Executive Summary: Macroeconomic Implications of Capital Flows in India

1. Introduction

Capital plays an important role in economic growth. In developing countries where capital is generally scarce, foreign capital inflows can fill the resource gap. Foreign capital is usually considered supportive of economic development for developing economies. However, such economies with a relatively weak financial system often find it difficult to manage massive capital inflows or outflows, especially in a short period. Massive inflows or outflows of capital may cause significant damage to macroeconomic stability and even lead to financial crises in the host country. For example, when overseas capital flows into an emerging economy, it tends to elevate the domestic exchange rate and asset prices, making the market all the more attractive. However, with the monetary policy tightening, it again goes back to its root or flies to a third country, offering a relatively better return.

Similarly, when a large quantum of foreign funds flows into an economy, the exchange rate appreciates quickly, which would not be desirable. Often, global factors beyond the control of the host country also guide the inflows or outflows of funds. Therefore, adopting a balanced approach towards foreign capital is pertinent for sustainable long-term development without causing sudden avoidable disruption to the economy.

Given the role foreign capital plays for an economy, it is desirable to understand the required measures to offset the adverse implications for the host economy and let the inflow of much-needed foreign capital contribute to the host economy's growth. International institutions such as the IMF (International Monetary Fund) and World Bank believed that countries should allow the

free flows of money in and out of their borders regardless of their development level. However, during the numerous recent financial crisis episodes, it has been learned that many countries were hard-hit during the crisis because they did not use any capital control measures. Deregulation of capital controls has been one of the important factors for countries or regions to get walloped during the crisis. These events have forced policymakers worldwide to revisit the rules related to foreign capital movement. More recently, the IMF has started to endorse the use of different regulatory tools (economic and monetary) for capital controls to prevent or mitigate financial crises in developing countries. Capital controls are simply regulations that help smooth the inflows and outflows of the foreign fund to minimize volatility in the system to maintain financial stability. Empirical evidence points out that capital controls are an essential part of the macroeconomic toolkit for developing countries.

Given this background, this thesis attempts to generate empirical evidence for India's macroeconomic effects of capital inflows. Macroeconomic effects are measured in terms of impact on the key macroeconomic variables. The analysis uses quarterly data for variables from Q2 2000-01 until Q1 2019-20. All data are sourced primarily from two sources 1) the Handbook of Statistics on the Indian economy and 2) the International Financial Statistics published by IMF. Quarterly data for most of the variables are available at the sources. For some of the variables for which quarterly estimates are not available, quarterly series are estimated using the arithmetic mean.

The thesis has five chapters. Chapter 1 introduces the study and the broad objectives, which provide a base for extensive analysis of the significant issues in different chapters. Further, this section includes a literature review of international and domestic

experiences of capital flows. This explicitly covers an overview of the recent development in cross-border capital flows, financial globalization, and liberalization. It spells out the study's scope and objectives. Foreign capital flows depend on the host country's prevailing macroeconomic conditions and international macroeconomic scenarios. Chapter 2 reviews the macroeconomic settings, including economic growth in India, and dwells into each of the significant macroeconomic drivers essential to understanding the background of foreign capital flows. Chapter 3 analyses the Granger-causality test in the frequency domain between FDI or FPI and macroeconomic indicators in India's context using quarterly data. The salient feature of this chapter is to identify the direction of the causality at multiple frequencies. For this purpose, we use the bivariate GC test over the spectrum proposed by Lemmens et al. (2008). In Chapter 4, empirical analysis is carried out using the macro-econometric model (VECM- Vector Error Correction Model) with quarterly time series data for examining the relationship between capital flows (FDI and FPI separately) and macroeconomic indicators such as GDP, exchange rate, and interest rate, export, import, inflation, money supply, foreign exchange reserve. Chapter 5 summarizes key findings emerging from the analysis in the preceding chapters and discusses concluding observations and policy implications. The research will provide important policy input to policymakers, practitioners, and researchers working in the thematic area.

2. Macroeconomic indicators of the Indian economy and their performance in the last two decades

The last two decades of this century were significant for India's economic growth. In the first decades of this century, the growth rate of the Indian economy leaped altogether into another league, from a slow-growth pathway to a high growth pathway. There

were years in which the IMF estimated that India would be the fastest-growing major economy globally. In the immediate (2009-19) decades, India has attracted record foreign investment (FDI - Foreign Direct Investment and FPI- Foreign Portfolio Investment).

2.1 Inflation

Inflation is measured based upon the consumer price index (CPI) and wholesale price index (WPI). Whereas in the analysis, WPI based index is used to measure inflation. A historical study of the inflation trajectory reveals that India has experienced a very volatile inflation bout until 2013. The average WPI inflation rate recorded during the four years from December 2009 to August 2013 was 8.17%. The inflation rate relatively moderated in the second half of the second decade due to fuel prices moderation. More recently monetary policy framework of India has undergone a paradigm shift. The amended RBI Act provides for the Central Bank to target inflation set by the government of India in consultation with the bank. Means RBI has done away with the flexible inflation targeting framework followed by the bank. As per the latest directive by the government, RBI has got a mandate to maintain inflation at 4 percent with a tolerance limit of 2 percent. There is a provision of a 2 percent upper and lower tolerance band for the bank to drive the monetary policy. The prescribed target is also reviewed every five years based on the experiences.

2.2 Money Supply

Based on the recommendation of the Second Working Group (SWG) of RBI, Money Supply developed four measures of money stocks (M1, M2, M3, and the M4). Data for these measures are compiled and published fortnightly. Our analysis uses M3 to measure the stock of money supply, the official measurement for the broad money supply. A surge in net foreign direct investment

(FDI), net foreign portfolio investment (FPI), and net foreign exchange assets (foreign exchange reserves) of the banking sector led to an increase in the money supply. In recent years, the volume of money supply has changed considerably more because of the high use of plastic money.

2.3 Interest rate

Monetary policy rates influence real economic indicators and vice-versa. We have considered CMR (Call Money Rate) as a proxy for the market interest rate because the rate of interest is determined purely by market forces (demand and supply). CMR reflective of short-term interest rates is the starting point of monetary policy transmission. The CMR market has made rapid strides in the last decade, with the volume and number of transactions increasing substantially with more players in the market.

2.4 Foreign trade (export and import)

In the last two decades, exports and imports played an essential role in India's economic growth. During 2000-2004, India's import dependency was much less. India has a considerably good export growth to nearly 20 percent CAGR (Compound Annual Growth Rate) between 2002 and 2008. There were increases in exports and imports, but the import growth rate was higher than exports leading to a trade deficit. However, the impacts of adverse trade balance become more visible after 2004-05. Trade deficits have been ever-increasing since then, except for 2009-10. Export plummeted to a negative 20.3 percent in 2009-10. The steep decline in export can be attributed to the reduction in global demand in the aftermath of the global financial crisis of 2008. Even though India had previously experienced negative exports growth, such a prolonged period of decline had not been witnessed in over two decades. Exports registered a negative growth of 40

percent in the early quarterly of FY 2008-09, and the decline in growth continued until the third quarter of FY 2009-10. Export recovered partially; however, the trade deficit persisted until 2018-19.

2.5 Exchange rate

Rupee -US dollar exchange rate is used to analyze the changing INR (Indian Rupees) trends over the last two decades in the context of fundamental determinants of exchange rates. India has been following almost a market-determined exchange rate system. However, RBI keeps intervening in the market in unexpected demand and supply situations from time to time. The rupees come under pressure quite frequently and have generally exhibited a depreciating trend against the USD (American Dollar) except for a few periods. It demonstrated an appreciating trend against the US dollar. India has a sustained current account deficit, which puts pressure on the rupee; a surge in capital inflows reduces stress from the rupee.

2.6 Foreign Exchange Reserve

Forex forms a crucial cushion when extreme global uncertainty occurs or when the country faces an external sector crisis. The Foreign Exchange Reserve of India reached an all-time high of 542.2 USD billion in December 2020 from a record low of 1.1 USD billion in June 1991. The growth rate of the Foreign Exchange Reserve (FXR) accumulation in the last five years was quite steep. The Reserve Bank of India provides monthly Foreign Exchange Reserves (forex) in USD. We convert this to quarterly data for analysis.

2.7 Foreign capital inflows (FDI) and (FPI)

FDI (Foreign Direct Investment) and FPI (Foreign Portfolio Investment) are significant non-debt financial resources for economic development. Over the last decade, several reform measures have steadily gained momentum. It is evident from the ever-increasing volumes of FDI and FPI inflows received by the country. India is perceived as a preferred investment destination can be ascertained from the significant increase in FDI inflows, which rose from around US$ 6 billion in 2001-02 to almost US$ 38 billion in 2008-09 and further to US$ 49 billion in 2019-20. The volume of FPI inflows also increased from more than US$ 10 billion in 2003-04 to US$ 33 billion in 2020-21.

3. Causality between foreign capital inflows indicators and other macroeconomic variables of the Indian economy

This study uses the Granger Causality (GC) test in frequency domain analysis to understand the causality between selected macroeconomic variables and capital flows. The analysis explains causality between foreign capital inflows (FDI and FPI separately) and macroeconomic indicators to uncover further layers of complexity in different periods of interest. Unlike traditional tests, decomposing GC over the frequency allows disentangling potential causal relationships over variable frequencies to generate new insights. However, with changing frequencies, the GC test's strength and direction vary. Therefore, we follow Granger's (1969) spectral-density approach of the GC test to obtain comprehensive estimates than a one-shot GC measure that applies uniformly across periodicities. The result supports the results of the traditional GC test. Frequency domain analysis provides more precise and accurate details of the directions and strengths of causalities between the variables at different frequencies. Decomposing the causality into different frequencies provides a

deeper understanding of causal relationships between FDI and the macroeconomic variables and FPI and the macroeconomic variables separately.

Theoretically, there is increasing evidence about the relationship between two-time series data sets that vary with the changing frequencies. Our results show that causal and reverse causal relations between foreign capital inflows and macroeconomic indicators vary across frequencies. The study finds that the capital inflows Granger causes money supply in short and in the long run, whereas GDP, import, export, exchange rate, and WPI in the short run. The Granger Causality test failed to observe the causality between foreign capital inflows and foreign exchange reserves. Similarly, causality between foreign capital inflows and interest rates was not significant. We find evidence that causal and reverse causal relations between FDI and macroeconomic indicators vary across frequencies. The study finds that the FDI Granger causes money supply in both short-run and long-run, whereas GDP, import, export, exchange rate, and WPI are Granger caused in the short run. Granger causality test failed to observe causality between foreign capital inflows and foreign exchange reserves, and further on between foreign capital inflows and interest rate. The present study's unique contribution is that it decomposes the causality based on time horizons. It demonstrates the causality between capital inflows and other quarterly macroeconomic indicators for India during the period of interest.

4. The macroeconomic implications of capital inflows

The study attempts to estimate the relationship between foreign capital flows and macroeconomic indicators. Granger Causality, Cointegration tests, and finally, a macroeconomic model using VECM (Vector Error Correction Model) were formulated to estimate the relationship. Once a unit root is confirmed for all the

data series, we examine whether there exists a long-run equilibrium relationship among variables using cointegration analysis. Cointegration analysis is essential to avoid the risk of spurious regression. The Johansen method applies both the maximal eigenvalue statistic (lambda max), without linear trend and with constant and trace statistic, without linear trend and with constant to determine cointegrated vectors' presence in non-stationary time series. Finally, we have used the Engle-Granger two-step approach (2OLS) to estimate VECM with a lag of 3. We used three statistical estimates Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan Quinn Criterion (HQ), for lag selection. Separate models are estimated for FDI and FPI, considering the nature of these two foreign capital inflows.

ADF test for the presence of unit root in the variable series result shows that the p-value for GDP, FEX, EXR, CMR, MP, and FPI is greater than 0.05 at the level form of the variables. Later after the first difference, all the p-values for the same variables were less than 0.05. Hence, it can be interpreted that the null hypothesis of the presence of unit root in the model cannot be rejected at the level form. In contrast, we could reject the null hypothesis or accept the alternative hypothesis by running the same test with the first difference of the variables. The Phillips–Perron (PP) test modifies the Dickey-Fuller test and corrects autocorrelation and heteroscedasticity in the model's errors terms. PP test results further established the findings obtained from the ADF test. In the KPSS test case, the null hypothesis of no unit root is assumed because it tests the data for non-stationarity rather than stationarity in both level forms and first difference. The study results were obtained at 10 percent, 5 percent, 2.5 percent, and 1 percent levels. The KPSS test result for the variables was in line with the other two tests. To conclude, we found that all three tests suggest that all

the variables are non-stationary in level form but stationary in the first difference form, i.e., integrated of the first order, I (1) process.

Cointegration is an econometric technique to explore the long-run equilibrium relation between a set of time series variables. If two or more variables are integrated of the same order and are cointegrated, it also follows a long-run equilibrium relationship. We have built two separate models that take macroeconomic variables with FDI and FPI separately to test the Johansen cointegration between the variables. The test uses both trace test statistics and lambda max statistics. Trace test statistic demonstrates the null hypothesis of "r" cointegrating vectors against the alternative hypothesis of "n" cointegrating vectors in the multivariate cointegration process.

On the other hand, the maximum eigenvalue test analyzes the null hypothesis of "r" cointegrating vectors against the alternative hypothesis of "r+1" cointegrating vectors. Johansen's multivariate cointegration test arrived at the findings that FDI has a long-run equilibrium relationship with macroeconomic variables. A similar result was obtained for the FPI and macroeconomic variables relation also.

VECM describes the general framework of the dynamic relationship between the variables in the short run and the long run. We have used the Engle-Granger two-step approach (2OLS) to estimate VECM. Two separate models are constructed to study the impact of FDI and FPI separately on the macroeconomic variables. The selection of lags for making an appropriate parsimonious model is based on Akaike Information Criteria and Bayesian Information Criteria. The result shows that FDI negatively influences WPI, EXR, and CMR.

In contrast, FEX, M3, IMP, EXP, and GDP are positively affected, which means high inflows of FDI lead to more

inflationary pressure on the exchange rate and domestic interest rate. At the same time, it supplements the recipient country's growth and enhances both exports and imports. Unlike FDI, FPI does not support GDP growth in the recipient economy but improves exports.

5. Conclusion and suggestions

Capital flows in developing countries contribute to growth that may help spur economic productivity to improve domestic income and living standards. However, those benefits would come with risks. Some policymakers may conclude that the costs outweigh the risks, at least in some economic settings. Therefore, we need to think about the system as a whole, where that capital inflows, and how it influences the system's resilience. For example, the experience has been that FDI has historically been a more stable inflows for India. Short-term bank debt has been a volatile form of capital inflows. The host country's central bank has a limited choice of instruments when the pace of capital outflows is significantly higher than capital inflows. A central bank's obvious question is what could be the right policy tool for managing capital flows? More specifically, the appropriate policy mix is to help to increase the system's resilience to the shock of massive capital outflows.

Evidence suggests that inflation targeting coupled with market-determined exchange rates could be appropriate to capital flows. To control inflation, the bank will use the interest rate as an instrument more amenable to it than the exchange rate. The monetary policy framework prescribes inflation targeting by the central bank; hence country may achieve high economic growth with foreign capital inflows provided low inflation and low current account deficits can be achieved.

Sustainability is the primary defense of financial stability. Any measure that may undermine economic openness and weaken investor confidence is an example of financial unsustainability. The right policy option would be to place financial stability on a solid footing at all the levels of macroeconomic management, such as policy-making level, corporate governance level, and the household decision-making process. At the same time, one must consider the volatility of capital flows, the time-value of capital flows, financing of investments, etc. In general, capital inflows are suitable for the economy if it boosts economic growth and productivity. However, at the late growth cycle stage, capital inflows can only accelerate the economy's overheating.

Mr. Chandrashekhar
Research Scholar