Overseas Direct Investments to the Wholly Owned Subsidiaries and Their Association with Indian Macroeconomic Factors

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Abstract

Purpose : The present study focused on analyzing the macroeconomic factors of the home country (India) before investing in a wholly owned subsidiary (WOS) established in a foreign country. When an investment is made in a WOS, the entity must focus on several factors that would ensure profitability in the long run.

Methodology : The overseas investments to the WOS are made through equity, loan, and guarantee or a combination of the same. The study considered the total overseas direct investments to the WOSs. The performance of the total overseas investments was analyzed using descriptive statistics. The short-run and long-run associations between the total overseas direct investment and the macroeconomic factors of the home country were estimated by employing the Granger causality test and Johansen cointegration test.

Findings : The results proved the existence of a short-run association between select macroeconomic factors and overseas investments. A long-run association also existed between the variables.

Practical Implications : Apart from firm-specific factors, several macroeconomic factors should also be considered before investing. In this context, the study focused on the performance of the ODI from India to the WOS in particular and the home country's macroeconomic factors that should be evaluated before investing in a foreign country.

Originality : Although several research studies were conducted on the performance and growth of overseas direct investments, studies about investments to the WOSs established abroad is a new research dimension in the area of overseas direct investments in the Indian scenario.

Keywords : **overseas direct investment, wholly owned subsidiaries, macroeconomic factors, short-run association, long-run association**

JEL Classification Codes : F21, P33

Paper Submission Date : August 25, 2022 ; Paper sent back for Revision : May 5, 2023 ; Paper Acceptance Date : May 30, 2023 ; Paper Published Online : July 15, 2023

The global value chain (GVC) concepts and the United Nations Sustainable Development Goals 2015 have asserted the significance of cross-border investments. The World Development Report 2020 published by the World Bank has reported that for every 1% increase in GVC participation, the country's per capita

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DOI : https://doi.org/10.17010/ijf/2023/v17i7/170039

increases by more than 1%. The GVC participation includes FDI along with other cross-border trading activities (Andrenelli et al., 2019). It shows the reasons for China's higher per capita income than India, although both are developing economies. In SDGs, goal number 17 has focused on increasing cross-country collaborations in the form of trade and investments. It has stressed the importance of strengthening the initiatives undertaken by the countries to accomplish the goal. This goal is achievable by the year 2030, only if the concerned economies work toward increasing their overseas investment (United Nations ESCAP, 2020). The World Bank and the United Nations, through their reports, have suggested an increase in the quantum of investments and changes in investment policies across the globe to foster economic growth in the long run.

A significant impact of overseas direct investment at the macroeconomic level is possible only when a larger number of firms invest from the home economy (Knoerich, 2017). Although there are several well-established firms in India, the overseas investments by these firms for a longer period are very less. In the wake of increasing international competitiveness, investments made abroad enhance the performance of both the firm and the economy. The benefit of such overseas investments by the firms is reflected in the home country's economic growth only if the investments are made for a longer period (United Nations ESCAP, 2020). The Indian ODI to its wholly owned subsidiaries (WOSs) established overseas has experienced several fluctuations over the years. The establishment of a business in a foreign country is beneficial not only to the investing country (home country) but also to the country receiving the investment (host country). The home country enters the international market in search of natural resources, human resources, better markets, strategic assets, better tax rates, access to more tangible assets and products, industrial upgrading, and a favorable economic environment. These resources cannot be used productively and profitably through import activities or joint ventures. Importing such resources would be profitable in a large way only to the host country. In the case of joint ventures, a decision to support domestic companies is limited as the stake is jointly held by the Indian party and the foreign promoters.

In most cases, firms with a strong domestic base establish a WOS abroad. Such foreign subsidiaries can import products and resources from India that are not available in that country, thereby creating a demand for Indian products in the foreign market. Employment opportunities are provided to Indian citizens in the overseas establishment. The establishment of such subsidiaries abroad would support the development of domestic firms in the home country. This promotes the growth of the Indian economy. Such WOSs make the resources of the host country more easily accessible. The risk of an economic downturn in the home country is compensated by the investment earned in the foreign country. A part of the profits that are earned in the host country is brought back to the home country. These additional financial earnings are used for domestic investment or to fulfill other economic motives (United Nations ESCAP, 2020). The benefits of such overseas investments are also available to the host country. The host country gains access to the resources of the home country. The government of the respective host country also receives revenue in the form of tax. Employment opportunities increase in the host country.

Despite these advantages, the importance of direct investment outside India has been undermined compared to the FDI investments into India. Earlier studies conducted by researchers have given generalized results on factors of the host country that encourage investments from the home country. Research in the area of overseas direct investments from India to the WOS at the macroeconomic level is limited. The Indian firms are ignorant about analyzing the home country and host country macroeconomic factors essential for long-term sustainable investment. As a result, several firms with a stronghold in the home economy cannot form a WOS in a foreign country. Hence, this research analyzes the home country factors at the macroeconomic level, which are crucial in deciding the investment to be made in the overseas establishment. A study in this area will enable the firms to better understand the home country's macroeconomic factors that play a vital role in overseas direct investment decisions. An accurate overseas direct investment decision, in turn, would help in achieving the SDG goal.

Review of Literature

Gao (2008) analyzed the relationship between the macroeconomic variables and Chinese OFDI. The study specified if the patterns are based on Dunning's investment development path (IDP) or whether the formulation of a new theory is required. The macroeconomic variables such as gross domestic product (GDP) per capita, inward FDI, export, human capital mobility, and research and development indicated a long-run relationship with Chinese OFDI. Inward FDI, R&D, and human capital mobility were the factors that affected China's OFDI growth in the short run. The analysis showed the existence of two-way causation between OFDI and a few independent variables such as FDI, export, and R&D. The study suggested the formulation of a new theory that would better explain the flow of OFDI by incorporating variables that are specific to transitional economies, such as China.

Tolentino (2008) used the vector autoregression model (VAR) to analyze the specific home country macroeconomic factors that drive outward FDI from both China and India. The results indicated that none of the variables used in the study have explained the level of outward FDI from China and vice versa. In India, only technological capability proved to be a major determinant of outward FDI from India, and the OFDI from India has influenced the home country's interest rates.

A study by Das (2013) indicated that an increase in the outward FDI from developing countries has been influenced by an increase in GDP per capita, trade openness, political risk, and R&D as a percentage of GDP. He suggested the need to improve their R&D activities and political governance. However, developing countries should not replace domestic investment with OFDI.

Amann and Virmani (2015) examined the level of development of a country using GDP per capita acting as a proxy, which is the main factor that influences OFDI. The data was analyzed using the Granger causality test and vector error correction model. The results indicated a positive relationship between GDP and OFDI, thereby supporting Dunning's theory. The direction of causality between OFDI and R&D indicated the existence of reverse technology spillover. The execution of policies that would encourage export and FDI inflows would also encourage OFDI.

Mishra and Kumar (2016) analyzed the impact of macroeconomic determinants on outward foreign direct investment from India. Macroeconomic indicators, mainly economic openness, interest rate, and exchange rate, were used in the study. Interest rates and trade openness showed a significant relationship with OFDI. However, the openness of the economy was negatively associated with OFDI. The results of Granger's causality test revealed that interest rate causes openness and OFDI and foreign exchange causes interest rate, but a reverse relationship has not been derived. Economy openness and interest rate showed a bi-directional relationship.

Haiyan (2017) analyzed the home-country determinants of OFDI from the developing BRICS nations and five other developed economies (Australia, Germany, Japan, the UK, and the US). The study focused on the variables such as exchange rate, market size, inflation, labor cost, interest rate, corruption, political risks, technology, and openness. The results proved that inflation, political risks, interest rate, market size, and openness showed a significant influence on OFDI, whereas exchange rate and corruption showed a significant influence only in the case of BRICS. On the other hand, labor costs and technology have not exhibited any influence on OFDI. Differences in the influence of home country determinants on the OFDI have been noted between the selected developing and developed countries.

Li et al. (2019) analyzed the factors influencing OFDI along the "Belt and Road Initiative." The results demonstrated that distance, economic freedom, bilateral trade, GDP, and patent were the most significant determinants of OFDI in the Belt and Road Initiative. In the PSTR model, which was used, economic freedom, bilateral trade, GDP, and patent positively influenced FDI, and distance had a negative effect on OFDI.

Objectives of the Study

The objectives framed for the study are given below:

(1) To examine the performance of the total overseas direct investment from the home country to the WOSs established in the host country.

(2) To investigate the short-run and long-run associations between the macroeconomic variables of India and total ODI to the WOSs established overseas.

Research Methodology

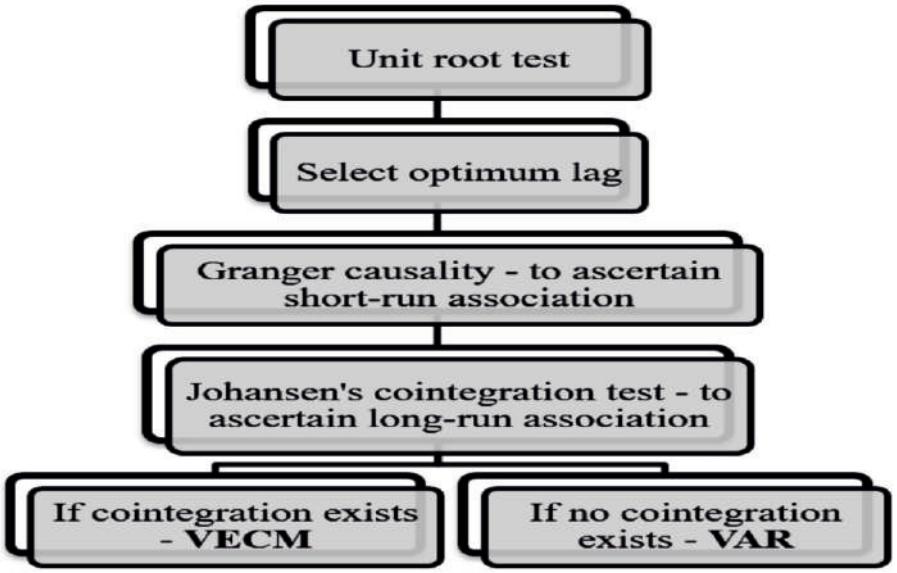
The study comprised yearly and quarterly data for 12 years, from January 1, 2008 – December 31, 2019. The purposive sampling technique was adopted in the study. Since July 2007, the Reserve Bank of India has published data on overseas direct investments from India. The investments made in the form of equity, loan, and guarantee were given for both joint ventures and WOSs. The total overseas direct investments from India to the WOS were considered.

The macroeconomic factors play an essential role in influencing investments from India to the WOSs established overseas. This section discusses the home country's macroeconomic variables taken for the study. The IDP, as given by Dunning, has considered GDP as an important proxy for economic development and has also explained its importance in the net outward investment from a country. The quarterly GDP data were drawn from the IMF's International Financial Statistics. The nominal GDP data were given in domestic currency in millions. The data were converted to real terms by using the GDP deflators. Trade openness of an economy refers to the extent to which a country has international experience in terms of exports and imports. It is normally measured as a percentage of GDP. The study used the method Tolentino (2008) adopted, where the sum of exports and imports was taken as a measure of trade openness. A new establishment with minimum or lack of experience might not be willing to invest abroad due to fear of risk or capital inadequacy. The real effective exchange rate (REER) of India refers to the weighted average of the Indian rupee in relation to a group of other major currencies. The REER Index for India is published by the RBI monthly in two forms: six currency index and 36 currency index. The data for the REER were obtained from the RBI monthly data. These data were converted to quarterly data for the purpose of analysis. Because the data were already available in real terms, there was no need to convert them to real value. The interest rate was taken to determine its impact on the WOS investments from India. The quarterly interest rate data were drawn from the International Financial Statistics. They were converted into real terms by using the consumer price index. The monthly inward FDI was drawn from the Department for Promotion of Industry and Internal Trade. It was converted to quarterly data. The nominal data were converted to real data by using GDP deflators.

The data for all the variables were converted into the logarithmic form to ensure uniformity of the data and to avoid the problem of heteroscedasticity. The data for the study were collected from the United Nations Conference on Trade and Development (UNCTAD, 2020), Ministry of Commerce and Industry, Reserve Bank of India, International Financial Statistics, World Trade Organization, Department for Promotion of Industry and Internal Trade, and several other journals, books, reports, and websites.

The first objective is to analyze the performance of the total overseas direct investments from India to its WOSs established abroad. The Reserve Bank of India has published the monthly investment data. The data comprises both joint venture investments and WOS investments. The investment in the WOS was taken for the study. The data were given in USD million. The performance of the total ODI from India to the WOS was analyzed by employing descriptive statistics, such as mean, median, standard deviation, skewness, kurtosis, and Jarque–Bera

Figure 1. ***Procedure for Analyzing the Short-Run and Long-Run Associations***



test using the EViews 8 software. The year-wise analysis was performed for 12 years commencing from January 2008. The procedure for analysis of the long-run and short-run association between the macroeconomic variables and the overseas direct investment to the WOS is diagrammatically represented in Figure 1.

Analysis and Interpretation

Year-Wise Analysis and Descriptive Statistics of Total Overseas Direct Investments from India to the Wholly Owned Subsidiaries

The data on overseas direct investment to the WOSs have been compiled from the Reserve Bank of India database and exhibited in Table 1, along with the descriptive statistics for the same. The total investment indicates that the

Table 1. ***Year-Wise Analysis of Total ODI from India to the WOS from 2008–2019***

Year	Total ODI (USD Million)		Total ODI
2008	14,783.31	**Mean**	19257.09
2009	15,406.03	**Median**	19451.65
2010	26,956.37	**Maximum**	26956.37
2011	25,311.58	**Minimum**	14398.47
2012	20,248.36	**Standard deviation**	4277.9
2013	20,307.73	**Skewness**	0.41
2014	22,791.80	**Kurtosis**	2.00
2015	18,654.95	**Jarque–Bera test value**	0.84

2016	20,966.03	***p*-Value (Jarque–Bera test)**	0.65
2017	16,801.93		
2018	14,458.56		
2019	14,398.47		
Total	**2,31,085.1**		

Source : Compiled from RBI database, and EViews 8 has been used for the analysis.

lowest investment of 14,398.47 USD million was in 2019, and the highest investment of 26,956.37 USD million was in 2010. During the entire study period, several fluctuations have been observed in the total investments.

The mean value of the total ODI is 19,257.09 USD million. The skewness value (0.41) lies between (−) 0.5 and 0.5, which indicates that the data are approximately symmetrical. The kurtosis value (2.00) shows that it is a platykurtic distribution. The probability value of the Jarque–Bera test has shown that the data are normally distributed.

Analysis of the Short-Run and Long-Run Association between the Home Country Macroeconomic Variables and the Overseas Direct Investments from India to the Wholly Owned Subsidiaries

Unit Root Test

The following are hypothesized:

- **H_{01} :** The dependent variable has a unit root (non-stationary).
- **H_{a1} :** The dependent variable has no unit root (stationary).

The first step in the application of an econometric tool is to test the stationarity of the given data set. Data are stationary when it has a constant mean, constant variance, and constant auto covariance for every lag (Brooks, 2008). In this case, stationarity has to be tested for all macroeconomic variables and the total ODI. The augmented Dickey–Fuller (ADF) test has been applied to test the stationarity of the data.

The *p*-value (0.43) of the stationarity test (at level) for total ODI shows that the data are non-stationary. The absolute *t* - statistics of these variables are found to be less than the critical values. This reveals that the data are non-stationary at the level. Further analysis is applied only if the data are stationary. The ADF test has been applied to the first difference in the data to convert it to stationary data. The results of the stationarity test have shown that the data for equity are stationary because the *p*-values are 0.00, which is less than 0.05. Hence, the null hypothesis H_{01} is rejected.

The stationarity test for the macroeconomic variables (independent variables) has also been conducted. The *t* - statistics (absolute value) of GDP (3.41) is less than its critical value, and its *p*-value (0.06) is more than 0.05, which shows that GDP is non-stationary at level. The absolute *t*-statistics of other macroeconomic variables, such as interest, inward FDI, REER, and trade openness, are less than their critical values, and their *p*-values, such as 0.22, 0.68, 0.83, and 0.65, are also found to be insignificant, which shows that the macroeconomic variables are not stationary at level. The null hypothesis H_{01} cannot be rejected. The next step is to calculate stationarity at the "first difference." The absolute *t* - statistics for all the variables are less than their critical values, and the *p*-values of the variables, namely interest, inward FDI, REER, and trade openness, are 0.00, and GDP is 0.02, which is less than 0.05. Hence, it is concluded that all the variables are stationary at the first difference. Hence, the null

hypothesis H_{01} is rejected. The conversion of the non-stationary data to stationary data is the basic step in econometric modeling before proceeding with the analysis.

Selection of Optimum Lag

After the conversion of the data into stationary data, the next step is to select the optimum lag for the study. Lag refers to one period of delay in the variables. In other words, the effect of the value of a variable is usually felt only after a delay and not immediately. This delay is referred to as a lag. The lagged value of a variable is the value that exists in the previous period. If Y is variable, its lagged value is Y_{t-1}. The choice of the optimum lag is essential before the application of the tools because the lagged value influences the results of the study to a great extent. However, the selection of a very high lagged value dilutes the data and reduces the degrees of freedom. As a result of which, the statistical inference is affected (Gujarati & Porter, 2009).

The optimum lag length is selected by applying the VAR and selecting the lag length criterion option from the resulting output window. The result of the lag selection criteria is represented in Table 2.

In Table 2, lag 1, as suggested by the Schwarz information criterion, has been considered as the optimum lag.

Table 2. ***Selection of Optimum Lag (Total ODI)***

Form of Investment	Lag	Log L	LR	FPE	AIC	SC	HQ
Total ODI	1	554.77	281.59	3.09e–18	–23.30	**–21.60***	–22.67

Source : Computed using EViews 8. AIC = Akaike information criterion; FPE = final prediction error; HQ = Hannan-Quinn information criterion; LR = likelihood ratio; SC = Schwarz information criterion.

Short-Run Association Between the Variables

The study analyses the existence of a short-run causal association between the macroeconomic variables of the home country and the total overseas direct investments to the WOSs.

Granger Causality Test

The Granger causality test has been applied to estimate the results. The study focuses on the short-run causal association of the macroeconomic variables with the ODI to the WOS. The result shown in Table 3 includes only those variables that have a short-run causation effect with ODI.

The *p*-values of LGDP (0.0050) and LINTEREST (0.045) in Table 3 are less than 0.05, which shows that GDP

Table 3. ***Granger Causality Test (Total ODI)***

Hypotheses	*p*-value
• **H_{02} :** *LGDP* does not Granger cause *LTOTAL*.	0.005
• **H_{a2} :** *LGDP* Granger causes *LTOTAL*.	
• **H_{03} :** *LINTEREST* does not Granger cause *LTOTAL*.	0.045
• **H_{a3} :** *LINTEREST* Granger causes *LTOTAL*.	

Source : Computed using EViews 8. GDP = Gross Domestic Product; Interest = interest rate; Total = Total ODI.

and interest Granger cause total ODI. Hence, the null hypothesis H_{02} and H_{03} have not been accepted. The results obtained with respect to interest rates are similar to the findings of Mishra and Kumar (2016). In the short run, the past values of GDP and interest rates have an impact on total ODI, which helps in the prediction of ODI values. The other macroeconomic variables, such as inward FDI, REER, and trade openness, do not have a short-term causal association with Total ODI.

Long-Run Association Between Variables

After ascertainment of the short-run association, the next step is to check if the variables exhibit a long-run association. The following analysis has been applied for this purpose.

Johansen's Test for Cointegration

During the estimation of the long-run association between the variables, the optimum lag that has been selected must be considered. Johansen's cointegration test has been used to ascertain the long-run association. Johansen's cointegration test is applied only if the variables are all integrated in the same order. In this case, all the variables are integrated of the first order I (1), or in other words, they are stationary at the first difference. It is imperative to note that although the variables are stationary at the first difference, Johansen's test is applied to the original data and not to the first difference data. Table 4 illustrates the results of Johansen's cointegration test.

The trace test and maximum Eigenvalue test show different results with respect to the number of cointegration equations.

Table 4. ***Johansen's Cointegration Test (Total ODI)***

H_{04} **:** There is no cointegration equation.

H_{a4} **:** There is at least one cointegration equation.

No. of Cointegration Equations	Trace Test		Maximum Eigenvalue Test	
	Trace Statistic	*p*-value	Max-Eigen Statistic	*p*-value
None*	129.12	0.00*	54.67	0.00*
At most 1	74.45	**0.02***	33.64	**0.05**
At most 2	40.81	0.19	18.17	0.48
At most 3	22.63	0.26	16.53	0.19
At most 4	6.10	0.68	5.11	0.72
At most 5	0.99	0.31	0.99	0.31

Note. *Significant at the 5% level.

Trace Test Results

The first *p*-value of the Trace test is less than 0.05, that is, 0.00. Hence, the null hypothesis H_{04} is not accepted. In the next step, the existence of at least one cointegration equation is to be tested.

- **H_{05} :** There is at least one cointegration equation.
- **H_{a5} :** There are at least two cointegration equations.

The *p*-value (0.02) is less than 0.05. This indicates that there are at least two cointegration equations. The null hypothesis H_{05} has not been accepted. The next step is to test whether at least three cointegration equations exist.

- **H_{06} :** There are at least two cointegration equations.
- **H_{a6} :** There are at least three cointegration equations.

The *p*-value is 0.19. The null hypothesis H_{06} is accepted. Therefore, the trace test shows that there are at least two cointegration equations.

Maximum Eigenvalue Test

The presence of at least one cointegration equation is proved because the first *p*-value (0.0006) is significant. However, the second *p*-value of 0.05 indicates that more than one cointegration equation does not exist. Whenever the Trace test and maximum Eigenvalue test exhibit different results, the Trace test is preferred (Lütkepohl et al., 2001). Hence, it is concluded that there are at least two cointegration equations. Johansen's cointegration test also gives details of the normalized cointegration coefficients. The details are given in Table 5.

The interpretation of the normalized cointegration coefficients involves reversing the signs of the coefficients. From Table 5, a negative association is detected between total overseas direct investment and GDP, interest, and REER. Any decrease in these variables results in an increase in the ODI from India to the WOSs. Inward FDI and trade openness, on the other hand, have exhibited a positive association with total overseas direct investment. The results are similar to the findings obtained by Das (2013) and Stoian (2013). In the long run, the investments in the WOS established abroad increase with a decrease in the GDP, interest, and REER. A lower GDP causes fear of recession or a decline in business revenues. In this situation, firms will look out for opportunities outside the country where there is a possibility of receiving an income. This increases overseas direct investment in the WOS. Low-interest rates within the country decrease the opportunity cost of capital, which in turn, increases overseas investments (Tolentino, 2008). However, to see if the long-run association is significant or not, the *t* - statistic has been computed. The *t* - statistics value is derived by dividing the coefficient by the standard error. If the *t* - statistics value (absolute value) is more than 1.96 (5% level of significance), the null hypothesis is not accepted. The null hypothesis indicates the absence of a cointegration relationship in the model. In this case, a long-run association exists because the *t* - statistics for all variables is greater than 1.96, and the null hypothesis is rejected.

Because the variables show a cointegration in the long run, it is important to ascertain the "error correction term," also known as the "speed of adjustment." Hence, the vector error correction model has been applied to

Table 5. ***Normalized Cointegration Coefficients (Total ODI)***

Variables Used in the Study	Normalized Cointegration Coefficients	Standard Errors	*t*-statistics
LTOTAL	1.00		
LGDP	7.34	0.92	7.94
LINTEREST	3.93	0.60	6.50
LINWFDI	(–)1.87	0.25	(–)7.46
LREER	0.38	1.37	0.27
LTRADEOPENNESS	(–)1.92	0.43	(–)4.45

Note. GDP = gross domestic product; Interest = interest rate; INWFDI = inward FDI; REER = real effective exchange rate; Total = total ODI.

correct the short-run divergence of the individual variables, which causes these variables to converge in the long run.

Vector Error Correction Model

VECM Equation

The standard form of the VECM equation is stated below:

$$\Delta Y_t = \beta_0 + \sum_{i=1}^{n} \beta_i \Delta Y_{t-i} + \sum_{i=0}^{n} \delta_i \Delta X_{t-i} + \varphi_i Z_{t-1} + \mu_t \qquad (1)$$

The variables stated in the equation have been explained in Table 6, along with the corresponding value generated by the VECM model.

Table 6. ***VECM Model (Total ODI)***

Variables Stated in the Equation	Explanation	Corresponding Values
ΔY_t	Target variable (Δ refers to change)	Δ*Total ODI*
β_0	Constant	–0.007
β_i	Coefficient of the target variable's lagged value	0.13
ΔY_{t-i}	Past period's target variable	$\Delta Total\ ODI_{(t-1)}$
δ_i	Coefficient of all other variable's lagged value	1.42
		0.15
		0.11
		0.80
		0.09
ΔX_{t-i}	Other variables (past period)	ΔGDP_{t-1}
		$\Delta Interest_{t-1}$
		$\Delta Inwfdi_{t-1}$
		$\Delta REER_{t-1}$
		$\Delta Trade\ Openness_{t-1}$
φ_i	Coefficient of the error correction term (speed of adjustment)	–1.26
Z_{t-1}	Error correction term's lagged value	ect_{t-1}
μ_t	Residuals	

These values are substituted in the equation :

$$\Delta Total\ ODI = -0.007 + 0.13\ \Delta Total\ ODI_{t-1} + 1.42\ \Delta GDP_{t-1} + 0.15\ \Delta Interest_{t-1} + 0.11\ \Delta Inwfdi_{t-1} + 0.80\ \Delta REER_{t-1} + 0.09\ \Delta Trade\ openness_{t-1} - 1.26\ ect_{t-1} + \mu_t \qquad (2)$$

The previous period's deviation from the long-run equilibrium is corrected in the current period at a speed of 126.60% (−1.26). The negative sign for the error correction term is a favorable one indicating that a deviation in one direction is corrected only if the correction takes place in the opposite direction. A percentage change in GDP,

Table 7. *Cointegration Equation (Total ODI)*

Variables Stated in the Equation	Explanation	Corresponding Values
Z_{t-1}	Error correction term's lagged value	ECT_{t-1}
Y_{t-1}	Target variable's lagged value	1.00 Total ODI_{t-1}
β_0	Constant	−4.59
β_1	Coefficient of the explanatory variable's lagged value	−1.25
		2.03
		−6.54
		1.46
X_{t-1}	Past period variables	$Interest_{t-1}$
		$Inwfdi_{t-1}$
		$REER_{t-1}$
		$Trade\ Openness_{t-1}$

interest, inward FDI, REER, and trade openness results in a 1.42, 0.155773, 0.11, 0.80, and 0.09 change in total ODI in the same direction.

Cointegration Equation

$$Z_{t-1} = ECT_{t-1} = Y_{t-1} - \beta_0 - \beta_1 X_{t-1} \quad (3)$$

This is the standard form of the cointegration equation, also called the long-run model. Equation 2 signifies the long-run association between the variables. The variables stated in the equation have been explained in Table 7 along with the corresponding value generated by the VECM model.

The long-run model is as follows:

$$Z_{t-1} = ect_{t-1} = 1.00\ Total\ ODI_{t-1} - 4.59 - 1.25\ Interest_{t-1} + 2.03\ Inwfdi_{t-1} - 6.54\ REER_{t-1} + 1.46\ Trade\ openness_{t-1} \quad (4)$$

The significance of the coefficients in the equation is estimated by deriving the system-generated equation and running a regression model. The equation generated by the system is given below:

$$\mathbf{D(LTOTAL) = C(1)*(LTOTAL(-1) - 1.25*LINTEREST(-1) + 2.03*LINWFDI(-1) - 6.54*LREER(-1) + 1.46*LTRADE\_OPENNESS(-1) - 4.59)} + C(2)*(LGDP(-1) + 0.70*LINTEREST(-1) - 0.53*LINWFDI(-1) + 0.94*LREER(-1) - 0.46*LTRADE\_OPENNESS(-1) - 5.46) + C(3)*D(LTOTAL(-1)) + C(4)*D(LGDP(-1)) + C(5)*D(LINTEREST(-1)) + C(6)*D(LINWFDI(-1)) + C(7)*D(LREER(-1)) + C(8)*D(LTRADE\_OPENNESS(-1)) + C(9) \quad (5)$$

The long-run model is given in bold in the equation. The regression analysis has to be applied to this equation. The results of the regression are stated in Table 8.

Table 8. *Regression Equation (Total ODI)*

$C(1) = \varphi_i$ (Coefficient of error correction term)	–1.26
p-value of *C*(1)	0.00
R^2	0.57
Adjusted R^2	0.47
F-statistic	6.14
p-value of *F*-statistic	0.00

There are two basic conditions that prove the presence of a long-run association,

which are as follows:

Condition 1 : The coefficient of $C(1)$ should be negative – satisfied.

Condition 2 : The probability value of $C(1)$ should be significant – satisfied.

Because both the basic conditions are satisfied, it is concluded that a long-run association exists between the total overseas direct investment to the WOSs and the home country's macroeconomic determinants. The R^2 value indicates that 57% of any change that occurs in the dependent variable is caused because of the independent variables used in the study. The probability value of the *F* - statistic (0.00) is also highly significant. The results are similar to the findings of Khoon and Nyen (2012), where similar variables were considered. The reliability of the model is tested using diagnostic checks, which test the characteristics of the residuals that are developed from the model.

Diagnostic Checking

Normality Test

- **H_{o7} :** The residuals follow a normal distribution.
- **H_{a7} :** The residuals do not follow a normal distribution.

The test of normality is used to check if the residuals are normally distributed. The probability value of the Jarque–Bera test is 0.10. The null hypothesis H_{07} cannot be rejected. The residuals follow a normal distribution.

Serial Correlation Test

- **H_{o8} :** There is no serial correlation.
- **H_{a8} :** There is a serial correlation.

The serial correlation test verifies if the error terms are correlated. The main assumption of a regression model is that the residuals should not be correlated. The probability value is 0.77. The null hypothesis H_{08} cannot be rejected. The residuals of our model are not correlated.

Heteroscedasticity Test

- **H_{o9} :** There is no heteroscedasticity (variances are equal).
- **H_{a9} :** There is heteroscedasticity (variances are unequal).

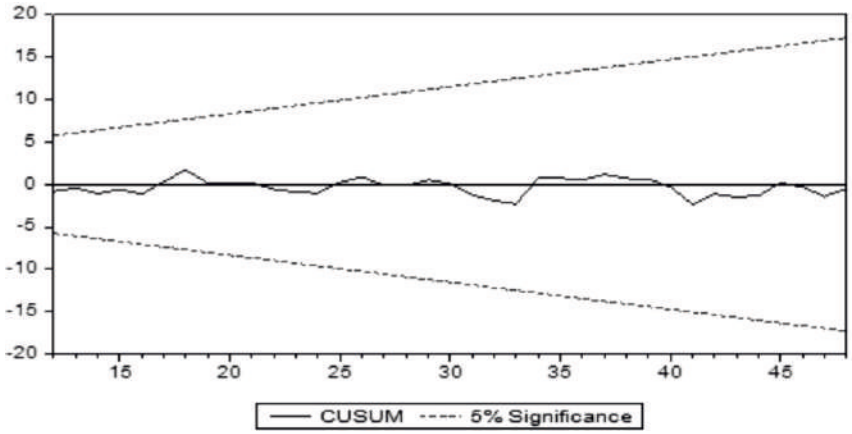
The *p*-value of 0.27 indicates that the null hypothesis H_{09} cannot be rejected. This has shown that the residuals are not heteroscedastic.

Test of Stability (Cumulative Sum)

The cumulative sum (CUSUM) chart combines the current and previous values and detects minor deviations from the mean within a specified level of significance. The model is stable if these minor deviations lie within the given significance level.

In Figure 2, it is seen that the deviations fall within the specified range, and the model is said to be a stable one. The existence of short-run and long-run associations between the home country's macroeconomic variables and overseas direct investments to the WOS has been studied. These results would facilitate the investment firms to examine the home country's macroeconomic factors before making an investment decision. The existence of a long-run association between these variables would reveal the importance of overseas direct investment in ensuring long-term sustainable development.

Figure 2. ***CUSUM Test of Stability (Total ODI)***



Findings, Suggestions, and Conclusion

The concepts of the GVC and the United Nations Sustainable Development Goals have emphasized the importance of overseas direct investment for the sustainable development of the economies. Overseas direct investment in a WOS is a long-term investment that helps to foster the growth of the economy and enrich the trading activities in the home economy. The WOS in the foreign country can import resources from its parent entity in the home country and vice versa. The WOS provides employment opportunities not only to the inhabitants of the host country but also to the home country. This ensures efficient and effective utilization of both human and material resources. A part of the earnings of the WOS will be repatriated to the home country, which

can be utilized for the home country's growth. When an investment is made in a WOS, the entity must focus on several factors that would ensure profitability in the long run. Apart from the firm-specific factors, several macroeconomic factors should also be considered. In this context, the study has focused on the performance of the ODI from India to the WOS and also the home country factors that should be evaluated before investing in a foreign country.

The GDP and interest rate have shown a short-run association with ODI, which has indicated that a change in GDP and interest rate in the short run causes a change in overseas investments. As GDP acts as a measure of the production of goods and services within the country, a good GDP indicates the ability of the entity to take up risky investments. On the other hand, overseas direct investments increase when the interest rates are low because the entities are in search of better markets where the return would be higher. The Indian entities planning to invest overseas in a WOS must check the GDP and interest rates often to decide the time of investment. The study has proved the existence of a short-run association between GDP and ODI and interest rate and ODI.

The existence of a long-run association between the macroeconomic variables and overseas investments has been proved. The results are similar to the study conducted by Dasgupta (2014). This shows that in the long run, investments in an overseas establishment (WOS) benefit the home economy and ensure its sustainable development. The existence of a long-run association shows that overseas direct investment benefits the investor entities and also the country as a whole in the long run. As the dues receivable from such WOS in the form of dividends, royalties, or any other fees must be repatriated to India. Hence, the government must take necessary measures to improve the import and export activities and inward FDI to increase overseas direct investment in the long run. A prior experience in the international market gives the investor the confidence and knowledge to set up a subsidiary abroad.

India has been ranked fifth for ODI flows and fourth for ODI stock among the developing countries in Asia and the Pacific. Despite this, the importance given to FDI inflows is much more than that of FDI outflows. Framing of new policies would facilitate further growth of overseas direct investments from India to the WOS to ensure sustainable growth of the Indian economy. Extending beyond national borders for multiple motives helps to access the resources of the foreign country and thereby foster the growth of the home country.

Managerial and Theoretical Implications

The concepts of the GVC and the United Nations Sustainable Development Goals have emphasized the importance of overseas direct investment for the sustainable development of the economies. Overseas direct investment in a WOS is a long-term investment that helps to foster the growth of the economy and enrich the trading activities in the home economy. The WOS in the foreign country can import resources from its parent entity in the home country and vice versa. The WOS provides employment opportunities not only to the inhabitants of the host country but also to the home country. This ensures efficient and effective utilization of both human and material resources. A part of the earnings of the WOS will be repatriated to the home country, which can be utilized for the home country's growth. When an investment is made in a WOS, the entity must focus on several factors that would ensure profitability in the long run. Apart from the firm-specific factors, the firm should also consider several macroeconomic factors such as GDP, trade openness, REER, interest rates, and inward FDI.

Limitations of the Study and Suggestions for Future Research

The study is subject to the following limitations:

- The overseas investment data in the form of joint ventures have been ignored. The inclusion of this may give different results.

- The macroeconomic factors, such as distance, politics, and cultural similarities, which also influences the choice of the destination country, have not been considered in the study.

The following areas can be explored by researchers in future studies:

- A study on overseas direct investments in the form of joint ventures can be conducted.
- The performance of the WOS in the host country and its parent company in the home country can be studied.
- A study on the impact of overseas direct investment on the macroeconomic variables of the home country can be conducted.
- A region-wise analysis of overseas direct investments from India.
- A sector-wise analysis of overseas direct investments from India.

Authors' Contribution

Dr. D. Vijayalakshmi identified the research problem, framed the research methodology, and verified the tools applied and the study results. Dr. Shalini K. Menon collected the relevant data and applied the econometric tools using EViews 8.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding Acknowledgement

The authors received no financial support for the research, authorship, and/or for publication of this article.

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