and hypothesis. Section 4 contains research methodology and empirical analysis followed by the section on conclusion and policy implications. Contributions and limitations of the study are discussed towards the end.

Present State of Art

According to Investment Development Path, a country passes through five stages of economic development that alters its domestic ownership-location-internalization (OLI) advantages, which in turn, affects its outward and inward FDI flows (Dunning, 1981, 1988). Although some studies conducted in context of developed (Barry et al., 2003; Bellak, 2001; Buckley and Castro, 1998), developing (Andreff, 2002, Sathye, 2008; Verma and Bernnan, 2011) and the mix of developing and developed countries (Dunning and Narula, 1996; Tolentino, 1993) have found consistency with the IDP stages, it is reported that some emerging markets have leapfrogged and have originated more OFDI than development path would predict (Kalotay, 2008; Liu et al., 2005, Amann and Virmani, 2015).

²Author's own calculation on the basis of data from UNCTAD FDI statistics <http://unctad.org/en/Pages/DIAE/FDI%20Statistics/FDI-Statistics.aspx> (last accessed: 10 June 2017).



This suggests that IDP or the economic development as proxied by the GDP Per Capita only may be insufficient to account for EMNEs ownership advantage that are embedded either in their home country institutional context (Andreff, 2002) or derived from broader set of factors including higher capital availability, high productivity, specialized know-how and research and development, leading to increased ability to invest abroad (Duran and Ubeda, 2005). Therefore it is imperative to examine the nature of relationship between OFDI and home country characteristics such as income, exchange rate, technology and interest rate (Kyrkilia and Pantedilis, 2006). Banga (2008) examined the drivers of OFDI flows of 13 developing countries of South, East and South East Asian region during 1980-2002. Using random effect model, they found that home country trade and economy related factors significantly influences OFDI. In his study on 65 developing countries from different regions using fixed effect regression model, Kayam (2009) highlighted the importance of inward FDI flows and trade liberalization in driving their OFDI during the period 2000 to 2006. Bhasin and Jain (2013) conducted a similar study in context of 10 developing Asian economies. Using fixed effects least squares dummy variable model, they found that OFDI flows during 1991-2010 were significantly influenced by home country economic development and FDI openness. Home country macroeconomic soundness, globalization in terms of FDI and trade openness, political governance and Science & Technology investment acts as an important push factor in driving OFDI from the group of developing countries (Das, 2013; Bano and Tabadda, 2015). Wei and Alon (2010) examined the home country macroeconomic determinants of China's OFDI during 1987-2006. Employing partial least squares model, they found country's trade, foreign currency reserves, exchange rate, annual interest rate and patents registrations to be important driving factors. In contrast to this, Tolentino (2008, 2010) in his studies, using vector autoregression model, didn't find any empirical support for the association between several home country macroeconomic variables and OFDI from China and India during the period 1982 to 2006 and 1980 to 2006 respectively. The studies confirming the importance of various home country characteristics such as trade openness, inward FDI flows, exchange rate, stage of economic development, interest rate are conducted in various contexts including Malaysia (Kueh et al., 2008, 2009; Goh and Wong, 2011; Wong, 2013; Saad et al., 2014), Thailand (Masron and Shahbudin, 2010), and Latin American economies (Amal et al., 2009).



However in context of India, there is dearth of studies adopting macro-level approach and examining the direct impact of home country characteristics on OFDI flows. For instance, Dasgupta (2009) examined the impact of trade and investment related push factors on OFDI from India during 1970 to 2005. It was found that lagged values of trade related variables- exports and imports granger cause OFDI. Verma and Bernnan (2013), using OLS regression, found India's OFDI during 1981 to 2009 to be driven by GDP, trade openness and human capital. In contrast to theory, they did not find statistical support for the exchange rate, interest rate and technological capability. Amann and Virmani (2015) augmented the investment development path to find that OFDI during 1980 to 2010 was granger caused by GDP per capita, export and inward FDI stock.

The limited number of studies so conducted in Indian context suffer three limitations – (i) taking a narrow view of home country macroeconomic environment- focusing solely on the stage of economic development (e.g. Verma and Bernnan, 2011a) and exports (e.g. Verma and Bernna, 2011b), (ii) considering time period ending prior to the real takeoff of OFDI from India (e.g. Dasgupta, 2009; Verma and Bernnan, 2011a,b) and (iii) not accounting for the presence of structural breaks an economy may undergo because of various domestic and global events, thereby rendering the results of empirical analysis misleading (Lee and Strazicich, 2003, 2004; Nag and Mukherjee, 2012).

Moreover, given the substantial heterogeneities that exist across the emerging markets (Sudhir et al., 2015), the results of studies conducted in one context as well as large panel of countries may not be generalizable to other emerging market, in this case, India (Gammeltoft, 2010; Dasgupta, 2015). The relationship between OFDI and important economic variables is likely to be country specific depending on the prevailing socioeconomic and political environment (Lee, 2010). Therefore, building on Dunning's IDP, this paper proposes and examines a comprehensive model for the home country specific determinants of outward FDI from India.



Model and Hypothesis

Dependent Variable

Annual OFDI flows from India are taken for the period 1984 to 2015.

Independent Variables

Following Giovanni (2005), Brooks and Jongwanich (2011) and Bhasin and Jain (2013), the home country characteristics are divided into following categories: (1) macroeconomic factors (economic development, exchange rate); (2) Financial development (stock market depth and banking sector depth); (3) Policy variables (trade and FDI openness) and (4) Knowledge based factors of the home economy (technological capability and human capital).

Macroeconomic Factors

The macroeconomic environment of home country may directly influence the quantum of its outward investment flows (Kojima, 1978; Kyrkilis and Pantelidis, 2003; Buckley et al., 2007; Curevo-Cazurra, 2011).

Economic Development: According to IDP, there is a positive association between the stage of a country's economic development and outward FDI (Dunning, 1981, 1986, 1988). Higher level of economic development translates into higher demand for sophisticated goods and services in the market pushing companies to upgrade its ownership advantages in order to satisfy local demand (Rabbiosi et al., 2012). The development of ownership advantages enables and motivates firms to expand into foreign markets. The positive association between economic development as measured by GDP per capita and OFDI is confirmed by numerous studies in context of both developed and emerging economies (Barry et al., 2003; Bellak, 2001; Buckley & Castro, 1998; Stoian, 2013; Amann and Virmani, 2015). It is, therefore, expected that outward FDI from India is positively related with the level of its economic development.



Exchange rate: The exchange rate of Home Country's currency determines the ability of domestic firms to invest abroad. The strengthening of domestic currency reduces the amount of foreign currency required to purchase the assets in overseas markets, thereby encouraging outward investment and discouraging exports (Aliber, 1970; Blonigen, 1997; Stevens, 1993). The rise in overseas merger and acquisition activity of Indian firms, especially during 2003-2011, has been found to be associated with the strengthening of Indian rupee against the US dollars that made the valuation of target companies abroad cheaper (Buckley et al., 2012; Varma et al., 2015). In line with Buckley et al. (2012), this paper takes the direct quote (INR/USD) of foreign exchange and therefore expects a negative relationship between outward FDI and the appreciation of Indian Rupee against US Dollar.

Financial Development

Financial market deepening in the home country could play an important role in influencing the firms' decision to undertake OFDI (Brooks and Jongwanich, 2011). Financial deep markets provide firms access to capital- equity as well as debt- necessary to undertake investment projects which they otherwise might have to forego because of financial constraints owing to imperfect capital market (Giovanni 2005; Buckley et al., 2007; Hyun and Kim, 2010). Extant studies have produced mixed results on the greater importance of stock market (Giovanni, 2005; Hyun and Kim, 2010) or the banking sector development (Brooks and Jongwanich, 2011) in influencing OFDI from a large panel of developed as well as emerging markets. In context of India, financial sector reforms initiated since 1991 has resulted into the radical transformation of banking as well as equity markets as a result of which financial depth in India has exceeded most of other Asian countries (Farrell et al., 2006). A positive relationship is expected between the indicators of financial sector development (or deepening) - stock market and banking sector, and OFDI from India.

The consideration of both stock market and banking sector development is also in line with the recent study examining the relationship between financial market development and cross border acquisitions, on a panel of emerging Asian countries (Brooks and Jongwanich, 2011)

Policy Variables

Trade openness: The openness of home country to international trade is likely to positively affect its outward FDI (Kyrkilis and Pantelidis, 2003). An open economy motivates OFDI by increasing the



competitive forces in the domestic economy by allowing greater imports and by enabling firms to acquire relevant knowledge and information about operating and emerging opportunities in the foreign markets through their exporting experience (Banga, 2007). Sometime OFDI takes place to establish trade-supporting infrastructure for exports (Vernon, 1966) as in case of India's software exports (Dasgupta, 2009). According to World Development Indicators, the share of exports (20 percent) and imports (22 percent) in India's GDP during 2015 have doubled up their level since the adoption of liberalized policy regime by the Indian Government. Similar upsurge is observed in OFDI levels which now accounts for nearly 8 percent of GDP (as on 2015) as compared to virtually 0 percent in the 1990s. Hence, the study expects a positive relationship between outward FDI from India and the trade openness.

Inward FDI: The IDP posits a positive relationship between a country's inward and outward FDI flows. Inflow of foreign direct investment is a source of foreign currency reserves for the host country and a source of obtaining advanced managerial and technological skills for the domestic firms through the spillover and demonstration effects, thereby positively affecting their capability to invest overseas (Dunning, 1981, 1988; Duran & Ubeda, 2001; Banga, 2007). Hence, more open an economy is to inward FDI; higher would be its outward FDI. The effect of inward FDI is likely to be higher in case of large emerging markets such as India as domestic firms tend to accelerate their strategic capabilities (or asset) seeking OFDI to stay competitive vis-à-vis foreign rivals and defend their domestic market share as home country is a major source of growth for them (Dasgupta, 2009; Yang et al., 2014). A priori, positive relationship is expected between outward FDI from India and its inward FDI flows.

Knowledge based factors

Technological Capability: It has been suggested that technological capability of the home country is positively associated with its outward FDI as local firms get access to more advanced technology that they can exploit as competitive advantage when undertaking production in foreign markets (Duran & Ubeda, 2001; Narula, 1996). While emerging markets such as India are not at the leading edge of technological advancements, EMNEs still have access to 'lower level' technologies and management practices better suited to other emerging markets, thereby facilitating OFDI into markets at similar level of development.

Therefore, a positive relationship is expected between outward FDI from India and the technological capability of home country.



Human Capital: An important indicator of the knowledge base of the home economy is the human capital embedded in an economy's population through investment in education (Dunning and Narula, 1996; Duran and Ubeda, 2001). A pool of skilled workforce is an important ownership advantage that a firm can exploit in its foreign market expansion and is thereby reported to have positive influence on a country's OFDI (Liu et al., 2005; Armann and Virmani, 2015). A positive relationship is expected between outward FDI from India and its human capital.

Research Methodology and Empirical Analysis

Data source and description

The data description and sources of all variables used in the study are presented in Table A1 in Appendix. Data on FDI is available in the form of stock as well as flows. This study uses flow measure as the behaviour of inward and outward FDI can be more thoroughly examined using flow data than stock (Dasgupta, 2009). The time period for the study is 1984 to 2015- guided by the availability of data.

Methodology and discussion of results

Unit Root Test

While dealing with the macroeconomic time series, it is imperative to check if the series under consideration is stationary, i.e., whether the effect of random shock is temporary or permanent. The stationarity properties can be examined using alternate unit root tests such as Augment Dickey-Fuller (ADF, 1979) or Phillip-Perron (PP, 1988). However, these conventional unit root tests do not take into consideration the possibility of existence of structural breaks in the macroeconomic time series and therefore likely to produce misleading results in the presence of the same (Perron, 1989). Given the nature of Indian economy, variables and time period under consideration in this study, the possibility of the presence structural break cannot be ignored, in which case the standard test for the unit root will be inclined towards the non-rejection of null hypothesis. The first "endogeneous break" unit root test was proposed by Zivot and Andrews (1992), which examined the null hypothesis of non-stationarity against the alternate hypothesis of stationarity in the presence of single-break. In the subsequent work, it was extended to examine the unit root against two breaks stationarity alternative (Lumsdaine and Papell, 1997) and then up to five breaks (Kapetanios, 2005). The break point is



determined where the t statistic of unit root test is most negative. Other unit root tests as proposed by Perron (1997) and Vogelsang and Perron (1998) determine the break point by examining the significance of dummy variables in regression including structural break. However, these tests suffer from the limitation of omitting the chances of unit root null with break. If a break exists under the null of unit root, results would suffer from size distortions as these tests are biased towards the rejection of unit root null hypothesis and also tend to identify the break point incorrectly- one period prior to the actual break point (Nunes et al., 1997; Lee and Strazicich, 2003, 2004; Altinay, 2005). To overcome this limitation, Lee and Strazicich (2003, 2004) proposed an alternative unit root test to examine stationarity in the presence of two endogenously determined structural breaks. This test uses Lagrange Multiplier (LM) statistics and allows for breaks under both null and alternate hypothesis, such that if this test rejects the unit root null, it is a stronger evidence of stationarity (Chakraborty and Mukherjee, 2012; Chakraborty et al., 2017).

Accordingly, the following data generating process (DGP) is considered for the analysis:

$$Y_t = \delta Z_t + e_t, \quad e_t = \beta e_{t-1} + \varepsilon_t \tag{1}$$

where Z_t is a vector of exogenous variables, δ is a vector of parameters and ε_t is a white noise process, such that $\varepsilon_t \sim \text{NIID}(0, \sigma^2)$. The study employs Lee and Strazicich (2003) test that incorporates two structural breaks. While, the crash model considers structural break in the levels only- given by- $Z_t = [1, t, D_{1t}, D_{2t}]$; the break model allows for the break in the level as well as trend and is given as $Z_t = [1, t, D_{1t}, DT_{1t}, D_{2t}, DT_{2t}]$, where D_{jt} and DT_{jt} for $j=1,2$ are the two dummies defined as:

$$D_{jt} = 1, \text{ if } t \geq T_{Bj} + 1; = 0, \text{ otherwise}$$

and

$$DT_{jt} = t - T_{Bj}, \text{ if } t \geq T_{Bj} + 1; = 0, \text{ otherwise}$$

where T_{Bj} denotes the j th break date.

The major benefit of using Lee and Strazicich (2004) unit root test is that it accounts for the structural breaks under both null ($\beta = 1$) and the alternate hypothesis ($\beta < 1$) of the data generating process given in (1). Following regression is used to ascertain the LM unit root test statistics.



$$\Delta y_t = \delta' \Delta Z_t + \theta \hat{s}_{t-1} + \sum_{j=1}^k \lambda_j \Delta \hat{s}_{t-j} + u_t \quad (2)$$

Where $\hat{s}_t = y_t - \hat{\varphi}_t - Z_t \delta$, $t = 2, \dots, T$; δ indicates the regression coefficients of Δy_t on ΔZ and $\hat{\varphi}_t = y_1 - Z_1 \delta$, y_1 and Z_1 being the first observations of y_t and Z_t respectively. The lagged terms $\Delta \hat{s}_{t-1}$ are included to correct for likely serial correlation in errors. Using equation (2), the null hypothesis of unit root ($\theta = 0$) is tested by the LM t-statistic.

General to specific (GTS) method is used to select the lag length, k , which is further cross checked by using different lag selection criteria, like AIC, BIC etc. (Chakraborty et al., 2017). The critical values are tabulated in Lee and Strazicich (2003) for the two-break case.

Table A2 in appendix presents the result of Augmented Dickey- Fuller (ADF) (1979) and Phillip-Perron (P-P) (1988) unit root tests. In the absence of structural breaks all the variables, except stock market development, are found to be non-stationary at level but are integrated of order 1- I(1)- i.e., stationary only at their first difference .

However, as pointed out earlier, the existence of structural breaks in the macroeconomic time series under consideration is likely to render the results of standard unit root test misleading. Table 1 below presents the result of LM test with two endogenous structural breaks at level (Lee and Strazicich, 2003). It is observed that null hypothesis of non-stationarity can be rejected for all the variables except trade openness and bank credit (proxy for banking sector development) which are found to be stationary at first difference. As expected, this is in contrast to the results obtained without considering structural breaks. The breaks points are roughly concentrated around 1990-1993 and 1996-1998 (the period coinciding with the introduction of structural economic reforms and realization thereof) as well as around 2003-2009 (a regime of high growth rate and rising share of Indian economy in the global trade and investment flows followed by the 2008 global financial crisis).

**Table 1: Unit Root Tests with Two Structural Breaks (at Level)**

Variables	Break Points	Optimal Lags	T-Statistic
ROFDI	1997, 2005	4	-11.86*
RGDPPC	1996, 2009	4	-5.80**
EXRATE	1996, 2009	5	-7.23*
STOCK	1990, 2004	0	-6.40**
CREDIT	1992, 2003	5	-4.71
TRADEOPEN	1993, 2008	5	- 4.95
RIFDI	2004, 2007	5	-8.58*
PATENT	1997, 2008	4	-6.44**
ENROLLMENT	1998, 2009	4	-8.20*

Note: 1. Method applied is Lee and Strazicich's (2003) 2. Critical value range at 1% and 5% levels are (-6.16 to -6.45) and (-5.59 to -5.74) respectively. 3. Asterisks (*) and (**) denotes that null hypothesis of unit root is rejected at 1% and 5% level of significance respectively. 4. Results reported are those for Break Model (Intercept & Trend). 5. The first difference of TRADEOPEN and CREDIT are reported stationary.

Cointegration test

After ascertaining the order of integration of variables under consideration, cointegration test is conducted to examine the existence of long-run relationship between India's OFDI flows and selected macroeconomic indicators. The time series variables are cointegrated when series itself is non-stationary but any linear combination of them is stationary (Engle and Granger, 1987). A widely used method of determining cointegration among the variables is residual based Engle – Granger test (1987). However, the test can be applied only when all the variables in system are integrated of same order. Since the variables under consideration in this study are integrated of different order- as seen in the previous section of unit root testing- the study employs autoregressive-distributed lag (ARDL) bound testing approach for cointegration (Pesaran et al., 2001). The ARDL bound testing can be employed irrespective of the order of integration of underlying variables, i.e., it does not necessitate equal order of integration for its application (Pesaran and Shin, 1999). Moreover, being based on Monte Carlo Studies, the bounds test performs better than traditional cointegration test in small samples.



The error correction version of the ARDL model is given below:

$$\begin{aligned} \Delta ROFDI_t = & \alpha_0 + \phi_0 t + (\alpha_{1+i} - \alpha_0) D_{1993+i} + (\phi_{1+i} - \phi_0) D_{1993+i} t + \sum_{k=1}^p \beta_k \Delta RIFDI_{t-k} + \sum_{l=1}^p \chi_l \Delta RGDP_{t-l} \\ & + \sum_{m=1}^p \delta_m \Delta TRADEOPEN_{t-m} + \sum_{n=1}^p \varepsilon_n \Delta ENROLLMENT_{t-n} + \sum_{r=1}^p \varphi_r \Delta PATENT_{t-r} + \sum_{s=1}^p \eta_s \Delta EXRATE_{t-s} + \\ & \sum_{u=1}^p \kappa_u \Delta MARKETCAP_{t-u} + \sum_{v=1}^p \mu_v \Delta CREDIT_{t-v} + \lambda_1 RIFDI_{t-1} + \lambda_2 RGDP_{t-1} + \lambda_3 TRADEOPEN_{t-1} + \\ & \lambda_4 ENROLLMENT_{t-1} + \lambda_5 PATENT_{t-1} + \lambda_6 EXRATE_{t-1} + \lambda_7 MARKETCAP_{t-1} + \lambda_8 CREDIT_{t-1} + u_t \end{aligned}$$

where Δ is the first difference operator. It is assumed that break in relationship between the variables have occurred at a maximum of 17 lags from the date of realization of liberalization policies in 1993 till the commencement of global financial crisis in 2009. Thus D_{1993+i} ($i=0 \dots 17$) is defined as follows:

$$D_{1993+i} = 0 \text{ for } t < 1993+i$$

$$= 1 \text{ for } t \geq 1993+i$$

The crash (break only in intercept) and growth (break only in trend) models in the equation were estimated separately so that a total of (17 + 17) 34 equations are estimated to examine the existence of long-run relationship between the variables, in the presence of structural breaks.

The ARDL (1, 1, 1, 0, 1, 0, 1, 1, 1, 0) specification is selected on the basis of Schwarz Bayesian optimal lag length criterion. The results are presented in table 2. The calculated value of F and W statistics for all the 34 equations is higher than the critical values representing the higher bound at 5% level of significance [as tabulated by Pesaran et al. (2001)]- leading to the rejection of null hypothesis of no cointegration. This implies that, taking structural breaks into consideration, a long-run relationship exists between the outward FDI flows from India, and its home country characteristics- macroeconomic environment (proxied by GDP Per Capita and Exchange rate), Financial Sector development (proxied by stock market and banking deepening), trade and investment policies as well as the knowledge based factors represented by technological capability and human capital.

The results of the study are in sharp contrast to a similar study by Tolentino (2010) conducted in context of OFDI flows from China and India, but undertaken in the absence of structural breaks. Tolentino (2010)



concluded home country factors does not explain the OFDI flows from China and India. As opposed to that, the findings of the present study lends a robust empirical support to the argument that home country plays an important role in influencing outward FDI from emerging markets.

Table 2: Results from ARDL Bounds Test for Cointegration

Year	Type of Break	F-Statistic	W-Statistic	Year	Type of Break	F-Statistic	W-Statistic
1993	Intercept	6.86	61.74	2002	Intercept	7.01	63.09
	Trend	11.31	101.79		Trend	6.85	61.65
1994	Intercept	6.97	62.73	2003	Intercept	6.84	61.56
	Trend	7.07	63.63		Trend	6.90	62.10
1995	Intercept	7.31	65.79	2004	Intercept	10.60	95.4
	Trend	7.37	66.33		Trend	9.90	89.1
1996	Intercept	8.13	73.17	2005	Intercept	6.43	57.87
	Trend	8.05	72.45		Trend	5.51	49.59
1997	Intercept	6.82	61.38	2006	Intercept	11.06	99.54
	Trend	6.78	61.02		Trend	11.56	104.04
1998	Intercept	6.48	58.32	2007	Intercept	8.99	80.91
	Trend	6.48	58.32		Trend	9.21	82.89
1999	Intercept	19.62	176.58	2008	Intercept	12.22	109.98
	Trend	19.42	174.78		Trend	12.31	110.79
2000	Intercept	10.54	94.86	2009	Intercept	7.05	63.45
	Trend	7.73	69.57		Trend	6.99	62.91
2001	Intercept	6.90	62.10				
	Trend	6.87	61.83				

Notes: 1. Dependent variable ROFDI. 2. ARDL model selected is (1, 1, 1, 0, 1, 0, 1, 1, 1, 0) 3. Critical value bounds for the F-Statistic at 5% are (2.30, 3.33) and for the W-statistics at 5% are (20.70, 29.97) (see Pesaran and Shin (1999)). 4. The null hypothesis being no cointegration between ROFDI and RIFDI, RGDPPC, TRADEOPEN, ENROLLMENT, PATENT, EXRATE, STOCK and CREDIT.



The results of the long-run coefficients (without incorporating exogenous breaks) are presented in Table 3.

Table 3: Estimated Long-run Coefficients²

RGDPPC	-3.83 (-0.21)
EXRATE	2.59 (1.54)
STOCK	70.26*** (2.05)
CREDIT	871.01** (2.49)
TRADEOPEN	100.21*** (1.76)
RIFDI	** (2.86)
PATENT	0.02 (0.92)
ENROLLMENT	-12.34 (0.14)

Note: 1. Asterisks (*), (**) and (***) denote statistically significant at 1% and 5% levels respectively. 2. t-statistic in parentheses. 3. Dependent variable log of India’s outward FDI.

Consistent with Verma and Bernnan (2013) and Kayam (2009), inward FDI flows and trade openness are found to be significant at 5% and 10% level of significance respectively. The findings emphasize the importance of Government support (e.g. liberalized foreign trade and investment policy regime) and indicate the existence of “Linkage- Leverage- Learning” mechanism behind the accelerated internationalization of EMNEs (Matthews, 2002, 2006).

Liberalized foreign trade policy manifested in the form of higher exports and imports is likely to increase an economy’s OFDI flows as a result of intensifying competitive forces from imports and by enabling “learning-by-doing” through exporting (Banga, 2007). Higher levels of exports also necessitate the establishment of trade-supporting facilities abroad (Vernon, 1966)- the phenomenon observed in context of Indian IT Industry. Majority of the Indian IT firms involved in cross-border acquisition during 2000 to 2016 are observed to have started their internationalization journey from exporting to the western markets of US and Europe followed by setting up of the wholly-owned subsidiary or branch office in order to support export sales and provide better services to the clients onshore (Varma et al., 2016). Inward FDI into a country create linkage opportunities for latecomer firms in emerging markets, which they are quick to seize and turn into

² Results presented in the table are for the model without structural breaks. This is done to avoid the complicated presentation of results of 34 ARDL regressions incorporating exogenous structural breaks starting from the period 1993 to 2009, for both crash and growth model. However, the authors have cross-verified that the while the value of coefficients change between the models with and without structural breaks, overall results- in terms of significant variables (coefficient significance) and the sign remains the same across all the models.



opportunities for leveraging and learning- preparing ground for accelerated internationalization (Mathews, 2002)- phenomenon observed in the Indian auto components industry. Foreign automotive companies such as Hyundai, Ford, Honda and Volkswagen are stepping up their investment in manufacturing facilities and assembly lines in order to increasingly source auto-components such as engines and body parts for their global operations from India.

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Finally, despite having the long run relationship with the OFDI flows, technological capability and the human capital- i.e., the knowledge-based resources of the home country are not the significant determinants of OFDI from India. The long-run coefficients for the patents (proxy for technological development) and enrollment (proxy for human capital) do not reach the level of significance. It may be because of the aggregate nature of OFDI flows considered in this study. The effect of knowledge-based factors is expected to vary between the developed and developing host nations, as they matter more for the strategic asset seeking OFDI undertaken in developed countries.



Conclusion and Policy Implications

The paper empirically examined the direct effect of home country – macroeconomic environment, financial development, trade and investment policy and knowledge based factors- on the Outward FDI flows from India during the period 1980-2015. Taking cognizance of the structural breaks that Indian economy has gone during the period, both as a result of domestic and global factors, the paper emphasized that the empirical model developed to examine the proposed relationships should incorporate such breaks. Having done so, the ARDL bounds test for cointegration finds the existence of long-run relationship between the OFDI flows and the selected home country specific factors- emphasizing the importance of home country in explaining overseas investment activity of multinationals from emerging markets (India), unlike as suggested by Tolentino (2010). Financial market development and the Government Policy in terms of liberalized trade and investment regime significantly determines OFDI from India.

The results of the study present important implications for policy makers. In order to integrate India with the global economy and more importantly to enhance its participation in the international production networks (IPNs), a proper policy framework that supports and encourages OFDI should be devised. While the regulations governing foreign investment flows have been significantly liberalized since 1991, a focused policy is required to encourage and support the overseas ventures of India companies- like the “Go Global” policy initiated by the Chinese Government in 1999. For instance- on the basis of result on banking sector variable it can be argued that RBI directive allowing banks to lend to Indian companies for overseas investment have facilitated the quantum of OFDI flows from India. The study suggests that more such policy measures are needed- such as special investment tax credit scheme especially for strategic asset seeking investment abroad (Pradhan and Singh, 2008). Not only does the India needs to have policies supporting OFDI, the results (relating to IFDI) suggests that an appropriate policy framework is also required that motivates the formation of linkages with the foreign multinationals operating in domestic market. Such an approach can have a mileage in promoting OFDI, especially by the manufacturing firms, through the mechanism of repeated application of leverage and learning process (LLL). Outward FDI in manufacturing sector is expected to enhance the competitiveness of the investing firms, raise the level of India’s participation in the international production networks (IPNs) and thereby strengthen and support the India’s manufacturing sector and the “Make in India” initiative respectively. Without the enhanced integration of the sector with the global value chain, the initiative may lose its appeal to the domestic as well as foreign firms (Das, 2016).



Contributions and Limitations

The literature on Outward FDI from India is noted to be relatively scanty in terms of examination of the phenomenon (at macro-level) from home country perspective (Paul and Benito, 2017). This paper, therefore, adds to the literature by undertaking the examination at macro level and examining the direct effect of home country factors on OFDI flows from India, while also incorporating structural breaks in the empirical model. More particularly, the paper empirically validates the importance of financial market development as financial reforms constituted an important component of structural reforms initiated in 1991.

However, the study is not free from limitations which also provides the scope for future research work. Firstly, at present the analysis is done on aggregate OFDI flows from India i.e., without disaggregating the investment flows to various host countries in developed and developing region. The effect of the various home country factors may vary according to the destination of investment and therefore the natural extension of this study would be examine how the importance of home country variables vary with the destination of outflows as well as examine how home country factors interact with host country factors to drive the investment outflows from India. Secondly, though the results indicate the presence of “LLL” mechanism in Indian context, any concrete conclusion on the same can be reached to by studying the investment decisions at micro (firm) level in conjunction with macro level.



Appendix

A1. Description of variables

Table A1: Description of Variables

	Variable	Abbreviation	Description	Theoretical Justification	Expected Sign	Source
	Outward FDI flows	ROFDI	Nominal OFDI flows (USD Million)/GDP deflator (2010) ³	Dependent variable		Handbook of Statistics on Indian Economy (RBI)
Macroeconomic Environment	Economic Development	RGDPPC	GDP per capita at factor cost (2010)/Total Population	LDP hypothesis	+	Handbook of Statistics on Indian Economy (RBI)
	Exchange Rate	EXRATE	Official exchange rate (LCU per US\$, period average)	OLI theory (home country L advantage)	-	World Development Indicators, World Bank
Financial Development	Stock Market development	STOCK	Stock Market Capitalization (BSE) relative to GDP ratio	OLI theory (home country L advantage)	+	Handbook of Statistics on Indian Economy (RBI)
	Banking Sector development	CREDIT	Bank Credit to the commercial sector relative to GDP	OLI theory (home country L advantage)	+	Handbook of Statistics on Indian Economy (RBI)
Policy Variables	Trade Openness	TRADEOPEN	Sum of exports and imports relative to GDP	OLI theory (home country L advantage)	+	World Development Indicators, World Bank and Handbook of Statistics on Indian Economy (RBI)
	Inward FDI flows	RIFDI	Nominal IFDI flows (USD Million)/GDP deflator (2010)	OLI theory (home country L advantage), LLL framework	+	Handbook of Statistics on Indian Economy (RBI)
Knowledge based factors	Technological Development	PATENT	Patent Applications filed by residents	OLI theory (home country L advantage)	+	World Development Indicators, World Bank
	Human Capital	ENROLLMENT	Tertiary School Enrollment (% of Gross)	OLI theory (home country L advantage)	+	World Development Indicators, World Bank

³ Data for GDP deflator (base-2010) is obtained from International financial statistics of International Monetary Fund. All variables are converted into real terms using this GDP deflator.



⁴ Data for GDP deflator (base-2010) is obtained from International financial statistics of International Monetary Fund. All variables are converted into real terms using this GDP deflator.

A2. Stationary tests without structural breaks

Table A2: Unit Root Tests (Without Structural Break)

Variables	ADF ¹		PP ²	
	Level	First Difference	Level	First Difference
ROFDI	3.26	-5.17*	-2.02	-5.18*
RGDPPC	-1.20	-4.05**	-1.20	-3.94**
EXRATE	-1.38	-4.49*	-1.87	-4.53*
STOCK	-3.82**	-----	-3.74**	-----
CREDIT	-1.17	-3.77**	-0.94	-3.78**
TRADEOPEN	-3.14	-4.73*	-3.01	-4.78*
RIFDI	-2.51	-4.80*	-2.54	-6.08*
PATENT	0.71	-5.73*	1.66	-5.65*
ENROLLMENT	-0.69	-4.90*	-0.72	-4.90*

Note: 1. Augmented Dickey-Fuller test. 2. Philips-Perron test. 3. Asterisks (*) and (**) denote statistically significant at 1% and 5% levels respectively. 4. Results reported are those with drift and trend. 5. First differences of I(1) series are reported stationary.



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W.P. No: EC- 1 8 - 33

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S. No	WP. No	Title	Author(s)
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