

Chapter - 5

Findings and Conclusion

In this chapter, a brief summary relating to Co-Movement and the Causal relationship between select Macroeconomic Indicators and Exchange Rate of BRICS Countries is presented. Subsequently, the major findings emerging from the analysis of data is obtained and this chapter also provides a brief conclusion and suggestions based on key findings.

This chapter is broadly classified into four sections:

- 5.1 Findings.
- 5.2 Conclusion.
- 5.3 Suggestions.
- 5.4 Scope for further research.

5.1 Findings

The main focus of the study is to examine the relationship between Exchange rate of BRICS countries with Macroeconomic Indicators, using data for periods from 1st January 2002 to 31st December 2017. Data collected from secondary sources were used for the study. This research provides empirical results on the relationship between Exchange rate and Macroeconomic Indicators.

The findings of the study were derived based on the following objectives

- Identification of the nature of the data
- Relationship of Macroeconomic Indicators with Exchange Rate
- Forecasting the future movements of Macroeconomic Indicators with Exchange Rate

5.1.1 Identification of the nature of the data

Descriptive statistics were performed to identify the nature of the data. From the analysis, it has been identified that Brazil showed greater reliability and positive outcomes indicating the strength of the economy. In the case of GDP and Government finance, Russia stands better measured by its growth rates.

5.1.2 Relationship of Macroeconomic Indicators with Exchange Rate

Augmented-Dickey Fuller unit root test results show that Macroeconomic Indicators and Exchange Rates was significant at first differences and intercept. The below table clearly potrays Long-run relationship between Macroeconomic Indicators and BRICS Exchange rate

Table 5.1

Long-run relationship between Macroeconomic Indicators and BRICS Exchange rate

S No	Macroeconomic Indicators	Presence of Long-run Co-integrating relationship in BRICS Countries
1	Prices, Production, and Labour	Russia, India, China, South Africa
2	Effective Exchange rates as per SDR, US Dollar, and CPI	Brazil, India, China, South Africa
3	External sector	Brazil, Russia, South Africa
4	GDP	India, China
5	Government Finance	Brazil, Russia, India, South Africa
6	Interest rates	Russia, India, South Africa
7	International Liquidity	Brazil, Russia, India
8	Trade of goods	Brazil, India, South Africa

*Lack of data for Government finance of China

The results of Johansen's co-integration interpreted there is long-run relationship between the Macroeconomic Indicators and Exchange Rates. Prices, Production, and Labour had a long-run relationship with Russia, India, China, South Africa. Effective Exchange rates as per SDR and CPI had a long-run relationship with Brazil, India, China, and South Africa. The Balance of Payments had a long-run relationship with Brazil, Russia, and South Africa. GDP had a long-run relationship with India and China. Government Finance had a long-run relationship with Brazil, Russia, India, and South Africa. Interest rates had a long-run relationship with Russia, India and South Africa. International Liquidity had a long-run relationship with Brazil, Russia, and India. Foreign Trade had a long-run relationship with Brazil, India and South Africa

Table 5.2

The causal relationship between Macroeconomic Indicators and BRICS Exchange rate

S No	Macroeconomic Indicators	Presence of Causal relationship in BRICS Countries
1	Prices, Production, and Labour	Nil
2	Effective Exchange rates as per SDR, US Dollar, and CPI	Unidirectional causality- Brazil, Russia
3	External sector	Nil
4	GDP	Unidirectional causality- Russia
5	Government Finance	Nil
6	Interest rates	Unidirectional causality- Russia
7	International Liquidity	Bidirectional Causality- Russia, India Unidirectional Causality- South Africa
8	Trade of goods	Unidirectional causality- India, China

* Lack of data for Government finance of China

From the above table Granger causality test results interpreted the causal relationship between the Macroeconomic Indicators and Exchange Rates. The results interpreted that Russia and India showed bidirectional causality between International Liquidity and Exchange rate of Russia and India indicating short-run causality between the variables. It also witnessed that there is unidirectional causality between Effective Exchange rates as per SDR and CPI, GDP, Interest rates, International Liquidity, Foreign Trade, and Exchange rate. Finally, Prices, Production and Labour, Balance of Payments and Government Finance had no causal relationship with the Exchange rate.

The findings further revealed structural shocks and dynamic effects of Macroeconomic Indicators and Exchange Rates. VAR results interpreted about Exchange Rates own shock and shock to Macroeconomic Indicators. VECM model results showed that there is a correction of disequilibrium adjusted between the Macroeconomic Indicators and Exchange Rate. The study further proceeded to forecasting models such as Variance Decomposition model and Impulse response function

5.1.3 Forecasting the future movements of Macroeconomic Indicators with Exchange Rate

In Variance Decomposition model, the exogenous shock was examined to show the variations for the period of one year which was divided into three-month intervals to show the variations in Exchange rate on Macroeconomic Indicators. In the case of Prices, production and Labour Exchange Rate of South Africa was most influential. Exchange Rate of Russia had prominent variance innovations to Effective Exchange rates based on SDR and CPI. Exchange Rate of South Africa had leading innovations to the Balance of Payments. Exchange Rate of India had dominant innovations to GDP. Exchange Rate of India had persuasive variance innovations to Government Finance. Exchange Rate of Russia had authoritative variance innovations to Interest Rates. Exchange Rate of India had strong variance innovations to International Liquidity. Exchange Rate of Russia had strong variance innovations to Foreign Trade. From the above results, it has been concluded that Exchange Rates impacts Macroeconomic indicators and vice-versa.

The results of the Impulse response function interpreted that the changes in one variable impact on current and future values of endogenous variables. Impulse response functions of Exchange Rate to Prices, Production, and Labour of BRICS countries except South Africa remains significant and had a positive effect. Impulse response functions of Exchange Rate of BRICS countries to Effective Exchange rate based on SDR and CPI remains statistically significant and positive except India. Impulse response functions Exchange Rates to Balance of Payments of BRICS had a significant positive effect except for India. Impulse response functions with Exchange Rate to GDP of BRICS remains had a positive effect except for India. Impulse response functions of Exchange Rates to Government Finance had a significant positive effect on Russia, India and South Africa. Impulse response functions of Exchange Rates of BRICS Countries to Interest Rates of is significant and positive except Russia. Impulse response functions of Exchange Rate to International Liquidity of BRICS was significant and had a positive effect. Impulse response functions of Exchange Rate with Foreign Trade was significant and had a positive effect on Russia, China, and South Africa. In examining the effect of one-time shock there was increase and decrease effect between Macroeconomic Indicators and Exchange rate. The overall results interpreted that there is a significant positive impact and negative effect between Macroeconomic Indicators and Exchange Rates of BRICS Countries.

5.2 Conclusion

Exchange rates have witnessed massive reforms in the past decades. The exchange rate is one of the most important determinants of the economy. The role of macroeconomic Indicators is to analyze the performance of the country, its behavior, and the decision taken related to the economy of the country. The study was based on the time period of fifteen years from 1st January 2002 to 31st December 2017. Descriptive statistics resulted that Brazil had a relative level of economic health showing greater reliability and positive outcomes.

The Augmented-Dickey Fuller unit root test (ADF) has reported that the series was non-stationary at levels and found to be stationary at first differences. The empirical results of Johansen's co-integration test showed there is long-run relationship dynamics between the Macroeconomic Indicators and Exchange rate. Granger Causality test resulted Exchange rate affects Macroeconomic Indicators in the short run in certain cases and there is bi-directional causality between International Liquidity and Exchange rate of Russia and India. Further, Vector Error Correction Model resulted there were changes in disequilibrium corrected between the study period of fifteen years indicating that Exchange rate plays a vital role in the economy.

Vector Auto-regression Estimates reveals that Exchange rate had a dynamic effect on Macroeconomic Indicators. Variance decomposition analysis showed an average of 0.50 percent of fluctuations in the Exchange rate and Macroeconomic Indicators. Impulse response function showed the impact of Exchange rate on Macroeconomic Indicators is significant compared to the impact of Macroeconomic Indicators on Exchange rate. Impulse response function and Variance decomposition model concludes that Exchange rate had a significant positive impact and negative effect on the Macroeconomic Indicators and vice-versa. Both Exchange rate and Macroeconomic Indicators mutually reinforce each other.

5.3 Suggestions

On the basis of the findings of the study, the following suggestions have been made.

- Global Trade patterns have changed with emerging market economies, this is because larger share has been taken by India and China. The study explained the fluctuations in exchange rate affected by macroeconomic fundamentals based on past history of Exchange rates. This implies the policymakers and the government to impart better policies for economic growth.

- Promotion of economic growth through innovation can be done to initiate national policies to ensure that there will be enough prosperity to carry on into the next generation.
- In order to increase productivity, Capital should be increased for the production process. The increase can be in the form of human capital or physical capital and the size of the capital stock can be expanded and the average age of capital can be reduced to encourage a higher level of business investment.
- Tax and welfare reforms will help to improve work incentives, it can be initiated to increase the incomes of people working more productively and also improving the quality and affordability of education and training will increase effectiveness in raising productivity.
- Exports of India has less influence on its GDP, so exchange rate depreciation can increase its foreign debt, increase in exports should be made and less influence on imports should be carried out to encourage stronger competition leading to greater efficiency. Exports can be increased to non-traditional markets such as South Africa.
- The government should take measures to bank lending, investment, and productivity. Enterprises and the general investors can also gain a deeper understanding of the trends of the equilibrium exchange rate to avoid investment losses.
- Public investment can be increased, hence it is essential to produce public goods and services.
- Foreign investment is regarded as a source of capital, technology, and managerial skills. Adequate steps should be taken to enhance foreign direct investment. This is because foreign direct investment increases employment and output in the country.
- Chartered Institute of Public Finance and Accountancy (CIPFA) launched a new web portal to help organizations to implement a whole systems approach in order to improve public financial accountability. This approach can be practiced by International organizations, Professional Accountancy organizations and other bodies promoting public Financial Management for better performance.
- Raising the official price of gold will necessarily solve the problem of International Liquidity. The volume of Liquidity would increase with raising the official price of gold.
- Research and development activities should be undertaken to increase the quality of CPI and also improvements should be made in developing CPI, it should also have a goal to achieve and develop the Cost of Living Index.

- More workshops can be conducted to disseminate information about the government's schemes like foreign trade partnerships and promotions so that smaller exporters can become aware of the schemes.
- Interest Rates are increased when inflation is predicted to rise above the target. Higher interest rates tend to moderate economic growth, it reduces the rate of economic growth and inflationary pressures. Hence inflationary pressures can be reduced by cheaper imports and reducing the demand for exports.
- RBI can take the measures under the Foreign Exchange Regulation Act (1947), to keep the Exchange rates stable. The measures are, to lower the discount rate, impose restrictions on dealing foreign Exchange etc.
- RBI should make policies on controlling Exchange Rate, to increase investors and also to keep stable inflation rates.
- The government should give attention towards the issue of the high stock exchange. Proper policies should be provided for investment in stock exchanges in the condition of decreasing Exchange Rates.

5.4 Scope for Future Research

Attempts have been made to make the study intensive. But still, further work may be undertaken in the area of the study

- The policymakers should think wisely when deciding to alter or change their policies regarding the macroeconomic variables. They should be aware that any changes in their policies would affect the global market.
- If macroeconomic variables have a long-term relationship with Exchange rate, the government can control the behavior of the Exchange rate by adjusting the disorder exchange rate and reducing the intervention in currency markets. Hence, future research can be carried out in examining the relationships with various International Macroeconomic Indicators such as stock market indices, oil prices etc.
- The model employed in this study can be developed using various other econometric models such as GARCH and ARCH can be applied for further studies.
- In further studies, various other macroeconomic indicators shall be included to analyze the developing countries. Further guidance can be provided in determining macroeconomic policy formulations.