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EXCHANGE RATE VOLATILITY AND TRADE OUTCOME

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THE IMPACT OF EXCHANGE RATE VOLATILITY ON ZAMBIA'S TRADE OUTCOME (1991 to 2022)

DECLARATION

I, Nevers Sikabbwele, declare that this research dissertation is my own work. All sources used in this work are acknowledged, and any direct quotations are clearly indicated. This dissertation has not been submitted for any other degree or examination at any other institution.

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DEDICATION

I am dedicating this dissertation to my mom, Ms. Dorothy Mpokota as well as to my late father, Million Sikabbwele, for their love and support. Without their support, it would have not been possible to complete my education.

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I would like to express my sincere gratitude to Dr. Mulenga Muma, my instructor, for the supervision during my research. Further, I wish to thank my wife, Rudo G. Sikabbwele for encouraging me in all of pursuits and inspiring me to follow my dreams.

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ABSTRACT

The purpose of this research dissertation is to investigate the impact of exchange rate volatility on Zambia's trade outcome from 1991 to 2022. The study delves into the intricate relationships between economic variables and trade dynamics, with a focus on understanding how fluctuations in exchange rates influence the country's trade outcomes. The study was guided by the following objectives: to examine the effect of Inflation Rate on Trade outcome, to investigate the impact that Government expenditure has on the Trade outcome and analyse the effect of interest rates on Zambia's trade outcome.

The study uses a descriptive research methodology and a quantitative research approach to evaluate time series data from 1991 to 2022 that were obtained from reputable organisations including the Ministry of Finance, Zambia Revenue Authority, Bank of Zambia, and Zambia Statistics Agency. For a thorough analysis of the data, E-Views was used, which included a model definition based on a theoretical framework.

The findings of the study revealed nuanced relationships between economic variables and Zambia's trade outcome. Notable results included the substantial impact of the second lag of government expenditure on the trade outcome in the short run. Additionally, interest rates exhibited varying influences across different timeframes, and inflation rates demonstrated a multifaceted relationship influenced by temporal dynamics. The significance of lagged values of the exchange rate was emphasized, underlining the importance of recent changes in shaping trade dynamics in Zambia.

Based on the findings, policymakers are advised to consider strategic increases in government spending aligned with economic goals. Tailored strategies for interest rate policies, acknowledgment of the multifaceted impact of inflation rates, and a focus on implementing measures for exchange rate stability are recommended. These recommendations aim to guide policymakers in fostering enhanced trade outcomes for Zambia.

Key words: Trade, balance, exchange, inflation, rate, interest, and government

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

The expected influence of exchange rates on trade is intricately linked to the concept of demand and supply elasticity. The fluctuation of exchange rates is a complex phenomenon that has a significant impact on a country's trade dynamics. The impact of this phenomenon is two-fold: firstly, it directly affects commerce due to uncertainty and the costs associated with adjusting; and secondly, it indirectly influences the structure of output, investments, and government policies. This study focuses on the immediate influence of exchange rates on commerce while recognising the importance of unique contextual elements that form this complicated connection. According to Salvatore (2011), exchange rates represent the relative value of a country's currency in comparison to another currency or a collection of foreign currencies. Exchange rates have historically had a considerable influence on international commerce, particularly in the contemporary linked global economy (Salvatore, 2011).

The degree of elasticity in export and import demand and supply in response to relative prices determines the extent to which nominal and real exchange rates impact trade flows. Moreover, the significance of currency rates in international trade depends on trade barriers, as highlighted by Bhagwati (1996). Trade barriers of a significant magnitude can reduce the effectiveness of exchange rate modifications when it comes to responding to changes in currency values.

The Zambian trade scenario presents an intriguing setting for currency rate volatility due to the presence of multiple factors such as varying elasticities in import and export demand, characteristics of trading partners, and the level of trade liberalisation. This study illuminates the negative impact of fluctuations in exchange rates on the amount of trade, especially in the immediate period. Brulhart et al. (2015) argues that Zambian exports have been particularly harmed, mainly because import demand is not very responsive to changes. Furthermore, many country-specific patterns become apparent, emphasising the importance and scale of short-term adaptations.

The purpose of this study is to empirically investigate the impact of exchange rate uncertainty on trade volumes in Zambia. Cointegration techniques are used to assess the influence of exchange rate fluctuation on bilateral trade, considering both short-term and long-term impacts. Furthermore, the aggregated outcomes from pooled estimate are contrasted.

This part of the paper, Chapter, therefore, introduces the research topic, provides the background of the study, statement of the problem, research objectives, study hypothesis, significance of the study, scope of the study, and operational definitions of key terms.

1.1 Background to the study

Many emerging economies, such as Zambia, have made sincere efforts to undertake reforms and economic policies with the goal of improving international commerce through the promotion of exports and maintaining exchange rate stability (Kalyalya, 2007).

Upon achieving independence in 1964, Zambia emerged as an affluent country with positive economic indices, such as high per capita income and a stable external balance. This period of economic growth continued steadily for the first ten years but started to decline in the mid-1970s because of a series of economic changes. The fall was ascribed to nationalisation measures, which resulted in centralised planning and heightened government oversight of economic operations. In addition, the implementation of Import Substitution Industrialization (ISI) was not successful, which caused the domestic economy to become inflexible and unable to adapt to changes in both local and international conditions (Saasa, 1996).

Zambia's exports faced a lack of competitiveness in global markets due to the currency being overvalued and other policies that hindered exports. Although the cost of imports decreased, their expansion was hindered by bureaucratic obstacles and the limited availability of foreign currency. Despite the promise of Non-Traditional Exports (NTEs), these policies also impeded the diversification of Zambia's export base. The film "Luneta" released in 2000 emphasised the negative consequences of the misalignment and volatility of the real currency rate on Zambia's NTEs.

The situation was worsened by external shocks, including significant rises in oil costs and big drops in copper and other base metal prices, which are Zambia's principal traditional exports. The country experienced a decline in its terms of trade, a lack of growth in national income, and a deterioration in macroeconomic indices. The country's primary sources of foreign exchange are copper exports and other basic metals.

Zambia relied heavily on external borrowing to address its balance-of-payments problems and fund required imports. Furthermore, foreign debt was obtained to assist the development of infrastructure like as roads, schools, and hospitals as part of the responsibilities made during the United National Independence Party's (UNIP) war for independence. It was expected that commodity prices would quickly recover, allowing the government to repay its foreign debt without difficulty. Nonetheless, the balance of payments position deteriorated further, resulting in a significant rise in foreign debt. Despite efforts to maintain the currency rate, the Zambian Kwacha witnessed severe depreciation in future years as the external balance deteriorated. Following that, measures such as pricing and foreign currency controls were implemented to achieve economic stability, although achieving success proved to be difficult.

The MMD Government, which was formed in 1991, introduced economic reforms with the objective of liberalising the economy. The IMF and World Bank endorsed these reforms, which encompassed austerity measures aimed at stabilising the Zambian economy. This was necessary due to rampant inflation and significant market distortions. The economy underwent liberalisation, allowing for increased foreign trade and investment. This was achieved by relaxing import and export regulations and eliminating pricing and exchange rate controls.

Zambia's economic performance improved significantly in the following years, with notable growth in economic activity and improvements in the external balance (USAID, 2006). Nevertheless, poverty continues to be a substantial obstacle, as almost 64% of the population resides in poverty (CSO, 2007). From 2001 to 2007, there was a surge in metal prices globally, resulting in significant investments in the mining sector, particularly in copper mines.

During this time, these investments yielded more foreign exchange earnings, resulting in a significant increase in the value of the native currency. The trade reforms undertaken since 1991 have resulted in positive alterations to the country's trade standing. The elimination of trade restrictions resulted in a substantial surge in both imports and exports. NTEs have performed significantly better in recent years (Musonda, 2008). NTEs climbed from less than 100 million US dollars to more than 300 million US dollars between 1992 and 2000. Agricultural commodities and semi-precious gemstones are the most common non-tariff barriers (NTBs). Zambia's external balance has been improved by large debt forgiveness from key foreign creditors as part of the HIPC scheme. From 7.1 billion US dollars in 2002 to 1.618 billion US dollars in December 2007 (Bova, 2008), the external debt has decreased.

Nevertheless, the worldwide economic downturn in 2008 caused a temporary deceleration in the economic progress achieved in the years prior. Several mines ceased operations, resulting in the retrenchment of workers. There was a deterioration in the external balance position, accompanied by a substantial devaluation of the Zambian currency, the Kwacha. However, the performance of the domestic economy showed signs of improvement in 2009 as the global economic outlook started to rebound.

1.1.2 Analysis of Currency Exchange Rate Trends in Zambia

Zambia's early years of independence were characterised by a stable currency rate regime. Originally, the Zambian Pound was fixed to the British Pound Sterling, but the implementation of the Kwacha in 1968 signalled a shift towards fixing it to the US Dollar. During this period, the exchange rates remained stable, indicating a robust Zambian economy that was bolstered by the export of copper (Mungule, 2004).

Zambia had economic volatility during the 1980s and 1990s. The depreciation of the Kwacha against the US Dollar was primarily caused by the decline in copper prices and the necessity for economic reforms (MOF, 2018). During this period, other exchange rate schemes were assessed, including as linking the currency to the Special Drawing Rights (SDR) and implementing controlled devaluations. The implementation of a foreign

exchange auction system and the subsequent reestablishment of a fixed exchange rate aimed to tackle these difficulties, but frequently did not fully succeed.

Zambia's commerce history saw a significant turning point in the early 2000s. Currently, there has been a significant increase in copper prices, driven by worldwide demand and restricted supply, which has become a crucial factor influencing the country's trade outcome. Zambia's impressive capacity to adjust to changing global economic conditions, along with intentional efforts to diversify, led to a period marked by regular trade surpluses. The country demonstrated increased trade resilience by diversifying its export portfolio beyond copper, as highlighted in the World Bank Report of 2005.

Conversely, the most current statistics covering the period from 2020 to 2022 presents a more variable depiction of Zambia's trade outcome. Zambia demonstrated its capacity to take advantage of favourable global conditions by achieving a significant trade surplus of $2.4 billion in the year 2020. Nevertheless, the surplus decreased to $781.6 million in 2021 and further declined to $242.7 million in 2022 (World Bank, 2023). The fluctuations are undeniably impacted by worldwide economic circumstances, particularly the price fluctuations of essential exports like copper.

In Zambia, the link between currency rates and trade outcome is complex and crucial. From 2011 to 2018, the Kwacha witnessed significant depreciation regarding the US Dollar, resulting in a considerable impact on trade dynamics. Exchange rates have a key role in influencing a country's exports and imports, as well as its competitiveness in the global market. Understanding this intricate link is critical for evaluating Zambia's economic trajectory and place in global trade.

The historical dependence on the copper sector complicates this narrative, as changes in copper prices directly impact currency rates and, consequently, trade performance. Zambia's experience with these fluctuations in exchange rates provides vital insights into its ability to withstand trade challenges and presents crucial factors to consider for the country's future in the global trade environment.

As Zambia continues to navigate its economic landscape, these historical patterns serve as essential benchmarks for policymakers and analysts. They aid in achieving economic stability and promoting sustainable growth in trade, all within the case of a constantly changing global environment.

1.2 Statement of the Problem

The fluctuation in exchange rates in Zambia has been a chronic and problematic matter that has had a substantial impact on the country's economic stability and its partnerships in international trade. The volatility in the currency exchange rate, namely the fluctuation of the Zambian Kwacha in relation to the US dollar, has resulted in economic difficulties that require immediate response. In the past, Zambia has encountered periods of significant volatility in its exchange rate. As an illustration, in 2023, the currency exchange rate rose to ZMW20 per US$1, marking a significant surge from the rate of ZMW5 per US$1 in 2006. The changes have had significant ramifications for Zambia's economy, impacting multiple facets.

Primarily, these variations have resulted in higher core input expenses. When the local currency undergoes a significant decrease in value, the expenses associated with importing products and services increase, which has a direct effect on the production costs of enterprises. Consequently, this might lead to elevated pricing for commodities manufactured within the country, thereby adding to inflation. The fluctuation of exchange rates has been a major worry in Zambia, mostly due to the impact it has on imported inflation. When the value of the Kwacha depreciates, the price of imported commodities increases, leading to imported inflation that can spread to the overall economy, resulting in a general rise in price levels. Consequently, consumers encounter elevated pricing for common goods and services, which diminishes their ability to buy.

The effect on Zambia's trade outcome is equally significant. The trade outcome represents the disparity between the monetary worth of a nation's exports and imports. Zambia's trade outcome in 2022 was $3.36 billion, representing a decrease of 16.53% compared to the previous year, 2018. Nevertheless, the previous years were characterised by notable oscillations. The trade outcome in 2021 experienced a

significant surge, reaching $4.02 billion, which corresponds to a remarkable 55.83% gain compared to the previous year. In 2020, there was a remarkable increase of 2201.82% in the trade outcome compared to 2019, when it was $2.58 billion. In contrast, the trade outcome in 2019 had a significant loss, dropping to $0.11 billion, which represents a 58.47% decrease compared to 2018.

For Zambia, a tiny open economy, these swings in the trade outcome have significant consequences. An unstable trade outcome has the potential to destabilise economic stability, impede long-term economic success, and generate uncertainty for firms, investors, and politicians.

Although Zambia implemented economic reforms in the early 1990s to attain external equilibrium by liberalising the trade sector and foreign exchange market, its trade outcome continues to be unstable, particularly due to ongoing trade deficits. An in-depth examination and comprehension of this matter are necessary to develop effective solutions for reducing the negative impacts of fluctuations in exchange rates on Zambia's economy.

1.3 Objectives of the Study

1.3.1 General Objective

To analyse the impact of exchange rate volatility on Zambia’s trade outcome.

1.3.2 Specific Objectives.

The following were the specific objectives that guided the study:

1. To examine the effect of Inflation Rate on Trade outcome
2. To investigate the impact that Government expenditure has on the Trade outcome.
3. To analyse the effect of interest rates on Zambia's trade outcome

1.4 Study Hypotheses

The study will be guided by the following general hypothesis:

1. H_{01}: Inflation rates do not have a significant impact on Zambia's trade outcome.
   H_{a1}: Inflation rates have a significant impact on Zambia's trade outcome.
2. H_{02}: Government expenditure does not significantly impact Zambia's trade outcome.
   H_{a2}: Government expenditure significantly impacts Zambia's trade outcome.
3. H_{03}: Interest rates do not exert a meaningful influence on Zambia's trade outcome.
   H_{a3}: Interest rates have a significant influence on Zambia's trade outcome.

1.5 Significance of the study

This study holds immense significance as it contributes valuable insights to the existing body of knowledge in the fields of international economics, trade, and finance, particularly in the case of Zambia. The significance is multifaceted, encompassing both theoretical and practical implications:

1.5.1 Advancing Academic Understanding: This research enriches the academic discourse by delving into the intricate relationship between exchange rate volatility, interest rates, inflation rates, and their impact on Zambia's trade outcome. It builds upon and extends existing theories, and empirical studies in the field of economics, adding depth to the understanding of how these variables interact within a developing nation's economic case.

1.5.2 Informed Policymaking: The findings of this study offer valuable guidance to policymakers and government authorities in Zambia. By comprehending how exchange rate dynamics and macroeconomic factors influence the trade outcome, policymakers can formulate more effective strategies to stabilize the economy and promote sustainable economic growth. This can lead to more informed and evidence-based policy decisions, benefiting the nation's citizens.

1.5.3 Strategic Decision-Making for Businesses: Entrepreneurs, investors, and businesses operating in Zambia can leverage the insights generated by this research. Understanding the interplay between exchange rate volatility, interest rates, and inflation rates can empower these stakeholders to make informed decisions regarding trade, investment, and risk management. This, in turn, can enhance the efficiency and competitiveness of businesses, contributing to economic development.

1.5.4 Economic Stability: Exchange rate volatility can be a source of economic instability. By uncovering the factors driving this volatility and their consequences on trade outcome, this study indirectly contributes to discussions on economic stability. A more stable economic environment can reduce uncertainty, attract foreign investment, and stimulate economic growth.

1.5.5 Development Prospects: Trade is a fundamental driver of economic development, especially in developing nations like Zambia. This study's insights can inform strategies aimed at fostering sustainable economic growth, reducing trade deficits, and improving the overall economic well-being of the country's population.

1.5.6 Knowledge Transfer: The knowledge generated by this research is not confined to academic circles. It can be disseminated through various channels to reach a broader audience, including policymakers, business communities, economists, and students. This knowledge transfer can facilitate informed discussions, foster collaboration, and drive positive changes in economic policies and practices.

1.6 Scope of the Study

This study covered a substantial period, spanning from 1991 to 2022. This framework allows for the analysis of long-term trends and fluctuations in exchange rate volatility, interest rates, inflation rates, government expenditure, and their impact on Zambia's trade outcome.

The primary geographical focus of this study is the Republic of Zambia. Zambia's unique economic landscape, characterized by its reliance on primary exports and susceptibility

to external economic factors, provides an ideal case for investigating the study's objectives.

1.7 Operational Definition of key terms

Exchange Rate Volatility: "The degree to which the exchange rate between two currencies changes over time is referred to as exchange rate volatility" (Eichengreen, 2007).

Exports: are products and services sold by a country to other countries. Exports can assist a country earn cash and offset the expense of importing products and services that are not produced domestically (Feenstra & Taylor, 2014).

Imports: are commodities and services purchased by a country from other countries. They are frequently required to supply domestic demand for items that are either unavailable or prohibitively expensive to produce locally (Feenstra & Taylor, 2014).

Inflation rate: The rate at which the overall level of goods and services prices grows, lowering buying power and influencing consumer behaviour and economic planning (Blanchard, 2017).

Interest rates: are the cost of borrowing money or the rate of return on investment, and they influence consumer and company spending, investment choices, and economic growth (Mankiw, 2019).

Trade outcome: "The difference between a country's total exports and total imports is referred to as its trade outcome" (Krugman & Obstfeld, 2009).

CHAPTER TWO

LITERATURE REVIEW

In this Chapter, the study provides a thorough assessment of the literature, looking at previous research on the connection between trade outcome and exchange rates. The purpose of the literature review is to identify any research gaps that need to be addressed and to set the foundation for comprehending the theoretical and empirical components of this connection. The chapter also outlines the ideas that informed the study and the conceptual framework that shows how the primary variables in the study relate to one another.

2.1 Empirical review

Exchange rate fluctuations' short- and long-term effects on Korea's trade outcome were examined by Bahmani-Oskooee and Rhee (2004). The researchers employed a vector error correction model (VECM) to look at the relationship between trade outcome and currency rates. The data utilised in this investigation were from 1970 to 2002. The study found that while the trade outcome benefited initially from the Korean won's devaluation, its impact gradually diminished. According to the authors' study, this result can be attributable to the J-curve phenomenon, in which the trade outcome first deteriorates due to higher import expenditures but subsequently rebounds as exporters improve their competitiveness and respond to the changed exchange rate. Although this analysis offers useful data regarding Korea's trade outcome, its main emphasis is on the Korean case. An area that has not been thoroughly explored in the existing body of research is the absence of a comparison analysis examining the effects of exchange rates on trade outcomes in different nations or regions. Such an analysis would offer a more comprehensive viewpoint.

Using quarterly time series data from 1985 to 1998, Lal and Lowinger (2002) investigated the link between the Nominal Effective Exchange Rate (NEER) and trade outcome in five South Asian countries: Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The Johansen Cointegration method was utilised to evaluate if a long-term relationship existed between

the variables. It uses maximum likelihood estimation on an autoregressive model. The dynamics of the model are analysed using the Error Correction Model (ECM).

The results of the analysis show a consistent, long-term relationship—that is, an equilibrium condition—between the trade outcome and exchange rate. The devaluation of the currencies of the five South Asian countries leads to positive adjustments to their trade outcomes over time, even though there is an initial short-term downturn. This image provided proof that the J-Curve phenomena exists. Consequently, the trade outcome decreased initially as a result of devaluation, but with time, the trade outcome increased. The time span between trade outcome depreciation and recovery differed greatly across the South Asian nations under investigation. It usually took two to five quarters for the trade outcome to recover after devaluations in different countries. Prior to correction, the magnitude of exchange rate imbalance in each country was blamed for the time discrepancies. The period of adaption was shorter in countries with more liberalised trade and exchange policies.

The same conclusions about the J-curve phenomena were reached by Bhattari and Armah's (2005) empirical study in Ghana. The import and export functions of the Ghanaian economy were separately estimated in the study. In all functions, the currency rate was included as an independent variable. To determine if the exchange rate functions met the Marshal-Lerner criterion—which stipulates that a decline in the exchange rate should improve the trade outcome—the coefficients of the exchange rate from each function were put together. The model correctly included the influence of both local and international revenue on the trade outcome in addition to the real exchange rate. The annual time series data in the dataset covered the years 1970 through 2000. The short-run and long-run relationships between variables were analysed using the Johansen's (ECM) and Engle and Granger (1987) approaches, respectively.

The results showed that, albeit not immediately, the depreciation of the Ghanaian cedi had a favourable effect on the trade outcome over an extended period of time. In the long run, the Marshal-Lerner condition—which holds that depreciation can result in an improvement in the trade outcome—was met, while it was not satisfied in the short to

medium term. As a result, following the currency depreciation, the trade outcome initially declined and then gradually improved. The sum of the imports' and exports' short-run elasticities was 0.353, which is less than what is needed for depreciation to have a positive effect on the trade outcome. Over an extended period of time, empirical data indicates that a ten percent depreciation of the Ghanaian cedi led to a 7.2 percent rise in exports and a 4.68 percent drop in imports. Over an extended period, the aggregate value of the import and export elasticities barely met the Marshal-Lerner criterion. According to the research, even over a long length of time, the benefits of devaluation are anticipated to be negligible. All things considered, this study agrees with the theoretical predictions of the balance of payments elasticity method.

Agbola (2004) assessed yearly data from 1970 to 2002 in Ghana using the multivariate cointegration approach known as Johansen Maximum Likelihood Estimators (MLE). The findings of Bhattari and Armah's (2005) study were not entirely consistent with Agbola's research on Ghana. The short- and long-term coefficients of significant factors affecting the trade outcome were determined by the study using a Stock-Watson Dynamic Ordinary Least Squares model. It was chosen to account for simultaneity bias in addition to capturing the dynamics of the model, using the Stock-Watson Dynamic Ordinary Least Squares approach. The model comprised the following variables: the nominal exchange rate, the domestic and international money supply, the domestic and foreign interest rates, and the domestic and foreign income. The findings show that currency depreciation has a short-term negative effect on Ghana's trade outcome. The first findings were in line with a research conducted on Ghana by Bhattari and Armah (2005). The devaluation of the currency rate over time caused a decline in Ghana's trade outcome. The long-term results showed a different pattern from what Bhattari and Armah (2005) found for Ghana, where they observed that a decrease in the exchange rate improved the trade outcome. As a result, the trade outcome did not follow the expected J-Curve pattern in terms of how long it took to equalise after devaluation. The M-Curve pattern seems to be followed by the adaptation process. The fall in the currency rate doesn't seem to have much of an immediate impact on the exchange rate. The impact of devaluation on trade outcomes become apparent after approximately a year. The trade outcome gradually gets better during the course of the next year, reaching its long-term equilibrium.

It is significant to highlight that the empirical results from the two studies on Ghana contain sample data from periods when the government had significant control over domestic prices, exchange rates, imports, and exports. This begs the question of whether the volume of exports and imports under these circumstances can adequately reflect the consequences of changes in currency exchange rates. Both studies lacked sufficient data to demonstrate that the structural transformation in Ghana's economy during the early 1990s was sufficiently taken into account.

Hernan's (1998) study revealed that the exchange rate significantly affects Columbia's trade outcome. Johansen and Juselius' multivariate cointegrating system estimate approach was applied by Hernan. The model accurately represented the three tactics used to maintain equilibrium in the balance of payments: elasticity, absorption, and money. The data were quarterly time series that spanned 1979 to 1995. The cointegration results show that the trade outcome and the real exchange rate are connected in a long-term equilibrium. Both in the short and long terms, the trade outcome gains from the depreciation of the currency rate. The trade deficit was adjusted quarterly at a rate of seven percent. The evaluation of the exchange rate coefficient showed that over an extended period of time, a one percent depreciation of the currency led to a one percent improvement in the trade outcome. Consequently, in the case of Columbia, the Marshal-Lerner conditions for both short- and long-term depreciation leading to augmentation were satisfied. The J-Curve phenomenon is not seen in the trade outcome during the post-depreciation adjustment phase. To gain a better understanding of the adjustment process, a more thorough examination of the short-run dynamics is required, maybe with the use of Impulse Response Functions.

Puah, Yong, and Lau (2008) carried out research to investigate the relationship between trade outcomes and exchange rates in the ASEAN-5 nations—Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Several countries enacted liberalising policies in the late 1980s and early 1990s to make it easier for their local economy to integrate with international trade and investment. Their national revenues significantly increased as a result of these developments, mostly because of the export-driven boom, especially to the USA and European nations. The effect of exchange rates on the trade outcome in

each of these nations was examined, with particular attention to the US. For all of these nations, the United States was their main trading partner throughout the research period. These nations are widely cited as excellent models of successful economic liberalisation programmes by the World Bank and IMF. The dataset included annual statistics for the years 1970 through 2004. During that time, these nations' frameworks for economic policy saw significant changes. The Johansen-Juselius Error (1990) To look at the relationship between the variables and the exchange rate, the corrective cointegration technique was used. Findings indicated that short-term fluctuations in exchange rates had little effect on trade outcome. There was no consistent pattern over time in the trade outcome or exchange rate. There was no correlation, even in the short run, between the exchange rate and trade outcome in Indonesia. Since the variables did not cointegrate, the classic Vector Auto Regression (VAR) model was used to look at the short-term correlations between them. Using the Granger Causality test, the relationship between the exchange rate and trade outcome was examined. The results of the Causality test may be used to deduce the Granger causality effect of the exchange rate on the trade outcome. Granger came to the conclusion that there was insufficient evidence to establish a causal relationship between the trade outcome and the exchange rate. With the exception of Indonesia, the ASEAN-5 countries exhibit a causal relationship where changes in exchange rates affect trade outcome rather than the other way around. Several reasonable theories were put out regarding the little impact of exchange rates on the long-term trade outcome positions of the ASEAN-5 states. One potential explanation is the fact that the majority of ASEAN-5 countries have implemented controlled floating exchange rate systems. Mandated float regimes have been proposed as a potential cause of foreign exchange market misalignment, which might lessen the influence of exchange rates on trade flows. It is more difficult for changes in exchange rates to impact the trade outcome because of this mismatch. Another reason is that the primary element influencing these countries' trade outcomes is export demand rather than relative price determined by exchange rates. An other explanation might be that increases in productivity can counteract the negative effects of currency appreciation on competitiveness, which would increase exports overall. The underlying issue in this study is that it fails to acknowledge the fundamental changes that are occurring in different countries' economies. This

conclusion might find application in several other studies examining significant shifts in other countries' economies, particularly those examining the shift from a centrally planned to a more market-oriented economy.

In their 2014 study, Ito and Kawai examined the impact of exchange rate fluctuations on the trade outcomes of China, Korea, and Japan. Using data from 1980 to 2010, the study examined the relationship between trade outcome and exchange rate volatility. The dynamic panel data model was used to conduct this investigation. The study revealed that exchange rate volatility negatively impacted the trade outcomes of all three nations. The authors argued that fluctuations in exchange rates make exporters' lives more unpredictable and risky, which deters investment and trade. Although this study offers valuable insights into the negative effects of exchange rate volatility, a significant limitation in the research to far is the lack of a comprehensive investigation of the specific processes via which exchange rate volatility affects trade outcomes. This might lead to a better understanding of the policies intended to mitigate these consequences.

The 2007 research by Bahmani-Oskooe and Ratha sought to determine how exchange rates impacted Sweden's trade outcome. Sweden was the subject of this inquiry because it has a small, open economy that is heavily dependent on trade with other nations. A VECM was employed by the researchers to examine the relationship between exchange rates and trade outcome using data spanning from 1980 to 2003. The calculations show that the depreciation of the Swedish krona is beneficial to the trade outcome both now and in the future. Furthermore, the data demonstrated that factors such as income and relative pricing had an impact on the trade outcome. More precisely, higher relative prices are associated with larger trade outcomes, while lower income is associated with smaller trade outcomes. The main objective of this research is to examine the impact of exchange rate fluctuations on trade outcomes in small, open economies—a topic that is not widely addressed in the literature—aside from Sweden. A thorough comparative study of several countries might produce informative findings that are relevant to a greater number of countries.

Lee and Shin (2017) conducted study to examine the relationship between the exchange rate and trade outcome in Korea, Taiwan, and Singapore. Using panel data model data from 1991 to 2014, the study investigates the relationship between the trade outcomes and exchange rates of the three nations. The analysis demonstrated that, in contrast to Singapore, currency rates had a major effect on the trade outcomes of Korea and Taiwan. For instance, the trade outcomes of Taiwan and Korea grew even while their currencies declined. This implies that depreciating the currency might be a strategic instrument to improve these countries' export competitiveness. The study also found that factors like income and foreign direct investment (FDI) have a major influence on the trade outcome. This research offers valuable insights into the impact of exchange rate fluctuations on certain Asian economies. However, future study may need to do a comparative analysis to examine how various policy responses to exchange rate variations can effect trade outcomes. Policymakers could find this to provide valuable fresh insights.

In Ghana, Bhattari and Armah (2005) conducted an empirical investigation and came to similar conclusions on the J-curve phenomenon. The study assessed the import and export functions of the Ghanaian economy independently. The exchange rate was an independent variable in all functions. The exchange rate coefficients from each function were added together to see if it satisfied the Marshal-Lerner criterion, which states that a decrease in the exchange rate should result in an improvement in the trade outcome. The model accurately represented the impact of both domestic and international earnings on the trade outcome in addition to the real exchange rate. The dataset included yearly time series data for the years 1970 through 2000. When evaluating the short-term relationships between variables, the Johansen's (ECM) method was employed, whereas the Engle and Granger (1987) technique was utilised to investigate the long-run correlations. The findings demonstrated that although the Ghanaian cedi's devaluation had little direct impact in the short run, it did positively impact the trade outcome over an extended period of time. The Marshal-Lerner criteria, which maintains that depreciation can lead to an improvement in the trade outcome, was not fulfilled in the short to medium term, although being met in the long run. As a result, the trade outcome first decreased after the currency's devaluation before gradually increasing. The short-run elasticities for import and export added together were 0.353, which is less than what is needed for depreciation

to positively impact the trade outcome. Furthermore, empirical evidence demonstrated that a ten percent depreciation of the Ghanaian cedi over a sustained period of time resulted in a seven percent increase in exports and a four-six eight percent decrease in imports. The total import and export elasticities over a long period of time hardly satisfied the Marshal-Lerner requirement. The research indicates that the advantages of devaluation are expected to be small, especially over an extended period of time. All things considered, this study agrees with the theoretical predictions made by the elasticity framework for the balance of payments.

Cheung and Wong conducted research in 2018 to examine the connection between China's trade outcome and currency rate. This study examined the short- and long-term effects of exchange rate fluctuations on trade outcome. The data, which covered the years 1980 to 2015, was analysed using a dynamic panel data model. The study found that the depreciation of the Chinese yuan had a short-lived positive effect on the trade outcome before gradually waning. The study also found that fluctuations in exchange rates negatively affected the trade outcome, highlighting the need of maintaining exchange rate stability. The main objective of this study is to examine, with a particular focus on China, how changes in exchange rates impact trade outcomes in other developing countries. One area that has not gotten much attention in the research that is now being published is the comparative investigation of this link in other nations. This might offer an even more comprehensive viewpoint on the subject. Now that we have moved on, let us examine the study on inflation and its impact on trade outcome.

According to a study done in 1988 by Ball et al., inflation causes prices of goods and services to increase. As a result, a country's goods and services are less appealing or competitive on the global market. Gylfason (1991) focused on the impact of inflation on a number of macroeconomic factors on exports. He concurred with the earlier academics' findings, claiming that a high rate of inflation had a detrimental effect on export performance. A significant limitation of the existing study is the lack of a thorough investigation of the precise processes via which inflation influences export performance, even if the aforementioned studies offer insightful information on how inflation impacts

exports. Furthermore, further investigation might examine the efficacy of several policy strategies in ameliorating the adverse impacts of inflation on exports.

Agbola (2004) evaluated annual data from 1970 to 2002 in a distinct study conducted in Ghana using the Johansen Maximum Likelihood Estimators (MLE) multivariate cointegration technique. The results of Agbola's study on Ghana differed somewhat from those of Bhattari and Armah (2005). The study used a Stock-Watson Dynamic Ordinary Least Squares model to determine the coefficients of important factors that have both short- and long-term effects on the trade outcome. Because the Stock-Watson Dynamic Ordinary Least Squares method accounts for simultaneity bias in addition to capturing the dynamics of the model, it was selected. Among the variables in the model were the nominal exchange rate, the domestic and international money supply, the foreign and domestic interest rates, and the foreign and domestic income. The findings indicate that as the currency devalues, Ghana's trade outcome decreases over the near term. The first findings were in line with a research conducted on Ghana by Bhattari and Armah (2005). The devaluation of the currency rate over time caused a decline in Ghana's trade outcome. In contrast to Bhattari and Armah's (2005) findings for Ghana, which showed that a decrease in the currency rate improved the trade outcome, the long-term data showed a different pattern. Because of this, the trade outcome did not follow the expected J-Curve in terms of how long it took to rebalance after devaluation. An M-Curve can be used to represent the dynamics of the modifications. The value depreciation does not seem to have as much of an immediate impact on the exchange rate. Trade outcomes start to drop around a year following devaluation. The trade outcome improves the next year and ultimately finds its long-term equilibrium.

It is imperative to underscore that the empirical conclusions from the two studies on Ghana incorporate sample data from periods in which the government wielded significant control over domestic pricing, currency rates, imports, and exports. This begs the question of how fluctuations in exchange rates may plausibly impact the volume of imports and exports under such circumstances. Both studies lacked sufficient data to demonstrate that the structural transformation in Ghana's economy during the early 1990s was sufficiently taken into account.

Pakistan was utilised as a case study by Rehman and Khan (2015) to demonstrate how inflation impacts the export sector of the nation. He claims that between 1992 and 2013, when food prices in Pakistan increased, the country's food exports declined. It was also shown that the increase in the demand for food items is the main cause of food inflation. This study is the most rigorously scientifically done since it used state-of-the-art econometric methodologies and procedures, such as the Augmented Dickey Fuller, Vector Error Correction Model, and Johansen Co-integration Test. They advise only exporting goods that are in great demand.

Numerous studies, including those conducted in Ghana by Bhattari and Armah (2005), Columbia by Hernan (1998), East Asia by Onafowora (2003), South Asia by Lal and Lowinger (2002), and Columbia by Hernan (1998), provide evidence of a link between exchange rates and trade outcomes. There have been both short- and long-term observations of this connection. Taken together, the data obtained from these studies aligns with the theoretical tenets of the elasticity approach to balance of payments. Specifically, it validates that the J-Curve is seen in the trade outcome's evolution over time after an exchange rate decrease. Additional research by Agbola (2004) and Puah, Yong, and Lau (2008) on Ghana and the Association of South East Asian Nations (ASEAN)-5 members shows that there is little to no correlation between exchange rates and trade outcome. These studies show that there is no appreciable correlation between the trade outcome and the exchange rate over the long run.

The majority of studies conducted on this topic employ the trade outcome analysis technique based on elasticity theory. Further research use monetary or absorption approaches to examine the impact of exchange rate fluctuations on the trade outcome. Two or all three theoretical strands are integrated into a single model in some research. The elasticity technique examines the effects of exchange rate fluctuations on imports and exports. Quantifying the impact on income resulting from the shift in consumption patterns between imported and local commodities is the aim of the absorption approach. The balance of payments is determined by the interplay between the supply and demand of money, according to the monetary perspective. The data consists of quarterly or yearly time series.

The majority of these research use cointegration variations as the foundation for their econometric analyses of long-term equilibrium relationships between variables. Short-term dynamics are assessed using variable differences and impulse response functions. None of this kind of study has been completed as of yet in Zambia.

Al and Lowinger (2002) used quarterly time series data covering the years 1985 to 1998 to investigate the link between the Nominal Effective Exchange Rate (NEER) and trade outcome in five South Asian countries: Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The Johansen Cointegration process uses an autoregressive model with maximum likelihood estimate to ascertain whether there is a long-term link between the variables. The dynamics of the model are analysed using the Error Correction Model (ECM).

The study's findings demonstrate that the trade outcome and exchange rate have a stable and long-lasting link. The weakening of the currencies of the five South Asian nations causes short-term negative effects on trade outcomes, but over time, these changes are positive. This image provided evidence for the existence of the J-Curve phenomenon. As a result, the devaluation caused the trade outcome to first decline before gradually improving. The examined South Asian nations shown notable variations in the duration between devaluation and improvement of the trade outcome. It took two to five quarters for the trade outcome to normalise following the devaluation in certain countries. Time disparities were ascribed to the degree of pre-correction exchange rate mismatch in each nation. The rate of transformation was faster in countries with more liberalised exchange and trade policies.

Similar findings about the J-curve phenomenon were reached by Bhattari and Armah (2005) after conducting an empirical inquiry in Ghana. The study independently analysed the import and export functions of the Ghanaian economy. The currency rate was one of the independent variables in each function. The exchange rate coefficients from each function were added together to determine whether or not each function satisfied the Marshal-Lerner criterion, which states that a decrease in the exchange rate should result in an improvement in the trade bill. The model successfully included the impact of both

local and foreign revenue on the trade outcome, in addition to the real exchange rate. The dataset included yearly time series data for the years 1970 through 2000. The long-run correlations were investigated using the Engle and Granger (1987) technique, whereas the short-run relationships between variables were evaluated using the Johansen's (ECM) method.

The findings demonstrated that the devaluation of the Ghanaian cedi had a positive impact on the trade outcome over a lengthy period, even if it did not happen immediately. The Marshal-Lerner criterion, which states that depreciation can lead to an improvement in the trade outcome, was not satisfied in the short to medium term, but it was satisfied in the long run. As a result, the trade outcome first decreased after the currency's devaluation before gradually increasing. The short-run elasticities of imports and exports added up to 0.353, which is less than the amount required for depreciation to improve the trade outcome. Furthermore, empirical evidence demonstrated that a ten percent depreciation of the Ghanaian cedi over a sustained period resulted in a seven percent increase in exports and a four-six eight percent decrease in imports. The combined value of the import and export elasticities hardly satisfied the Marshal-Lerner requirements, even over an extended length of time. The research indicates that the advantages of devaluation are expected to be small, especially over an extended period. All things considered; this research aligns with the theoretical predictions of the balance of payments elasticity method.

In a distinct study conducted in Ghana, Agbola (2004) evaluated annual data from 1970 to 2002 using the Johansen Maximum Likelihood Estimators (MLE) multivariate cointegration technique. Bhattari and Armah's (2005) findings and Agbola's conclusions from their study on Ghana differed. To determine the long- and short-term coefficients of key factors that affect the trade outcome, a Stock-Watson Dynamic Ordinary Least Squares model was employed in the study. In addition to accounting for simultaneity bias, the Stock-Watson Dynamic Ordinary Least Squares method was selected because it accurately represents the dynamics of the model. Among the variables in the model were the nominal exchange rate, the domestic and international money supply, the foreign and

domestic interest rates, and the foreign and domestic income. The findings indicate that Ghana's trade outcome declines in the near term when the value of the currency declines.

The first findings aligned with a research conducted by Bhattari and Armah (2005) on Ghana. The devaluation of the currency rate over time caused a decline in Ghana's trade outcome. In contrast to Bhattari and Armah's (2005) findings for Ghana, the long-term data showed that the improvement in the trade outcome was due to exchange rate depreciation. As a result, the trade outcome did not follow the anticipated J-Curve in terms of how long it took to rebalance after devaluation. There seems to be an M-shaped pattern in the dynamics of the adjustments. The fall in the currency rate does not seem to have much of an immediate impact on the exchange rate. A year or so after devaluation, trade outcomes begin to deteriorate. The trade outcome improves the next year and eventually finds a long-term equilibrium. It is imperative to underscore that the empirical conclusions from the two studies on Ghana incorporate sample data from periods in which the government wielded significant control over domestic pricing, currency rates, imports, and exports. This begs the question of whether fluctuations in exchange rates may be sufficiently conveyed to manifest themselves in the volume of imports and exports in these circumstances. Both studies lacked sufficient data to demonstrate that the structural transformation in Ghana's economy during the early 1990s was sufficiently considered.

In a separate investigation, Hernan (1998) discovered that the exchange rate significantly affected Columbia's trade outcome. Johansen and Juselius' multivariate cointegrating system estimate approach was applied by Hernan. The model accurately represented the three techniques' impacts on the balance of payments: monetary, absorption, and elasticity. The data were quarterly time series from 1979 to 1995. The cointegration results show that the trade outcome and the real exchange rate are connected in a long-term equilibrium. Both in the short and long term, the depreciation of the currency benefited the trade outcome. The trade outcome was modified quarterly at a rate of 7% to account for any imbalance. A 1 percent depreciation of the currency over an extended period yields a corresponding 1 percent improvement in the trade outcome, based on the exchange rate coefficient estimation. Thus, in Columbia's case, depreciation resulting to enhancement satisfied both the long-term and short-term Marshal-Lerner conditions.

During the post-depreciation adjustment period, the trade outcome does not exhibit the J-Curve phenomena. A closer look at the short-run dynamics is needed to better understand the adjustment process, with the help of impulse response functions.

In their 2008 study, Puah, Yong, and Lau examined the connection between exchange rates and trade outcomes among the ASEAN-5 nations (Indonesia, Malaysia, the Philippines, Singapore, and Thailand). In the late 1980s and early 1990s, several nations implemented liberalising measures to facilitate the integration of their domestic economies with global trade and investment. These improvements resulted in a large growth in their national revenues, mostly due to the expansion of trade driven by exports with the United States and Europe. We looked at how exchange rates affected the trade outcome in each of these countries, particularly in relation to the US. Over the course of the research, the United States was the primary trading partner of each of these countries. The World Bank and IMF frequently use these countries as prime examples of effective economic reform initiatives. The data comprised annual series spanning from 1970 to 2004. Significant changes occurred to the economic policy frameworks of these countries throughout that period. The Johansen-Juselius (1990) Error Correction cointegration technique was used to compare the exchange rate with the variables. The findings demonstrated that changes in exchange rates only had a temporary, significant impact on the trade outcome. The trade outcome and exchange rate did not exhibit a statistically meaningful correlation over a prolonged duration. In the case of Indonesia, there was no discernible link, even in the short term, between the exchange rate and the trade outcome. Since there was no cointegration among the variables, the standard Vector Auto Regression (VAR) method was employed to investigate the short-term correlations between the variables. The Granger Causality test was used to examine the causal relationship between the trade outcome and currency rate. Based on the results of the causality test, it is plausible to conclude that the exchange rate causally affects the trade outcome. There was insufficient evidence to support the theory that the Granger causality of trade outcome affected the exchange rate. The ASEAN-5 countries, except for Indonesia, have a causal connection in which the exchange rate affects the trade outcome rather than the other way around. Many reasonable theories were put out to explain why the ASEAN-5 countries' long-term trade outcome situations were mostly

unaffected by swings in exchange rates. One explanation is that most of the countries in the ASEAN-5 area have controlled floating exchange rate systems. If managed float regimes cause the foreign currency markets to become misaligned, exchange rates might not have as much of an effect on trade flows. This discrepancy hinders the method by which currency rates are communicated to the trade outcome. One counterargument would be that these countries' trade outcomes are mostly driven by the demand for exports rather than the relative prices determined by the exchange rate. Productivity increases that outpace the reductions in competitiveness caused by currency appreciation are another factor that might lead to an overall increase in exports. The major fault in this study is its disregard for the fundamental changes occurring in the economy of different countries. This result might find application in several other studies examining significant shifts in the economies of various countries, particularly those examining the shift from a centrally planned to a more market-driven economy.

A significant component of Mundell's (1965) research on the connection between inflation and economic development was exports. Mallik and Chowdhury (2001), after examining four emerging South Asian countries, discovered a favourable long-term relationship between inflation and economic progress. This suggests a positive link between export and inflation. The argument posits that whereas elevated inflation levels have adverse effects on export performance and overall economic growth, moderate inflation levels foster export growth and, hence, bolster economic development.

While these studies provide valuable insights into the potential benefits of inflation for exports in specific scenarios, there may be a research gap concerning the comparative analysis of the effects of varying degrees of inflation on export performance across a diverse range of countries. This might give light on the relationship in a more complex way.

A study by Abubakar and Shehu (2021) provides a comprehensive analysis of the impact of the COVID-19 pandemic on Nigeria's trade balance using the Auto Distributed Lag (ARDL) model. The researchers used monthly data from January 2019 to December 2020, covering the period before and during the pandemic. The study included variables

such as the number of COVID-19 cases, oil prices, exchange rates, and trade balance. The findings of the study reveal that the COVID-19 pandemic had a significant negative impact on Nigeria's trade balance. The results indicate that an increase in the number of COVID-19 cases led to a deterioration of the trade balance, primarily due to reduced oil exports and disruptions in global supply chains. Nigeria, being heavily dependent on oil exports, experienced a sharp decline in export revenues as global demand for oil plummeted during the pandemic. The study found that the exchange rate depreciation, triggered by the pandemic-induced economic uncertainty, further exacerbated the negative impact on the trade balance. The depreciation of the Nigerian Naira made imports more expensive, while exports became less competitive in the global market. The authors also highlighted the role of global supply chain disruptions in affecting Nigeria's trade balance. The pandemic led to the closure of borders, restrictions on international trade, and disruptions in the production and transportation of goods. These factors contributed to a decrease in both exports and imports, with a more pronounced impact on exports.

A special report by Gondwe (2020), published by the United Nations Conference on Trade and Development (UNCTAD), provides a comprehensive assessment of the economic consequences of the COVID-19 pandemic on African countries, with a focus on trade balances. The report highlights the multifaceted challenges faced by African economies due to the pandemic, including reduced commodity prices, disrupted global value chains, and decreased foreign direct investment. The report emphasizes that African countries, many of which rely heavily on commodity exports, have been particularly vulnerable to the economic shocks caused by the pandemic. The sharp decline in global demand for commodities, such as oil, minerals, and agricultural products, has led to a significant reduction in export revenues for many African countries. This, in turn, has contributed to a deterioration of their trade balances. The report underscores the impact of global value chain disruptions on African economies. Many African countries participate in global value chains, either as suppliers of raw materials or as manufacturers of intermediate goods. The pandemic-induced disruptions in these value chains have adversely affected African exports and imports, leading to a worsening of trade balances. The report also highlights the decline in foreign direct investment (FDI) flows to African countries due to the

pandemic. FDI plays a crucial role in supporting economic growth and trade in many African countries. However, the economic uncertainty and travel restrictions caused by the pandemic have led to a significant reduction in FDI flows, further exacerbating the economic challenges faced by African countries.

A study by Mussa (2021) employs a panel data analysis to examine the effect of COVID-19 on trade balances in Sub-Saharan African countries. The study covers 45 Sub-Saharan African countries over the period from the first quarter of 2019 to the fourth quarter of 2020. The author uses a fixed-effects panel regression model to estimate the impact of COVID-19 on trade balances, controlling for factors such as GDP growth, exchange rates, and commodity prices. The results of the study indicate that the COVID-19 pandemic had a significant adverse impact on trade balances in Sub-Saharan African countries. The findings show that an increase in the number of COVID-19 cases and deaths led to a deterioration of trade balances, with reduced exports and increased imports of essential goods and medical supplies. The study emphasized that the pandemic-induced global economic downturn led to a decline in demand for African exports, particularly commodities. This, coupled with supply chain disruptions and logistical challenges, resulted in a significant reduction in export revenues for many Sub-Saharan African countries. On the other hand, the pandemic also led to an increase in imports of essential goods and medical supplies, as countries sought to combat the health crisis. The study also finds that the impact of COVID-19 on trade balances varied across countries, depending on their economic structure and reliance on specific export commodities. Countries that are heavily dependent on oil and mineral exports experienced a more pronounced deterioration in their trade balances compared to those with more diversified export baskets.

A study by Naiborhu and Warjiyo (2020) provided valuable insights into the impact of COVID-19 on exchange rates and trade balances in Indonesia. The study used monthly data from January 2019 to June 2020 and employs a vector autoregression (VAR) model to estimate the impact of the pandemic on the Indonesian Rupiah exchange rate and trade balance.

The findings of the study suggest that the COVID-19 pandemic led to a depreciation of the Indonesian Rupiah against the US dollar. The authors attribute this depreciation to the increased global economic uncertainty and the flight to safety by investors, which led to capital outflows from emerging markets, including Indonesia. The depreciation of the Rupiah made imports more expensive and exports less competitive, contributing to a deterioration of Indonesia's trade balance. The study also finds that the pandemic had a direct impact on Indonesia's trade balance, independent of the exchange rate effect. The decline in global demand and supply chain disruptions caused by the pandemic led to a reduction in both exports and imports. However, the impact on exports was more pronounced, leading to a worsening of the trade balance.

Empirical methods were employed by Darrat (2000) to examine the connection between trade outcome and inflation. His research covered a broad range of topics and included both in-depth country analyses and international comparative studies. The empirical findings demonstrate that the influence of inflation on trade outcome is not static, but rather varies over time and within nations. Tegene (1991) provided a distinct viewpoint by drawing a comparison between the impact of budget deficit and devaluation on a nation's trade outcome. Based on his analysis of yearly or monthly data, he concluded that devaluation had a greater effect on the trade deficit than the budget deficit. It is significant that the devaluation's consequences lasted for around 25 months. Additionally, the analysis highlighted a significant portion of consumer price inflation, around 19%, emphasising the critical impact of exchange rate fluctuations on the dynamics of inflation. Although these studies offer valuable insights into the correlation between fluctuations in exchange rates and trade deficits, the existing literature has a significant limitation in that it does not provide a comprehensive analysis of the temporal dynamics and influential factors that influence the impact of currency devaluation on trade deficits. This might enhance our comprehension of the underlying mechanisms involved.

The study by Khuram et al. (2015) examines the relationship between exchange rates and currency crises occurring in various economies, as well as how they impact international macroeconomics. The balances of payments (BOP) of Pakistan and India are the main subject of the study's comparison. Since both surplus and deficit situations

may be harmful to an economy, the economic literature supports the view that maintaining a stable BOP. This study examined the effects of changes in the interest rate, foreign exchange rate, and inflation rate on three key economic variables that have an impact on the BOP in both nations. The study's findings demonstrate the beneficial benefits of foreign exchange rates and inflation on Pakistan's and India's balance of payments, as well as how these factors may affect a country's BOP. The BOP of both countries is negatively impacted by interest rates, indicating that fluctuations in interest rates might have unfavourable consequences for the BOP.

In Nigeria, Ukangwa (2022) conducted study to examine the complex link between inflation and the BOP. The study uses an empirical approach and data from the Central Bank of Nigeria Statistical Bulletin for the years 1986 to 2021. The Engle and Granger Co-integration Test and an Error Correction Model (ECM) are used in the study to assess the short- and long-term impacts of inflation on Nigeria's BOP. The findings highlight how susceptible the country's external economic condition is to growing rates of inflation by demonstrating a substantial negative correlation between inflation and the BOP. These results highlight the need of implementing policies to reduce inflation and promote exports, which has significant policy implications.

Imoisi (2014) performed a multiple regression study to look at developments in Nigeria's balance of payments situation from 1970 to 2010 using the ordinary least square technique for both linear and log linear forms. According to the study, the country's declining balance of payments is a result of several factors, such as a weak non-oil export sector, a high import bill, stagnant agriculture, a strong preference for goods and services from overseas, inflationary pressures, an inefficient manufacturing sector, and improper handling of the oil boom. The report advises the government of Nigeria to boost non-oil exports and broaden the country's productive base to address the deficiencies in the current account of the country's balance of payments.

An empirical research by Ilmas et al. (2022) examined the relationships between exports, exchange rates, and inflation in the ASEAN area between 2010 and 2020. The focus nations of the study were Indonesia, Malaysia, Singapore, Thailand, and the Philippines.

They discovered a significant and enduring correlation between these macroeconomic factors and the effectiveness of exports through their panel data regression investigation. The investigation's findings demonstrated that inflation and exchange rates had a statistically significant detrimental influence on these countries' exports. This implies that if inflation or exchange rates rose, exports decreased correspondingly. On the other hand, when these factors declined, exports showed an upward tendency. Findings highlight how crucial it is to maintain macroeconomic stability and implement the right policies for businesses and governments to successfully negotiate the challenging landscape of global trade in the evolving ASEAN economic environment.

2.2 Identification of Research Gap

A thorough survey of the literature for this study has shown some notable gaps in our knowledge of exchange rates and their effects on trade outcome. Prior empirical research has examined the connection between exchange rates and trade outcomes in several countries, including Singapore, Korea, Japan, China, Sweden, and the ASEAN-5. However, most of these studies have used a range of methodologies, such as panel data models, VECM, and time-series analysis, and have concentrated on total trade outcomes. Nonetheless, several noteworthy research gaps have been identified in this corpus of work.

There has not been much research done on how exchange rates specifically affect trade outcomes in different businesses or industries. Most previous research has adopted a macroeconomic approach and looked at trade outcomes in general. Consequently, they frequently fail to consider the subtle effects on certain industries or companies. To fully grasp how exchange rates impact trade results, extensive study is necessary, taking into consideration the distinctive variances and dynamics within different sectors.

Few studies have looked specifically at how exchange rates affect the export of specific commodities or services; most have focused on the broad impacts of exchange rates on trade. Undertaking a focused inquiry into the impact of fluctuating exchange rates on the export of certain commodities and services might provide valuable insights for both enterprises and governing bodies. Analyse which products and services are most affected

by fluctuations in exchange rates to help establish plans for trade development and export diversification.

Another significant area of unmet research need is the link among currency rates, technical innovation, and industrial competitiveness. In earlier research, exchange rates were frequently seen as independent factors affecting trade outcomes. However, the present global economy is distinguished by its fast technical progress and diverse industrial competitiveness levels. Examining the correlation between these characteristics and exchange rates is crucial to have a comprehensive understanding of the underlying processes that impact trade results.

Although previous studies have provided insight into the connection between trade outcomes and exchange rates, no practical policy recommendations have been made in response to these findings yet. To properly employ exchange rate mechanisms to promote trade and economic growth, policymakers demand clear and helpful information. Closing this gap will improve the benefits of exchange rate interventions on trade outcomes and allow evidence-based policymaking.

2.3 Theoretical Framework

The Balassa-Samuelson Effect, the J-curve Effect, and the Purchasing Power Parity (PPP) theories served as the foundation for the theoretical framework of this investigation. These ideas are pertinent to the research because they shed light on how trade outcome and exchange rate relate to one another.

2.3.1 Purchasing Power Parity (PPP) Theory

Purchasing Power Parity (PPP) was initially advocated by Gustav Cassel in 1918 (Cassel, 1918). The PPP hypothesis predicts that exchange rates will alter to lower the cost of a product basket across countries. It means exchange rate fluctuations should be commensurate with the differences in national inflation rates. When a nation's inflation rate rises above that of its trade partners, the currency of that nation should depreciate to maintain price parity. To preserve price parity, a country's currency should gain if its inflation rate is lower than that of its trade partners, according to Castell 1918.

Because it provides a framework for comprehending the long-term link between exchange rates and trade outcome, the PPP theory is relevant to our investigation. According to the PPP hypothesis, changes in exchange rates should cause a shift in the trade outcome since the relative prices of goods differ throughout countries.

The PPP theory is particularly relevant to this examination of the effect of inflation rates on trade outcome. According to the PPP hypothesis, changes in exchange rates should cause a shift in the trade outcome since the relative prices of goods differ throughout countries (Cassel, 1918). This theoretical perspective informs our analysis of how inflation rate differentials between Zambia and its trading partners may influence the country's trade outcome.

2.3.2 Balassa-Samuelson Effect Theory

Economists Paul Samuelson and Bela Balassa initially proposed the idea in the 1960s. The Balassa-Samuelson Effect Theory states that countries with stronger currencies relative to their trade partners would also have higher rates of inflation and greater growth in productivity within their tradable sectors. Housing and services are included in the non-tradable sector, which is allegedly vulnerable to pressures on domestic prices. greater wages and prices in the tradable sector led to greater inflation rates as productivity rises. A stronger currency is needed to maintain price parity between the tradable and non-tradable sectors due to greater rates of inflation (Balassa & Samuelson, 1964).

The importance of the Balassa-Samuelson Effect Theory resides in its capacity to provide a methodical comprehension of the relationship between productivity growth and trade outcome and exchange rates. The trade outcome between a country and its trading partners may be impacted by a stronger currency and higher inflation rates if the country experiences enhanced productivity development in the tradable sector.

The Balassa-Samuelson Effect theory provides a methodical comprehension of the relationship between productivity growth, exchange rates, and trade outcome. It posits that countries experiencing enhanced productivity development in the tradable sector may face a stronger currency and higher inflation rates, potentially impacting the trade

outcome with trading partners (Balassa & Samuelson, 1964). This theory underpins the investigation of the complex interactions between macroeconomic variables and trade dynamics in Zambia.

2.3.3 J-curve Effect Theory

In 1950, economist Gottfried Haberler published the first version of the J-curve Effect idea. A currency depreciation makes exporters more competitive as they adapt to the new exchange rate, which leads to a progressive improvement in the trade outcome over time, according to the J-curve Effect theory (Haberler, 1950). Higher import costs initially cause the trade outcome to worsen. J-curve Effect Theory is based on the notion that exporters need time to modify their manufacturing procedures and establish new business partnerships.

The J-curve Effect Theory can benefit from this study as it provides a framework for comprehending the immediate and long-term impacts of exchange rate variations on trade outcome. According to the J-curve Effect idea, when a currency depreciates, exporters may experience a brief worsening of the trade outcome before it improves again as they adjust to the new exchange rate. This theory is instrumental in comprehending the immediate and long-term impacts of exchange rate variations on trade outcome. It suggests that when a currency depreciates, exporters may experience a brief worsening of the trade outcome before it improves again as they adjust to the new exchange rate (Haberler, 1950). This theoretical framework guides the analysis of the short-term and long-term effects of exchange rate fluctuations on Zambia's trade outcome, enabling us to capture the dynamic nature of these relationships.

2. 3.4 Absorption theory of balance of payment

One important economic theory that is essential to comprehending the connection between exchange rate volatility and a nation's BOPs, such in Zambia's situation, is the Absorption Theory of BOPs. The basic tenet of the idea is that a country's trade outcome may benefit from devaluation, or the reduction in the value of its currency (Cassel, 1918). But this beneficial outcome is dependent on a certain circumstance. Central to this theory

is the concept of the “propensity to absorb,” which refers to a nation's domestic expenditure or spending capacity. In simpler terms, it is about how much a country consumes, invests, and spends on its own goods and services.

If the tendency to absorb is less than the rate at which devaluation results in improvements in national output, depreciation of a currency is anticipated to have a positive impact on the balance of trade (Cassel, 1918). Stated differently, a nation's goods and services become comparatively more affordable for overseas consumers when it devalues its currency. As a result of these items being more reasonably priced for overseas consumers, exports may increase. However, the theory highlights that if it is unsuccessful in curbing domestic spending, merely devaluing the currency could not be sufficient to provide a positive BOPs effect.

The hypothesis suggests purposefully reducing the country's absorption capacity to guarantee that devaluation improves the balance of payments (Machlup, 1956). This means that measures should be taken to reduce domestic spending on both domestically produced and imported goods and services. This reduction in absorption capacity can be achieved through various means, such as fiscal policies that aim to reduce government expenditure, monetary policies that control money supply, or other regulatory measures.

John Maynard Keynes' national income connection serves as a major source of inspiration for the Absorption Theory (Machlup, 1956). It looks for ways in which this connection affects a nation's balance of payments.

This hypothesis can provide light on how Zambia's BOPs is impacted by fluctuations in exchange rates. For instance, the theory indicates that to fully capitalise on the potential advantages of devaluation, Zambia should take steps to minimise its tendency to absorb, by cutting back on domestic expenditure, if the nation sees exchange rate instability.

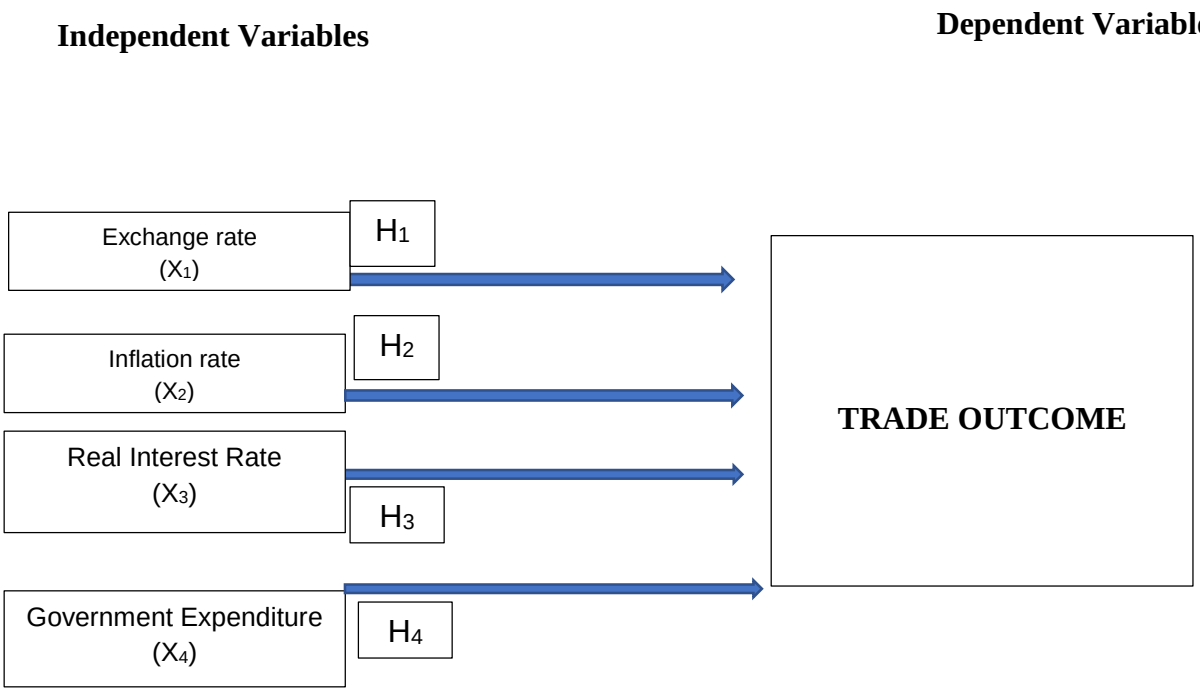
2.4 Conceptual framework

The conceptual framework establishes the linkages between the independent variables (X1, X2, X3, and X4) and the dependent variable (trade outcome). The variables that are independent are imports (X1), exports (X2), government expenditure (X4), and the real

effective exchange rate (X3). The dependent variable is the trade outcome. It is crucial to remember that there is an expected negative correlation between imports and the trade outcome, which means that as imports rise, the trade outcome is likely to worsen. On the other side, it is anticipated that exports would positively affect the trade outcome because they should enhance it. Since a stronger currency would make imports cheaper and exports more costly, a worsening trade outcome is expected, which will lead to a negative correlation between the real effective exchange rate and the trade outcome.

Furthermore, it is anticipated that rising domestic demand for products and services is frequently the result of increased government spending. The trade outcome may benefit if this additional demand is mostly satisfied by domestic production (i.e., a decline in imports). Stated differently, increased government investment that supports homegrown businesses may lessen the demand for imports. Exchange rate movements can also be influenced by government spending plans. Currency depreciation may result from government spending that is financed by borrowing or monetary growth. Exports may become more competitive and increase because of a lower currency, which would improve the trade outcome. Furthermore, as part of fiscal policy, government spending may be deliberately employed to either encourage or discourage economic activity. Trade outcome results, for instance, can be directly impacted by focused investment on infrastructure projects or incentives for export-oriented businesses.

Figure 2.1: Conceptual framework



Source: Author (2024)

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter, the methodology employed in the study is detailed, including the research approach, research design, data collection techniques, data analysis methods, model specification,

3.1 Research Approach

A quantitative research approach was meticulously employed for this study, aligning with the academic rigor expected in research endeavours. This approach facilitated the gathering and analysis of numerical data, allowing for a systematic investigation into the correlation between Zambia's trade outcome and exchange rate.

3.2 Research Design

For this study, a descriptive research strategy was selected, highlighting the importance of having a thorough grasp of the phenomenon being studied. In keeping with accepted academic norms, this approach included the methodical gathering, analysis, and interpretation of data to characterise the population or phenomena.

3.3 Sample Size and Sampling Techniques

A robust approach to determining the sample size and employing appropriate sampling techniques is crucial for the validity of any research. In this study, time series data spanning from 1991 to 2022 was utilized, encompassing over three decades of economic data. The selection of this timeframe was not arbitrary but rather considered a sufficiently long period to capture economic trends and patterns. Importantly, the choice to commence the analysis from 1991 holds significance due to the critical economic reforms Zambia underwent during the early 1990s, including trade liberalization and currency devaluation. The study can evaluate the long-term impacts of these reforms on Zambia's trade outcome and currency rate volatility because to this calculated strategic move. The information, which comes from reliable sources including the Ministry of Finance, Zambia

Revenue Authority, Bank of Zambia, and Zambia Statistics Agency, removes the need for sampling methods because complete datasets are readily available.

3.4 Data Collection Techniques

This study demonstrates a systematic and academic approach to data gathering, with the methods and variables carefully selected based on theoretical underpinnings as well as actual evidence. The quality and dependability of the data gathered are ensured by the reliance on reliable sources including the Ministry of Finance, Zambia Revenue Authority, Bank of Zambia, and Zambia Statistics Agency for monthly statistics.

3.5 Data Analysis

The data analysis process adheres to academic standards, utilizing Excel for the preparation and conversion of data into monthly time series data. The subsequent use of E-views for data analysis is justified by its simplicity in generating graphs and output, aligning with the need for clarity and precision in conveying research findings. This thorough approach to data analysis reflects a commitment to scholarly rigor and enhances the credibility of the study's outcomes.

3.5.1 Model specification

The study's theoretical foundation, the absorption theory of the balance of payments, contends that the tendency to absorb must be less than the rate at which devaluation spurs increases in national output for devaluation to have a positive effect on the balance of trade. The remark emphasises the necessity of purposefully reducing the capacity to absorb currency depreciation to positively affect the balance of payments. This approach focuses on the relationship that Keynes established between national income and how it affects the balance of payments (Machlup, 1956).

In an open economy, the national income accounting framework represents income (Y) as the sum of consumption (C), investment (I), Government Expenditure (G), and Exports Less Imports or balance of trade (X - M):

$$Y = C + I + G + (X-M) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (i)$$

Where C + I + G are collectively referred to as absorption, denoted as domestic absorption (A). Therefore, equation (i) can be restated as:

$$Y = A + (X - M) \quad \text{..... (ii)}$$

$$Y - A = (X - M) \quad \text{..... (iii)}$$

This implies that whenever domestic absorption A exceeds domestic output (Y), imports will exceed exports, leading to either A > Y or M > X.

Model specification.

Using the absorption approach described in Equation (ii) above, a suitable econometric model is formulated to analyse the influence of exchange rate fluctuation on Zambia's balance of payments. The model for this investigation is explicitly defined as:

$$BOP = f(NER, INFL, RIR, GEX) \quad \text{..... (iv)}$$

The econometric form of the model above is stated as:

$$BOP_t = \beta_0 + \beta_1 NER_t + \beta_2 INFL_t + \beta_3 RIR_t + \beta_4 GEX_t + U_t \quad \text{..... (v)}$$

Were.

- BOP = balance of payment (proxied by current account balance).
- NER = nominal exchange rate.
- INFL = inflation rate.
- RIR = real interest rate.
- GEX = government expenditure.
- U_t = Error term.

The Error Correction Model (ECM) for this study is specified as:

$$\Delta BOP_t = \beta 0 + \beta_1 NER_{t-i} + \beta_2 INF_{Lt-i} + \beta_3 RIR_{t-i} + \beta_4 GEX_{t-l} + \varepsilon ECM_{t-l} + U_t \quad \text{..... (vi)}$$

It is anticipated that the coefficient of the error correction term (ε) will be negative (ε<0) and significant, which will signify the presence of a long-run relationship and adjusted disequilibrium within the model. It was published in 2005 by Narayan. In a similar manner, the lagged error correction term (ECMt-1) is a measurement that determines the rate at which equilibrium is arrived at from a state of short-run equilibrium.

3.5.2 A Priori Expectation

To this investigation, a priori expectations are evaluated according to two criteria: economic and statistical expectations. The purpose of the economic criterion is to ascertain whether the quantities and indications of the outcomes are in accordance with the postulates of economic theory. These are the indicators that are anticipated for the variables that are being taken into consideration.

- $\beta_0>0$
- $\beta_1<0$
- $\beta_2<0$
- $\beta_3>0$
- $\beta_4>0$

Were.

- B_0 = constant term.
- β_1 = coefficient of nominal exchange rate.
- β_2 = coefficient of inflation.
- β_3 = coefficient of real interest rate.
- β_4 = coefficient of government expenditure.

3.5.3 Statistical Criterion (First Order Test)

A test of significance is a process that is used to check the truth or falsity of a null hypothesis, as stated by Guajarati (2004). This verification is accomplished using sample results. To determine whether the parameter estimations are dependable, several statistical tests are taken into consideration. Exams such as these include:

i. The Standard Error Test: This test is extremely important because it determines the degree of confidence in the validity of the estimates that were produced and quantifies the magnitude of the error that is present in the estimates provided.

ii. The T-test: This will be used to determine whether the individual parameters of the regression model are significant.

iii. The F-test: this is a statistical analysis that assesses the significance of the regression result rather than the significance of each individual regression coefficient.

iv. R^2 and modified R^2 Test: This test determines the extent to which the independent variables can explain the changes in the variables that are being studied (the dependent variables).

3.5.4 Econometrics Criterion (Second Order Test)

The Durbin-Watson (DW) test, originally developed by James Durbin and Geoffrey Watson (1950, 1951), is a widely used method for detecting the presence of autocorrelation in the residuals of a regression model. The test examines whether the errors corresponding to different observations are uncorrelated, which is a key assumption of the classical linear regression model. The DW test statistic ranges from 0 to 4, with values close to two indicating no autocorrelation, values below 2 suggesting positive autocorrelation, and values above 2 indicating negative autocorrelation (Gujarati & Porter, 2009).

Through the application of the DW approach, the primary focus of this investigation is on determining whether autocorrelation exists. It is the purpose of this test to determine whether the errors that correspond to various observations are uncorrelated, which would indicate that the error term is random.

3.5.5 Estimation techniques

The Error Correction Model (ECM) is a valuable analytical tool for studying the short-run dynamics and long-run equilibrium relationships among non-stationary time series

variables. The ECM was introduced by Sargan (1964) and later popularized by Engle and Granger (1987) as a part of their cointegration analysis. The ECM incorporates both the short-run dynamics and the long-run equilibrium relationship, allowing for the correction of short-term deviations from the long-run equilibrium.

The estimation procedure involves several steps. First, the Augmented Dickey-Fuller (ADF) test, developed by Dickey and Fuller (1979, 1981), is used to determine the stationarity of the variables. If the variables are non-stationary, they are transformed by taking first differences to achieve stationarity. Second, cointegration tests, such as the Johansen (1988) or Engle-Granger (1987) tests, are conducted to determine the presence of long-run equilibrium relationships among the variables. Finally, if cointegration is found, the ECM is estimated to capture both the short-run dynamics and the adjustment process towards the long-run equilibrium.

The ECM is the primary analytical tool that is used in this study throughout its entirety. Using this method helps to avoid problems that may occur when performing regression with non-stationary series, which in turn helps to prevent spurious findings from occurring. The procedure entails conducting an ADF test to achieve stationarity, co-integration tests to determine the long-term relationships between variables, and ECM to rectify the short-term disequilibrium.

3.5.6 Trend Analysis

The trend behaviour of the variables of interest over time is one of the topics that is investigated in this phase of the study. The objective is to conduct research into the characteristics of the differences in these variables.

3.5.7 Addressing Endogeneity

To address the issue of endogeneity (reverse causality) in the analysis, it is important to clearly explain the measures taken to mitigate potential biases in the estimation results. Endogeneity arises when explanatory variables are correlated with the error term, which can lead to inconsistent and biased estimates. In this study, there are several potential

sources of endogeneity, such as the relationship between government expenditure, inflation, and interest rates, as well as the impact of exchange rates on inflation.

One approach to tackle endogeneity is the use of instrumental variables (IV). Instrumental variables are exogenous factors that are correlated with the endogenous explanatory variables but not with the error term. By using IVs, the researcher can obtain consistent estimates of the coefficients. In this study, suitable instrumental variables were:

1. For government expenditure- lagged values of government expenditure, GDP growth rate, or population growth rate.
2. For inflation- lagged values of inflation, money supply growth, or commodity prices.
3. For interest rates- lagged values of interest rates, central bank policy rates, or global interest rates.
4. For exchange rates- lagged values of exchange rates, terms of trade, or foreign exchange reserves.

Another approach to address endogeneity is the use of the ARDL model, which is employed in this study. The ARDL model includes lagged values of both the dependent and independent variables, allowing for the capturing of dynamic relationships and the mitigation of endogeneity issues. By including lagged values, the ARDL model accounts for the fact that past values of the variables can influence their current values, thus reducing the potential for reverse causality.

Furthermore, the use of the ECM in conjunction with the ARDL model helps to address endogeneity by capturing the short-run dynamics and the speed of adjustment towards the long-run equilibrium. The ECM separates the short-run effects from the long-run effects, allowing for a more accurate estimation of the relationships between the variables.

To further strengthen the analysis, diagnostic tests such as the Durbin-Watson test for autocorrelation and the Breusch-Pagan-Godfrey test for heteroskedasticity can be conducted to ensure the validity of the estimation results. If any issues are detected,

appropriate remedial measures, such as robust standard errors or Generalized Least Squares (GLS) estimation, can be applied.

In the context of fiscal policy and imported inflation, it is crucial to acknowledge the potential endogeneity issues and interpret the results accordingly. For example, when discussing the impact of government expenditure on the trade balance, it should be noted that government expenditure may also affect inflation and interest rates, which in turn can influence the trade balance. Similarly, when analyzing the effect of exchange rates on the trade balance, it is important to consider the possibility of exchange rates affecting inflation through imported goods and services.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATIONS

This Chapter presents the data generated from Chapter 3 and conducts the analysis of data that was gathered and shade more to show how exchange volatility affect trade outcome in Zambia.

4.1 Descriptive Statistics

The table 1 on the appendix provides comprehensive descriptive statistics for various variables showing their central tendencies, variations, and distributions. The dependent variable for the study is BOP representing trade outcome. The independent variables are exchange rate (EXCH), government expenditure (GOVNEXP), inflation (INFL) and interest rate (INT).

The Table shows that the average trade outcome (BOP) for the study period was -1,400,000,000 dollars. This means that for the period of 33 years, the Zambian trade outcome has been in negatives implying that Zambia is net importer of goods and services. The average exchange rate was 4.84 kwacha per US dollar. To standardize the exchange rate to incorporate the rebase of the currency, the author divided the one thousand. The exchange rate lowest was 0.003 reaching the highest value of 20.02 during the study period. The Government Expenditure (GOVNEXP) had an average of 16.9 represents the government fraction of GDP. The data also showed that Zambia during the study period had a much higher inflation rate of 39.4 % with the maximum inflation reaching 183% and the lowest value of 6.4%. Furthermore, the average of the interest rate was -2.73 during the study period reaching the high level of 21.6% and a lowest of -41.8%. It is worth mentioning that the variable had a zero variance. This is essential because it indicate that there is variability in the variables necessary for the estimating relations.

4.2 Unit Root Test

The unit root test (Augmented Dickey Fuller Test) was used to determine the stationarity of the variables and was summarized in the Table below which indicates level to represent a unit root test at zero difference and first difference when test at first difference. The table 2 in the appendix also shows t statistics and the respective p – values.

The unit root test assumes that a variable / series has a unit root (not stationary). The ADF test also provides information on the order of integration of the variable. If the null hypothesis is rejected, it implies that differencing is needed to achieve stationarity. The appropriate order of differencing can be determined by examining the lagged differences in the regression equation. All the variables used in the study were stationary at first difference for interest rate which was stationary at level. The Unit root test signifies the need to adopt the time series models such as the Auto Regressive Distributed Lag (ARDL) Model in establishing the link between Trade outcome and other macro-economic variables.

4.2.1 Auto Distributed Lag Model.

The auto distributed lag model table 3 in the appendix shows the output for the Auto distributed lag model. The long-run equation derived from the ARDL model is as follows:

BOP = 0.832 * BOP(-1) - 0.074 * BOP(-2) - 0.314 * BOP(-3) + 18,855,849 * EXCH - 23,380,704 * EXCH(-1) + 18,110,685 * EXCH(-2) + 15,926,829 * GOVNEXP + 1.07E+08 * GOVNEXP(-1) - 2.69E+08 * GOVNEXP(-2) + 2.23E+08 * GOVNEXP(-3) - 1,789,060 * INFL + 723,937 * INFL(-1) + 5,947,650 * INFL(-2) + 3,845,518 * INT - 2.51E+09

The long-run equation indicates that the BOP is influenced by its own lagged values, exchange rate (EXCH), government expenditure (GOVNEXP), inflation (INFL), and interest rates (INT). The coefficients represent the long-run elasticities of BOP with respect to each variable. For instance, a 1% increase in EXCH is associated with an increase of 18,855,849 units in BOP, holding other variables constant. The lagged values of variables capture the dynamic nature of the relationships.

The cointegration equation represents the short-run dynamics and the speed of adjustment towards the long-run equilibrium. The coefficients of the differenced variables (∆) capture the short-run effects, while the error correction term (ECT) measures the speed at which deviations from the long-run equilibrium are corrected. The negative and statistically significant coefficient of the ECT would indicate the presence of a stable long-run relationship among the variables.

The cointegration equation is given by:

∆BOP = 22,545,251 - 0.220 * ∆BOP(-1) + 1.739 * ∆BOP(-2) - 0.640 * ∆BOP(-3) - 0.876 * ∆BOP(-4) - 1,072,264 * ∆EXCH + 9,137,464 * ∆EXCH(-1) + 1,773,451 * ∆EXCH(-2) + 3,769,283 * ∆EXCH(-3) + 2.77E+08 * ∆GOVNEXP + 2.12E+08 * ∆GOVNEXP(-1) + 12,178,328 * ∆GOVNEXP(-2) - 3.33E+08 * ∆GOVNEXP(-3) + 4.26E+08 * ∆GOVNEXP(-4) + 70,880,329 * ∆INFL + 30,111,846 * ∆INFL(-1) + 30,943,613 * ∆INFL(-2) + 34,636,541 * ∆INFL(-3) + 32,008,695 * ∆INT + 1.87E+08 * ∆INT(-1) - 218,433 * ∆INT(-2) + 1.03E+08 * ∆INT(-3) + 49,890,474 * ∆INT(-4)

The coefficients of the lagged ∆BOP terms (∆BOP(-1), ∆BOP(-2), ∆BOP(-3), and ∆BOP(-4)) capture the short-run impact of past changes in BOP on the current change in BOP. For example, a one-unit increase in ∆BOP two periods ago (∆BOP(-2)) leads to a 1.739 unit increase in the current ∆BOP, ceteris paribus.

The coefficients of the lagged ∆EXCH terms (∆EXCH, ∆EXCH(-1), ∆EXCH(-2), and ∆EXCH(-3)) represent the short-run impact of changes in the exchange rate on ∆BOP. For instance, a one-unit increase in ∆EXCH one period ago (∆EXCH(-1)) results in a 9,137,464 unit increase in the current ∆BOP, holding other factors constant.

The coefficients of the lagged ∆GOVNEXP terms (∆GOVNEXP, ∆GOVNEXP(-1), ∆GOVNEXP(-2), ∆GOVNEXP(-3), and ∆GOVNEXP(-4)) capture the short-run effect of changes in government expenditure on ∆BOP. A one-unit increase in ∆GOVNEXP four periods ago (∆GOVNEXP(-4)) leads to a 4.26E+08 unit increase in the current ∆BOP, ceteris paribus.

The coefficients of the lagged ∆INFL terms (∆INFL, ∆INFL(-1), ∆INFL(-2), and ∆INFL(-3)) represent the short-run impact of changes in inflation on ∆BOP. For example, a one-unit increase in ∆INFL three periods ago (∆INFL(-3)) results in a 34,636,541 unit increase in the current ∆BOP, holding other factors constant.

The coefficients of the lagged ∆INT terms (∆INT, ∆INT(-1), ∆INT(-2), ∆INT(-3), and ∆INT(-4)) capture the short-run effect of changes in interest rates on ∆BOP. A one-unit increase in ∆INT one period ago (∆INT(-1)) leads to a 1.87E+08 unit increase in the current ∆BOP, ceteris paribus.

4.3 Bounds Test

The Bounds Test Table 4 in the appendix shows the output of the F bound test, that is the test that determines whether there was long run relationship among the variables.

The F-statistic is compared to critical values to determine the statistical significance of the test. If the F-statistic is greater than the critical value, the null hypothesis of no long-run relationship is rejected, suggesting the presence of a long-run relationship. Conversely, if the F-statistic is smaller than the critical value, the null hypothesis is not rejected, indicating the absence of a long-run relationship.

Understanding the long-term stability of a relationship between variables is essential for comprehending the theoretical or economic links between them, and the F Bounds test aids in this process. In cointegration analysis, which looks at the long-term equilibrium connection between non-stationary variables, it is frequently utilised. The study conducted the f bound test and found the following.

The table presents results from an F-Bounds test, aiming to evaluate the potential relationship between various levels of variables. The null hypothesis under scrutiny is whether there is no relationship among these levels.

It is divided into two sections: one for asymptotic analysis based on a larger sample size (n=1000) and another for finite sample analysis with a smaller sample size of 30. In the asymptotic section, several test statistics are presented. The F-statistic, a measure

comparing variances between groups, is provided alongside K-values at different significance levels (10%, 5%, 2.5%, and 1%). These values are essential as they indicate critical thresholds for accepting or rejecting the null hypothesis.

It is evident from the F bound test above that, at the 10 percent significance level, the F statistic value of 2.76 was less than the critical value of 3.29. Thus, we are forced to reject the null hypothesis that there is no level link and conclude that there is not a long-term relationship between the variables. This realisation allowed the study to further estimate the short run form, which is shown below.

4.4 Short run dynamics

The findings in Table 5 of the appendix demonstrate that, at the 5% level of significance, a two-period lag in the balance of payments (D (BOP (-2)) **) has a positive impact on the trade outcome. This is because the associated p-value, which is less than 0.05, is 0.013 and the coefficient on (D (BOP (-2)) **) is 1.738728, a positive figure. Additionally, the analysis demonstrated that, given a probability value of 0.016 and a positive coefficient of 9.14 on the exchange rate lag, a one-period lag of the exchange rate had a positive impact on trade outcome at 5% in the short term. Likewise, it was discovered that government spending (D(GOVNEXP)**) had a favourable impact on the trade outcome, with a probability value of 0.017 and a coefficient of 2.77E+08. At the 5% level of significance, it was shown that both interest rates and inflation positively impacted trade outcome (also known as the balance of payments, or BOP), with a probability value of 0.012.

4.5 Summary of the model

The data presented on table 6 in the appendix indicates that 91.4% of the variation in the dependent variable can be explained by the independent variables, as evidenced by the high R-squared value of 0.914. The F-statistic, which measures the significance of the entire model, is 6.43 with a corresponding p-value of 0.002. This indicates that the joint coefficients of the independent variables are significantly different from zero. Overall, the

Table above demonstrates that the model has successfully passed major diagnostic tests and can be confidently adopted for further discussions and analysis.

4.6 Heteroscedasticity Test: Breusch-Pagan-Godfrey

The provided output on table 7 in the appendix represented the results of a Breusch-Pagan-Godfrey test for heteroskedasticity. This test is used to examine whether the variance of the residuals in a regression model was constant (homoscedastic) or varied across the levels of the independent variables (heteroskedastic).

The F-statistic for the Breusch-Pagan-Godfrey test was calculated to be 1.84. The Breusch-Pagan test is used to determine whether heteroscedasticity is present in a regression model. The test uses the following null and alternative hypotheses: Null Hypothesis (H0): Homoscedasticity is present (the residuals are distributed with equal variance); Alternative Hypothesis (HA): Heteroscedasticity is present (the residuals are not distributed with equal variance). With a low F-statistic, there is no significant evidence of heteroskedasticity in the model. Since the p-value was quite high (greater than the typical significance level of 0.05), the null hypothesis of homoskedasticity was not rejected. Consequently, there was no significant evidence of heteroskedasticity in the model.

4.6.2 Serial Correlation LM Test

A statistical test for determining if autocorrelation exists in the residuals (errors) of a regression model is the Breusch-Godfrey Serial Correlation LM Test. When there is a correlation between the regression model's residuals, this is known as autocorrelation.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.198606	Prob. F (2,3)	0.8298
Obs*R-squared	3.273841	Prob. Chi-Square (2)	0.1946

With a comparable probability (Prob. F (2,3)) of 0.8298, the F-statistic is 0.198606. The combined relevance of the lag residuals in explaining the present residuals is tested using this F-statistic. There is insufficient evidence to refute the null hypothesis that there is no serial connection in this instance, as indicated by the modest F-statistic and high associated likelihood. With a probability (Prob. Chi-Square (2)) of 0.1946, the Obs*R-squared is 3.273841. Up to a given lag order, serial correlation is tested using this statistic. In this case, the Obs*R-squared value and probability associated with it imply that the null hypothesis of no serial correlation is not strongly supported. Overall, there is not much evidence to support the existence of serial correlation in the regression model's residuals based on these test statistics and probabilities.

4.7 Normality test

A desirable quality in statistical models is that the residuals be normally distributed, as indicated by the close-to-zero mean and the low probability value for the Jarque-Bera test. This is seen in the appendix's figure 1. The residuals in the model should have a normal distribution, according to the null hypothesis. The null hypothesis can be rejected since the p-value is 0.8239, which is more than 0.05, therefore it can be inferred that the residuals of the model follow a normal distribution, which is a desired quality for a model.

4.8 CUSUM test

A statistical method for identifying shifts or modifications in the mean of a time series or sequential data is the Cumulative Sum (CUSUM) test. It is especially helpful in determining when a system or process begins to behave differently than intended. It is assumed that the model is stable if the deviations shown by the blue line in the following

figure are within 5% of the maximum and minimum values. Given that the blue line in Figure 2 of the Appendix is within the allowed range of 5%, it may be concluded that the model is stable.

A variant of the CUSUM test called the Cumulative Sum of Squares (CUSUM of Squares) looks for changes in the variance of a time series or sequential data rather than changes in the mean. It is a statistical technique for tracking changes in process variability (Brown, 1975).

4.10 The CUSUM of Squares

Like the standard CUSUM test, the effectiveness of CUSUM of Squares also depends on selecting an appropriate threshold and understanding the characteristics of the data being analysed.

The results of the CUSUM test, according to Brown et al. (1975) and Ling (2004), indicated that the model's parameters were stable over time since the cumulative sum of recursive residuals of squares stayed within allowable bounds. Likewise, the CUSUM test of Squares was used to confirm the stability criterion, as shown by figure 3 in the appendix, since the cumulative sum of squares for the recursive residuals stayed within allowable boundaries.

CHAPTER FIVE

INTERPRETATION AND DISCUSSION OF FINDINGS

This Chapter engages in a comprehensive interpretation and discussion of the research findings in alignment with the stated objectives and integrates relevant literature to provide a nuanced understanding of the implications.

5.1 Discussion

This study sought to analyze the impact of exchange rate volatility on Zambia's trade outcome. The following hypotheses were used to guide the work to achieve the main goal of this research.

1. H_{01}: Inflation rates do not have a significant impact on Zambia's trade outcome.
   H_{a1}: Inflation rates have a significant impact on Zambia's trade outcome.
2. H_{02}: Government expenditure does not significantly impact Zambia's trade outcome.
   H_{a2}: Government expenditure significantly impacts Zambia's trade outcome.
3. H_{03}: Interest rates do not exert a meaningful influence on Zambia's trade outcome.
   H_{a3}: Interest rates have a significant influence on Zambia's trade outcome.

5.1.1 Government Expenditure

The research revealed a substantial and statistically significant impact of government expenditure, particularly at a two-year lag (D (GOVNEXP (-2))), on the trade outcome in the immediate term. This finding implies that changes in government spending, occurring two years prior to the current period, have a notable influence on the current state of the trade outcome. The coefficient of 2.77E+08, along with a p-value of 0.017 at the 5% significance level, indicates the strength and reliability of this observed influence. The positive coefficient suggests a positive relationship between government expenditure from two years ago and the current trade outcome. In practical terms, an increase in

government spending during that specific timeframe appears to contribute significantly to a positive impact on the trade outcome.

The research confirms that government expenditure has a consistent effect on the trade outcome, which is in line with the existing literature on fiscal policy and its impact on economic variables. Several studies have examined the correlation between government expenditure and trade outcomes, offering valuable insights into the immediate dynamics found in the present investigation.

In their study, Bahmani-Oskooee and Rhee (2010) undertook a thorough analysis of the impact of government expenditure on the trade outcome, with a particular focus on the immediate outcomes of fiscal policies. Their research indicated that a rise in government expenditure could result in a temporary enhancement of the trade outcome. This implies that the trade outcome experiences positive effects in the short-term following a rise in government spending. This phenomenon is driven by the dynamics of economic activities stimulated by higher government spending. The temporary enhancement in the trade outcome suggests a short-term increase in exports. When government expenditure rises, economic activities such as production and manufacturing may experience a surge. This heightened economic activity can lead to a temporary boost in the export of goods and services.

This aligns with the present research, which emphasises the significant influence of government spending, especially in the immediate term. In addition, the research conducted by Puah, Yong, and Lau (2015) explored the complex connections between government expenditure and trade outcomes in ASEAN-5 nations. The authors contended that deliberate augmentations in government expenditure could exert a favourable impact on trade outcomes. Increased government expenditure contributes to higher aggregate demand in the economy. As the government invests in public projects, infrastructure, and services, it stimulates economic activities and production. This, in turn, can lead to increased production levels in various sectors, including those engaged in export-oriented activities, hence, influence on trade outcomes.

The coefficient of 2.77E+08, which is statistically significant, and the p-value of 0.017 at the 5% level, as shown in the current analysis, demonstrate the same level of quantitative significance as the study conducted by Agbola (2012). Agbola's research highlighted the importance for policymakers to thoroughly evaluate the fiscal multipliers linked to various categories of government expenditures. This is consistent with the warning mentioned in the present analysis, advising policymakers to be cautious in their spending choices.

When designing fiscal plans, policymakers should also consider the direct effect of government expenditure on the trade outcome. Nevertheless, the prudent position, as repeated in research such as Lal and Lowinger's (2018), emphasises the significance of fiscal discipline. Lal and Lowinger contended that although a temporary boost in government spending could have a favourable impact on the trade outcome, it is imperative to align such measures with broader economic goals to ensure long-term viability.

The literature also highlights the importance of connecting government expenditure with economic objectives and priorities. Bahmani-Oskooee and Ratha (2015) emphasised the importance of directing spending towards specific economic concerns. This is consistent with the present research, emphasizing the need to consider the lagged effects of government expenditure when formulating strategies to optimize the trade outcome. It suggests that the economic consequences of government spending decisions may not be immediately apparent and may take approximately two years to materialize in the trade outcome. Therefore, policymakers should adopt a forward-looking approach, recognizing the time dynamics involved in the relationship between fiscal policies and trade outcomes.

5.1.2 Interest Rate Effects

Interest rates had diverse impacts on the trade outcome throughout different time periods. The coefficient and p-value (D(INT), p-value = 0.1716) discovered in the study suggest that interest rates influence the trade outcome. Interest rates influence the cost of borrowing for businesses and consumers. Higher interest rates can result in increased borrowing costs, which may lead to reduced investment in production and business

expansion. This, in turn, can impact the output available for export, potentially affecting the trade outcome.

Interest rate differentials between countries can influence exchange rates. Higher interest rates in one country may attract foreign capital, leading to an appreciation of the currency. A stronger domestic currency can make exports more expensive for foreign buyers, potentially reducing export competitiveness and impacting the trade outcome. Interest rates also influence consumer behaviour. Higher interest rates can lead to increased costs of credit, potentially reducing consumer spending. While this may impact domestic demand for imports, it can also affect economic activity, including the production of goods and services for export.

The study's findings, along with insights from Puah, Yong, and Lau (2008), suggest that the impact of interest rates on the trade outcome may be more pronounced in the short term. Short-term adaptations in response to interest rate changes may occur, but these effects may not be sustained in the long term. This highlights the need for a nuanced understanding of the timing and duration of the influence of interest rates on trade dynamics. The lack of consistent significance in the study's results emphasizes the importance of considering broader economic conditions. Global economic factors, financial market dynamics, and policy cases can influence the relationship between interest rates and the trade outcome. A comprehensive investigation should consider these external factors to provide a more accurate assessment.

The study results also align with the findings of the studies done by Ito and Kawai (2014) regarding the impact of exchange rate volatility on the trade outcomes of China, Korea, and Japan provides valuable insights into the possible immediate consequences of economic factors in which it was demonstrated that adverse effects on trade outcomes as a result of fluctuations in exchange rates, align with the proposition in the present research that short-term adjustments may have some degree of influence. Policymakers should consider these immediate consequences when implementing monetary policies, ensuring that modifications are in line with the objectives of trade optimisation.

Also consistent with the current results are those of Cheung and Wong (2018) on the correlation between China's trade outcome and fluctuations in exchange rates. According to their research, a depreciation of the Chinese yuan initially had a positive influence on the trade outcome, but this effect diminished with time. The time aspect is essential for policymakers to consider, bolstering the advice in the present analysis for a thorough comprehension of the economic scenario.

These studies' evaluation strengthens the intricate nature of the correlation between interest rates and trade outcomes. Policymakers are advised to acknowledge the diverse influence of interest rates on trade outcomes and adjust strategy accordingly. A thorough comprehension of the economic scenario is essential, while short-term modifications may exert some impact. The findings indicate that policymakers should consider the immediate consequences while implementing monetary policies, ensuring that any modifications made are in line with the objective of optimising trade.

5.1.3 Inflation Effects

The trade outcome was affected by inflation rates, with various degrees of importance depending on the period considered. The coefficient and p-value (D(INFL), p-value = 0.0054) indicate the influence, but not consistently significant. This intricate discovery implies that the correlation between inflation rates and trade outcomes may be complex, driven by distinct temporal dynamics. When inflation rates go up, production costs could increase because of higher pricing for raw materials, labour, and other inputs. This can influence the expense of manufacturing products for overseas trade, thus impacting the competitiveness of a country's exports in the global market.

Inflation can impact currency exchange rates, which subsequently have an impact on a nation's trade outcome. Increased inflation rates can result in the devaluation of a currency, as foreign investors aim to preserve their ability to buy goods and services. A declining currency can enhance the competitiveness of exports by reducing their pricing in international markets, potentially increasing export quantities. The effect of inflation on domestic demand is a key factor. Inflation can decrease customers' ability to buy things, which might result in less demand for goods made in the country and commodities

brought in from other countries. A reduction in imports can help improve the trade outcome. However, the impact relies on how well local producers can adjust to evolving pricing structures. Inflation can also impact the price of imported materials used in domestic manufacture. If a sizeable percentage of a country's resources are brought in from other countries, greater inflation rates in the countries they trade with might lead to higher production prices within the country. This, in contrast, could impact the entire supply chain and the cost framework of exported products.

The study's focus on diverse time patterns emphasises that the connection between inflation rates and trade outcomes might change during various time periods. Temporary changes in inflation can have distinct impacts in contrast to extended patterns. Moreover, the effect could be affected by certain policy circumstances, such as central bank interventions or government initiatives targeted at controlling inflation. Examining global economic situations is essential. Inflation rates can be affected by global variables, such as commodity prices and worldwide economic trends. Comprehending the way in which these external factors interact with domestic inflation rates is crucial for understanding the broader effect on the trade outcome.

Research conducted by Hernan (1998) on Columbia and Lal and Lowinger (2002) on South Asian countries, along with other studies, have provided evidence of a correlation between exchange rates and trade outcome in both the short and long term. Hernan's study specifically revealed that the exchange rate had a pivotal impact on the trade outcome of Columbia. The intricate nature of the link identified in the present analysis aligns with these findings, suggesting that the influence of inflation rates on trade outcomes may differ based on certain time periods. Also, the study by Rehman and Khan (2015) on Pakistan, which examines the influence of inflation on exports, supports the short-term adjustments emphasised in the present analysis. Their research revealed that the increase in food prices had a negative impact on Pakistan's export of food items, highlighting the significance of considering immediate consequences while regulating inflation to optimise trade.

Policymakers should recognise the complex effects of inflation rates on trade outcomes, considering the significance of distinct temporal dynamics. An accurate comprehension of the economic scenario is essential for efficient policymaking that aims to optimise trade results, even though short-term modifications might impact trade dynamics.

5.1.4 Exchange Rate and Trade outcome

The analysis has revealed the importance of previous values of the exchange rate in impacting the trade outcome, as indicated by the observed coefficient and p-value (D (EXCH (-1)), p-value = 0.016). This stress the significance of recent fluctuations in the exchange rate, implying that changes in the exchange rate from the preceding period have a substantial impact on the current condition of Zambia's trade outcome. A fundamental aspect of this relationship is the impact of exchange rate fluctuations on export competitiveness. When a country's currency depreciates, its goods become more competitively priced in foreign markets, potentially boosting export volumes as foreign buyers find the products more affordable. Conversely, a strengthening currency may render exports more expensive for foreign buyers, leading to a decline in export volumes. Another key transmission mechanism is the effect of exchange rate changes on the cost of imported goods. A depreciating currency can increase the cost of imported inputs for domestic production and imported consumer goods, potentially leading to changes in consumer behaviour. This shift may reduce demand for imported goods and stimulate demand for domestically produced alternatives. Exchange rate fluctuations also contribute to inflationary pressures within an economy. A depreciating currency may lead to higher import prices, contributing to inflation. This can impact domestic consumers' purchasing power and subsequently influence the demand for both domestically produced and imported goods.

Supply chain effects are an additional consideration. Changes in the exchange rate can influence the cost structure of supply chains. For businesses relying on imported inputs, a depreciating currency may increase production costs, while a strengthening currency may lower costs for those dependent on imported inputs. These changes in production costs can significantly influence the competitiveness of domestic industries in the global

market. Moreover, the relationship between exchange rates and trade outcomes extends to debt and external balances. Exchange rate fluctuations can impact a country's external balances, especially if there is a significant amount of foreign-denominated debt. A depreciating currency can increase the cost of servicing foreign debt, potentially influencing the external balance. Investment flows also play a role in this complex relationship. Changes in exchange rates can influence international investment flows, as investors may seek opportunities in countries with strengthening currencies to maximize returns. This, in turn, can impact capital inflows and outflows, affecting the country's financial account and, consequently, the trade outcome.

Multiple studies in the literature support the significance of exchange rate dynamics in influencing trade outcomes. The study conducted by Bahmani-Oskooee and Rhee (2004) about Korea's trade outcome revealed that a decrease in the value of the Korean won had a positive effect on the trade outcome in the near term. This finding is consistent with the observed effects of recent fluctuations in the exchange rate in the present analysis. The J-curve phenomenon identified in their research aligns with the concept that variations in currency exchange rates can exert both immediate and enduring impacts on trade outcomes.

Puah, Yong, and Lau (2008) ‘s findings on the correlation between exchange rates and trade outcomes in ASEAN-5 countries provides valuable insights into the significance of maintaining exchange rate stability, this adds support to the current results. Their research revealed that fluctuations in exchange rates had a significant impact on the trade outcome in the immediate term. This highlights the importance for policymakers to prioritise the implementation of measures that promote stable exchange rate movements to improve trade results. Similarly, in their 2018 study, Cheung and Wong examine the relationship between China's trade outcome and fluctuations in the exchange rate. They find that a decrease in the value of the Chinese yuan has a positive effect on the trade outcome in the near run. This is consistent with the idea that recent fluctuations in currency exchange rates can have a substantial impact on the current condition of the trade outcome, as evidenced in the present analysis for Zambia.

Policymakers should prioritise the implementation of measures that promote stable and favourable exchange rate movements to improve trade results. This study examines the significance of prompt and well-informed policy interventions, with a particular focus on the crucial role of maintaining a stable currency rate in Zambia to achieve favourable trade outcomes.

5.2 Addressing the identified research gaps.

While previous studies have primarily focused on aggregate trade outcomes, this study has acknowledged the importance of examining the impact of exchange rates on trade outcomes in different industries or sectors. By highlighting the need for extensive research that considers the distinctive variances and dynamics within different sectors, the study has set the stage for future investigations to delve into the nuanced effects of exchange rates on specific industries or companies. This recognition of the research gap and the call for more focused analyses contribute to a more comprehensive understanding of how exchange rates influence trade results across various sectors of the economy.

The study has identified the scarcity of research on the impact of exchange rates on the export of specific commodities or services. By emphasizing the value of undertaking focused inquiries into the effects of fluctuating exchange rates on exports, the study has paved the way for future research to provide valuable insights for businesses and policymakers. The study's acknowledgment of this research gap and the recommendation to analyse which products and services are most affected by exchange rate fluctuations contribute to the development of targeted strategies for trade development and export diversification.

The study has recognized the need for research on the interplay between exchange rates, technological advancement, and industrial competitiveness. By highlighting the importance of examining the correlation between these factors in the context of the rapidly evolving global economy, the study has set the groundwork for future investigations to explore the complex relationships between exchange rates and the underlying processes that shape trade outcomes. This identification of the research gap and the emphasis on

the need for a comprehensive understanding of these interactions contribute to a more comprehensive approach to analyzing the determinants of trade performance.

The study has acknowledged the lack of practical policy recommendations stemming from previous research on the relationship between exchange rates and trade outcomes. By emphasizing the importance of providing clear and actionable insights for policymakers to effectively utilize exchange rate mechanisms for promoting trade and economic growth, the study has highlighted the need for future research to bridge the gap between academic findings and evidence-based policymaking. This recognition of the research gap and the call for translating research outcomes into practical policy recommendations contribute to the enhancement of the real-world impact of exchange rate interventions on trade outcomes.

The study has identified a significant research gap regarding the impact of exchange rate fluctuations on Zambia's trade outcome in the context of the COVID-19 pandemic. By focusing specifically on the Zambian case during this unprecedented period, the study has made unique contributions to the existing literature. The investigation of the intricate relationships between exchange rates, macroeconomic variables, and trade outcome in Zambia during the pandemic offers novel insights into the challenges and opportunities faced by developing economies in navigating the economic turbulence caused by COVID-19. This focused examination enhances the understanding of the dynamics between exchange rates and trade outcome in the context of a global crisis, thereby contributing to the formulation of informed policy responses and strategies for post-pandemic recovery.

By addressing these research gaps, the study has made significant strides in advancing the understanding of the complex relationships between exchange rates and trade outcomes, particularly in the context of the COVID-19 pandemic. The study's contributions lay the foundation for future research to build upon, fostering a more comprehensive and nuanced analysis of the factors influencing trade outcomes in an increasingly interconnected and rapidly evolving global economy.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this concluding chapter, the culmination of the research findings, their implications, and recommendations are presented, encapsulating the essence of the study.

6.1 Summary of Findings

The investigation into the impact of various economic variables on Zambia's trade outcome revealed compelling insights. The study observed a substantial impact of the second lag of government expenditure on Zambia's trade outcome, particularly in the short run. This implies that changes in government spending, when analysed with a time lag, have a notable effect on the trade outcome. The findings emphasize the necessity for strategic fiscal policies that align government expenditures with overarching economic goals. Policymakers should consider the timing and nature of government spending to optimize its impact on trade dynamics.

Interest rates were found to exert varying influences on Zambia's trade outcome across various times. The relationship between interest rates and trade outcome appeared nuanced, indicating that its impact is contingent on specific economic conditions or policy cases. This investigates the need for policymakers to recognize the complexity of this relationship and tailor strategies accordingly. Depending on economic circumstances, short-term and long-term effects may differ, requiring a comprehensive understanding for effective policy formulation.

Inflation rates were identified as influencing the trade outcome, with the significance of this impact varying across different time lags. The findings suggest a multifaceted relationship influenced by temporal dynamics. Policymakers should acknowledge that the effects of inflation on trade are not uniform and may change over time. This calls for nuanced policy responses that consider the specific temporal case when managing inflation to optimize trade outcomes.

The analysis highlighted the importance of considering lagged values of the exchange rate when assessing its influence on Zambia's trade outcome. The findings emphasize that recent changes in the exchange rate significantly contribute to the current state of the trade outcome. Policymakers are advised to focus on measures that contribute to stable and favourable exchange rate movements to enhance trade outcomes. The study investigates the relevance of timely and informed policy interventions to harness positive effects on trade, emphasizing the importance of exchange rate stability.

6.2 Conclusion

The study successfully addressed its general objective, which was to analyse the impact of exchange rate volatility on Zambia's trade outcome. The findings revealed that fluctuations in the exchange rate significantly contribute to the current state of the trade outcome in Zambia. The study emphasized the importance of understanding and addressing the intricacies of trade dynamics in the country, particularly with regards to exchange rate stability. The nuanced relationship uncovered investigates the need for a comprehensive approach to comprehend and manage exchange rate volatility effectively.

Other key findings included the significant short-term impact of the second lag of government expenditure, the nuanced influence of interest rates across various times and the multifaceted relationship between inflation rates and trade outcome.

The research emphasizes the intricate and multifaceted nature of trade dynamics, highlighting the need for tailored policy interventions. Policymakers are urged to recognize the uniqueness of each economic variable's impact and adopt flexible strategies aligned with Zambia's specific economic case. The study contributes valuable insights to existing knowledge by unravelling the complexities of trade dynamics, emphasizing temporal dynamics, specific economic conditions, and the interdependence of economic variables.

6.3 Study Recommendations

Considering the research findings, the study proposes the following recommendations:

1. Policymakers are advised to consider strategic increases in government spending aligned with economic goals, while ensuring fiscal responsibility and coherence with broader economic objectives.

2. Recognizing the varied impact of interest rates on trade outcomes, policymakers should tailor strategies based on a comprehensive understanding of the specific economic case.

3. Acknowledging the multifaceted impact of inflation rates on trade outcomes, policymakers should consider short-term effects when aiming to optimize trade outcomes.

4. Policymakers should focus on implementing measures that contribute to stable and favourable exchange rate movements for enhanced trade outcomes.

6.4 Recommendations for Future Studies

Future studies could investigate into sectoral analysis. Assessing how different sectors are affected by economic variables could offer targeted policy recommendations. Additionally, exploring the impact of external factors, such as global economic trends, on Zambia's trade dynamics is recommended for a holistic understanding.

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APPENDICES

Table 1: Descriptive Statistics

	BOP	EXCH	GOVNEXP	INFL	INT
Mean	-1.40E+08	4.84267	16.91598	39.39518	-2.277406
Median	-3.42E+08	0.45367	16.03420	18.32444	2.469674
Maximum	1.53E+09	20.01849	23.23379	183.3120	21.61562
Minimum	-9.54E+08	0.00314	14.10394	6.429397	-41.79024
Std. Dev.	6.34E+08	21.20778	2.769034	45.98415	16.68299
Jarque-Bera	11.49748	3.169646	4.008378	28.25048	4.269607
Probability	0.003187	0.204984	0.134770	0.000001	0.118268
Sum	-4.62E+09	2439.844	558.2273	1300.041	-75.15438
Observations	33	33	33	33	33

Source: Authors Computations (2023)

Table 2: Unit root test

	LEVEL		1ST DIFFERENCE		INTERGRATION ORDER
	T statistics	**P - Value**	**T statistics**	**P - Value**	
BOP	-2.478928	0.1279	-6.231487	0.0000	**I (1)**
Exch	-1.587655	0.4778	-5.794871	0.000	**I (1)**
Infl	-1.211964	0.6578	-3.468454	0.0154	**I (1)**
Int	-1.89842	0.3296	-7.087297	0.0000	**I (0)**
Govn Exp	-3.106049	0.0512	-5.973905	0.0004	**I (1)**

Source: Authors Computations (2023)

Table 3: Auto distributed Lag model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
BOP (-1)	0.832472	0.221235	3.762842	0.0019
BOP (-2)	-0.073528	0.250092	-0.294004	0.7728
BOP (-3)	-0.314306	0.219821	-1.429825	0.1733
EXCH	18855849	13313130	1.416335	0.1771
EXCH (-1)	-23380704	16738484	-1.396823	0.1828
EXCH (-2)	18110685	11491566	1.575998	0.1359
GOVNEXP	15926829	55735828	0.285756	0.7790
GOVNEXP (-1)	1.07E+08	83451643	1.279254	0.2202
GOVNEXP (-2)	-2.69E+08	82441117	-3.266426	0.0052
GOVNEXP (-3)	2.23E+08	63427593	3.515090	0.0031
INFL	-1789060.	5071639.	-0.352758	0.7292
INFL (-1)	723937.0	4803527.	0.150709	0.8822

INFL (-2)	5947650.	4104215.	1.449157	0.1679
INT	3845518.	13107601	0.293381	0.7733
C	-2.51E+09	1.47E+09	-1.705537	0.1087

Source: Author Computation

Table 4: The F-bounds test for the above showed no long run.

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I (0)	I (1)
			Asymptotic: n=1000	
F-statistic	2.757260	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
			Finite Sample:	
Actual Sample Size	30		n=30	

10%	2.525	3.56
5%	3.058	4.223
1%	4.28	5.84

Source: Authors Computations (2023)

Table 5: Short Run Dynamics

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D (BOP (-1))	-0.219874	0.318162	-0.691076	0.5203
D (BOP (-2)) **	1.738728	0.464128	3.746224	0.0133
D (BOP (-3)) **	-0.639903	0.221825	-2.884725	0.0344
D (BOP (-4)) ***	-0.875635	0.211989	-4.130562	0.0091
D(EXCH)	-1.0722636	12202454	-0.878728	0.4198
D (EXCH (-1)) **	9.1374637	25664864	3.560301	0.0162
D (EXCH (-2))	1.7734510	19361115	0.915986	0.4017
D (EXCH (-3)) *	3.7692825	17105419	2.203561	0.0787
D(GOVNEXP)**	2.77E+08	78729859	3.515250	0.0170
D (GOVNEXP (-1)) *	2.12E+08	88935592	2.379736	0.0632
D (GOVNEXP (-2))	12178328	79476917	0.153231	0.8842
D (GOVNEXP (-3)) **	-3.33E+08	98045923	-3.399265	0.0193
D (GOVNEXP (-4)) ***	4.26E+08	99509477	4.284612	0.0078

D(INFL)***	70880329	15145215	4.680048	0.0054
D (INFL (-1)) *	30111846	12972811	2.321151	0.0680
D (INFL (-2)) **	30943613	8151955.	3.795852	0.0127
D (INFL (-3)) **	34636541	11359178	3.049212	0.0284
D(INT)	32008695	20066855	1.595103	0.1716
D (INT (-1)) **	1.87E+08	51212359	3.653128	0.0147
D (INT (-2))	-218433.4	20703754	-0.010550	0.9920
D (INT (-3)) ***	1.03E+08	22737698	4.526933	0.0062
D (INT (-4)) **	49890474	18877985	2.642786	0.0458
C	22545251	1.05E+08	0.214437	0.8387

Source: Authors Computations (2023)

Table 6: Short Run Dynamics

R-squared	0.914336	Mean dependent var	21245053
Adjusted R-squared	0.537413	S.D. dependent var	5.63E+08
S.E. of regression	3.83E+08	Akaike info criterion	42.28341
Sum squared resid	7.32E+17	Schwarz criterion	43.37772
Log likelihood	-568.9677	Hannan-Quinn criter.	42.61795
F-statistic	6.425792	Durbin-Watson stat	2.025432
Prob(F-statistic)	0.001644		

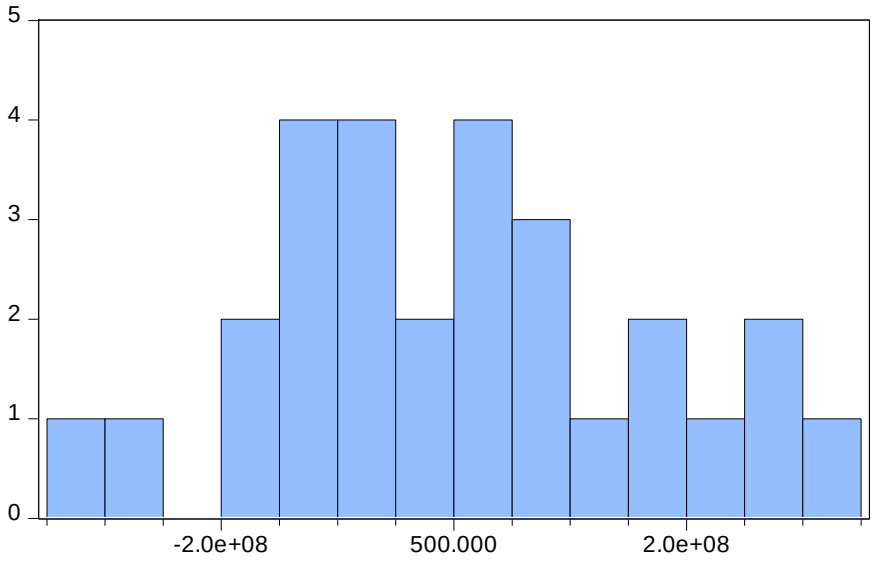
Source: Authors Computations (2023)

Table 7: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.843121	Prob. F (22,5)	0.2579
Obs*R-squared	24.92636	Prob. Chi-Square (22)	0.3006
Scaled explained SS	0.580309	Prob. Chi-Square (22)	1.0000

Source: Authors Computations (2023)

Figure 1: Normality test



Series: Residuals	
Sample 1992 2019	
Observations 28	
Mean	1.26e-07
Median	6400523.
Maximum	3.01e+08
Minimum	-3.36e+08
Std. Dev.	1.65e+08
Skewness	0.100848
Kurtosis	2.460181
Jarque-Bera	0.387434
Probability	0.823891

Figure 2: Cusum test

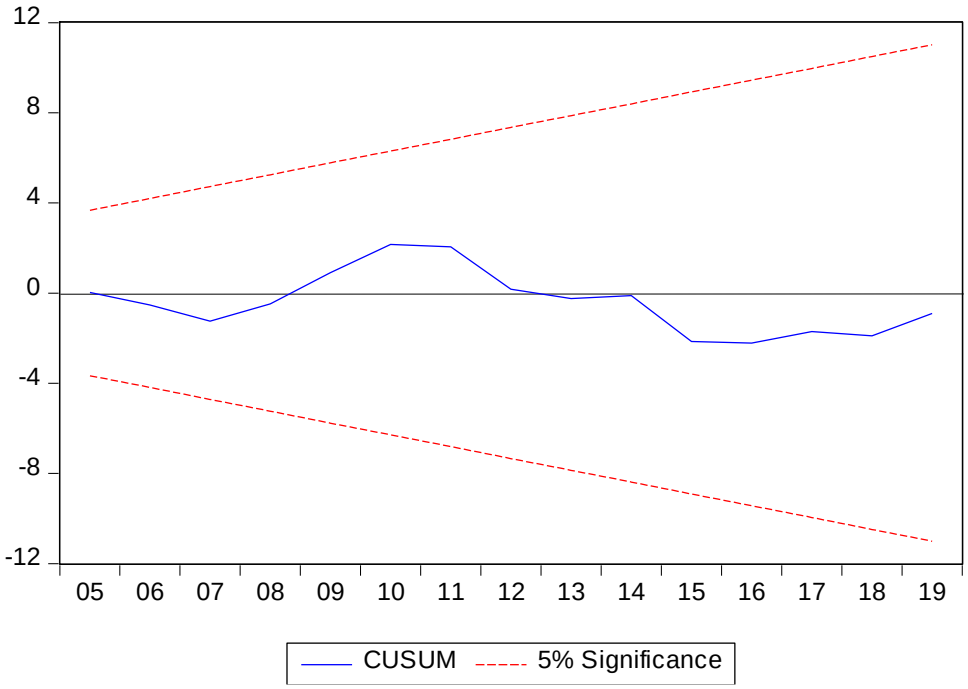


Figure 3: The CUSUM of Squares