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RESEARCH ARTICLE

INTERPLAY BETWEEN FOREIGN INVESTMENT INFLOWS AND MACROECONOMIC FACTORS

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Abstract: The study is an attempt to discover the mutual interactions between Indian rupee exchange rate and foreign financial investment inflows in the form of foreign direct investment and foreign institutional investors' investment using Autoregressive Distributed lag framework based on monthly data from January 2008 to December 2021. The long-run ARDL estimates revealed that a hike in domestic interest rate, foreign inflation, foreign direct investment and FIIs investment inflows lowers the exchange rate, i.e., causing rupee appreciation and vice versa. However, domestic inflation and foreign interest rate are directly and positively linked with rupee exchange rate which signifies that a rise in domestic inflation and foreign interest rate raises the Indian rupee exchange rate and thus cause rupee depreciation and vice versa. The Granger causality results further highlighted that rupee exchange rate and FIIs investment are active players since both cause each other. But, for FDI and exchange rate of rupee, FDI is proactive and cause Indian rupee exchange rate while exchange rate of rupee does not cause FDI.

Keywords: *Foreign Direct Investment, Foreign Institutional Investors' Investment, Indian Rupee Exchange Rate, Investment Inflows.*

JEL Classification Code: F21, G11, G24.

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INTRODUCTION

Balance of payment crisis in 1990-91 is the landmark for the Indian economic system when International Monetary Fund (IMF) urged the country to adopt stabilisation and structural reforms. In order to fulfill the requirement of structural reforms, India liberalised its foreign investment policy which led to abolishment of barriers in the way of capital inflows and removal of foreign exchange controls.

Financial liberalisation of India since 1990 basically aimed at globalisation of Indian economy. However, this Financial globalisation is not free of challenges for the domestic economic stability, particularly the opening up of Indian stock market to foreign institutional investors. Although Foreign Direct Investment (FDI) is a stable and long term commitment of foreign country's funds to the domestic market but Foreign Institutional Investors' (FIIs) investment may cause volatility spikes in domestic stock market prices. Moreover, foreign investment has significant bearing upon the domestic macroeconomic variables which may end up in severe financial crisis. FIIs have been allowed to invest in all the listed securities traded in Indian Capital market initially in Sept, 1992. Since then the regulations concerning FIIs investment have been liberalized continuously. Consequently, India observed unprecedented surge in capital inflows. Simultaneously, these massive capital inflows posed challenges for the sustainability of Indian economic system.

Exchange rate fluctuations have far reaching implications for the value of international investment portfolios, competitiveness of exports and imports, international reserves, currency value of debt payments, and the cost to tourists in terms of the value of their domestic currency (Dua and Ranjan, 2011). Since exchange rate fluctuation is recognized as a major area of risk management, it would

further increase costs for risk-averse traders and thus discourage trading. In other words, elevated exchange rate risk makes trade earnings riskier which discourages risk-averse traders from trading in international markets (Arize *et. al.,* 2000).

Thus, in the liberalised financial system with huge capital inflows, it is necessary to analyse mutual interactions between domestic currency exchange rate and other vital parameters consisting of domestic and foreign country inflation and interest rates along with foreign investment inflows.

LITERATURE REVIEW

Handful studies are available that highlight the significance of foreign investment inflows for the recipient economy but simultaneously explain the pros and cons in relation to macroeconomic factors especially exchange rate of local currency. From among these studies, a few are being discussed as below:

Khan (2004) analysed that the bank lending as well as foreign financial inflows could be the reason behind 1997 Asian crisis along with other macroeconomic factors. The study observed that the countries which depended upon Japanese banks as their principal lender along with Thailand, became most vulnerable to the Asian financial crisis which eventually led to exchange rate crisis. The results further provided the evidence that short term investment inflows such as FIIs investment contributed to Asian financial crisis. The study also exhibited that the "common bank lender" channel had a substantial role in widening the impact of Asian crisis.

Udomkerdmongkol *et. al.* (2006) explored the influence of exchange rate volatility on US foreign direct investment inflows to 16 developing economies applying panel regression using annual data spanning 1990-2002. The study observed negative association between host country's currency and FDI inflows, implying, depreciation in the value of host country's currency attracts more inflows of FDI from US to the local or emerging market economies and vice versa.

Osinubi and Amaghionyeodiwe (2009) scrutinised the direction and magnitude of foreign direct investment (FDI) and exchange rate volatility of Nigerian economy applying OLS and error correction model based on annual time series from 1970 to 2004. The findings revealed a significant positive association between the variables which signify that depreciation in the value of Nigerian currency, i.e., naira leads to higher foreign direct investment inflows.

Bhasin and Khandelwal (2014) explored the relationship between India's foreign institutional investors' (FIIs) investment, exchange rate and its foreign exchange reserves using Autoregressive Distributed Lag mechanism based on monthly series spanning September 1993 to July 2013. After verifying strong cointegration among FIIs investment, foreign exchange reserves and exchange rate, the long and short-run parameters have been computed. The results signify that exchange rate and foreign exchange reserves significantly influence the FIIs investment and contribute towards foreign investment inflows.

Lily *et. al.* (2014) analysed the association between foreign direct investment (FDI) and currency exchange rate prevailing in four ASEAN economies, namely, Malaysia, Thailand, Singapore and Philippines using ARDL framework on annual data from 1971–2011. The study revealed the presence of cointegration for all the economies except Thailand. Further, the significant and negative coefficient of considered exchange rates have been observed which implies that the appreciation in the value of Philippine peso, Singapore dollar and Malaysian ringgit has a positive impact on FDI, meaning thereby, a fall in these exchange rate indices leads to increase in FDI inflows in these economies.

Bahmani and Toms (2015) scrutinised the influence of Federal Reserve Bank's quantitative easing programme on the volume of United States' foreign direct investment (FDI) in Brazil applying correlation coefficient matrix and OLS regression. Federal Reserve Total Monetary Base (MBASE) has been taken into account as a proxy of quantitative easing spanning 1982–2012.

The study found that US quantitative ease leads to capital inflows towards Brazil from US. The study further revealed that the US monetary base, GDP of Brazil and exchange

rate of Brazilian real in terms of USD contributes substantially towards FDI inflows in Brazil from US.

Ogawa and Wang (2016) have scrutinised that how East Asian economies are affected by the modifications in United States' monetary policy. The main emphasis, here, is on how Federal Reserve Bank's (FRB) withdrawal from quantitative easing policy may impact capital flows in East Asian nations. The paper empirically analysed impact of rate of interest in US and euro zone on exchange rates in terms of US dollar and euro as well as on rate of interest and capital flows in East Asian nations using Vector Autoregressive (VAR) model.

The findings observed that if the FRB opts for quantitative easing exit policy and increases interest rates, East Asian nations will face capital withdrawal that weaken their domestic currencies simultaneously exerting an upward push against their own interest rates.

Several studies are available that analyse the impact of foreign direct investment (FDI) and foreign institutional investors' (FIIs) investment on exchange rate movements and vice versa but the outcome of these studies remained controversial. Moreover, these studies are based on distant past. The present study is an attempt to analyse the mutual interactions between foreign investment inflows in the form of foreign direct investment (FDI) and foreign institutional investors' (FIIs) investment and Indian rupee exchange rate along with other macroeconomic factors such as interest rates and inflation.

OBJECTIVES OF THE STUDY

Considering the present void as far as foreign financial inflows and exchange rate is concerned, the study focuses on following objectives:

- To analyse the lead-lag relationship between foreign direct investment (FDI) and macroeconomic factors including exchange rate.
- To study the lead-lag relationship between foreign institutional investors' (FIIs) investment and macroeconomic factors including exchange rate.

Data Description

For assessing the mutual interactions between foreign investment inflows and Indian rupee exchange rate, monthly observations spanning January 2008 to December 2021 have been taken into account. The foreign investment inflows have been measured in the form of foreign direct investment (FDI) and foreign institutional investors' (FIIs) investment.

The observations on Indian rupee exchange rate (EXR), domestic inflation (INF_d), foreign inflation (INF_f), domestic interest rate (IR_d), foreign interest rate (IR_f), FDI and FIIs investment have been obtained from RBI website.

RESEARCH METHODOLOGY

Unit Root Tests

In order to verify stationarity of time series observations, Augmented Dickey Fuller (ADF) test (1979) and Phillips-Perron (PP) test (1988) have been employed.

Autoregressive Distributed Lag Modelling (ARDL)

For assessing long-run and short-run interactions of Indian rupee exchange rate in response to selected determinants and foreign investment inflows, ARDL model given by Pesaran and Shin (1999) and Pesaran et al. (2001) has been employed. Cointegration has been checked through bounds test. If cointegration is detected, subsequently long-run ARDL coefficients for the explanatory factors are obtained through two separate sets of equation.

For the first equation, i.e., equation (1) Indian rupee exchange rate (EXR) has been taken as dependent variable and explanatory variables are domestic inflation (INF_d), foreign inflation (INF_f), domestic interest rate (IR_d), foreign interest rate (IR_f) and foreign direct investment (FDI).

$$EXR_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta INF_{d_{t-1}} + \sum_{i=1}^{p} \beta_2 \Delta INF_{f_{t-1}} + \sum_{i=1}^{p} \beta_3 \Delta IR_{d_{t-1}} + \sum_{i=1}^{p} \beta_4 \Delta IR_{f_{t-1}} + \sum_{i=1}^{p} \beta_5 \Delta FDI_{t-1} + \mu_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$\Delta EXR_t = \lambda_0 + \sum_{i=1}^{p} \lambda_1 \Delta INF_{d_{t-1}} + \sum_{i=1}^{p} \lambda_2 \Delta INF_{f_{t-1}} + \sum_{i=1}^{p} \lambda_3 \Delta IR_{d_{t-1}} + \sum_{i=1}^{p} \lambda_4 \Delta IR_{f_{t-1}} + \sum_{i=1}^{p} \lambda_4 \Delta FDI_{t-1} + \theta ECM_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Firstly, ARDL long-run and short-run estimates are obtained based on equation (1) and (2) respectively which considers foreign investment in the form of FDI as one of the explanatory variables along with other aforesaid variables. Here in this system of equations, value of F-statistic confirms the existence or non-existence of cointegration. If F value is less than lower bound range, then no cointegration exists among the series taken into account. However, if F-statistic turns higher than upper bound range, cointegration exists. If F-statistic remains within upper and lower critical range, the results will be inconclusive.

Moving on, in equation (3) Indian rupee exchange rate (EXR) has been taken as dependent variable and explanatory variables are domestic inflation (INF_d), foreign inflation (INF_f), domestic interest rate (IR_d), foreign interest rate (IR_f) and foreign institutional investors' (FIIs) investment. ARDL long-run and short-run estimates are obtained based on equation (3) and (4) respectively which considers foreign investment in the form of FIIs as one of the explanatory variables along with other aforesaid variables.

$$EXR_t = \sigma_0 + \sum_{i=1}^{p} \sigma_1 \Delta INF_{d_{t-1}} + \sum_{i=1}^{p} \sigma_2 \Delta INF_{f_{t-1}} + \sum_{i=1}^{p} \sigma_3 \Delta IR_{d_{t-1}} + \sum_{i=1}^{p} \sigma_4 \Delta IR_{f_{t-1}} + \sum_{i=1}^{p} \sigma_5 \Delta FIIs_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

$$\Delta EXR_t = \delta_0 + \sum_{i=1}^{p} \delta_1 \Delta INF_{d_{t-1}} + \sum_{i=1}^{p} \delta_2 \Delta INF_{f_{t-1}} + \sum_{i=1}^{p} \delta_3 \Delta IR_{d_{t-1}} + \sum_{i=1}^{p} \delta_4 \Delta IR_{f_{t-1}} + \sum_{i=1}^{p} \delta_5 \Delta FIIs_{t-1} + \Omega ECM_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

Equation (2) and (4) represent short-run dynamics for the considered variables and will obtain error correction term (ECT_{t-1}) which signifies the speed of adjustment towards long-run equilibrium through mutual interactions among the variables.

RESULTS AND DISCUSSION

Table 1: Augmented dickey fuller and phillips-perron unit root test for Indian rupee exchange rate and its contributing factors

	Augmented Dickey Fuller Test (ADF)				Phillips-Perron test (PP)			
	Levels		First Difference		Levels		First Difference	
Variables	With Intercept	With Trend and Intercept	With Intercept	With Trend and Intercept	With Intercept	With Trend and Intercept	With Intercept	With Trend and Intercept
EXR	0.455	0.164	0.000***	0.000***	0.450	0.128	0.000***	0.000***
INF_d	0.108	0.633	0.000***	0.000***	0.017**	0.643	0.000***	0.000***
INF_f	0.925	0.020**	0.000***	0.000***	0.860	0.337	0.000***	0.000***
IR_d	0.781	0.933	0.000***	0.000***	0.605	0.852	0.000***	0.000***
IR_f	0.404	0.659	0.000***	0.000***	0.305	0.559	0.000***	0.000***
FDI	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
FII	0.604	0.120	0.000***	0.000***	0.627	0.277	0.000***	0.000***

***, ** and * show 1%, 5% and 10% level of significance respectively.

Firstly, Augmented Dickey Fuller and Phillips-Perron (ADF and PP) unit root tests have been used to verify the stationarity of the series considered and results have been displayed in Table 1.

Table 1 indicates that local country's inflation (INF_d), foreign inflation (INF_f) and foreign direct investment (FDI) are stationary at levels I(0) while other variables namely, Indian rupee exchange rate (EXR),

domestic interest rate (IR_d), foreign interest rate (IR_f) and foreign institutional investors' (FIIs) investment are found to be stationary at I(1). Since considered variables are mixture of I(0) and I(1), the prerequisite for ARDL application is satisfied as none of the series is integrated of order I(2) or higher.

Table 2: Bounds test of cointegration for normalizing EXR

Variables	F-Statistic	Outcome
F_{EXR} (EXR/ INF_d INF_f, IR_d, IR_f, FDI)	**3.41***	Cointegration Exists
F_{EXR} (EXR/ INF_d INF_f, IR_d, IR_f, FIIs)	**3.88****	
Critical Value	Lower Bound	Upper Bound
1% Level	3.41	4.68
5% Level	2.62	3.79
10% Level	2.26	3.35

***, ** and * show 1%, 5% and 10% level of significance respectively.

Table 2 presents the ARDL bounds test results firstly for exchange rate and INF_d INF_f, IR_d, IR_f, and FDI as independent variables and secondly for exchange rate and INF_d INF_f, IR_d, IR_f, and FIIs as independent variables. For the first equation which incorporates FDI as one of the independent variables, cointegration exists as the value of F- statistic, i.e., 3.41 is higher than the upper bound critical value at 10% level of significance. For equation (3), where FIIs investment has been taken as one of the independent variables, F- statistic turns out 3.88 which is again higher than 5% upper bound critical value, implying that cointegration holds.

Having confirmed the existence of long-run equilibrium, ARDL model has further been applied to estimate the long-run and short-run parameters.

Table 3 displays the long-run estimates from ARDL when FDI is considered as one of the independent variables. The findings reveal that foreign inflation (INF_f), domestic interest rate (IR_d) and foreign direct investment (FDI) are negatively associated with Indian rupee exchange rate (EXR) and the coefficients derived are significant at 10%, 5% and 5% level of significance respectively.

Table 3: Estimated ARDL long-run parameters for exchange rate with FDI as one of the explanatory variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.40***	3.970	2.619	0.009
INF_d	0.738**	0.318	2.316	0.022
INF_f	-2.223*	1.293	-1.719	0.087
IR_d	-0.117**	0.055	-2.137	0.034
IR_f	0.006	0.016	0.361	0.718
FDI	-0.018**	0.018	-0.974	0.031
R^2	0.735	Akaike info criterion		-5.454
Adjusted R^2	0.728	Schwarz criterion		-5.276
F-statistic	248.52***	Durbin-Watson stat		1.869
Prob (F-stat.)	0.000			

***, ** and * show 1%, 5% and 10% level of significance respectively.

However, domestic inflation (INF_d) and foreign interest rate (IR_f) are directly and positively linked with Indian rupee exchange rate (EXR). The analysis brings out that rise in domestic inflation (INF_d) increases the exchange rate of rupee vis-a-vis USD and thus causes the depreciation in rupee value as represented by the positive and significant sign of INF_d. Further, significantly negative sign of foreign inflation (INF_f) implies that a

hike in foreign country inflation results into appreciation in domestic currency value. Likewise, the Indian interest rate (IR_d) affects domestic exchange rate adversely which signifies that a hike in domestic country's interest rate would lead to more capital inflows in Indian financial market which in turn causes the local country's currency to appreciate in comparison to foreign currency. The results highlight that foreign direct investment (FDI) has negative and significant impact on rupee exchange rate leading to Indian currency appreciation following FDI inflows. The adjusted R^2 value i.e., 0.72 is fairly robust which implies that 72% of the swings in Indian rupee exchange rate are captured by factors so considered (including FDI). The model is free from autocorrelation since Durbin-Watson turns out 1.86 which is close to 2 and F-statistic also turns highly significant confirming the robustness of the model.

Table 4: Estimated ARDL long-run parameters for exchange rate with FIIs as one of the explanatory variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.036	1.855	1.097	0.274
INF_d	0.582***	0.154	4.291	0.000
INF_f	-0.190	0.571	-0.333	0.739
IR_d	-0.055***	0.020	-2.658	0.008
IR_f	0.019**	0.008	2.368	0.019
FIIs	-0.011***	0.002	-5.074	0.000
R^2	0.883	Akaike info criterion		-6.761
Adjusted R^2	0.871	Schwarz criterion		-6.403
F-statistic	476.98***	Durbin-Watson stat		1.760
Prob(F-stat.)	0.000			

***, ** and * show 1%, 5% and 10% level of significance respectively.

Table 4 illustrates the results of ARDL long run estimates when foreign institutional investors' (FIIs) investment is considered as one of the independent variables along with domestic inflation (INF_d), foreign inflation (INF_f), domestic interest rate (IR_d) and foreign interest rate (IR_f). The results obtained are similar with the earlier ARDL results (in Table 3) with the only deviation that when FIIs investment is taken as one of the independent variables in place of FDI then the results of foreign inflation (INF_f) turned out insignificant and foreign interest rate (IR_f) turned out significant.

It is clear that when FIIs investment is taken as one of the explanatory variables in place of FDI, domestic inflation and foreign country's interest rate cause rupee depreciation since INF_d and IR_f are positively associated with exchange rate of rupee, implying that a rise in these factors raises the exchange rate and thus cause rupee depreciation. Similarly, domestic interest rate and FIIs investment have negative impact upon rupee exchange rate. This implies that hike in domestic interest rate lowers the exchange rate, i.e., causing rupee appreciation and vice versa.

Likewise, FIIs investment inflows lowers rupee exchange rate leading to rupee appreciation following FIIs inflows. But FIIs outflows, i.e., a reduction of FIIs investment raises exchange rate and cause rupee depreciation. The adjusted R^2 value i.e., 0.87 is fairly robust which implies that 87% of the swings in Indian rupee exchange rate are captured by variables so considered (including FIIs investment). The model is free from autocorrelation since Durbin-Watson turns out 1.76 and F-statistic also turns highly significant confirming the robustness of the model.

Table 5: **Short-Run Dynamics for Exchange Rate with FDI as one of the Explanatory variables**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$D(INF_d)$	0.796***	0.229	3.468	0.000
$D(INF_d (-1))$	-0.381***	0.225	-1.690	0.093
$D(INF_f)$	-0.204**	0.101	-2.015	0.045
$D(IR_d)$	-0.010***	0.004	-2.687	0.008
$D(IR_f)$	0.000	0.00	0.351	0.725
D(FDI)	-0.001	0.001	-1.030	0.304
ECT (-1)	-0.092***	0.033	-2.775	0.006

***, ** and * show 1%, 5% and 10% level of significance respectively.

Table 6: Short-run dynamics for exchange rate with FIIs as one of the explanatory variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$D(INF_d)$	0.824***	0.125	6.575	0.000
$D(INF_d(-1))$	0.152	0.230	0.662	0.509
$D(INF_d(-2))$	-0.214*	0.122	-1.748	0.082
$D(INF_f)$	-1.240***	0.225	-5.499	0.000
$D(INF_f(-1))$	0.826*	0.463	1.780	0.077
$D(INF_f(-2))$	-0.005	0.418	-0.012	0.989
$D(INF_f(-3))$	-0.386*	0.228	-1.692	0.092
$D(IR_d)$	0.005	0.006	0.884	0.378
$D(IR_f)$	0.004	0.003	1.289	0.199
$D(IR_f(-1))$	0.006*	0.003	1.924	0.056
D(FIIs)	-0.013***	0.000	-20.22	0.000
ECT (-1)	-0.112***	0.039	-2.878	0.004

***, ** and * show 1%, 5% and 10% level of significance respectively.

The short-run drivers for both the system of equations i.e., equation (2) and (4) respectively are shown in Table 5 and 6 respectively. For both the system of equations, it has been observed that error correction term (ECT_{t-1}) is negative and highly significant i.e., -0.09 and -0.11 respectively. It signifies that disturbance in the preceding month is being rectified at the rate of 9% and 11% in the present month for both the system of equations respectively. It implies that although the restoration of long-run equilibrium is attained but the speed for the same is quite low.

Table 7: Granger causality analysis (Wald F-statistics and T-statistics)

Null Hypothesis:	Tests	Statistics	P-value	Remarks
FIIs does not Granger Cause EXR	T- Statistic	-0.013*	0.000	Bidirectional FII ↔ EXR
	F-Statistic	-20.22*	0.000	
EXR does not Granger Cause FIIs	T-Statistic	13.62*	0.000	
	F-Statistic	-19.86*	0.000	
FDI does not Granger Cause EXR	T-Statistic	-1.656**	0.040	Unidirectional FDI → EXR
	F-Statistic	2.745***	0.099	
EXR does not Granger Cause FDI	T- Statistic	-1.030	0.304	
	F-Statistic	1.061	0.304	

***, ** and * show 1%, 5% and 10% level of significance respectively.

Table 7 summarises the results of causality analysis for the considered system of equations based on Wald F- statistics and T-statistics. A bidirectional causality between foreign institutional investors' (FIIs) investment and Indian rupee exchange rate (EXR) at 1% level of significance has been detected. However, unidirectional causality which runs from foreign direct investment (FDI) to Indian rupee exchange rate (EXR) has been observed. This signifies that both types of investment, i.e., FDI and FIIs investment have a considerable impact on Indian rupee exchange rate.

CONCLUSION AND POLICY IMPLICATIONS

In the present study, an attempt has been made to observe the mutual interactions between Indian rupee exchange rate and foreign financial investment inflows in the form of foreign direct investment (FDI) and foreign institutional investors' (FIIs) investment based on monthly observations spanning January 2008 to December 2021. The results of ADF and PP unit root test portrayed that the series considered are mixture of I(0) and I(1) order of integration and subsequently Autoregressive distributed lag (ARDL) methodology has been used. The impact of domestic inflation (INF_d), foreign inflation (INF_f), domestic interest rate (IR_d), foreign interest rate (IR_f), FDI and FIIs investment in relation to Indian rupee exchange rate (EXR) have been assessed based on two separate set of equations. For the first equation, FDI has been taken as one of the explanatory variables along with other

aforesaid variables while second equation incorporates FIIs investment as one of the independent variables in place of FDI. For both the system of equations, ARDL bounds test confirmed the presence of cointegration and thus holding of long-run equilibrium.

The findings of long-run ARDL estimates revealed that foreign inflation (INF_f), domestic interest rate (IR_d), foreign direct investment (FDI) and foreign institutional investors' (FIIs) investment are negatively associated with Indian rupee exchange rate in both the system of equations. This implies that a hike in domestic interest rate, foreign inflation, foreign direct investment and FIIs investment inflows lowers the exchange rate, i.e., causing rupee appreciation and vice versa. Considering other side of the coin, domestic inflation (INF_d) and foreign interest rate (IR_f) are directly and positively linked with Indian rupee exchange rate in both the equations. It signifies that a rise in domestic inflation and foreign country's interest rate raises the Indian exchange rate and eventually cause rupee depreciation and vice versa. Further, the adjusted R^2 values i.e., 0.72 and 0.87 are fairly robust in both the system of equations respectively which signals that around 72% and 87% of the swings in Indian rupee exchange rate are captured by factors so considered (incorporating both FDI and FIIs in two sets of ARDL model). Furthermore, the findings of Granger causality revealed a unidirectional causality that runs from foreign direct investment (FDI) towards Indian rupee exchange rate (EXR) and bidirectional causality between foreign institutional investors' (FIIs) investment and Indian rupee exchange rate.

It is clear that as far as FIIs investment is concerned both exchange rate of rupee and FIIs investment are active players since both cause each other. However, for FDI and exchange rate of rupee, FDI is proactive and cause exchange rate of Indian rupee but exchange rate of rupee does not cause FDI. The reason behind this is that FDI is more stable and long-run form of investment while FIIs investment is short term and passive form of investment which often causes instability in the host country market. This implies that government of India should strive towards gaining more FDI inflows since it provides stability to the host country market while FIIs investment although contribute towards the recipient economy but is simultaneously prone to destabilise host country market since FIIs are known to be fair weather friends.

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