THE IMPACT OF THE US INTEREST ON THE EXCHANGE RATE OF EMERGING COUNTRIES: A CROSS COUNTRY EMPIRICAL STUDY

BANGKOK UNIVERSITY

THE CREATIVE UNIVERSITY

THE IMPACT OF US INTERST RATE ON THE EXCHANGE RATE OF EMERGING COUNTRIES: A CROSS COUNTRY EMPIRICAL STUDY

A Thesis Presented to

The Graduate School of Bangkok University

In Partial Fulfillment

of the Requirements for the Degree

Master of Business Administration

by

Fares Chahrour

2025

This thesis has been approved by
the Graduate School
Bangkok University

Title: The impact of the US interest rate on the exchange rate of the emerging countries: A cross-country empirical study

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Fares Chahrour, Master of Business Administration, June 2025, Graduate School, Bangkok University.

The Impact of the US interest rate on the exchange rate of the emerging countries: A cross-country empirical study (132 pp.)

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ABSTRACT

The aim of the research is to examine the influence of US interest rate changes on the nominal and real effective exchange rates of 20 emerging economies. To achieve this, a cross-country empirical study utilizing historical macroeconomic data was conducted, with data collected and analyzed from sources such as the Federal Reserve Economic Data (FRED), World Bank Data, and IMF, spanning from 2003 to 2022. Several statistical tools are used for data analysis, including descriptive statistics, inferential statistics, regression analysis and hypothesis testing. These tools help researchers summarize data, draw conclusions and assess the significance of relationships between variables. The findings specify that the US interest rate generally exhibits a positive and statistically significant relationship with the nominal exchange rate across all regions, signifying that an increase in US interest rates is associated with a depreciation of the nominal exchange rate in these economies. For the real effective exchange rate, a significant positive relationship was observed, particularly in Asia, linking rising US rates to currency appreciation. Additionally, the inflation rate consistently showed a significant negative effect on the nominal exchange rate, while other macroeconomic factors like domestic interest rates, foreign direct investment, external debt, trade openness, and economic growth presented varied effects across regions. These results suggest that US monetary policy applies substantial spillover effects on emerging economies through various channels, and that domestic macroeconomic conditions also play a crucial role in shaping exchange rate dynamics. Finally, this research underwrites to a deeper understanding of how different emerging markets respond to external shocks under varying economic cycles, offering critical insights for policymakers, investors, and stakeholders navigating the complexities of the global economy.

Keywords: Interest rate, Foreign exchange rate, Inflation rate, Monetary policy, Macroeconomics, Emerging economics, Federal reserve, FDI, Central banks, international trade.

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ACKNOWLEDGEMENT

I would like to express my sincere gratitude to my advisor, Associate Professor Dr. Supachet Chansarn, for his vital guidance, insightful feedback, and unwavering support throughout the entire research process, his expertise and encouragement were instrumental in shaping this thesis from its initial conceptualization to its final completion.

I am also deeply thankful to my Co-advisor Dr. Rapeesorn Fuangkasem, the MBA program director Assoc. Prof. Dr. Suthinan Ponsuwan, Ajarn Jack from the graduate school and to the faculty & staff of Bangkok University International for providing a conducive academic environment and the necessary resources that facilitated this research. Furthermore, I extend my heartfelt appreciation to my family and friends for their constant encouragement, patience, and understanding during conducting this study. Their demonstrative support provided the strength and motivation needed to overcome challenges.

Finally, I am grateful for this experience which opens new perspectives to me and I'm willing to go further in developing my skills in business and academic research.

Fares Chahrour

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CHAPTER 1
INTRODUCTION

1.1 The Background and signification of the Study:

The currencies exchange rates are a vital element of the worldwide financial system, indicating the relative value of each currency, foreign exchange rate impact global trade, investment decisions, and economic policies at a global scale, it's established through a complex combination of economic factors and market forces, functioning as a measure of a country's economic health, and playing a central role in shaping the mutuality of the global economy.

The significance of foreign exchange lies in its capacity to determine the value of a country's currency in comparison to others, this, sequentially, has an impact on the cost of imports and exports, influencing a country's competitiveness in the global trade and affecting the balance of payments, fluctuations in foreign exchange rates can have substantial effects on an economy, for instance, a depreciation of a country's currency can enhance the competitiveness of its exports in international markets but may also result in higher import costs, potentially leading to inflation, conversely, an appreciation of the currency can reduce import expenses but may negatively impact export competitiveness. Changes in foreign exchange rates can also influence investment decisions, capital flow, and overall economic stability.

There are many determinants for the exchange rate, interest rate is a major one of them among other ones which are economic growth, political events, government policies and market speculation, changes in interest rates can have a fundamental influence on foreign exchange rates, with interest rates hikes, currency tends to become stronger as higher interest rates attract foreign capital, leading to an increased demand for that currency, on the contrary, with cuts in interest rates, the currency may weaken due to capital outflow. Central banks' decisions on interest rates can influence capital flows and investment decisions, somehow affecting the value of the currencies in the exchange

market, Stanley (1990) This is why interest rates are considered a major factor in FX movements.

When the local interest rate increases the money supply decreases as the cost of borrowing becomes higher and bank deposits become a more attractive option with a higher return and lower risk, with less supply of the local currency the value could be higher, in the case of the US dollar as the primary reserve currency in the world, means that the impact of the US interest rate changes will not only effects it values but also will impact other countries currency value through the foreign exchange rate not to forget the hot money movements.

The changes in the US interest rate can have spillover effects on emerging markets countries currency exchange rates through multiple ways, in addition to the capital flows mentioned above, borrowing cost will be higher in foreign currency for emerging countries, international trade is another channel is the cost of import in will be higher for emerging economies, finally, inflation dynamics.

In 2020, The COVID19 was declared as a pandemic worldwide by the WHO and major countries in the world, lockdowns and curfew were enforced almost everywhere in the world as a precaution and an attempt to contain the situation, thus production decreased worldwide due to the lockdowns, uncertainties and fear, supply chains were distressed worldwide as well, most governments implemented handouts and financial aids for the population causing liquidity to increase between the public, 2 years later pandemic was in final scene the shrink in the production, the crumpled supply chains, and extra liquidity due to government expenditure and low interest rates is ready to be spent causing an increase in prices worldwide and inflation in the major economies of the world and the biggest one which is the United states.

In March 2022**,** The US federal reserve begun interest rate hikes as a monetary policy to decrease money supply and combat inflation. This step will have economic and financial effects worldwide due to the integration of the global economy and financial markets. In this study, I will focus on the impact of US rate hikes and specifically on the emerging economies recently and will try to reach better understanding how the FED

policy has the significance on the exchange rates, GDP, and other macroeconomic measures. I believe it's important to define and study the relationship between those factors, also how the inflation tackle policy in the US affected the inflation rates in the emerging economies noting the relation between the exchange rate and inflation. It's important for foreign potential investors, governments, and other stakeholders to understand the interactions between the above along with gaining insights about both risks and opportunities in these countries.

Central banks around the world implement monetary policies in order to manage money supply in ways that achieve the economic and financial goals of the country, during recessions central banks tend to facilitate its policy and increase the money supply in order to increase the buying power and push the production forward, in inflation era , central banks tend to tighten the money supply throughout it tools which interest rate is the most significant one. By analyzing the historical data, figures, and trends in different regions around the globe we will be able to see how this central bank tool influences emerging economies' foreign exchange rates.

The signification of the study is improving the understanding of the current globalization of today's world economy and far from that current world regime where the monetary policy in the biggest world economy affects almost everywhere inflation, investments, currency value, domestic production among other indicators.

It's important to note that effect of US interest rates on other countries, as stated the rates hikes led to a strong US dollar which is the currency for around 85 % of international trade, moreover the US currency forms arounds 50 % of foreign reserves worldwide, in addition to the volume of the United States economy which is around 15 % of the world's economy, based on what presented the FED decisions and the US economic indicators will lead to response in the areas of international trade, economic stability, policy making and economic indicators in other countries.

In a word, the conditions and trends in the United States can have significant effects on the foreign exchange rates of other countries through various channels such as economic performance, monetary policy, trade policies, Oil and other essentials prices,

among others.

Here, we will be studying groups of diverse emerging countries, but the study leaves the door open for further academic research for additional countries and macro variables reacted to the US interest rate changes and discovered the distinct properties of each country, based on such attributes as sustained market access, progress in reaching middle-income levels, and greater global economic relevance.

Emerging markets have made remarkable progress in strengthening their macroeconomic policies since the turn of the century, which helped them more than double their per capita incomes on average, monetary policies in 65 % of the countries we have identified as emerging markets follow forward-looking inflation-targeting regimes, and inflation has fallen and stabilized in most. Public finances in several are guided by fiscal rules. Many embraced major banking sector reforms after the financial crises of the 1990s. Progress was tempered by the global financial crisis in 2008–2009 but not derailed. Emerging markets are differentiated from higher income countries with relatively more reliable political, economic, financial, and judicial systems and better-established institutions and lower income countries with relatively weaker and less reliable systems and less established institutions.

The selection for the group of countries under the study in this research is based on their classification by multiple sources as emerging markets, it's interesting to study and investigate the impact and the reaction of the exchange rates in countries with different exchange rate regime, different economy characteristics and different geopolitical positions, which should make the observation interesting and the results of the study should lead to meaningful comparison along with the other outcomes.

The finding of the research may help policy makers, other interested organizations and parties in many different aspects not limited to economic planning, risk management, financial market intuition and global economic standardization.

1.2 Objectives of the study:

1. To explore the situation and trend of US interest rates.
2. To examine the exchange rate regime as well as the foreign exchange rate dynamic of 20 emerging economies.
3. To investigate the impact of the US interest rate on nominal and real effective exchange rates of 20 emerging economies.
4. To examine macroeconomic factors which affect nominal and real effective exchange rate of 20 emerging economies.

1.3 Research problems of the study:

1. What is the situation and trend of US interest rate?
2. How does the exchange rate regime influence the nominal and real effective exchange rate dynamic of 20 emerging economies?
3. What is the impact of the US interest rate on the nominal and real effective exchange rate of 20 emerging economies?
4. Which macroeconomic factors significantly affect the nominal and real effective exchange
5. rate of 20 emerging economies?

1.4 Scope of the Study:

1. This study covers 20 emerging economies according to the World Bank. These countries are divided into three groups according to their region, including Asia, Europe and America.
2. This study covers eight emerging economies in Asia region, including China, India, Indonesia, Malaysia, Thailand, Philippines, Vietnam and Bangladesh.
3. This study covers six emerging economies in Europe region, including Poland, Turkey, Romania, Czech Republic, Hungary and Bulgaria.
4. This study covers six emerging economies in America region, including

Argentina, Chile, Columbia, Dominican Republic, Brazil and Mexico.

5. The selection of the emerging economies in this study is based on geographical classification and the choice of this country's group sample is they have different economic and political characteristics, while the emerging economies in the middle East and Africa excluded due to their economic reliance on oil and gas production which priced in US Dollar and could be subject for another study or further investigation beyond this study.
6. This study covers the period 2003 – 2022, in total 20 years.
7. This study relies on US interest rates which are obtained from Database the Federal Reserve Economic Data (FRED).
8. This study relies on the economic data of 20 emerging economies which are obtained from World Bank open data, International monetary fund-IMF data, as well as other local data sources.

1.5 Benefits of Research:

This Research have numerous benefits covering economic, investment, policy making and decision options management areas.

1. Policy makers: the concluding points of this research may assist policy makers to manage the risks involved with higher US interest rates to implement fiscal and monetary measures to ensure currency stability.
2. Tourists: tourists, expats and international travelers may make good use from the research finding in the fields of budgeting their trips or relocation based on the currency value changes, deciding whether to keep their savings in their origin country or keep it in the emerging countries, lastly choosing the time to visit in emerging countries for tourism to maximize the benefit from foreign exchange rates.
3. Financial institutions: currency exchange companies in emerging countries can gain insight into how the US interest rate can affect the decision on optimizing their assets holdings portfolio.

4. International traders: Entrepreneurs, Importers and Exporters can benefit from finding buy hedging against currency/interest rates fluctuations in other areas like competitive advantage and market analysis, finally in setting transfer prices.
5. Investors: investors in emerging economies could benefit from the findings and support their plans and decisions through market timing, as an example, taking a decision to exit or enter a transaction upon FED rates announcement, another benefit is portfolio diversification as investors may mitigate risk by carrying different financial assets in the US and the emerging countries.

Moreover, this study will deal with uncertainty caused by the contentious event (the pandemic) so it can partially evaluate the fiscal and monetary policies implemented and their effect on the countries concerned

1.6 Definition of Terms

1. Emerging economies are the economies of a developing nation that is becoming more engaged with global markets as they grow. Countries classified as emerging market economies are those with some, but not all, of the characteristics of a developed market. Characteristics of developed markets may include strong economic growth, high per capita income, liquid equity and debt markets, accessibility by foreign investors, and a dependable regulatory system. As an emerging market economy develops, it typically becomes more integrated with the global economy.
2. Foreign currency is the currency used by a foreign country as its recognized form of monetary exchange. This currency is the form of exchange that the applicable government allows to be used for buying and selling within its borders.
3. Foreign exchange is the conversion of one country's currency into another. In a free economy, a country's currency is valued according to the laws of supply and demand. In other words, a currency's value can be pegged to another country's currency, such as the U.S. dollar, or even to a basket of currencies. A country's currency value may also be set by the country's government.

4. The foreign exchange regime is the way a country manages its currency in relation to other currencies and the foreign exchange market. It involves policies and strategies that a government or a central bank uses to determine the exchange rate of its national currency against foreign currencies.
5. The foreign exchange rate is a rate at which one currency will be exchanged for another currency and affects trade and the movement of money between countries. Exchange rates are impacted by both the domestic currency value and the foreign currency value.
6. A fixed exchange rate is a regime applied by a government or central bank that ties the country's official currency exchange rate to another country's currency or the price of gold. The purpose of a fixed exchange rate system is to keep the currency's value within a narrow strip.
7. A flexible exchange rate is the exchange system where the exchange rate is dependent upon the supply and demand of money in the market. In a flexible exchange rate system, the value of the currency is allowed to fluctuate freely as per the changes in the demand and supply of the foreign exchange.
8. Currency appreciation is an increase in the value of one currency in relation to another currency. Currencies appreciate and depreciate each other for a variety of reasons, including government policy, interest rates, trade balances, and business cycles.
9. Currency depreciation is a fall in the value of a currency in terms of its exchange rate versus other currencies. Currency depreciation can occur due to factors such as economic fundamentals, interest rate differentials, political instability, or risk aversion among investors.
10. Currency revaluation is a calculated upward adjustment to a country's official exchange rate relative to a chosen baseline. The baseline can include wage rates, the price of gold, or a foreign currency.
11. Currency devaluation involves taking measures to strategically lower the purchasing power of a nation's own currency. Countries may pursue such a

strategy to gain a competitive edge in global trade and reduce sovereign debt burdens. Devaluation, however, can have unintended consequences that are self-defeating.

12. Interest rates are a percentage you pay to borrow money or that you earn on a loan you give. Central banks use interest rates to influence the economy by making borrowing more or less expensive. This can affect spending, investment, and inflation. There are simple and compound interest rates.
13. Interest rate spread is a financial term that refers to the profit margin a bank earns on its lending activities. It's calculated as the difference between the interest rate a bank charges borrowers on loans and the interest rate it pays to depositors on savings accounts and other interest-bearing liabilities.
14. Interbank rate is the rate of interest charged on short-term loans made between U.S. banks. Banks may borrow money from other banks to ensure that they have enough liquidity for their immediate needs or lend money when they have excess cash on hand. The interbank lending system is short-term, typically overnight, and rarely more than a week.
15. Discount rate is the interest rate used to calculate the present value of future cash flows from a project or investment. Many companies calculate their WACC and use it as their discount rate when budgeting for a new project.
16. Monetary policy is a set of tools used by a nation's central bank to control the overall money supply and promote economic growth and employ strategies such as revising interest rates and changing bank reserve requirements. In the United States, the Federal Reserve Bank implements monetary policy through a dual mandate to achieve maximum employment while keeping inflation in check.
17. Central bank is a financial institution given privileged control over the production and distribution of money and credit for a nation or a group of nations. usually responsible for the formulation of monetary policy and the regulation of member banks.
18. Federal reserve is the central bank of the United States. Often called the Fed, it is

arguably the most influential financial institution in the world. It was founded to provide the country with a safe, flexible, and stable monetary and financial system.

19. Fed funds rate is the interest rate that banks charge each other to borrow or lend excess reserves overnight. The law requires that banks must have a minimum reserve level in proportion to their deposits.
20. Money demand refers to how much assets individuals wish to hold in the form of money (as opposed to illiquid physical assets.) It is sometimes referred to as liquidity preference. The demand for money is related to income, interest rates and whether people prefer to hold cash(money) or illiquid assets like money.
21. Money supply is the total amount of money—cash, coins, and balances in bank accounts—in circulation. The money supply is commonly defined as a group of safe assets that households and businesses can use to make payments or to hold as short-term investments.
22. Open market operations (OMO) a term that refers to the purchase and sale of securities in the open market by the Federal Reserve (Fed). The Fed conducts open market operations to regulate the supply of money that is on reserve in U.S. banks. The Fed purchases Treasury securities to increase the money supply and sells them to reduce it. By using OMOs, the Fed can adjust the federal funds rate, which in turn influences other short-term rates, long-term rates, and foreign exchange rates. This can change the amount of money and credit available in the economy and affect certain economic factors, such as unemployment, output, and the costs of goods and services.
23. Open market purchase is the purchasing of the treasury bills and government securities by the central bank of any country to regulate money supply in the economy. It is one of the most important ways of monetary control that is exercised by the central banks. Under this system, the central bank sells securities in the market when it wants to reduce the money supply in the market. It is done to increase interest rates. This policy is also known as the contractionary

monetary policy.

24. Open market sales are a process through which the Federal Reserve sells government securities, such as Treasury bonds and bills, in the open market. The primary objective behind these sales is to influence and control the money supply within the economy. This tool is commonly employed by the Federal Reserve to execute monetary policy and regulate interest rates.
25. Trade balance is the difference between the value of a country's exports and the value of a country's imports for a given period. Balance of trade is the largest component of a country's balance of payments (BOP). Sometimes the balance of trade between a country's goods and the balance of trade between its services are distinguished as two separate figures. The balance of trade is also referred to as the trade balance, the international trade balance, the commercial balance, or the net exports.
26. Trade openness is one measure of the extent to which a country is engaged in the global trading system. Trade openness is usually measured by the ratio between the sum of exports and imports and gross domestic product (GDP).
27. Economic growth is an increase in the production of goods and services in an economy. Increases in capital goods, labor force, technology, and human capital can all contribute to economic growth.
28. Capital formation is net capital accumulation during an accounting period for a particular country. The term refers to additions of capital goods, such as equipment, tools, transportation assets, and electricity.
29. Foreign direct investment **(**FDI) refers to an ownership stake in a foreign company or project made by an investor, company, or government from another country. FDI is generally used to describe a business decision to acquire a substantial stake in a foreign business or to buy it outright to expand operations to a new region. The term is usually not used to describe a stock investment in a foreign company alone. FDI is a key element in international economics.

CHAPTER 2
LITERATURE REVIEW

The association between U.S. interest rates and the foreign exchange rates of emerging economies has been a topic of interest among academic researchers and world economics institutions, a major finding upon reviewing previous studies is that changes in the U.S. Federal Reserve's monetary policy, particularly the level of interest rates, can have a considerable impact on the exchange rates of emerging market currencies, the macroeconomic terms will be defined below as it has significant implications while conducting the study, then will review the findings of the recent papers and journals published related to this topic, so new findings or updates on these factors results could be presented.

2.1 Interest Rate:

Interest rates are a primary economic concept that plays a key role in the financial model, influencing various aspects of our lives, from personal finance to global economic policies. Interest rates can be defined as the price paid for the use of money, or the cost of borrowing funds, Faure, Alexander Pierre (2014). They represent the compensation lenders receive for the time value of their money and the risk associated with the borrower's ability to repay, also there is the interest rate spread, which represents the difference between the rates charged on loans and the rates paid on deposits.

While interest rates can be charged on a wide range of financial instruments, including loans, bonds, mortgages, and deposits; The level of interest rates is determined by various factors, such as the risk-free rate, the borrower's creditworthiness, the duration of the loan, and market conditions, the risk-free rate, typically denoted by the yield on government securities, serves as the base rate, to which additional risk premiums are added to account for the specific risks associated with a given borrower or instrument.

Interest rates can be broken down into several key components that contribute to

their overall structure, these include Risk-free rate, Risk premium, Liquidity premium and Inflation premium. By understanding the composition of interest rates, we can better understand the factors that impact their fluctuations and the decision-making process behind several financial instruments and investments, Faure, Alexander Pierre (2014).

The process of interest rate discovery involves the drive of fundamental interest rates in the financial markets, this process is influenced by a complex interplay of factors, including supply and demand for credit, central bank policies, and market sentiment, the primary mechanisms for interest rate discovery are the debt and deposit markets, where lenders and borrowers interact to establish the rates at which funds are exchanged, in these markets, the interaction of supply and demand for credit, as well as the perceived risks associated with different borrowers and instruments, drives the discovery of interest rates.

Moreover, interest rates are a crucial economic variable that have a far-reaching impact on various aspects of the financial system and the broader economy. It affects borrowing and lending for businesses or individuals, also it is used by central banks as a tool for the monetary policy transmission, lastly interest rate is essential input for risk and asset valuations.

In a word, interest rates are a crucial economic variable that have a far-reaching impact on various aspects of the financial system and the broader economy.

2.2 Foreign Exchange rate:

The foreign exchange rate (FX rate) stands as a critical variable in the complex web of international economics, it embodies the relative price of one currency in terms of another, serving as a crucial indicator of a nation's economic health and influencing a wide range of economic activities. Understanding the dynamics of FX rates is dominant for economists seeking to understand trade worldwide, investment flows, and the overall performance of national economies, here will be exploring the distinctions between spot and forward rates, nominal and real effective rates, and the dynamics of currency

appreciation and depreciation.

Spot Rate vs. Forward Rate:

The spot exchange rate refers to the current market price at which one currency can be exchanged for another, reflecting immediate or near-term settlement. In contrast, the forward exchange rate is a contractual agreement to buy or sell a currency at a specific price and future date, the relative valuation between the forward and spot prices can result on a currency basis, a deviation from the covered interest rate parity, Stockman (1980).

Countries with large negative external imbalances tend to have a depressed forward price of their domestic currency compared to the U.S. dollar Liao, Zhang (2020). Furthermore, during periods of increased market volatility, countries with positive external imbalances experience domestic currency appreciation in both spot and forward exchange rate markets, while those with negative external imbalances face currency depreciation.

Forward exchange rates often exhibit greater price movements relative to spot exchange rates, even after adjusting for interest rate differentials. This difference in exchange rate adjustment between the forward and spot markets contributes to the increased cross-sectional dispersion of currency bases, reflecting the direction and magnitude of external imbalances.

Nominal and Real effective exchange rate:

The nominal exchange rate is the direct exchange of one currency for another, without considering the effects of inflation while the real effective exchange rate considers the relative purchasing power of currencies, adjusting for differences in inflation rates between countries, the effective exchange rate is a weighted average of a country's currency in relation to an index or basket of other major currencies. The real effective exchange rate is a crucial indicator of a country's international competitiveness, as it reflects the relative prices of goods and services between countries. Unless the stocks of the two monies remain constant, there can be persistent violations of the law of one price and purchasing power parity, while the nominal exchange rate simply tells you

how much of one currency you need to exchange for one unit of another currency, real rate provides greater understanding since it accounts for inflation and purchasing power.

Currency Appreciation vs. Depreciation:

Currency appreciation refers to the increase in the value of a currency relative to other currencies, while currency depreciation is the opposite - a decrease in the value of a currency. Factors such as trade balances, inflation, interest rates, and economic growth can all contribute to changes in exchange rates and the appreciation or depreciation of a currency.

Depreciation of a currency can have both favorable and unfavorable effects on an economy, however, it can increase the price of imported goods, reducing domestic demand and promoting the consumption of domestic products, potentially enhancing exports and economic growth, on the other hand, currency appreciation can reduce the price of imports, leading to lower inflation, but also potentially reducing the competitiveness of exports and worsening the trade balance.

Policymakers must carefully weigh the potential impacts of exchange rate movements on various sectors of the economy when determining appropriate monetary and fiscal policies. It's important to mention that there are different exchange rate regimes, Fixed exchange rate regimes, semi-floating (floating with authorities' partial control over it) and floating exchange rate regime.

2.3 Exchange rate Determination:

Exchange rate determination is the process by which the value of the currency is established towards some other foreign money inside the foreign exchange market. Various elements affect exchange rate determination, consisting of delivery and call for dynamics, prices, inflation rates, economic indicators, political balance, and market speculation. The interplay of those factors' outcomes inside the fluctuation of alternate values, reflecting the relative strength or weakness of currencies against each different.

The determination of exchange rates is a complex process influenced by a myriad

of economic factors, these include the relative supplies and demands for the two countries' monies, inflation rates, interest rate differentials, productivity growth, and trade balances. Head, Shi, (2003).

Factors such as money growth rates, real income growth, and productivity shocks can lead to changes in nominal and real effective exchange rates, even in the absence of price stickiness. The degree of exchange rate volatility and misalignment can be exacerbated by financial liberalization, the abolition of exchange controls, and the transition to a more market-driven exchange rate regime,

Central banks also play a fundamental role in the interest rate discovery process, as they influence market rates through their monetary policy decisions and the management of the money supply, by adjusting key interest rates, such as the federal funds rate or the discount rate, central banks can impact the broader interest rate environment and, in turn, influence economic activity and inflation as stated, central banks among other authorities also play an extensive role in this area through their policies selections, for example, central banks might also interfere within the foreign exchange marketplace to stabilize their currency's value or attain specific policy targets. Additionally, the nature of an exchange rate regime, whether it is a fixed or floating one, highly influences the exchange rate determinations.

Overall, the determination of exchange rates is a multifaceted and dynamic process, with both short-term and long-term considerations shaping the relative value of currencies. This is not a simple procedure since it’s influenced by the aid of a mixture of monetary, financial, economic and political-related factors that shape the value of currencies in the global market.

2.4 Impact of Exchange Rate on Macroeconomic Factor:

The changes in exchange rate will affect the economic factors in negative or positive way, the major factors effected are the trade balance, inflation rate, FDI and economic growth among other factors, the stability of the local currency necessary for

FDI attraction, also it may ensure lower inflation rates; import of basic energy country needs will be at stable prices all the mentioned is essential for economic growth, whereas high fluctuations in the foreign exchange rate is an indicator for unhealthy economic situation in most cases, will be red flag for FDI, regarding inflation, the devaluation of local currency may lead to higher inflation rate with a multiplier effect.

The Relationship between Exchange Rate and Trade:

The relationship between exchange rates and trade is complex, as it is influenced by several factors, depreciation of the local currency can increase the price of foreign products, reducing the demand for imports and encouraging the consumption of domestic goods. This, in turn, can boost exports by making domestic products more affordable for foreign buyers, leading to an improvement in the trade balance, conversely, an appreciation of the local currency can reduce the price of imports, making them more attractive to domestic consumers, while making exports less competitive in the global market, potentially leading to a deterioration of the trade balance.

Impact on Investment and Economic Growth:

The effect of exchange rate fluctuations on investment and economic growth is also a crucial consideration. Exchange rate depreciation can stimulate investment by increasing the competitiveness of domestic firms and making exports more attractive. Sugeng, Nugroho, Ibrahim, Yanfitri (2010) This can lead to increased economic activity and growth, in the other hand, exchange rate appreciation can depress investment by reducing the profitability of exporting and increasing the cost of imported goods and services, possibly reducing economic growth.

Exchange Rate and Inflation:

Exchange rate fluctuations can also have a significant impact on inflation, reflecting the fact that exchange rate changes are rapidly transmitted to import prices. The depreciation of the local currency can lead to an increase in the prices of imported goods, which can then be passed on to consumers, resulting in higher inflation, conversely, currency appreciation can lower the prices of imported goods, helping to keep inflation in check.

Implications for Policymakers:

The complex and multifaceted relationship between exchange rates and macroeconomic factors poses a significant challenge for policymakers. They must carefully balance the various trade-offs and implications of exchange rate movements to achieve their economic objectives, such as maintaining a stable exchange rate, promoting exports, and controlling inflation (Sandamini et al., 2021)

Impacts on tourism in the economic sector:

The depreciation of local currency can have positive effect on Tourism and improve the GDP in main tourist destinations countries, the weak Turkish lira made from Turkey a cheap country for tourists, and post pandemic the depreciation of Thai baht among other factors is driving tourism arrivals to a higher level.

In conclusion, the impact of exchange rate fluctuations on macroeconomic factors is not straightforward and can vary depending on the specific economic conditions and the structure of the economy.

2.5 Monetary Policy and Change in the Interest Rate:

Monetary Policy Transmission: Central banks use interest rates as a key tool in the implementation of monetary policy, adjusting them to influence economic activity, inflation, and employment, Faure, Alexander Pierre (2014). Monetary policy influences economic activity, with central banks trying to stimulate output, employment, and control prices through their monopoly position as suppliers of liabilities.

An essential part of monetary policy is the monetary transmission mechanism, how the economy is being influenced by the process of monetary policy, while there are number of channels for the monetary mechanism including exchange rates, bank credit, and asset prices, most economists consider interest rates to be the major way by which economic activity is affected by monetary policy. For example, in the United States, anticipated changes in the federal funds rate led to stronger and more significant movements in long-term interest rates, highlighting the importance of monetary policy in

economics and finance, changes in monetary policy simultaneously affect inflation, interest rates, volatilities, and co-movements between long and short rates, explaining empirical regularities across different policy regimes in the United States.

In the other hand, in emerging economies markets, optimized interest rate rules can maintain financial stability in these countries economies by adjusting to real effective exchange rates, asset prices, and lending spreads, with stronger anti-inflationary stances when maintaining financial stability.

Contractionary monetary policy causes interest rates to rise because it decreases the money supply, making loans more expensive and leading individuals and businesses to reduce their borrowing and spending activities, this helps control inflation and stabilize the economy. Conversely, in an expansionary monetary policy scenario aimed at stimulating economic growth, central banks often lower interest rates, lower interest rates make borrowing cheaper, encouraging consumers and businesses to spend and invest more, this increased spending can help boost economic activity and inflation.

In a word, Changes in interest rates are a key mechanism through which monetary policy actions impact the economy. Central banks adjust interest rates to influence borrowing costs, investment decisions, and overall economic activity in line with their policy objectives, both money supply and interest rate are useful predictors of inflation in the US; inflation and exchange rate in EMDEs.

2.6 FED and US Interest Rate Intervention:

The Federal Reserve, "Fed," plays a crucial role in shaping the economic landscape of the United States through its monetary policy decisions, particularly its influence on interest rates, the Fed's primary objectives are to promote maximum employment, stable prices, and moderate long-term interest rates, the Fed's policy of actively managing short-term interest rates effectively controls inflation and helps the economy respond to supply-side disturbances, insuring output from exogenous demand-side disturbances, to achieve these goals, the Fed utilizes various tools and strategies,

which have evolved over time as the institution and economists have gained a deeper understanding of monetary policy theory and practice, one of the key ways the Fed influences the economy is through its ability to adjust short-term interest rates, which in turn, impacts a wide range of financial instruments and economic activities. The Fed's interest rate decisions have far-reaching consequences, affecting consumer borrowing, business investment, and the overall cost of capital, ultimately shaping the trajectory of economic growth and inflation.

During periods of economic distress, such as the recent COVID-19 pandemic, the Fed has demonstrated its willingness to take bold and unconventional actions to support the economy, this includes not only cutting short-term interest rates to near-zero levels, but also engaging in large-scale asset purchases, commonly known as quantitative easing (QE), to inject liquidity into the financial system and keep long-term interest rates low, Bernanke (2020). These measures are designed to provide stimulus and alleviate cash-flow stress for businesses and individuals, ultimately supporting employment and price stability. However, the effectiveness of the Fed's monetary policy interventions is not without debate, some experts argue that the Fed's actions, while necessary in times of crisis, may have unintended consequences, such as inflating asset bubbles or exacerbating wealth inequality. Furthermore, as the economy and financial markets have become increasingly complex, the Fed faces new challenges in determining the appropriate policy tools and communication strategies to achieve its desired outcomes. Lastly, US interest rate interventions have vital implications, the interconnected nature of the world economy means that actions taken by the Fed can have far-reaching implications beyond US borders, impacting financial markets, exchange rates, capital flows, and economic growth worldwide.

2.7 Related Research:

The impact of US interest rates on exchange rates in emerging markets (EMEs) has been extensively studied, with findings highlighting major effects, the review

highlights key findings from various studies, including:

US interest rate impact on Exchange Rates:

Higher US interest rates generally lead to depreciation of emerging market currencies, this is attributed to increased capital flows towards the US, boosting demand for dollars and reducing demand for emerging market currencies. Countries with managed exchange rates experience smaller fluctuations in exchange rates but larger and more prolonged fluctuations in output and prices, while flexible exchange rates allow for immediate depreciation, cushioning the impact on real GDP.

Gilles & Thibau (2015) empirical data suggests depreciation of emerging market currencies with rising US interest rates and concluded that higher US interest rates lead to depreciation of emerging market currencies due to capital flow attraction, integration of world financial markets and free capital flow lead to increased exchange rate volatility, impacting emerging economies. Countries with floating exchange rates are partially insulated from US interest rate shocks, while managed exchange rates experience larger output fluctuations and price turbulence, Yang Zhang, Mengling Li & Wai-Mun Chia (2014).

Sikhwal (2022) found that US interest rate shocks lead to depreciation of emerging market currencies, decline in industrial production index, and rise in consumer price index. Higher foreign interest rates lead to real exchange rate depreciation in emerging economies, improving terms of trade and boosting exports and GDP Puspitasari (2017).

Andries and Ihnatov and Capraru, and Tiwari (2017) found out that interest rate increases lead to short-term appreciation of the exchange rate and a reduction in economic activity. While Erbaş, Sökmen, and Yilmaz (2019) determine that interest rates and inflation have a significant adverse impact on real exchange rates in developing countries.

Higher US interest rates generally lead to depreciation of emerging market currencies, this is attributed to increased capital flows towards the US, boosting demand for dollars and reducing demand for emerging market currencies. Countries with

managed exchange rates experience smaller fluctuations in exchange rates but larger and more prolonged fluctuations in output and prices, while flexible exchange rates allow for immediate depreciation, cushioning the impact on real GDP, Jogenson (2024).

US interest rate impact on other Economic Factors:

Inflation: Higher US interest rates can lead to inflation in emerging economies due to depreciation of their currencies. Hoek and Kamin and Yoldas (2022)

Trade balance: Currency depreciation can improve competitiveness in emerging economies, potentially boosting exports and GDP. Venus Khim-Sen Liew (2003).

Capital Flows: US interest rate changes can significantly impact capital flows to emerging markets, affecting their economic growth. World interest rates influence the country's interest rates beyond the no-arbitrage condition, with US interest rate fluctuations impacting emerging market business cycles. Martin and Vivian (2003).

Poyraz (2014) found a positive correlation exists between interest rates and unemployment, highlighting the impact of financial crises on the real sector.

Johannes, Alice and Sai (2023) examine high US interest rates effects on capital flows to emerging markets, which was negative and led to depreciation of their currencies and negatively affect macroeconomic growth. Nikhil & Deene (2021) reach a conclusion in their study that US interest rate changes significantly impact key macroeconomic factors in emerging economies. Iacoviello, Matteo and Navarro (2014) stated that emerging economies, especially vulnerable ones, may react more strongly to US monetary shocks than the US economy itself.

Arteta, Kamin and Ulrich Ruch (2022) stated that increased US interest rates due to higher inflation expectations and a hawkish Fed stance negatively impact emerging economies, leading to sovereign expansion, capital outflows, and decreased consumption and investment. While, Cheung, Yin-Wong; Tam, Dickson and Yiu, Matthew S (2007) found that US interest rate effect is weak on Chinese interest rates but strong on Hong Kong's

Junius W. Yu (2014) examined the role interest rates play in predicting GDP per

capita in Southeast Asian countries, which was crucial with an inverse relationship. Lastly, Musa Ahmed (2014) concluded that ASEAN countries are closely linked to the US economy, making them vulnerable to external changes.

Macroeconomic Factors: US interest rates can influence various macroeconomic factors in emerging economies, including government bond yields, inflation rates, and economic activity.

Other Economic Factors impact exchange rates:

Gashchyshyn and Marushchak, and Sukhomlyn, and Tarasenko, (2020) results indicate that the short-term impact of local interest rate changes on the exchange rate is positive and statistically significant, although the economic significance is weak, while the long-term relationship is found to be insignificant. Richard Floyd (2016) examined emerging market economies exchange rate volatility due to fluctuations in money supply and inflation and found a negative impact. Relative prices and incomes significantly influence trade flows and exchange rates in emerging economies. Evans & Rime (2019).

Bouraoui (2015) founded that terms of trade and international reserves significantly influence the Thai baht exchange rate against the US dollar. While Nenrot, Olumide Mustapha and A. Mohammad (2022) stated that various factors, including terms of trade, money supply, trade openness, and interest rate differentials, influence exchange rates in developing countries.

Cahyadin & Ratwianingsih (2020) examine in their study on ASEAN countries the impact of external debt in economic growth among other macroeconomic factors and they founded negative but insignificant relationship between those variables, however, they emphasize the importance of macroeconomic policies like exchange rate stability and external debt risk management for mitigating the potential negative effects. Amjad Ali (2022).

This research on South Asian countries suggests that foreign debt has a negative and insignificant influence on the level of growth, whereas exchange rate volatility has a positive and significant relationship with economic growth, the overall results conclude

that exchange rate volatility has important roles in determining economic growth.

Nguyen and Thu-Trang and Toan, (2022) confirms the negative impact of exchange rate volatility on economic growth in Vietnam, the authors recommend implementing measures to stabilize the exchange rate and diversify export markets to mitigate the negative effects. Karroubi (2011) argues that real exchange rate adjustments can play a positive role in reducing trade imbalances and promoting economic growth in the emerging countries. The author emphasizes the importance of managing exchange rate volatility and using it as a tool for promoting competitiveness.

Checo and Grigoli, Damiano, (2024) suggests that monetary policy tightening leads to a temporary appreciation of the exchange rate and a reduction in economic activity in the emerging countries. They emphasize the importance of considering the impact of monetary policy on both financial and macroeconomic conditions. Khim-Sen Liew, (2003) founded that trade openness has a two-way Granger causality with exchange rate volatility, suggesting that both factors influence each other. Also, Gantman & Dabós, (2017) found that trade openness has a negative impact on the real exchange rate, suggesting that increased trade leads to currency depreciation

Impact of Exchange Rate Regimes:

Kassowitz, (2017) concluded that flexible exchange rate regimes have a positive impact on economic growth in emerging markets and developing countries. In a word, the literature review highlights the significant impact of US interest rates on exchange rates and broader economic factors in emerging economies. Understanding these impacts is crucial for policymakers and businesses operating in these markets.

The Table below represents a summary of sources for the literature review regarding the independent variables, the dependent variables and the control variables.

Table 2.1: Summary of the Variables Determining Exchange Rate

No.	Variables	Literature Sources
1	US interest rate, trade balance, terms of trade	Uribe, Martin and Yue, Vivian, (2003)
2	Exchange rate, trade balance	Venus Khim-Sen Liew, (2003)
3	US interest rate, local interest rate	Cheung, Yin-Wong; Tam, Dickson and Yiu, Matthew S (2007)
4	Trade balance, real exchange rate	Enisse Kharroubi, (2011)
5	Interest rates, unemployment	Meltem Poyraz (2021)
6	US interest rate, exchange rate regime	Yang Zhang, Mengling Li & Wai-Mun Chia (2014):
7	US interest rates, GDP	Iacoviello, Matteo and Gaston Navarro (2014)
8	US interest rates, GDP	Junius W. Yu (2014)
9	Domestic interest rates, foreign exchange rate, GDP	Elsadig Musa Ahmed (2014)
10	US interest rates, foreign exchange rate	Gilles & Thibau (2015)
11	Terms of trade, foreign exchange rate	Taoufik Bouraoui (2015)
12	Inflation, foreign exchange rate	Richard Floyd (2016)
13	Exchange rate regime,	Kassowitz, Michael (2017)
14	Trade openness, real exchange rate, trade balance, terms of trade, exchange rate regime, domestic interest rate	Ernesto R. Gantman, Marcelo P. Dabós (2017),
15	Exchange rate, interest rate	Andries, Alin & Ihnatov, Iulian & Capraru, Bogdan & Tiwari, Aviral, (2017).
16	Interest rates, foreign exchange rates, terms of trade, GDP,	Ratih Puspitasari (2022)
17	Interest rates, foreign exchange rate, inflation	Erbaş, Sökmen, & Yilmaz (2019) Asper Hoek, Steve Kamin, Emre Yoldas (2022)
18	Exchange rates	Evans & Rime (2019)
19	GDP growth	Ezzahid, E., & Elouaourti, Z. (2021).

Table 2.1: Summary of the Variables Determining Exchange Rate (Continued)

20	Exchange rate, domestic interest rate	Gashchyshyn, Adam, Marushchak, Kateryna & Sukhomlyn, Oleksandr & Tarasenko, Andrii. (2020).
21	External debt, exchange rate	Malik Cahyadin, Lely Ratwianingsih (2020)
22	Interest rates, FDI	Nikhil & Deene (2021)
23	Trade openness, real effective exchange rate, GDP	Kim Lien, Nguyen & Doan, Thu-Trang & Bui, Toan, (2022)
24	US interest rate, foreign exchange rate, CPI, production	Shweta Sikhwal (2022)
25	US interest rate, inflation, FDI	Carlos Arteta, Steven Kamin and Franz Ulrich Ruch (2022)
26	foreign exchange rate, interest rate differentials, terms of trade, trade openness	Ayuba Nenrot, Lateef Olumide Mustapha and Ibrahim A. Mohammad (2022)
27	External debt, exchange rate, GDP	Ali, Amjad (2022)
28	US interest rate, foreign exchange rate, GDP, FDI	Johannes, Alice and Sai (2023)
29	Monetary policy, exchange rate	Ariadne Checo, Francesco Grigoli, Damiano (2024)

2.8 Research Gaps:

The previous studies pointed out that most emerging currencies value have a negative relationship with the US interest rate movement, The interrelation of global financial markets and policy decisions, especially those regarding interest rate adjustments, have profound effects on emerging economies.

The literature review identified several common factors that discover the impact of US interest rate changes on emerging economies:

- Exchange Rate Movements: Some studies conclude that interest rate changes, particularly in developed economies like the US, have instant effects on the exchange rates of emerging economies, and higher interest rates tend to lead to currency depreciation in these markets.
- Trade balance and terms of trade: The response of trade balances to foreign interest rate shocks is also highlighted, with studies noting that such changes can improve the terms of trade for emerging economies, aiding export competitiveness and potentially boosting GDP.
- Monetary Policy Transmission and Spillovers: The research underlines the effect of US monetary policy on emerging markets. Policy rate changes in the US can affect short-term and long-term interest rates in these economies, which backs to variation in their macroeconomic variables.
- Capital Flows and Investment: Several studies show the sensitivity of capital flows to US interest rate movements, increased US rates can lead to capital outflows from emerging markets, cutting investment and consumption in these regions.
- Macroeconomic Growth and Stability: The overall stability and growth of emerging economies are impacted by the monetary policy shifts in developed countries, fluctuations in interest rates can have a significant impact on economic growth, inflation, government bond yields, and other macroeconomic factors in these regions.
- Country-Specific Effects and Vulnerabilities: It is noted that the impact of foreign monetary policy varies across different emerging markets. Factors such as the structure of the economy, the level of integration into global markets, and the prevailing domestic economic conditions all influence the extent of the impact.

The analysis communally suggests a compound interaction between US monetary policy and the financial stability and economic performance of emerging markets, with

implications for exchange rates, capital flows, domestic monetary policy responses, and the overall macroeconomic environment in these economies.

The gaps in the previous research gaps present opportunities for further research and deeper understanding of these critical dynamics, particularly in the context of Emerging countries.

- Limited Focus on Specific Country Groups: Most studies tend to focus on broad categories neglecting the diverse economic and political realities within the emerging countries' regions, future research could benefit from focusing and comparing specific country groups countries to capture nuanced variations and tailor policy recommendations accordingly.
- Shortage of Long-Term Studies: Many studies focus on short-term effects, neglecting the long-term implications of external debt, exchange rate fluctuations, and trade on economic growth, examining the long-term dynamics would provide a more comprehensive understanding of these relationships and their impact on sustainable development.
- Limited Consideration of External Shocks: While some studies acknowledge the role of external shocks like global financial crises, the impact of such events on the relationship between external debt, exchange rates, trade, and economic growth remains under-explored like the COVID pandemic.
- Inadequate Attention to Policy Interactions: The interplay between various policy instruments, such as exchange rate management, debt management strategies, and trade policies, remains under-investigated.
- Limited Integration of New Variables: Emerging trends like the rise of digital currencies and global value chains could significantly impact foreign exchange rates and economic growth, research could incorporate these new variables to provide a more comprehensive and relevant analysis.

It will be useful to introduce more empirical studies to investigate the direct influence of changes in the US interest rate in the foreign exchange rates, since the previous research papers did not cover the recent FED rate hikes which started in March

2022 without any rate cut defined date till mid of 2024, while there is acknowledgment that impacts vary among emerging economies, detailed studies on the specific characteristics that cause different responses to interest rate shocks within these markets could provide more insights, also few emerging economies was not covered by previous study. Finally, the previous research papers did not take into consideration unusual worldwide events like the 2020 pandemic with its governmental handouts for businesses and individuals or studied the impact under different economic cycles.

This study will try to fill the gaps by addressing an unusual event like the pandemic, in the scope of how the policies adopted may have created worldwide inflation and how the FED reacted in terms of the monetary policy specifically in interest rate to combat it. Also, we will compare the responses of emerging markets to interest rate shocks during crisis episodes versus periods of economic stability to contextualize policy recommendations. Another comparison could be made in the context of geographical position and political one, this study will introduce couple of countries not been studied before in south America and Latin America like the Dominican Republic. Finally, we will leverage on the availability of the data and development of indicators to find new approaches for the subject under study and unveil trends, alongside the findings.

2.9 The Conceptual Framework:

Below is the theoretical framework for our study, showing the relationships between the essential elements of what we are going to focus on mostly within this study.

Figure 2.1: Conceptual Framework

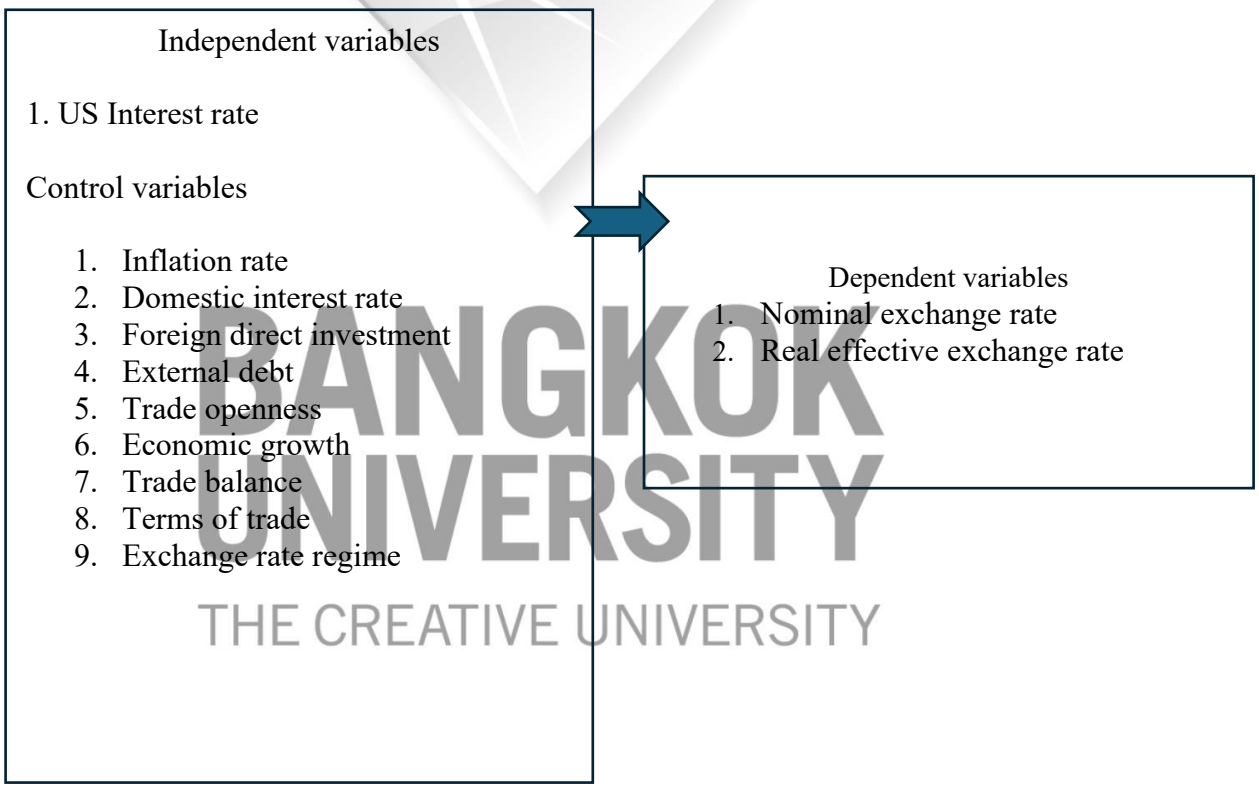


Table 2.2: Conceptual Framework

No.	Variable	Description	Measurement
Dependent variables			
1	Nominal exchange rate	the current market price of one currency in terms of another	Domestic currency per 1 US Dollar
2	The real effective exchange rate	adjusts the nominal exchange rate for inflation differences, reflecting the relative purchasing power of one currency	Real exchange rate (RER) = Nominal exchange rate x (CPI domestic/CPIUS)
Independent variables			
1	The US interest rate	target rate at which commercial banks borrow and lend their excess reserves to each other overnight.	Fed Fund Rate (%)
Control variables			
1	Inflation rate	annual % increase of the cost of living	Inflation Rate = [(Current Price Level - Previous Price Level) / Previous Price Level] x 100
2	Domestic interest rate	Interest rate in the emerging economies countries	Average rate between deposit and lending rate
3	Foreign direct investment	cross-border investment in which an investor resident in one economy establishes a lasting interest	FDI inflow as a % of the country GDP
4	External debt	the portion of a country's debt that is borrowed from foreign lenders, including banks and governments.	External debt as % of the country GNI.

Table 2.2: Conceptual Framework (Continued)

5	Trade openness	measure of the extent to which a country is engaged in the global trading system	Trade openness= Export + Import (% of GDP)
6	Economic growth	an increase in the size of a country's economy over a period	Measured by the total production of goods and services in the economy GDP
7	Trade balance	the difference between a country's exports and imports of goods and services over a given period	Trade balance = Exports – Imports (% of GDP)
8	Terms of trade	measure of a country's export prices relative to its import prices	Barter index %
9	Exchange rate regime	the method by which the currency exchange rate is managed	Dummy variable where dummy variable = 1 if floating exchange rate and dummy variable = 0 if managed exchange rate

CHAPTER 3
METHODOLOGY

This chapter will outline the research approach and techniques employed to address the research questions, The cross-country panel data analysis framework allows for the examination of both the within-country and between-country variations, providing a more comprehensive understanding of the phenomenon under investigation. Salisu (2020) By utilizing panel data, the study can portray the divergency across the sample emerging economies, taking into consideration the unique economic, political, and institutional characteristics that may influence the exchange rate dynamics.

The methodology section will detail the data sources, variables, and modeling techniques to quantify the impact of US interest rates on the exchange rates of the selected emerging economies.

3.1 Emerging Countries:

Emerging countries, also named emerging markets, describe countries that are in the process of quick economic development and experiencing substantial economic growth. These countries typically have lower to medium income levels, but they are promising a high potential for development and are becoming gradually significant performers in the world economy. Emerging countries are of a certain interest due to their distinctive economic characteristics, growth projection, and challenges. Researchers often study these countries to understand the factors driving their growth, the impact of globalization on their economies, and the effectiveness of various policies in promoting sustainable development.

Emerging economies frequently grapple with the tradeoffs between maintaining a stable exchange rate to anchor inflation and preserving competitiveness, on the one hand, and allowing greater exchange rate flexibility to cushion against external shocks, on the other. Fagbemi, Fisayo & Olatunde, Olufemi (2020*)*.

Emerging countries are called by this name because they are distinguished as nations that are in the process of emerging or rising to importance on the global economical stand, these countries are transitioning from developing economies to more advanced and industrialized ones, experiencing rapid economic growth and development in the process. The term "emerging markets" has since advanced to include not just economic factors, but also social and political aspects of development. It is used to describe countries that are not yet deemed completely developed but are on a trajectory towards reaching higher levels of economic success, stability, and power in the world. Key emerging countries include Brazil, Russia, India, China (BRIC), as well as countries in Southeast Asia as Thailand, Malysia, Vietnam, Bangladesh, Philippines, in Africa countries such South Africa and Nigeria. South America and Latin America includes countries like Argentina, Chile, Columbia, Dominican Republic and Mexico. Finally in Europe, Poland, Czech Republic, Romania, Turkey, Bulgaria and Hungry are considered emerging countries. Researchers often analyze data from these countries to generate new awareness for policymaking and provide contributions to a deeper knowledge of global economic developments.

Asia:

1. China: has been among the world's fastest growing economies, with real gross domestic product averaging over 9% growth annually through 2021, lifting an estimated 800 million people out of poverty and dramatically improving overall living standards. By 2011, the PRC's economy was the second largest in the world.
2. Bangladesh: one of the fastest growing emerging market economies; strong economic rebound following COVID-19; significant poverty reduction; exports dominated by textile industry; weakened exports and remittances resulted in declining foreign exchange reserves and 2022 IMF loan request.
3. India**:** largest South Asian economy; still informal domestic economies; COVID-19 reversed both economic growth and poverty reduction; credit access weaknesses contributing to lower private consumption and inflation.

4. Indonesia: one of the fastest growing economies and largest in Southeast Asia; upper middle-income country; human capital and competitiveness phase of its 20-year development plan.

5. Philippines: growing Southeast Asian economy; commercial rebound led by transportation, construction, and financial services; electronics exports recovering from sector slowdown; significant remittances; interest rate rises following heightened inflation.

6. Thailand: upper middle-income Southeast Asian economy; substantial infrastructure; major electronics, food, and automobile parts exporter; globally used currency; extremely low unemployment, even amid COVID-19; ongoing Thailand 4.0 economic development.

7. Malaysia: upper middle-income Southeast Asian economy; implementing key anticorruption policies; major electronics, oil, and chemicals exporter; trade sector employs over 40% of jobs; key economic equity initiative; high labor productivity.

8. Vietnam: lower middle-income socialist East Asian economy; rapid economic growth since Doi Moi reforms; strong investment and productivity growth; tourism and manufacturing hub; TPP signatory; declining poverty aside from ethnic minorities; systemic corruption.

Europe:

9. Bulgaria: upper-middle-income EU economy; improving living standards and very robust economic growth; coal-based infrastructure; legacy structural vulnerabilities and widespread corruption.

10. Czech Republic: high income, diversified EU economy; advanced services and automotive exporter; mostly intra-EU trader; low unemployment; usually maintains a positive trade balance; large investments in systems innovation and information technologies.

11. Hungary: high-income EU economy; tightening fiscal policy in response to budget deficit; delayed EU cohesion fund disbursement due to judicial independence

concerns; high inflation and low consumer confidence.

12. Poland: diversified, high-growth European economy; COVID-19 led to first recession in nearly 3 decades, albeit small; EU and NATO member; bolstering US relations; economic concentration in western region; aging labor force; growing debt.

13. Romania: high-income, service- and industrial-based European economy; EU member but non-euro user until convergence criteria met; sustained growth prior to COVID-19; major FDI recipient; flat taxation structure; digital hub of Eastern Europe.

14. Türkiye: upper middle-income, diversified Middle Eastern economy; heightened inflation and currency depreciation triggered by expansionary monetary and fiscal policy ahead of 2023 elections, industrializing economy that maintains large agricultural base.

America and Latin America:

15. Argentina: large, diversified economy; financial risks from debt obligations, rapid inflation, and reduced investor appetites; resource-rich, export-led growth model; increasing trade relations with China; G20 and OAS leader; tendency to nationalize businesses and under-report inflation.

16. Brazil: industrial-led economic growth model; recovering from 2014-2016 recession when COVID-19 hit; industry limited by Amazon rainforest but increasing deforestation; new macroeconomic structural reforms; high income inequality.

17. Chile: export-driven economy; leading copper producer; though hit by COVID-19, quick rebound from increased liquidity and rapid vaccine rollouts; decreasing poverty but still lingering inequality; public debt rising but still manageable.

18. Columbia: prior to COVID-19, one of the most consistent growth economies; declining poverty; large stimulus package has mitigated economic fallout but delayed key infrastructure investments; successful inflation management; sound flexible exchange rate regime; domestic economy suffers from lack of trade integration and infrastructure.

19. Dominican Republic: surging middle-income tourism, construction, mining, and telecommunications OECS economy; major foreign US direct investment and free-

trade zones; developing local financial markets; improving debt management; declining poverty.

20. Mexico: one of the world's largest economies; USMCA buttresses its manufacturing sector; has underperformed growth targets for three decades; COVID-19 disrupted export-based economy; corruption and cartel-based violence undermine economic stability.

As noted, the above countries do not cover all the emerging economy group, the fact that other Asian country mainly in the Middle East (Saudi Arabia, Oman, Qatar….) excluded from this study because of their pledged exchange rate with the US dollar for decades, another fact that these countries economy is highly dependent on fossil energy production which is priced in global markets in US dollar, with regards of the emerging countries in Africa which also not included in this research as well due to the dependence on oil exports, Nigeria for example, and the availability of reliable data for other African emerging countries.

3.2 Data and Sources:

This study employs financial and economic annual data of each emerging country from secondary sources during 2003 – 2022, in total for 20 years. Data and sources of data employed in this study are presented in Table 3.1.

The data set in this study comprises Annual time-series data on US interest rates and exchange rates of 20 emerging economies from 2003 to 2022. The data was sourced from the Federal Reserve Economic Data (FRED), World Data Bank and the International Monetary Fund (IMF) databases. The key variables include the US Federal Funds Rate, the exchange rates of the emerging economies against the US dollar, and related macroeconomic indicators. STATA Software was used for the Hausman test, regression analysis and the model setup. Visualizations such as time series plots and scatter plots were used to explore patterns and relationships.

Table 3.1: Data and Sources

No.	Data	Unit	Source
1	Official exchange rate	LCU/1US$	IMF
2	FED Policy rate (US interest)	%	IMF
3	Real effective exchange rate	%	World bank data
4	Foreign direct investment inflow	%	World bank data
5	Inflation rate	%	World bank data
6	GDP growth	%	World bank data
7	Domestic interest rate	%	World bank data
8	external debt	%	World bank data
9	FED fund effective rate	%	FRED
10	Average lending rate	%	FRED
11	Average deposit rate	%	FRED
12	Export of goods and services	% of GDP	World bank data
13	Import of goods and services	% of GDP	World bank data
14	Exports of goods and services	US$	World bank data
15	Imports of goods and services	US$	World bank data
16	Net barter terms of trade index	%	World bank data

3.3 Analytical Method:

The analytical method is divided into three sections. The first section explores the situation and trend regarding US interest rates. The second section explores the situation and dynamic of the foreign exchange rate of 20 emerging countries. Eventually, the last section examines the effect of the US interest rate, as well as other macroeconomic factors, on the exchange rate of 20 emerging countries.

3.3.1 The Analysis of US Interest Rate:

In the section, I'll explore the situation regarding US interest rate, by employing

statistical measures such as the mean, standard deviation, maximum, and minimum values serves as an initial approach to understanding their dynamics, the mean provides a central reference point for assessing the prevailing interest rate environment, while the standard deviation offers a measure of volatility and risk in the market, crucial for risk management and investment decision-making. Furthermore, utilizing a line graph as a visual aid enhances data interpretation by illustrating trends, patterns, and anomalies in US interest rates, facilitating a more nuanced understanding of the market dynamics from an academic perspective.

3.3.2 The Analysis of Exchange Rate of Emerging Countries:

In the exploration of exchange rates and the appreciation/depreciation of domestic currencies in emerging countries regarding US interest rates and other macro factors, a detailed analysis incorporating statistical measures such as mean, standard deviation, maximum, and minimum values, in combination with a line graph, offers a robust basis for understanding dynamics, by leveraging statistical tools like the mean, can distinguish the average exchange rate levels and currency valuation trends, providing a vital basis for comparison and evaluation. The standard deviation, on the other hand, illuminates the degree of variability and risk inherent in currency fluctuations, aiding in risk assessment and decision-making processes. Moreover, employing a line graph as a visual aid enhances the analytical process by offering a graphical representation of exchange rate movements and currency fluctuations over time. This visual depiction allows for a more intuitive understanding of how US interest rates and other macroeconomic factors impact exchange rates and currency values in emerging countries.

3.3.3 The effect of US interest rates on overall emerging countries:

This section purposes to explore the influence of US interest rate changes by employing fixed effects and random effects regression analyses using the panel data. Note that an unbalanced panel data of 20 countries during 2004 – 2024, 400 countries-years, are examined. The estimated model can be expressed as the following.

$$NER = \beta_0 + \beta_1 USM_{in} + \beta_2 INF_{it} + \beta_3 NFR_{it} + \beta_4 FDV_{it} + \beta_5 EXD_{it} + \beta_6 TOD_{it} + \beta_7 GROW_{it} + \beta_8 TRB_{it} + \beta_9 TOT_{it} + \beta_{10} FXR + \mu_{1it} \quad (1)$$

$$RER = \delta_0 + \delta_1 USM_{in} + \delta_2 INF_{it} + \delta_3 NFR_{it} + \delta_4 FDV_{it} + \delta_5 EXD_{it} + \delta_6 TOD_{it} + \delta_7 GROW_{it} + \delta_8 TRB_{it} 6 + \delta_9 TOT_{it} + \delta_{10} FXR + \mu_{2it} \quad (2)$$

Dependent variables:

NER = Nominal exchange rate

RER = Real effective exchange rate

Independent variable:

USM_{in} = The US interest rate (% per year)

Control variables:

INF_{it} = Inflation rate (% per year)

NFR_{it}= Domestic interest rate (% per year)

FDV_{it}= Foreign direct investment, net onflow (% of GDP)

EXD_{it} = External debt (% of GNI)

TOD_{it} = Export + Impact as % of GDP

$GROW_{it}$ = GDP growth (% per year)

TRB_{it} = Trade Balance (% of GDP)

TOT_{it} = Terms of trade index %

FXR = Exchange rate regime (FXR = 1 if freely floating exchange rate and FXR = 0 if managed floating rate)

Fixed Effect Regression Model:

Due to panel data used in this study, there is an unobserved outcome of each country which also influences foreign exchange rate, causing pooled ordinary least

squares (OLS) estimators to be biased and inconsistent. Such bias is called heterogeneity bias which is caused by omitting a time-invariant unobserved effect (Wooldridge, 2003). In this study, such unobserved effects are a country fixed effect. Suppose that the variable ai presents all unobserved, time-invariant factors that affect exchange rare. The fixed effects regression model with unobserved effect, ai, can be presented as the following:

$$NER = \beta_0 + \beta_1 USM_{in} + \beta_2 INF_{it} + \beta_3 NFR_{it} + \beta_4 FDV_{it} + \beta_5 EXD_{it} + \beta_6 TOD_{it} + \beta_7 GROW_{it} + \beta_8 TRB_{it} + \beta_9 TOT_{it} + \beta_{10} FXR + a_i + \mu_{1it} \quad (3)$$

$$RER = \delta_0 + \delta_1 USM_{in} + \delta_2 INF_{it} + \delta_3 NFR_{it} + \delta_4 FDV_{it} + \delta_5 EXD_{it} + \delta_6 TOD_{it} + \delta_7 GROW_{it} + \delta_8 TRB_{it} 6 + \delta_9 TOT_{it} + \delta_{10} FXR + a_i + \mu_{2it} \quad (4)$$

Where a_i = an unobserved effect which affects the dependent variables and μ_i = the residual term

According to the fixed effects regression model, transform the model into the mean equation as the following.

$$\overline{NER} = \beta_0 + \beta_1 \overline{USM_{in}} + \beta_2 \overline{INF_{it}} + \beta_3 \overline{NFR_{it}} + \beta_4 \overline{FDV_{it}} + \beta_5 \overline{EXD_{it}} + \beta_6 \overline{TOD_{it}} + \beta_7 \overline{GROW_{it}} + \beta_8 \overline{TRB_{it}} + \beta_9 \overline{TOT_{it}} + \beta_{10} \overline{FXR} + a_i + \mu_{1it} \quad (5)$$

$$\overline{RER} = \delta_0 + \delta_1 \overline{USM_{in}} + \delta_2 \overline{INF_{it}} + \delta_3 \overline{NFR_{it}} + \delta_4 \overline{FDV_{it}} + \delta_5 \overline{EXD_{it}} + \delta_6 \overline{TOD_{it}} + \delta_7 \overline{GROW_{it}} + \delta_8 \overline{TRB_{it}} + \delta_9 \overline{TOT_{it}} + \delta_{10} \overline{FXR} + a_i + \mu_{2it} \quad (6)$$

Then,

NER- $\overline{NER}$= β_0+β_1(USM- $\overline{USM}$) + β_2(INF- $\overline{INF}$)+ β_3(NFR-¯ $\overline{NFR}$) +β_4(FDV- $\overline{FDV}$)

$+\beta_5$(EXD-$\overline{EXD}$)+ β_6(SIZE−$\overline{SIZE}$)+ β_7(GROW-$\overline{GROW}$) +β_8(TRB- $\overline{TRB}$) +β_9(TOT-$\overline{TOT}$) +β_{10}(FXR- $\overline{FXR}$) +(μ_{1it}-$\bar{}$μ) (7)

RER-$\overline{RER}$= δ_0+δ_1 (USM- $\overline{USM}$) +δ_2 (INF- $\overline{INF}$)+ δ_3 (NFR-$\bar{}$ $\overline{NFR}$) +δ_4 (FDV- $\overline{FDV}$) +δ_5 (EXD-$\overline{EXD}$)+ δ_6(SIZE−$\overline{SIZE}$)+ δ_7 (GROW-$\overline{GROW}$) +δ_8 (TRB- $\overline{TRB}$) +δ_9 (TOT-$\overline{TOT}$)+ δ_{10} (FXR- $\overline{FXR}$) +(μ_{2it}-$\bar{}$μ) (8)

Corresponding to (Wooldridge, 2003), fixed effects regression analysis is suitable for estimating panel data if the unobserved effect, ai, is correlated with one or more explanatory variables in the model. But if ai is uncorrelated with explanatory variables in all time periods, random effects regression analysis is more appropriate.

Random Effects Regression Model:

In the random effects regression concept, ai is uncorrelated with explanatory variables. Thus, the country is instead considered as random effect. In this case, ai is considered as a part of residual term, called composite error time (v_{it}) as $v_{it} = a_i + \mu_{it}$ (Wooldridge, 2003). hence, the random effects model can be identified as the following:

$$NER = \beta_0 + \beta_1 USM_{in} + \beta_2 INF_{it} + \beta_3 NFR_{it} + \beta_4 FDV_{it} + \beta_5 EXD_{it} + \beta_6 TOD_{it} + \beta_7 GROW_{it} + \beta_8 TRB_{it} + \beta_9 TOT_{it} + \beta_{10} FXR + v_{1it}$$

(9)

$$RER = \delta_0 + \delta_1 USM_{in} + \delta_2 INF_{it} + \delta_3 NFR_{it} + \delta_4 FDV_{it} + \delta_5 EXD_{it} + \delta_6 TOD_{it} + \delta_7 GROW_{it} + \delta_8 TRB_{it} 6 + \delta_9 TOT_{it} + \delta_{10} FXR + v_{1it}$$

(10)

The v_{1it} serially correlated across time since a_i is in the composite error in each interval. which is below:

$$\text{Corr}(v_{it}, v_{is}) = \frac{\sigma_a^2}{(\sigma_a^2 + \sigma_\mu^2)}, t \neq s$$

Where σ_a^2 is the variance of a_i and σ_μ^2 is the variance of μ .

Hausman Test:

Whether fixed or random effects regression model will be accepted depends on the Hausman test which tests whether random effects estimation would be appropriate. The null hypothesis (H0) and the alternative hypothesis (Ha) for the Hausman test are as below:

H0: Unobserved effects, a_i, and explanatory variables are uncorrelated, implying that random effects would be consistent and efficient. (Choose RE)

Ha: Unobserved effect, a_i, and explanatory variables are correlated, implying that random effects would be inconsistent and inefficient. (Choose FE)

If the Hausman test statistics are statistically significant at 5 % level, it means that the random effects are inconsistent, implying that the fixed effects are assumed.

In the Study, there will be four models to be analyzed as per the following:

a. Overall emerging countries
b. Asian emerging countries
c. European emerging countries
d. North and Latin American emerging countries.

3.4 Research Assumptions:

1. The US interest rate has a negative effect on the foreign exchange rate of emerging countries, that is, an increase in the US interest rate will lead to an increase in the exchange rate, implying the depreciation of the domestic currency against the US Dollar.
2. The inflation rate has a negative effect on the exchange rate of emerging countries. Thus, an increase in the inflation rate will lead to an increase in the exchange rate, implying weakened domestic currency.
3. The domestic interest rate has a positive relationship with the foreign exchange rate, meaning that an increase in the country's interest rate will lead

to a decrease in the exchange rate and appreciation of the local currency.

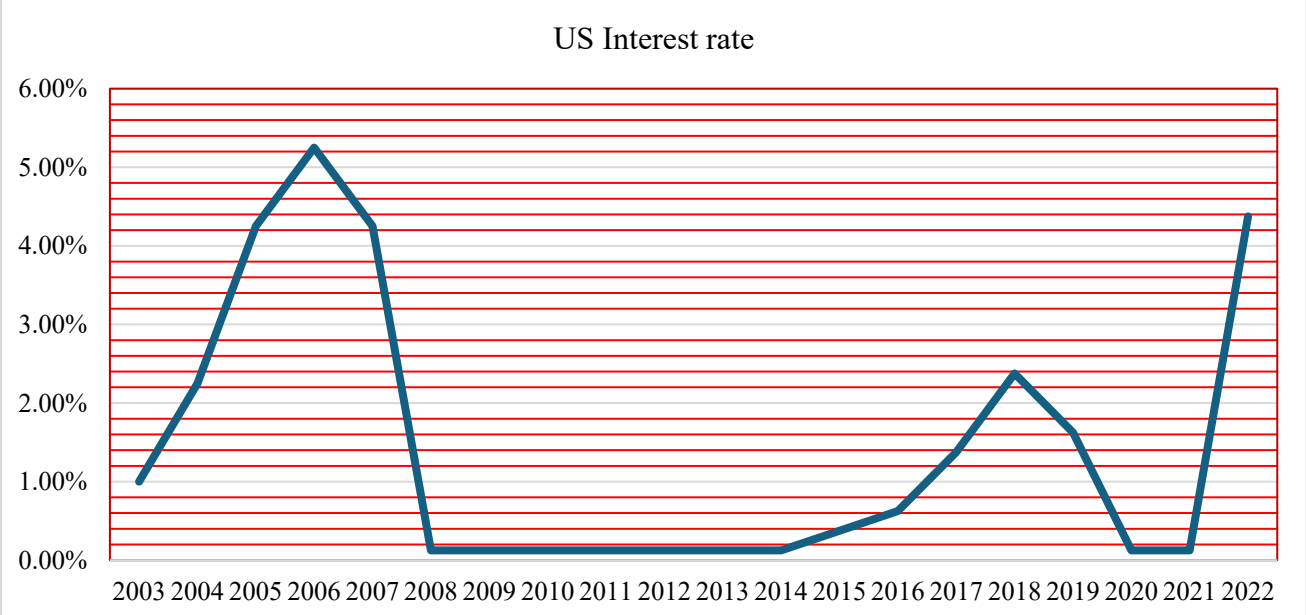
4. FDI has a positive impact on local currency, an increase in FDI will lead to a decrease in the exchange rate and appreciation of the local currency.
5. External debt has a negative effect on the exchange rate of emerging countries. A high level of external debt will lead to an increase in the exchange rate, implying weakened domestic currency.
6. GDP growth will lead to a decrease in the foreign exchange rate and an appreciation of the local currency.
7. The trade balance has a positive impact on the exchange rate, meaning that an increase in the country's trade balance will lead to a decrease in the exchange rate and appreciation of the local currency.
8. Trade openness has a negative effect on the exchange rate of emerging countries. A high level of trade openness will lead to an increase in the exchange rate, implying weakened domestic currency
9. Terms of trade have a positive impact on the exchange rate, meaning that an increase in the country's terms of trade ratio will lead to a decrease in the exchange rate and appreciation of the local currency.

CHAPTER 4
RESEARCH FINDINGS

4.1 Movement and Descriptive Statistics of US Interest Rate:

Figure 4.1 represents the US interest rate, as measured by yearly average, for study period where the chart line visually demonstrates the trend and fluctuations of the interest rate over time. The interest rate starts low (around 1% in 2003) and increases progressively, reaching a high of approximately 5.25% by 2006, The slow economic growth, inflationary pressures and the Fed's preventive efforts to combat inflation were the primary factors behind the initial period of rising US interest rates from 2003 to 2006. Following the 2008 financial crisis, the interest rate dropped significantly and persisted close to 0% for around 7 years which reflects the Federal Reserve's response to the financial crisis, employing near-zero interest rates to stimulate economic growth.

Figure 4.1: US Interest rate movement (FED policy rate annual average)



Starting 2015, the interest rate begins a slow, gradual hike, reflecting the economic recovery and the Federal Reserve's efforts to regulate monetary policy after the crisis, then the rate reaches approximately 2.25% by late 2018. Economic slowdown activity and COVID19 lead to a sharp decrease in the interest rate in 2019 and 2020. Lastly, the FED started increasing the interest rate in 2021 to combat the high inflation due to the noted increase in money supply during covid among other reasons.

Table 4.1 represents the Mean of the US interest rate over the period is around 1.44%, indicating the average level of US interest rates, The standard deviation is about 1.66%, which shows acceptable variability in interest rates. The maximum interest rate reached 5.25%, representing the peak during this period while the minimum interest rate was 0.125%, showing the lowest rate during this period, the spread between the maximum and minimum rates (5.12 %age points) indicates major fluctuation during this period. The standard deviation is larger than the Mean which implies considerable volatility in interest rates comparative to their average level for the period under study.

Table 4.1: Descriptive statistics of US interest rate

Mean	1.44%
Std. Dev.	0.016
Minimum	0.13%
Maximum	5.25%

4.2 Situation and Trend of Foreign Exchange Rate of Emerging Countries:

4.2.1 Nominal Exchange Rate:

The below table summarizes data for nominal exchange rates (in local currency/USD) of Asian emerging countries, each column corresponds to a different country, indicating the variation in nominal exchange rates among the Asian emerging markets to give an overall sense of typical values and the variability of the exchange rates.

In summary, these figures offer insight into both historical exchange rates and their variations over time

Table 4.2: Nominal Exchange Rate of Asian Emerging Countries

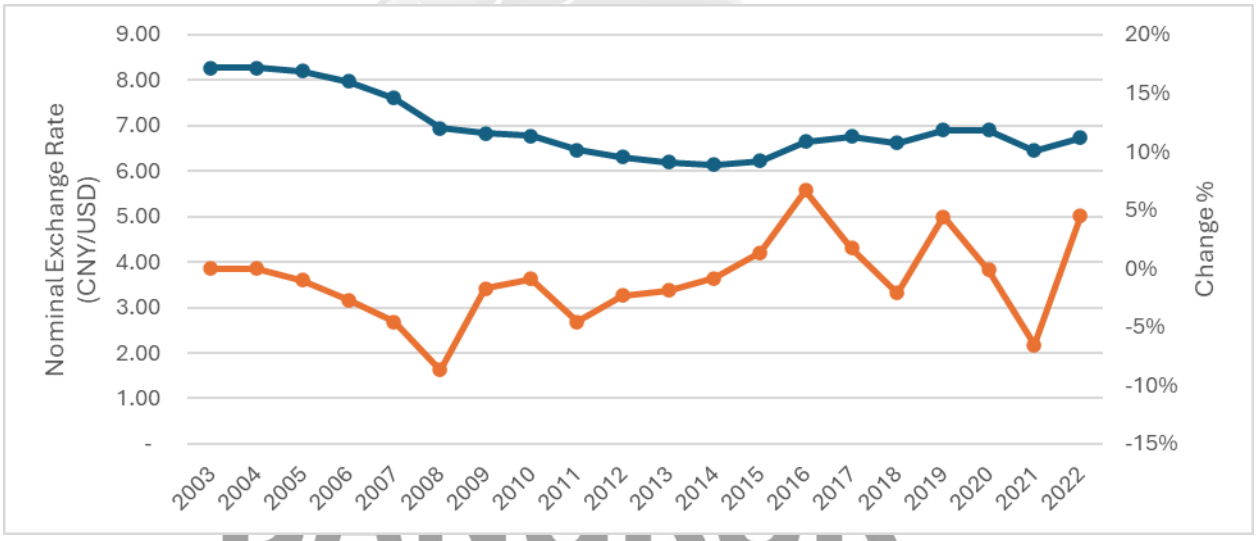
Year	CN	BD	IN	ID	MY	PH	TH	VT
2003	8.27	58.15	46.58	8,577.1	3.8	54.20	41.48	15,509.5
2022	6.73	91.74	78.60	14,849.8	4.4	54.47	35.06	23,271.2
2003-2007	8.06	63.96	44.53	9,104.2	3.69	52.56	38.86	15,842.7
2008-2012	6.66	72.66	47.54	9,467.2	3.24	44.53	32.17	18,663.6
2013-2017	6.39	78.52	63.21	12,481	3.75	46.04	33.34	21,616.8
2018-2022	6.72	85.92	73.08	14,424.9	4.18	51.56	32.34	23,058.3
Average	7.14	75.16	58.92	11,484.03	3.84	50.56	35.54	19,660.35
Std. Dev	0.6900	8.8629	12.0218	2301.3566	0.4244	3.2691	2936.2384	3193.9922
Maximum	8.27	91.74	78.60	14849.85	4.40	56.03	41.48	23271.2
Minimum	6.14	58.15	41.34	8577.13	3.06	42.22	30.49	15509.5

Remark**:** Figures in the table are nominal exchange of each country (LCU/USD). CN = China, BD = Bangladesh, IN = India, ID = Indonesia, MY = Malaysia, PH = Philippines, TH = Thailand, VT = Vietnam

The CNY/USD exchange rate begins with a clear downward trend from 2003, indicating a strengthening of the Chinese Yuan with a sharp decrease in the nominal exchange rate around 2008, probably because of the US financial crisis. Afterwards, the exchange rate becomes more unstable, showing periods of both appreciation and depreciation of the Yuan against the dollar. Finally, by 2022, the exchange rate has

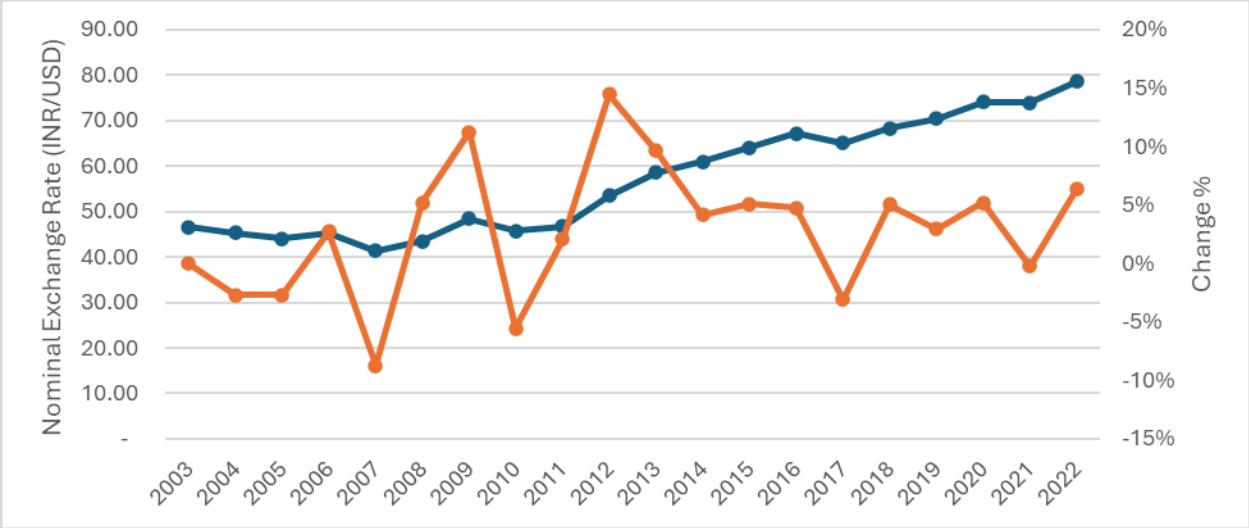
settled at a level slightly lower than its low point around 2008, but still within the range of fluctuation.

Figure 4.2: Movement of Nominal Exchange Rate of China



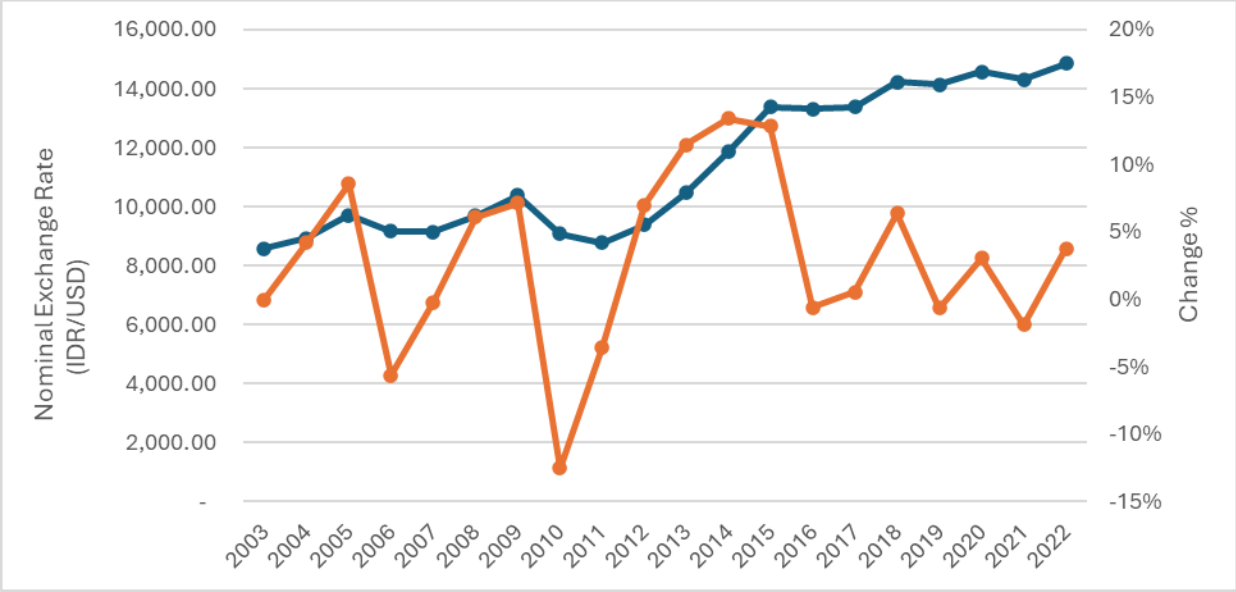
The graph below reveals the trends in the nominal exchange rate of the (INR) per (USD) from 2003 to 2022 along with the corresponding % change. Throughout this period, the nominal exchange rate shows a general upward trend, indicating a continuing depreciation of the Rupee against the Dollar. However, the % change shows significant volatility, particularly between 2008 and 2016, indicating periods of pressure on currency. Regardless of this fluctuation, the nominal exchange rate climbed from about 45 INR/USD in 2003 to around 80 INR/USD in 2022 which is a considerable shift in exchange rate.

Figure 4.3: Movement of Nominal Exchange Rate of India



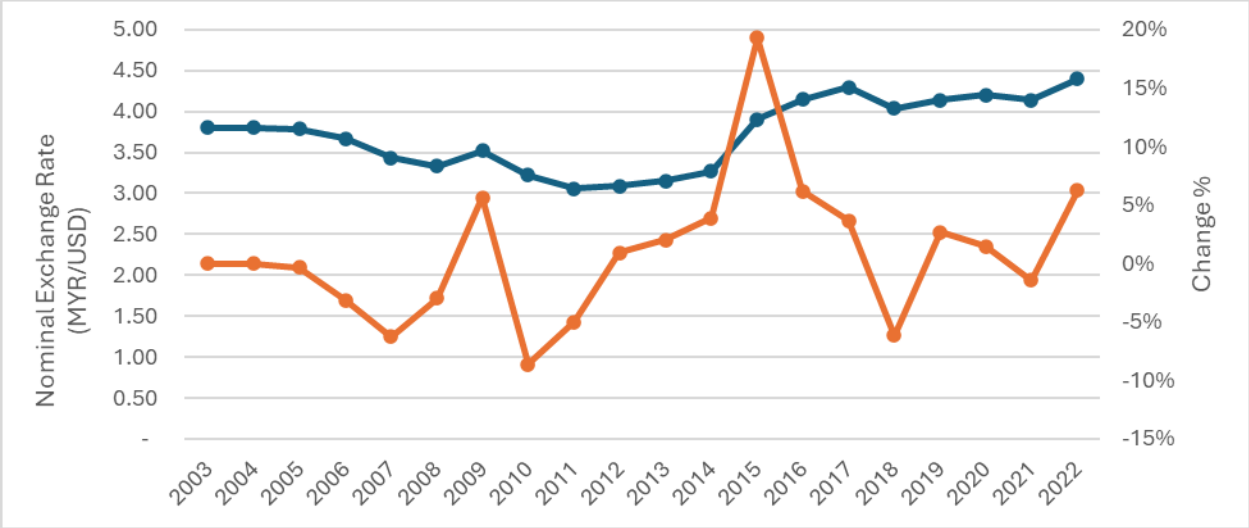
The graph below depicts the trends in the nominal exchange rate of the (IDR) per (USD) from 2003 to 2022, along with the corresponding % change. Over the years, the nominal exchange rate generally trends upward, indicating a gradual depreciation of the Rupiah against the Dollar. Significant fluctuations in the % change, particularly between 2010 and 2015, the nominal exchange rate increased from about 8,000 IDR/USD in 2003 to approximately 15,000 IDR/USD in 2022. Regardless of some years experiencing relative stability.

Figure 4.4: Movement of Nominal Exchange Rate of Indonesia



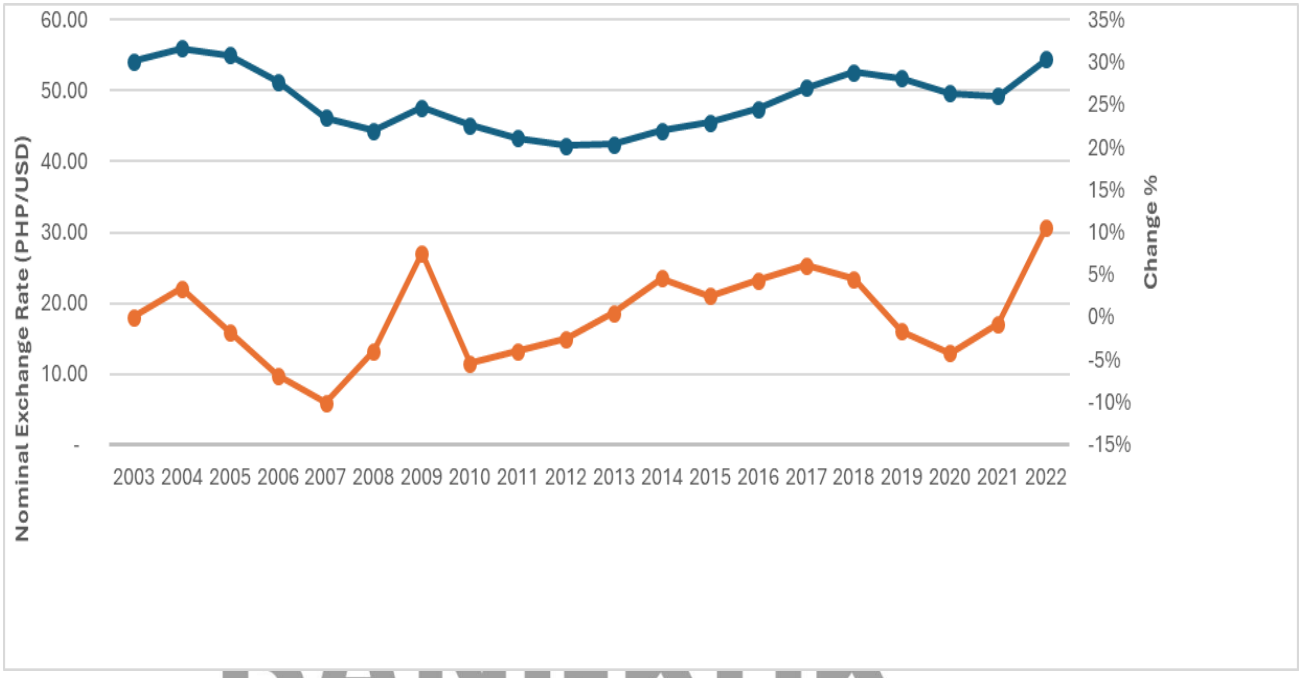
The below graph demonstrates the trends in the nominal exchange rate of the Malaysian Ringgit (MYR) per US Dollar (USD) from 2003 to 2022, alongside the corresponding % change. The nominal exchange rate remains relatively stable, with only gradual increases, reflecting a somehow steady value for the Ringgit against the Dollar comparing to the other Asian countries. However, there are remarkable spikes in the % change in the year 2015, indicating periods of significant volatility and adjustment, the exchange rate increased from approximately 3.80 MYR/USD in 2003 to about 4.40 MYR/USD in 2022.

Figure 4.5: Movement of Nominal Exchange Rate of Malaysia



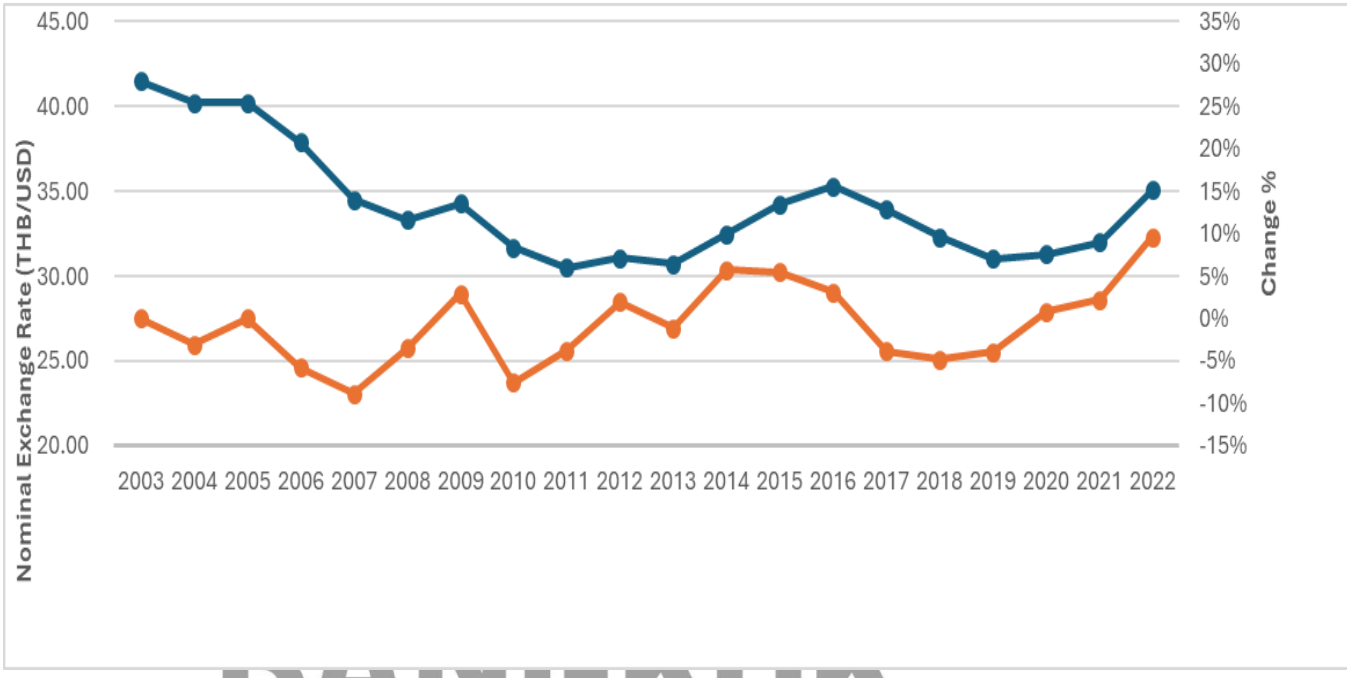
The below graph displays the Philippine Peso to US Dollar exchange rate from 2003-2022. The nominal exchange rate shows a general upward trend, indicating long-term PHP depreciation against USD. However, year-over-year % changes between 2007 and 2011 show significant volatility, with periods of both appreciation and depreciation. Notable peaks and troughs in % change are observed around 2009 and 2021, highlighting strong shifts in the exchange rate during those times. Overall, the peso depreciated considerably against the dollar.

Figure 4.6: Movement of Nominal Exchange Rate of Philippines



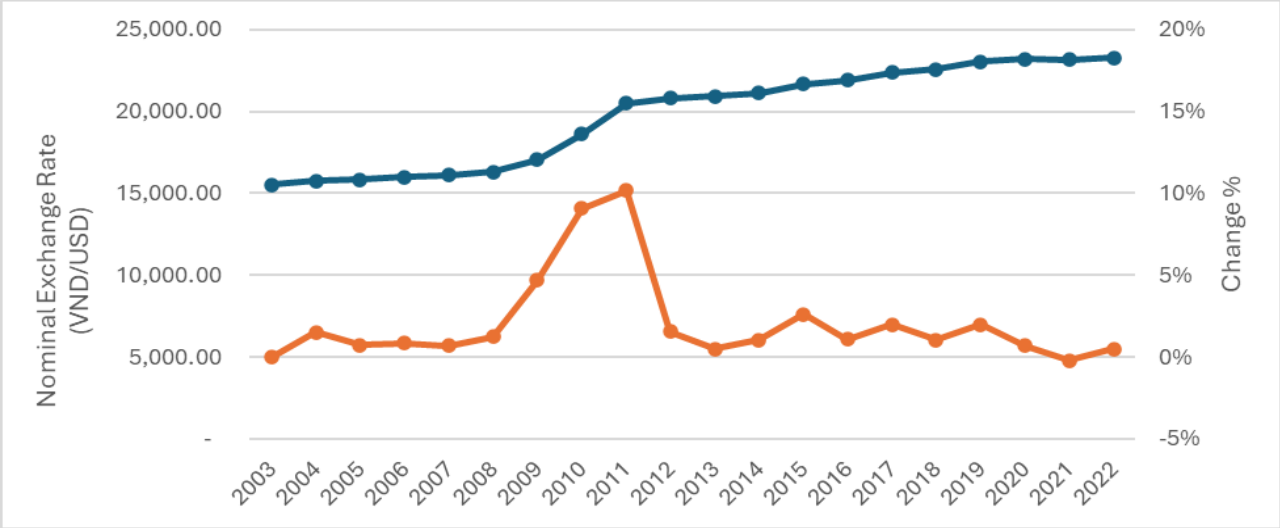
The below graph illustrates the Thai Baht (THB) to US Dollar (USD) exchange rate from 2003 to 2022, showing a relatively stable range with slight fluctuations over the period where an appreciation of THB occurred in the first ten years then the foreign exchange rate gradually rose for the remaining of the period. The % of change reveals substantial volatility, while the nominal rate remains within a similar range, the % changes show periods of both appreciation and depreciation of the THB against the USD with a notable appreciation from 2003 till 2013.

Figure 4.7: Movement of Nominal Exchange Rate of Thailand



The below graph shows the Vietnamese Dong (VND) to US Dollar (USD) exchange rate from 2003-2022), which demonstrates a slow but steady increase over the two decades with a higher % in increase from 2008 till 2011. While the long-term trend shows a gradual weakening of the VND against the USD, the fluctuations exhibit periods of appreciation and depreciation, the significant, overall trend is one of regular VND devaluation linked to the US dollar.

Figure 4.8: Movement of Nominal Exchange Rate of Vietnam



The table below summarizes data for nominal exchange rates (in local currency/USD) of European emerging countries, each column corresponds to a different country, indicating the variation in nominal exchange rates among the European emerging markets to give an overall sense of typical values and the variability of the exchange rates.

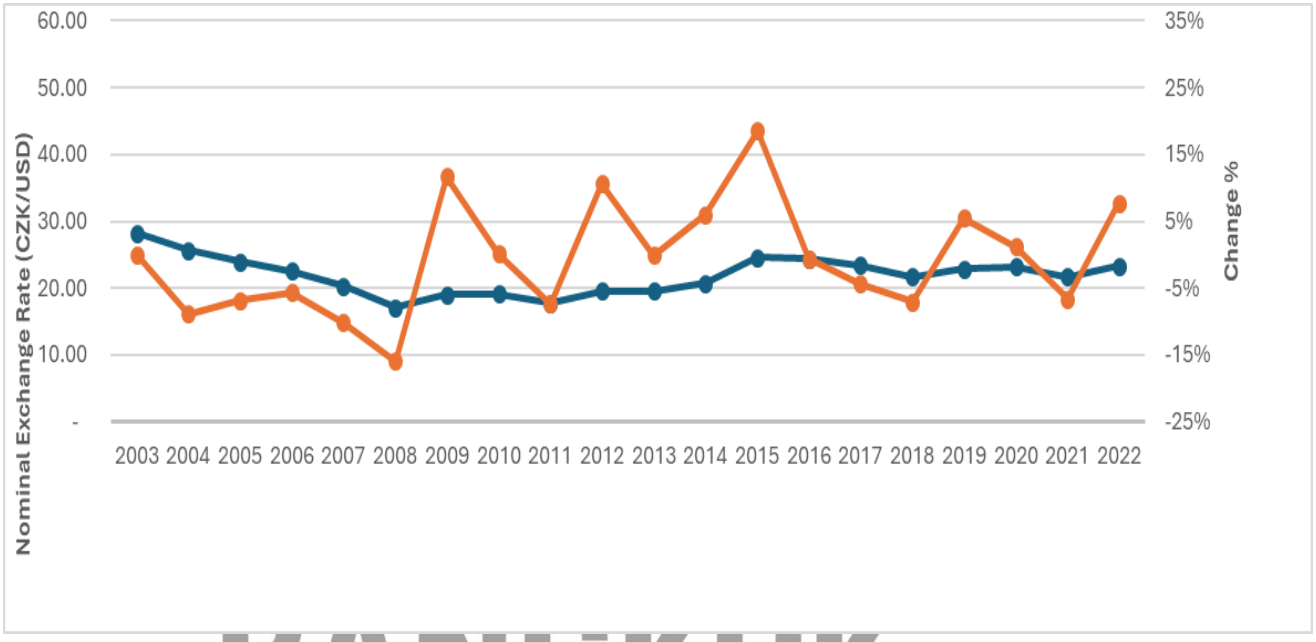
Table 4.3: Nominal Exchange Rate of European Emerging Countries

Year	BG	CZ	HU	PL	RO	TR
2003	1.73	28.21	224.31	3.89	3.32	1.50
2022	1.86	23.36	372.60	4.46	4.69	16.55
2003-2007	1.57	24.15	204.13	3.33	2.95	1.40
2008-2012	1.43	18.50	201.71	2.95	3.05	1.57
2013-2017	1.64	22.55	258.32	3.56	3.76	2.70
2018-2022	1.73	22.58	308.92	3.93	4.25	8.58
Average	1.59	21.95	243.27	3.44	3.50	3.56
Std. Dev	0.15	2.82	51.48	0.50	0.63	3.73
Maximum	1.86	28.21	372.60	4.46	4.69	16.55
Minimum	1.34	17.07	172.11	2.41	2.44	1.30

Remark: Figures in the table are nominal exchange of each country (LCU/USD). BG = Bulgaria, CZ = Czechia, HU = Hungary, PL = Poland, RO = Romania, TR = Türkiye

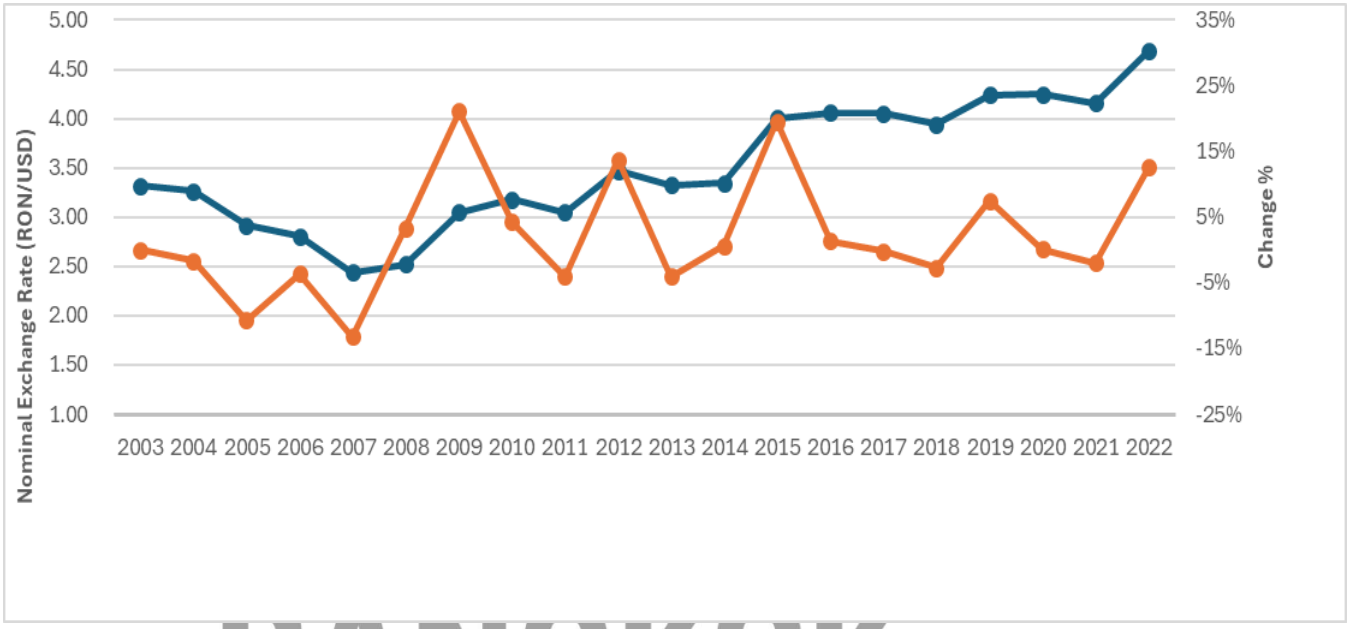
The figure below shows the nominal exchange rate in Czech Republic which remains relatively stable over the years, with minor fluctuations. The % change exhibits significant volatility, with sharp peaks and troughs, particularly in 2009, 2015, and 2022. The nominal exchange rate appears to have a slight upward trend in recent years, while the % change stabilizes around smaller fluctuations. This chart highlights the relationship between the exchange rate's stability and the variability in its rate of change. There is a notable change in CZK/USD exchange rate, especially during 2009, 2015, and 2022.

Figure 4.9: Movement of Nominal Exchange Rate of Czechia



The figure below shows the movement of the nominal exchange rate in Romania (RON/USD) and its % change over the years 2003 to 2022 shows a gradual upward trend over the years, indicating a depreciation of the RON against the USD. Then the rate stabilizes between 4.0 and 4.2 RON/USD from 2013 to 2020, a sharper increase is observed after 2020, reaching its highest point in 2022. After 2015, the % change stabilizes somewhat, with smaller fluctuations. A positive % change is observed in 2022, aligning with the increase in the nominal exchange rate.

Figure 4.9: Movement of Nominal Exchange Rate of Romania



The figure below presents the nominal exchange rate movement in Turkey (TL/USD) and the % change for the years 2003 to 2022. The nominal exchange rate shows a gradual upward trend, indicating a consistent decrease in the value of the Turkish lira the US dollar over the period. the % change, which fluctuates significantly, with definite spikes throughout the years. Notably, the % change climbs sharply toward the end of the timeline, suggesting periods of heightened volatility or economic shifts impacting the exchange rate.

Figure 4.11: Movement of Nominal Exchange Rate of Türkiye

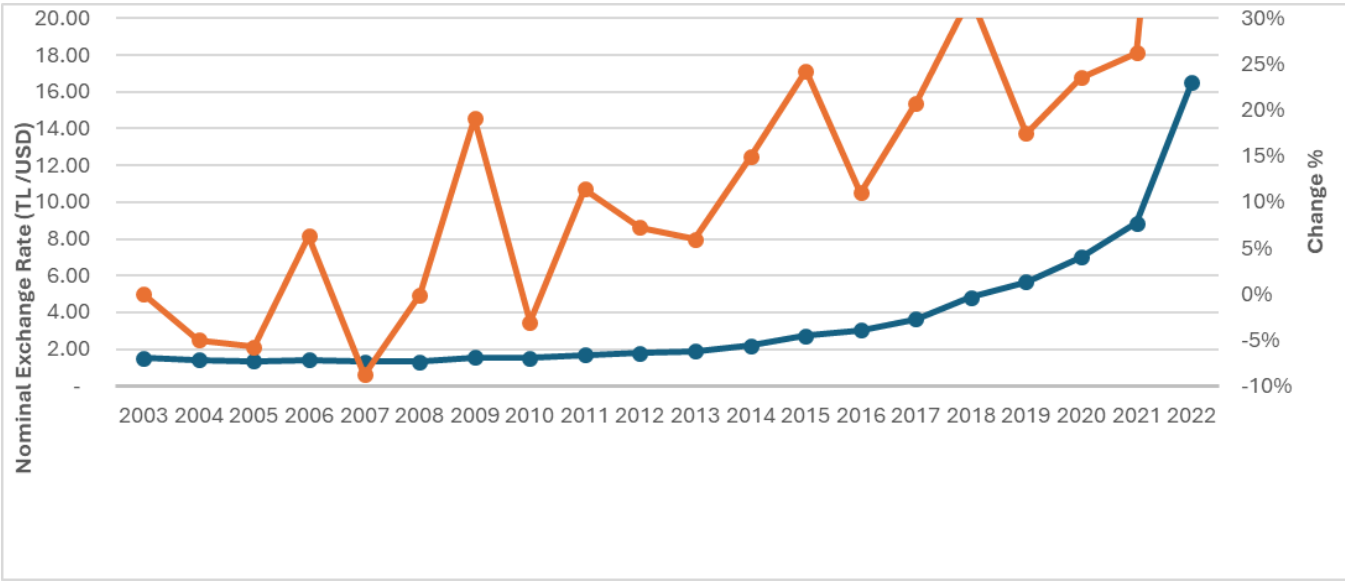


Table 4.4 shows the data of nominal exchange rates (in local currency/USD) of Americans emerging countries, each column corresponds to a different country, indicating the variation in nominal exchange rates among the Americans emerging markets to give an overall sense of typical values and the variability of the exchange rates.

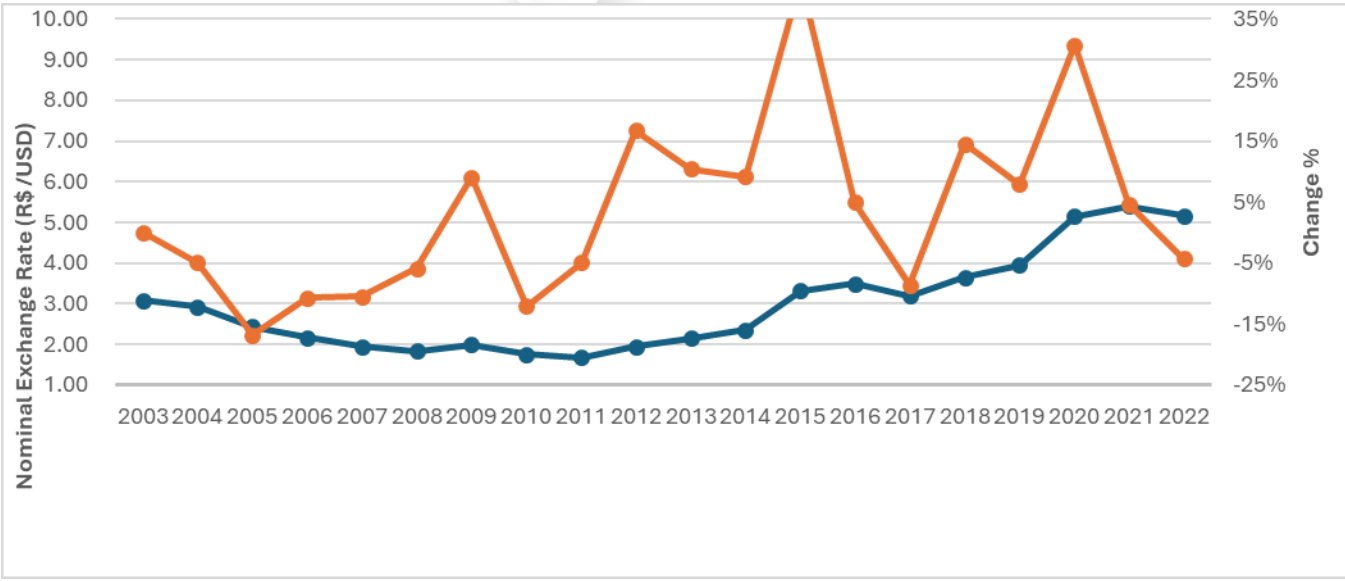
Table 4.4: Nominal Exchange Rate of Americans Emerging Countries

Year	ARG	BR	CH	COL	DMR	MEX
2003	2.90	3.08	691.40	2,877.54	29.37	10.79
2022	130.62	5.16	873.31	4,256.19	55.14	20.13
2003-2007	2.98	2.51	582.69	2,452.69	33.61	10.96
2008-2012	3.88	1.84	512.74	1,933.55	36.95	12.57
2013-2017	10.82	2.90	609.11	2,523.70	44.80	15.90
2018-2022	74.48	4.66	753.83	3,586.21	53.94	20.08
Average	23.04	2.98	614.59	2,624.04	42.32	14.88
Std. Dev	35.80	1.19	110.31	720.26	8.60	3.87
Maximum	130.62	5.39	873.31	4,256.19	57.22	21.49
Minimum	2.90	1.67	483.67	1,798.01	29.37	10.79

Remark: Figures in the table are nominal exchange of each country (LCU/USD). ARG = Argentina, BR = Brazil, CH = Chile, COL = Colombia, DMR = Dominican Republic, MEX = Mexico

The figure below illustrates the nominal exchange rate (R$/USD) in Brazil and the % change from 2003 to 2022. The blue line, indicating the nominal exchange rate, remains relatively steady with minor fluctuations, suggesting stability against the US dollar, the orange line representing the % change exhibits significant volatility, with sharp peaks and falls, especially noticeable in 2008, 2011, and 2016. The most significant movements are seen during the 2008-2009 financial crisis period, showing around 10% % of change while the recent years 2021-2022 show stability of the exchange rate.

Figure 4.12: Movement of Nominal Exchange Rate of Brazil



The figure below shows the nominal exchange rate (DOP/USD) in the Dominican Republic and its % change from 2003 to 2022, the nominal exchange rate (DOP/USD) in the Dominican Republic alongside its % change from 2003 to 2022. The nominal exchange rate shows a meaningful increase overall, indicating a devaluation against the US dollar in a consistent upward trend. A notable spike is observed in 2004, reflecting a sharp adjustment, the % change exhibits considerable fluctuations throughout the period, suggesting episodes of volatility and economic shifts. This divergence highlights how exchange rate stability can occur even amidst varying levels of market dynamics reflected in % changes.

Figure 4.13: Movement of Nominal Exchange Rate of Dominican Republic

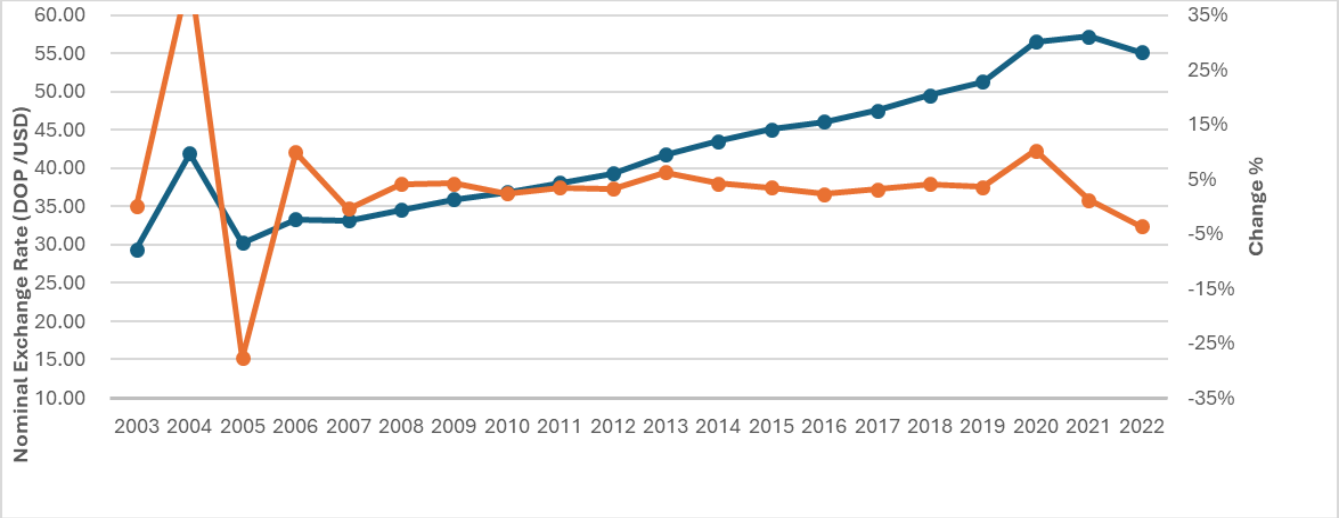


Table 4.14**:** Correlations coefficient of independent variable and control variables in case of Asian Countries

Variable	USM	INF	NFR	FDV	EXD	TOD	GROW	TRB	TOT
USM	1.0000								
INF	0.0681	1.0000							
NFR	0.0002	0.7365*	1.0000						
FDV	0.0609	0.1493	-0.0475	1.0000					
EXD	0.0593	-0.0076	-0.0834	0.1296	1.0000				
TOD	0.0881	-0.0814	0.3076*	0.6064*	0.5539*	1.0000			
GROW	0.0558	0.3764*	0.4599*	-0.018	0.1264	0.4093*	1.0000		
TRB	0.2227	0.1303	0.2403*	0.1711*	0.4465*	0.2889*	0.2203*	1.0000	
TOT	0.0407	0.1767*	0.1755*	-0.0953	0.3044*	0.0642	0.1913*	0.2259*	1.0000

Remark:

(1) USM = US interest rate, INF = Inflation rate (%), NFR = Domestic intertest rate (%), FDV = FDI inflow, EXD = External debt %, TOD = Trade openness %, GROW= GDP growth, TRB = Trade balance % of GDP, TOT = Terms of trade %

(2) * indicates statistical significance at 5 % level.

Table 4.15 shows correlations between the US interest rate (the independent

variable) and other macroeconomic variables for Asian emerging economies. While some statistically significant correlations exist, no pair of variables exhibits a very strong linear relationship (correlation coefficients above 0.8 or below -0.8). This lack of high correlation indicates no serious multicollinearity issues, validating the use of both fixed and random effects regression models in this study.

Table 4.15: Correlations coefficient of independent variable and control variables in case of European countries

Variable	USM	INF	NFR	FDV	EXD	TOD	GROW	TRB	TOT
USM	1.0000								
INF	0.2812*	1.0000							
NFR	0.0860	0.6064	1.0000						
FDV	0.0904	0.0325	-0.1257	1.0000					
EXD	-0.1699	0.0455	-0.1154	0.1824*	1.0000				
TOD	-0.0313	0.2497	0.6375*	0.2376*	0.2686*	1.0000			
GROW	-0.3958	0.2320*	-0.1739	-0.1845	-0.1035	0.3013*	1.0000		
TRB	0.3901*	0.1892*	0.2010*	-0.1079	0.2207*	0.2518*	0.3440*	1.0000	
TOT	0.0058	0.1997*	0.2901*	-0.0261	0.2777*	0.1700	0.3257*	0.1500	1.0000

Remark:

(1) USM = US interest rate, INF = Inflation rate (%), NFR = Domestic intertest rate (%), FDV = FDI inflow, EXD = External debt %, TOD = Trade openness %, GROW= GDP growth, TRB = Trade balance % of GDP, TOT = Terms of trade %,

(2) * indicates statistical significance at 5 % level.

Analysis of the correlation matrix in Table 4.16 below reveals no evidence of multicollinearity among the variables used in the fixed and random effects regression models for Asian emerging economies. Although some significant correlations exist between the US interest rate (the independent variable) and other variables, none are strong enough (i.e., above 0.8 or below -0.8) to cause concern about multicollinearity bias, thus supporting the validity of the regression models employed.

Table 4.16: Correlations coefficient of independent variable and control variables in case of Americans countries

Variable	USM	INF	NFR	FDV	EXD	TOD	GROW	TRB	TOT
USM	1.0000								
INF	0.0704	1.0000							
NFR	0.0932	0.9138*	1.0000						
FDV	-0.0587	0.2566*	0.2977*	1.0000					
EXD	0.0231	0.2789*	0.1514	0.2530*	1.0000				
TOD	0.0830	0.2278*	-0.4014	0.3936	0.0662	1.0000			
GROW	0.2519*	0.1818*	0.1440	0.3121*	0.2423	0.0853	1.0000		
TRB	0.3056*	-0.1516	-0.2163	0.0950	0.0130	0.2168	0.0099	1.0000	
TOT	0.2410*	0.1595*	-0.1642	0.0372	0.3805*	0.2031*	0.3232*	0.0133	1.0000

Remark:

(1) USM = US interest rate, INF = Inflation rate (%), NFR = Domestic intertest rate (%), FDV = FDI inflow, EXD = External debt %, TOD = Trade openness %, GROW= GDP growth, TRB = Trade balance % of GDP, TOT = Terms of trade %

(2) * indicates statistical significance at 5 % level.

Table 4.17 below presents a correlation matrix probing the linear relationship among independent variable, which is US interest rate, and the other controlling variables in the fixed and random effects regression models in case of Asian emerging economies. The table reviews that regardless of statistically significant linear relationships between several pairs of variables, there are no pairs of variables with correlation coefficients over 0.8 or under -0.8 which imply high linear relationship between them. As a result, there is no multicollinearity problem in the fixed and random effects regression analyses in this study. Thus, fixed and random effects regression models in this study are valid.

Table 4.17: Correlations coefficient of independent variable and control variables

Variable	USM	INF	NFR	FDV	EXD	TOD	GROW	TRB	TOT
USM	1.0000								
INF	0.1229*	1.0000							
NFR	0.0643	0.7967*	1.0000						
FDV	0.0484	-0.0349	-0.0913	1.0000					
EXD	-0.0314	0.0786	0.0155	0.2069*	1.0000				
TOD	0.0407	0.1867*	0.3865*	0.2210*	0.4042*	1.0000			
GROW	-0.0496	0.1174*	0.1728*	0.1978*	0.2093	0.2273	1.0000		
TRB	0.2914	-0.0259	-0.0252	-0.0709	0.2704*	0.1374*	-0.0656	1.0000	
TOT	-0.0914	-0.0797	-0.0716	-0.0079	0.1157*	0.1485*	-0.0660	0.1260*	1.0000
FXR	0.0000	-0.0613	0.1013	0.1249*	0.1929*	0.1439*	0.3444*	0.1258*	0.3125*

Remark**:**

(1) USM = US interest rate, INF = Inflation rate (%), NFR = Domestic intertest rate (%), FDV = FDI inflow, EXD = External debt %, TOD = Trade openness %, GROW= GDP growth, TRB = Trade balance % of GDP, TOT = Terms of trade %

(2) * indicates statistical significance at 5 % level.

4.3 Impact of US Interest Rate on Nominal Exchange Rate

4.3.1 Asian Emerging Economies:

Table 4.18 presents the results from the fixed and random effects regression analyses in case of Asian emerging economies. According to the table, Hausman test statistics are equal to 149.32 with the P-Value of 0.0000, indicating that random effects are inconsistent and inefficient. That is, that the fixed effects model is more appropriate than the random effects model. Consequently, the fixed effects model is selected to examine the nominal exchange rate of Asian emerging economies. Moreover, the R-Squared is 0.1476, meaning that approximately 14.76 % of the variations in nominal exchange rates can be explained by the independent and controlling variables in the regression model.

According to Table 4.18, the coefficient of US interest rate is 0.0051 with the P-

Value of 0.468, implying that US interest rate is not statistically significant at any level. However, regardless of the statistical significance, the US interest rate is found to have a positive impact on nominal exchange rate. That is, a one % increase in the US interest rate will cause the nominal exchange rate to increase by 0.51 %. In other words, a one % increase in the US interest rate will cause the domestic currency to depreciate by 0.51 %.

Table 4.18: Analysis of Nominal Exchange Rate Using Fixed and Random Effects Regression Model in case of Asian Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	0.0051	0.0070	0.4680	0.0066	0.0994	0.9470
INF	-0.0158**	0.0061	0.0110	-0.3541***	0.0777	0.0000
NFR	-0.0017	0.0096	0.8570	0.7413***	0.0866	0.0000
FDV	0.0260**	0.0131	0.0490	0.3989**	0.1596	0.0120
EXD	0.0035**	0.0017	0.0390	0.0557***	0.0192	0.004
TOD	0.0005	0.0009	0.6100	0.0058	0.0067	0.3830
TRB	-0.0024	0.0042	0.5540	-0.2245***	0.0475	0
GROW	-0.0050	0.0046	0.2840	0.0158	0.0626	0.8010
TOT	0.0015	0.0015	0.317	0.0463**	0.0211	0.028
Constant	4.5185***	0.1723	0.0000	4.4608**	2.1339	0.0370
Observation	160			160		
R-Squared	0.1476			0.5670		
Hausman Test	149.32					
P-Value	0.0000					
Selected Model	Fixed effect model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively.

The findings reveal that there are three controlling variables which are statistically significant, including inflation rate, foreign direct investment and external debt.

The coefficient of inflation rate (INF) is -0.0158 with the P-Value of 0.0110, implying that the nominal exchange rate is negatively affected by domestic inflation rate. This result indicates that a one % increase in the inflation rate will lead to a 1.58 %

decrease in the nominal exchange rate or 1.58 appreciation of the local currency.

The coefficient of foreign direct investment (FDV) is 0.026 with the P-Value of 0.049, implying that the nominal exchange rate is positively affected by FDI inflow. This result indicates that a one % increase in FDI inflow will lead to a 2.6 % increase in the nominal exchange rate or 2.6 % depreciation of the local currency.

The coefficient of external debt (EXD) is 0.0035 with the P-Value of 0.039, implying that the nominal exchange rate is positively affected by external debt. This result indicates that a one % increase in external debt will lead to a 0.35 % increase in the nominal exchange rate or a 0.35% depreciation of the local currency.

The other controlling variables, including local domestic interest rate, trade openness, trade balance, economic growth and terms of trade are not statistically significant at any level, suggesting that they do not have significant impact on the nominal exchange rate of Asian emerging countries. Nevertheless, regardless of the statistical significance, the impact of each variable can be summarized as the following.

The domestic interest rate (NFR) has a negative effect on the nominal exchange rate. One % increase in the domestic exchange rate will lead to a 0.17 % decrease in the nominal exchange rate or 0.17 % appreciation of the local currency.

The coefficient of trade openness degree (TOD) is 0.0005 with the P-Value of 0.6100, implying that the nominal exchange rate is positively affected by trade openness. This result indicates that a one % increase in trade openness will lead to a 0.05 % increase in the nominal exchange rate or 0.05 % depreciation of the local currency.

The coefficient of trade balance (TRB) is -0.0024 with the P-Value of 0.554, implying that the nominal exchange rate is negatively affected by trade balance. This result indicates that a one % increase in the trade balance will lead to a 0.24 % decrease in the nominal exchange rate or 0.24 % appreciation of the local currency.

The coefficient of economic growth (GROW) is -0.005 with the P-Value of 0.284, implying that the nominal exchange rate is negatively affected by economic growth. This result indicates that a one % increase in economic growth will lead to a 0.5 % decrease in the nominal exchange rate or 0.5 % appreciation of the local currency.

The coefficient of terms of trade (TOT) is 0.0015 with the P-Value of 0.317, implying that the nominal exchange rate is positively affected by terms of trade. This result indicates that a one % increase in the terms of the trade index will lead to a 0.15 % increase in the nominal exchange rate or a 0.15 % depreciation of the local currency.

4.3.2 European Emerging Economies:

The Hausman test statistics of 100.88 with the P-Value of 0.0000 strongly rejects the null hypothesis, confirming the fixed effects model is appropriate. The fixed effects model explains 60.65 % of the variation in the exchange rate.

The coefficient of US interest rate (USM) is 0.0124 with a p-value of 0.4200, suggesting that a one % increase in US interest rates leads to a 1.24 % depreciation of the local currency. However, this relationship is not statistically significant at conventional levels.

Table 4.19: Analysis of Nominal Exchange Rate Using Fixed and Random Effects Regression Model in case of European Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	0.0124	0.0153	0.4200	-0.0310	0.0520	0.5510
INF	0.0411***	0.0040	0.0000	-0.0070	0.0129	0.5870
NFR	0.0489***	0.0081	0.0000	0.0641***	0.0179	0.0000
FDV	0.0016	0.0016	0.3270	0.0043	0.0055	0.4380
EXD	0.0108***	0.0026	0.0000	-0.0220***	0.0045	0.0000
TOD	-0.0033*	0.0019	0.0920	0.0532***	0.0030	0.0000
TRB	0.0313***	0.0066	0.0000	-0.0459**	0.0208	0.0280
GROW	0.0120	0.0073	0.1040	-0.0432*	0.0241	0.0740
TOT	-0.0040	0.0065	0.5360	0.0145	0.0222	0.5120
FXR	-	-	-	1.7448***	0.1827	0.0000
Constant	2.3362***	0.6926	0.0010	-5.2394**	2.3212	0.0240

Table 4.19: Analysis of Nominal Exchange Rate Using Fixed and Random Effects Regression Model in case of European Emerging Countries (Continued)

Observation	120	120
R-Squared	0.6065	0.8163
Hausman Test	100.88	
P-Value	0.0000	
Selected Model	Fixed effect model	

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Collinearity between fixed effects variable and foreign exchange rate regime (FXR) is detected, as a result FXR is omitted from fixed effects model.

Among significant controlling variables in the fixed effects model, inflation rate (INF), local interest rate (NFR), external debt (EXD), and trade balance (TRB) have significantly positive effects on nominal exchange rate, implying that the increase in these variables will cause the depreciation of domestic currency. On the contrary, trade openness degree (TOD) the significantly negative effect on nominal exchange rate, implying that the increase in this variable will cause the appreciation of the domestic currency. The coefficient in inflation (INF) is 0.0411 with a p-value of 0.000, which means a positive relationship between the inflation rate and the nominal exchange rate indicating that a one % increase in the inflation rate is associated with a 4.11 % depreciation of the local currency.

The coefficient of domestic interest rate (NFR) is 0.0489 with a p-value of 0.000 revealing a positive relationship. This suggests that a one % increase in net foreign reserves corresponds to a 4.89 % depreciation of the local currency.

The coefficient of external debt (EXD) is 0.0108 with a p-value of 0.000. This result implies that a positive relationship between the external debt and the nominal exchange rate where a one % rise in external debt leads to a 1.08 % depreciation of the local currency.

TOD (Trade Openness Degree): The coefficient for trade openness degree (TOD) is -0.0033 with a p-value of 0.092. This indicates that a one % increase in trade openness is associated with a 0.33 % appreciation of the local currency. Although this effect is

statistically significant at the 10% level (marginal significance), it suggests some evidence that greater trade openness may contribute to currency appreciation.
The coefficient of trade balance (TRB) is 0.0313 with a p-value of 0.000. This shows a positive relationship between the trade balance and the nominal exchange rate where a one % increase in the trade balance is associated with a 3.13 % depreciation of the local currency.

The remaining variables Foreign direct investment inflow, Economic growth and terms of trade index (FDV, GROW, TOT) show no statistically significant impact on the exchange rate.
The FDV coefficient is 0.0016 with a p-value of 0.327, indicating that changes in Foreign direct investment have only a minimal and statistically non-significant positive effect on the exchange rate.

The coefficient for economic growth is 0.012 with a p-value of 0.104. Although a one % increase in economic growth appears to be associated with a 1.2 % depreciation of the local currency, this result is not statistically significant at the 10% level, meaning we cannot confidently assert that economic growth has a meaningful impact on the exchange rate.

The coefficient of TOT is -0.004 with a p-value of 0.536. This negative relationship indicates that a one % increase in the terms of trade would be linked to a 0.4 % appreciation of the local currency, but again, this relationship is not statistically significant.

4.3.3 American Emerging Economies:

The Hausman test statistics are 105.93 with a p-value of 0.0000, which strongly rejects the null hypothesis. This result confirms that the fixed effects model is the appropriate specification for the data. The fixed effects regression, which has R-square of 0.6735, explains approximately 67.35% of the variation in the dependent variable, indicating a good fit relative to the model's complexity.

The main independent variable, USM (the US interest rate), has a coefficient of

0.0093 with a p-value of 0.666. This positive coefficient suggests that an increase in the US interest rate is associated with a depreciation of the local currency (i.e., for each one % increase in the US interest rate, the nominal exchange rate increases by approximately 0.93 %). However, the relationship is statistically insignificant, meaning we cannot confidently assert that changes in the US interest rate reliably affect the exchange rate based on this model.

The statistically significant controlling variables in the fixed effects regression are the trade balance, external debt, inflation rate, domestic interest rate and FDI inflow.

The coefficient of Trade Balance (TRB) is 0.0562 and a p-value of 0, indicating a positive relationship between the trade balance and nominal exchange rate where a one % increase in the trade balance is associated with a 5.62 % depreciation of the local currency.

The coefficient of External Debt (EXD) is 0.0143 with a p-value of 0, implying a positive relationship between the variables that a one % increase in external debt leads to a 1.43 % depreciation of the local currency.

Inflation rate (INF) shows a coefficient of 0.0239 with a p-value of 0.005, meaning that a one % increase in the inflation rate corresponds to a 2.39 % depreciation of the local currency, positive relationship as well.

Table 4.20: Analysis of Nominal Exchange Rate Using Fixed and Random Effects Regression Model in case of the Americans Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	0.0093	0.0215	0.6660	0.2060*	0.1239	0.0970
INF	0.0239	0.0083	0.0050	0.0780*	0.0474	0.0990
NFR	0.0329***	0.0120	0.007	-0.0878	0.0690	0.2030
FDV	-0.0520*	0.0265	0.0520	0.4955***	0.1213	0.0000
EXD	0.0143***	0.0030	0	0.03543**	0.01592	0.026
TOD	-0.0069	0.0052	0.1840	0.0160	0.0141	0.2560

Table 4.20: Analysis of Nominal Exchange Rate Using Fixed and Random Effects Regression Model in case of the Americans Emerging Countries (Continued)

TRB	0.0562***	0.01365	0	-0.1415*	0.0753	0.0600
GROW	-0.0132	0.0090	0.1450	-0.0421	0.0516	0.4150
TOT	0.0020	0.0028	0.478	0.0450***	0.01489	0.002
FXR	-	-	-	0.7452	0.5184	0.1510
Constant	3.2442***	0.4625	0.0000	-5.3962***	2.2115	0.0150
Observation	120			120		
R-Squared	0.6735			0.3882		
Hausman Test	105.93					
P-Value	0.0000					
Selected Model	Fixed effect model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Collinearity between fixed effects variable and foreign exchange rate regime is detected, as a result FXR is omitted from fixed effects model.

The coefficient of Domestic interest rate (NFR) shows a positive relationship where 0.0329 with a p-value of 0.007, suggesting that a one % increase in net foreign reserves is associated with a 3.29 % depreciation of the local currency, also significant at the 1% level.

The coefficient of Foreign direct investment (FDV) is -0.0520 with a p-value of 0.052, which is marginally significant at the 10% level. This negative relationship indicates that a one % improvement in financial development is associated with a 5.20 % appreciation of the local currency.

The remaining controlling variables which are non-significant are the trade openness index and Economic growth.

The Trade Openness index has a coefficient of -0.0069 with a p-value of 0.184. Although the negative coefficient hints at an appreciation effect, an increase in trade openness leads to a stronger local currency.

Economic Growth exhibits a coefficient of -0.0132 with a p-value of 0.145. While this negative relationship between the two variables suggests that improved economic

growth might be associated with currency appreciation.

4.3.4 All Emerging Economies:

The Hausman test statistic is 12.01 with a p-value of 0.1506, indicating that we do not reject the null hypothesis in favor of the random effects model. This finding supports the use of the Random Effects model, which in this case yields an R-square of 0.0018. Although the R-square suggests that the model explains only a very small fraction of the variation in the dependent variable, the random effects framework is preferred based on the Hausman test.

Focusing on the main independent variable, USM (the US interest rate) has a coefficient of -0.0056 with a p-value of 0.55 in both the fixed and random effects specifications. The negative coefficient implies that a one % increase in the US interest rate is associated with a 0.56 % appreciation of the local currency. However, since this result is not statistically significant, we cannot assert that changes in US interest rates reliably affect the nominal exchange rate in this model.

With regard of the Significant controlling variables, we can recognize Inflation, External debt, terms of trade and trade balance.

The coefficient of the inflation rate is 0.0331 and has high statistical significance. This indicates a positive relationship between this variable and nominal exchange rate where a one % increase in inflation is associated with a 3.31 % depreciation of the local currency, suggesting a strong and reliable impact of inflation on the exchange rate.

The External Debt coefficient of 0.0068 shows a positive relationship between it and the nominal exchange rate. This suggests that a one % increase in external debt corresponds to a 0.68 % depreciation of the local currency, highlighting the sensitivity of the exchange rate to changes in external debt levels.

Terms of Trade have a coefficient of 0.0041 with a p-value of 0.015, a positive relationship meaning that a one % improvement in the terms of trade is linked to a 0.41 % depreciation of the currency. This effect is statistically significant at the 5% level.
The coefficient of trade balance is -0.0093 and a p-value of approximately 0.06, is

marginally significant (at the 10% level). The negative sign here indicates a negative relationship and one % improvement in the trade balance is associated with a 0.93 % appreciation of the local currency.

Table 4.21: Analysis of Nominal Exchange Rate Using Fixed and Random Effects Regression Model in case of all Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	-0.0056	0.0094	0.5500	-0.0056	0.0095	0.5500
INF	0.0331***	0.0037	0.0000	0.0331***	0.0037	0.0000
NFR	0.0024	0.0058	0.6730	0.0024	0.0058	0.6790
FDV	-0.0003	0.0020	0.8680	-0.0003	0.0020	0.8720
EXD	0.0068***	0.0016	0.0000	0.0067***	0.0016	0.0000
TOD	0.0007	0.0013	0.6190	0.0007	0.0013	0.6070
GROW	0.0049	0.0047	0.3060	0.0048	0.0048	0.3130
TRB	-0.0093*	0.0049	0.0610	-0.0093*	0.0050	0.0620
TOT	0.0041**	0.0017	0.0150	0.0042**	0.0017	0.0140
FXR	-	-	-	-0.6539	1.1971	0.5850
Constant	2.8274***	0.2226	0.0000	3.0871***	0.7889	0.0000
Observation	400			400		
R-Squared	0.3995			0.0018		
Hausman Test	12.01					
P-Value	0.1506					
Selected Model	Random Effect Model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Collinearity between fixed effects variable and foreign exchange rate regime (FXR) is detected, as a result FXR is omitted from fixed effects model.

In contrast, the remaining variables Local interest rate, Foreign direct investment, Terms of trade, Economic growth, and FXR exhibit no statistically significant effects on the nominal exchange rate in this model.

The coefficient of Local interest rate was 0.0024 with a p-value of 0.679. This

positive relationship implies that a one % increase in net foreign reserves is associated with a 0.24 % depreciation of the local currency. However, the high P-value indicates that this relationship is not statistically significant.

FDV (FDI inflow) has a coefficient of -0.0003 with a p-value of 0.872. The negative coefficient suggests that there is a negative relationship between the variables and appreciation 0.03 % for each one % increase in FI inflow.

The Trade Openness Index exhibits a coefficient of 0.0007 with a p-value of 0.607. This indicates a positive relationship that a one % increase in trade openness is associated with a minimal 0.07 % depreciation of the local currency.

The coefficient of Economic Growth 0.0048 with a p-value of 0.313. While this is positive relationship, it suggests that a one % increase in economic growth might be associated with a 0.48 % depreciation of the local currency, the relationship is not statistically significant.

FXR (Foreign Exchange Regime) shows a coefficient of -0.6539 with a p-value of 0.585. Although the negative coefficient implies that adopting a flexible FX system (FXR = 1) leads to a smaller change in the nominal exchange rate.

4.4 Impact of US Interest Rate on Real Effective Exchange Rate:

4.4.1 Asian Emerging Economies:

The table below shows Hausman test statistics are 65.18 with a p-value of 0, which strongly rejects the null hypothesis and confirms that the fixed effects model is the appropriate specification. With an R-square of 0.4354, the fixed effects model explains about 43.54% of the variation in the dependent variable, suggesting a moderate fit to the data.

Focusing on the main independent variable, USM (US interest rate) has a coefficient of 0.0115 with a p-value of 0.004 in the fixed effects model, positive relationship implies that a one % increase in the US interest rate is associated with a 1.15 % depreciation of the real exchange rate of the currency. The result is statistically

significant at the 1% level, indicating a reliable relationship where increases in the US interest rate led to local currency depreciation.

Table 4.22: Analysis of Real effective Exchange Rate Using Fixed and Random Effects Regression Model in case of Asian Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	0.0115***	0.0039	0.004	-0.0117**	0.0049	0.0170
INF	-0.0033	0.0034	0.3350	-0.0091**	0.0039	0.0180
NFR	-0.0133**	0.0053	0.0140	0.0054	0.0043	0.208
FDV	-0.0209***	0.0073	0.0050	0.0014	0.0079	0.8570
EXD	-0.0057***	0.0009	0.0000	-0.0053***	0.0009	0.0000
TOD	0.0014***	0.0005	0.0060	0.0006*	0.0003	0.0850
TRB	-0.0035	0.0023	0.1330	-0.0047**	0.0023	0.0460
GROW	-0.0059**	0.0026	0.0230	-0.0022	0.0031	0.4750
TOT	0.0021**	0.0008	0.013	0.0033***	0.0010	0.0010
Constant	4.6217***	0.9555	0.0000	4.4273***	0.1061	0.0000
Observation	160			160		
R-Squared	0.4354			0.2760		
Hausman Test	65.18					
P-Value	0.0000					
Selected Model	Fixed effect model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Foreign exchange rate regime (FXR) is excluded from these analyses because there is no Asian country in this study has adopted freely floating exchange rate regime.

The table above reveals controlling variables with significance are external debt, FDI inflow, Trade openness, term of trade, Economic growth and local interest rate. External Debt Exhibits a coefficient of -0.0057 with a p-value of 0, a negative relationship implying that a one % increase in external debt is associated with a 0.57 % appreciation of the local currency. The negative sign indicates that higher external debt tends to strengthen the real effective exchange rate.

FDI inflow has a coefficient of -0.0209 with a p-value of 0.005, a negative relationship between the variables meaning that a one % improvement in financial development is associated with a 2.09 % appreciation of the real value of local currency.

The coefficient of the Trade Openness index is 0.0014 with a p-value of 0.006, implying a positive relationship between the variables where a one % increase in trade openness is associated with a 0.14 % depreciation of the local currency.

Terms of Trade coefficient Shows a positive relationship with the nominal exchange rate, 0.0021 with a p-value of 0.013, indicating that a one % improvement in the terms of trade leads to a 0.21 % depreciation of the real local currency.

Economic Growth has a negative relationship with the real effective exchange rate, coefficient -0.0059 with a p-value of 0.023, indicating that a one % increase in economic growth is associated with a 0.59 decrease in the real effective exchange rate. This result is statistically significant at the 5% level.

The local interest rate has a coefficient of -0.0133 with a p-value of 0.014, suggesting a negative relationship between the variables where a one % increase in net foreign reserves is associated with a 1.33 % appreciation of the local currency; it is significant at the 5% level.

The remaining variables have no statistical significance and are stated below:

Inflation, however, shows a coefficient of -0.0033 with a p-value of 0.335, implying a negative and statistically non-significant impact on the real effective exchange rate.

Trade Balance coefficient is -0.0035 with a p-value of 0.133, which is also statistically negative non-significant impact on the real effective exchange rate.

4.4.2 European Emerging Economies:

The Hausman test statistic is 54.1 with a p-value of 0, which strongly rejects the null hypothesis and confirms that the fixed effects model is the appropriate specification for this data. The fixed effects model has R-square of 0.4167, indicating that it explains approximately 41.67% of the variation in the dependent variable. This suggests a

moderate fit to the data, though the random effects model shows a higher R-Square of 0.5467. Examining the main independent variable, USM (US interest rate) has a coefficient of -0.00658 with a p-value of 0.316 in the fixed effects model. The negative coefficient suggests that a one % increase in the US interest rate is associated with a 0.658 % appreciation of the local currency in terms of the real effective exchange rate. However, this relationship is not statistically significant at conventional levels, meaning we cannot reliably conclude that changes in US interest rates affect the real exchange rate based on this model.

Table 4.23: Analysis of Real Effective Exchange Rate Using Fixed and Random Effects Regression Model in the case of European Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	-0.00658	0.0065	0.3160	-0.0064	0.0085	0.4490
INF	-0.0114***	0.0017	0.0000	-0.0090***	0.0021	0.0000
NFR	0.0074**	0.0034	0.0340	0.0220***	0.0029	0.0000
FDV	-0.0013*	0.0007	0.0590	-0.0003	0.0009	0.7220
EXD	-0.0049***	0.0011	0.0000	-0.0009	0.0007	0.2110
TOD	0.0032***	0.0008	0.0000	-0.0005	0.0005	0.3540
TRB	-0.0130***	0.0028	0.0000	-0.0005	0.0034	0.8620
GROW	-0.0115***	0.0031	0.0000	0.0001	0.0039	0.9880
TOT	0.0060**	0.0027	0.0320	0.0009	0.0036	0.7980
FXR	-	-	-	-0.0503*	0.0299	0.0920
Constant	3.9997***	0.2943	0.0000	4.5872***	0.3793	0.0000
Observation	120			120		
R-Squared	0.4167			0.5467		
Hausman Test	54.1					
P-Value	0.0000					
Selected Model	Fixed effect model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Collinearity between fixed effects variable and foreign exchange rate regime (FXR) is detected, as a result FXR is omitted from fixed effects model.

The significant controlling variables shown in the table above are the inflation rate, External debt, trade openness, Economic growth, local interest rate, terms of trade and foreign direct investment inflow implying there is considerable impact on the real effective exchange rate.

The coefficient of the inflation rate is -0.0114 with a p-value of 0, indicating a negative relationship between the variables where a one % increase in inflation is associated with a 1.14 % decrease in the real effective exchange rate. This effect is highly significant at the 1% level.

The coefficient of External Debt shows a negative relationship with the real effective exchange rate (-0.0049 with a p-value of 0), suggesting that a one % increase in external debt leads to a 0.49 % decrease in the real effective exchange rate. This relationship is also highly significant at the 1% level)

The Trade Openness Degree coefficient is 0.0032 with a p-value of 0, implying a positive relationship between the two variables where a one % increase in trade openness is associated with a 0.32 % increase in the real effective exchange rate. This effect is statistically significant at the 1% level.

The coefficient of the trade balance is equal to -0.013 with a p-value of 0, indicating a negative relationship with the real effective exchange rate where a one % improvement in the trade balance is associated with a 1.3 % decrease in the real effective exchange rate. This relationship is highly significant at the 1% level.

Economic Growth has a coefficient of -0.0115 with a p-value of 0, which means there is a negative relationship between the variables where a one % increase in economic growth leads to a 1.15 decrease in the real effective exchange rate. This effect is also highly significant at the 1% level.

The Domestic interest rate coefficient of 0.0074 with a p-value of 0.034, meaning it has a positive relationship with the real effective exchange rate where a one % increase in net foreign reserves is associated with a 0.74 % depreciation of the local currency. This relationship is significant at the 5% level.

The coefficient of Terms of Trade 0.0060 with a p-value of 0.032, we have a

positive relationship between the variables indicating that a one % improvement in the terms of trade leads to a 0.60 % increase in the real effective exchange rate. This effect is significant at the 5% level.

FDI inflow exhibits a coefficient of -0.0013 with a p-value of 0.059, a negative impact suggesting that a one % increase in FDI inflow is associated with a 0.13 % decrease in the real effective exchange rate. This relationship is marginally significant at the 10%.

4.4.3 American Emerging Economies:

The table below shows Hausman test statistics are 80.1 with a p-value of 0, which strongly rejects the null hypothesis and indicates that the fixed effects model is preferred over the random effects model. With R-Square of 0.5586, the fixed effects model explains approximately 55.86% of the variation in the dependent variable, suggesting a moderately strong overall fit.

Now examining the independent variable and the significant controlling variables in the fixed effects model, USM (US Interest Rate) has a coefficient of 0.0042, and although it is marked with a star, its high p-value of 0.666 in the random effects specification (which mirrors the insignificance) casts some doubt about its overall importance. The positive coefficient here indicates that a one % increase in the US interest rate is associated with a 0.42 % increase in the real effective exchange rate.

Table 4.24: Analysis of Real Effective Exchange Rate Using Fixed and Random Effects Regression Model in case of the Americans Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	0.0042*	0.0072	0.6660	-0.0060	0.0136	0.6550
INF	-0.0035**	0.0028	0.0050	0.0033	0.0052	0.5230
NFR	0.0088**	0.0040	0.0070	-0.0101	0.0075	0.1800
FDV	0.0258**	0.0089	0.0520	0.0165	0.0133	0.2160
EXD	-0.0038**	0.0010	0.0000	-0.0003	0.0017	0.8480
TOD	-0.0031**	0.0017	0.1840	-0.0031**	0.0015	0.0420
TRB	0.0161***	0.0046	0.0000	0.0349***	0.0082	0.0000
GROW	0.0098**	0.0030	0.1450	0.0111**	0.0057	0.0490
TOT	0.0013	0.0009	0.4780	0.0024	0.0016	0.1420
FXR	-	-	-	-0.3934***	0.0569	0.0000
Constant	4.7120***	0.1558	0.0000	4.7730***	0.2428	0.0000
Observation	120			120		
R-Squared	0.5586			0.4461		
Hausman Test	80.1					
P-Value	0.0000					
Selected Model	Fixed effect model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Collinearity between fixed effects variable and foreign exchange rate regime (FXR) is detected, as a result FXR is omitted from this model.

The table above reveals controlling variables with significance are inflation rate, local interest rate, FDI inflow, trade balance, economic growth, external debt and trade openness.

The coefficient of Inflation rate variables shows a coefficient of -0.0035 with a p-value of 0.005, it has a negative relationship with the real effective exchange rate implying that a one % increase in inflation is associated with a 0.35 % decrease in the real effective exchange rate. This relationship is statistically significant at the 1% level.

The coefficient of Local interest rate variable is 0.0088 with a p-value of 0.007, suggesting that a 1 % increase in local interest rate is associated with a 0.88 % increase in

the real effective exchange rate, a positive relationship with real effective exchange rate significant at the 1% level.

The coefficient of FDI inflow is 0.0258 with a p-value of 0.052, which is marginally significant at the 10% level and has a positive relationship with the real effective exchange rate. This implies that higher FDI inflow and increase with a one % increase in FDI inflow associated with a 2.58 % increase in the real effective exchange rate.

The Trade Balance displays a coefficient of 0.0161 with a p-value of 0, indicating a positive relationship with the real effective exchange rate and that a one % improvement in the trade balance is associated with a 1.61 % increase in the real effective exchange rate, which is highly significant at the 1% level.

The coefficient of the control variable Economic growth is 0.0098 with a p-value of 0.145 in the fixed effects model suggesting that 1 % increase in economic growth led to an increase in the real effective exchange rate, a positive relationship between these two variables.

Trade Openness Degree) has a coefficient of -0.0031, and it appears statistically significant. This negative relationship implies that greater trade openness contributes to a decrease in the real effective exchange rate of 0.31% for a 1% increase in this control variable.

Turning to the non-significant variables in the table above, we have External debt and Terms of trade: The coefficient of External debt is -0.0038 suggests a negative relationship with the real exchange rate where 1% increase in this variable leads to a 0.38% decrease in the real effective exchange rate. Terms of Trade have a coefficient of 0.0013 with a p-value of 0.478 which is a positive relationship but with a distinguishable impact on the real effective exchange rate.

4.4.4 All Emerging Economies:

The table below shows Hausman test statistics are 100 with a p-value of 0, strongly favoring the fixed effects specification over the random effects one. The fixed effects model, selected for this analysis, has R-square of 0.3211, meaning that

approximately 32.11% of the variation in the dependent variable is explained by the model. While not exceptionally high, this moderate fit suggests that a substantial portion of the variation remains unexplained. The main dependent US Interest Rate shows a coefficient of -0.00251 with a high P- value of 0.463, a negative relationship with the real effective exchange rate, the dependent variable where a 1 % increase in the US interest rate leads to a decrease in the real effective exchange rate but still indicating no statistical effect on the local currency.

Table 4.25: Analysis of Real Effective Exchange Rate Using Fixed and Random Effects Regression Model in case of all Emerging Countries

Variable	Fixed Effects Regression			Random Effects Regression		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
USM	-0.00251	0.0034	0.463	-0.0038	0.0039	0.3270
INF	-0.0075***	0.0013	0.0000	-0.0079***	0.0015	0.0000
NFR	0.00357**	0.0021	0.0910	0.0014	0.0023	0.5150
FDV	-0.0005	0.0007	0.5070	-0.0003	0.0008	0.6820
EXD	0.00361***	0.0005	0.000	-0.0021***	0.000	0.0000
TOD	0.0004	0.0005	0.3790	-0.0001	0.0004	0.8100
GROW	-0.0006	0.0017	0.6980	-0.0001	0.0018	0.9490
TRB	0.0001	0.0018	0.9560	0.0021	0.0020	0.3030
TOT	0.0012**	0.0006	0.0410	0.0010	0.0006	0.1280
FXR	-	-	-	-0.0673	0.0411	0.1020
Constant	4.6477	0.8195	0.0000	4.6454	0.8681	0.0000
Observation	400			400		
Adj. R^2	0.3211			0.0000		
Hausman Test	100					
P-Value	0.0000					
Selected Model	Fixed Effect Model					

Remarks: *, ** and *** indicate statistical significance at 10, 5 and 1 % levels, respectively. Collinearity between fixed effects variable and foreign exchange rate regime (FXR) is detected, as a result FXR is omitted from this model.

The significant controlling variables in the fixed effects model revealed from the table above, the inflation rate, External debt, Terms of trade, and Domestic interest rate, showing a notable impact in the real effective exchange rate.

The coefficient in inflation rate is −0.0075 and a p-value of 0, a negative relationship with the real effective exchange rate. This implies that a one % increase in inflation is associated with a 0.75 % appreciation of the real value local currency, a statistically robust relationship.

External Debt is also highly significant variable, with a coefficient of 0.00361 and a p-value of 0, indicating a positive relationship with the real effective exchange rate and that a one % increase in external debt leads to a 0.361 % depreciation of the real local currency value.

Additionally, Terms of Trade exhibit a significant coefficient of 0.0012 (p-value = 0.041), a positive relationship suggesting that a one % improvement in the terms of trade corresponds to a 0.12 % increase in the real effective exchange rate.

Lastly, there is a significant positive relationship between the domestic interest rate and the real effective exchange rate with a coefficient of 0.00357 and a p-value of 0.091, is marginally significant at the 10% level. Although this suggests that a one % increase in domestic interest rate may lead to a 0.357 % depreciation of the real local currency value, the weaker level of significance calls for caution when interpreting this finding.

The remaining variables appear non-significant in the fixed effects model are FDI inflow, Trade openness, Economic growth and Trade balance with a coefficient of -0.0005 and a p-value of 0.507, FDI inflow has a negative relationship with real effective exchange rate where 1 % increase in FDI inflow leads to a 0.05% decrease in the real exchange rate.

The Trade Openness Degree has a coefficient of 0.0004 which means a positive relationship but a 1 % increase in this variable will lead to an increase in real effective exchange rate by 0.04% only.

Economic Growth does not show significant effects, with coefficient equal to -

0.0006 meaning a negative relationship with the real effective exchange rate and 1% increase in Economic growth will lead to a decrease in this dependent variable by 0.06%.

Trade Balance has an almost negligible coefficient (0.0001) and an extremely high p-value (0.956).

CHAPTER 5
CONCLUSION AND DISSCUSION

5.1 Summary of Findings:

This study investigates the relationship between US interest rate changes and the exchange rates of 20 emerging economies across Asia, Europe, and the Americas. Employing a quantitative approach using panel data analysis (fixed and random effects models) over the period 2003-2022 examines the direct impact of changes in US interest rates on both nominal and real effective exchange rates of the selected emerging economies. Additionally, this study analyzes the influence of several macroeconomic control variables, including inflation, domestic interest rates, foreign direct investment (FDI), external debt, trade openness, economic growth, trade balance, and terms of trade.

The analysis uses statistical measures (Mean, standard deviation, maximum, minimum values) and visual representations (line graphs) to understand trends and fluctuations in the data. Finally, the study concludes by highlighting the implications of the findings for policymakers, investors, and other stakeholders interested in understanding and managing risks and opportunities in emerging markets.

The descriptive analysis revealed a generally upward trend in US interest rates from 2003 to 2022, with significant fluctuations influenced by economic factors (e.g., the 2008 financial crisis and the COVID-19 pandemic). The Nominal exchange rates in the studied group of 20 countries demonstrated different patterns as several countries experienced stable declines against the US dollar while others showed inconsistent movements with alternating periods of appreciation and depreciation. Real effective exchange rates across different nations manifested distinct patterns as some moved upwards while experiencing high volatility and significant shifts in appreciation and depreciation against the US dollar. Macroeconomic factors and country-specific characteristics resulted in varying levels of volatility among different countries.

Table 5.1: Regression analysis summary for the nominal exchange rate

	Asia		Europe		Americans		Overall	
Variables	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
USM	0.0051	0.4680	0.0124	0.4200	0.0093	0.6660	-0.0056	0.5500
INF	-0.0158**	0.0110	0.0411***	0.0000	0.0239	0.0050	0.0331***	0.0000
NFR	-0.0017	0.8570	0.0489***	0.0000	0.0329***	0.007	0.0024	0.6790
FDV	0.0260**	0.0490	0.0016	0.3270	-0.0520*	0.0520	-0.0003	0.8720
EXD	0.0035**	0.0390	0.0108***	0.0000	0.0143***	0.0000	0.0067***	0.0000
TOD	0.0005	0.6100	-0.0033*	0.0920	-0.0069	0.1840	0.0007	0.6070
TRB	-0.0024	0.5540	0.0313***	0.0000	0.0562***	0.0000	0.0048	0.3130
GROW	-0.0050	0.2840	0.0120	0.1040	-0.0132	0.1450	-0.0093*	0.0620
TOT	0.0015	0.317	-0.0040	0.5360	0.0020	0.478	0.0042**	0.0140
Constant	4.5185***	0.0000	2.3362	0.0010	3.2442	0.0000	3.0871	0.0000

- The US interest rate (USM) shows no statistically significant impact on nominal exchange rates across all regions, suggesting limited direct influence of US monetary policy on these currencies.
- Inflation (INF) has significant effects that vary by region: negative in Asia (-0.0158) but positive in Europe (0.0411) and overall (0.0331), indicating that higher inflation tends to depreciate Asian currencies but appreciate European ones.
- Domestic interest rate (NFR) significantly strengthens currencies in Europe (0.0489) and the Americas (0.0329), showing that higher local interest rate supports currency values in these regions.
- Foreign direct investment (FDV) inflow has a significant positive effect in Asia (0.0260) but a negative effect in the Americas (-0.0520), suggesting regional differences in how capital inflows affect exchange rates.
- External debt (EXD) consistently shows significant positive coefficients across all regions, indicating that higher external debt is associated with currency appreciation, possibly due to capital inflows.

- Terms of trade (TOT) have a significant positive effect (0.0042) in the overall sample, suggesting that improved terms of trade index generally strengthen currencies.
- Trade balance (TRB) significantly strengthens currencies in Europe (0.0313) and the Americas (0.0562), highlighting the importance of trade surpluses for currency values in these regions.

Table 5.2: Regression analysis summary for the real effective exchange rate

	Asia		Europe		Americans		Overall	
Variables	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
USM	0.0115***	0.0040	0.0124	0.3160	0.6660	0.6660	-0.00251	0.463
INF	-0.0033	0.3350	0.0411***	0.0000	0.0050	0.0050	-0.0075***	0.0000
NFR	-0.0133**	0.0140	0.0489***	0.0340	0.0070	0.007	0.00357**	0.0910
FDV	-0.0209***	0.0050	0.0016	0.0590	0.0520	0.0520	-0.0005	0.5070
EXD	-0.0057***	0.0000	0.0108***	0.0000	0.0000	0.0000	0.00361***	0.000
TOD	0.0014***	0.0060	-0.0033*	0.0000	0.1840	0.1840	0.0004	0.3790
TRB	-0.0035	0.1330	0.0313***	0.0000	0.0000	0.0000	-0.0006	0.6980
GROW	-0.0059**	0.0230	0.0120	0.0000	0.1450	0.1450	0.0001	0.9560
TOT	0.0021**	0.013	-0.0040	0.0320	0.4780	0.478	0.0012**	0.0410
Constant	4.6217	0.0000	2.3362	0.0000	0.0000	0.0000	4.6477	0.0000

- The US interest rate (USM) displays a positive and statistically significant relationship in Asia, implying that rising rates are associated with an increase in the real effective exchange rate.
- Inflation (INF) has a significant positive impact in Europe, though its effect is negative in overall estimates, suggesting that inflationary pressures might weaken the real effective exchange rate when considering the entire sample.

- Domestic interest rates (NFR) show a significant negative impact in Asia, yet a significant positive effect in Europe, highlighting regional diversity in how local interest levels influence currency values.
- Foreign direct investment (FDV) inflow employs a significant negative effect in Asia, indicating an inverse relation between FDV and the real effective exchange rate there, while its impact on other regions appears less influenced.
- External debt (EXD) demonstrates strong, significantly negative associations in Asia, but positive effects in Europe and overall, suggesting complex dynamics between debt and exchange rate adjustments.
- The terms of trade (TOD) positively and significantly affect Asia, although its influence is less pronounced in the overall sample.
- Trade balance (TRB) is influential in Europe with a significant positive effect, reinforcing the role of trade surpluses in maintaining higher real effective exchange rates.

Overall, these results underline the role of regional economic dynamics in determining how traditional macroeconomic variables impact the real effective exchange rate.

5.2 Discussion:

5.2.1 The US interest rate:

The descriptive analysis shows a fluctuating yet generally upward trend in US interest rates from 2003 to 2022. This trajectory reflects the actions and policy responses of the US Federal Reserve (FED) to evolving macroeconomic conditions. The initial rise in rates (2003-2006) can be linked to the FED's efforts to combat inflationary pressures and slow economic Tepper and Powell (2025). This aligns with the general monetary policy principle that higher interest rates curb inflation by reducing borrowing and spending. Numerous studies, such as those reviewed in literate review Faure, Alexander Pierre (2014) support the idea of interest rate's role in combating inflation.

The near-zero interest rate policy adopted following the 2008 financial crisis is well-documented in the literature Bernanke (2020). This unconventional approach, aimed at stimulating economic activity, corresponds to expansionary monetary policies designed to boost aggregate demand during periods of economic downturn, this aligns with Keynesian economic theory, which advocates government intervention, including through interest rate manipulation, to counteract recessions.

The subsequent period of low interest rates (approximately 2009-2015) reflects a prolonged period of slow economic recovery and the FED's continued efforts to support the economy. This contrasts with the earlier period, where the focus had been on combating inflation.

The renewed increase in interest rates starting around 2015, and accelerating notably from 2022 onwards, is a direct response to the significant inflationary pressures the US experienced CRS Labonte, Marc (2024). This is widely documented in financial news and reflects a classic contractionary monetary policy, in line with established economic theory, designed to control inflation by reducing aggregate demand. This policy response is consistent with central bank behavior worldwide and reflects concerns expressed by numerous researchers and economic institutions about the dangers of sustained high inflation.

In summary, the trends in US interest rates presented here directly mirror the FED's approach to managing monetary policy. The FED's actions, whether expansionary (during recession) or contractionary (during inflation), have been influenced by prevailing economic conditions and are consistent with established economic principles and the body of existing research. The specific policy decisions and their timing, however, are subjects of ongoing discussion and analysis in literature.

5.2.2 Nominal and real effective exchange rate:

The descriptive analysis of nominal and real effective exchange rates across the 20 emerging economies reveals a complex and contrasting picture, highlighting the diverse

macroeconomic conditions and policy reactions in these countries. While some countries experienced consistent depreciation against the US dollar over the study period (2003-2022), others showed significant volatility with periods of both appreciation and depreciation. Similarly, real effective exchange rates also demonstrated varied tendencies.

This diversity in exchange rate movements underscores the limitations of viewing these trends solely from a US-centric perspective. A global perspective reveals several key dynamics as below:

- Currency Depreciation: In countries experiencing consistent or significant currency depreciation against the US dollar, several factors could be at play. A weaker domestic economy, high inflation, or unsustainable government policies can reduce investor confidence, leading to capital outflows and a decrease in demand for the local currency. Increased import costs resulting from depreciation can exacerbate inflationary pressures and negatively impact economic growth. However, depreciation can also boost export competitiveness, potentially leading to improved trade balances and economic growth if the country effectively capitalizes on this advantage. This is consistent with findings from various researchers, such as those mentioned in the literature review, Venus Khim-Sen Liew, (2003), who highlight the complexities of exchange rate fluctuations and their potential impacts on economic growth.
- Currency Appreciation: Countries experiencing currency appreciation often show a stronger economy, lower inflation, and stable macroeconomic policies. These factors attract foreign investment and boost demand for the local currency. While appreciation can reduce import costs and contribute to lower inflation, it can simultaneously make exports less competitive in international markets, potentially negatively impacting the trade balance and economic growth.
- Volatility: The significant volatility observed in several exchange rates, both nominal and real effective, reflects the vulnerability of emerging economies to external shocks. Rapid changes in global economic conditions (e.g., financial

crises, commodity price fluctuations), shifts in global investor sentiment, and policy uncertainty in the domestic economy can trigger substantial fluctuations in exchange rates. The degree of volatility is also affected by the exchange rate regime employed; fixed or managed exchange rates tend to exhibit less volatility than freely floating rates, but can lead to larger, more prolonged adjustments when a regime shift occurs.

- Global interconnectedness: Changes in US interest rates, as well as other global economic events, can have significant spillover effects on emerging economies, influencing their exchange rates and broader macroeconomic performance, this aligned with a study for Aledeimat, Shadi & Bein, Murad. (2025). This interconnectedness is a major area of focus in recent economic research, with many studies examining the transmission of monetary policy across borders

In summary, the exchange rate dynamics across the 20 emerging economies were diverse and influenced by a combination of global and domestic factors. Simply labeling a currency as appreciating or depreciating is insufficient for a complete understanding; the magnitude, speed, and underlying reasons behind these movements must be considered within the context of each country's specific economic and political situation, and within the broader framework of global macroeconomic conditions.

The analysis of the impact of US interest rate changes on both nominal and real effective exchange rates reveals significant regional variations. The statistical significance of the US interest rate varied across the regions examined, with its impact being most reliably demonstrable in the Asian emerging economies regarding real effective exchange rates. In Asian emerging economies, the results showed that a one % increase in the US interest rate was associated with a statistically significant 1.15 % depreciation of the real effective exchange rate ($p<0.004$). This aligns with the established literature demonstrating the impact of US monetary policy on emerging markets, particularly through capital flows and reduced investment, Gilles & Thibau, (2015).

This finding implies that changes in US monetary policy, as reflected in interest rate adjustments, have a direct and noticeable impact on the real effective exchange rates of Asian emerging economies. The higher significance in the impact on the real effective exchange rate, compared to the nominal rate, suggests that the effect is not merely a short-term market fluctuation but is also influenced by purchasing power parity adjustments related to inflation differences between the US and the Asian economies. An increase in US interest rates leads to several effects that contribute to the depreciation of the domestic currency in emerging Asian economies:

- Capital Outflows: Higher US interest rates attract global capital, leading to a movement of funds from emerging markets to the US, reducing the demand for, and thus value of, the domestic currency.
- Reduced Investment: Increased US interest rates generally translate to higher borrowing costs globally. This decreased availability of capital makes investment in emerging Asian economies less attractive, leading to reduced foreign direct investment (FDI) inflows, which further depresses the local currency. This aligns with numerous studies in Chapter 2 that document a negative relationship between US interest rate hikes and FDI flows to emerging economies.
- Increased Import Costs: The stronger US dollar resulting from higher interest rates increases the cost of imports denominated in US dollars for the Asian countries, potentially contributing to higher inflation. This higher inflation, in turn, can further weaken the domestic currency through market forces and through central bank interventions aimed at controlling inflation.
- Currency Valuation: The relative valuation of currencies is influenced by investor sentiment. Higher interest rates in the US can influence investor expectations, making US dollar-denominated assets more attractive. This shifting sentiment results in a decrease in the demand for the domestic currency, leading to depreciation.
- It's important to note that while the US interest rate's impact was demonstrably significant on real effective exchange rates in Asia, it lacked the same level of

significance in the nominal exchange rates and in the other two regions studied (Europe and the Americas). This could be attributed to several factors, including:

- Exchange Rate Regimes: The exchange rate regimes (managed, or freely floating) employed by the countries in each region impact the transmission of US monetary policy. Freely floating regimes allow for immediate adjustment, while fixed or managed regimes tend to delay or dampen the impact.
- Economic Diversification: The degree of diversification within each region's economies could influence their sensitivity to external shocks. Economies more reliant on exports or international capital flows may exhibit a stronger response to changes in US interest rates.
- Macroeconomic Conditions: Inflation, domestic interest rates, government debt, and other macroeconomic factors specific to the countries in each region moderate the direct impact of US interest rate changes on their exchange rates. The interplay of these factors makes it impossible to predict the impact solely based on the direction of the change in US interest rates.

In conclusion, while the impact of US interest rate changes on the real effective exchange rates of the 20 emerging economies is complex and regionally heterogeneous, the findings from this study corroborate the idea that such changes do have a substantial impact on these economies, particularly in Asia, leading mainly to real currency value depreciation through the channels outlined above.

The US interest rate showed a statistically significant positive relationship with real effective exchange rates only in the Asian region. However, examining all the findings reveals a generally positive association between US interest rates and exchange rate depreciation across the regions and types of exchange rates (nominal and real effective). Therefore, despite inconsistent statistical significance, the overall direction of impact is in line with the expected effects as outlined in economic theory and several studies mentioned in our literature reviews.

In the European and American regions, the statistical analysis revealed that the US interest rate did not have a significant impact on the exchange rates (both nominal and real effective) at conventional levels of significance, many European and American countries employed exchange rate regimes that partially insulated their currencies from external shocks (fixed or managed floats), unlike many Asian countries with more freely floating rates, Kassowitz (2017) and the influence of domestic macroeconomic conditions (inflation, domestic interest rates, etc.) might have masked or overridden the impact of US monetary policy, Head (2003). This lack of significance, despite the global interconnectedness of financial markets, can be attributed to several factors:

- Economic Diversification: The European and American economies within the sample, compared to the Asian economies, likely exhibit greater economic diversification. This means that their economies are less heavily reliant on exports or international capital flows, reducing their sensitivity to fluctuations in the US interest rate. A more diverse economic base allows for greater resilience against external shocks, including changes in US monetary policy as per a study named Economic Diversification in Developing Countries..
- Macroeconomic Factors: The domestic macroeconomic conditions of European and American economies (e.g., inflation rates, domestic interest rates, fiscal policy, growth) have likely played a more significant role in determining their exchange rates than the US interest rate. The interplay of these domestic factors could mask or offset the impact of external shocks emanating from changes in the US monetary policy. This is consistent with numerous studies demonstrating the strong influence of domestic macroeconomic conditions on exchange rates.
- Data Limitations: While the study meticulously addressed the limitations of the data used, this aspect could also play a role. Potential measurement error, missing data, or data limitations specific to the European and American countries, or inherent limitations in capturing all relevant macroeconomic variables, may have resulted in an underestimation of the US interest rate's actual impact on exchange rates in these regions.

- Compliance with Existing Theories and Research: Even though the US interest rate was not statistically significant in the European and American regions, the direction of its impact, as observed in the study, is generally consistent with established economic theories and many existing research papers. Most studies suggest that higher US interest rates tend to strengthen the US dollar, leading to depreciation of currencies in other countries Gilles & Thibau (2015). The study observed this effect, even if it wasn't statistically significant in Europe and the Americas, supporting the overall direction predicted by economic theory.

The lack of statistical significance in these two regions could be due to the factors mentioned above, including macroeconomic diversity, exchange rate regimes, and data limitations. These factors create a more complex and nuanced relationship between US interest rates and exchange rates in these specific regions compared to Asia. The direction of the impact observed, while not statistically significant, remains generally compatible with established economic theories and the results of previous research.

5.2.3 The significance of the control variables in our regression models:

Consistent Effect:

Inflation (INF): Across all three regions and for both nominal and real effective exchange rates, higher inflation was consistently associated with currency depreciation. This is theoretically consistent with purchasing power parity (PPP) Head (2003), which suggests that higher inflation in a country will eventually lead to a depreciation of its currency. This is also supported by considerable existing research. The magnitude of the impact varied across regions, potentially due to differences in central bank policies and the responsiveness of markets to inflation pressures. For example, the effect in high inflation environments, like some countries in the American region, was substantially more pronounced than in regions with more stable inflation.

Positive Effect:

1. Foreign Direct Investment (FDV): FDI inflow generally showed a positive association with currency appreciation, especially in the Asian and American regions, consistent with its role in strengthening a country's balance of payments and increasing demand for its currency. However, the strength and statistical significance varied substantially, possibly because of the differing levels of financial development and the macroeconomic environments across the countries. In several instances, the impact was non-significant.
2. Economic Growth (GROW): Strong economic growth tended to be associated with currency appreciation in the fixed effects models, suggesting increased investor confidence and demand for the local currency. However, the significance of the relationship varied, with growth showing limited explanatory power in some regions.
3. Trade Balance (TRB): The impact of trade balances was also inconsistent. While in several instances a positive trade balance was associated with currency appreciation, there were instances where the effect was either insignificant or even negative. The varied relationship underscores the complexities of trade's impact, which may be influenced by other economic variables, such as the level of imports, price fluctuations in goods markets, and the structure of exports.

Mixed Effects:

1. Local Interest rate (NFR): The influence of domestic interest rates varied significantly between regions and types of exchange rates. In some cases, it was significantly associated with currency appreciation (higher domestic interest rates attracting capital inflows) aligning with the economic theories and IMF publications, but in others, the impact was not statistically significant or even negative. This inconsistency could be due to differences in monetary policy, capital market integration, and other

macroeconomic factors that interacted with domestic interest rates, influencing the overall effect on exchange rates.

2. Terms of Trade (TOT): This variable also demonstrated mixed results in relation to exchange rates. In some models, improved terms of trade (an increase in the relative price of exports) were associated with currency appreciation, but in other instances, there was no significant effect, aligning with the literature review's description of this variable compound properties, Khim-Sen Liew, (2003) Gantman & Dabós, (2017). This inconsistency highlights the diverse effects of trade, which are influenced by global commodity prices, domestic supply and demand conditions, and other macroeconomic factors.

Negative Effects:

External Debt (EXD): Higher external debt levels were generally (though not uniformly) associated with currency depreciation across the regions, particularly in the analysis of real effective exchange rates. This is consistent with theories suggesting that higher debt burdens can undermine investor confidence, leading to capital outflows and currency depreciation, supporting the established view that high debt burdens weaken investor confidence and reduce demand for the local currency, Chika Priscilla, Imoagwu & Ezenekwe, (2023). However, the strength of the relationship varied across regions and the exchange rate considered (nominal vs. real effective). The impact in high-debt countries was stronger.

Inconsistent Effect:

Trade Openness (TOD): Trade openness exhibited an inconsistent relationship with exchange rates across regions. In some instances, greater trade openness was positively associated with currency appreciation (increased economic activity and foreign exchange reserves), but in others, there was no significant effect or even a negative association, consistent with the literature review's description of these variables' complex and often context-dependent effects, Khim-Sen Liew, (2003) Gantman & Dabós, (2017). This

highlights the complexities of trade's impact on exchange rates, which is influenced by the structure of the economy, the composition of exports and imports, and other factors.

In summary, the control variables demonstrated a complex interplay of effects on nominal and real effective exchange rates. While inflation consistently showed a negative association with exchange rates and FDI often a positive association (currency appreciation), the impacts of the other control variables varied across regions and exchange rate types. The lack of consistent, statistically significant effects across all regions and variables underscores the significant influence of domestic macroeconomic conditions, exchange rate regime choices, and other unobserved effects on exchange rate behavior in emerging economies. While the direction of the effects often aligns with economic theory and previous research, the context-specific nature of these influences emphasizes the necessity of considering them together when analyzing exchange rate dynamics in emerging markets.

5.3 Recommendations:

5.3.1 Policy Recommendations:

Reference this research findings and discussions, here are some policy recommendations for policymakers and practical recommendations for businesses in each region:

- Global Policy Coordination: Policymakers in both developed and developing economies should strive for greater international cooperation to mitigate the spillover effects of US monetary policy. Coordinated monetary policies could reduce the volatility experienced by emerging markets when the FED adjusts interest rates.
- Strengthening Domestic Macroeconomic Fundamentals: Emerging economies, particularly in Asia, should prioritize policies to enhance macroeconomic stability, including measures to manage inflation, strengthen fiscal policy, and deepen capital markets. This will reduce their vulnerability to changes in US

interest rates and external shocks. Each region requires tailor-made policies based on their specific strengths and challenges as identified in the descriptive analysis. The significant regional variations in the study's results emphasize the importance of regional-specific policies, not limited to:

- Asia: Focus on measures to enhance financial stability, manage capital inflows and outflows effectively, and diversify exports. Policies to promote sustainable growth without excessive reliance on external capital are essential.
- Europe: Given the relatively higher external debt in several European countries, implementing fiscal consolidation measures and diversifying sources of funding could strengthen macroeconomic resilience. Strengthening domestic financial markets, including banking regulations, might be a priority.
- Americas: Addressing the high inflation in certain American economies requires implementing credible anti-inflationary policies alongside efforts to promote sustainable growth and reduce external debt vulnerabilities.
- Exchange Rate Management: Countries should carefully consider their exchange rate regimes and adjust their policies accordingly. The study highlights the impact of both fixed and floating exchange rates.

Policies needed by the region could be pointed out as below:

- Asia: Policies focusing on capital account management, export diversification, financial market development, and inflation targeting are needed. Greater collaboration to moderate the impact of external shocks on exchange rates could lessen the adverse impacts of US interest rate changes.
- Europe: Fiscal consolidation measures are needed, along with strengthened banking regulation and enhanced measures to reduce external debt vulnerabilities. Further measures to promote domestic growth and reduce reliance on external funding are important.

- Americas: Credible anti-inflationary policies, alongside efforts to achieve sustainable fiscal consolidation and reduce external debt, are crucial. Structural reforms to improve macroeconomic stability, potentially including regulatory changes, would help.

Practical Recommendations for the Business Sector, businesses in each region should adapt to the risks and opportunities identified in the study:

- Hedging Strategies: Businesses in all regions should use effective hedging strategies to mitigate the risk of exchange rate fluctuations. This would include forward contracts, options, and other risk management tools.
- Diversification: Businesses in Asia should diversify their export markets and sources of financing to reduce vulnerability to US monetary policy. This will reduce dependence on the USD.
- Investment Decisions: Businesses should carefully assess the macroeconomic environment, particularly inflation and interest rate risks, before making investment decisions.
- Supply Chain Management: Businesses should diversify their supply chains to reduce dependence on specific countries or regions. This may ensure better strength against external shocks.
- Financial Planning: Businesses should incorporate exchange rate risk into their financial planning and implement robust risk management strategies.

This research emphasizes the complex and dynamic nature of exchange rate movements, particularly in emerging markets, the recommendations presented above, while specific to the findings of the study, are general suggestions.

5.3.2 Recommendation for an improved Methodological approach:

- Advanced Econometric Techniques: employing more sophisticated econometric techniques to address potential issues such as endogeneity, heteroscedasticity, and

autocorrelation. Instrumental variable (IV) estimation or dynamic panel data models could address potential endogeneity issues.

- Robustness Checks: Conduct robustness checks by using different sample periods, alternative measures of the variables, and various econometric techniques. This strengthens may the conclusions and reduces sensitivity to data issues.
- Expanded Data Set: A broader range of emerging economies and consider the inclusion of additional macroeconomic variables (such as consumer confidence, or national foreign reserves). This may lead to more robust results.
- Qualitative Analysis: While the current study emphasizes quantitative analysis, incorporating qualitative data, such as interviews with policymakers or industry leaders, could provide a valuable additional perspective. This enhances the interpretation of results.
- Consideration of Time-Varying Effects: The possibility that the relationship between the US interest rate and the exchange rates might vary over time. For example, the impact of a change in the US interest rate might be stronger during periods of global financial instability than during times of relative calm.

By addressing these research gaps and improving the methodology, future studies can advance understanding of the complex relationship between US monetary policy and exchange rates in emerging economies. The suggestions above should lead to more robust, reliable, and generalizable findings.

5.3.3 Recommendations for Future Research:

Based on the study and research gaps here are the areas for Further Investigation:

- Longitudinal Analysis: The study's 20-year timeframe is valuable, but a longer-term perspective could offer deeper insights into the long-term impacts of US interest rate changes on emerging economies. A more extensive longitudinal analysis could better capture the effects of sustained periods of high or low interest rates and help distinguish between short-term market fluctuations and long-term structural changes in exchange rates.

- Country-Specific Analyses: The study analyzed groups of countries by region, but more in-depth, country-specific analyses could provide a more nuanced understanding of the diverse factors influencing exchange rate dynamics. This would require investigating the unique political, economic, and institutional contexts within each country, allowing for a more precise evaluation of the relative importance of the US interest rate and the control variables.
- Policy Interaction: The study could benefit from explicitly investigating the interplay between US monetary policy and the domestic monetary and fiscal policies of the emerging economies. A more thorough analysis of these interactions would provide a more comprehensive understanding of the transmission mechanism of US monetary policy and its ultimate effect on exchange rates.
- External Shocks: Future studies may openly integrate the impact of various external shocks (e.g., commodity price shocks, geopolitical events) on exchange rates, this would help to isolate the impact of US interest rate changes from other, potentially confounding factors. The COVID-19 pandemic provides a prime case study in terms of external shock that could inform future research.
- Exchange Rate Regimes: A more thorough investigation into the influence of exchange rate regime choices (fixed, managed float, or freely floating) on the openness of emerging economies to changes in the US interest rate is needed. The function of exchange rate regimes as a mediating factor between US monetary policy and exchange rates requires further study which is not deeply covered in this study.
- Financial Development and Capital Flows: Investigation could be done regarding the interaction between the level of financial development in emerging economies and their vulnerability to changes in US interest rates. This will include the role of capital flows and their interaction with financial depth and stability in the emerging economies.

- Non-linear Relationships: The study primarily investigated linear relationships; however, exploring potential non-linear relationships between US interest rates, macroeconomic variables, and exchange rates might reveal more insightful dynamics.

5.4 Limitation:

While providing valuable insights through this study, we still have several limitations stated below that should be acknowledged:

- Sample Size and Selection Bias: The study included 20 emerging economies. While this represents a reasonably large sample for a cross-country study, it might not fully capture the diversity of experiences among all emerging economies. The selection criteria, while aiming for regional representation, may have introduced selection bias, potentially excluding certain types of economies that could have exhibited different responses to US interest rate changes. The exclusion of Middle Eastern and African economies, due to their heavy reliance on oil and gas (priced in USD), introduces further limitations on the generalizability of the findings.
- Data Limitations: The study relied on annual data from secondary sources (World Bank, IMF and FRED). While these data sources are reputable, annual data frequency could not uncover important short-term fluctuations in exchange rates and economic variables. Data availability and consistency might also vary across countries, introducing potential measurement errors or biases. The limited availability of reliable data for some African emerging economies restricts the comprehensiveness of the regional comparison. Furthermore, the use of only annual data does not fully capture the dynamic nature of exchange rate movements and the potential for rapid and short-lived reactions to economic policy changes.

- Model Specification and Econometric Challenges: The study employed fixed and random effects regression models. The choice of model was based on Hausman tests to determine the appropriate model based on the characteristics of the panel data. However, econometric issues, such as endogeneity, heteroscedasticity, and autocorrelation, were not fully accounted for, which could also influence the results and the interpretation of statistical significance.
- Omitted Variable Bias: The study acknowledged the possibility of omitted variable bias, meaning that there might be other relevant variables (political risk, commodity prices, global value chains, etc.) not included in the model. The omission of these variables could have affected the estimates and potentially biased the results.
- Limited Focus on Policy Interactions: The study did not fully investigate the interactions among various policies (monetary, fiscal, trade, exchange rate policies). The potential interplay between these policies could significantly affect exchange rate dynamics, and this interaction was not fully addressed in the current study. This is mentioned in the research gap section.
- Causality vs. Correlation: While the study investigated statistical relationships, it is essential to remember that correlation does not imply causation. The analysis identifies statistical relationships but establishing definitive cause-and-effect relationships between the US interest rate and exchange rate movements requires more advanced methodology.

The limitations mentioned above could have affected the results in a couple of ways:

- Underestimation/Overestimation of Effects: Omitted variable bias and data limitations could have led to either an underestimation or an overestimation of the impact of the US interest rate and the control variables on exchange rates.
- Limited Generalizability: The limitations on sample size and selection, coupled with econometric challenges, could restrict the generalizability of the findings to other emerging economies or different time periods.

Trump's tariff policies have complex and often unpredictable impacts on US interest rates and, subsequently, on emerging countries' foreign exchange rates. Here are some of the key limitations:

- Inflationary Pressure: Tariffs are taxes on imported goods, directly increasing their cost. This can lead to higher domestic prices in the US, potentially contributing to inflation. If the US Federal Reserve (Fed) prioritizes controlling inflation, it might be more inclined to raise interest rates or maintain higher rates for longer.
- Growth Slowdown: However, tariffs can also slow down economic growth in the US by increasing input costs for businesses, reducing consumer purchasing power (due to higher prices), and creating uncertainty that deters investment. A significant slowdown in US economic growth might prompt the Fed to lower interest rates to stimulate the economy.
- The net effect on US interest rates is ambiguous and depends on which of these opposing forces dominate. The Fed's reaction function to these conflicting signals introduces significant limitations in predicting the precise impact. Academic research needs to model these competing forces and the Fed's policy response.
- Tariff policies, especially those implemented abruptly or with frequent changes, introduce significant policy uncertainty. This uncertainty can lead to increased volatility in financial markets, including bond markets (affecting interest rates).

The lack of clarity and predictability in trade policy makes it difficult for markets to price in future expectations, leading to erratic movements in interest rates that are not solely driven by fundamental economic indicators. This unpredictability makes it challenging for academic models to consistently forecast outcomes.

Global Supply Chain Realignments: US tariffs often provoke retaliatory tariffs from other countries, further disrupting global trade and potentially leading to a

"trade war." This can reduce global demand, including for US exports. Erica York, Nicolo Pastrone (2024).

Many emerging countries have significant foreign-currency denominated debt, particularly in USD. Depreciating local currency makes it more expensive to service this debt, increasing the risk of default and potentially leading to financial instability.

The study findings reveal significant relationships between US interest rate changes and emerging economies exchange rates, but caution is required for broad generalizations or policy recommendations due to study limitations while additional research to address these limitations will enhance the results. The differing effects of control variables and regional statistical significance variations demonstrate that exchange rate determination in emerging markets is complex while exchange rate regimes affect the explanatory power of models which shows that single models have limitations, and further research should include more varied factors. Future studies could incorporate additional variables (e.g., global value chains, digital currencies, and political risk), expand the time frame, or focus on more specific country groups to provide a deeper understanding of exchange rate dynamics in emerging economies.

Final Thoughts:

We cannot conclude research about this topic without talking about the impact of the latest US tariffs and new trade policies on the US dollar, gold and emerging markets. The recent tariff imposition in the US will most likely exert downward pressure on the US Dollar Index (DXY). This is contrary to conventional economic wisdom that posits tariffs will lead to the appreciation of the tariff-imposing nation's currency. Recent analysis confirms a weaker dollar. This may be explained by, among others, decreased consumer and business confidence brought about by heightened trade tensions and policy uncertainty, which makes US assets less attractive to foreign investors. Additionally, if the tariffs lead to higher import costs that are passed on to consumers and businesses in

the United States, the dollar might need to depreciate to offset the deteriorating terms of trade, as foreign suppliers have less incentive to absorb these costs.

Regarding the emerging economies, the impact of these US tariffs on their foreign exchange rates is multifaceted and generally negative. Historically, US tariffs have led to currency depreciation in emerging markets, making their imports more costly and contributing to inflationary pressures. Reduced exports to the US due to tariffs can lower demand for their currencies, causing them to weaken against the dollar but this could not be the case this time. Moreover, the uncertainty surrounding trade policies can deter investment in emerging markets, tourism and local purchases; further destabilizing their currencies. While some emerging economies might see shifts in supply chains that could temporarily benefit their exports, the overarching impact of broad US tariffs tends to create headwinds for their exchange rates, but all of this is assumptions, and we could watch new trends and economic effects in this domain.

Finally, tariffs can contribute to inflationary pressures by increasing the cost of imported goods. Since gold is often seen as a hedge against inflation, rising inflation expectations due to tariffs can further bolster gold prices. The weakening of the US dollar, which can occur because of tariffs eroding investor confidence or due to retaliatory tariffs from other nations, also tends to support higher gold prices, as gold is priced in dollars and becomes cheaper for holders of other currencies. Therefore, the latest US tariffs are likely to continue contributing to the factors that support elevated gold prices. So that, Emerging countries with high gold reserves may benefit in terms of their foreign exchange rates among other fiscal and monetary aspects.

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APPENDIX

Appendix A: Panel data of the Americans emerging countries

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Argentina	2003	Nominal exchange rate	2.90	1.13	100.00	5.00	1.29	80.50	40.64	8.84	6.38	74.12
Argentina	2003	Real exchange rate	227.32	1.13	100.00	5.00	1.29	80.50	40.64	8.84	6.38	74.12
Argentina	2004	Nominal exchange rate	2.92	1.35	4.42	2.61	2.51	114.78	40.69	9.03	1.95	79.20
Argentina	2004	Real exchange rate	218.61	1.35	4.42	2.61	2.51	114.78	40.69	9.03	1.95	79.20
Argentina	2005	Nominal exchange rate	2.90	3.22	9.64	3.76	2.65	74.25	40.55	8.85	2.65	76.75
Argentina	2005	Real exchange rate	215.65	3.22	9.64	3.76	2.65	74.25	40.55	8.85	2.65	76.75
Argentina	2006	Nominal exchange rate	3.05	4.97	10.90	6.42	2.38	52.88	40.43	8.05	2.79	80.18
Argentina	2006	Real exchange rate	210.61	4.97	10.90	6.42	2.38	52.88	40.43	8.05	2.79	80.18
Argentina	2007	Nominal exchange rate	3.10	5.02	8.83	7.97	2.25	43.15	40.95	9.01	2.10	84.98
Argentina	2007	Real exchange rate	205.14	5.02	8.83	7.97	2.25	43.15	40.95	9.01	2.10	84.98
Argentina	2008	Nominal exchange rate	3.14	1.92	8.59	11.05	2.69	36.80	40.40	4.06	1.50	95.34
Argentina	2008	Real exchange rate	199.55	1.92	8.59	11.05	2.69	36.80	40.40	4.06	1.50	95.34
Argentina	2009	Nominal exchange rate	3.71	0.16	6.27	11.60	1.21	41.42	34.06	-5.92	2.18	96.08
Argentina	2009	Real exchange rate	186.85	0.16	6.27	11.60	1.21	41.42	34.06	-5.92	2.18	96.08
Argentina	2010	Nominal exchange rate	3.90	0.18	10.46	9.17	2.68	30.95	34.97	10.13	-0.38	99.44
Argentina	2010	Real exchange rate	180.44	0.18	10.46	9.17	2.68	30.95	34.97	10.13	-0.38	99.44
Argentina	2011	Nominal exchange rate	4.11	0.10	9.78	10.68	2.04	27.74	35.21	6.00	-1.01	109.72
Argentina	2011	Real exchange rate	171.97	0.10	9.78	10.68	2.04	27.74	35.21	6.00	-1.01	109.72
Argentina	2012	Nominal exchange rate	4.54	0.14	10.04	12.02	2.81	26.24	30.53	-1.03	-0.39	114.20
Argentina	2012	Real exchange rate	177.65	0.14	10.04	12.02	2.81	26.24	30.53	-1.03	-0.39	114.20
Argentina	2013	Nominal exchange rate	5.46	0.11	10.62	14.85	1.78	27.81	29.33	2.41	-2.38	106.94
Argentina	2013	Real exchange rate	163.10	0.11	10.62	14.85	1.78	27.81	29.33	2.41	-2.38	106.94
Argentina	2014	Nominal exchange rate	8.08	0.09	23.90	20.42	0.96	29.83	28.41	-2.51	-1.74	104.74
Argentina	2014	Real exchange rate	134.34	0.09	23.90	20.42	0.96	29.83	28.41	-2.51	-1.74	104.74
Argentina	2015	Nominal exchange rate	9.23	0.13	26.50	21.17	1.98	30.36	22.49	2.73	-2.96	100.00
Argentina	2015	Real exchange rate	155.58	0.13	26.50	21.17	1.98	30.36	22.49	2.73	-2.96	100.00
Argentina	2016	Nominal exchange rate	14.76	0.39	25.68	24.28	0.58	33.31	26.09	-2.08	-2.71	106.08
Argentina	2016	Real exchange rate	128.54	0.39	25.68	24.28	0.58	33.31	26.09	-2.08	-2.71	106.08
Argentina	2017	Nominal exchange rate	16.56	1.00	25.68	19.00	1.79	36.02	25.29	2.82	-4.84	103.01
Argentina	2017	Real exchange rate	136.29	1.00	25.68	19.00	1.79	36.02	25.29	2.82	-4.84	103.01
Argentina	2018	Nominal exchange rate	28.09	1.83	34.27	31.92	2.23	54.90	30.76	-2.62	-5.16	104.24
Argentina	2018	Real exchange rate	111.55	1.83	34.27	31.92	2.23	54.90	30.76	-2.62	-5.16	104.24
Argentina	2019	Nominal exchange rate	48.15	2.16	53.55	47.29	1.49	65.25	32.63	-2.00	-0.78	103.34
Argentina	2019	Real exchange rate	98.85	2.16	53.55	47.29	1.49	65.25	32.63	-2.00	-0.78	103.34
Argentina	2020	Nominal exchange rate	70.54	0.37	42.02	29.32	1.27	68.09	30.20	-9.90	0.70	103.98
Argentina	2020	Real exchange rate	100.00	0.37	42.02	29.32	1.27	68.09	30.20	-9.90	0.70	103.98
Argentina	2021	Nominal exchange rate	94.99	0.08	48.41	33.55	1.37	51.52	32.93	10.72	1.36	113.90
Argentina	2021	Real exchange rate	103.10	0.08	48.41	33.55	1.37	51.52	32.93	10.72	1.36	113.90
Argentina	2022	Nominal exchange rate	130.62	1.69	72.43	52.42	2.40	40.00	31.65	4.96	-0.64	96.50
Argentina	2022	Real exchange rate	125.27	1.69	72.43	52.42	2.40	40.00	31.65	4.96	-0.64	96.50

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Brazil	2003	Nominal exchange rate	3.08	1.13	14.71	21.97	1.81	43.64	28.14	1.14	0.39	90.57
Brazil	2003	Real exchange rate	57.58	1.13	14.71	21.97	1.81	43.64	28.14	1.14	0.39	90.57
Brazil	2004	Nominal exchange rate	2.93	1.35	6.60	15.42	2.71	33.98	29.68	5.76	1.34	92.09
Brazil	2004	Real exchange rate	60.45	1.35	6.60	15.42	2.71	33.98	29.68	5.76	1.34	92.09
Brazil	2005	Nominal exchange rate	2.43	3.22	6.87	17.63	1.73	21.75	27.09	3.20	1.31	92.86
Brazil	2005	Real exchange rate	73.46	3.22	6.87	17.63	1.73	21.75	27.09	3.20	1.31	92.86
Brazil	2006	Nominal exchange rate	2.18	4.97	4.18	13.93	1.75	17.99	26.04	3.96	0.97	97.82
Brazil	2006	Real exchange rate	81.72	4.97	4.18	13.93	1.75	17.99	26.04	3.96	0.97	97.82
Brazil	2007	Nominal exchange rate	1.95	5.02	3.64	10.58	3.19	17.44	25.29	6.07	-0.20	101.36
Brazil	2007	Real exchange rate	87.43	5.02	3.64	10.58	3.19	17.44	25.29	6.07	-0.20	101.36
Brazil	2008	Nominal exchange rate	1.83	1.92	5.68	11.66	2.99	15.90	27.26	5.09	-2.10	104.95
Brazil	2008	Real exchange rate	90.36	1.92	5.68	11.66	2.99	15.90	27.26	5.09	-2.10	104.95
Brazil	2009	Nominal exchange rate	2.00	0.16	4.89	9.28	1.89	17.28	22.11	-0.13	-1.76	101.68
Brazil	2009	Real exchange rate	89.17	0.16	4.89	9.28	1.89	17.28	22.11	-0.13	-1.76	101.68
Brazil	2010	Nominal exchange rate	1.76	0.18	5.04	8.87	3.73	16.46	22.77	7.53	-3.93	118.53
Brazil	2010	Real exchange rate	100.00	0.18	5.04	8.87	3.73	16.46	22.77	7.53	-3.93	118.53
Brazil	2011	Nominal exchange rate	1.67	0.10	6.64	10.99	3.92	15.85	23.93	3.97	-3.19	127.30
Brazil	2011	Real exchange rate	103.17	0.10	6.64	10.99	3.92	15.85	23.93	3.97	-3.19	127.30
Brazil	2012	Nominal exchange rate	1.95	0.14	5.40	7.91	3.75	18.33	25.11	1.92	-3.76	120.39
Brazil	2012	Real exchange rate	91.99	0.14	5.40	7.91	3.75	18.33	25.11	1.92	-3.76	120.39
Brazil	2013	Nominal exchange rate	2.16	0.11	6.20	7.81	3.04	19.84	25.79	3.00	-3.57	117.12
Brazil	2013	Real exchange rate	86.41	0.11	6.20	7.81	3.04	19.84	25.79	3.00	-3.57	117.12
Brazil	2014	Nominal exchange rate	2.35	0.09	6.33	10.02	3.57	23.11	24.69	0.50	-4.50	113.19
Brazil	2014	Real exchange rate	84.59	0.09	6.33	10.02	3.57	23.11	24.69	0.50	-4.50	113.19
Brazil	2015	Nominal exchange rate	3.33	0.13	9.03	12.62	3.59	30.73	26.95	-3.55	-3.52	100.00
Brazil	2015	Real exchange rate	69.61	0.13	9.03	12.62	3.59	30.73	26.95	-3.55	-3.52	100.00
Brazil	2016	Nominal exchange rate	3.49	0.39	8.74	12.45	4.14	30.91	24.53	-3.28	-1.70	102.37
Brazil	2016	Real exchange rate	73.24	0.39	8.74	12.45	4.14	30.91	24.53	-3.28	-1.70	102.37
Brazil	2017	Nominal exchange rate	3.19	1.00	3.45	8.51	3.34	26.82	24.32	1.32	-1.23	108.24
Brazil	2017	Real exchange rate	79.73	1.00	3.45	8.51	3.34	26.82	24.32	1.32	-1.23	108.24
Brazil	2018	Nominal exchange rate	3.65	1.83	3.66	6.87	4.08	29.93	28.88	1.78	-2.86	106.88
Brazil	2018	Real exchange rate	71.42	1.83	3.66	6.87	4.08	29.93	28.88	1.78	-2.86	106.88
Brazil	2019	Nominal exchange rate	3.94	2.16	3.73	5.43	3.69	31.20	28.89	1.22	-3.63	107.04
Brazil	2019	Real exchange rate	70.00	2.16	3.73	5.43	3.69	31.20	28.89	1.22	-3.63	107.04
Brazil	2020	Nominal exchange rate	5.16	0.37	3.21	2.20	2.59	38.01	32.30	-3.28	-1.91	107.67
Brazil	2020	Real exchange rate	55.58	0.37	3.21	2.20	2.59	38.01	32.30	-3.28	-1.91	107.67
Brazil	2021	Nominal exchange rate	5.39	0.08	8.30	4.35	2.78	35.78	37.66	4.99	-2.77	123.23
Brazil	2021	Real exchange rate	53.79	0.08	8.30	4.35	2.78	35.78	37.66	4.99	-2.77	123.23
Brazil	2022	Nominal exchange rate	5.16	1.69	9.28	12.00	3.82	31.11	38.82	2.90	-2.47	103.20
Brazil	2022	Real exchange rate	60.36	1.69	9.28	12.00	3.82	31.11	38.82	2.90	-2.47	103.20

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Colombia	2003	Nominal exchange rate	2877.54	1.13	7.13	7.80	1.82	40.83	36.52	3.92	-0.96	89.64
Colombia	2003	Real exchange rate	68.96	1.13	7.13	7.80	1.82	40.83	36.52	3.92	-0.96	89.64
Colombia	2004	Nominal exchange rate	2628.37	1.35	5.90	7.80	2.66	33.83	35.86	5.33	-0.66	100.57
Colombia	2004	Real exchange rate	75.22	1.35	5.90	7.80	2.66	33.83	35.86	5.33	-0.66	100.57
Colombia	2005	Nominal exchange rate	2321.13	3.22	5.05	7.01	7.03	26.43	37.42	4.83	-1.34	114.16
Colombia	2005	Real exchange rate	84.79	3.22	5.05	7.01	7.03	26.43	37.42	4.83	-1.34	114.16
Colombia	2006	Nominal exchange rate	2358.59	4.97	4.29	6.28	4.17	24.52	39.64	6.72	-1.85	119.05
Colombia	2006	Real exchange rate	83.09	4.97	4.29	6.28	4.17	24.52	39.64	6.72	-1.85	119.05
Colombia	2007	Nominal exchange rate	2077.81	5.02	5.54	8.01	4.31	22.18	37.10	6.74	-2.98	124.96
Colombia	2007	Real exchange rate	92.33	5.02	5.54	8.01	4.31	22.18	37.10	6.74	-2.98	124.96
Colombia	2008	Nominal exchange rate	1965.14	1.92	7.00	9.74	4.36	20.09	39.17	3.28	-2.68	132.29
Colombia	2008	Real exchange rate	95.44	1.92	7.00	9.74	4.36	20.09	39.17	3.28	-2.68	132.29
Colombia	2009	Nominal exchange rate	2157.60	0.16	4.20	6.15	3.46	23.80	35.16	1.14	-1.91	125.01
Colombia	2009	Real exchange rate	90.45	0.16	4.20	6.15	3.46	23.80	35.16	1.14	-1.91	125.01
Colombia	2010	Nominal exchange rate	1899.00	0.18	2.27	3.66	2.24	23.30	34.26	4.49	-3.00	145.10
Colombia	2010	Real exchange rate	100.00	0.18	2.27	3.66	2.24	23.30	34.26	4.49	-3.00	145.10
Colombia	2011	Nominal exchange rate	1848.02	0.10	3.42	4.26	4.37	23.74	39.47	6.95	-2.91	166.48
Colombia	2011	Real exchange rate	100.15	0.10	3.42	4.26	4.37	23.74	39.47	6.95	-2.91	166.48
Colombia	2012	Nominal exchange rate	1798.01	0.14	3.17	5.36	4.06	22.23	38.84	3.91	-3.14	157.28
Colombia	2012	Real exchange rate	105.29	0.14	3.17	5.36	4.06	22.23	38.84	3.91	-3.14	157.28
Colombia	2013	Nominal exchange rate	1868.90	0.11	2.02	4.17	4.24	25.11	37.99	5.13	-3.24	146.03
Colombia	2013	Real exchange rate	101.34	0.11	2.02	4.17	4.24	25.11	37.99	5.13	-3.24	146.03
Colombia	2014	Nominal exchange rate	2001.11	0.09	2.90	4.09	4.24	28.24	37.49	4.50	-5.20	132.84
Colombia	2014	Real exchange rate	95.88	0.09	2.90	4.09	4.24	28.24	37.49	4.50	-5.20	132.84
Colombia	2015	Nominal exchange rate	2741.78	0.13	4.99	4.58	3.96	39.14	38.36	2.96	-6.37	100.00
Colombia	2015	Real exchange rate	77.58	0.13	4.99	4.58	3.96	39.14	38.36	2.96	-6.37	100.00
Colombia	2016	Nominal exchange rate	3055.26	0.39	7.51	6.78	4.90	43.21	36.20	2.09	-4.45	98.84
Colombia	2016	Real exchange rate	74.18	0.39	7.51	6.78	4.90	43.21	36.20	2.09	-4.45	98.84
Colombia	2017	Nominal exchange rate	2951.49	1.00	4.31	5.99	4.39	41.13	35.28	1.36	-3.18	115.71
Colombia	2017	Real exchange rate	77.42	1.00	4.31	5.99	4.39	41.13	35.28	1.36	-3.18	115.71
Colombia	2018	Nominal exchange rate	2955.70	1.83	3.24	4.71	3.38	40.89	36.53	2.56	-4.20	126.54
Colombia	2018	Real exchange rate	78.27	1.83	3.24	4.71	3.38	40.89	36.53	2.56	-4.20	126.54
Colombia	2019	Nominal exchange rate	3281.62	2.16	3.52	4.50	4.33	43.97	37.56	3.19	-4.58	124.75
Colombia	2019	Real exchange rate	73.65	2.16	3.52	4.50	4.33	43.97	37.56	3.19	-4.58	124.75
Colombia	2020	Nominal exchange rate	3693.28	0.37	2.53	3.38	2.76	58.26	34.06	-7.25	-3.43	105.33
Colombia	2020	Real exchange rate	67.99	0.37	2.53	3.38	2.76	58.26	34.06	-7.25	-3.43	105.33
Colombia	2021	Nominal exchange rate	3744.24	0.08	3.50	2.07	3.00	54.99	40.06	11.02	-5.64	126.39
Colombia	2021	Real exchange rate	65.81	0.08	3.50	2.07	3.00	54.99	40.06	11.02	-5.64	126.39
Colombia	2022	Nominal exchange rate	4256.19	1.69	10.18	8.50	4.98	55.79	48.07	7.26	-6.14	98.60
Colombia	2022	Real exchange rate	62.74	1.69	10.18	8.50	4.98	55.79	48.07	7.26	-6.14	98.60

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Chile	2003	Nominal exchange rate	691.40	1.13	2.81	2.73	4.56	31.40	65.69	4.72	0.21	56.91
Chile	2003	Real exchange rate	86.22	1.13	2.81	2.73	4.56	31.40	65.69	4.72	0.21	56.91
Chile	2004	Nominal exchange rate	609.53	1.35	1.05	1.94	5.02	30.20	69.89	6.67	3.26	69.52
Chile	2004	Real exchange rate	91.04	1.35	1.05	1.94	5.02	30.20	69.89	6.67	3.26	69.52
Chile	2005	Nominal exchange rate	559.77	3.22	3.05	3.93	4.90	29.40	72.06	5.84	1.91	79.49
Chile	2005	Real exchange rate	96.33	3.22	3.05	3.93	4.90	29.40	72.06	5.84	1.91	79.49
Chile	2006	Nominal exchange rate	530.28	4.97	3.39	5.11	3.09	28.00	73.71	6.05	5.50	103.29
Chile	2006	Real exchange rate	100.14	4.97	3.39	5.11	3.09	28.00	73.71	6.05	5.50	103.29
Chile	2007	Nominal exchange rate	522.46	5.02	4.41	5.61	6.11	28.10	76.98	5.17	5.06	106.86
Chile	2007	Real exchange rate	97.52	5.02	4.41	5.61	6.11	28.10	76.98	5.17	5.06	106.86
Chile	2008	Nominal exchange rate	522.46	1.92	8.72	7.49	10.46	27.60	80.68	3.79	-4.19	91.34
Chile	2008	Real exchange rate	98.26	1.92	8.72	7.49	10.46	27.60	80.68	3.79	-4.19	91.34
Chile	2009	Nominal exchange rate	560.86	0.16	0.35	2.05	7.42	28.30	66.69	-1.12	1.44	94.82
Chile	2009	Real exchange rate	95.13	0.16	0.35	2.05	7.42	28.30	66.69	-1.12	1.44	94.82
Chile	2010	Nominal exchange rate	510.25	0.18	1.41	1.75	6.84	27.70	69.72	5.85	0.90	115.40
Chile	2010	Real exchange rate	100.00	0.18	1.41	1.75	6.84	27.70	69.72	5.85	0.90	115.40
Chile	2011	Nominal exchange rate	483.67	0.10	3.34	5.29	10.49	27.00	72.48	6.22	-4.92	117.18
Chile	2011	Real exchange rate	100.71	0.10	3.34	5.29	10.49	27.00	72.48	6.22	-4.92	117.18
Chile	2012	Nominal exchange rate	486.47	0.14	3.01	5.79	11.91	26.60	68.16	6.16	-5.33	109.12
Chile	2012	Real exchange rate	102.90	0.14	3.01	5.79	11.91	26.60	68.16	6.16	-5.33	109.12
Chile	2013	Nominal exchange rate	495.27	0.11	1.79	5.17	7.61	26.30	65.14	3.31	-4.78	105.71
Chile	2013	Real exchange rate	101.36	0.11	1.79	5.17	7.61	26.30	65.14	3.31	-4.78	105.71
Chile	2014	Nominal exchange rate	570.35	0.09	4.72	3.92	9.84	26.10	65.63	1.79	-3.46	102.66
Chile	2014	Real exchange rate	91.88	0.09	4.72	3.92	9.84	26.10	65.63	1.79	-3.46	102.66
Chile	2015	Nominal exchange rate	654.12	0.13	4.35	3.61	7.33	26.70	59.35	2.15	-2.74	100.00
Chile	2015	Real exchange rate	90.99	0.13	4.35	3.61	7.33	26.70	59.35	2.15	-2.74	100.00
Chile	2016	Nominal exchange rate	676.96	0.39	3.79	3.82	4.56	27.20	56.06	1.75	-2.62	103.83
Chile	2016	Real exchange rate	92.64	0.39	3.79	3.82	4.56	27.20	56.06	1.75	-2.62	103.83
Chile	2017	Nominal exchange rate	648.83	1.00	2.18	2.94	1.90	27.50	56.03	1.36	-2.76	114.26
Chile	2017	Real exchange rate	95.82	1.00	2.18	2.94	1.90	27.50	56.03	1.36	-2.76	114.26
Chile	2018	Nominal exchange rate	641.28	1.83	2.43	2.70	2.68	27.10	58.18	3.99	-4.48	111.33
Chile	2018	Real exchange rate	97.14	1.83	2.43	2.70	2.68	27.10	58.18	3.99	-4.48	111.33
Chile	2019	Nominal exchange rate	702.90	2.16	2.56	2.53	4.88	27.70	57.61	0.74	-5.21	109.35
Chile	2019	Real exchange rate	92.52	2.16	2.56	2.53	4.88	27.70	57.61	0.74	-5.21	109.35
Chile	2020	Nominal exchange rate	792.73	0.37	3.05	0.86	4.51	34.50	58.18	-6.15	-1.95	121.82
Chile	2020	Real exchange rate	84.96	0.37	3.05	0.86	4.51	34.50	58.18	-6.15	-1.95	121.82
Chile	2021	Nominal exchange rate	758.96	0.08	4.52	1.28	4.81	34.20	64.84	11.74	-7.28	136.14
Chile	2021	Real exchange rate	87.86	0.08	4.52	1.28	4.81	34.20	64.84	11.74	-7.28	136.14
Chile	2022	Nominal exchange rate	873.31	1.69	11.64	8.99	6.04	35.30	74.99	2.44	-8.66	103.40
Chile	2022	Real exchange rate	84.81	1.69	11.64	8.99	6.04	35.30	74.99	2.44	-8.66	103.40

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Dominican	2003	Nominal exchange rate	29.37	1.13	27.45	20.50	2.88	36.38	84.45	-1.35	4.84	90.49
Dominican	2003	Real exchange rate	79.92	1.13	27.45	20.50	2.88	36.38	84.45	-1.35	4.84	90.49
Dominican	2004	Nominal exchange rate	41.93	1.35	51.46	21.12	4.19	38.13	81.35	2.57	4.67	95.04
Dominican	2004	Real exchange rate	79.96	1.35	51.46	21.12	4.19	38.13	81.35	2.57	4.67	95.04
Dominican	2005	Nominal exchange rate	30.28	3.22	4.19	13.82	3.13	22.88	61.65	9.43	-1.32	92.02
Dominican	2005	Real exchange rate	106.86	3.22	4.19	13.82	3.13	22.88	61.65	9.43	-1.32	92.02
Dominican	2006	Nominal exchange rate	33.30	4.97	7.57	9.79	4.04	25.59	63.77	9.17	-3.40	94.94
Dominican	2006	Real exchange rate	100.52	4.97	7.57	9.79	4.04	25.59	63.77	9.17	-3.40	94.94
Dominican	2007	Nominal exchange rate	33.17	5.02	6.14	6.93	5.12	25.72	61.95	7.42	-4.93	98.11
Dominican	2007	Real exchange rate	100.68	5.02	6.14	6.93	5.12	25.72	61.95	7.42	-4.93	98.11
Dominican	2008	Nominal exchange rate	34.53	1.92	10.64	10.10	5.67	22.88	61.39	3.21	-9.39	92.13
Dominican	2008	Real exchange rate	99.76	1.92	10.64	10.10	5.67	22.88	61.39	3.21	-9.39	92.13
Dominican	2009	Nominal exchange rate	35.97	0.16	1.44	7.63	3.51	25.47	50.61	0.95	-4.77	97.76
Dominican	2009	Real exchange rate	99.58	0.16	1.44	7.63	3.51	25.47	50.61	0.95	-4.77	97.76
Dominican	2010	Nominal exchange rate	36.82	0.18	6.33	4.82	3.38	25.99	56.00	8.34	-7.47	95.82
Dominican	2010	Real exchange rate	100.00	0.18	6.33	4.82	3.38	25.99	56.00	8.34	-7.47	95.82
Dominican	2011	Nominal exchange rate	38.09	0.10	5.80	7.56	3.79	27.07	58.99	3.13	-7.51	94.09
Dominican	2011	Real exchange rate	96.42	0.10	5.80	7.56	3.79	27.07	58.99	3.13	-7.51	94.09
Dominican	2012	Nominal exchange rate	39.32	0.14	3.69	7.05	5.63	37.92	58.39	2.72	-6.54	94.69
Dominican	2012	Real exchange rate	96.33	0.14	3.69	7.05	5.63	37.92	58.39	2.72	-6.54	94.69
Dominican	2013	Nominal exchange rate	41.79	0.11	4.83	5.59	2.55	40.12	56.68	4.88	-4.10	92.42
Dominican	2013	Real exchange rate	93.58	0.11	4.83	5.59	2.55	40.12	56.68	4.88	-4.10	92.42
Dominican	2014	Nominal exchange rate	43.55	0.09	3.00	6.40	3.55	41.09	55.50	7.05	-3.23	92.09
Dominican	2014	Real exchange rate	91.69	0.09	3.00	6.40	3.55	41.09	55.50	7.05	-3.23	92.09
Dominican	2015	Nominal exchange rate	45.05	0.13	0.84	6.43	3.13	39.17	52.17	6.93	-1.80	100.00
Dominican	2015	Real exchange rate	94.26	0.13	0.84	6.43	3.13	39.17	52.17	6.93	-1.80	100.00
Dominican	2016	Nominal exchange rate	46.06	0.39	1.61	6.69	3.32	39.05	51.59	6.66	-1.08	104.48
Dominican	2016	Real exchange rate	93.69	0.39	1.61	6.69	3.32	39.05	51.59	6.66	-1.08	104.48
Dominican	2017	Nominal exchange rate	47.53	1.00	3.28	6.00	4.50	38.65	50.23	4.67	-0.17	99.73
Dominican	2017	Real exchange rate	90.79	1.00	3.28	6.00	4.50	38.65	50.23	4.67	-0.17	99.73
Dominican	2018	Nominal exchange rate	49.51	1.83	3.56	6.01	3.21	38.92	52.06	6.98	-1.54	94.99
Dominican	2018	Real exchange rate	87.80	1.83	3.56	6.01	3.21	38.92	52.06	6.98	-1.54	94.99
Dominican	2019	Nominal exchange rate	51.29	2.16	1.81	6.12	3.18	41.35	51.01	5.05	-1.34	99.27
Dominican	2019	Real exchange rate	86.97	2.16	1.81	6.12	3.18	41.35	51.01	5.05	-1.34	99.27
Dominican	2020	Nominal exchange rate	56.52	0.37	3.78	4.65	3.12	54.07	44.29	-6.72	-1.69	109.96
Dominican	2020	Real exchange rate	81.39	0.37	3.78	4.65	3.12	54.07	44.29	-6.72	-1.69	109.96
Dominican	2021	Nominal exchange rate	57.22	0.08	8.24	2.49	3.55	49.02	52.73	12.27	-2.85	99.29
Dominican	2021	Real exchange rate	81.64	0.08	8.24	2.49	3.55	49.02	52.73	12.27	-2.85	99.29
Dominican	2022	Nominal exchange rate	55.14	1.69	8.81	6.74	3.57	44.27	54.23	4.86	-5.77	98.40
Dominican	2022	Real exchange rate	88.72	1.69	8.81	6.74	3.57	44.27	54.23	4.86	-5.77	98.40

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Mexico	2003	Nominal exchange rate	10.79	1.13	4.55	3.09	2.37	26.32	48.70	1.19	-0.53	109.51
Mexico	2003	Real exchange rate	110.21	1.13	4.55	3.09	2.37	26.32	48.70	1.19	-0.53	109.51
Mexico	2004	Nominal exchange rate	11.29	1.35	1.42	3.00	3.07	25.86	52.04	6.78	-0.46	115.85
Mexico	2004	Real exchange rate	105.98	1.35	1.42	3.00	3.07	25.86	52.04	6.78	-0.46	115.85
Mexico	2005	Nominal exchange rate	10.90	3.22	2.98	3.00	2.74	24.14	52.56	5.33	-0.62	119.36
Mexico	2005	Real exchange rate	109.81	3.22	2.98	3.00	2.74	24.14	52.56	5.33	-0.62	119.36
Mexico	2006	Nominal exchange rate	10.90	4.97	3.61	3.15	2.17	22.07	54.48	5.58	-0.32	122.78
Mexico	2006	Real exchange rate	109.90	4.97	3.61	3.15	2.17	22.07	54.48	5.58	-0.32	122.78
Mexico	2007	Nominal exchange rate	10.93	5.02	2.03	3.17	2.81	23.11	55.26	6.30	-0.84	122.38
Mexico	2007	Real exchange rate	108.37	5.02	2.03	3.17	2.81	23.11	55.26	6.30	-0.84	122.38
Mexico	2008	Nominal exchange rate	11.13	1.92	5.44	3.13	2.56	21.66	56.37	4.83	-1.41	123.98
Mexico	2008	Real exchange rate	106.07	1.92	5.44	3.13	2.56	21.66	56.37	4.83	-1.41	123.98
Mexico	2009	Nominal exchange rate	13.51	0.16	0.58	2.08	2.08	26.51	54.59	-1.51	-0.75	110.15
Mexico	2009	Real exchange rate	92.78	0.16	0.58	2.08	2.08	26.51	54.59	-1.51	-0.75	110.15
Mexico	2010	Nominal exchange rate	12.64	0.18	1.62	2.50	2.76	28.07	59.27	7.42	-0.34	118.52
Mexico	2010	Real exchange rate	100.00	0.18	1.62	2.50	2.76	28.07	59.27	7.42	-0.34	118.52
Mexico	2011	Nominal exchange rate	12.42	0.10	3.17	2.91	1.94	29.05	62.16	5.29	-0.86	126.59
Mexico	2011	Real exchange rate	99.80	0.10	3.17	2.91	1.94	29.05	62.16	5.29	-0.86	126.59
Mexico	2012	Nominal exchange rate	13.17	0.14	1.66	2.98	1.45	35.13	64.26	5.47	-1.41	121.98
Mexico	2012	Real exchange rate	96.62	0.14	1.66	2.98	1.45	35.13	64.26	5.47	-1.41	121.98
Mexico	2013	Nominal exchange rate	12.77	0.11	2.11	2.97	3.84	38.90	62.69	4.69	-2.39	121.89
Mexico	2013	Real exchange rate	102.24	0.11	2.11	2.97	3.84	38.90	62.69	4.69	-2.39	121.89
Mexico	2014	Nominal exchange rate	13.29	0.09	3.14	3.05	2.08	40.25	64.10	6.01	-1.82	115.66
Mexico	2014	Real exchange rate	101.14	0.09	3.14	3.05	2.08	40.25	64.10	6.01	-1.82	115.66
Mexico	2015	Nominal exchange rate	15.85	0.13	2.10	3.13	2.99	44.85	70.41	5.09	-2.60	100.00
Mexico	2015	Real exchange rate	90.63	0.13	2.10	3.13	2.99	44.85	70.41	5.09	-2.60	100.00
Mexico	2016	Nominal exchange rate	18.66	0.39	2.09	3.03	3.50	50.30	75.69	4.45	-2.27	93.93
Mexico	2016	Real exchange rate	79.01	0.39	2.09	3.03	3.50	50.30	75.69	4.45	-2.27	93.93
Mexico	2017	Nominal exchange rate	18.93	1.00	3.87	2.92	2.78	49.86	76.95	5.81	-1.80	98.12
Mexico	2017	Real exchange rate	80.96	1.00	3.87	2.92	2.78	49.86	76.95	5.81	-1.80	98.12
Mexico	2018	Nominal exchange rate	19.24	1.83	0.88	3.14	3.01	49.50	80.21	4.84	-2.06	100.46
Mexico	2018	Real exchange rate	80.92	1.83	0.88	3.14	3.01	49.50	80.21	4.84	-2.06	100.46
Mexico	2019	Nominal exchange rate	19.26	2.16	0.66	2.98	2.30	48.04	77.40	4.41	-0.30	101.40
Mexico	2019	Real exchange rate	83.53	2.16	0.66	2.98	2.30	48.04	77.40	4.41	-0.30	101.40
Mexico	2020	Nominal exchange rate	21.49	0.37	-1.14	1.95	2.81	55.55	76.87	-5.46	2.40	96.84
Mexico	2020	Real exchange rate	77.10	0.37	-1.14	1.95	2.81	55.55	76.87	-5.46	2.40	96.84
Mexico	2021	Nominal exchange rate	20.27	0.08	2.48	1.56	2.69	46.47	83.29	3.30	-0.34	96.79
Mexico	2021	Real exchange rate	81.65	0.08	2.48	1.56	2.69	46.47	83.29	3.30	-0.34	96.79
Mexico	2022	Nominal exchange rate	20.13	1.69	3.38	1.95	2.67	41.92	88.45	8.65	-1.20	98.70
Mexico	2022	Real exchange rate	85.97	1.69	3.38	1.95	2.67	41.92	88.45	8.65	-1.20	98.70

Appendix B: Panel data of the Asian emerging countries

Country	Year	Variable	Value	US Interes	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Banglades	2003	Nominal exchange rate	58.15	1.13	5.67	7.11	0.45	23.40	27.66	4.74	0.22	134.33
Banglades	2003	Real exchange rate	96.00	1.13	5.67	7.11	0.45	23.40	27.66	4.74	0.22	134.33
Banglades	2004	Nominal exchange rate	59.51	1.35	5.67	5.80	0.69	29.02	26.86	5.24	-0.43	125.21
Banglades	2004	Real exchange rate	98.00	1.35	5.67	5.80	0.69	29.02	26.86	5.24	-0.43	125.21
Banglades	2005	Nominal exchange rate	64.33	3.22	7.05	5.53	1.17	25.51	34.40	6.54	-0.25	117.89
Banglades	2005	Real exchange rate	98.50	3.22	7.05	5.53	1.17	25.51	34.40	6.54	-0.25	117.89
Banglades	2006	Nominal exchange rate	68.93	4.97	6.77	5.99	0.64	26.57	38.11	6.67	1.67	110.51
Banglades	2006	Real exchange rate	99.50	4.97	6.77	5.99	0.64	26.57	38.11	6.67	1.67	110.51
Banglades	2007	Nominal exchange rate	68.87	5.02	9.11	6.99	0.82	25.41	39.94	7.06	1.08	100.05
Banglades	2007	Real exchange rate	99.00	5.02	9.11	6.99	0.82	25.41	39.94	7.06	1.08	100.05
Banglades	2008	Nominal exchange rate	68.60	1.92	8.90	7.55	1.45	23.66	42.62	6.01	1.01	86.56
Banglades	2008	Real exchange rate	96.00	1.92	8.90	7.55	1.45	23.66	42.62	6.01	1.01	86.56
Banglades	2009	Nominal exchange rate	69.04	0.16	5.42	7.81	0.88	22.95	40.09	5.05	3.47	98.63
Banglades	2009	Real exchange rate	97.00	0.16	5.42	7.81	0.88	22.95	40.09	5.05	3.47	98.63
Banglades	2010	Nominal exchange rate	69.65	0.18	8.13	7.21	1.07	21.32	37.80	5.57	1.83	90.02
Banglades	2010	Real exchange rate	98.00	0.18	8.13	7.21	1.07	21.32	37.80	5.57	1.83	90.02
Banglades	2011	Nominal exchange rate	74.15	0.10	11.40	8.84	0.98	19.48	47.42	6.46	-0.13	83.21
Banglades	2011	Real exchange rate	99.00	0.10	11.40	8.84	0.98	19.48	47.42	6.46	-0.13	83.21
Banglades	2012	Nominal exchange rate	81.86	0.14	6.22	10.22	1.19	20.16	48.11	6.52	1.93	90.30
Banglades	2012	Real exchange rate	101.00	0.14	6.22	10.22	1.19	20.16	48.11	6.52	1.93	90.30
Banglades	2013	Nominal exchange rate	78.10	0.11	7.53	11.72	1.74	20.03	46.30	6.01	1.37	89.73
Banglades	2013	Real exchange rate	102.00	0.11	7.53	11.72	1.74	20.03	46.30	6.01	1.37	89.73
Banglades	2014	Nominal exchange rate	77.64	0.09	6.99	9.80	1.47	19.13	44.51	6.06	0.44	89.55
Banglades	2014	Real exchange rate	102.50	0.09	6.99	9.80	1.47	19.13	44.51	6.06	0.44	89.55
Banglades	2015	Nominal exchange rate	77.95	0.13	6.19	8.24	1.45	18.63	42.09	6.55	1.32	100.00
Banglades	2015	Real exchange rate	103.00	0.13	6.19	8.24	1.45	18.63	42.09	6.55	1.32	100.00
Banglades	2016	Nominal exchange rate	78.47	0.39	5.51	6.20	0.88	14.97	31.33	7.11	0.35	101.58
Banglades	2016	Real exchange rate	103.50	0.39	5.51	6.20	0.88	14.97	31.33	7.11	0.35	101.58
Banglades	2017	Nominal exchange rate	80.44	1.00	5.70	5.61	0.62	16.80	30.00	6.59	-2.04	96.27
Banglades	2017	Real exchange rate	104.50	1.00	5.70	5.61	0.62	16.80	30.00	6.59	-2.04	96.27
Banglades	2018	Nominal exchange rate	83.47	1.83	5.54	6.66	0.75	17.09	32.51	7.32	-2.21	91.75
Banglades	2018	Real exchange rate	105.50	1.83	5.54	6.66	0.75	17.09	32.51	7.32	-2.21	91.75
Banglades	2019	Nominal exchange rate	84.45	2.16	5.59	6.78	0.54	17.09	31.58	7.88	-0.84	94.86
Banglades	2019	Real exchange rate	107.50	2.16	5.59	6.78	0.54	17.09	31.58	7.88	-0.84	94.86
Banglades	2020	Nominal exchange rate	84.87	0.37	5.69	6.07	0.41	18.89	26.27	3.45	0.32	98.38
Banglades	2020	Real exchange rate	106.50	0.37	5.69	6.07	0.41	18.89	26.27	3.45	0.32	98.38
Banglades	2021	Nominal exchange rate	85.08	0.08	5.55	5.05	0.41	20.88	27.72	6.94	-3.79	82.86
Banglades	2021	Real exchange rate	107.50	0.08	5.55	5.05	0.41	20.88	27.72	6.94	-3.79	82.86
Banglades	2022	Nominal exchange rate	91.75	1.69	7.70	5.56	0.36	20.28	33.78	7.10	-3.14	99.30
Banglades	2022	Real exchange rate	110.00	1.69	7.70	5.56	0.36	20.28	33.78	7.10	-3.14	99.30

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
China	2003	Nominal exchange rate	8.28	1.13	1.13	1.98	3.49	12.56	51.80	10.04	2.59	98.54
China	2003	Real exchange rate	88.38	1.13	1.13	1.98	3.49	12.56	51.80	10.04	2.59	98.54
China	2004	Nominal exchange rate	8.28	1.35	3.82	2.25	3.48	12.68	59.51	10.11	3.53	96.25
China	2004	Real exchange rate	85.85	1.35	3.82	2.25	3.48	12.68	59.51	10.11	3.53	96.25
China	2005	Nominal exchange rate	8.19	3.22	1.78	2.25	4.55	12.59	62.21	11.39	5.79	93.78
China	2005	Real exchange rate	84.92	3.22	1.78	2.25	4.55	12.59	62.21	11.39	5.79	93.78
China	2006	Nominal exchange rate	7.97	4.97	1.65	2.52	4.51	11.88	64.48	12.72	8.42	94.87
China	2006	Real exchange rate	86.26	4.97	1.65	2.52	4.51	11.88	64.48	12.72	8.42	94.87
China	2007	Nominal exchange rate	7.61	5.02	4.82	4.14	4.40	10.62	62.19	14.23	9.95	93.89
China	2007	Real exchange rate	89.33	5.02	4.82	4.14	4.40	10.62	62.19	14.23	9.95	93.89
China	2008	Nominal exchange rate	6.95	1.92	5.93	2.25	3.73	8.36	57.61	9.65	9.15	88.87
China	2008	Real exchange rate	97.01	1.92	5.93	2.25	3.73	8.36	57.61	9.65	9.15	88.87
China	2009	Nominal exchange rate	6.83	0.16	-0.73	2.25	2.57	8.92	45.18	9.40	4.77	96.60
China	2009	Real exchange rate	101.11	0.16	-0.73	2.25	2.57	8.92	45.18	9.40	4.77	96.60
China	2010	Nominal exchange rate	6.77	0.18	3.18	2.75	4.00	12.25	50.72	10.64	3.91	87.00
China	2010	Real exchange rate	100.00	0.18	3.18	2.75	4.00	12.25	50.72	10.64	3.91	87.00
China	2011	Nominal exchange rate	6.46	0.10	5.55	3.50	3.71	14.09	50.74	9.55	1.80	83.82
China	2011	Real exchange rate	102.69	0.10	5.55	3.50	3.71	14.09	50.74	9.55	1.80	83.82
China	2012	Nominal exchange rate	6.31	0.14	2.62	3.00	2.83	13.49	48.27	7.86	2.52	86.13
China	2012	Real exchange rate	108.67	0.14	2.62	3.00	2.83	13.49	48.27	7.86	2.52	86.13
China	2013	Nominal exchange rate	6.20	0.11	2.62	3.00	3.04	15.60	46.74	7.77	1.55	87.16
China	2013	Real exchange rate	114.65	0.11	2.62	3.00	3.04	15.60	46.74	7.77	1.55	87.16
China	2014	Nominal exchange rate	6.14	0.09	1.92	2.75	2.56	16.95	44.91	7.43	2.25	89.64
China	2014	Real exchange rate	118.36	0.09	1.92	2.75	2.56	16.95	44.91	7.43	2.25	89.64
China	2015	Nominal exchange rate	6.23	0.13	1.44	1.50	2.19	12.12	39.46	7.04	2.65	100.00
China	2015	Real exchange rate	130.04	0.13	1.44	1.50	2.19	12.12	39.46	7.04	2.65	100.00
China	2016	Nominal exchange rate	6.64	0.39	2.00	1.50	1.56	12.65	36.89	6.85	1.70	99.78
China	2016	Real exchange rate	123.89	0.39	2.00	1.50	1.56	12.65	36.89	6.85	1.70	99.78
China	2017	Nominal exchange rate	6.76	1.00	1.59	1.50	1.35	13.92	37.63	6.95	1.53	94.34
China	2017	Real exchange rate	120.26	1.00	1.59	1.50	1.35	13.92	37.63	6.95	1.53	94.34
China	2018	Nominal exchange rate	6.62	1.83	2.07	1.50	1.69	14.18	37.57	6.75	0.17	91.45
China	2018	Real exchange rate	121.80	1.83	2.07	1.50	1.69	14.18	37.57	6.75	0.17	91.45
China	2019	Nominal exchange rate	6.91	2.16	2.90	1.50	1.31	14.85	35.89	5.95	0.72	92.67
China	2019	Real exchange rate	121.18	2.16	2.90	1.50	1.31	14.85	35.89	5.95	0.72	92.67
China	2020	Nominal exchange rate	6.90	0.37	2.42	1.50	1.72	15.97	34.75	2.24	1.69	98.50
China	2020	Real exchange rate	123.64	0.37	2.42	1.50	1.72	15.97	34.75	2.24	1.69	98.50
China	2021	Nominal exchange rate	6.45	0.08	0.98	1.50	1.93	15.27	37.30	8.45	1.98	90.22
China	2021	Real exchange rate	127.32	0.08	0.98	1.50	1.93	15.27	37.30	8.45	1.98	90.22
China	2022	Nominal exchange rate	6.74	1.69	1.97	1.50	1.06	13.44	38.35	2.99	2.48	103.20
China	2022	Real exchange rate	125.96	1.69	1.97	1.50	1.06	13.44	38.35	2.99	2.48	103.20

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
India	2003	Nominal exchange rate	46.58	1.13	3.81	5.75	0.61	19.71	30.59	7.86	1.44	92.30
India	2003	Real exchange rate	88.73	1.13	3.81	5.75	0.61	19.71	30.59	7.86	1.44	92.30
India	2004	Nominal exchange rate	45.32	1.35	3.77	6.50	0.77	17.56	37.50	7.92	0.11	87.96
India	2004	Real exchange rate	90.33	1.35	3.77	6.50	0.77	17.56	37.50	7.92	0.11	87.96
India	2005	Nominal exchange rate	44.10	3.22	4.25	7.00	0.89	14.88	42.00	7.92	-1.25	84.25
India	2005	Real exchange rate	93.25	3.22	4.25	7.00	0.89	14.88	42.00	7.92	-1.25	84.25
India	2006	Nominal exchange rate	45.31	4.97	5.80	7.50	2.13	17.10	45.72	8.06	-0.99	82.22
India	2006	Real exchange rate	92.43	4.97	5.80	7.50	2.13	17.10	45.72	8.06	-0.99	82.22
India	2007	Nominal exchange rate	41.35	5.02	6.37	8.50	2.07	16.84	45.69	7.66	-0.66	78.29
India	2007	Real exchange rate	98.53	5.02	6.37	8.50	2.07	16.84	45.69	7.66	-0.66	78.29
India	2008	Nominal exchange rate	43.51	1.92	8.35	9.50	3.62	19.06	53.37	3.09	-2.58	78.29
India	2008	Real exchange rate	93.70	1.92	8.35	9.50	3.62	19.06	53.37	3.09	-2.58	78.29
India	2009	Nominal exchange rate	48.41	0.16	10.88	8.50	2.65	19.22	46.27	7.86	-1.95	91.16
India	2009	Real exchange rate	88.43	0.16	10.88	8.50	2.65	19.22	46.27	7.86	-1.95	91.16
India	2010	Nominal exchange rate	45.73	0.18	11.99	9.00	1.64	17.52	49.26	8.50	-3.25	89.68
India	2010	Real exchange rate	98.73	0.18	11.99	9.00	1.64	17.52	49.26	8.50	-3.25	89.68
India	2011	Nominal exchange rate	46.67	0.10	8.91	9.50	2.00	18.51	55.62	5.24	-3.43	86.34
India	2011	Real exchange rate	98.80	0.10	8.91	9.50	2.00	18.51	55.62	5.24	-3.43	86.34
India	2012	Nominal exchange rate	53.44	0.14	9.48	10.00	1.31	21.74	55.79	5.46	-5.00	86.43
India	2012	Real exchange rate	92.60	0.14	9.48	10.00	1.31	21.74	55.79	5.46	-5.00	86.43
India	2013	Nominal exchange rate	58.60	0.11	10.02	10.50	1.52	23.30	53.84	6.39	-2.65	88.70
India	2013	Real exchange rate	88.25	0.11	10.02	10.50	1.52	23.30	53.84	6.39	-2.65	88.70
India	2014	Nominal exchange rate	61.03	0.09	6.67	10.00	1.70	22.70	48.92	7.41	-1.34	90.02
India	2014	Real exchange rate	89.61	0.09	6.67	10.00	1.70	22.70	48.92	7.41	-1.34	90.02
India	2015	Nominal exchange rate	64.15	0.13	4.91	9.00	2.09	23.03	41.92	8.00	-1.07	100.00
India	2015	Real exchange rate	96.53	0.13	4.91	9.00	2.09	23.03	41.92	8.00	-1.07	100.00
India	2016	Nominal exchange rate	67.20	0.39	4.95	7.50	1.94	20.08	40.08	8.26	-0.53	105.32
India	2016	Real exchange rate	97.53	0.39	4.95	7.50	1.94	20.08	40.08	8.26	-0.53	105.32
India	2017	Nominal exchange rate	65.12	1.00	3.33	7.00	1.51	19.50	40.74	6.80	-1.44	98.52
India	2017	Real exchange rate	101.89	1.00	3.33	7.00	1.51	19.50	40.74	6.80	-1.44	98.52
India	2018	Nominal exchange rate	68.39	1.83	3.94	7.50	1.56	19.49	43.62	6.45	-2.43	93.31
India	2018	Real exchange rate	97.42	1.83	3.94	7.50	1.56	19.49	43.62	6.45	-2.43	93.31
India	2019	Nominal exchange rate	70.42	2.16	3.73	8.00	1.78	19.98	39.91	3.87	-1.05	95.41
India	2019	Real exchange rate	99.37	2.16	3.73	8.00	1.78	19.98	39.91	3.87	-1.05	95.41
India	2020	Nominal exchange rate	74.10	0.37	6.62	6.50	2.41	21.44	37.76	-5.83	1.22	101.39
India	2020	Real exchange rate	100.00	0.37	6.62	6.50	2.41	21.44	37.76	-5.83	1.22	101.39
India	2021	Nominal exchange rate	73.92	0.08	5.13	6.00	1.41	19.82	45.42	9.05	-1.06	90.74
India	2021	Real exchange rate	99.91	0.08	5.13	6.00	1.41	19.82	45.42	9.05	-1.06	90.74
India	2022	Nominal exchange rate	78.60	1.69	6.70	5.50	1.49	18.42	49.97	7.24	-2.36	97.60
India	2022	Real exchange rate	100.86	1.69	6.70	5.50	1.49	18.42	49.97	7.24	-2.36	97.60

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Indonesia	2003	Nominal exchange rate	8577.13	1.13	6.76	10.59	-0.25	59.52	53.62	4.78	3.45	88.85
Indonesia	2003	Real exchange rate	94.01	1.13	6.76	10.59	-0.25	59.52	53.62	4.78	3.45	88.85
Indonesia	2004	Nominal exchange rate	8938.85	1.35	6.06	6.44	0.74	56.33	59.76	5.03	0.61	90.70
Indonesia	2004	Real exchange rate	90.17	1.35	6.06	6.44	0.74	56.33	59.76	5.03	0.61	90.70
Indonesia	2005	Nominal exchange rate	9704.74	3.22	10.45	8.08	2.92	52.26	63.99	5.69	0.10	92.35
Indonesia	2005	Real exchange rate	88.51	3.22	10.45	8.08	2.92	52.26	63.99	5.69	0.10	92.35
Indonesia	2006	Nominal exchange rate	9159.32	4.97	13.11	11.41	1.35	38.96	56.66	5.50	2.98	97.75
Indonesia	2006	Real exchange rate	102.62	4.97	13.11	11.41	1.35	38.96	56.66	5.50	2.98	97.75
Indonesia	2007	Nominal exchange rate	9141.00	5.02	6.41	7.98	1.60	35.67	54.83	6.35	2.43	100.85
Indonesia	2007	Real exchange rate	102.15	5.02	6.41	7.98	1.60	35.67	54.83	6.35	2.43	100.85
Indonesia	2008	Nominal exchange rate	9698.96	1.92	10.23	8.49	1.83	32.09	58.56	6.01	0.02	108.10
Indonesia	2008	Real exchange rate	98.28	1.92	10.23	8.49	1.83	32.09	58.56	6.01	0.02	108.10
Indonesia	2009	Nominal exchange rate	10389.94	0.16	4.39	9.28	0.90	34.45	45.51	4.63	1.97	103.22
Indonesia	2009	Real exchange rate	97.86	0.16	4.39	9.28	0.90	34.45	45.51	4.63	1.97	103.22
Indonesia	2010	Nominal exchange rate	9090.43	0.18	5.13	7.02	2.03	26.98	46.70	6.22	0.68	109.48
Indonesia	2010	Real exchange rate	0.00	0.18	5.13	7.02	2.03	26.98	46.70	6.22	0.68	109.48
Indonesia	2011	Nominal exchange rate	8770.43	0.10	5.36	6.93	2.30	25.30	50.18	6.17	0.19	115.56
Indonesia	2011	Real exchange rate	110.48	0.10	5.36	6.93	2.30	25.30	50.18	6.17	0.19	115.56
Indonesia	2012	Nominal exchange rate	9386.63	0.14	4.28	5.95	2.31	28.32	49.58	6.03	-2.66	111.15
Indonesia	2012	Real exchange rate	106.38	0.14	4.28	5.95	2.31	28.32	49.58	6.03	-2.66	111.15
Indonesia	2013	Nominal exchange rate	10461.24	0.11	6.41	6.26	2.55	29.78	48.64	5.56	-3.19	104.90
Indonesia	2013	Real exchange rate	102.87	0.11	6.41	6.26	2.55	29.78	48.64	5.56	-3.19	104.90
Indonesia	2014	Nominal exchange rate	11865.21	0.09	6.39	8.75	2.82	33.98	48.08	5.01	-3.09	102.50
Indonesia	2014	Real exchange rate	96.27	0.09	6.39	8.75	2.82	33.98	48.08	5.01	-3.09	102.50
Indonesia	2015	Nominal exchange rate	13389.41	0.13	6.36	8.34	2.30	36.99	41.94	4.88	-2.04	100.00
Indonesia	2015	Real exchange rate	97.85	0.13	6.36	8.34	2.30	36.99	41.94	4.88	-2.04	100.00
Indonesia	2016	Nominal exchange rate	13308.33	0.39	3.53	7.17	0.49	35.37	37.42	5.03	-1.82	101.54
Indonesia	2016	Real exchange rate	102.25	0.39	3.53	7.17	0.49	35.37	37.42	5.03	-1.82	101.54
Indonesia	2017	Nominal exchange rate	13380.83	1.00	3.81	6.52	2.02	35.96	39.36	5.07	-1.59	101.21
Indonesia	2017	Real exchange rate	103.98	1.00	3.81	6.52	2.02	35.96	39.36	5.07	-1.59	101.21
Indonesia	2018	Nominal exchange rate	14236.94	1.83	3.20	6.13	1.81	37.56	43.07	5.17	-2.94	100.56
Indonesia	2018	Real exchange rate	97.43	1.83	3.20	6.13	1.81	37.56	43.07	5.17	-2.94	100.56
Indonesia	2019	Nominal exchange rate	14147.67	2.16	3.03	6.69	2.23	37.08	37.63	5.02	-2.71	101.00
Indonesia	2019	Real exchange rate	101.81	2.16	3.03	6.69	2.23	37.08	37.63	5.02	-2.71	101.00
Indonesia	2020	Nominal exchange rate	14582.20	0.37	1.92	5.50	1.81	40.50	32.97	-2.07	-0.42	98.48
Indonesia	2020	Real exchange rate	100.00	0.37	1.92	5.50	1.81	40.50	32.97	-2.07	-0.42	98.48
Indonesia	2021	Nominal exchange rate	14308.14	0.08	1.56	3.67	1.79	35.63	40.20	3.70	0.30	100.77
Indonesia	2021	Real exchange rate	98.50	0.08	1.56	3.67	1.79	35.63	40.20	3.70	0.30	100.77
Indonesia	2022	Nominal exchange rate	14849.85	1.69	4.21	3.21	1.87	30.89	45.47	5.31	1.00	101.90
Indonesia	2022	Real exchange rate	101.40	1.69	4.21	3.21	1.87	30.89	45.47	5.31	1.00	101.90

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Malaysia	2003	Nominal exchange rate	3.80	1.13	1.09	3.07	2.92	39.10	194.20	5.79	12.14	93.52
Malaysia	2003	Real exchange rate	97.88	1.13	1.09	3.07	2.92	39.10	194.20	5.79	12.14	93.52
Malaysia	2004	Nominal exchange rate	3.80	1.35	4.69	2.70	3.51	38.30	210.37	3.57	12.09	93.20
Malaysia	2004	Real exchange rate	93.48	1.35	4.69	2.70	3.51	38.30	210.37	3.57	12.09	93.20
Malaysia	2005	Nominal exchange rate	3.79	3.22	3.99	3.46	2.73	36.90	203.85	2.11	13.92	94.22
Malaysia	2005	Real exchange rate	93.30	3.22	3.99	3.46	2.73	36.90	203.85	2.11	13.92	94.22
Malaysia	2006	Nominal exchange rate	3.67	4.97	3.63	3.30	4.73	34.50	202.58	4.81	16.10	100.86
Malaysia	2006	Real exchange rate	96.29	4.97	3.63	3.30	4.73	34.50	202.58	4.81	16.10	100.86
Malaysia	2007	Nominal exchange rate	3.44	5.02	3.97	3.21	4.69	33.70	192.47	2.08	15.38	104.74
Malaysia	2007	Real exchange rate	98.08	5.02	3.97	3.21	4.69	33.70	192.47	2.08	15.38	104.74
Malaysia	2008	Nominal exchange rate	3.34	1.92	5.12	3.04	3.28	35.00	176.67	0.94	16.86	112.23
Malaysia	2008	Real exchange rate	97.79	1.92	5.12	3.04	3.28	35.00	176.67	0.94	16.86	112.23
Malaysia	2009	Nominal exchange rate	3.52	0.16	5.30	2.01	0.06	34.70	162.56	-6.30	15.72	98.43
Malaysia	2009	Real exchange rate	94.94	0.16	5.30	2.01	0.06	34.70	162.56	-6.30	15.72	98.43
Malaysia	2010	Nominal exchange rate	3.22	0.18	4.16	1.21	4.27	33.10	157.94	4.97	10.06	100.30
Malaysia	2010	Real exchange rate	100.00	0.18	4.16	1.21	4.27	33.10	157.94	4.97	10.06	100.30
Malaysia	2011	Nominal exchange rate	3.06	0.10	3.41	0.96	5.07	31.70	154.94	3.44	10.91	105.83
Malaysia	2011	Real exchange rate	99.83	0.10	3.41	0.96	5.07	31.70	154.94	3.44	10.91	105.83
Malaysia	2012	Nominal exchange rate	3.09	0.14	4.11	1.08	2.83	31.40	147.84	3.55	5.19	105.46
Malaysia	2012	Real exchange rate	99.52	0.14	4.11	1.08	2.83	31.40	147.84	3.55	5.19	105.46
Malaysia	2013	Nominal exchange rate	3.15	0.11	3.81	1.33	3.49	40.50	142.72	0.85	3.47	103.32
Malaysia	2013	Real exchange rate	99.01	0.11	3.81	1.33	3.49	40.50	142.72	0.85	3.47	103.32
Malaysia	2014	Nominal exchange rate	3.27	0.09	4.02	0.84	3.14	42.00	138.31	2.50	4.39	103.50
Malaysia	2014	Real exchange rate	97.96	0.09	4.02	0.84	3.14	42.00	138.31	2.50	4.39	103.50
Malaysia	2015	Nominal exchange rate	3.91	0.13	2.72	0.59	3.27	44.00	131.37	2.70	3.01	100.00
Malaysia	2015	Real exchange rate	89.57	0.13	2.72	0.59	3.27	44.00	131.37	2.70	3.01	100.00
Malaysia	2016	Nominal exchange rate	4.15	0.39	2.82	1.29	4.47	46.20	126.90	1.77	2.37	96.69
Malaysia	2016	Real exchange rate	86.56	0.39	2.82	1.29	4.47	46.20	126.90	1.77	2.37	96.69
Malaysia	2017	Nominal exchange rate	4.30	1.00	6.04	2.70	2.94	49.20	133.16	1.87	2.81	97.74
Malaysia	2017	Real exchange rate	85.12	1.00	6.04	2.70	2.94	49.20	133.16	1.87	2.81	97.74
Malaysia	2018	Nominal exchange rate	4.04	1.83	4.90	3.27	2.31	52.00	130.40	1.97	2.24	97.38
Malaysia	2018	Real exchange rate	88.66	1.83	4.90	3.27	2.31	52.00	130.40	1.97	2.24	97.38
Malaysia	2019	Nominal exchange rate	4.14	2.16	3.64	3.53	2.51	53.00	123.03	-0.28	3.50	98.47
Malaysia	2019	Real exchange rate	87.48	2.16	3.64	3.53	2.51	53.00	123.03	-0.28	3.50	98.47
Malaysia	2020	Nominal exchange rate	4.20	0.37	3.40	1.46	1.20	63.00	116.79	-8.65	4.19	99.01
Malaysia	2020	Real exchange rate	84.40	0.37	3.40	1.46	1.20	63.00	116.79	-8.65	4.19	99.01
Malaysia	2021	Nominal exchange rate	4.14	0.08	5.69	0.85	5.42	63.60	134.02	5.84	3.88	104.95
Malaysia	2021	Real exchange rate	83.28	0.08	5.69	0.85	5.42	63.60	134.02	5.84	3.88	104.95
Malaysia	2022	Nominal exchange rate	4.40	1.69	7.90	2.57	3.69	62.00	146.66	3.90	3.13	100.50
Malaysia	2022	Real exchange rate	82.09	1.69	7.90	2.57	3.69	62.00	146.66	3.90	3.13	100.50

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of G	External de	Trade oper	GDP Grow	Current ac	Term of trade
Philippines	2003	Nominal exchange rate	54.20	1.13	2.29	5.22	0.57	65.89	87.57	5.09	0.33	115.76
Philippines	2003	Real exchange rate	79.40	1.13	2.29	5.22	0.57	65.89	87.57	5.09	0.33	115.76
Philippines	2004	Nominal exchange rate	56.04	1.35	4.83	6.18	0.62	58.86	87.13	6.57	1.71	111.99
Philippines	2004	Real exchange rate	76.02	1.35	4.83	6.18	0.62	58.86	87.13	6.57	1.71	111.99
Philippines	2005	Nominal exchange rate	55.09	3.22	6.52	5.56	1.55	49.77	83.85	4.94	1.85	112.33
Philippines	2005	Real exchange rate	80.04	3.22	6.52	5.56	1.55	49.77	83.85	4.94	1.85	112.33
Philippines	2006	Nominal exchange rate	51.31	4.97	5.49	5.29	2.12	41.31	80.85	5.32	5.45	110.26
Philippines	2006	Real exchange rate	88.22	4.97	5.49	5.29	2.12	41.31	80.85	5.32	5.45	110.26
Philippines	2007	Nominal exchange rate	46.15	5.02	2.90	3.70	1.87	34.81	73.64	6.52	5.17	107.72
Philippines	2007	Real exchange rate	95.33	5.02	2.90	3.70	1.87	34.81	73.64	6.52	5.17	107.72
Philippines	2008	Nominal exchange rate	44.32	1.92	8.26	4.49	0.74	29.33	67.68	4.34	0.08	94.73
Philippines	2008	Real exchange rate	97.76	1.92	8.26	4.49	0.74	29.33	67.68	4.34	0.08	94.73
Philippines	2009	Nominal exchange rate	47.68	0.16	4.22	2.74	1.17	28.51	60.89	1.45	4.80	101.26
Philippines	2009	Real exchange rate	96.01	0.16	4.22	2.74	1.17	28.51	60.89	1.45	4.80	101.26
Philippines	2010	Nominal exchange rate	45.11	0.18	3.79	3.22	0.51	28.20	66.10	7.33	3.45	98.78
Philippines	2010	Real exchange rate	100.00	0.18	3.79	3.22	0.51	28.20	66.10	7.33	3.45	98.78
Philippines	2011	Nominal exchange rate	43.31	0.10	4.72	3.39	0.86	25.47	60.80	3.86	2.41	91.41
Philippines	2011	Real exchange rate	100.22	0.10	4.72	3.39	0.86	25.47	60.80	3.86	2.41	91.41
Philippines	2012	Nominal exchange rate	42.23	0.14	3.03	3.16	1.23	23.85	57.84	6.90	2.65	91.23
Philippines	2012	Real exchange rate	104.76	0.14	3.03	3.16	1.23	23.85	57.84	6.90	2.65	91.23
Philippines	2013	Nominal exchange rate	42.45	0.11	2.58	1.66	1.32	20.86	55.82	6.75	4.01	89.48
Philippines	2013	Real exchange rate	107.60	0.11	2.58	1.66	1.32	20.86	55.82	6.75	4.01	89.48
Philippines	2014	Nominal exchange rate	44.40	0.09	3.60	1.23	1.93	23.26	57.47	6.35	3.62	93.41
Philippines	2014	Real exchange rate	106.32	0.09	3.60	1.23	1.93	23.26	57.47	6.35	3.62	93.41
Philippines	2015	Nominal exchange rate	45.50	0.13	0.67	1.59	1.84	22.33	59.14	6.35	2.37	100.00
Philippines	2015	Real exchange rate	111.49	0.13	0.67	1.59	1.84	22.33	59.14	6.35	2.37	100.00
Philippines	2016	Nominal exchange rate	47.49	0.39	1.25	1.60	2.60	21.11	61.78	7.15	-0.38	104.27
Philippines	2016	Real exchange rate	108.40	0.39	1.25	1.60	2.60	21.11	61.78	7.15	-0.38	104.27
Philippines	2017	Nominal exchange rate	50.40	1.00	2.85	1.88	3.12	20.05	68.17	6.93	-0.65	99.07
Philippines	2017	Real exchange rate	103.45	1.00	2.85	1.88	3.12	20.05	68.17	6.93	-0.65	99.07
Philippines	2018	Nominal exchange rate	52.66	1.83	5.31	3.12	2.87	20.58	72.16	6.34	-2.56	96.34
Philippines	2018	Real exchange rate	100.61	1.83	5.31	3.12	2.87	20.58	72.16	6.34	-2.56	96.34
Philippines	2019	Nominal exchange rate	51.80	2.16	2.39	4.08	2.30	20.18	68.84	6.12	-0.81	98.13
Philippines	2019	Real exchange rate	105.39	2.16	2.39	4.08	2.30	20.18	68.84	6.12	-0.81	98.13
Philippines	2020	Nominal exchange rate	49.62	0.37	2.39	1.50	1.89	25.31	58.17	-9.52	3.20	100.49
Philippines	2020	Real exchange rate	111.27	0.37	2.39	1.50	1.89	25.31	58.17	-9.52	3.20	100.49
Philippines	2021	Nominal exchange rate	49.25	0.08	3.93	2.00	3.04	26.08	63.48	5.71	-1.51	95.83
Philippines	2021	Real exchange rate	111.11	0.08	3.93	2.00	3.04	26.08	63.48	5.71	-1.51	95.83
Philippines	2022	Nominal exchange rate	54.48	1.69	5.82	3.50	2.35	25.98	72.43	7.57	-4.52	98.50
Philippines	2022	Real exchange rate	109.31	1.69	5.82	3.50	2.35	25.98	72.43	7.57	-4.52	98.50

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Thailand	2003	Nominal exchange rate	41.48	1.13	1.80	3.30	3.44	40.02	116.69	7.19	3.13	93.63
Thailand	2003	Real exchange rate	77.13	1.13	1.80	3.30	3.44	40.02	116.69	7.19	3.13	93.63
Thailand	2004	Nominal exchange rate	40.22	1.35	2.76	1.10	3.39	35.32	127.41	6.29	1.60	95.30
Thailand	2004	Real exchange rate	76.81	1.35	2.76	1.10	3.39	35.32	127.41	6.29	1.60	95.30
Thailand	2005	Nominal exchange rate	40.22	3.22	4.54	1.65	4.34	32.36	137.85	4.19	-4.04	96.14
Thailand	2005	Real exchange rate	77.82	3.22	4.54	1.65	4.34	32.36	137.85	4.19	-4.04	96.14
Thailand	2006	Nominal exchange rate	37.88	4.97	4.64	4.34	4.02	29.37	134.09	4.97	1.04	95.07
Thailand	2006	Real exchange rate	84.35	4.97	4.64	4.34	4.02	29.37	134.09	4.97	1.04	95.07
Thailand	2007	Nominal exchange rate	34.52	5.02	2.24	2.84	3.28	24.87	129.87	5.44	5.93	95.38
Thailand	2007	Real exchange rate	95.46	5.02	2.24	2.84	3.28	24.87	129.87	5.44	5.93	95.38
Thailand	2008	Nominal exchange rate	33.31	1.92	5.47	2.54	2.94	23.76	140.44	1.73	0.32	93.52
Thailand	2008	Real exchange rate	89.85	1.92	5.47	2.54	2.94	23.76	140.44	1.73	0.32	93.52
Thailand	2009	Nominal exchange rate	34.29	0.16	-0.85	1.02	2.28	29.77	119.27	-0.69	7.88	98.20
Thailand	2009	Real exchange rate	91.38	0.16	-0.85	1.02	2.28	29.77	119.27	-0.69	7.88	98.20
Thailand	2010	Nominal exchange rate	31.69	0.18	3.25	1.20	4.32	32.79	127.25	7.51	3.37	98.46
Thailand	2010	Real exchange rate	91.38	0.18	3.25	1.20	4.32	32.79	127.25	7.51	3.37	98.46
Thailand	2011	Nominal exchange rate	30.49	0.10	3.81	2.46	0.67	32.52	139.68	0.84	2.54	93.70
Thailand	2011	Real exchange rate	90.56	0.10	3.81	2.46	0.67	32.52	139.68	0.84	2.54	93.70
Thailand	2012	Nominal exchange rate	31.08	0.14	3.01	2.60	3.24	39.84	137.67	7.24	-1.23	92.39
Thailand	2012	Real exchange rate	90.95	0.14	3.01	2.60	3.24	39.84	137.67	7.24	-1.23	92.39
Thailand	2013	Nominal exchange rate	30.73	0.11	2.18	2.43	3.79	39.10	132.46	2.69	-2.10	93.93
Thailand	2013	Real exchange rate	95.93	0.11	2.18	2.43	3.79	39.10	132.46	2.69	-2.10	93.93
Thailand	2014	Nominal exchange rate	32.48	0.09	1.90	1.75	1.22	38.03	130.91	0.98	2.86	93.84
Thailand	2014	Real exchange rate	93.11	0.09	1.90	1.75	1.22	38.03	130.91	0.98	2.86	93.84
Thailand	2015	Nominal exchange rate	34.25	0.13	-0.90	1.43	2.22	34.78	124.84	3.13	6.92	100.00
Thailand	2015	Real exchange rate	94.45	0.13	-0.90	1.43	2.22	34.78	124.84	3.13	6.92	100.00
Thailand	2016	Nominal exchange rate	35.30	0.39	0.19	1.30	0.84	35.42	120.58	3.44	10.51	102.47
Thailand	2016	Real exchange rate	91.49	0.39	0.19	1.30	0.84	35.42	120.58	3.44	10.51	102.47
Thailand	2017	Nominal exchange rate	33.94	1.00	0.67	1.29	1.82	37.40	120.89	4.18	9.63	100.70
Thailand	2017	Real exchange rate	94.51	1.00	0.67	1.29	1.82	37.40	120.89	4.18	9.63	100.70
Thailand	2018	Nominal exchange rate	32.31	1.83	1.06	1.29	2.71	37.66	120.84	4.22	5.62	98.54
Thailand	2018	Real exchange rate	97.22	1.83	1.06	1.29	2.71	37.66	120.84	4.22	5.62	98.54
Thailand	2019	Nominal exchange rate	31.05	2.16	0.71	1.42	1.02	33.95	109.69	2.11	7.03	98.59
Thailand	2019	Real exchange rate	102.86	2.16	0.71	1.42	1.02	33.95	109.69	2.11	7.03	98.59
Thailand	2020	Nominal exchange rate	31.29	0.37	-0.85	0.62	-0.86	40.29	97.80	-6.07	4.18	101.76
Thailand	2020	Real exchange rate	100.00	0.37	-0.85	0.62	-0.86	40.29	97.80	-6.07	4.18	101.76
Thailand	2021	Nominal exchange rate	31.98	0.08	1.23	0.41	3.04	42.21	117.14	1.49	-2.03	101.66
Thailand	2021	Real exchange rate	94.45	0.08	1.23	0.41	3.04	42.21	117.14	1.49	-2.03	101.66
Thailand	2022	Nominal exchange rate	35.06	1.69	6.08	0.51	2.39	39.95	132.86	2.60	-3.18	101.30
Thailand	2022	Real exchange rate	93.83	1.69	6.08	0.51	2.39	39.95	132.86	2.60	-3.18	101.30

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Viet Nam	2003	Nominal exchange rate	15509.58	1.13	3.23	6.62	3.67	40.06	124.33	6.90	-4.88	76.85
Viet Nam	2003	Real exchange rate	84.71	1.13	3.23	6.62	3.67	40.06	124.33	6.90	-4.88	76.85
Viet Nam	2004	Nominal exchange rate	15746.00	1.35	7.75	6.17	3.54	39.55	133.02	7.54	-2.11	78.54
Viet Nam	2004	Real exchange rate	84.32	1.35	7.75	6.17	3.54	39.55	133.02	7.54	-2.11	78.54
Viet Nam	2005	Nominal exchange rate	15858.92	3.22	8.28	7.15	3.39	32.87	130.71	7.55	-0.97	82.98
Viet Nam	2005	Real exchange rate	87.13	3.22	8.28	7.15	3.39	32.87	130.71	7.55	-0.97	82.98
Viet Nam	2006	Nominal exchange rate	15994.25	4.97	7.42	7.63	3.62	28.87	138.31	6.98	-0.25	85.78
Viet Nam	2006	Real exchange rate	89.91	4.97	7.42	7.63	3.62	28.87	138.31	6.98	-0.25	85.78
Viet Nam	2007	Nominal exchange rate	16105.13	5.02	8.34	7.49	8.65	30.75	154.61	7.13	-8.98	87.49
Viet Nam	2007	Real exchange rate	90.64	5.02	8.34	7.49	8.65	30.75	154.61	7.13	-8.98	87.49
Viet Nam	2008	Nominal exchange rate	16302.25	1.92	23.12	12.73	9.66	27.55	154.32	5.66	-10.92	92.38
Viet Nam	2008	Real exchange rate	100.44	1.92	23.12	12.73	9.66	27.55	154.32	5.66	-10.92	92.38
Viet Nam	2009	Nominal exchange rate	17065.08	0.16	6.72	7.91	7.17	32.31	134.71	5.40	-6.23	92.06
Viet Nam	2009	Real exchange rate	103.28	0.16	6.72	7.91	7.17	32.31	134.71	5.40	-6.23	92.06
Viet Nam	2010	Nominal exchange rate	18612.92	0.18	9.21	11.19	5.43	31.56	113.98	6.42	-2.90	96.51
Viet Nam	2010	Real exchange rate	100.00	0.18	9.21	11.19	5.43	31.56	113.98	6.42	-2.90	96.51
Viet Nam	2011	Nominal exchange rate	20509.75	0.10	18.68	13.99	4.30	32.38	125.26	6.41	0.14	96.06
Viet Nam	2011	Real exchange rate	100.99	0.10	18.68	13.99	4.30	32.38	125.26	6.41	0.14	96.06
Viet Nam	2012	Nominal exchange rate	20828.00	0.14	9.09	10.50	4.28	32.87	123.22	5.50	4.82	95.86
Viet Nam	2012	Real exchange rate	108.24	0.14	9.09	10.50	4.28	32.87	123.22	5.50	4.82	95.86
Viet Nam	2013	Nominal exchange rate	20933.42	0.11	6.59	7.14	4.16	32.10	130.85	5.55	3.62	95.81
Viet Nam	2013	Real exchange rate	114.15	0.11	6.59	7.14	4.16	32.10	130.85	5.55	3.62	95.81
Viet Nam	2014	Nominal exchange rate	21148.00	0.09	4.08	5.76	3.94	33.27	135.41	6.42	4.01	97.89
Viet Nam	2014	Real exchange rate	117.53	0.09	4.08	5.76	3.94	33.27	135.41	6.42	4.01	97.89
Viet Nam	2015	Nominal exchange rate	21697.57	0.13	0.63	4.75	4.93	36.03	144.91	6.99	-0.85	100.00
Viet Nam	2015	Real exchange rate	121.88	0.13	0.63	4.75	4.93	36.03	144.91	6.99	-0.85	100.00
Viet Nam	2016	Nominal exchange rate	21935.00	0.39	2.67	5.04	4.90	37.24	145.41	6.69	0.24	103.85
Viet Nam	2016	Real exchange rate	123.57	0.39	2.67	5.04	4.90	37.24	145.41	6.69	0.24	103.85
Viet Nam	2017	Nominal exchange rate	22370.09	1.00	3.52	4.81	5.01	41.57	160.98	6.94	-0.59	104.21
Viet Nam	2017	Real exchange rate	123.66	1.00	3.52	4.81	5.01	41.57	160.98	6.94	-0.59	104.21
Viet Nam	2018	Nominal exchange rate	22602.05	1.83	3.54	4.74	5.00	38.27	164.66	7.47	1.90	102.58
Viet Nam	2018	Real exchange rate	122.03	1.83	3.54	4.74	5.00	38.27	164.66	7.47	1.90	102.58
Viet Nam	2019	Nominal exchange rate	23050.24	2.16	2.80	4.98	4.82	38.57	164.70	7.36	3.92	105.05
Viet Nam	2019	Real exchange rate	126.30	2.16	2.80	4.98	4.82	38.57	164.70	7.36	3.92	105.05
Viet Nam	2020	Nominal exchange rate	23208.37	0.37	3.22	4.12	4.56	39.02	163.25	2.87	4.34	104.28
Viet Nam	2020	Real exchange rate	129.21	0.37	3.22	4.12	4.56	39.02	163.25	2.87	4.34	104.28
Viet Nam	2021	Nominal exchange rate	23159.78	0.08	1.83	3.38	4.27	40.26	186.68	2.56	-1.26	101.68
Viet Nam	2021	Real exchange rate	126.53	0.08	1.83	3.38	4.27	40.26	186.68	2.56	-1.26	101.68
Viet Nam	2022	Nominal exchange rate	23271.21	1.69	3.16	3.82	4.36	37.70	183.79	8.02	0.34	99.40
Viet Nam	2022	Real exchange rate	131.90	1.69	3.16	3.82	4.36	37.70	183.79	8.02	0.34	99.40

Appendix C: Panel data of the European emerging countries

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Bulgaria	2003	Nominal exchange rate	1.73	1.13	2.35	2.93	9.92	66.36	79.01	5.24	-4.83	84.77
Bulgaria	2003	Real exchange rate	78.92	1.13	2.35	2.93	9.92	66.36	79.01	5.24	-4.83	84.77
Bulgaria	2004	Nominal exchange rate	1.58	1.35	6.15	3.05	11.75	62.81	93.06	6.51	-6.39	85.40
Bulgaria	2004	Real exchange rate	82.77	1.35	6.15	3.05	11.75	62.81	93.06	6.51	-6.39	85.40
Bulgaria	2005	Nominal exchange rate	1.57	3.22	5.04	3.08	13.72	61.79	99.71	7.06	-11.21	86.48
Bulgaria	2005	Real exchange rate	83.05	3.22	5.04	3.08	13.72	61.79	99.71	7.06	-11.21	86.48
Bulgaria	2006	Nominal exchange rate	1.56	4.97	7.26	3.17	22.90	83.53	111.05	6.80	-17.05	91.57
Bulgaria	2006	Real exchange rate	86.65	4.97	7.26	3.17	22.90	83.53	111.05	6.80	-17.05	91.57
Bulgaria	2007	Nominal exchange rate	1.43	5.02	8.40	3.68	31.23	106.47	123.53	6.65	-25.74	93.82
Bulgaria	2007	Real exchange rate	91.66	5.02	8.40	3.68	31.23	106.47	123.53	6.65	-25.74	93.82
Bulgaria	2008	Nominal exchange rate	1.34	1.92	12.35	4.44	18.90	102.36	124.69	6.13	-21.80	94.04
Bulgaria	2008	Real exchange rate	99.66	1.92	12.35	4.44	18.90	102.36	124.69	6.13	-21.80	94.04
Bulgaria	2009	Nominal exchange rate	1.41	0.16	2.75	6.18	7.49	110.58	92.69	-3.35	-8.18	95.53
Bulgaria	2009	Real exchange rate	103.88	0.16	2.75	6.18	7.49	110.58	92.69	-3.35	-8.18	95.53
Bulgaria	2010	Nominal exchange rate	1.48	0.18	2.44	4.08	3.63	102.01	103.38	1.56	-1.90	96.33
Bulgaria	2010	Real exchange rate	100.00	0.18	2.44	4.08	3.63	102.01	103.38	1.56	-1.90	96.33
Bulgaria	2011	Nominal exchange rate	1.41	0.10	4.22	3.37	3.64	85.36	117.42	2.09	0.47	95.43
Bulgaria	2011	Real exchange rate	101.45	0.10	4.22	3.37	3.64	85.36	117.42	2.09	0.47	95.43
Bulgaria	2012	Nominal exchange rate	1.52	0.14	2.95	3.08	3.29	96.01	123.97	0.75	-0.97	95.27
Bulgaria	2012	Real exchange rate	100.02	0.14	2.95	3.08	3.29	96.01	123.97	0.75	-0.97	95.27
Bulgaria	2013	Nominal exchange rate	1.47	0.11	0.89	2.41	3.56	94.57	129.69	-0.54	1.22	95.58
Bulgaria	2013	Real exchange rate	100.89	0.11	0.89	2.41	3.56	94.57	129.69	-0.54	1.22	95.58
Bulgaria	2014	Nominal exchange rate	1.47	0.09	-1.42	1.66	1.91	83.07	130.27	0.95	1.31	96.03
Bulgaria	2014	Real exchange rate	100.17	0.09	-1.42	1.66	1.91	83.07	130.27	0.95	1.31	96.03
Bulgaria	2015	Nominal exchange rate	1.76	0.13	-0.10	0.61	4.37	81.99	126.74	3.40	-0.24	100.00
Bulgaria	2015	Real exchange rate	97.08	0.13	-0.10	0.61	4.37	81.99	126.74	3.40	-0.24	100.00
Bulgaria	2016	Nominal exchange rate	1.77	0.39	-0.80	0.17	2.76	76.46	122.85	3.03	2.89	101.84
Bulgaria	2016	Real exchange rate	97.30	0.39	-0.80	0.17	2.76	76.46	122.85	3.03	2.89	101.84
Bulgaria	2017	Nominal exchange rate	1.74	1.00	2.06	0.05	3.38	70.66	129.74	2.75	3.35	99.83
Bulgaria	2017	Real exchange rate	98.55	1.00	2.06	0.05	3.38	70.66	129.74	2.75	3.35	99.83
Bulgaria	2018	Nominal exchange rate	1.66	1.83	2.81	0.03	2.73	62.45	128.90	2.69	0.84	99.01
Bulgaria	2018	Real exchange rate	101.85	1.83	2.81	0.03	2.73	62.45	128.90	2.69	0.84	99.01
Bulgaria	2019	Nominal exchange rate	1.75	2.16	3.10	0.02	3.24	60.51	124.69	4.04	1.83	99.10
Bulgaria	2019	Real exchange rate	102.38	2.16	3.10	0.02	3.24	60.51	124.69	4.04	1.83	99.10
Bulgaria	2020	Nominal exchange rate	1.72	0.37	1.67	0.01	4.68	68.96	110.33	-3.97	-0.04	103.10
Bulgaria	2020	Real exchange rate	105.34	0.37	1.67	0.01	4.68	68.96	110.33	-3.97	-0.04	103.10
Bulgaria	2021	Nominal exchange rate	1.65	0.08	3.30	0.02	2.77	55.69	120.97	7.66	-1.80	102.18
Bulgaria	2021	Real exchange rate	106.75	0.08	3.30	0.02	2.77	55.69	120.97	7.66	-1.80	102.18
Bulgaria	2022	Nominal exchange rate	1.86	1.69	15.33	0.02	5.46	54.02	138.18	3.93	-0.65	101.10
Bulgaria	2022	Real exchange rate	112.02	1.69	15.33	0.02	5.46	54.02	138.18	3.93	-0.65	101.10

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of G	External de	Trade oper	GDP Grow	Current ac	Term of trade
Czechia	2003	Nominal exchange rate	28.21	1.13	0.12	1.33	2.01	35.60	94.97	3.58	-5.78	102.95
Czechia	2003	Real exchange rate	78.04	1.13	0.12	1.33	2.01	35.60	94.97	3.58	-5.78	102.95
Czechia	2004	Nominal exchange rate	25.70	1.35	2.76	1.28	5.35	32.90	113.49	4.81	-3.72	105.80
Czechia	2004	Real exchange rate	78.79	1.35	2.76	1.28	5.35	32.90	113.49	4.81	-3.72	105.80
Czechia	2005	Nominal exchange rate	23.96	3.22	1.86	1.17	10.00	31.70	121.30	6.60	-2.05	105.02
Czechia	2005	Real exchange rate	83.17	3.22	1.86	1.17	10.00	31.70	121.30	6.60	-2.05	105.02
Czechia	2006	Nominal exchange rate	22.60	4.97	2.53	1.19	4.56	30.00	127.03	6.77	-2.56	103.01
Czechia	2006	Real exchange rate	87.62	4.97	2.53	1.19	4.56	30.00	127.03	6.77	-2.56	103.01
Czechia	2007	Nominal exchange rate	20.29	5.02	2.85	1.32	7.27	28.30	129.78	5.57	-4.70	102.57
Czechia	2007	Real exchange rate	90.04	5.02	2.85	1.32	7.27	28.30	129.78	5.57	-4.70	102.57
Czechia	2008	Nominal exchange rate	17.07	1.92	6.36	1.61	3.73	31.70	123.74	2.69	-1.86	100.32
Czechia	2008	Real exchange rate	103.50	1.92	6.36	1.61	3.73	31.70	123.74	2.69	-1.86	100.32
Czechia	2009	Nominal exchange rate	19.06	0.16	1.02	1.27	2.55	33.00	112.80	-4.66	-2.35	103.48
Czechia	2009	Real exchange rate	99.33	0.16	1.02	1.27	2.55	33.00	112.80	-4.66	-2.35	103.48
Czechia	2010	Nominal exchange rate	19.10	0.18	1.47	1.08	4.82	31.20	128.03	2.43	-3.52	100.93
Czechia	2010	Real exchange rate	100.00	0.18	1.47	1.08	4.82	31.20	128.03	2.43	-3.52	100.93
Czechia	2011	Nominal exchange rate	17.70	0.10	1.92	1.04	1.81	31.00	137.86	1.76	-2.19	100.11
Czechia	2011	Real exchange rate	101.87	0.10	1.92	1.04	1.81	31.00	137.86	1.76	-2.19	100.11
Czechia	2012	Nominal exchange rate	19.58	0.14	3.29	1.02	4.48	31.10	146.53	-0.79	-1.51	98.64
Czechia	2012	Real exchange rate	98.41	0.14	3.29	1.02	4.48	31.10	146.53	-0.79	-1.51	98.64
Czechia	2013	Nominal exchange rate	19.57	0.11	1.44	0.86	3.45	30.50	146.42	-0.05	-0.52	98.83
Czechia	2013	Real exchange rate	96.44	0.11	1.44	0.86	3.45	30.50	146.42	-0.05	-0.52	98.83
Czechia	2014	Nominal exchange rate	20.76	0.09	0.34	0.70	3.84	30.40	157.57	2.26	0.22	99.61
Czechia	2014	Real exchange rate	90.86	0.09	0.34	0.70	3.84	30.40	157.57	2.26	0.22	99.61
Czechia	2015	Nominal exchange rate	24.60	0.13	0.31	0.53	0.90	29.40	155.18	5.39	0.45	100.00
Czechia	2015	Real exchange rate	88.61	0.13	0.31	0.53	0.90	29.40	155.18	5.39	0.45	100.00
Czechia	2016	Nominal exchange rate	24.44	0.39	0.68	0.37	5.48	28.10	150.59	2.54	1.76	100.54
Czechia	2016	Real exchange rate	90.96	0.39	0.68	0.37	5.48	28.10	150.59	2.54	1.76	100.54
Czechia	2017	Nominal exchange rate	23.38	1.00	2.45	0.28	5.07	27.30	150.53	5.17	1.35	99.30
Czechia	2017	Real exchange rate	94.87	1.00	2.45	0.28	5.07	27.30	150.53	5.17	1.35	99.30
Czechia	2018	Nominal exchange rate	21.73	1.83	2.15	0.28	3.30	27.00	147.95	3.22	0.51	99.31
Czechia	2018	Real exchange rate	99.25	1.83	2.15	0.28	3.30	27.00	147.95	3.22	0.51	99.31
Czechia	2019	Nominal exchange rate	22.93	2.16	2.85	0.39	4.19	26.00	141.77	3.03	0.36	100.02
Czechia	2019	Real exchange rate	99.59	2.16	2.85	0.39	4.19	26.00	141.77	3.03	0.36	100.02
Czechia	2020	Nominal exchange rate	23.21	0.37	3.16	0.30	3.39	30.30	133.15	-5.50	2.02	100.80
Czechia	2020	Real exchange rate	100.24	0.37	3.16	0.30	3.39	30.30	133.15	-5.50	2.02	100.80
Czechia	2021	Nominal exchange rate	21.68	0.08	3.84	0.23	4.43	29.70	142.50	3.55	-2.73	98.85
Czechia	2021	Real exchange rate	104.88	0.08	3.84	0.23	4.43	29.70	142.50	3.55	-2.73	98.85
Czechia	2022	Nominal exchange rate	23.36	1.69	15.10	1.40	3.03	29.50	151.92	2.35	-5.98	101.80
Czechia	2022	Real exchange rate	115.26	1.69	15.10	1.40	3.03	29.50	151.92	2.35	-5.98	101.80

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of G	External de	Trade oper	GDP Grow	Current ac	Term of trade
Hungary	2003	Nominal exchange rate	224.31	1.13	4.66	7.08	4.87	56.40	116.63	4.07	-8.25	98.31
Hungary	2003	Real exchange rate	89.16	1.13	4.66	7.08	4.87	56.40	116.63	4.07	-8.25	98.31
Hungary	2004	Nominal exchange rate	202.75	1.35	6.74	10.50	4.36	59.30	123.45	5.00	-9.07	97.61
Hungary	2004	Real exchange rate	94.88	1.35	6.74	10.50	4.36	59.30	123.45	5.00	-9.07	97.61
Hungary	2005	Nominal exchange rate	199.58	3.22	3.56	6.41	24.28	61.10	127.81	4.29	-9.88	96.25
Hungary	2005	Real exchange rate	96.22	3.22	3.56	6.41	24.28	61.10	127.81	4.29	-9.88	96.25
Hungary	2006	Nominal exchange rate	210.39	4.97	3.93	6.03	16.14	61.30	149.01	3.95	-7.28	92.94
Hungary	2006	Real exchange rate	91.63	4.97	3.93	6.03	16.14	61.30	149.01	3.95	-7.28	92.94
Hungary	2007	Nominal exchange rate	183.63	5.02	7.96	7.23	50.38	61.00	155.50	0.28	-7.28	92.69
Hungary	2007	Real exchange rate	101.99	5.02	7.96	7.23	50.38	61.00	155.50	0.28	-7.28	92.69
Hungary	2008	Nominal exchange rate	172.11	1.92	6.04	8.06	47.21	66.50	158.33	1.00	-7.03	91.85
Hungary	2008	Real exchange rate	104.89	1.92	6.04	8.06	47.21	66.50	158.33	1.00	-7.03	91.85
Hungary	2009	Nominal exchange rate	202.34	0.16	4.21	8.14	-2.28	78.20	145.00	-6.60	-0.68	94.52
Hungary	2009	Real exchange rate	98.98	0.16	4.21	8.14	-2.28	78.20	145.00	-6.60	-0.68	94.52
Hungary	2010	Nominal exchange rate	207.94	0.18	4.86	4.93	-15.85	80.40	157.46	1.08	0.26	96.73
Hungary	2010	Real exchange rate	100.00	0.18	4.86	4.93	-15.85	80.40	157.46	1.08	0.26	96.73
Hungary	2011	Nominal exchange rate	201.06	0.10	3.93	5.49	7.44	81.60	166.43	1.87	0.62	97.20
Hungary	2011	Real exchange rate	99.75	0.10	3.93	5.49	7.44	81.60	166.43	1.87	0.62	97.20
Hungary	2012	Nominal exchange rate	225.10	0.14	5.65	6.27	8.28	83.00	165.65	-1.25	1.54	96.80
Hungary	2012	Real exchange rate	97.03	0.14	5.65	6.27	8.28	83.00	165.65	-1.25	1.54	96.80
Hungary	2013	Nominal exchange rate	223.70	0.11	1.73	3.77	-2.75	85.20	164.35	1.80	3.44	98.82
Hungary	2013	Real exchange rate	96.01	0.11	1.73	3.77	-2.75	85.20	164.35	1.80	3.44	98.82
Hungary	2014	Nominal exchange rate	232.60	0.09	-0.23	1.78	9.13	79.10	168.39	4.23	1.14	99.34
Hungary	2014	Real exchange rate	92.13	0.09	-0.23	1.78	9.13	79.10	168.39	4.23	1.14	99.34
Hungary	2015	Nominal exchange rate	279.33	0.13	-0.06	1.11	-4.37	77.30	167.32	3.71	2.34	100.00
Hungary	2015	Real exchange rate	88.32	0.13	-0.06	1.11	-4.37	77.30	167.32	3.71	2.34	100.00
Hungary	2016	Nominal exchange rate	281.52	0.39	0.39	0.58	54.00	74.10	164.40	2.20	4.55	101.17
Hungary	2016	Real exchange rate	88.99	0.39	0.39	0.58	54.00	74.10	164.40	2.20	4.55	101.17
Hungary	2017	Nominal exchange rate	274.43	1.00	2.35	0.12	-8.64	72.40	165.23	4.27	1.93	102.02
Hungary	2017	Real exchange rate	90.77	1.00	2.35	0.12	-8.64	72.40	165.23	4.27	1.93	102.02
Hungary	2018	Nominal exchange rate	270.21	1.83	2.85	0.06	-40.26	70.80	163.26	5.36	0.26	101.67
Hungary	2018	Real exchange rate	90.29	1.83	2.85	0.06	-40.26	70.80	163.26	5.36	0.26	101.67
Hungary	2019	Nominal exchange rate	290.66	2.16	3.34	0.10	59.91	69.30	160.75	4.86	-0.78	102.05
Hungary	2019	Real exchange rate	89.08	2.16	3.34	0.10	59.91	69.30	160.75	4.86	-0.78	102.05
Hungary	2020	Nominal exchange rate	308.00	0.37	3.33	0.47	106.43	71.60	155.42	-4.54	-1.04	105.76
Hungary	2020	Real exchange rate	85.67	0.37	3.33	0.47	106.43	71.60	155.42	-4.54	-1.04	105.76
Hungary	2021	Nominal exchange rate	303.14	0.08	5.11	1.01	18.39	72.30	159.69	7.09	-4.03	103.70
Hungary	2021	Real exchange rate	86.10	0.08	5.11	1.01	18.39	72.30	159.69	7.09	-4.03	103.70
Hungary	2022	Nominal exchange rate	372.60	1.69	14.61	8.36	-1.12	74.50	185.27	4.55	-8.17	100.30
Hungary	2022	Real exchange rate	82.22	1.69	14.61	8.36	-1.12	74.50	185.27	4.55	-8.17	100.30

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Poland	2003	Nominal exchange rate	3.89	1.13	0.68	4.25	2.46	41.70	69.45	3.50	-2.51	102.83
Poland	2003	Real exchange rate	88.45	1.13	0.68	4.25	2.46	41.70	69.45	3.50	-2.51	102.83
Poland	2004	Nominal exchange rate	3.66	1.35	3.38	4.50	5.41	42.50	71.45	4.98	-6.00	105.22
Poland	2004	Real exchange rate	87.48	1.35	3.38	4.50	5.41	42.50	71.45	4.98	-6.00	105.22
Poland	2005	Nominal exchange rate	3.24	3.22	2.18	5.00	3.60	42.20	70.53	3.51	-3.31	103.23
Poland	2005	Real exchange rate	97.22	3.22	2.18	5.00	3.60	42.20	70.53	3.51	-3.31	103.23
Poland	2006	Nominal exchange rate	3.10	4.97	1.28	5.50	6.21	41.70	77.97	6.13	-4.67	101.95
Poland	2006	Real exchange rate	99.13	4.97	1.28	5.50	6.21	41.70	77.97	6.13	-4.67	101.95
Poland	2007	Nominal exchange rate	2.77	5.02	2.46	6.50	5.83	42.10	80.83	7.06	-6.69	102.36
Poland	2007	Real exchange rate	102.51	5.02	2.46	6.50	5.83	42.10	80.83	7.06	-6.69	102.36
Poland	2008	Nominal exchange rate	2.41	1.92	4.16	7.50	2.72	47.50	80.91	4.20	-6.77	100.58
Poland	2008	Real exchange rate	111.83	1.92	4.16	7.50	2.72	47.50	80.91	4.20	-6.77	100.58
Poland	2009	Nominal exchange rate	3.12	0.16	3.80	6.50	3.18	52.00	75.27	2.83	-3.96	104.04
Poland	2009	Real exchange rate	94.85	0.16	3.80	6.50	3.18	52.00	75.27	2.83	-3.96	104.04
Poland	2010	Nominal exchange rate	3.02	0.18	2.58	6.00	3.94	51.50	82.55	2.93	-5.18	101.66
Poland	2010	Real exchange rate	100.00	0.18	2.58	6.00	3.94	51.50	82.55	2.93	-5.18	101.66
Poland	2011	Nominal exchange rate	2.96	0.10	4.24	5.50	3.57	51.20	87.28	5.04	-5.12	99.31
Poland	2011	Real exchange rate	98.43	0.10	4.24	5.50	3.57	51.20	87.28	5.04	-5.12	99.31
Poland	2012	Nominal exchange rate	3.26	0.14	3.56	5.00	1.53	50.60	89.27	1.55	-4.11	97.43
Poland	2012	Real exchange rate	95.68	0.14	3.56	5.00	1.53	50.60	89.27	1.55	-4.11	97.43
Poland	2013	Nominal exchange rate	3.16	0.11	0.99	4.50	0.26	49.10	90.78	0.86	-1.96	98.11
Poland	2013	Real exchange rate	96.27	0.11	0.99	4.50	0.26	49.10	90.78	0.86	-1.96	98.11
Poland	2014	Nominal exchange rate	3.15	0.09	0.05	4.00	3.85	49.30	92.57	3.84	-2.95	98.37
Poland	2014	Real exchange rate	96.86	0.09	0.05	4.00	3.85	49.30	92.57	3.84	-2.95	98.37
Poland	2015	Nominal exchange rate	3.77	0.13	-0.87	3.50	3.30	49.70	92.82	4.38	-1.29	100.00
Poland	2015	Real exchange rate	92.57	0.13	-0.87	3.50	3.30	49.70	92.82	4.38	-1.29	100.00
Poland	2016	Nominal exchange rate	3.94	0.39	-0.66	3.00	3.82	48.80	97.54	2.95	-1.02	100.36
Poland	2016	Real exchange rate	88.95	0.39	-0.66	3.00	3.82	48.80	97.54	2.95	-1.02	100.36
Poland	2017	Nominal exchange rate	3.78	1.00	2.08	2.50	2.38	47.80	101.28	5.14	-1.15	98.82
Poland	2017	Real exchange rate	92.05	1.00	2.08	2.50	2.38	47.80	101.28	5.14	-1.15	98.82
Poland	2018	Nominal exchange rate	3.61	1.83	1.81	3.00	3.35	47.10	103.45	5.95	-1.93	98.09
Poland	2018	Real exchange rate	93.52	1.83	1.81	3.00	3.35	47.10	103.45	5.95	-1.93	98.09
Poland	2019	Nominal exchange rate	3.84	2.16	2.23	3.50	3.15	46.20	102.69	4.45	-0.24	98.66
Poland	2019	Real exchange rate	92.37	2.16	2.23	3.50	3.15	46.20	102.69	4.45	-0.24	98.66
Poland	2020	Nominal exchange rate	3.90	0.37	3.37	3.00	3.31	48.00	100.32	-2.02	2.46	100.85
Poland	2020	Real exchange rate	92.93	0.37	3.37	3.00	3.31	48.00	100.32	-2.02	2.46	100.85
Poland	2021	Nominal exchange rate	3.86	0.08	5.06	2.50	5.44	48.90	112.08	6.93	-1.25	98.47
Poland	2021	Real exchange rate	92.60	0.08	5.06	2.50	5.44	48.90	112.08	6.93	-1.25	98.47
Poland	2022	Nominal exchange rate	4.46	1.69	14.43	3.50	6.01	50.00	123.98	5.26	-2.42	102.20
Poland	2022	Real exchange rate	94.01	1.69	14.43	3.50	6.01	50.00	123.98	5.26	-2.42	102.20

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Romania	2003	Nominal exchange rate	3.32	1.13	15.27	11.02	3.19	40.28	56.18	2.34	-5.73	94.35
Romania	2003	Real exchange rate	81.10	1.13	15.27	11.02	3.19	40.28	56.18	2.34	-5.73	94.35
Romania	2004	Nominal exchange rate	3.26	1.35	11.87	11.54	8.59	41.34	60.63	10.43	-8.51	97.51
Romania	2004	Real exchange rate	82.87	1.35	11.87	11.54	8.59	41.34	60.63	10.43	-8.51	97.51
Romania	2005	Nominal exchange rate	2.91	3.22	9.01	6.42	6.60	40.69	59.36	4.67	-8.67	97.44
Romania	2005	Real exchange rate	97.48	3.22	9.01	6.42	6.60	40.69	59.36	4.67	-8.67	97.44
Romania	2006	Nominal exchange rate	2.81	4.97	6.56	4.77	9.02	45.77	61.68	8.03	-10.67	98.66
Romania	2006	Real exchange rate	104.38	4.97	6.56	4.77	9.02	45.77	61.68	8.03	-10.67	98.66
Romania	2007	Nominal exchange rate	2.44	5.02	4.84	6.70	5.79	49.95	63.51	7.23	-13.70	98.10
Romania	2007	Real exchange rate	112.66	5.02	4.84	6.70	5.79	49.95	63.51	7.23	-13.70	98.10
Romania	2008	Nominal exchange rate	2.52	1.92	7.85	9.51	6.38	47.44	65.17	9.31	-11.66	97.38
Romania	2008	Real exchange rate	106.42	1.92	7.85	9.51	6.38	47.44	65.17	9.31	-11.66	97.38
Romania	2009	Nominal exchange rate	3.05	0.16	5.59	11.99	2.66	66.10	58.47	-5.52	-4.73	98.28
Romania	2009	Real exchange rate	98.65	0.16	5.59	11.99	2.66	66.10	58.47	-5.52	-4.73	98.28
Romania	2010	Nominal exchange rate	3.18	0.18	6.09	7.31	1.89	68.66	69.83	-3.90	-4.99	98.97
Romania	2010	Real exchange rate	100.00	0.18	6.09	7.31	1.89	68.66	69.83	-3.90	-4.99	98.97
Romania	2011	Nominal exchange rate	3.05	0.10	5.79	6.30	1.23	62.86	76.14	4.52	-4.82	99.72
Romania	2011	Real exchange rate	102.56	0.10	5.79	6.30	1.23	62.86	76.14	4.52	-4.82	99.72
Romania	2012	Nominal exchange rate	3.47	0.14	3.33	5.51	1.70	68.58	76.54	1.92	-4.58	99.19
Romania	2012	Real exchange rate	96.58	0.14	3.33	5.51	1.70	68.58	76.54	1.92	-4.58	99.19
Romania	2013	Nominal exchange rate	3.33	0.11	3.98	4.55	2.03	66.28	81.40	0.27	-0.96	98.56
Romania	2013	Real exchange rate	101.14	0.11	3.98	4.55	2.03	66.28	81.40	0.27	-0.96	98.56
Romania	2014	Nominal exchange rate	3.35	0.09	1.07	3.02	1.94	56.26	83.38	4.12	-0.28	98.12
Romania	2014	Real exchange rate	101.82	0.09	1.07	3.02	1.94	56.26	83.38	4.12	-0.28	98.12
Romania	2015	Nominal exchange rate	4.01	0.13	-0.59	1.89	2.43	54.80	83.52	3.16	-0.78	100.00
Romania	2015	Real exchange rate	98.33	0.13	-0.59	1.89	2.43	54.80	83.52	3.16	-0.78	100.00
Romania	2016	Nominal exchange rate	4.06	0.39	-1.54	1.11	3.37	52.58	85.89	2.86	-1.62	100.21
Romania	2016	Real exchange rate	96.61	0.39	-1.54	1.11	3.37	52.58	85.89	2.86	-1.62	100.21
Romania	2017	Nominal exchange rate	4.05	1.00	1.34	0.89	2.83	55.04	87.16	8.20	-3.13	98.05
Romania	2017	Real exchange rate	95.20	1.00	1.34	0.89	2.83	55.04	87.16	8.20	-3.13	98.05
Romania	2018	Nominal exchange rate	3.94	1.83	4.63	1.30	3.02	47.12	86.47	6.03	-4.58	98.04
Romania	2018	Real exchange rate	97.73	1.83	4.63	1.30	3.02	47.12	86.47	6.03	-4.58	98.04
Romania	2019	Nominal exchange rate	4.24	2.16	3.83	1.79	2.93	47.81	84.50	3.85	-4.85	98.54
Romania	2019	Real exchange rate	97.25	2.16	3.83	1.79	2.93	47.81	84.50	3.85	-4.85	98.54
Romania	2020	Nominal exchange rate	4.24	0.37	2.63	1.93	1.43	57.51	78.06	-3.68	-4.99	100.12
Romania	2020	Real exchange rate	98.62	0.37	2.63	1.93	1.43	57.51	78.06	-3.68	-4.99	100.12
Romania	2021	Nominal exchange rate	4.16	0.08	5.05	1.58	4.10	46.30	86.85	5.71	-7.22	99.27
Romania	2021	Real exchange rate	99.56	0.08	5.05	1.58	4.10	46.30	86.85	5.71	-7.22	99.27
Romania	2022	Nominal exchange rate	4.69	1.69	13.80	4.19	3.87	47.20	93.23	4.60	-9.14	99.60
Romania	2022	Real exchange rate	103.28	1.69	13.80	4.19	3.87	47.20	93.23	4.60	-9.14	99.60

Country	Year	Variable	Value	US Interest	Inflation ra	Local depo	FDI % of GI	External de	Trade oper	GDP Grow	Current ac	Term of trade
Turkiye	2003	Nominal exchange rate	1.50	1.13	21.60	37.68	0.54	48.01	46.23	5.76	-2.40	100.59
Turkiye	2003	Real exchange rate	143.56	1.13	21.60	37.68	0.54	48.01	46.23	5.76	-2.40	100.59
Turkiye	2004	Nominal exchange rate	1.43	1.35	8.60	24.26	0.68	41.03	48.83	9.80	-3.47	101.16
Turkiye	2004	Real exchange rate	146.11	1.35	8.60	24.26	0.68	41.03	48.83	9.80	-3.47	101.16
Turkiye	2005	Nominal exchange rate	1.34	3.22	8.18	20.40	1.98	35.58	46.14	8.99	-4.14	100.23
Turkiye	2005	Real exchange rate	160.70	3.22	8.18	20.40	1.98	35.58	46.14	8.99	-4.14	100.23
Turkiye	2006	Nominal exchange rate	1.43	4.97	9.60	21.65	3.62	39.47	48.76	6.95	-5.59	95.49
Turkiye	2006	Real exchange rate	159.28	4.97	9.60	21.65	3.62	39.47	48.76	6.95	-5.59	95.49
Turkiye	2007	Nominal exchange rate	1.30	5.02	8.76	22.56	3.24	39.80	47.85	5.04	-5.42	98.14
Turkiye	2007	Real exchange rate	172.73	5.02	8.76	22.56	3.24	39.80	47.85	5.04	-5.42	98.14
Turkiye	2008	Nominal exchange rate	1.30	1.92	10.44	22.91	2.58	38.60	50.55	0.82	-5.12	94.44
Turkiye	2008	Real exchange rate	174.29	1.92	10.44	22.91	2.58	38.60	50.55	0.82	-5.12	94.44
Turkiye	2009	Nominal exchange rate	1.55	0.16	6.25	17.65	1.32	44.57	46.79	-4.82	-1.75	98.44
Turkiye	2009	Real exchange rate	163.12	0.16	6.25	17.65	1.32	44.57	46.79	-4.82	-1.75	98.44
Turkiye	2010	Nominal exchange rate	1.50	0.18	8.57	15.27	1.17	41.10	46.69	8.43	-5.74	93.92
Turkiye	2010	Real exchange rate	179.74	0.18	8.57	15.27	1.17	41.10	46.69	8.43	-5.74	93.92
Turkiye	2011	Nominal exchange rate	1.67	0.10	6.47	14.11	1.93	38.60	53.30	11.20	-8.87	91.11
Turkiye	2011	Real exchange rate	158.93	0.10	6.47	14.11	1.93	38.60	53.30	11.20	-8.87	91.11
Turkiye	2012	Nominal exchange rate	1.80	0.14	8.89	17.19	1.56	40.44	52.83	4.79	-4.75	90.98
Turkiye	2012	Real exchange rate	164.81	0.14	8.89	17.19	1.56	40.44	52.83	4.79	-4.75	90.98
Turkiye	2013	Nominal exchange rate	1.90	0.11	7.49	15.30	1.42	42.37	52.53	8.49	-5.15	92.55
Turkiye	2013	Real exchange rate	162.60	0.11	7.49	15.30	1.42	42.37	52.53	8.49	-5.15	92.55
Turkiye	2014	Nominal exchange rate	2.19	0.09	8.85	16.94	1.42	44.47	53.77	4.94	-3.42	93.91
Turkiye	2014	Real exchange rate	153.40	0.09	8.85	16.94	1.42	44.47	53.77	4.94	-3.42	93.91
Turkiye	2015	Nominal exchange rate	2.72	0.13	7.67	14.92	2.23	46.75	51.09	6.08	-2.47	100.00
Turkiye	2015	Real exchange rate	150.09	0.13	7.67	14.92	2.23	46.75	51.09	6.08	-2.47	100.00
Turkiye	2016	Nominal exchange rate	3.02	0.39	7.78	14.61	1.59	46.38	48.33	3.32	-2.55	104.05
Turkiye	2016	Real exchange rate	147.38	0.39	7.78	14.61	1.59	46.38	48.33	3.32	-2.55	104.05
Turkiye	2017	Nominal exchange rate	3.65	1.00	11.14	15.29	1.30	52.69	55.76	7.50	-4.09	98.61
Turkiye	2017	Real exchange rate	131.38	1.00	11.14	15.29	1.30	52.69	55.76	7.50	-4.09	98.61
Turkiye	2018	Nominal exchange rate	4.83	1.83	16.33	23.28	1.60	55.45	62.61	3.01	-1.87	94.97
Turkiye	2018	Real exchange rate	112.04	1.83	16.33	23.28	1.60	55.45	62.61	3.01	-1.87	94.97
Turkiye	2019	Nominal exchange rate	5.67	2.16	15.18	25.41	1.25	55.34	63.19	0.82	1.97	94.73
Turkiye	2019	Real exchange rate	110.85	2.16	15.18	25.41	1.25	55.34	63.19	0.82	1.97	94.73
Turkiye	2020	Nominal exchange rate	7.01	0.37	12.28	13.36	1.07	60.33	61.34	1.86	-4.32	99.61
Turkiye	2020	Real exchange rate	100.00	0.37	12.28	13.36	1.07	60.33	61.34	1.86	-4.32	99.61
Turkiye	2021	Nominal exchange rate	8.85	0.08	19.60	20.70	1.57	54.07	71.08	11.44	-0.78	88.64
Turkiye	2021	Real exchange rate	89.88	0.08	19.60	20.70	1.57	54.07	71.08	11.44	-0.78	88.64
Turkiye	2022	Nominal exchange rate	16.55	1.69	72.31	27.04	1.51	51.05	81.17	5.53	-5.05	96.80
Turkiye	2022	Real exchange rate	82.56	1.69	72.31	27.04	1.51	51.05	81.17	5.53	-5.05	96.80

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