

## Macroeconomic Drivers of Outward Foreign Direct Investment from Bangladesh: A Time Series Analysis

Tahera Khanam<sup>1</sup> and Shruti Shastri<sup>2</sup>

### ABSTRACT

The purpose of this paper is to identify the home country macroeconomic drivers of Outward Foreign Direct Investment (OFDI) from Bangladesh for the period 1985-2018. The study employs Autoregressive Distributed Lags (ARDL) bound testing approach suggested by Pesaran et al.(2001) to find the long run relationship among the variables. The causal linkages are investigated through block exogeneity test based on vector error correction model. Our empirical results indicate a positive impact of GDP per capita, exports and inward FDI on outward FDI in the long run. In short run, GDP per capita, infrastructure availability and skill level of the home country turn out to be significant determinants of outward FDI from Bangladesh. The study is the first empirical effort to identify the long run and short run home country macroeconomic drivers of Outward Foreign Direct Investment using time series data in the context of Bangladesh.

### ملخص

يتمثل الغرض من هذه الورقة البحثية في تحديد محركات الاقتصاد الكلي للبلد الأصلي للاستثمار الأجنبي المباشر الصادر (OFDI) من بنغلاديش للفترة 1985-2018. وتستخدم الدراسة نهج الانحدار الذاتي للإبطاء الموزع (ARDL) الذي اقترحه بيساران وآخرون (2001) لإيجاد العلاقة طويلة المدى بين المتغيرات. ويتم دراسة الروابط السببية من خلال اختبار block exogeneity بناء على نموذج تصحيح أخطاء المتجه. وتشير نتائجنا التجريبية إلى وجود أثر إيجابي لنصيب الفرد من الناتج المحلي الإجمالي والصادرات والاستثمار الأجنبي المباشر المتجه إلى الداخل على الاستثمار الأجنبي المباشر المتجه إلى الخارج في الأجل الطويل. وعلى المدى القصير، تبين أن نصيب الفرد من الناتج المحلي الإجمالي، وتوافر

<sup>1</sup>Department of Economics, Banasthali Vidyapith, Banasthali, India.  
E-mail: [taheraphd2020@gmail.com](mailto:taheraphd2020@gmail.com)

<sup>2</sup>Department of Economics, Banasthali Vidyapith, Banasthali, India.  
E-mail: [shastrishruti5@gmail.com](mailto:shastrishruti5@gmail.com)

الهيكل الأساسية، ومستوى المهارات في البلد الأصلي، كلها عوامل هامة في تحديد الاستثمار الأجنبي المباشر الصادر من بنغلاديش. وتعتبر الدراسة أول عمل تجريبي لتحديد محركات الاقتصاد الكلي على المدى الطويل والقصير في بلد المنشأ للاستثمار الأجنبي المباشر الصادر باستخدام بيانات السلاسل الزمنية في سياق بنغلاديش.

### ABSTRAITE

L'objectif de ce document est d'identifier les facteurs macroéconomiques du pays d'origine des investissements directs étrangers (IDE) du Bangladesh pour la période 1985-2018. L'étude utilise l'approche de test de limite Retards distribués autorégressifs (Modèle Auto régressif à Retards Échelonnés) (ARDL) suggérée par Pesaran et al. (2001) pour trouver la relation à long terme entre les variables. Les liens de causalité sont étudiés au moyen d'un test d'exogénéité par blocs basé sur un modèle vectoriel de correction des erreurs. Nos résultats empiriques indiquent un impact positif du PIB par habitant, des exportations et des IDE entrants sur les IDE sortants à long terme.

A court terme, le PIB par habitant, la disponibilité des infrastructures et le niveau de compétence du pays d'origine s'avèrent être des déterminants significatifs des IDE sortants du Bangladesh. L'étude est le premier effort empirique pour identifier les facteurs macroéconomiques à long et court terme du pays d'origine de l'investissement direct étranger en utilisant des données de séries chronologiques dans le contexte du Bangladesh.

**Keywords:** Outward FDI, Bangladesh, Auto Regressive Distributed Lags Model

**JEL Classification:** F21, C22

## 1. Introduction

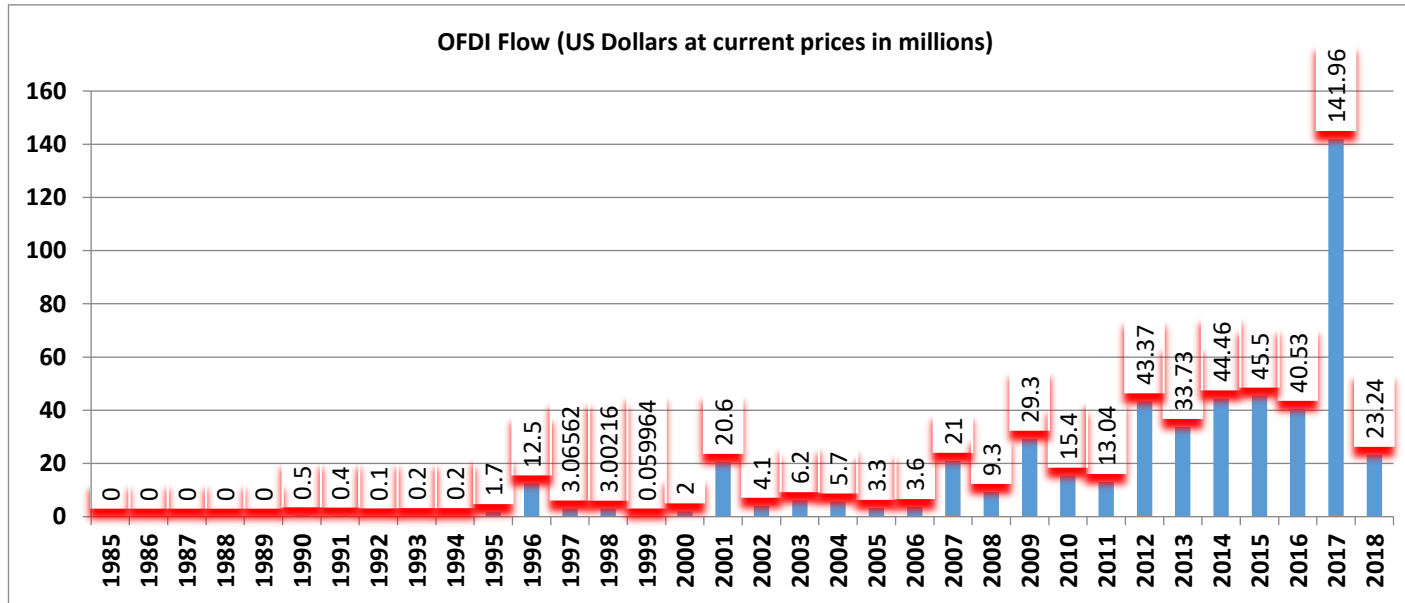
The globalization process during the last four decades has been characterized by significant surge in trade and foreign direct investment (FDI) across countries. Under the outward looking development strategy, while inward FDI has been a key source of capital in capital scarce countries, a rapid economic growth in the countries is also accompanied by a surge in outward FDI (Mohanty and Sethi, 2019). The analysis of outward FDI (OFDI) has thus become a key area of interest in international business research. What triggered the recent academic interest in the OFDI is the rapid growth in outward overseas investment from developing countries. One of the distinguishing features of the rise in OFDI from developing world is the absence of any targeted policies

towards the promotion of OFDI. It is only recently that developing countries have put in place specific measures to promote overseas investment. This clearly indicates the role played by macroeconomic factors rather than policy measures in promoting OFDI from developing countries (Banga, 2004). Considering the numerous benefits conferred by the OFDI (Navaretti and Castellani, 2004) it is important for the policymakers to identify these macroeconomic drivers of OFDI from developing countries.

The extant literature on macroeconomic drivers in the country of origin is limited and mostly confined to developed countries. Studies focusing on home country macroeconomic drivers of outward FDI from developing countries are very less and majority of them focus on trends of OFDI and utilize panel data analysis that conceals country specific determinants of OFDI flows. Furthermore, the impact of short run and long run impact of macroeconomic drivers on OFDI is seldom analyzed.

In view of the above, the purpose of the present study is to identify the macroeconomic drivers of OFDI from Bangladesh. To the best of the authors' knowledge, this is the first study which identifies and empirically tests the macroeconomic factors that influence Bangladesh's OFDI flows. Our time series analysis includes most up-to date information related to these macro factors covering time period 1985 to 2018.

Bangladesh offers an interesting research arena for investigation of macroeconomic drivers of OFDI. Bangladesh over the years has emerged as an attractive destination for foreign investment. The country has registered significant progress in terms of inward FDI and also experienced progress in outward FDI.

**Figure 1: FDI outflow of Bangladesh (in million US\$)**

Source:UNCTAD

However, the country's performance in outward FDI flow has been much poorer in comparison to the inwards FDI flows (UNCTAD, 2014). As shown in Figure I there was no significant involvement of Bangladesh in the OFDI till 1995. In 1996 the OFDI recorded at USD12.5 million which increased to USD 20.6 million in 2001 and further to USD 40.5million in 2015. The highest outward flow was USD 141.96 million in 2017. The fillip to the offshore investment from Bangladesh may be attributed to the significant relaxations in controls on the OFDI by government in 2015. Until 2015 government controls intended to focus on capital investment availability for domestic development. However, controls have been relaxed since the nation was accorded lower middle-income status by the World Bank in July 2015. The government amended the country's 1947 foreign exchange regulations in 2015, paving the way for capital account transactions. Offshore investment applications have since been considered actively on a case-by-case basis. With the policy focus accorded to OFDI only recently, the role of macroeconomic driver seems to play an important role in driving OFDI in Bangladesh. This makes Bangladesh an interesting case to be investigated. The key research question that we ask is: Do domestic macroeconomic factors impact the OFDI from Bangladesh? Following Banga (2004) we categorize the home country macroeconomic drivers of OFDI into a) Trade factors b) Capability related factors and c) Other factors. We seek to examine the impact of each of these factors on the OFDI activity from Bangladesh.

The rest of the paper is organized as follows. Section II provides a brief review of the existing literature. Section III discusses the model and estimation strategy. Section IV presents the empirical findings and section V summarizes and concludes the study.

## **2. Literature Review**

The dominant theoretical views in explaining the determinants of OFDI traces its roots to international trade theories (Banga, 2004) and considers the comparative advantage of the host country as the prime determinant of offshore investment. However, this approach fails to explain why countries choose FDI and not trade. During 1960's and 1970's market access was put as an alternative explanation of FDI. This view successfully explained the "tariff-jumping" FDI, which was most prevalent in the import-substituting industrialization wave of the 1970s.

However, the concurrence of growing OFDI and greater integration of markets during 1980s called for exploring factors other than market access to explain offshore investment. Later, the internalization theory explained FDI in terms of a need to internalize transaction costs so as to improve profitability. Dunning (1981) successfully combined the transaction cost element with firm specific ownership advantage and location advantages. Dunning (1981) also relates the evolution of OFDI with the development stages of an economy. From the pre industrialization stage with no inward and outward investment, a country gradually starts attracting foreign investment into labor and resource intensive sectors. As the inbound investment spills over the other sectors of the economy, domestic firms develop ownership advantage and start investing abroad, engaging in outbound direct investment that tends to surpass inbound investment by foreign firms, respectively.

Against the aforementioned theoretical strands, a number of empirical studies have investigated the drivers of OFDI. A lion's share of studies focus either on developed economies (see e.g., Kyrkilis and Pantelidis, 2003; Morris and Jain, 2015) or host country characteristics (see e.g., Buckley et al., 2007; Kolstad and Wiig, 2012). The literature on examination of home country determinants from the perspective of developing countries is quite thin and explores outward FDI experience of a handful of developing countries.

From the standpoint of determinants of outward FDI from developing countries significant contribution is made by Banga (2004). The study provides a theoretical framework describing the drivers of outward FDI in terms of trade related, capability related and domestic drivers from Asian region. The study based on panel data analysis found all three drivers to play a significant role in propelling outward FDI.

Pradhan (2007) explored the determinants of the overseas direct investment activity of Indian manufacturing enterprises. Several firm-specific characteristics such as age, size, R&D intensity, skill intensity and export orientation are observed to be important explanatory factors in the outward foreign direct investment activity of Indian firms.

Fung et al. (2009) examined both descriptively and econometrically the motives and determinants of investment abroad from the four Asian economies, namely, China, Japan, Taiwan, and Republic of Korea. The

step wise regression analysis supported Market Seeking Hypothesis for China; Natural Resource Seeking hypothesis for Japan and Republic of Korea and Technology Acquisition hypothesis for Taiwan. Masron et al. (2010) using time series data for Malaysia and Thailand from 1980 to 2006 found interest rate and labor cost having a negative impact and trade openness having a positive impact on OFDI. Baskaran et al. (2011) discussed the factors which promote the outward FDI from developing economies along with the shape and nature of the flow. The study dealt with companies from China, India and South Africa for a time period 1999 to 2009 using a case study approach. In all the three countries, access to new markets, increasing existing share of markets, acquiring R&D facilities, improving technological capabilities, and ensuring long term security of natural resources were found to be the prime drivers of OFDI. Saadet et al. (2014) studied the determinants of Malaysia based MNCs over a period of 1980 to 2009. Using multiple regression analysis, the result showed that export and OFDI have positive relationship. Inward FDI was also found to be positively related to outward FDI. Impact of market size is negative on OFDI. Labor productivity proved to be a very important positive factor in the promoting OFDI.

Das (2013) dealt with the determinants of OFDI in the 56 developing countries using panel data analysis for the period 1996-2010. The result showed GDP per capita, trade openness, political risk and technology expenditure have positive effect on OFDI. Bhasin (2013) dealt with examining the determinants of outward FDI of ten countries from South, East and South-East Asian regions. The result based on fixed effect panel regression indicted a significant impact of real GDP and government policies on OFDI. Bano and Tabbada (2015) studied the determinants of OFDI of six Asian developing countries between 1980 and 2011. Ordinary least square regression results pointed to the significant role of foreign reserve and GDP proved to be most significant factors for all the six countries. Kakoti (2019) found the role of real GDP, exchange rate and real interest rate in driving OFDI from India for the period 1980-2016. Saikia et al. (2020) studied the factors that drove the boom in OFDI of Indian Firms. The study applied probit model and ordinary least squares regression to identify factors that affect decision to internationalize and the size of outward investment. The study identified prior experience and institutional advantage as significant drivers of OFDI. Correa da Cunha et al. (2022) investigated how home country factors affect the OFDI intensity in Latin America and Caribbean (LAC) countries. The study

used the entropy weight method for balanced panel data consisting of 19 countries from 2007 to 2016. The results indicated a positive association between macroeconomic performance, formal institutions, infrastructure, technology and the OFDI intensity.

The aforementioned review of literature suggests the key role played by home country factors in shaping the OFDI trends. The identified factors though differ across studies due to differences in countries analyzed, methodologies and time period. Amongst the studies focusing on developing countries, a good number of studies are based on firm level factors driving OFDI (Pradhan, 2007; Baskaran, et al. 2011; Saad et al., 2011, Saikia et al. 2020). Considering that the environmental factors associated with a firm's country of origin play a crucial role in the development of a firm's competitive advantages, the analysis of home country macroeconomic drivers is important. However, the macroeconomic drivers of OFDI from developing countries mostly use panel data analysis for a group of countries which fail to unearth country specific factors (see e.g., Banga, 2004; Banga 2007; Das, 2013; Bhasin, 2013; Correa da Cunha et al. 2022). Pesaran and Smith (1995) and Pesaran et al. (2000) raise the issue of parameter heterogeneity across countries and suggest that panel regressions mask important cross-country differences. As a result, policy inferences drawn from panel estimates may be misleading. The present study based on time series data of Bangladesh intends to fill this gap.

### **3. Model Specification and Estimation Strategy**

Following Banga(2004) we categorize the macroeconomic determinants of OFDI into a) Trade related b) Capability related and c)Other Domestic factors. Our model is defined as:

$$\text{OFDI} = f(\text{EXPORT,IFDI, EDU, PATENT, INT, PCGDP, INFRA, REER}) \quad (1)$$

Where, OFDI is the ratio of outward FDI stock to the GDP.EXPORT is the size of exports as proportion of GDP and represents the impact of trade on OFDI. Higher level of exports implies access to foreign markets and promotes OFDI by lowering uncertainties related to external markets. The trade related drivers of course provide opportunities for undertaking OFDI but may not be sufficient to materialize OFDI. As OFDI requires



information of the conditions in host country, managerial and technical knowhow, capabilities of the home country become quite important. The capability related drivers in the model include inward FDI, skill level and innovation in the home country. The inward FDI (IFDI) is often considered a key channel of productivity spillover as it brings in standard technologies, efficiency and competitiveness. Inward FDI, thus may impart key capabilities to undertake OFDI. The higher the number of educated people in a country the better is the skill and quality of the labor. The enrollment ratio at the secondary education level (EDU) is considered a proxy for the skilled labor in the home country. As such we expect a positive relationship between education or skill level and OFDI. Another capability related factor is cost of capital proxies by lending rate (INT). A low interest rate in the home country is an indicator of capital abundance. The lower the interest rate, the more profitable would be outward investment.

Besides the capability factors, the domestic constraints play an important role as a push factor for OFDI. The per capita Gross Domestic Product (PCGDP) represents the market size of the country. Small domestic market size may act as a push factor for overseas investment. Furthermore, according to Investment Development Path theory, PCGDP also represents the level of economic development of the country. The economic development facilitates rapid expansion of internationalization. With rapid expansion of the modern sectors, factor endowment in the country begins to shift from low-skilled labor to relatively more physical and human capital abundance, paving the way for investment-driven industrialization and OFDI. The shift in factor abundance prompts firms to transplant their existing operations to other countries where they can produce at low cost. Other domestic push factors include domestic infrastructure. The deficiency and high cost of domestic infrastructure has a direct bearing on cost of operation and thus may trigger OFDI (Banga, 2007). We proxy the availability of infrastructure (INFRA) with the availability of transportation and communication services as a share of GDP. Finally, the effect of currency strength is captured through real effective exchange rate (REER). An increase in currency strength tends to favor outward investment, as a strong currency can buy more in real terms. The appreciation of home country currency lowers the capital requirements of foreign investments in domestic currency units, making it easier to raise capital than in the case of a depreciating currency (Das, 2013). The data for the OFDI, GDP, GDP per capita, export and inward FDI are taken from

UNCTAD and the data for the remaining variables are obtained from World Development Indicators, World Bank.

All the time series are first subjected to Augmented Dickey Fuller (ADF) and KPSS unit root tests to check for their stationarity properties. Several methods have been proposed in the literature to assess the long run relationship among variables. The study adopts Autoregressive Distributed Lag (ARDL) bounds testing approach developed by Pesaran et al. (2001). This approach has some econometric advantages over the Engle and Granger (1987) cointegration test and maximum likelihood based approach proposed by Johansen and Juselius (1990) cointegration techniques. First, endogeneity problem and inability to test hypotheses on the estimated coefficients in the long run associated with the Engle and Granger (1987) method are avoided. In the ARDL method all the variables are supposed to be endogenous and parameters are estimated simultaneously in long run and short run. According to Pesaran and Shin (1999), modeling the ARDL with the appropriate lags corrects for both serial correlation and endogeneity problem. Second, the econometric methodology is relieved of the burden of establishing the order of integration amongst the variables and of pre-testing for unit roots which means that the test on the existing relationship between variables in levels is applicable irrespective of whether the underlying regressors are purely  $I(0)$ , purely  $I(1)$  or a mixture of both. Most importantly, as argued by Narayan (2004), the small sample properties of the bounds testing approach are far superior to those of multivariate cointegration. The model could be used with limited sample data (as is the case with the present study) in which the set of critical values were developed originally by Narayan (2004) using GAUSS.

The first step of the bounds testing procedure involves the estimation of equation (1) by the ordinary least squares (OLS). The existence of long run relationship is said to exist if the F-statistic value exceeds the upper critical value bound. In the presence of long run relationship, the long run coefficients of the selected ARDL model are estimated. The third step involves reparameterization of ARDL Model into Error Correction Model (ECM) form. ECM is used to test for the speed of adjustment towards the equilibrium in the long run. Once the ECM model has been estimated, the cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ) tests are applied to assess the parameter stability.

The Granger Representation Theorem (Engle and Granger, 1987) states that if a set of variables is cointegrated, then there exists a valid error correction representation of the data, in which the short-term dynamics of the variables in the system are influenced by the deviation from long-term equilibrium. In a VECM, short-term causal effects are indicated by changes in other differenced explanatory variables. The long-term relationship is implied by the level of disequilibrium in the cointegration relationship, i.e., the lagged error correction term (ECT). The Vector Error Correction model is thus useful for detecting both short- and long-term Granger causality tests. The VEC Model can be formulated as follows:

$$\Delta y_{1t} = \mu_1 + \gamma_1 z_{t-1} + \sum_{i=1}^{p-1} \theta_{1i} \Delta y_{1t-i} + \sum_{i=1}^{p-1} \delta_{1i} \Delta y_{2t-i} + \varepsilon_{1t} \quad (2)$$

$$\Delta y_{2t} = \mu_2 + \gamma_2 z_{t-1} + \sum_{i=1}^{p-1} \delta_{2i} \Delta y_{2t-i} + \sum_{i=1}^{p-1} \theta_{2i} \Delta y_{1t-i} + \varepsilon_{2t} \quad (3)$$

where  $z_{t-1}$  is the error correction term derived from the cointegrating vector.  $\theta$  and  $\delta$  are the short-run parameters to be estimated,  $p$  is the lag length, and  $\varepsilon_t$  are assumed to be stationary random processes with a mean of zero and constant variance. For each equation in the VEC Model, short-term Granger causality to assess whether endogenous variables can be treated as exogenous may be tested by the joint significance of the coefficients of each of the other lagged endogenous

variables in that equation. The short term significance of sum of the each lagged explanatory variables ( $\theta$ 's and  $\delta$ 's) can be exposed either through joint F or Wald  $\chi^2$  test. Besides, the long-term causality is implied by the significance of the  $t$ -tests of the lagged error correction term. However, the non significance of both the  $t$ -statistics and joint F or Wald  $\chi^2$  tests in the VECM indicates econometric exogeneity of the dependent variable (Singh and Shastri, 2020).

#### 4. Empirical Result

Before applying the ARDL bound test we first investigate the unit root test. Following are the result of unit root tests.

**Table 1:** Result of ADF unit root test

Variable	Lag (based on SIC)	t-statistic	Critical Values at 1%	Critical Values at 1%	Critical Values at 10%
OFDI	0	-2.349775 (0.1633)	-3.646342	-2.954021	-2.615817
ΔOFDI	0	-6.407786 (0.0000)	-3.653730	-2.957110	- 2.617434
GDPPC	0	-1.886362 (0.3343)	-3.646342	-2.954021	- 2.615817
ΔGDPPC	1	-7.537582 (0.0000)	-3.661661	-2.960411	- 2.619160
EXPO	0	-1.395281 (0.5726)	-3.66342	-2.954021	- 2.615817
ΔEXPO	0	-4.799396 (0.0005)	-3.653730	-2.957110	- 2.617434
INFRA	0	-1.96500 (0.3003)	-3.646342	-2.954021	- 2.615817
ΔINFRA	0	-5.735229 (0.0000)	-3.653730	-2.957110	- 2.617434
REER	0	-1.758834 (0.3935)	-3.646342	-2.954021	- 2.615817
ΔREER	0	-5.550908 (0.0001)	-3.65730	-2.957110	- 2.617434
IFDI	0	-0.485739 (0.8817)	-3.646342	-2.954021	- 2.615817
ΔIFDI	0	-4.854877 (0.0004)	-3.653730	-2.957110	- 2.617434
RINT	0	-4.751780 (0.0005)	-3.646342	-2.954021	- 2.615817
ΔRINT	0	-8.379935 (0.0000)	-3.653730	-2.957110	- 2.617434
PAT	0	-4.291134 (0.0019)	3.646342	-2.954021	- 2.615817
ΔPAT	1	-6.883955 (0.0000)	-3.661661	-2.960411	- 2.619160
EDU	0	-.967431 (0.2990)	-3.646342	-2.954021	- 2.615817
ΔEDU	0	-8.022209 (0.0000)	-3.653730	-2.957110	- 2.617434

**Note:** Figures in parenthesis are.

Table 1 presents the result of ADF unit root test. The results indicate that all the variables are stationary at the first difference except real interest rate and patent which are stationary at level. We also check for robustness of the results using the KPSS test by Kwiatkowski et al. (1992). The

results of the KPSS test are in conformity with those of ADF test in the sense that none of the series is I(2).

**Table 2:** Result of KPSS unit root test

Variable	Bandwith (based on Bartlett Kernal)	LM statistic
OFDI	4	0.529899
$\Delta$ OFDI	1	0.187079
GDPPC	4	0.783904
$\Delta$ GDPPC	16	0.265203
EXPO	5	0.610885
$\Delta$ EXPO	1	0.198989
INFRA	4	0.510630
$\Delta$ INFRA	3	0.086021
REER	4	0.511247
$\Delta$ REER	3	0.217495
IFDI	5	0.582800
$\Delta$ IFDI	3	0.113439
RINT	2	0.184045
$\Delta$ RINT	9	0.298209
PAT	3	0.578152
$\Delta$ PAT	7	0.207052
EDU	4	0.589761
$\Delta$ EDU	5	0.104008

**Note:** Critical values at 1%, 5% and 10% are 0.739, 0.463 and 0.347 respectively.

From the results of stationarity tests, it may be concluded that none of the series under consideration is I(2) and hence, the ARDL bounds testing approach could be proceeded with.

**Table 3:** Results of ARDL Bound Test

F Statistics = <b>10.14022</b>  (N=32)	Critical values					
	$\alpha = 0.01$		$\alpha = 0.05$		$\alpha = 0.10$	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.5	3.68	2.04	2.08	1.8	2.8

Table 3 represents the result of ARDL bound test for cointegration. We apply bound test to confirm whether cointegration exists or not.

The results shown in Table 3 indicate that the F-statistic value is 10.14022 which is the greater than value of I(1) 2.08 at 5% level of significance. The results thus confirm the existence of long run relationship among the variables.

**Table 4:** Result of long-run coefficients from ARDL Model

Regressor	Coefficient	t-statistics	Probability
GDPPC	0.138773	7.260848	0.0008
EXPO	0.007320	2.574457	0.0498
INFRA	0.011844	1.834873	0.1260
REER	-3.81	-0.201061	0.8486
IFDI	0.042470	4.718548	0.0052
RINT	-0.001132	-1.606300	0.1691
PAT	-0.000184	-1.264887	0.2617
EDU	-0.000423	-1.323010	0.2431
R-squared	0.793074	Durbin-Watson	2.086014
Adjusted R-squared	0.757058	Heteroskedasticity	F= 0.443288 (p value = 0.9213)
F-statistic	10.14022	Ramsey's Reset	F = 2.284850 (p value = 0.2052)

Table 4 and 5, report the long run and short run coefficient of the ARDL model. In the long run GDP per capita, export, inward FDI turn out to be the significant drivers of OFDI. The signs of the coefficients associated with GDPPC, EXPO and IFDI are positive and in conformity with the theoretical predictions. It shows when real GDP increases by one percent, FDI outflows increases by 0.138 per cent. Our result shows similar result to those found by Bhasin (2013) and Kakoti (2019). Bhasin's result found Positive impact of GDP on outward FDI in selected Asian countries while

Kokoti (2019) found the positive relationship between GDP and OFDI in long run in India. Higher Goss Domestic Product helps the firm in realizing economies of scale through specialization. Our findings are different from those of Singh (2017). Singh (2017) found the negative relationship between GDP and OFDI in long run. Further our results show that one percentage point increase in EXPO and IFDI increases OFDI by 0.007 and 0.042 percentage points respectively. Our results are in conformity with the study of Liu et.al (2016) who also found complementary relationship between export and OFDI in long run.

In the short run, we find a significant effect of GDPPC, INFRA and EDU on OFDI. While the sign of GDPPC is as per the a priori expectations, INFRA and EDU turn out be positive and negative determinants of OFDI respectively. A positive impact of infrastructure development on OFDI implies that infrastructure is not a push factor of OFDI. Indeed, the growth in domestic infrastructure tends to improve the competitive advantage of firms in undertaking OFDI. The negative effect of EDU implies that in short run, the OFDI efforts of firms may be the result of indigenous skill deficiency. The effect of exports and inward FDI on OFDI is positive but statistically weak in the short run.

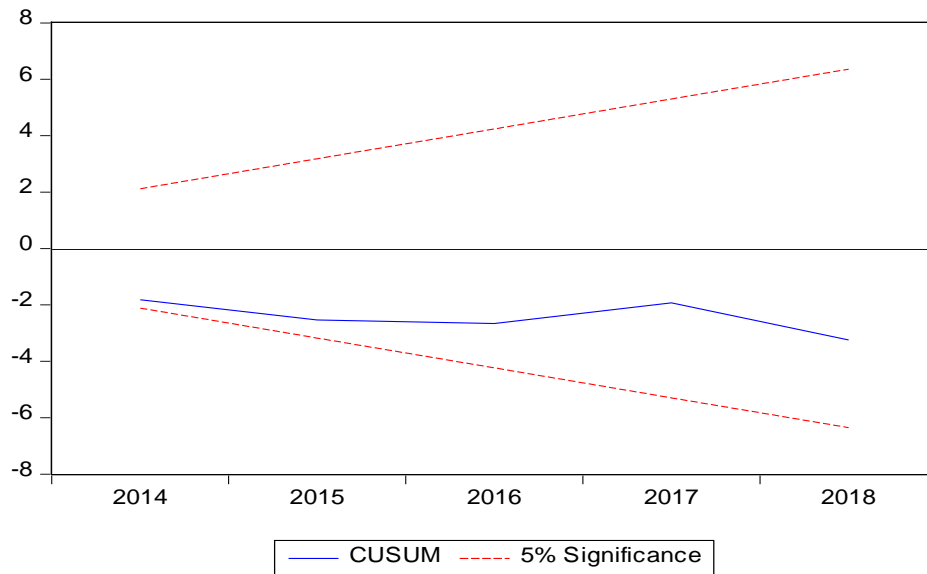
**Table 5:** Result of short-run coefficients from ARDL Model

Regressors	Coefficients	t-statistics	Probability
GDPPC	1.227597	6.171341	0.0016
EXPO	0.004449	2.071456	0.0931
INFRA	0.042758	3.947193	0.0109
REER	9.28	0.513951	0.6292
IFDI	0.017231	2.240646	0.0752
RINT	-0.001359	-2.410043	0.0609
PAT	-0.000280	-1.322621	0.2432
EDU	-0.000904	-3.946056	0.0109
ECT	-1.522015	-18.29282	0.0000

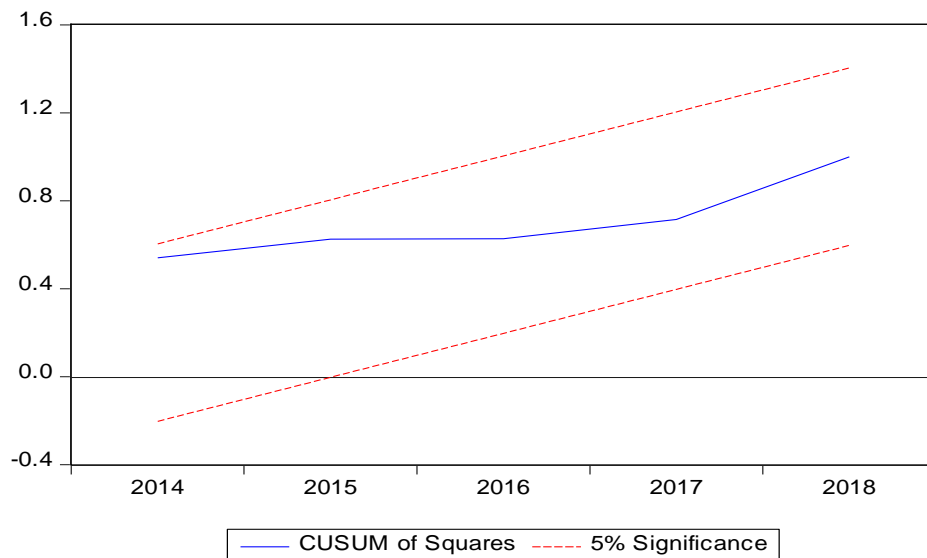
The negative and significant error correction term in Table 4 reaffirms that the variables are co-integrated. The speed of adjustment towards long run equilibrium is 152% annually. In other words, the system corrects its previous period disequilibrium at a speed of 152% annually. The adequacy of the dynamic specification of the models is judged on the basis of various diagnostic statistics. The Durbin Watson (DW) test statistics

indicate the absence of autocorrelation in the model. The Ramsay Reset test suggests the appropriateness of the functional form of the models.

**Figure 2: Stability Test (CUSUM)**



**Figure 3: Stability Test (CUSUM SQUARE)**



For checking structural break is present or not in our model we applied cumulative sum (CUSUM) and cumulative sum of square (CUSUMSQ)



test. Figure 3 and 4 represents the plots of CUSUM and CUSUMSQ, respectively. It shows that CUSUM and CUSUMSQ test statistics fall inside lower and upper critical bound of 5% is significance. The variables are stable over the taken time period.

**Table 6:** Result of Block Exogeneity Wald Test

<b>Hypothesis</b>	<b>Chi-sq</b>	<b>Prob.</b>
GDPPC does not cause OFDI	10.46364	0.0053
OFDI does not cause GDPPC	2.869911	0.2381
EXPORT does not cause OFDI	10.99543	0.0041
OFDI does not cause EXPORT	0.471840	0.7898
INFRA does not cause OFDI	2.096753	0.3505
OFDI does not cause INFRA	1.545544	0.4617
REER does not cause OFDI	3.347489	0.1875
OFDI does not cause REER	0.783241	0.6760
IFDI does not cause OFDI	0.641887	0.7255
OFDI does not cause IFDI	0.279123	0.8697
INT does not cause OFDI	0.121543	0.9410
OFDI does not cause INT	2.310895	0.3149
PAT does not cause OFDI	0.498044	0.7796
OFDI does not cause PAT	1.210379	0.5460
EDU does not cause OFDI	0.980133	0.6126
OFDI does not cause EDU	0.015340	0.9924

For the direction of causality among the variables we conduct VEC Granger causality or block exogeneity Wald Test. The results of the test presented in Table 6 reveal a unidirectional causality from GDPPC, EXPORT and IFDI to OFDI.

## 5. Conclusion

The present study analyses the macroeconomic drivers of outward foreign direct investment in Bangladesh for the time period of 1985-2018. Towards this end ARDL bound testing approach and block exogeneity test have been applied. Our estimates of ARDL model indicate that GDP per capita, exports and inward FDI are significant determinants of outward FDI in Bangladesh. The short run determinants of OFDI include GDP per capita, infrastructure availability and labor skills. The causality analysis revealed a unidirectional causation from GDP per capita, exports and inward FDI to OFDI in Bangladesh.

These findings suggest that outward FDI is encouraged by the economic development of Bangladesh's economy as the variable capturing the level of development of the home country (GDPPC) is positive and highly significant. Therefore, the level of development seems to matter for internationalization in context of Bangladesh.

Further, exports and inward FDI also encourage outward FDI from Bangladesh. This suggests that in the long-run, outward-oriented policies are crucial for the promotion of trade openness which in turn could facilitate outward investment. Since Bangladesh's inward FDI is effectively supporting OFDI, further strengthening and streamlining of doing business procedures to attract inward FDI are important which will further stimulate OFDI. Policymakers must also focus on the development of infrastructure as infrastructure exerts a positive impact on OFDI in the short run. The study offers important practical implications for the policymakers by providing insights into what drives the OFDI process in Bangladesh. In view of the findings of the study it may be suggested that besides focusing on specific measures to promote outward FDI, the government of Bangladesh must focus on infrastructure and other outward oriented policies including promotion of exports and inward FDI. The efforts to promote the overall economic development of the country will also pay off in terms of augmenting OFDI.

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## References

- Banga, R. (2004), "Drivers of outward foreign direct investment from developing economies", Working Paper No. 116, *Indian Council for Research in International Economic Relations*.
- Bano, S. and Tabbada, J. (2015), "Foreign direct investment outflows: Asian developing countries", *Journal of Economic Integration*, Vol.30, pp. 359-398.
- Baskaran, A., Liu, L. and Muchie, M. (2011), "Exploring the Outflow of FDI from Developing Countries: Case Studies from China, India and South Africa", *ERI Working Paper* 2010-007.
- Bhasin, N. and Jain, V. (2013), "Home country determinants of outward FDI: A study of select asian economies", Available at SSRN: <https://ssrn.com/abstract=2206739> (accessed 20 November,2020)
- Buckley, P.J, Clegg , L.J., Cross, A.R., Liu, X., Voss, H. and Zheng, P. (2007). "The determinants of Chinese outward foreign direct investment," *Journal of International Business Studies*, Vol. 38 No. 4, pp. 499-518.
- Correa da Cunha, H., Singh, V. and Xie, S. (2022). "The determinants of outward foreign direct investment from Latin America and the Caribbean: an integrated entropy-based TOPSIS multiple regression analysis framework. *Journal of Risk and Financial Management* 15: 130. <https://doi.org/10.3390/jrfm15030130>
- Das, K., (2013). "Home country determinants of outward FDI from developing countries", *Margin: The Journal of Applied Economic Research*, Vol. 7 No. 1, pp. 93-116.
- Dunning, J.H. (1981). "Explaining outward direct investment of developing countries: In support of eclectic theory of international production",Kumar, K. and McLeod, M. G. (Ed.), *Multinationals from Developing Countries*, *Lexington Books*, Lexington, pp: 1–22.
- Engle, R.F. and Granger, C.W.J. (1987), "Co-integration and error correction: representation, estimation, and testing", *Econometrica*, Vol. 55 No. 2, pp. 251-276.
- Fung, K.C., Garcia-Herrero, A. and Siu, A. (2009). "A comparative empirical examination of outward direct investment from four Asian economies: China, Japan, Republic of Korea and Taiwan" *BBVA Working Paper* No. 0924.

- Johansen, S. and Juselius, K. (1990), “Maximum likelihood estimation and inference on cointegration– with applications to the demand for money”, *Oxford Bulletin of Economics and Statistics*, Vol. 52 No. 2, pp. 169–210.
- Kakoti, D.(2019), “An empirical investigation of India’s outward foreign direct investment: A macro perspective”, *Emerging Economies Studies*, Vol. 5 No. 2, pp.1-10.
- Kolstad, I. and Wiig, A. (2012). “What determines Chinese outward FDI?” *Journal of World Business*, Vol. 47 No. 1, pp. 26–34.
- Kyrkilis D. and Pantelidis P. (2003), "Macroeconomic determinants of outward foreign direct investment", *International Journal of Social Economics*, Vol. 30 No. 7, pp. 827 – 836.
- Liu, Z., Xu, Y., Wang, P., & Akamavi, R. (2016). A pendulum gravity model of outward FDI and export. *International Business Review*, 25(6), 1356-1371.
- Masron, T. A., and Shahbudin, A. S. (2010). “Push factors of outward FDI: evidence from Malaysia and Thailand”, *Journal of Business and Policy Research*, Vol. 5. No 1. pp 54 – 68.
- Mohanty S. and Sethi N.(2019), "Outward FDI, human capital and economic growth in BRICS countries: an empirical insight," *Transnational Corporations Review*, Vol. 11 No. 3, pp. 235-249.
- Morris S. and Jain P. (2015), “Determinants of OFDI: An empirical analysis of OECD source countries using gravity model”, *Indian Economic Review*, Vol. 50 No. 2, pp. 243-271.
- Narayan, P. K. (2004), “Reformulating critical values for the bounds F-statistics approach to cointegration: an application to the tourism demand model for Fiji”, *Discussion Papers* No. 02/04 , Department of Economics, , University of Monash.
- Navaretti, B. and Castellani, D. (2004), “Investments abroad and performance at home: Evidence from Italian multinationals”, *CEPR Discussion Paper* No. 4284.
- Pesaran , M.H., Shin, Y. and Smith, R.J. (2001), “ Bounds testing approaches to the analysis of level relationships”, *Journal of Applied Econometrics* , Vol. 16 No.3,pp. 289–326.

- Pesaran, M. H. and Smith, R. (1995), "Estimating long run relationships from dynamic heterogeneous panels", *Journal of Econometrics*, Vol, 68 No.1, pp. 79–113.
- Pesaran, M.H. and Shin, Y. (1999), "An autoregressive distributed lag modelling approach to cointegration analysis", in S.Strom (Ed.), *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*, Cambridge University Press, Cambridge.
- Pradhan, J. P. (2007), "The determinants of outward foreign direct investment: a firm-level analysis of Indian manufacturing", *Oxford Development Studies*, Vol. 32, pp.619-639.
- Saad, R.M., Mohd Noora, A.M. and Md Nor, A.H.S.(2014), "Developing countries' outward investment: push factors for Malaysia", *Procedia - Social and Behavioral Sciences*, 130, pp.237 – 246.
- Saikia, M., Das, K., & Borbora, S. (2020), What drives the boom in outward FDI from India? *International Journal of Emerging Markets*. ahead-of-print. 10.1108/IJOEM-12-2017-0538.
- Singh, D. and Shastri, S. (2020), "Public expenditure on education, educational attainment and unemployment nexus in India: an empirical investigation", *International Journal of Social Economics*, Vol. 47 No. 5, pp. 663-674.
- Singh, S. (2017). The Relationship between FDI outflows, Exports and GDP in India: An Application of the Autoregressive Distributed Lag Model. *Economic Affairs*, 62(3), 471-481.
- Ukrainets, L. & Yeleyko Gerlach, I. (2021), "The Determinants of outward FDI from developing countries: role of political connections", 10.37734/2409-6873-2021-2-17.
- UNCTAD (2014), "World Investment Report- Investing in SDGs: an action plan", *New York and Geneva*, 2014.