ECONOMIC FACTOR INFLUENCING INDIA’S OUTBOUND INVESTMENT: AN ECONOMETRIC TEST WITH REAL EFFECTIVE EXCHANGE RATE

Dikshita Kakoti

Abstract: United Nations Conference on Trade and Investment (UNCTAD) has confirmed India to be listed in the top 20 countries for outbound investment by the end of 2019. In fact in 2018, it was approx $11 billion that provides domestic enterprises a better admittance to global networks as well as markets, transfer of technology and skills and enables better outcomes. Being a positive determinant of such raising upward flows, exchange rate plays a crucial role for encouraging outward investment from the emerging economies like India. This paper uses real effective exchange rate as a proxy for raising OFDI from India and technique used is Engle granger co-integration test and verified both short run and long run causal relation. The paper's findings show that there is long term co-integration between OFDI and REER. From the findings of this paper, it still has some limitations that can be corrected for further study.

JEL classification: P45, F31, P62

Key words: India’s OFDI, Real effective exchange rate, Co-integration

1. INTRODUCTION

The increasing trend of outward investment is experienced along with inward investments since 1990. However, there exists a knowledge gap regarding the fact that they have considered outbound FDI commitments or approved equities terms, reflecting only the one side of the picture. India has some specific advantage over the monopoly advantage which further encourages India to become an attractive business hub for outsourcing its IT sector, Pharmaceuticals including contract research and other supporting activities. After introduction of economic reforms in 1990s in India, industrial and trade policies were also evolved to enhance the efficiency to capture the market and to encourage employment-oriented industrialization. After 2005, the India’s OFDI has been increased rapidly [1]. Consequently, in the recent years, to further capture the world market they have again shifted to developing counties with green field investment. Being
a macro determinant, the real effective exchange rate is a positive factor as it consider price differential with adjusted inflation. It helps in identifying the factors behind the country’s trade flow and used to measure the stable rate of a nation’s currency. Aliber, (1970) opines that nation with their tough currency influence a firm to financial power to their foreign investment. Because appreciation of currency reduces capital need for overseas investment, in terms of home currency for expanding capital [2][3] So positive relationship between overseas investment and Real effective exchange rate of the home country is quite obvious. Higher REER motivated to increase OFDI from home country [4]. Appreciation of exchange rate is the pushing factor investing in overseas [5].

1. EXTENSIVE LITERATURE REVIEW

Rapid appreciation of exchange rate would proportionately lead to raise outward investment with its successive improvement from the undervalue position. However Froot and Stain (1991) argue that the decision regarding a firm to invest overseas is not always based on the changes in the expected level of exchange rate[6]. No doubt currency appreciation reduces the cost of buying asset in foreign but at the same time (nominal) expected return falls down, keeping the rate of return identical. There are instances which found a negative relation between exchange rate and OFDI. Wei and Alon,( 2010) empirically tested the home country determinant that affects the china’s outward investment by covering time period 1987 to 2006 where he has found that exchange rate is negatively associated with OFDI.[7] Similarly Hui , Y.L.,(2016)[8] tried to investigate the ER effects on OFDI from China and for this he has used nominal ER calculate in terms of their local currency unit Yuan and found that Yuan appreciation reduces the OFDI flow which is contradictory to the earlier related theories that depicts a positive relationship between OFDI and exchange rate. Because the Chinese MNCs decision regarding investing abroad is not directly influence by exchange rate as they are operated by their government and decisions are mostly based on the mercantilist ideas.[9][10]

As far as the volatility of Exchange rate is concerned, the writings on the uncertainty of exchange rate and probable impact on the overseas investment show an opaque picture. Cushmas, (1988, 1989) suggests that if a country is experiencing an uncertainty in exchange rate, then OFDI can be substitute
over export, pointed a positive relationship influence on OFDI. Later on he has empirically proof his view by investigating investment flows from USA to other six countries including United Kingdom, France, Canada, Germany and Japan covering time periods 1963 to 78[11]. Hui, Y.L., (2016) also established a constructive association between the volatility of exchange rate as well as outward FDI[12]. Contrary to that, Apergis and Kyrkillis (2002), opines that grand volatility of exchange rate is a heavy risk factor to the investor profit and other future cost flows.[12]

2. DATA SOURCE AND METHODOLOGY

Yearly time series data of OFDI flows from India is considered covering time period 1980 to 2017, mainly collected from the online database of UNCTAD. The REER data which are collected from RBI is based on different base periods, so splicing method is therefore applied to make it one single series and take 2005 as a base year.[13] After that data are transformed to natural logarithms(ln)[14].

A time series analysis is done where ADF and PP stationarity test is used. For testing the long run association between the outward FDI and REER of India, Engle-Granger residual based co-integration test is used. Later on to examine the causality between the variables (i.e., whether REER leads to increase rate of OFDI from India or not), ECM technique is used.

For ADF test, the following regressions are estimated –

$$\Delta y_t = \alpha + \gamma_1 y_{t-1} + \beta_1 \Delta y_{t-1} + \epsilon_t$$

The lag length of ADF is selected as 9. The Phillips- Perron (PP) test considers the subsequent regression equation as:

$$\Delta y_t = \alpha + \gamma_1 y_{t-1} + \beta_1 \Delta y_{t-1} + \epsilon_t$$

co-integration testing equation is –

$$y_t = \alpha_1 t + \gamma_2 x_t + \epsilon_t$$

Then error correction mechanism (ECM) is considered for checking the long run equilibrium relationship and causality together. ECM testing equation is -

$$\Delta y_t = \gamma_1 + \gamma_2 \Delta x_t + \gamma_3 \epsilon_t$$

3. RESULTS AND DISCUSSION

- UNIT ROOT

In order to check the stationarity of the time series (GDP and OFDI), two unit root tests-Augmented Dicky fuller (ADF) and Phillips-Perron (PP) tests are selected.

Table 1: Unit root test results

<table>
<thead>
<tr>
<th>Factors</th>
<th>Augmented Dicky Fuller test</th>
<th>Phillips- Perron test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>1st</td>
</tr>
</tbody>
</table>

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It is clear that both the time series has a unit root i.e., non-stationary at levels as p values are greater at 5 percent significant level. But we can reject Hₒ at 1ˢᵗ difference, demonstrating that the time series has no unit root. Therefore, we can declare the time series under consideration as I(1), i.e., stationary at 1ˢᵗ difference.

- **CO-INTEGRATION TEST**

Engel-Granger residual based co-integration test is used to check the involvement between OFDI as well as REER.

**Table 2: Co-integration results**

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Coefficient values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-99.34</td>
<td>.00*</td>
</tr>
<tr>
<td>InREER</td>
<td>20.59</td>
<td>.00*</td>
</tr>
<tr>
<td>R squared</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>F-statistics</td>
<td>26.59</td>
<td>.000*</td>
</tr>
<tr>
<td>ADF Stats for resid</td>
<td>-3.39 (lag 1)</td>
<td></td>
</tr>
</tbody>
</table>

Note: The Engle-Granger Critical value (5 per cent) level of significance is (−2.94)

Source: Researchers own compilation based on secondary data

It is established that the ADF test residuals is 3.39 at lag 1 exceeds Engle-Granger critical values at 5 percent significance level (table 2). Thus a extensive co-integrating association between overseas investment and REER is thereby established as the projected value exceeds the critical value (−2.94) at 5% level verified by Engle-Granger.

- **RESIDUAL DIAGNOSIS**

The residual diagnostic is used to verify the validity of the representation for which we have run tests for Normality, Auto correlation and for Heteroscedasticity. The residual diagnostic results show that our model satisfies two assumptions, but this replica fails in normality test as India’s OFDI was very low or insignificant prior to liberalization.

**Table 3: Residual diagnostics**

<table>
<thead>
<tr>
<th>experiment</th>
<th>Null Hypothesis</th>
<th>P-values</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality</td>
<td>Normally distributed</td>
<td>0.0000</td>
<td>reject the Hₒ</td>
</tr>
</tbody>
</table>
• ERROR CORRECTION MECHANISM (ECM)

Whether progressive REER leads to push OFDI of India, ECM is used to test the diminutive and contributory association between OFDI and REER of India. From VAR lag length criteria, all the lag length selection criteria suggest that for ECM, the optimal lag length is 1.

Table 4: ECM results

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Coefficient standards</th>
<th>probability-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.27</td>
<td>0.00</td>
</tr>
<tr>
<td>D(lnofdi)</td>
<td>-.31</td>
<td>0.03</td>
</tr>
<tr>
<td>D(lnreer)</td>
<td>17.25</td>
<td>0.06</td>
</tr>
<tr>
<td>D(lnreer(-1))</td>
<td>9.22</td>
<td>0.39</td>
</tr>
<tr>
<td>ECT(-1)</td>
<td>-.29</td>
<td>0.004***</td>
</tr>
<tr>
<td>R squared</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>F-Statistics</td>
<td>3.59</td>
<td>0.02**</td>
</tr>
</tbody>
</table>

Note: ***, ** point out significant at 1 and 5 per cent respectively.

Source: Researchers own compilation based on secondary data

The table 5 reflects the diminutive causality from REER to overseas investment. The researcher refuse the H₀ as p-value of F-statistics is exceeds the 5 significance level establishing diminutive causal association among OFDI and REER.

4. CONCLUSION

India’s overseas investment in the current days develops tremendously. But theoretically speaking, if Indian currency is depreciated in terms of overseas currency, Indian export will no doubt augment. But as significant level. The co efficient value of ECT is –0.29 indicating the long run causality from REER to OFDI and it corrects the disequilibrium by 29 percent.

- SHORT RUN CAUSAL RELATION: (WALD TEST)

The null hypothesis of Wald test is current and previous year exchange rate does not cause Outward investment i.e., D(InREER)and D(InREER(-1)) is 0.

Table 5: Wald test

<table>
<thead>
<tr>
<th>Test statistics</th>
<th>Value</th>
<th>D.F.</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-stats</td>
<td>4.92</td>
<td>(2,31)</td>
<td>.03</td>
</tr>
<tr>
<td>χ²</td>
<td>4.92</td>
<td>1</td>
<td>.02</td>
</tr>
</tbody>
</table>

Source: Researchers own compilation based on secondary data
a result of that instead of investing abroad firms may try to create link with the overseas firms. So with currency depreciation, preference is going to promote export. Changing institutional framework along with the degree of structural transformations are the essential factors for facilitating FDI. Easy and simple norms of raising foreign funds, Government support, in the form of subsidies can promote foreign investment by compensating ownership and locational disadvantages in abroad.

5. REFERENCES


perspective. *Munich Personal RePEc Archive*.


