Does a strong rupee aid FPI flows?

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The Indian rupee has depreciated by 14.1% from the start of the financial year FY19 till the lowest value of rupee at 74.4/$ on October 9, 2018. Following the steep depreciation in the Indian rupee, November'18 has witnessed a reversal with the rupee closing at 72.3/$ on 14 November, 2018.

On the same lines, the foreign portfolio investment (FPI) flows have witnessed an investment outflow in 5 out of the 7 months in this fiscal year, with exceptions in the month of July'18 and August'18. November'18 (till 14 Nov'18) has witnessed a reversal in this trend with foreign portfolio investors investing in India to tune of USD 718 Mn, indicative of positive FPI flows in the Indian economy.

There could be several arguments which could be linked to the recent FPI inflows in the economy ranging from easing crude oil prices which augur well for the Indian economy, moderation in inflation, improved indirect tax numbers, unchanged global monetary policy stance (US, BoE, BoJ and ECB) and strengthening of the rupee.

This quick study aims at testing the hypothesis whether a strong rupee bodes well for FPI inflows in the economy. Admittedly, the relationship is two ways- Higher FPI improves fundamentals and hence strengths the rupee. A strong rupee however gives confidence to investors who look at medium term investment and are enthused to invest more. Therefore, FPI can be looked at as being both the cause and effect of rupee movement.

To make it a better representative model for examination, the US 10-year treasury yields have also been considered as a proxy of how well the US economy has been performing. Typically a strong US economy would keep investment within with flows to EMs (emerging markets) reducing. Against the backdrop of a strong US economy performance, the US Federal Reserve would increase the US interest rate which translates into higher treasury yields. For debt investors, a higher interest rate in US makes it an attractive destination to invest leading to fund flows outside India.

To test the above hypothesis, monthly data on total monthly foreign portfolio investments (equity, debt and hybrid instruments), monthly average value of the rupee per dollar (based on RBI reference rate) and monthly average US-10 year treasury yields from November, 2013 till November, 2018 has been used for analysis. For the month of November'18, the data has been collected up to November 14, 2018. Using the average value of the rupee and US treasury yields, month-on-month depreciation has been quantified. This gives a total of 60 observations to determine the correlation between the variables and undertake a regression analysis to quantify the impact of movement in the rupee and change in the treasury yields on the FPI flows.

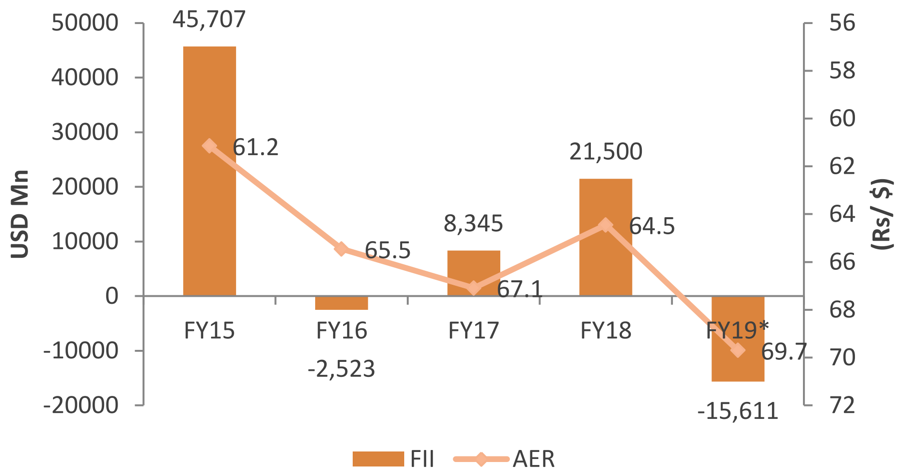
The regression analysis to be undertaken is to understand the association of the movement in the rupee exchange rate and US treasury yields on the FPI flows based on the following parameters:

Dependent variable	Independent variables
FPI flows (USD million)	M-o-M change in rupee exchange rate vis-à-vis dollar and M-o-M change in US treasury yields

Note: Positive month on month (M-o-M) change in rupee exchange rate indicates depreciation and negative value indicates appreciation.

Chart 1 exhibits the yearly movement in FPI flows in relation to the movement in the value of the rupee vis-à-vis the dollar from FY14 to FY18. In addition, Chart 2 summarises a similar picture for the FY19 on a monthly basis.

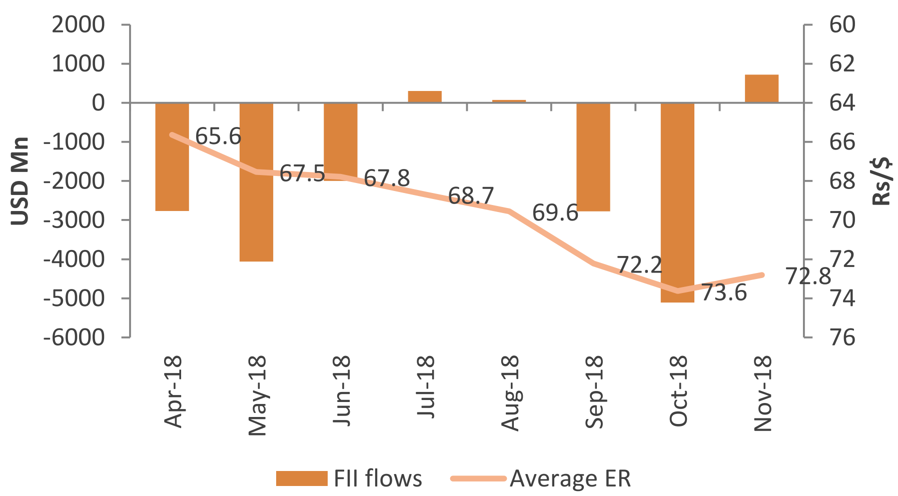
Chart 1: FPI flows and value of Indian rupee



Source: CMIE
AER – Average Annual Exchange Rate

The above chart shows that in FY16 and FY19 (up to Nov'18), negative FPI flows could in part be associated with the depreciation in the Indian rupee vis-à-vis the dollar. In addition, FY18 witnessed a FPI inflow which was can be partly ascribed to the appreciation in the currency from Rs. 67.1/$ to Rs. 64.5/$. Hence prima facie there is reason to link these two variables. Sharp depreciation has been associated with negative FPI flows during this period.

Chart 2: FPI flows and movement in rupee during FY19 (up to November'18)



Source: CMIE

- The above chart shows that there was FPI outflows from India in 5 out of the 7 months. The outflows witnessed during April-June'18 can in part be associated with the depreciation in the Indian rupee during this period

- Despite the continuous depreciation in the Indian rupee during July and Aug'18, there was a small quantum of FPI inflows to tune of USD 377 Mn (aggregate) during this period.

- September and October'18 witnessed a total FPI outflows at an aggregate level of USD 7,881 Mn when the rupee depreciated by 3.8% in Sept'18 and further depreciated by 2% in October'18.

- An inflow of Rs USD 718 Mn in Nov'18 can be seen in line with the appreciation in the rupee from Rs. 73.6/$ in Oct'18 to Rs. 72.8/$ in Nov'18 (till 14 Nov'18).

Using the data on the total FPI flows on a monthly basis and monthly change in the Indian rupee and treasury yields, correlation between each of the independent variables with the dependent variable has been computed and a simple regression analysis between the variables has been undertaken. The regression analysis has been undertaken in two parts:

- To ascertain the relation between the movement in the Indian rupee and dollar on the FPI flows in the economy

- To find out the association of the movement in the Indian rupee and US treasury yields on the FPI flows in the economy.

The correlation coefficient, which establishes a statistical relationship between the variables, has been given in Table 1. The correlation coefficient lies between (-1) and 1 with (-1) indicating negative and strong relationship between the variables while 1 indicates a strong positive relationship between the variables.

Table 1: Results of Correlation coefficient

Particulars	Correlation coefficient
Correlation between FPI flows and monthly change in rupee vis-à-vis dollar	(-0.6)
Correlation between FPI flows and monthly change in US treasury yields	(-0.2)

Source: CARE Ratings

- The correlation coefficient between the change in the rupee and the FPI flows is (-0.6) which indicates that the relationship between the variable is negative and moderately strong.

- The correlation coefficient between the monthly change in the US treasury yields and the FPI flows is (-0.2), reflective of a negative but weak relation between the two variables.

Regression 1: Relation FPI flows and movement Rs/$ changes

The regression analysis undertaken between the dependent and independent variables (X1 – month on month change in rupee value of dollar) under study provides the following results:

Table 2: Results of regression analysis

Intercept	Coefficient of X1	Adjusted R square	Correlation Coefficient
1,553	-1,486	35%	(-0.6)

Source: CARE Ratings

The coefficient of the independent variable is significant at 1% level of significance. The adjusted R-square of 35% indicates that the change in exchange rate explains 35% change in the FPI flows in the Indian economy. The intercept represents other factors that influence the FPI flows.

Interpretation of the above results in Table 2 is as follows:

- The value of coefficient of X1 indicates that 1% depreciation in the Indian rupee on an average in a month is associated with an outflow of USD 1,486 Mn.

Regression 2: Association between movement in rupee and movement in US treasury yields on FPI flows

The regression analysis undertaken between the dependent and independent variables (X1 – month on month change in rupee and X2 – month on month change in US treasury yields) under study provides the following results:

Table 3: Results of regression analysis

Intercept	Coefficient of X1	Coefficient of X2	Adjusted R square	Coefficient of Correlation
1,538	-1,472	-67	38%	(-0.63)

Source: CARE Ratings

Interpretation of the above results in Table 3 is as follows:

- The value of coefficient of X1 indicates that a 1% depreciation in the Indian rupee on an average leads to an outflow of USD 1,472 Mn. The coefficient value of X2 indicates that a 1 bps rise in the US treasury yields on an average leads to an outflow of USD 67 Mn.
- On adding another variable in the regression model, the power of the explanation of the independent variables on the dependent variables has improved from 35% to 38%.

Concluding remarks

- The regression analysis to test the hypothesis whether a stronger rupee aids the FPI inflows in the economy shows the result in the affirmative. This means that a strong rupee partly aids to FPI flows in the economy.
- In addition, the rise in the US treasury yields also has a negative impact on the FPI flows, reflective of an outflow of FPI flows. The US Fed having increased the interest rates thrice this calendar year (2019) has translated into the US-treasury yields scaling multi-year high leading to FPI flows outside India.
- The strengthening of the rupee holds well for India in terms of higher FPI flows into the economy which will help in improving the balance of payment situation in the economy.

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