IMPACT OF CAPITAL INFLOWS AND MONEY SUPPLY ON EXCHANGE RATE: A CASE STUDY OF SOUTH ASIAN COUNTRIES

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By

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Candidate of **Master of Philosophy** at the National University of Modern Languages do hereby declare that the thesis **Impact of Capital Inflows and Money Supply on Exchange Rate: A Case Study of South Asian Countries** submitted by me in partial fulfillment of MPhil degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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ABSTRACT

Present study analyzes the impact of capital inflows and money supply on exchange rate for a sample of four South Asian countries (Pakistan, Bangladesh, India, and Sri Lanka) over the period 2000-2020. South Asia region is struggling with the issue of having insufficient amounts of financial capital. So, it leads low level of income. These nations have low savings and investment rates and it causeslow-income levels. Exchange rate shows degree of competitiveness of south asia regarding international trade. Real exchange rate is examine as important factor since economic growth of south asia. The finding of study indicate that exchange rate and its determinants shows statistically significant role in determining of exchange rate. Descriptive statistics describes the features of all variables in detail. The overall result shows exchange rate is volatile over time and all variables have a significant impact on determining the exchange rate. The highest variance of the exchange rate in all countries shows the volatility of the exchange rate over time. Panel ARDL Estimator show that both capital inflows and money supply are associated withs exchange rate. Remittances show big impact on appreciation of exchange rate. The short-run of the panel shows cointegration term is negative and significant which means variables are stable in short-run shocks and convergence towards the long run. The cross-section short-run coefficient shows three countries stable in the short run but Pakistan is not stable in the short run. Bangladesh is a more stable country of the selected four countries.

Keywords: exchange rate, interest rate, money supply, countries, south asia, trade, inflation, currency etc.

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DEDICATION

This thesis is dedicated to my family especially my parents and my husband for his love, endless support and encouragement.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The real exchange rate, which is a measure of the Price-Cost competitiveness of an economy, is an excellent explanation for the trade inflows and outflows of a country in the context of the worldwide market, which is competitive. It is essential for the regulatory authority to have a solid understanding of the factors that determine the real exchange rate, as this knowledge can assist them in preserving the natural balance of the real exchange rate. Because of this, changes in real exchange rates can have an effect on the pricing of both imports and exports. Higher real exchange rates make domestic production less expensive, which, in turn, results in cheaper exports and more expensive imports.

When seen from the standpoint of the monetary approach, an increase in the money supply lowers buying power, which in turn leads to an increase in price level and, as a consequence, a lower real exchange rate. The same is true with regard to the ratio of a foreign country's debt to its GDP; this leads in a weaker demand for foreign currency, which in turn results in a lower real exchange rate for the domestic country (Kia, 2012).

It is possible to state that a bigger budget deficit leads to an increase in demand for goods and services, which in turn leads to an increase in price and, as a result, a lower real exchange rate. This is also the case with debt that is financed externally. Because an increase in real income leads to an increase in real demand for money, this leads to an increase in the amount of transactions that take place in the market at any given price level. As a result, demand for money leads to a decrease in prices over the long run and an increase in the real exchange rate (Krugman et al., 2012).

A higher interest rate on foreign investments results in a lower demand for money, which leads to a depreciation of the domestic currency (Kia, 2012), which in turn leads to a higher real exchange rate. In contrast to this viewpoint, a higher domestic lending interest rate in developing countries raises the cost of capital in

the credit market, raises the risk of bankruptcy, and raises the risk premium; as a result, inflows are reduced and outflows are increased, which leads to a depreciation of the local currency and an increase in the real exchange rate (Farman & Stiglitiz, 1998).

The swift and strong rebound of capital inflows in emerging Asian countries after the current global financial crisis has added new impetus to the debate on how countries can receive benefits from capital inflows while avoiding costs that are associated with them. This debate concerns how countries can receive benefits from capital inflows while avoiding costs that are associated with them. One of the unwanted side effects of "too much" capital flows is (real) exchange rate appreciation, sometimes known as a loss of a country's competitiveness. This loss of competitiveness could have a negative impact on tradable production and export industries. Appreciation of a country's real exchange rate (RER) takes place independently of the type of exchange rate system that is in place in that nation. In a system with a flexible exchange rate, (real) currency appreciation takes place as a result of the appreciation of the nominal exchange rate, whereas in a system with a fixed exchange rate, appreciation takes place primarily as a result of an increase in prices of non-tradable goods and services. The appreciation of the real currency takes place through a combination of these two mechanisms when the regime is considered to be intermediate.

Capital inflows as defined as foreign direct investment, trade openness, and remittances. These capital inflows can be very extensive. In reaction to the significant rebound in capital inflows, particularly portfolio investment flows, developing Asian nations have begun to experience a stronger appreciation of their respective currencies. In addition to the appreciation of the currency, new levels of asset values have begun to be set as a result of the excessive liquidity that is associated with the robust return of capital inflows. The People's Republic of China (PRC) in particular has seen notable increases in asset prices, which has led to a heightened level of concern on the possibility of asset price bubbles.

While certain central banks in the region, such as those in the PRC and in Taipei, China, have begun to tighten their policies regarding capital control, other central banks in the region are actively monitoring the movement of capital. The

central banks of the Republic of Korea, Taipei, China, and Thailand have all engaged in excessive intervention in the foreign exchange market in an effort to reduce the rate at which their respective currencies are appreciating in value. Bonds denominated in the local currency are issued in order to "mop up" excess liquidity caused by interventions in foreign exchange markets. This helps to reduce the risk of liquidity crises in the domestic financial markets. In addition, even though inflation has started to show an upward trend, central banks are still hesitant to raise policy rates in order to limit the dangers of promoting speculative capital inflows. This is because raising rates could make it easier for investors to make risky bets.

The link between inflation and exchange rate has consistently been one of the most interesting topics for economists to study (Svensson, 1987). The link between the exchange rate and inflation is of the utmost significance, particularly in developing economies. In these economies, shifts in the value of the currency compared to another can have a major impact on the overall level of pricing (Dornbuch, 1976). According to Dornbuch, there will be an increase in the total level of prices if there is a change in the exchange rate, which can be defined as the rate of change between two national currencies. The expectation is that overall prices will go down when there is a decrease in the exchange rate, which would indicate that the value of the local currency would increase.

A shift in the value of one currency compared to another will have an impact not only on the expenses of manufacturing but also on the pricing of imported goods, which will also shift. Because of this factor, it is reasonable to assert that there is a very strong connection between the currency exchange rate and the rate of inflation. Therefore, it is necessary for developing countries to implement real exchange rate policies to take into account domestic inflation in order to maintain stability in national production and international competition without falling into the foreign exchange bottleneck. This can be done without falling into the foreign exchange bottleneck if these policies are put into place. In light of this fact, there is a pressing requirement for study to be carried out on the relationship between exchange rates and inflation.

The aggregative study of a closed economy has, for the better part of a century, continued to be conducted within the boundaries of the Keynesian

paradigm as it was interpreted by Hicks (1937). An alternative reading of Keynes was presented by Metzler (1951), Patinkin (1965), and other authors (1936). Later extensions brought about anticipations and growth while maintaining the fundamentally sound conclusions reached before.

The short-run response to changes in monetary policy and fiscal policy is, according to both theories, primarily conveyed via interest rates and is dependent on characteristics of the demand function for money and the spending function. The short-run response of output to changes in monetary and fiscal policy is amplified when the demand for money has a high interest elasticity. The short-run response of output to changes in monetary policy is amplified when there is a high interest elasticity of either consumption or investment expenditure.

The terms interest rates and rates of interest are interpreted in two different ways, and as a direct result, the adjustment procedures are different. In the standard textbook presentation, interest rates are defined as the costs of borrowing, and portfolio adjustment is defined as the process of making exchanges between money and a specific class of financial assets known as bonds.

A claim to actual capital is represented by the composite that serves as Metzler's financial asset. Bonds are a great alternative for claims of this kind, and interest rates represent the yield that a unit of real capital generates over a given time period. According to Metzler's model, real resources are static, and as a result, long-run output is also unchanging. Prices and interest rates are impacted in the long run by monetary and fiscal policies as a result of these policies' consequences.

Alterations to the money supply will have an effect on prices but will have no impact on interest rates or real balances. The ownership of claims to streams of real income is transferred between the public sector and the private sector as a result of open market operations and changes in tax rates. When there are more sales on the open market and lower tax rates, interest rates go up; when there are more purchases on the open market and higher tax rates, interest rates go down.

In the Hicksian model, the government is responsible for making purchases of various goods and services. The long-term effects of issuing and withdrawing bonds, particularly on prices and interest rates, are hardly ever

brought up for discussion. The analysis of portfolio adjustment performed by Hicks and Metzler are fundamentally distinct from one another due to the fact that they make distinct assumptions on transaction costs.

The cost of modifying the real assets contained in portfolios is unlimited when using the Hicksian technique. According to the Metzler methodology, these costs are to be approximately equivalent to the transaction costs for securities, which are either at or very close to zero. We feel that an intermediate stance that allows for the adjustment of real capital or claims to real capital, bonds, and money is better suitable for aggregate analysis.

According to our interpretation of the monetarist hypothesis, an economy is analysed in which the costs of modifying the real capital that is held in portfolios are neither zero nor infinite. The price of current production is pushed further away from the price of existing real capital as a result of the presence of finite transaction expenses.

There is no growth in the stock of real capital, population, or effective labour force because the economy is closed, which is consistent with the majority of our discussion on this topic. There is a government that buys goods and services, collects taxes, funds deficits and surpluses, and participates in open market operations. Interest rates, the prices of output, and real capital all have the ability to fluctuate.

Private decisions in the economy are made in response to prices and projected prices, including the prices of current output, existing real capital, and the market rate of interest. These decisions can include whether to hold, acquire, or dispose of assets, as well as whether or not to consume. A budget equation is a mathematical representation of the decisions made by the government on tax rates, expenditures, and the financing of the budget surplus or deficit.

The level of output, the market rate of interest, the size of the budget deficit or surplus, and the prices of real capital and current production are all determined by the decisions made by both the government and the private sector, assuming all other factors, such as preferences, opportunities, and expectations, as well as wage rates, remain constant. The economy is shut down, and everyone receives their money wages and their share of the capital stock. At certain

junctures, we loosen the remaining limits and make it such that either the money wage or the capital stock can vary.

1.1 Statement of Problems

To understand how money supply and capital inflows affect the currency rates of a few South Asian nations. A cross-country balanced panel data model is specified for four South Asian economies. All of these four countries near neighbours in South Asian. All four have historical ties to the UK as well as more contemporary connections stemming from membership in the SAARC (South Asian Association for Regional Cooperation) trading bloc.These are most popular countries of South Asia to maintain their trade balance and the relative worth of their currencies, the majority of Asian economies changed the direction of their exchange rate policies. On the base of same economic conditions of selected South Asian countries to compare the value of currency.

Exchange rate shows degree of competitiveness of south asia regarding international trade. Real exchange rate is examine as important factor since economic growth of south asia. Stability of exchange rate is helpful since overestimate exports and investment. Capital inflows are considered as important factor to determine the real exchange rate. Moreover, this exchange rate also affects tradable and non-tradable sectors of a country.

Depending on the sort of exchange rate system that is in place, capital inflows can either be seen as a building of reserves or a deficit in the country's current account. For instance, in a system with a floating exchange rate and no role for the central bank, capital inflows lead to an increase in capital assets, which in turn leads to an increase in imports. The current account deficit will therefore get significantly worse as a result of capital inflows. If there is a fixed exchange rate, then the central bank will intervene by monitoring the pressure to appreciate the currency. In this scenario, an increase in the country's foreign exchange reserves will be brought about by capital inflows.

1.2 Significance of Study

There are quite a few studies that investigate the effects that capital inflows, such as foreign direct investment and public spending, have on the economy. The vast majority of this literature treats FDI as a level concept, but key

characteristics of the money exchange are disregarded. The character of exchange is regarded as reflected in the behavior of capital inflows in many different studies. For example, the exchange of money is evident in the context of general government expenditure, and it is even more obvious in the context of the subcomponent of general government spending known as non-systematic spending.

1.3 Objective of Study

The objective of this study is:

- To find effect of capital inflow and money supply on exchange rate in selected South Aasian countries including Pakistan, Bangladesh, India and Sri Lanka.

1.4 Research Questions

The research question of this study are:

- Find effect of capital inflow and money supply on exchange rate.
- Analyze relationship among money supply and exchange rate.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

The South Asia nations are struggling with the low level of capital stock. At the same time low capital stock causes low level of output and economic growth. The level of income is not very high because there are not enough resources. These nations have low levels of savings and investment as a direct effect of their low-income levels. The lack of investment in these countries is a direct outcome of the inadequate availability of financial resources. Since their beginnings, they have been making persistent efforts to escape the never-ending cycle of poverty; yet, the lack of resources is the primary obstacle that undermines all of the efforts that governments have made to free their people from the shackles of this poverty trap.

The primary goals of economic expansion in countries still on the path to full development are, among other things, the reduction of poverty, the equitable distribution of income, the expansion of employment opportunities, and the enhancement of the quality of educational and medical facilities. They are unable, due to limits cause by a lack of capital, to obtain the requisite investment level. This level of investment is require for achieving economic development and breaking the cycle of poverty that exists in these economies.

The dual gap models provide justification for obtaining external loans in order to satisfy capital restrictions. Chenery and Strout (1966) are credited with developing the dual gap models, which explain why it is necessary to utilize foreign resources in order to bridge the dual gap. The premise that all external borrowings are employe for stimulating investment is at the core of the dual gap concept. The availability of foreign capital has the potential to significantly boost investment levels, especially when compared to the use of domestic resources.

Weisskopf (1972) propose the idea that increasing an economy's total capital resources through the use of foreign borrowing could boost the economy's overall rate of return on investment. Stoneman (1975) criticize the model develope by Weisskopf (1972) and argue that inflow of foreign resources and

foreign direct investment are led to some structural changes in the economy. These changes include export growth, modification in COR, transformation in income distribution, and some discriminatory incentives to some specific sectors that hinder economic growth. Stoneman's argument is based on the fact that export growth is cause by inflow of foreign resources and foreign direct investment. Direct investment from overseas helps countries who are short on money to make up for the gap in their financial systems (Noorzoy, 1979).

The inflow of foreign direct investment (FDI) into resource-related businesses might have the effect of boosting local investment in related fields. Additionally, foreign direct investment will have the consequence of elevating the quantity of goods that are shipped overseas. Enhanced exportation results in a rise in the amount of capital invest in the export industry (Sun, 1998). In places where there is a shortage of capital, remittances play an equally important role in alleviating the resource crunch.

Money sent back to family and friends from abroad boosts a bank's reserves and expands its ability to provide loans. The decline in interest rates and the acceleration of investment in the economy are both effects of the increase supply of money. One may say that the convenience of remittances in terms of their access to the banking sector acts as a complement to the promotion of local investment. Both overseas borrowings and remittances are consider to be substitutes for one another.

2.2 Previous Studies

Qamruzzaman et al. (2021) examines foreign direct investment (FDI), financial innovation, and exchange rate volatility in selected South Asian nations from 1980 to 2017. Toda-unit Yamamoto's root, Autoregressive Distributed Lagged, nonlinear ARDL, and causality tests are use. Unit root test shows that some variables remain stationary at a level and others after the first difference. Empirical model estimation with ARDL test shows long-run cointegration by rejecting the null hypothesis of "no cointegration." This show that long-term financial innovation, FDI inflows, and exchange rate volatility are link. Nonlinear ARDL also confirms asymmetric cointegration. The usual Wald test find long-term and short-term asymmetric effects from FDI inflows and financial

innovation to exchange rate volatility. Feedback hypothesis explains FDI, financial innovation, and exchange rate volatility.

Alam (2020) investigates whether macroeconomic variables affect stock markets and is there any country-specific pattern. Stock market return is the dependent variable and real interest rate, inflation, GDP growth, foreign currency reserve growth, fiscal deficit, FDI to GDP ratio, and exchange rate are independent variables. Bangladesh, India, Pakistan, Sri Lanka, and Nepal are include in the 1993–2019 dataset. The stock market and macro conditions of these countries are observe and show to have some connections with these independent factors. Unit root, heteroscedasticity, autocorrelation, and Hausman tests authenticate and clarify data to explore relationship nature. Finally, regression show that inflation and foreign currency reserve growth rates affect stock market returns. GDP growth, foreign currency reserve growth, and fiscal deficit favorably affect stock market returns, supporting the literature assessment. Only interest rates, inflation rates, and currency rates negatively effect stock market returns.

Gautam et al. (2020) uses felicitous econometrics techniques like Augmented Dickey-Fuller Unit Root Test, Granger Causality Test, and ARDL Bound Testing to examine the relationship between real effective exchange rate and capital flows like FDI, FPI, and other investments in BRICS economies from 1994Q1 to 2019Q2 while controlling for other policy variables like trade openness, government spending, and foreign exchange reserves. IMF, OECD, World Bank, and RBI databases provide data. In all BRICS economies, FPI, trade openness, and reserve position positively and significantly affect real effective exchange rate, but FDI does not. Russia, India, and South Africa adjust at 11.15%, 14.53%, and 8.13%, respectively.

Sinha et al. (2019) examines the macroeconomic effects of FDI and remittances in emerging Asia. Asia receives the most remittances and FDI. This 1981-2015 analysis examine the effects of FDI and remittances on real effective exchange rates and GDP in Asian developing nations. Dynamic panel GMM overcomes endogeneity. In developing Asia, FDI and remittances boost exchange rates and GDP. Due to stable inflows, remittances have more impact.

Draz et al. (2019) examines how macroeconomic factors affect exchange rates of selected South Asian economies from 1981 to 2013. The authors utilize two econometric methods. The pooled sample uses EGLS and two-stage least square. The authors employe panel generalized method of moments and OLS for panel data. The findings imply macroeconomic issues affect currency rates. The robust findings show that exchange rate policy success requires domestic economic and political system changes.

Sean et al. (2019) uses B-VAR to study money supply, inflation, and exchange rate in Cambodia. This study uses October-2009–April-2018 monthly data. This study uses the Money-in-Utility Function (MIU) to explain money growth and price level. The Purchasing Power Parity (PPP) displays the exchange rate-inflation relationship in this study. Cambodian money supply depends on its prior variable, according to empirical findings. Money supply also depreciates Khmer Riel against US Dollar and raises inflation. Based on variance decomposition, money supply shocks exchange rate by 8% and inflation by 0.13%, whereas exchange rate shocks Cambodia by 0.024%. National Bank of Cambodia cautiously supplies money due to low money supply-inflation-exchange rate shocks. Theoretical and actual findings match.

Bhat & Hussain (2017) examines South Asian real exchange rate determinants. Fiscal, monetary, and other determinants are studied (stock returns, real income and political stability). The study employe panel data from 1998 to 2012 with four cross sections. The study uses multicollinearity, panel unit root, Kao's cointegration, and FMOLS. Despite Kao's unfavorable cointegration test results, all variables are stationary at first difference. FMOLS favors co-integration. Although consistent with prior studies, other factors show opposing directions.

Razzaque et al. (2017) study exchange rate implications on Bangladeshi economic growth. They generate a real exchange rate series and use cointegration methods to determine Bangladeshi currency depreciation production responses. In the long run, a 10% real exchange rate depreciation increases aggregate output by 3.2 percent. In the short run, real devaluation causes GDP to fall by around half a percent. Real depreciations have a long-term expansionary effect, but rising

inflationary pressures should be considere when using exchange rate management as a development strategy.

Ali et al. (2015) examines Pakistani exchange rate volatility. Johansen Cointegration (trace and eigenvalue) tests and Vector Error Correction Model are use to determine short- and long-term relationships between variables using monthly data from July 2000 to June 2009. (VECM). Granger Causality Test and Impulse Response Function (IRF) have been use to determine variable effects and shock responses. Inflation and exchange rate volatility have short-term and long-term links. High money supply and interest rates enhance inflation and exchange rate volatility.

Jongwanich & Kohpaiboon (2013) uses a dynamic panel-data model for 2000–2009 to study capital flows and real exchange rate (RER) in rising Asian countries. Unlike earlier research, capital flows are divide into foreign direct investment (FDI), portfolio investment, and other investment (bank loans). The model separates inflows and outflows. Estimations reveal that capital flow compositions affect RER impacts. Portfolio and other investment (including bank loans) increase RER quicker than FDI. However, capital flows appreciate similarly. FDI flows are becoming more like portfolio investment due to merger and acquisition activity. Capital withdrawals cause more exchange rate adjustment than capital inflows, according to estimations. The results suggest that rapid capital movements in the region, especially portfolio investment and bank loans, could lead to excessive real currency appreciation.

Alam & Ahmed (2012) estimates Pakistan's export demand using Autoregressive Distributed Lag model and quarterly data from 1982Q1 to 2008Q2. The research examines the long-term and short-term effects of foreign real income, relative export prices, and real effective exchange rate volatility on export demand. The empirical results show that real export demand is co-integrated with real foreign income, aggregate export relative price, real effective exchange rate, and real effective exchange rate volatility. Pakistan's aggregate export demand is positively correlated with real foreign income, suggesting that its trade partners' incomes influence it. In the long run, higher export prices may lower demand. Long-term real effective exchange rate volatility has hurt

Pakistan's aggregate exports. This shows that short-term aggregate exports are caused by real effective exchange rate volatility and relative export prices.

Abbas et al. (2011) examines the causes of currency price changes of Pak rupee, Indian rupee, Indonesia Rupiah, Korean Won, and Sri Lankan rupee vs US dollar. Quarterly data from 1984 to 2008 shows that economic variables affect currency rates. Results of ordinary least squares and Johansen's cointegration demonstrate that long term relationship exists among exchange rates and macroeconomic fundamentals of sample economies. Emerging Asian economies also share economic variables that affect currency pricing.

Combes et al. (2011) examines how capital inflows and exchange rate regime affect the real effective exchange rate. A large variety of developing countries (42 countries) is consider with estimation based on panel cointegration techniques. Public and private inflows raise the real effective exchange rate. Portfolio investment affects appreciation roughly seven times more than foreign direct investment or bank loans, and private inflows have the least effect. They find that a more flexible exchange rate dampens capital inflow-induced real effective exchange rate appreciation using a de facto metric.

Özcan (2011) examines the real exchange rate and workers' remittances in 10 developing nations. Padroni's panel cointegration tests and FMOLS estimator show no Dutch disease effect from workers' remittances in these nations. Also, our results imply that overseas remittances have potential to boost these countries' export structures, if they are backed by adequate policy tools, as more liberalized trade regimes.

Maitra (2010) investigates if Sri Lanka's independent float regime's rupee/dollar exchange rate volatility affect domestic money supply. Cointegration shows exchange rate and M2 money supply are level-cointegrated. The VEC model shows that seven- and nine-month-lagged money supply depreciate exchange rates. Intervention analysis using impulse response functions and variance decomposition demonstrates that money supply will increasingly affect exchange rate fluctuation in the future.

Muhammad et al. (2002) investigates whether stock and exchange rates are connect to eachother. These variables' long-term and short-term associations

are examin. The study uses monthly data from Pakistan, India, Bangladesh, and Sri Lanka from January 1994 to December 2000. They examine the long-term and short-term relationship between stock prices and exchange rates using cointegration, vector error correction modeling, and Granger causality testing. This analysis find no short-term connection between variables for all four countries. Pakistan and India stock prices and exchange rates have no long-term association. Bangladesh and Sri Lanka show a bi-directional connection between these two financial factors. Our findings affect investors, policymakers, and academics.

2.3 Exchange Rates in South Asian Economies

During the past couple of decades, the environment of international markets has undergone significant shifts, which have taken the form of improve capital movement, extreme unpredictability in exchange rates, and a series of worldwide financial crises. These shifts have cause the environment to experience significant variation. Although the vast majority of contemporary empirical models have ignore the possibility of the existence of a long-term association between exchange rates and financial fundamentals, exchange rates continue to be the subject of a great deal of controversy in the fields of economics and international finance. This is true on both the theoretical and empirical levels (Beckmann et al., 2011).

Surprisingly, the connection between exchange rates and macroeconomic variables still remains an urgent problem despite the limited attention paid to researching this aspect, particularly in developing economies. This is especially the case because of the lack of attention paid to investigating this aspect. The Asian economies have undergone enormous change over the course of the past few decades, and the outbreak of the Asian Financial Crisis has stimulated various implementations of exchange rate arrangements. This is due to the fact that developing economies are more susceptible to turmoil than more developed economies. The variations in the exchange rate have a substantial influence on a variety of aspects of the economy, as well as on the parties concerned.

The fluctuation of exchange rates, whether they are appreciating or depreciating, is directly connect with the economic performance of a country. The

role of exchange rates is extremely significant on the international market, and the variability of exchange rates is directly connected with the performance of a country's economy. Following the advent of flexible exchange rate regimes, exchange rate swings have grown excessive. The pegging system and the implied burden of the currency that a specific nation pegs are two factors that contribute to the volatility of the currencies used in developing countries (Chong and Tan, 2007).

However, currency crises are more common in developing markets. This is due to the fact that the nominal currencies of these economies might not be able to generate fixed and anticipated exchange rates, and their equality levels might diverge, which flags the way for currency speculative movements. Even while Asian economies typically prefer a managed floating exchange rate strategy, the exchange rate instability of every currency is different even when a pegging arrangement is in place (Alba and Papell, 1998).

In addition, maintaining a constant exchange rate and capital mobility in conjunction with autonomous policies cannot be done at the same time. Furthermore, technically speaking, there has always been a tradeoff between these three elements of macroeconomics. As a result, it is worthwhile to analyze the significance of the elements that determine the exchange rate for a country's sustainable performance. Several economies in South Asia stayed on the path of internal and external transformations to include into the international economy throughout the middle of the 1990s. This is in response to the reforms that are implement in surrounding nations during the previous decade. This, in turn, enhance the vulnerability of financial upheaval since economies that are financially more linke and open are particularly susceptible to blows from both the outside and the within.

As a result, a certain amount of exchange rate flexibility and the corresponding sovereignty over monetary policy turned out to be essential for the management of the macroeconomy. Cavoli and Rajan (2013) have explain that, according to the IMF behavioral classifications of the leading South Asian currency systems, India is characterized as a managed floater, which is roughly regular with its official declarations. On the other hand, Bangladesh and Sri Lanka are categorize as countries that use a soft peg system.

On the other hand, maintaining stable exchange rates is an essential part of an economic strategy centered on exports. In point of fact, it is frequently suggest that developing economies can boost exports by means of an undervalued currency, and China is in reality pursuing the same policy posture that other countries have taken in the past. In addition to this, consistent exchange rates are indicative of reduced risk, which in turn results in a reduced cost of capital. However, one size does not fit all, and several policies may be necessary in order to accommodate the needs of other nations (Edwards, 2011).

India's currency exchange rate is consistently the most unpredictable. Following the implementation of the manage floating categorization, Bangladesh is able to maintain a significantly low exchange rate risk, and its exchange rate instability is typically lower than that of Sri Lanka and Nepal. After the monetary and fiscal policies of Asian countries are liberalize, we have witness fast shifts in these tactics as a response to the turbulent market environment that has arisen since liberalization. Since the currency exchange rates of Asian nations are suddenly plummeted as a result of currency speculation periods, rapid shifts are also notably obvious in the aftermath of the upheaval that engulfed the Asian financial system.

After the currency crisis, the majority of South Asian economies opted for controlled floating systems instead of fixed exchange rates. 2001 marked the beginning of a floating regime in Sri Lanka, and in 2003 Bangladesh became the first country in the world to go from a fixed to a controlled floating system. In addition, the Nepalese Rupee is pegged to the Indian Rupee; however, exchange rates between the Nepalese Rupee and all other currencies are flexible. In terms of exchange rate strategy, India is likewise a controlled floater.

Unraveling the mysteries surrounding the primary forces that influence currency exchange rates remains one of the most thought-provoking areas of research in the field of economics. The comparative predict inflation gaps and the relative productivity gaps are suggest by standard exchange rate models as essential determinants of exchange rates; however, these predictors are not addressed effectively in the existing research (Mark, 2009). In the past, the majority of the research has focused on analyzing the many facets that are associated with currency exchange rates.

The already available body of research can be organize into categories in accordance with the areas of interest that have been prioritized by researchers. For instance, it has been argue that maintaining a constant exchange rate has a negative impact on economic growth because it reduces a country's ability to respond in a flexible manner to asymmetric real shocks and increases the possibility of projected capital inflows and stickiness. Moreover, some economists believe that maintaining a constant exchange rate also has a negative impact on employment levels. On the other hand, it does have some good impacts, such as lowering the transaction costs of international trade and improving macroeconomic stability while reducing the amount of uncertainty surrounding the flow of foreign capital.

Although there is a large body of published research that experimentally investigates the connection between currency exchange rates and international commerce, the exchange rate determination process is where the theoretical underpinning for these studies originates (Chaban, 2011). According to Ogun (2012), the important drivers of short-term variations in the nominal exchange rates of developing countries are weather conditions, the exchange rate on the parallel market and the associated premium, as well as corrupt practices. This theory takes into account factors that are not conventional but are nonetheless significant.

In addition, the consequences of these variables are not the same in countries where the legal system is more developed. Chowdhury (2012) discovered, through the use of the Autoregressive Distributed Lag (ARDL) modeling, that the key long-term determinants of exchange rates for Australia include the terms of trade, government expenditure, interest rate differentials, and trade openness. In addition, differences in productivity are very important factors that determine the level of exchange between the member states of the EU and Malaysia (Candelon, at el, 2007; Wong, 2013).

Kia (2013) found that for Canada, over the long term, the real exchange rate is a utility of real money supply, national and overseas interest rates, real GDP, real government spending, deficit per GDP, national and external unpaid debt, and product prices. This information was discovered as part of an

investigation into the factors that determine the real exchange rate for a small open economy.

According to AbuDalu and Ahmed (2014), the primary factors that determine the exchange rates of the Asian countries are the domestic money supply, the domestic and foreign interest rates, the domestic money supply, the term of trades, the foreign interest rate (R*) for Thailand, and the net foreign assets of the respective countries. In the short run, the relative importance of each component differs from country to country. This is perhaps the most crucial point. Griffoli et al. (2015) analyzed the factors that influence the Swiss Franc by utilizing the annual data collected from 1973 to 2011.

The primary findings suggested that the degree to which trade barriers are relaxed and the amount of money spent by the government are the most important factors throughout time. The function that GDP per capita and net foreign assets play in the economy is distinct from one another, and relative productivity differentials do not have a substantial effect on exchange rates.

Chen and Liu (2017), one of the more recent studies, investigated real exchange rate variation for China using a structural Vector Autoregression (VAR) model; the authors incorporated five macroeconomic variables, namely technology, monetary policy, government spending, foreign demand, and risk premium shocks; the results of their study demonstrated that external demand variability is the extremely vital driving power for Chinese real exchange rate and monetary policy and risk pr; the authors of this study incorporated technology; the authors of this study incorporated risk premium shocks

In a separate piece of research, Aloui et al. (2018) examined a dataset from Saudi Arabia covering the years 1969 to 2014 and came to the conclusion that the Saudi economy is vulnerable to risk factors due to the volatility of the oil market and the fact that the Saudi riyal is pegged to the US dollar. These factors have a major and detrimental impact on the growth of the Saudi economy, inflation, and the financial policies of the sovereign government.

Tunaer (2018) found that the main determinants of Turkish exchange rates are the country's fiscal expenditures, real GDP per capita relative to trading partners, international openness, and oil prices. This conclusion was reached after

analyzing the long-term path of the Turkish currency as well as its fundamental determinants. The rise in GDP per capita, on the other hand, puts appreciation pressure on equilibrium exchange rates and there is no link between net foreign assets and exchange rates.

After conducting an investigation into the primary factors that determine exchange rates for developing and emerging economies, Barbosa et al. (2018) came to the conclusion that productivity differentials might contribute to the appreciation of the real exchange rate, and that financial factors are more relevant to the determination of exchange rates than fundamentals-related variables. In addition, the impact of interest rate differentials and foreign liquidity on exchange rates can be interpreted in other ways.

Vogiazas et al. (2019), using the case of high income and upper middle income economies, confirmed that financial development and natural resources rents do not have a significant effect on the real effective exchange rates of the upper-middle income countries, but that this link is substantial for the high-income countries. This was found by comparing the real effective exchange rates of the high-income countries to those of the upper-middle income countries. In a similar vein, the openness of commerce is the primary element that determines the currency exchange rates, and the effect of total factor productivity changes depending on the country you look at.

Taking a look at the most recent data from the Asia-Pacific area, Phuc and Duc (2019) investigated the factors that determine how quickly exchange rates (ERPT). The findings showed that changes in ERPT are caused by macroeconomic factors like the volatility of inflation, interest rates, and trade openness; however, the results also showed that the impact of these factors varies significantly across the surveyed countries and the three different price indices.

Assuming that the economies of Asia have gone through a number of shifts in their exchange rate provisions since liberalization, the purpose of this paper is to contribute to the existing body of research by concentrating on the macroeconomic fundamentals that have an effect on the exchange rates of this region. The vast majority of the research that has been done has been on the connection between international trade and currency exchange rates, but only a

very small number of studies have looked into the macroeconomic underpinnings of exchange rates. In addition, the vast majority of the earlier research concentrated on the developed economies, and even then, only on the level of individual nations.

The originality of our work lies in the fact that we have assembled a panel as well as a combined data set consisting of South Asian economies ranging in size from very small to very large. In this inquiry, a data set spanning more than three decades is subjected to a holistic method of analysis.

2.4 Foreign Direct Investment in South Asia

In the 1990s, one of the most notable aspects of globalization was the flow of private capital in the form of direct investments made by companies based in other countries. Foreign direct investment is a significant component of the financial infrastructure required for development. It also plays a role in the enhancement of productivity through the provision of fresh capital, improved technology, specialized management knowledge, and expanded export markets. There has been a shift toward relying more heavily on the forces of the market and the private sector as the primary driver of economic expansion in developing nations due to the scarcity of resources and the absence of investment. According to the neoclassical growth model, foreign direct investment (FDI) contributes to economic expansion by boosting both the level and the effectiveness of investment.

Therefore, as foreign direct investment (FDI) delivers a variety of benefits to the economy of the host country, it is a goal of any nation, particularly emerging and least developed countries, to attract as much of this type of investment as possible. Not only does foreign investment, and particularly FDI, replenish the resources available for local investment, but it also functions as a source of foreign exchange and has the potential to alleviate balance of payment limitations that inhibit growth. The majority of countries, in light of the economic benefits and significance of FDI for the promotion of economic growth, have made substantial changes in their national policies in order to increase their chances of attracting FDI.

The empirical literature suggests that foreign direct investment (FDI) contributes to an increase in national welfare by increasing the volume and efficiency of investment. This is accomplished through improved competitiveness, technological diffusion, accelerated spillover effects, and the accumulation of human capital (Asicdu, 2002; Durham, 2004). Globally, the inflow of foreign direct investment (FDI) into developing countries contributes to growth through two distinct mechanisms. These mechanisms are an increase in total investment within the host country as well as an improvement in productivity brought about by the transfer of technology and management practices (Lipsey, 2002).

Large amounts of Foreign Direct Investment were utilized during the decades of the 1980s and 1990s in order for East and Southeast Asian countries, including the People's Republic of China (PRC), to experience dramatic advancements in their respective macroeconomic situations, levels of investment, levels of exports, and levels of employment. Similar to how private capital, which for a long time was seen with concern and suspicion, is now recognized as a source of investment and economic progress in South Asia, it was viewed with concern and suspicion for a long time. In the same way as economies in other developing regions, South Asian economies direct their investment incentives only toward international businesses.

Since the beginning of the 21st century, market reforms, trade liberalization, and a heightened level of competition for foreign direct investment (FDI) have contributed to a loosening of restrictions placed on foreign investment and an increase in the amount of space available for FDI in most industries. However, the countries of South Asia have not been very successful in luring foreign direct investment (FDI) (Kumar, 2003). When compared to the People's Republic of China, Brazil, Singapore, and other East/Southeast Asian countries, these countries collectively and also individually get a lower amount of foreign direct investment (FDI) (Kumar, 2002).

Among the developing countries in Asia, South Asia was the recipient of the least amount of foreign direct investment (FDI), accounting for only around 3% of the total FDI that was invested in developing countries in the area. With the exception of India, no other nation in the South Asian region has garnered a

significant amount of attention or foreign direct investment (FDI) (Lipsey, 1999). South Asian policymakers have come to the realization that any credible efforts for economic reforms in South Asia must involve an upgrade in technology, scale of production, and linkages to an increasingly integrated globalized production system, primarily through the participation of multinational corporations (MNCs) (Jaumotte, 2004).

South Asian countries have a lot of benefits to offer potential investors, such as high and consistent economic growth, inflation in the single digits, vast domestic markets, a growing number of skilled personnel, an increasing entrepreneurial class, and constantly improving financial systems, including expanding capital markets. These are just some of the advantages that South Asian countries have to offer. In addition to these benefits, the governments of South Asia have also been developing policies and offering incentives to attract foreign direct investment in a variety of different ways (Srivastava, 2003).

2.5 Relation Between Capital Inflows and Foreign Direct Investment

Chishti and Hasan (1992) investigated how foreign aid, capital inflows, and investment in the Pakistani economy are related to one another. The conclusion that can be drawn from the findings is that investment can be encouraged by providing foreign help in the form of grants. Cohen (1993) conducted research into the theory that debt service inhibits investment. Chenery & Strout (1996) stated that dual-gap may be fulfilled more effectively with the assistance of foreign borrowings.

Both investment and economic growth were significantly influenced by the country's high level of external debt. Chenery & Strout (1996) proposed that the difference between savings and investments was influenced by foreign debt. The terms and conditions imposed by donor agencies in regard to developing countries' foreign debt had a negative effect on economic expansion. Kemal (2001) conducted research and found that foreign debt had a negative impact on economic growth.

Mohey-ud-din (2006) conducted research that suggested favorable monetary, fiscal, and trade policies encouraged the entrance of foreign capital,

which in turn stimulated economic growth. According to Chaudhry et al. (2009) research, a positive impact of debt on investment in Pakistan's economy was found. The authors of the aforementioned study, Luka and Spatafora (2012), evaluated the effect that inflows of foreign money have on the local credit and investment of emerging nations. For the purpose of analysis, he selected the years 2001 through 2007 to cover a span of eight years. He came to the conclusion that both of the international capitals had a positive impact on investment.

Ali (2013) investigates how domestic investment is affected by several types of foreign capital, including remittances, direct foreign investment, and foreign borrowings. The findings suggest that all of the factors have contributed to Pakistan's domestic investment climate being more favorable. Forgha et al. (2014) use the Two-Stage Least Squares approach from 180-2013 to investigate how the impact of foreign borrowings compares to the growth brought about by domestic investment in Cameroon. The findings demonstrated that domestic investment accelerated economic growth, whereas borrowing from outside slowed economic expansion. The research concluded that the negative effects of debt should be avoided at all costs by practicing responsible debt management and restricting its use to financially beneficial endeavors.

According to the findings of Ullah et al. (2014), throughout the course of time, negative effects of foreign borrowings on growth were detected in Sub-Saharan African nations, but positive effects of FDI on growth were observed. They proposed that efforts would be made to attract foreign direct investment and lessen the country's dependence on debt owed to other countries in order to accomplish these goals.

According to the findings of Jawaid et al. (2017), foreign direct investment (FDI), foreign remittances, and external debt all contributed to Pakistan's economic growth. According to the findings of Tanna et al. (2018), foreign direct investment boosted growth but was limited by external debt limitations. According to the findings of Lau et al. (2019), the presence of governmental debt discouraged private investment.

In recent decades, a great deal of attention has been focused on the influx of resources from other countries (Shan, 2002). The phenomena that the function

of foreign resources plays has now reached a level of acceptance on a global scale. The countries of South Asia are struggling to close two separate gaps. These voids need to be filled up as soon as possible. The poor countries are able to overcome their financial limits with the assistance of the inflows of foreign money, which also help to improve the level of domestic investment to a level that is desirable.

The purpose of this study is to explore the effect that inflows of foreign money have on domestic savings. According to the findings of the study, domestic investment is being fueled by an influx of international resources. Even while having foreign debt has a favorable effect on domestic savings, it is imperative that debt be put toward activities that are essential, productive, and generate money. The economic policies should have as their primary objective the mobilization of home resources, the enhancement of domestic investment, and the reduction of dependence on external debt. It is essential to have a sensible plan for managing debt, which should take into account both potential sources of funding and make every effort to invest borrowed money in economically beneficial activities.

According to Forgha et al. (2014), an investment that is funded by borrowed resources needs to produce a sufficient quantity of revenue to cover not only the principal but also the interest and other costs associated with the loan. The influx of foreign direct investment (FDI) into the economy causes a shift in people's perspectives by disseminating novel and contemporary ideas; it also raises the bar for the quality of human capital and raises the level of domestic output by supplying the domestic industry with skilled laborers and businesspeople; and finally, it creates new jobs.

Chenery (1996) proposed that worker remittances eliminate the shortage of capital and assist in the provision of critical financing to small and medium businesses. It is imperative that public policy work toward the goal of channeling remittances into productive and revenue-generating endeavors. Both domestic and international investors may be enticed to put their money into the country if conditions like as law and order, infrastructure, and economic policies are improved and made more investment friendly.

2.6 Relation Between Trade Openness and Foreign Direct Investment

Inflows of foreign direct investment (FDI) are recognized as one of the primary forces behind globalization due to the increasingly significant role they play in the economic development and progress of nations. Foreign direct investment (FDI) is essential to the economic growth of host countries because it generates money, external financing, infrastructure, technology, skilled labor, and market access, among other benefits. The majority of nations' policymakers and economists are of the opinion that foreign direct investment can have a favorable impact on their nations. In recent years, the majority of rising and developing countries have carried out a variety of economic reforms in attempt to restructure their economies and attract a greater amount of foreign direct investment (FDI).

Changing conditions in the world economy, as well as shifts in government policy and the political climate, all have significant bearings on the level of foreign direct investment. Decisions regarding foreign direct investment (FDI) are influenced by a wide range of aspects of the country that is serving as the host. These aspects include market size and potential, exchange rate, trade openness, political stability or risk, labor costs, trade costs, investment costs, trade deficit, human capital, tax, inflation, and budget deficit, amongst others.

Numerous empirical studies have pointed to the possibility that a country's economic growth might be affected by a variety of factors, such as its trade openness and its level of direct foreign investment. There are a lot of different meanings of "trade openness" that can be found in the research. The term "trade openness" refers to the proportion of a country's total imports and exports that is relative to its gross domestic product. This measurement, which is both the most common and the handiest, has been utilized in a wide variety of worldwide investigations (Adow et al., 2018; Zaman et al., 2018).

The degree to which a nation's markets are accessible to foreign investment is often regarded as one of the most important factors in determining the volume of foreign direct investment (FDI) that a nation receives. The amount of output and economic activity as well as the number of foreign investors are both impacted by globalization and the liberalization of trade regulations. For this

reason, it is essential to determine the extent to which the trade policies have been liberalized.

It is anticipated that the influence of trade openness on the flow of FDI will be of a mixed nature. Trade openness can have a good or negative impact on foreign direct investment (FDI), depending on the trade policies of the host country (Liargovas et al., 2012). First, the results of the vast majority of empirical studies have indicated that there is a positive connection between trade openness and FDI inflows. This is evidenced by the findings of the research carried out by Makoni (2018), Sahoo (2006), Janick and Wunnava (2004), and Zaman et al (2018).

According to the findings of these research, there is a positive association between trade openness and foreign diet investment. This suggests that a nation that places less limitations on its imports and exports has a greater possibility of attracting FDI. Second, a number of studies have discovered a negative correlation between economic openness and foreign direct investment (FDI) flows (Cantah et al., 2018). Thirdly, research conducted by Ho et al. (2013) and Wickramarachchi (2019) discovered that trade openness did not have a substantial influence on the amount of foreign direct investment (FDI) received by BRICS (Brasil, Russia, India, China, and South Africa) countries.

Several places throughout the world have been subjected to empirical research to investigate the relationship that exists between openness to trade and the flow of foreign direct investments. Some of the findings that were uncovered by the scientific research can be utilized in the present study as theoretical and practical foundations (Ghosh, 2007). The results of a regional analysis indicated that a variety of statistical and econometrical models might be applied in order to investigate the likelihood of relationships existing between the aforementioned factors and variables (Trinh and Nguyen, 2015; Yo et al., 2019).

For example, over the period of time between 1982 and 2012, a number of research on the impact of trade openness on foreign direct investment (FDI) in a select group of Asian nations, including India, Iran, and Pakistan, were carried out (Patsupathi and Sakthi, 2019). When analyzing panel data, the fixed effect and

Pooled OLS approaches were utilized for quantifying the individual country effect, as well as the group effect, and the time effect.

The findings suggested that the currency rate and inflation were utilized as a proxy for macroeconomic stability, and that variables pertaining to GDP per capita had an impact that was statistically significant on foreign direct investment (FDI). The authors came to the conclusion that increased trade openness is to blame for the rise in foreign direct investment (FDI) inflows on both the global and the national levels.

In conclusion, increasing trade openness would be a preferable alternative for long-term sustained inflows of foreign direct investment. Alshamsi et al. (2015) investigated the influence that the country's inflation rate and its GDP per capita had on the amount of incoming direct foreign investment that the United Arab Emirates received from 1980 to 2013. They utilized the ARDL (Auto Regressive Distributed Lag) model, and the results showed that GDP per capita had a positive and statistically significant impact on FDI inflows.

On the other hand, the inflation rate did not have the expected sign, and neither the long-run nor the short-run results showed that it was statistically significant. They hypothesized that adding new variables to studies to be conducted in the future, such as infrastructure, political stability, country risk, and country openness, will result in a more accurate model for analyzing the relationship between GDP per capita and the rate of inflation (Mohamed et al., 2010).

Ho et al. (2013) investigated the impact of trade openness, market size, and other characteristics on foreign direct investment (FDI) in six rapidly developing nations between the years 1977 and 2010. These countries included Brazil, China, India, Russia, South Africa, and Malaysia. The research was conducted using two econometric models, one for analyzing the impact of macroeconomic factors on foreign direct investment (FDI), and the other for analyzing the impact of country-specific factors on FDI.

It was determined that market size (GDP), trade openness, financial development, exchange rate, interest rate, government consumption, and inflation rate were all macroeconomic factors that had an impact on FDI inflows. On the

other hand, economic freedom, wages, human capital, and infrastructure quality were considered to be country factors. The findings from both models suggested that foreign direct investment (FDI) was affected by factors such as market size (GDP), interest rate, literacy rate, economic freedom, and the quality of infrastructure in the majority of BRICS nations as well as Malaysia.

The countries' respective GDPs have significant and favorable effects on foreign direct investment (FDI), particularly in Russia, China, and Malaysia (Fazekas, 2016). Only in Malaysia did trade openness have an influence that could be considered statistically significant on foreign direct investment; it had no effect on other emerging economies (Sazali et al., 2018).

Asiamah et al. (2018) conducted research on the factors that determined foreign direct investment (FDI) into Ghana during the period of 1990–2015 using a Johansen's approach to co-integration testing and a vector autoregressive model. The foreign direct investment stock was identified as the dependent variable by the regression model. The independent variables included the following: inflation rate, interest rate, real effective exchange rate, real gross domestic product rate, power production, and telephone usage.

According to the findings, inflation rate, exchange rate, and interest rate all had statistically significant negative effects on foreign direct investment (FDI) in Ghana. On the other hand, gross domestic product, electricity production, and TU all had a positive effect on FDI both in the long-run and in the short-run. In addition, the findings of the Granger causality test suggested that there was a causal relationship operating in both directions between the generation of electricity, the use of telephones, and FDI. However, there is a one-way causal relationship between the inflation rate, interest rate, exchange rate, GDP, and FDI.

Wijeweera and Mounter (2008) used the vector autoregressive approaches (VAR) in their investigation of the factors that determine the amount of foreign direct investment that comes into Sri Lanka after its economic reform (1977). The regression model was constructed with the use of six variables, including foreign direct investment inflows (FDI) as the dependent variable, market size and performance (RGDP), an openness indicator (TRADE), a labor cost indicator

(WAGE), the exchange rate (EXR), and the interest rate (IR) as independent variables, and foreign direct investment inflows (FDI) as the dependent variable.

According to the findings of the study, real GDP had a positive and statistically significant impact on the amount of FDI that was brought into a country over the long run. The wage rate had a significant adverse effect on foreign direct investment (FDI) inflows and had a favorable influence on the linkages between interest rates in the host nation and FDI inflows. In the long run, trade openness has a positive and statistically significant impact on inward foreign direct investment (FDI). In conclusion, the research proposed paying more weight to GDP, exchange rates, interest rates, and the amount of external trade in order to attract foreign direct investment (FDI) inflows in Sri Lanka. This recommendation is in line with Ravinthirakumaran et al (2015).

Uduak et al. (2014) used pooled time-series cross sectional analysis and a random effect model to investigate the factors that determined the amount of foreign direct investment in Brazil, Russia, India, China, and South Africa (BRICS) and Mexico, Indonesia, Nigeria, and Turkey (MINT) between the years 2001 and 2011. This study covered the period from 2001 to 2011. During the course of the study, foreign direct investment net inflow served as the dependent variable, and the independent variables that were taken into consideration included gross domestic product, the proportion of GDP that is comprised of natural resources, infrastructure, inflation, trade openness, and institutional-related indicators. According to the findings, the roles of market size, availability of infrastructure, and trade penness played significant roles in attracting foreign direct investment to BRICS and MINT countries. On the other hand, the roles of availability of natural resources and institutional quality played no significant role in attracting FDI over the long run.

Using panel data analysis, Demirhan and Masca (2008) conducted a study that investigated the factors that determined the amount of foreign direct investment (FDI) that flowed into 38 different developing nations during the years of 2000 and 2004. The dependent variable in the model was foreign direct investment net inflows expressed as a percentage of GDP. The independent variables included the following: the growth rate of GDP per capita, the inflation rate, the number of telephone main lines per 1000 people measured in logs, the

labor cost per worker in the manufacturing industry measured in logs, the degree of openness, the risk, and the corporate top tax rate.

According to the findings, a positive and statistically significant association exists between FDI net inflows and the growth rate of per capita income, the number of telephone main lines, and the degree to which a country is open for business. Both the inflation rate and the tax rate exhibited statistically significant and inverse connections with the amount of FDI net inflows. In contrast, the cost of labor has a positive sign, and risk has a negative sign, which is consistent with the findings of earlier studies. Both variables have little effect on the amount of foreign direct investment (FDI) that is brought in, which suggests that the cost of labor and the risk variable have not been significant factors in luring FDI.

Wickramarachchi (2019) did research based on a supply–demand framework with the ARDL approach in order to discover the primary factors that determined the amount of foreign direct investment (FDI) that came into Sri Lanka between the years 1970 and 2014. The ratio of foreign direct investment to private investment served as the dependent variable, while the independent variables included real gross domestic product, trade openness, real wage index, and real effective exchange rate. FDI flows to developing countries served as the independent variable.

The level of political stability is measured using a dummy variable, and the several FDI policy regimes over the course of 1977–2000, 2001–2008, and 2009–2014 are each analyzed separately. According to the findings, trade openness and the real wage index do not have any significant link with foreign direct investment (FDI) inflow in Sri Lanka.

In the long run, a country's real GDP was not a significant factor in determining the amount of foreign direct investment that it received. This result agrees with Athukorala's predictions (2003). The results show that foreign direct investment into Sri Lanka has been of the export-oriented variety rather than the market-seeking variety. A negative and statistically significant influence was found to be caused by the real effective exchange rate variable. It was clear from

the data that a higher real effective exchange rate led to a lower level of foreign direct investment (FDI) into Sri Lanka.

The influx of foreign direct investment has a beneficial and significant effect on the political stability. The results showed that open economic policies were successful in attracting FDI in comparison to closed economic periods, and all three dummy factors for regime shifts of FDI policy are positive and had significant impacts on FDI inflow. In conclusion, the research proposed that existing impediments, policy uncertainties, and inefficiencies should be removed and reduced in order to attract more foreign direct investment (FDI) in Sri Lanka. A study that was conducted by Muzurura (2016) looked at the factors that determined the amount of foreign direct investment that came into Zimbabwe between the years 1980 and 2011.

In this model, the endogenous variable was foreign direct investment, while the independent variables were external debt, gross fixed capital creation, gross fixed capital expenditure, gross domestic product, trade openness, and the inflation rate. The findings suggested that, in the long run, a positive and statistically significant association existed between trade openness, gross fixed capital formation, and foreign direct investment (FDI). It was determined that the inflation rate was negative, which had a significant impact on the amount of FDI that was brought in. In addition, the empirical results did not confirm prior research' findings that lagged GDP, external debt, government expenditure, and lagged exports are key predictors of short-run FDI inflow (Kariuki, 2015).

Quazi (2007) used panel data from nine different nations over the period of 1995–2004 to investigate the factors that determine foreign direct investment (FDI), the relationship between FDI and economic freedom, and study the investment climate from the perspective of foreign firms. The model included independent variables such as lagging changes in foreign direct investment (FDI), market size, economic freedom, human capital, infrastructure, trade openness, and return on investment (ROI). According to the findings, among the variables that served as explanations, incremental lagged changes in foreign direct investment (FDI), economic freedom, infrastructure, return on investment, and trade openness emerged as very significant with the signals that were anticipated. On the other

hand, market size and human capital were not found to have a statistically significant impact on foreign direct investment (FDI).

Makoni (2018) chose nine African countries to examine the influence of trade openness on foreign direct investment in African countries throughout the period of 2009–2016. The time period covered by this study was 2009. The dependent variable for this study was the ratio of net FDI inflows to GDP, and the independent variables included the log of FDI to GDP, trade openness, the real exchange rate, a proxy for macroeconomic stability in the form of real economic growth, natural resources endowment, infrastructure, and capital openness. The research utilized a number of different econometric methods, such as the pooled OLS,

The Generalized Least Squares model, the Least Squares Dummy Variable model (LSDV), the Fixed Effects model (FE), the Random Effects model (RE), the Generalized Method of Moments model (GMM), and the Random Effects model (RE) all fall under this category (GLS). The findings of the random effects model indicated that openness to international commerce was positively connected to inflows of direct investment from foreign countries. While real exchange rate variables had a positive impact that was statistically significant on foreign direct investment (FDI) inflow, capital openness had a positive impact that was statistically insignificant. According to the findings of the study, investment and macroeconomic strategies should be implemented.

Using the random effects model, Shah and Khan (2016) evaluated the effect that trade liberalization had on inward foreign direct investments (FDIs) in six emerging economies between the years 1996 and 2014: Brazil, China, India, Mexico, the Russian Federation, and Turkey. These countries were chosen because of their rapid economic development. The independent variables are utilized as proxies for market size, development level, openness, human capital, and trade liberalization. These proxies include total population, GDP per capita, total trade, primary education, preferential trade agreements, and regional trade agreements.

As a result, market size and human capital have a positive and significant impact on foreign direct investment (FDI) inflows. Trade and regional trade

agreements, on the other hand, appear to have no significant impact, whereas preferential trade agreements have a favorable impact on FDI inflows. The long-term effect of trade openness on the flow of foreign direct investment (FDI) in developing economies is beneficial. They looked at data from 36 different emerging economies between the years 1990 and 2008 and utilised that data. A direct test of causation between foreign direct investment inflows, trade openness, and other important variables in developing parts of the world was made possible by this study. In addition, the research showed that there are a few additional elements, including political stability, exchange rate stability, and market size, that have a beneficial influence on the presence of foreign direct investment (FDI).

Panel data analysis was the method that was utilized to investigate the macro determinants of foreign direct investment (FDI) into Japan from the years 1989 to 2002. As the dependent variable, foreign direct investment (FDI) flows into Japan from 17 countries were analyzed. The independent variables included GDP, export performance of source countries, relative bilateral exchange rate, borrowing cost differentials, relative labor cost, and nation risk rating. According to the findings, the determinants of market size, exchange rates, and labor costs have a statistically insignificant effect on foreign direct investment into Japan. It was discovered that the level of success that the source country had with its exports had a detrimental effect on FDI.

2.7 Impact of Interest Rate on Exchange Rate

According to a number of studies (Branson, 1981; Branson et al., 1977), when there is an increase in the domestic interest rate, interest-bearing assets, such as coupons, become more profitable for lenders, which in turn drives the ownership of more assets by lenders. In other words, an increase in the domestic interest rate encourages the ownership of more assets by lenders. As a result, increasing the amount of foreign investment that a country receives might result in an increase in the value of its currency due to a rise in the rate of exchange. In point of fact, the exchange rate can vary in either way, and governments can utilize interest rates as a tool for directing and monitoring their economies through the employment of monetary policy.

The economies of the countries in Asia have been expose to significant economic risks, chief among them being unstandardized foreign exchange rates and fluctuations in the value of their own currencies. These economic vulnerabilities are cause by various responses from Asian countries to the external ups and downs that affect the management and fluctuations of exchange rates in Asian countries. This is the primary cause of these economic vulnerabilities.

According to Chalongphob Susangkarn, President of the Thailand Development Research Institute, "Recently when the United States revised its interest rate, the replies from (ASEAN) countries are not the same" (The Star, Asian Need A Mechanism, 2017). This lack of coordination results in more expensive transactions across borders, and it works as a disincentive for the initiatives that are being taken to make Asia a major economic union.

According to Ong Ka Chuan, who serve as the former Malaysian Second Minister of International Trade and Industry, "Some econo-mists have forecast the emergence of the Asian (AEC) economy as the fourth largest economic bloc after the European Union (E.U.), China and India by the year 2030 due to the continuous growth of the overall Asian GDP." This prediction is made by Ong Ka Chuan (Sin, 2016). Nevertheless, this expansion will continue to be sluggish and precarious in the face of pressures from the outside world, such as an increase in the interest rate in the United States, particularly if the lack of coordination that exists among the Asian members continues.

As a result, the nations of Asia ought to initiate the process of integrating their efforts to mitigate the impact of such external pressures by establishing common standards and reacting in comparable fashions.

The countries of Asia need to come up with a strategy that can be agreed upon in order to deal with the volatility of the foreign currency market and the lack of standardization in their own foreign exchange rates. Similar monetary policies in terms of interest rate intervention and the range of inflation sustainability ought to be one of the common norms that the central banks in Asia should embrace. However, the purpose of this research is to gain a knowledge of the significance of the connection that exists between the interest rates and the exchange rates of the economies of Asia.

Researchers in the field have use a variety of approaches to investigate the correlation between the interest rate and the currency exchange rate. Hacker et al. (2014) use wavelet analysis and find that there is significant empirical evidence that nominal interest rate differential is driving the exchange rate volatility. More specifically, more positive linkages in the long run and more negative relationships in the short run are find to be driving the volatility.

The findings of the autoregressive conditional heteroscedasticity and generalized autoregressive conditional heteroscedasticity (GARCH) models are significant in the GARCH model, which led Lily et al. (2011) to conclude that there is a significant effect of uncovered interest rate parity upon exchange rate fluctuations. This conclusion is findings of both models are significant in the GARCH model. By looking at data from 80 different nations located in a variety of areas, Hnatkovska et al. (2013) are able to analytically demonstrate that there is a non-monotonic relationship between long-term interest rates and the exchange rate. In their 2006 study, Sollis and Wohar employe symmetric and asymmetric threshold cointegration tests to uncover evidence of long-run nonlinearity in the connection between real exchange rate and real interest rate. Specifically, the authors focus on the relationship between the two variables.

On the other hand, Abbas et al. (2012) uses regression analysis to find that the interest rate has no meaningful effect on the exchange rate. They came to this conclusion after finding that there is an effect. By employing the frequency domain Granger causality test, Sarac and Karagoz (2016) are able to determine that there is no correlation between the impacts of a higher interest rate and the depreciation of the exchange rate. Based on the findings of the studies that were discussed earlier, we can draw the conclusion that the empirical evidence for the connection between interest rate and exchange rate consists of a combination of symmetric and asymmetric patterns.

The interest rate and exchange rate continue to have a significant link; nevertheless, there is a lack of strong empirical proof of the effect of interest rate on exchange rate without exception, which creates greater ambiguity from the perspective of an economist. In most cases, the traditional policy action that is taken by central banks and policymakers is to make use of the short-term interest

rate in order to manipulate currency values, as well as market monetary conditions in broad terms. This is done in order to achieve their respective policy goals.

2.8 Research Gap

Mukhtar et al. (2007) conduct research on the factors that go into determining Pakistan's nominal exchange rate. They utilize a generalized method of moment (GMM) estimate technique and utilised quarterly time series data that cover the period of 1983 to 2004. They came to the conclusion that the relationship between relative pricing (RP) and nominal exchange rate is inverse, while the relationship between net capital inflow and nominal exchange rate is positive (Kyrtsou et al., 2006).

The purchasing power parity (PPP) method is utilize by Fida et al. (2012) in their investigation of the value of the equilibrium exchange rate over the long run. They gathered time series data that encompassed the years 1983 to 2010, which cover the entire timeframe. They employe a technique co-integration, and their findings led them to the conclusion that real exchange rate is negatively related to terms of trade, government spending, and productivity. They argue that external debt, in addition to other microeconomic variables, has a substantial effect in the swings of the real exchange rate (Lin & Granger, 2004).

Saeed et al. (2015) look into the dynamics of the currency exchange rate. They utilize time series data that is collect from 1982 all the way up until 2014. They came to the conclusion that the exchange rate is positively correlated with nominal money, foreign debt, and political instability; nevertheless, a negative correlation is between foreign exchange reserves and the exchange rate. The author makes the argument that in order to keep the exchange rate and maintain macroeconomic stability in Pakistan, it is vital to have an efficient monetary and fiscal policy in addition to political stability.

In this study, we will attempt to determine the impact of capital inflows and money supply on exchange rate: A case study of south asian countries by regional over a period of 2000-2020 for selected south Asian countries.

CHAPTER 3

METHODOLOGY

3.1 Theoretical Framework

On There is now a lot of interest in a possible return to a fixed exchange rate system for the entire world after twenty years of floating exchange rates among people worried about its alleged flaws. The European Monetary System's (EMS) apparent success and the potential for European monetary union have increased interest in these topics. The world's most recent attempt at a fixed exchange rate system was the Bretton Woods system. Even though it was intended to be an adjustable peg, during its heyday it transformed into a de facto fixed exchange rate regime.August 15, 1971, President Richard Nixon closed the gold window, bringing an end to that era. 20 years after that significant choice, a review of the Bretton Woods Institution's performance of the Bretton Woods system is timely (Bordo et al., 1993).

The preconvertible phase (1946–58) and the convertible phase (1946–70) are the two subperiods that make up the Bretton Woods period (1959-70). The comparison also addresses the theoretical questions brought up by the age-old argument between fixed and flexible exchange rates. A (commodity-based) fixed exchange rate system, such as the gold standard, was thought to provide long-term price stability for the entire world because the set price of gold served as a nominal anchor for the global money supply. Individual countries locked their pricing levels to the global average by tying their currencies to the price of gold. Fixed rates have the drawback of exposing individual countries to monetary and real shocks that are conveyed from the rest of the globe through the balance of payments and the balance of payments and other channels of transmission (Bordo & Schwartz, 1988). As a result of shocks to the demand for and supply of gold, the common international price level maintained by the gold standard also experienced secular periods of deflation and inflation (David Bordo, n.d.).

The long-term oscillations that defined the price level under the gold standard, however, might be avoided by a well-designed monetary system (Gold_comission_report_1982, n.d.)(Cagan 1984). The benefit of floating

exchange rates is that they protect against external shocks. Because there is no fixed exchange rate regulation to enforce discipline, monetary authorities may adopt inflationary policies. The straightforward distinction between fixed and variable rates has become more complex as a result of recent theoretical breakthroughs. Considering capital mobility, currency substitution, policy responses, and interconnectedness of policies, floating rates no longer always operate as a buffer against real or monetary shocks (Bordo & Schwartz, 1988). Additionally, real business cycle models suggest that there may be no connection between the global monetary system and the dissemination of actual shock (Baxter, 1989). Nevertheless, the comparison between regimes may shed light on these issues.

The historical regimes discussed here do not clearly illustrate examples of fixed and floating rate regimes, which is a significant drawback. The three regimes that made up the interwar era were managed floating until 1939, gold exchange standard from 1926 to 1931, and general floating from 1919 to 1925. 3 The preconvertibility period was very close to the adjustable peg that the Bretton Woods regime's architects had in mind, and the convertible period was very close to a de facto fixed dollar standard. As a result, the Bretton Woods regime cannot be characterised as a fixed exchange rate regime throughout its history. Last but not least, even though the time since 1973 has been referred to as a floating exchange rate regime, it has occasionally undergone variable degrees of management.

Inflation. The interwar period saw a mild deflation, and the classical gold standard had the lowest inflation rate. the average inflation rate during the Bretton Woods era was lower than it was during the period of floating exchange rates that followed. The two Bretton Woods subperiods' average inflation rates were essentially the same. The significance of two instances of fast inflation, in the 1940s and 1950s and in the late 1960s, is obscured by this comparison. The conventional view of pricing behaviour under fixed (commodity-based) and flexible exchange rates is compatible with a lower inflation rate during Bretton Woods than the next floating period.

The Bretton Woods convertible subperiod had the most stable inflation rate of any regime judged by both the standard deviation and the forecast error. By contrast,

the preconvertible Bretton Woods period exhibited greater inflation variability than the gold standard. The evidence of a high degree of price stability in the convertible phase of Bretton Woods is also consistent with the traditional view that fixed rate (commodity-based) regimes provide a stable nominal anchor; however, the remarkable price stability during this period may also reflect the absence of major shocks.

Money (M_2). After World War II, all nations had far faster money growth than before. Between the Bretton Woods system and the subsequent floating regime, there aren't many differences. Money growth was faster during the reconvertibility period of the Bretton Woods regime than during the convertibility period. The pre-convertible Bretton Woods period and the interwar period saw the highest disparity in money growth rates, whereas the fixed exchange rate gold standard and the convertible Bretton Woods regime saw the least.

Like inflation and real output variability, money growth variability was lowest in the convertible Bretton Woods period. This, however, was not the case for the preconvertible period, which was the most variable of any regime. Money growth also exhibited the greatest divergence in variability between countries. To the extent that one of the properties of adherence to a fixed exchange rate regime is conformity of monetary growth rates between countries, these results are sympathetic to the view that the Bretton Woods system really began in 1959.

Interest rate: The preconvertible period had the highest degree of convergence in real short-term interest rates, whereas the Bretton Woods convertible period has the lowest degree of convergence. Similar to nominal rates, convergence for long-term real rates is highest under the gold standard and lowest under the Bretton Woods convertible system. Under preconvertible Bretton Woods, it is at its lowest. During the Bretton Woods convertible era, when it also exhibits the least amount of standard deviation variation, the real short-term interest rate is the most consistent among nations. Real long-term interest rates are the same. Real interest rate behaviour is consistent with (McKinnon, 1988) justification across regimes. Fixed exchange rates, according to him, promote the integration of the capital markets. Fixed exchange rates, according to his argument, promote capital market integration by removing the danger of devaluation. As a result, short-term real

interest rates are less erratic. Similar to how short-term interest rates are controlled by pooling across markets, capital market risk is decreased.

The equilibrium conditions in the domestic money market determine the domestic interest rate. It is presumable that the demand for real money balances will be influenced by the domestic interest rate and real income and will, in an equilibrium state, equal the supply of real money.

3.1.1 The Origins of Bretton Woods

Interwar problems as they were seen The idea that the mistakes of the interwar era were to be avoided underpinned the planning that resulted in the establishment of a new international monetary order at Bretton Woods. First among these errors were the highly erratic currency rates following World War I and the demise of the flimsy gold standard; second, the global spread of deflation and the use of beggar-thy-neighbor devaluations; and third, trade and exchange restrictions and bilateralism. The negotiation of a global monetary charter based on collaboration, full employment programmes at the national and international levels, and stable exchange rates was the objective. The shortcomings of the gold exchange standard, the argument against floating exchange rates, and bilateralism were the three topics that dominated how the interwar period was perceived.

3.1.2 The Gold Exchange Standard

The gold exchange standard began de facto in 1925 after Britain returned to the gold standard at the prewar parity, followed in the next two years by most countries. The case for “gold economy” was made at the Genoa conference in 1922. The world could avoid a massive gold shortage, produced in large part by wartime inflation, by two measures: first, by nations adopting a gold bullion standard and demonetizing gold as a national currency; second, by using foreign exchange (primarily pounds and dollars) as international reserves and stockpiling monetary gold in the key reserve centers of London and New York. The gold exchange standard lasted only six years. It ended with Britain’s suspension of gold convertibility in September 193 1. The subsequent literature focused on the three problems that later plagued Bretton Woods: adjustment, liquidity, and confidence (Johnson H. G., 1972a), although Keynes and White, the architects of

Bretton Woods, paid attention only to the first two (Dam, 1982), (Eichengreen, 1990b).

3.2 Data Description

Data is obtaine from International Financial Statistics (IFS) and World Development Indicator (WDI). The dependent variable is the real exchange rate while other variables are remittances (EREM), inflation rate (INF), foreign direct investment (FDI), real interest rate (RIR), money supply (M2), and trade openness (OPP) that is using as independent variables.

Variables	Abbreviation	Description	Data Source
Exchange Rate	**ER**	Currency rate of the two countries	IFS
Remittances	**REM**	Money transfer by migrants who are working in another country	WDI
Inflation Rate	**INF**	Rate of increase in prices	WDI
Foreign direct investment	**FDI**	Investment of one country in another country	WDI
Interest rate	**IR**	The interest rate is the amount a lender charges a borrower for the use of assets.	IFS
Openness	**OPP**	Trade openness is defined as the ratio of exports plus imports over GDP.	WDI
Money supply	**M2**	Circulation of money in the economy	WDI

Panel data is used in this study which covers the duration from 2000 to 2020.

3.3 Variable Description

This section of the study is reserved to explain the variables of the analsis. These variable are selected due to their relative importance on theoretical as well as empirical grounds.

Real exchange rate: The relative cost of two nations' goods determines the real exchange rate. In other words, the real exchange rate informs us of the rate at which we may exchange commodities from one country for those from another. Because it considers the relative costs of products and services in the two countries, the real exchange rate is more beneficial than the nominal exchange rate. To explore the determinants of exchange rate following variables are used in the study; Remittances, inflation rate, FDI, interest rate, money supply, and openness.

Employees' Remittances: Employees' remittances are refered to current transfer by migrants who are employed in some other country in which they are considered residents. Employees' remittaaances are private transfers which minimizes the deficits in current account of receiving country.

Inflation: Persistance increase in amounts is inflation. Economist believe inflation comes about when the supply of money is greater than the demand for money. Inflation is closely related to interest rate.

Foreign Direct Investment: It indicates the direct investment in production by such company which is located in some other country. This company invest in other country for expanding the business. Across FDI domestic currency may be depreciate or appreciate it is depend on utilization of FDI inflows.

Interest Rate : As Marshall has ssupport "the payment made by borrower for the use of loan is called interest." As Keynes has ssupport "interest is the reward of parting with liquidity for spefic duration."

Money supply : The quantity of money available in the country is called money supply. M1 money supply contains cash and assets that can be immediately converted into currency while M2 money supply refers to M1 + short term money deposits and saving deposits. Theoretically an increase in money supply leads to reduction in exchange rate and vice versa.

Openness: Open economy means that market economy which is almost free from barriers of trade and thus imports and exports form large proportion of the GDP. One of the important measurement for the openness of country is the percentage of its GDP devoted to foreign trade.

3.4 Econometric Model

This research investigates the determinants of exchange rate by examining the effect of capital inflows and money supply on exchange rate. The generalized ARDL model is specified as:

$$\Delta y_{it} = \theta_i\left(Y_{i,t-1} - \beta_i X_{i,t-1}\right) + \sum_{j=1}^{p-1} \gamma_y^i \, \Delta(Y_i)_{t-j} + \sum_{j=0}^{q-1} \delta_y^i \, \Delta(X_i)_{t-j} + \mu_i + \varepsilon_{it}$$

Where, y is GDP per capita, X is a set of independent, γ and δ represent the short-run coefficients of dependent and independent variables respectively, β are the long-run coefficients, the coefficient of speed of adjustment to the long run status, while the subscripts i and t represent the country and time, respectively. The term in the square brackets contains the long- run growth regression.We construct the following model for analysis:

$$\boldsymbol{lnER_{it} = \beta_0 + \beta_1\, lnREM_{it} + \beta_2\ \ lnINF_{it} + \beta_3\, \ln FDI_{\,it} + \beta_4\, \ln IR_{\,it} + \beta_5\, lnOPP_{\,it} + \beta_6\, ln\mathrm{M}_{it} + \varepsilon_{\,it}}$$

In the model, ln is the natural logarithm, superscript i shows cross sectional, t shows time, and error term denotes e_{it}. ER is Real Exchange Rate, EREM is Remittances, INF is Inflation Rate, FDI is Foreign Direct Investment, IR is Interest Rate, M is Money Supply and OPP is Openness Trade. In model variables data converted in natural logarithm because of fluctuation in data and for smoothness of data.

3.5 Estimation Technique

A researcher can use an econometric model to isolate and figure out the effect of many explanatory variables on a predictor variable. This can be done by comparing the results of the model to the original data. The research places a

significant amount of weight on annual panel data that was obtained from World Development Indicators (WDI) database and International Financial Statistics (IFS). In addition, because this is an econometric study, multiple regression techniques were utilized. The Panel Unit Root test (*Levin–Lin–Chu* test, *Im-Pesaran-Shin* (IPS) and *Breitung*) for determining whether or not the variables are stationary because it specifies which approach should be used to validate the long run relationship, the Unit Root Test is the first stage that advises the usage of Autoregressive Distributed Lag (ARDL). When checking stationary, though, there are different scenarios. To begin, if all variables are stationary on the 'level,' the OLS technique is used to examine the short-run correlation between variables and Autoregressive Distributed Lag (ARDL) which were used to investigate the long-term relationship between variables.

First of all, calculate the Descriptive Statistics of Panel then Descriptive Statistics of Pakistan, Descriptive Statistics of Bangladesh, Descriptive Statistics of India and Descriptive Statistics of Srilanka. Secondly, calculate Panel unit root test containing *Levin–Lin–Chu* test, *Im-Pesaran-Shin* (IPS) and *Breitung then we apply* Panel ARDL Estimation for long run and Short run coefficient. Cross sectional short run also estimate for panel data and finally Variance Inflation Factor is determine.

CHAPTER 4

RESULTS AND DISCUSSION

As this study analyzes the impact of capital inflows and money supply on the exchange rate in selected four South Asian countries. The main focus of present study is to investigate the determinants of the exchange rate. In macroeconomic theory, there is a belief that volatile macroeconomic variables have directional causality with the exchange rate. The present study is utilizing secondary data from 2000 to 2020 and data is taken from World Development Indicator (World Bank, 2022)and International Monetary Fund (IFS, 2022).

The first section discusses the description of variables and data sources. The second section is about panel descriptive statistics of variables. The third section contains individual countries' descriptive statistics. The fourth section is related to the result of the panel unit root test. The fifth section is panel ARDL estimation and further segregate into short run and long run estimates of our model.

4.1 Descriptive Statistics

This section contains the description of variables, the sources **o**f data which are used in this study, and the model which is used to estimate the results. The dependent variable is the real exchange rate while other variables are remittances, inflation rate, FDI, real interest rate, money supply, and openness that are used as independent variables.

Descriptive statistics are selected statistical properties of the selected sample of the data that is used in the present study. The descriptive statistics gives a good quantitative description of the data and provides the information of the total population from which the sample is selected. Descriptive statistics simply provides normalization of data, distribution of data, summarization of data, presentation and analysis of the data. It is mainly used in non- experimental research.

The descriptive statistics broadly deals with central tendency-dispersion of the data, and normality of the data. Mean show the center of the data. The

dispersion is measured by the standard deviation (Combes et al., 2011). Following Table 4.1 contains the descriptive statistics of the variables of the model.

Table 4.1 Descriptive Statistics of Panel

Variables	Obs	Mean	Std. Dev	Min	Max
ER	84	85.60	34.96	39.42	186.4
FDI	84	1.23	0.71	0.100	3.62
REM	84	1.91	2.23	1.15	8.33
INF	84	7.63	5.75	0.64	38.51
IR	84	3.73	4.26	-13.64	9.25
M	84	55.22	13.11	30.55	87.91
OPP	84	49.49	15.25	25.99	88.63

Table 4.1 discuss descriptive statistics of 84 observations. The total numbers of variables for the study are seven namely exchange rate, remittances, money supply, inflation rate, interest rate, FDI, and openness with an equal number of observations 84. The first calculation of the dependent variable of the exchange rate (RER) reveals that the mean value is 85.60 which shows the center of the data, and the standard deviation of the exchange rate is 34.96, which shows the distance of data from its mean. Minimum value of exchange rate is 39.42, and a maximum value of exchange rate is 186.41. Similarly, for the values of all independent variables, the mean value of FDI (% of GDP) is 1.23 with a standard deviation of 0.71, a minimum value of FDI is 0.100, and a maximum value of FDI is 3.62.

The mean value of remittances ($US) is 1.91 with a standard deviation of 2.23, a minimum value of remittances is 1.15, and a maximum value of remittances is 8.33. The mean value of the inflation rate is 7.63 with a standard deviation of 5.75, a minimum value of inflation rate is 0.64, and a maximum value of inflation rate is 38.51. The mean value of the interest rate (RIR) is 3.73

with a standard deviation of 4.26, a minimum value of interest rate is -13.64, and a maximum value of interest rate is 9.25. The money supply (broad money M2) mean value is 55.22 with a standard deviation of 13.11, a minimum value of money supply is 30.55, and a maximum value of money supply is 87.91.

The last variable openness (%GDP) mean value is 49.49 with a standard deviation of 15.25, a minimum value of openness is 25.99, and a maximum value of openness is 88.63. Additionally, it is important to mention here that descriptive statistics of variables are calculated based on actual panel series units with yearly data and that is why wide ranges with high standard deviations are observed in the case of some variables.

The highest mean and variance of the exchange rate means the exchange rate is volatile over time. The least variance of FDI means it remains constant over time. The mean and variance of non-stationary data vary over time and stationary data does not change over time but remains constant. For this purpose, to check stationary or not applying the panel unit root test. Below Table 4.2, 4.3, 4.4, and 4.5 contains an individually descriptive statistics of all selected countries to check the heterogeneity of all countries.

Table 4.2: Descriptive Statistics: Pakistan

Variables	Obs	Mean	Std. Dev	Min	Max
ER	21	89.79	32.02	57.22	159.95
FDI	21	1.14	0.97	0.38	3.60
REM	21	1.15	7.79	1.08	2.61
M	21	49.31	6.25	34.79	58.86
OPP	21	28.78	7.22	0.72	35.68
INF	21	10.02	0.08	3.25	38.51
IR	21	1.87	3.28	-5.07	7.12

Descriptive statistics of 21 observations of Pakistan. The first dependent variable's mean value of the exchange rate is 89.76 with a standard deviation of 32.02, a minimum value of 57.22, and a maximum value is 159.95. Similarly, for all independent variables, the mean value of the money supply is 49.31 with a standard deviation of 6.25, a minimum value of money supply is 34.79, and a maximum value is 58.86. The mean value of the interest rate is 1.87 with a standard deviation of 3.28, a minimum value is -5.07 and a maximum value is 7.12.

The mean value of remittances is 1.15 with a standard deviation is 7.79, a minimum value is 1.08 and a maximum value is 2.61. The mean value of FDI is 1.14 with a standard deviation of 0.97, a minimum value is 0.38 and a maximum value is 3.60. The mean value inflation rate is 10.02 with a standard deviation of 0.08, the minimum value is 3.25 and the maximum value is 38.5`. The mean value of openness is 28.78 with a standard deviation of 7.22, a minimum value is 0.72, and a maximum value is 35.68.

Table 4.3 Descriptive Statistics: Bangladesh

Variables	Obs.	Mean	Std. Dev	Min	Max
ER	21	71.95	10.14	54.00	84.87
FDI	21	0.85	0.44	0.10	1.74
REM	21	1.02	5.85	1.97	2.18
M	21	52.58	8.50	30.55	64.50
OPP	21	36.09	7.16	26.27	48.11
INF	21	6.78	5.04	3.26	27.85
IR	21	4.93	4.50	-13.64	9.25

Descriptive statistics of 21 observations of Bangladesh. The mean value of the exchange rate is 71.95 with a standard deviation of 10.14, a minimum value is 54, and a maximum value is 84.87. The mean value of FDI is 0.85 with a standard

deviation of 0.44, a minimum value is 0.10, and a maximum value is 1.74. The mean value of remittances is 1.02 with a standard deviation is 5.85, a minimum value is 1.97, and a maximum value is 2.18.

The money supply mean value is 52.58, the standard deviation is 8.50, the minimum value is 30.55, and the maximum value is 64.50. The highest range of openness is 48.11, the minimum value is 26.27, the mean value is 36.09 and the standard deviation is 7.16. The widest range of inflation rate is 27.85, a minimum value is 3.26, mean value is 6.78, and a 5.04 is standard deviation. The average value of the interest rate is 4.93, with a standard deviation is 4.50, a minimum value is -13.64, a maximum value is 9.25.

Table 4.4 Descriptive Statistics: India

Variables	Obs.	Mean	Std. Dev	Min	Max
ER	21	54.41	10.73	39.42	73.05
FDI	21	1.66	0.72	0.61	3.62
REM	21	4.95	2.48	1.29	8.33
M	21	72.40	8.25	54.64	87.91
OPP	21	42.43	8.96	25.99	55.79
INF	21	5.49	2.42	2.27	10.52
IR	21	4.93	4.50	-13.64	9.25

Descriptive statistics of 21 observations of India. The mean value of the exchange rate is 54.41 with a standard deviation is 10.73, a minimum value is 39.42 and a maximum value is 73.05. The mean value of FDI is 1.66 with a standard deviation is 0.72, a minimum value is 0.61, and a maximum value is 3.62. The mean value of remittances is 4.95 with a standard deviation is 2.48, a minimum value is 1.29, and a maximum value is 8.33.

The average value of the money supply is 72.40 with a standard deviation is 8.25, a minimum value is 54.64, and a maximum value is 87.91. The openness

mean value is 42.43 with a standard deviation is 8.96, a minimum value is 25.99, and a maximum value is 55.79. The mean value of the inflation rate is 5.49 with a standard deviation is 2.42, a minimum value is 2.27, and a maximum value is 10.52. The average value of the interest rate is 4.93 with a standard deviation is 4.50, a minimum value is -13.64, and a maximum value is 9.25.

Table 4.5 Descriptive Statistics: Sri Lanka

Variable	Obs	Mean	Std. Dev	Min	Max
ER	21	124.94	30.73	82.58	186.41
FDI	21	1.23	0.36	0.54	1.86
REM	21	4.32	2.47	1.15	7.26
M	21	45.61	9.75	32.60	65.19
OPP	21	59.02	18.17	4.50	88.63
INF	21	8.29	5.29	0.64	22.79
IR	21	3.26	4.06	-10.24	9.24

Descriptive statistics of 21 observations of Sri Lanka. The mean value of the exchange rate is 124.94 with a standard deviation is 30.73, a minimum value is 82.58, and a maximum value is 186.41. The mean value of FDI is 1.23 with a standard deviation is 0.36, a minimum value is 0.54, and a maximum value is 1.86. The mean value of the remittances is 4.32, with a standard deviation is 2.47, a minimum value is 1.15, and a maximum value is 7.26. The mean value of the money supply is 45.61 with a standard deviation is 9.75, a minimum value is 32.60, and a maximum value is 65.19.

The mean value of openness is 59.02 with a standard deviation is 18.17, a minimum value is 4.50, and a maximum value is 88.63. The average value of the inflation rate is 8.29, with a standard deviation is 5.29, a minimum value is 0.64, and a maximum value is 22.79. The average value of the interest rate is 3.26 with

a standard deviation is 4.06, a minimum value is -10.24, and a maximum value is 9.24.

Additionally, it is important to mention here that descriptive statistics of variables are calculated based on actual panel series and individually units with yearly data and that is why wide ranges with high standard deviations are observed in the case of some variables. The highest mean and variance of the exchange rate means the exchange rate is volatile over time. The least variance of FDI means it remains constant over time.

4.2 Unit Root Test

In statistics the unit root test is basically used for checking the statistical properties of a variable, whether a variable is nonstationary (unit root) in a panel data or stationery. The mean and variance of non-stationary data varies overtime, and one does not predict the behavior of the data while the mean and variance of the stationary data does not change over time but remains constant over time. For this purpose, to check stationary or not applying the panel unit root test.

Table 4.6 Results of Panel Unit Root Tests

Variables	**Level**			**First difference**		
	Levin, Lin & Chu t	**Im, Pesaran & Shin W-Stat**	**Breitung**	**Levin, Lin & Chu t**	**Im, Pesaran & Shin W-Stat**	**Breitung**
LM	0.001*	0.11	0.30	0.00*	0.00*	0.54
LINF	0.00*	0.01*	0.17	0.00*	0.00*	0.04*
LRIR	0.01*	0.03*	0.00*	0.00*	0.00*	0.00*
LOPP	0.29I	0.71	0.96	0.00*	0.00*	0.76
LFDI	0.02*	0.02*	0.12	0.00*	0.00*	0.22
LREM	0.00*	0.03*	0.96	0.00*	0.00*	0.02*
LRER	0.94	0.99	0.17	0.00*	0.00*	0.01*

Table 4.6 contains the results of different Panel unit root tests. There are many test that are used to test stationary of panel data like Levin, Lin (LL), Im, Pesaran, Shin (IPS), ADF Chi-Square, PP Fisher Chi-Square, Breitung, and Hadri test but the present study uses three test of unit root test e.g., Levin, Lin & Chu-t (2002), Im, Pasaran Shin (2003) and Breitung (2000). Results of all three tests are showing that there is mix order of integration. As some variables are stationary at the level (inflation rate, FDI, interest rate, and remittances) while some variables are stationary at the first difference (money supply, openness, and exchange rate). Interestingly the exchange rate of our panel is non-stationary at a level in all methods unit root tests but at the first difference it becomes stationary.

Money supply is stationary at Levin Lin, and the other two are non-stationary at the level those values that are non-stationary at the level become stationary at first difference. Two stationary values of inflation rate at the level and one is non-stationary at the level, but the non-stationary value becomes stationary at first difference. All values of interest rate are stationary at a level and first difference. Openness values are non-stationary at level but become stationary after the first difference. Few values of FDI are stationary at a level and few are stationary at first difference.

Remittance values are stationary at the level, but non-stationary value becomes stationary after the first difference and stationary values of the level remain stationary at the first difference. The overall result of the panel unit root shows some values are stationary at the level and some values are stationary at the first difference. In the next section, we establish Panel ARDL (Pesaran, Shin & Smith 1999) for long-run and short-run relationships between variables.

4.3 Granger Causality Test

In empirical research, Granger Causality is frequently used in economic. The Granger Causality test, as it's known, is a technique for considering out whether one variable is helpful in predicting another. For all four selected countries, we use the Granger Cusality test to investigate the problem of causation. Granger Causality is used to confirm whether one variable may

accurately predict another. Our analysis, the causal relationship is determine for ER and other studies explanatory variables. Below Table 4.7 shows results of Granger Causality test.

Table 4.7 Results of Granger Causality Test

Hypothesis	**Pakistan**	**Bangladesh**	**India**	**Sri Lanka**
	F-statistics	**F-statistics**	**F-statistics**	**F-statistics**
EREM does not Granger Cause ER	2.09 (0.15)	2.22 (0.14)	5.92 (0.01)*	2.30 (0.13)
ER does not Granger Cause EREM	11.25 (0.01)*	2.13 (0.15)	0.98 (0.38)	1.51 (0.25)
FDI does not Granger Cause ER	0.47 (0.63)	0.02 (0.97)	0.90 (0.42)	4.03 (0.04)*
ER does not Granger Cause FDI	0.96 (0.40)	0.11 (0.86)	1.02 (0.38)	1.69 (0.25)
INR does not Granger Cause ER	0.08 (0.92)	0.64 (0.53)	3.19 (0.07)	0.34 (0.71)
ER does not Granger Cause INR	1.85 (0.19)	0.57 (0.57)	3.79 (0.04)*	0.89 (0.42)
M does not Granger Cause ER	0.48 (0.62)	0.47 (0.63)	2.07 (1.06)	3.36 (0.06)
ER does not Granger Cause M	0.14 (0.86)	0.14 (0.86)	1.17 (0.33)	0.78 (0.47)
Opp does not Granger Cause ER	0.28 (0.75)	1.93 (0.18)	1.93 (0.18)	1.52 (0.25)
ER does not Granger Cause opp	5.73 (0.01)*	1.82 (0.19)	1.82 (0.19)	7.7(0.005)*
IR does not Granger Cause ER	1.12 (0.35)	1.12 (0.35)	0.78 (0.47)	0.69 (0.51)
ER does not granger Cause IR	2.03 (0.16)	0.67 (0.52)	1.65 (0.22)	4.58 (0.02)*
FDI does not Granger Cause REM	0.01 (0.98)	2.10 (0.17)	1.22 (0.32)	2.99 (0.08)
REM does not Granger Cause FDI	1.75 (0.20)	0.26 (0.77)	0.81 (0.46)	0.43 (0.65)
INR does not Granger Cause EREM	1.26 (0.21)	0.77 (0.48)	1.06 (0.36)	1.18 (0.33)
EREM does not Granger Cause INR	0.09 (0.90)	1.99 (0.17)	1.44 (0.26)	2.34 (0.12)
M does not Granger Cause EREM	0.18 (0.83)	1.98 (0.17)	0.61 (0.55)	1.32 (0.29)
EREM does not Granger Cause M	0.06 (0.94)	0.80 (0.46)	2.75 (0.09)	3.62 (0.053)
OPP does not Granger Cause REM	1.87 (0.19)	4.19 (0.03)*	0.45 (0.65)	7.52 (0.006)*
REM does not Granger Cause OPP	2.30 (1.35)	5.07 (0.02)*	1.53 (0.24)	1.23 (0.32)
IR does not Granger Cause REM	0.12 (0.88)	2.03 (1.06)	3.74 (0.04)*	0.01 (0.98)
REM does not Granger Cause IR	1.16 (0.99)	1.93 (0.18)	1.64 (0.23)	5.42 (0.01)*

INR does not Granger Cause FDI	0.03 (0.96)	0.16 (0.84)	0.27 (0.76)	1.74 (0.21)
FDI does not Granger Cause INR	4.58 (0.02)	2.03 (0.16)	0.74 (0.49)	0.39 (0.68)
M does not Granger Cause FDI	1.29 (0.30)	0.45 (0.64)	0.59 (0.56)	1.03 (0.38)
FDI does not Granger Cause M	0.86 (0.44)	0.37 (0.69)	0.15 (0.85)	4.40 (0.03)*
OPP does not Granger Cause FDI	0.12 (0.88)	2.87 (0.09)	0.66 (0.52)	2.10 (0.15)
FDI does not Granger Cause OPP	0.16 (0.84)	0.25 (0.77)	5.46 (0.01)*	8.26 (0.004)*
IR does not Granger Cause FDI	0.43 (0.65)	0.33 (0.72)	0.12 (0.88)	0.95 (0.41)
FDI does not Granger Cuse IR	1.91 (1.83)	1.03 (0.38)	0.22 (0.80)	4.22 (0.03)*
M does not Granger Cause INR	2.66 (0.10)	0.10 (0.90)	0.58 (0.56)	0.66 (0.53)
INR does not Granger Cause M	1.43 (0.27)	2.68 (0.10)	0.20 (0.82)	2.52 (0.11)
OPP does not Granger Cause INR	1.94 (0.17)	1.59 (0.23)	3.29 (0.06)	3.37 (0.06)
INR does not Granger Cause OPP	0.35 (0.70)	0.54 (0.59)	5.35 (0.01)*	0.50 (0.61)
IR does not Granger Cause INR	1.63 (0.22)	0.62 (0.54)	0.01 (0.98)	0.79 (0.47)
INR does not Granger Cause IR	0.08 (0.92)	1.07 (0.37)	0.76 (0.48)	1.27 (0.30)
OPP does not Granger Cause M	1.33 (0.29)	0.76 (0.48)	0.06 (0.94)	5.64 (0.01)*
M does not Granger Cause OPP	0.53 (0.59)	0.28 (0.57)	0.46 (0.63)	1.95 (0.17)
IR does not Granger Cause M	0.42 (0.69)	0.002 (0.90)	0.08 (0.91)	10.5 (0.01)*
M does not Granger Cause IR	0.09 (0.90)	1.71 (0.21)	0.78 (0.47)	4.9 (0.02)*
IR does not Granger Cause OPP	1.30 (0.30)	0.15 (0.85)	0.07 (0.92)	1.76 (0.20)
OPP does not Granger Cause IR	0.11 (0.89)	0.66 (0.52)	1.73 (0.21)	3.15 (0.07)

Note : * denotes 5% level of significance and value in parentheses ( ) denotes P value.

In case of Pakistan, remittences and openness only these two variables are causing by exchange rate with unidirectional Causality. In the case of India, unidirectional cause in remittences, openness, interest rate, and FDI. Remittances cause exchange rate and exchange rate cause openness. Interest rate cause remittences, and FDI cause openness with unidirectional Causality. In the case of Bangladesh, bidirectional causality between openness cause remittances and remittances cause openness. Finally in the case of Sri Lanka, all causality is unidirectional between FDI and exchange rate, exchange rate and openness, exchange rate and interest rate, openness and remittences, remittences and interest

rate, FDI and money supply, FDI and interest rate, openness and money supply, interest rate and money supply.

Table 4.8: Result of Panel ARDL Estimation (Long-run coefficient)

Variables	Coefficient	t-value
LM	0.70	7.38
LINF	0.01	0.64
LIR	-0.01	-2.65
LFDI	-0.07	-5.86
LOPP	-0.20	-4.88
LREM	0.11	8.15

All variables are associated and significant in the long run rather than the inflation rate and openness which are insignificant. The money supply is positive and significant to the exchange rate which increases the exchange rate by 0.61% in long run. The monetary approach model for determining exchange rates. These are the Mundell-Fleming Model, the Sticky Price Model, and the Monetarist Flex-Price Model (MFPM). According to the monetarist flex-price model, the level of the exchange rate is long-term correlated with the money supply. As it depends on the theory of price level determination to a PPP equation to explain the exchange rate, the model is based on PPP theory as discussed in Ghosh et al. (1995) and Fisher (1984).

According to the model study, when there is a change in the amount of money in circulation, the exchange rate depreciates. The way the domestic money supply grows relative to the foreign money supply determines how the exchange rate will depreciate. Theoretically, when a rise in money supply will lead to domestic prices at a set of foreign price levels, and exchange rate will increase at the base of the PPP hypothesis in line of Pippenger (1993).

The long-term correlation of the inflation rate is positive and minor, which suggests that if these rates are high or prolonged, the currency will devalue due to inflation. (Dornbusch, 1976) according to Dornbusch when the exchange rate defined as the rate of change between two national currencies, increases will be existed in the overall level of prices. Then when the exchange rate falls, that is, when the domestic currency appreciates, prices are expected to fall in the general level.

A change in exchange rates will affect production costs as imported goods prices which will be changed exchange rates as well. For this reason, it is possible to say that there is a very close relationship between the exchange rate and inflation. Therefore, in developing countries, it is necessary to implement real exchange rate policies to take domestic inflation into account in to maintain stability in national production and international competition without falling into the foreign exchange bottleneck. So, with respect to this fact there is a need to conduct research on the exchange rate-inflation relationship.

Four main transmission mechanisms were identified by Agenor and Montiel (1996) for how exchange rate instability impact inflation: An open economy can have a direct impact on the cost of imported substitute goods and goods subject to trade. It can indirectly increase the price of the final goods through imported input prices. Due to fluctuations in the exchange rate, the uncertainties in foreign currency prices can affect domestic price makers and increase domestic prices.

Finally, it increases the prices by the means of wages. on the roles played by the exchange rate in the monetary transmission mechanism, according to (Svensson, 2000). As a result, there are three ways that changes in the exchange rate might impact the inflation rate: The relative pricing of local and imported commodities are impacted by exchange rate fluctuations in an open economy, which increases domestic and international demand for domestic products. Net exports thus have an impact on overall demand as well as the rate of indirect inflation. However, changes in the exchange rate have a direct impact on how much imported finished items cost in national currencies.

As a result, it has an immediate impact on the consumer price index. Prices of imported final goods ultimately have an impact on the inflation rate, and this effect typically manifests itself sooner than the indirect impact of net exports. Finally, changes in the exchange rate have an impact on nominal salaries through the Consumer Price Index, which measures middle import prices in terms of national currency. The cost of domestic goods has an impact on the inflation rate when these two factors are combined. The fact that the exchange rate is a future variable and an expected variable as an asset price makes up the second crucial point about the significance of the exchange rate in the inflation targeting method.

As a result, it plays a crucial role in the formation of expectations that have an impact on monetary policy. The final crucial element is that the national economy is affected by some external issues with the exchange rate. Changes in variables like the rate of external inflation or international interest rates (Monfared, 2017) have a direct impact on the domestic demand that is brought about by changes in exchange rates.

Woo (1984) makes similar mention of four ways through which the currency rate affects domestic inflation. The cost of domestic goods is directly impacted by import costs, which also have an impact on the consumer price index. The current account is directly impacted by exchange rate changes, which has an impact on both total demands and variations in total demands. the impact of imported goods on rising costs. Exchange rates to prices are often defined in economics literature through two channels: direct and indirect 1980 (Hendry).

The laws of one price and purchasing power parity are related to the direct channel. As a result, changes in the exchange rate for the price of an imported good directly affect domestic prices. The whole demand channel is used to describe the indirect channel. Foreign consumers can purchase domestic goods for less money thanks to the rising exchange rate, which raises exports, total demand, and pricing.

The rate of inflation rises as the cost of currency increases. Because these items are either consumer products or intermediary goods, the price increase of imported goods raises the cost of manufacturing and inflation as a result of this increase (Agenor and Montiel, 1996). If an increase in money volume is the cause

of price rises overall, the exchange rate will increase proportionately (other conditions, especially if the oil revenues are fixed).

Under these circumstances, rising nominal exchange rates result in an increase in the general level of prices. Even though the nominal exchange rate is increasing, the real exchange rate will stay the same. However, some factors, like declining oil revenues, cause the real exchange rate to rise more quickly than the rate of inflation. As a result, the price of imported goods rises, which in turn affects inflation. However, this effect is only temporary because the real exchange rate is not always rising.

The interest rate is negative and significant to the exchange rate increase interest rate which decreases the exchange rate by -0.02%. High interest attracts capital inflows which bolsters the local currency if it remains high or too long which means devaluing of currency. However, if interest rates remain high for a shorter period, this can have the opposite effect. The impact of monetary policy on exchange rates is significant. Interest rates and international transfer movements also affect the equilibrium of exchange rates.

According to Chowdhury (2012), increasing the cost of non-tradables likewise raises the exchange rate. A relaxation of capital regulations, on the other hand, boosts capital inflows, which enhances current expenditures, demands, and prices as well as increasing the value of the currency. A high interest rate lowers both the demand for and the price of products in a flexible monetary system, which depreciates the currency. Therefore, depending on a country's political, economic, and consumer demand stability, policy-oriented interest rates may also provide unclear consequences (Draz et al., 2019). Numerous studies have indicated that high interest rates lower the exchange rate, which is the fundamental Ivin Fisher theory (Mahmood Ali et al., 2015).

Foreign direct investment shows negative significance to the exchange rate increase in FDI will decrease in exchange rate by -0.09%. It is demonstrated by (Rajapatirana, 2003) that FDI inflows are connected to actual depreciation. The impact, or the extent of the real depreciation, varies from one place to another.

According to (Saborowski, 2009) capital inflows, particularly FDI, in developing nations cause a real appreciation, but this effect is diminished if the

economy lacks a robust banking sector. (E, 2007) discovers that while the total amount of "other capital flows" does not increase with FDI, the REER increases. There is essentially no appreciation effect to generate currency rate disequilibrium when FDI is linked to imported machinery and equipment for the accumulation process since these imports are not constrained by local supply capacity. Contrarily, FDI has favourable benefits on efficiency and productivity of Utilization of domestic resources through the exchange of technology, managerial expertise, and other intangible assets (Agenor, 1998, Javorcik, 2004, Kinda, 2008, 2009).

Remittances have a positive impact on the currency rate; a rise of 0.11% in remittances will result in an increase in the exchange rate. Private transfers, primarily remittances, have the smallest impact on price appreciation. This could imply that remittances are more counter-cyclical than procyclical, assisting nations to counteract the real depreciation-cyclical exchange rate during periods of economic slowdown (Combes et al., 2010).

Remittances for investment purposes, on the other hand, can be procyclical, aggravating macroeconomic overheating and causing the RER to increase in value. Procyclical remittances used for real estate in several developing nations have driven up input costs and sparked building booms. The effects of remittances on the RER typically deteriorate as more of them are spent on traded items (such as imported consumer durables) (Chami et al., 2008). Although economic theory typically predicts that private transfers or remittances have an impact on the RER, the empirical findings are mixed (Chami et al., 2008).

Remittance inflows lead to an increase in the RER, according to studies by Bourdet and Falck (2006), Amuedo et al. (2004), Montiel (2006), Saadi-Sedik and Petri (2006), and others. Openness shows negative insignificance to the exchange rate increase in openness will decrease the exchange rate by -0.06%. Through income and substitution impacts, trade openness also has an impact on non-tradeable good pricing.

The income effect is less likely to predominate as trade restrictions increase since they have a negative impact on the price of tradables through the income effect and a positive impact through the substitution effect (Edwards,

1988). Therefore, it is anticipated that limiting trade will cause the cost of tradable relative to non-tradable to decline, increasing the equilibrium REER. Trade openness causes the real exchange rate to decline (Özcan, 2011).

Table 4.9: Result of Short-run Coefficient

Variables	Coefficient	t-value
Coint term	-0.35	-2.02S
LM	-0.39	-2.00
LINF	-0.01	-0.66
LIR	0.00	1.32
LFDI	0.00	0.04
LOPP	0.14	1.46
LREM	-0.07	-1.07

In the short run results of all countries show insignificant in the short run. If an increase in money supply by1% exchange rate will decrease by 0.39% in all countries. The inflation rate is negative and insignificant if the increase in inflation rate by 1% exchange rate will decrease by 0.01%. Interest rate show positive and insignificant to the exchange rate if an increase in interest rate by 1% exchange rate increase by 0.00% in the short run of all countries.

Other variables FDI, Openness shows positive and insignificant to the exchange rate if these variables increase by 1% exchange rate will increase by 0.00%, and 0.14% respectively in all countries. Remittances show negative and insignificant to the exchange rate if the increase in remittances by 1% exchange rate will decrease by 0.07% in the short run. We find that, contrary to what certain chartists like Rossi (2006) have said, economic theories and macroeconomic fundamentals are not irrelevant or worthless.

Table 4.10: Result of Cross Sectional Short-Run

	PAK	BAN	IND	SL
Coint term	0.01	-0.05	-0.13	-0.72
t-value	1.67	-280.0	-5.15	-25.23
Short-run coefficient				
LIR	0.01	-0.00	-0.00	0.01
t-value	266.6	-152.66	-219.34	632.23
LM	-0.23	-0.14	-0.13	-0.96
t-value	-4.02	-41.73	-0.16	-16.19
LINF	0.03	-0.02	-0.04	-0.01
t-value	42.37	-95.88	-18.33	-68.02
LOPP	-0.09	0.39	0.15	0.12
t-value	-3.79	843.34	3.50	8.10
LFDI	-0.04	-0.00	0.09	-0.03
t-value	-28.14	-22.58	34.80	-20.08
LREM	0.02	0.00	-0.05	-0.28
t-value	3.08	2.98	-2.28	-18.11

Panel ARDL result shows long-run and short-run relations. All countries' variables are stable in the short run. Interest rate shows positive and significant in Pakistan and Sri Lanka. If the interest rate increase by 1% exchange rate will increase by 0.01% in Pakistan and 0.01% in Sri Lanka. As the t statistics value surpasses 2, the interest rate, openness, and net capital inflows have a substantial impact on Pakistan. Similar variables have been determined to be significant in the case of India. Interest rate, and inflation connected to the exchange rate are important factors in the case of Sri Lanka (Abbas et al., 2011).

But the interest rate is negative and significant to the exchange rate in the case of India and Bangladesh. If the interest rate increase rate by 1% exchange rate will decrease by 0.00% in India and with the same rate in Bangladesh. The money supply is negative and significant to the exchange rate in India and Pakistan (Qamruzzaman et al., 2021). if the money supply will increase by 1% exchange rate will decrease by 0.23% in Pakistan 0.14% in Bangladesh and 0.13% in India. In Sri Lanka 0.96% money supply shows negative relation.

The inflation rate is negative and significant in the case of India, Bangladesh, and Sri Lanka except for Pakistan where the inflation rate is positive. If the inflation rate increases by 1% exchange rate will decrease by 0.02% in Bangladesh 0.04% in India and 0.01% in Sri Lanka. But in the case of Pakistan if the inflation rate increase by 1% exchange rate will increase by 0.03%. The openness is negative and significant in the case of Pakistan, which decreases exchange rates by 0.09%. But in the case of India, Bangladesh, and Sri Lanka openness shows positive significance to the exchange rate which increases the exchange rate by 0.15%, 0.39%, and 0.12% (Qamruzzaman et al., 2021).

The employee remittances show positive and significant in Pakistan, and Bangladesh. If remittances increase by 1% exchange rate will decrease by 0.02% in Pakistan. In Bangladesh remittances shows a positive and significant to the exchange rate which increases the exchange rate by 0.00%. In India, and Sri Lanka remittances show negative which decrease exchange rate with the rate of 0.05 and 0.28 respectively. Foreign direct investment shows negative significance in Pakistan, Bangladesh, and Sri Lanka which decreases the exchange rate by 0.04% in Pakistan , 0.00% in Bangladesh, and also 0.03% in Sri Lanka. But FDI in India shows a positive and significant increases in the exchange rate by 0.09%.

Table 4.11: Residual Diagnostic

R^2	0.91	0.95	0.90	0.99
Adj-R^2	0.87	0.92	0.86	0.99
F-stat	22.42	39.21	22.51	2.89

The Table 4.10 of residual diagnostic shows a variation of independent variables to dependent variables in four selected countries. R^2 of Pakistan is 0.91, and 0.95 of Bangladesh. 0.90 value of R square of India and 0.99 is Sri Lanka. All countries R square values are show that Sri Lanka is most variant country. Adjusted R square of Pakistan is 0.87 and 0.92 of Bangladesh. India's adjusted R square is 0.86 and 0.99 of Sri Lanka. All values of R square and adjusted R square show countries' variation is normally distributed. F-statistics of Pakistan is 22.42, 39.21 of Bangladesh , 22.51 of India, and 2.89 is value of Sri Lanka.

Table 4.12: Variance Inflation Factors

Variables	VIF
LFDI	1.81
INF	1.45
LIR	1.25
LM	6.51
LOPP	1.70
LREM	5.77

The Table 4.10 of residual diagnostic shows a variation of independent variables to dependent variables in four selected countries. R^2 of Pakistan is 0.91, and 0.95 of Bangladesh. 0.90 value of R square of India and 0.99 is Sri Lanka. All countries R square values are show that Sri Lanka is most variant country. Adjusted R square of Pakistan is 0.87 and 0.92 of Bangladesh. India's adjusted R square is 0.86 and 0.99 of Sri Lanka. All values of R square and adjusted R square show countries' variation is normally distributed. F-statistics of Pakistan is 22.42, 39.21 of Bangladesh , 22.51 of India, and 2.89 is value of Sri Lanka.

Table 4.11 variance inflation factor (VIF) shows multicollinearity of independent variables. All variables' value are less than 10 which means no multicollinearity in independent variables.

CHAPTER 5

CONCLUSION, RECOMMENDATIONS AND FUTURE RESEARCH

This chapter discusses the conclusion on the base of secondary data. Descriptive statistics, panel unit root, and panel ARDL technique to use for results. This chapter also covers policy recommendations that should be applied in economies of South Asian economies to help to appreciate the exchange rate. It also covers limitations that assign to this explorative study and might congestion the result of the study. The future recommendation is also discussed at the end for exploring new perspectives in the field of macroeconomics.

5.1 Conclusion

As this study analyzes the impact of capital inflows and money supply on the exchange rate in selected four South Asian countries. The main focus of present study is to investigate the determinants of the exchange rate. In macroeconomic theory, there is a belief that volatile macroeconomic variables have bidirectional causality with the exchange rate. The exchange rate is one of the main variables of macroeconomics that affect the economy. The main variable of the study is the exchange rate and other variables selected for the determinants of exchange rate are: FDI, openness, remittances, interest rate, inflation rate, and money supply.

The study shows all the variables have their impact on determining the exchange rate. The main objectives are; to analyze the impact of capital inflows and money supply on the exchange rate in selected four countries. The study is based on secondary data taken through WDI and IMF. There are two types of processes carried out for analysis purposes; descriptive analysis and ARDL.

The first section of the study, the data analyze by descriptive analyses. Descriptive statistics describe the features of all variables in detail. The overall result shows exchange rate is volatile over time and all variables have a significant impact on determining the exchange rate. The mean and variance of the exchange rate in Pakistan are 89.76 and 32.01 respectively. The mean and variance of the exchange rate in Bangladesh are 71.95 and 10.14 respectively.

The mean and variance of the exchange rate in India are 54.41 and 10.73 respectively. The mean and variance of the exchange rate in Sri Lanka are 124.94 and 30.73 respectively. The highest variance of the exchange rate in all countries shows the volatility of the exchange rate over time. The lowest variance of FDI in all countries shows it is constant over time.

After descriptive statistics, panel unit root estimation carried out. Three tests used to check the stationary and non-stationary variables at the level and first difference. Some variables are stationary at the level and some variables are stationary at the first difference. The panel unit root result shows a mixed order of stationarity. After the panel unit root, panel ARDL estimation carried out. The result of ARDL shows the long-run and short-run coefficients of variables. In the long-run five variables (money supply, interest rate, openness, FDI, and remittances) are statistically significant but one variable is the inflation rate which is insignificant in the long run.

In the long-run most responsible factor for the exchange rate is money supply which is highly significance to increases in exchange rate. The short-run of the panel shows cointegration term is negative and significant which means variables are stable in short-run shocks and convergence towards the long run. In short-run all variables (interest rate, inflation rate, FDI, openness, money supply, and remittances) are insignificant causes to decrease in the exchange rate in the short-run.

The cross-section short-run coefficient shows three countries stable in the short run but Pakistan is not stable in the short run. Bangladesh is a more stable country of the selected four countries. The interest rate is significance in all four countries but highly significant in Sri Lanka with 632.23 and least significant in bangladesh with -152.66. The money supply is significant in the three countries except for India. Highly significant money supply in Bangladesh and lower significance in India.

The inflation rate is significant in all countries. Highly significant in bangladesh with a t-value of -95.88 and a low level of significance in India with -18.33. Trade openness is significant in all countries. Trade openness is most responsible in Bangladesh than in other countries. FDI is significant in all

countries but highly significant in India. Remittances are significant in all countrie. Highly significant in Sri Lanka with 18.11. And the residual diagnostic shows R square and VIF results. R square shows variation in all countries and Sri Lanka is a more variant country. The VIF shows no multicollinearity of independent variables.

5.2 Policy Recommendations

Result of study reflect the fact that the variables which are select for determination of exchange rate. Percentage analysis shows that every explanatory variable put its impact on exchange rate. Therefore, the policy recommendation for this study are as follows:

1. Pakistan's government need to give attention for high capital inflows like FDI, to maintain the value of currency. One more reason of devaluing of currency in Pakistan is inflation, and interest rate High interest rate leads to devalue of domestic currency but attracts foreign investment. Government of Pakistan should take into account all of the factors that have been demonstrated to have a long-term, stable link with the real exchange rate.
2. In Bangladesh trade openness, FDI are most responsible factor of increasing in exchange rate. Bangladesh's government should give attention to capital inflows for currency value.
3. In India foreign direct investment (FDI) is causes to raise the value of currency and inflation is causes to devalue of currency. Indian economies should make policies for investment and control inflation.
4. For Sri Lanka interest rate and inflation rate are most responsible for exchange rate. Sri Lankan economies should give attention for these factors.
5. The bilateral trade association brings stability to the foreign exchange rate by eliminating the trade gap across the border. Some barriers or restriction of trade effect currency value. Due to restriction trade will be at low level. Government should reduce unnecessary restrictions.
6. The authorities in certain nations are not permitted to use the exchange rate as an instrument of policy in order to entice foreign portfolio investment; rather, they should find some other way to accomplish this goal (e.g., use interest rates).

7. There is no correlation between cash flows and investment; therefore, the government should work to establish this correlation in order to boost exchange rate.
8. Policies that aim to increase the amount of money that is sent back home to family members should also be prioritized. It will be less expensive to transmit money to target countries if there is an effective network of financial intermediaries to handle the transactions. In addition, there should be incentive systems established so that the remittances can be channelled into productive investments inside the domestic economy.
9. To redress (real) currency appreciation, another policy option in addition to capital controls and foreign exchange intervention combined with sterilization policy is to encourage capital outflows by relaxing rules and regulations for investors to perform investment overseas. This policy option can be used to redress (real) currency appreciation.

5.3 Future Research

After analyzing the data, the researchers came to the conclusion that a negative determistic relationship exists between political stability and the real exchange rate. In addition, they recommended that the relevant authorities play an important part in ensuring political stability. As the behaviour of these factors can lead to the instability of the real exchange rate and foreign investors and creditors may face exchange rate risk, it is also recommended that multinational companies take into consideration all of the determinants studied in the current study when making investment and financial decisions in the countries of South Asia.

The exchange rates of developing countries in south Asia are being allowed to appreciate in order to entice greater amounts of foreign investment. However, an appreciation of the currency rate may cause instability in the administration of the macroeconomy. The developing nations of south Asia should focus their attention on short-term capital inflows, such as investments in portfolios, because these forms of inflows have a greater impact on currency appreciation than other types of capital inflows. In the future, researchers might chose this issue because it has a lot of data and a lot of countries that are relevant to the results.

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