AN ANALYSIS OF THE RELATIONSHIP BETWEEN EXCHANGE RATE FLUCTUATIONS AND UGANDA'S TRADE BALANCE 2000-2020

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Declaration

I, Bukenya Jonathan, now certify that the dissertation I have produced, partially fulfilling the standards of Uganda Christian University's bachelor of science in economics and statistics program, is entirely original with no content previously submitted to another academic institution. However, take note that when appropriate, citations, quotes, and references to other people's writings or information sources have been included.

Signature………………………………… Date 6th/09/2024

Approval

This research report by Bukenya Jonathan REG.NO. S21B34/017 entitled "**AN ANALYSIS OF THE RELATIONSHIP BETWEEN EXCHANGE RATE FLUCTUATIONS AND UGANDA'S TRADE BALANCE (2000-2020)"** has been under my supervision and is now ready for submission to the school of business with my approval

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List of abbreviations

BOU	BANK OF UGANDA
OLS	ORDINARY LEAST SQUARES
PPP	PUBLIC PRIVATE PARTERNSHIP
UBOS	UGANDA BUREAU OF STATISTICS
IMF	INTERNATIONAL MONETARY FUND
IM	IMPORTS
EX	EXCHANGE RATES
EXP	EXPORTS
TB	TRADE BALANCES

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Abstract

This dissertation investigates the relationship between exchange rate fluctuations and Uganda's trade balance with a focus on how this fluctuation in the Ugandan shilling affect the country's export and import dynamics. Uganda' s trade balance has persistently been in a deficit primarily due to its dependence on imports like oil and industrial inputs while exports mainly being agricultural products.

The study aims to assess the impact of exchange rate movements on these trade components and offers insights into the implications for Uganda's overall economic stability. This paper employs a mixed methods approach of both qualitative and quantitative data to analyze the effects of exchange rate fluctuations on trade. Secondary data sources include reports from Bank of Uganda (BOU), world bank and other financial institutions. The methodology involved testing for multicollinearity, autocorrelation and conducting a correlation analysis to establish the relationship between exchange rates and trade balance indicators. The ordinary least squares (OLS) regression model was used to assess relationship between exchange rate fluctuations on exports and imports. Exchange rate depreciation can make Ugandan exports more competitive on the international market potentially improving the trade balance. However, the fluctuation associated with this volatility creates uncertainty which can deter investment in export sectors resulting in less stable export growth. Additionally, depreciation raises cost of essential imports, worsening the trade deficit. The incomplete pass through of exchange rate changes into domestic prices further complicates the impact, making trade outcomes unpredictable.

The study concludes that while exchange rate fluctuations can offer short term benefits to exports, its overall impact on Uganda's trade balance is negative due to the increased cost of imports and uncertainty it introduces into the economy. To mitigate these effects, the dissertation recommends a multifaceted approach including the accumulation of foreign exchange reserves, promotion of export diversification, strengthening regional economic integration and continuously monitoring exchange rate movements to adjust policies proactively are also suggested as vital steps towards achieving a more stable trade environment.

Chapter One

1.1. Introduction

This chapter presents the background of the study, problem statement, study objectives, research questions, scope of the study (content, time, and geographical scope), significance of the study, and the conceptual framework.

1.2. Background of the Study

Uganda's economic growth is dependent on exchange rates and trade balances because of the huge effect these have on its capacity to compete in global markets. This, therefore, affects a nations' ability to export or even import goods and services at competitive prices. Consequently, this has far reached macroeconomic stability implications with regard to national development and growth which is the case for developing economies like Uganda as indicated by Krugman and Obstfeld (2009).

The period between 2000 and 2020 has seen notable fluctuations in Uganda's floating exchange rate regime; The Ugandan shilling (UGX), against major currencies especially the US dollar (USD) was highly volatile thus creating both challenges and opportunities in its trading sector (Bank of Uganda, 2020). These changes directly impact on the country's trade balance since they make exports competitive or imports cheaper. For instance, when shilling depreciates it means that Ugandan exports become relatively cheaper hence increasing volumes of exports due to increased demand from foreign buyers. On contrast depreciation increases costs of importing thus making it difficult for Uganda to reduce its long-standing trade deficit position where imports always exceed export values.

Among the reasons for Uganda's trade imbalance is its economy structure which depends largely on sale of primary goods such as coffee and tea. Mostly, these exports are affected by unstable global prices thereby increasing unpredictability in international merchandise sales (World Bank, 2020). Moreover, Uganda's large importation of capital goods, machinery and final consumer products intensifies its deficit in commercial transactions. This dependence on imports inhibits the possibility of a trade surplus limiting the significance of exchange rate policies on trade outcomes (Bank of Uganda, 2020). It is necessary to understand how the trade balance and rates of exchange move so as to come up with effective economic policies that can improve trade performance and ensure economic stability

1.3. Statement of the Problem

Despite the recognized importance of exchange rate fluctuations in influencing trade balances, there is limited empirical evidence specifically addressing this relationship in the Ugandan context. While global studies have documented the impact of exchange rates on trade balances, the unique economic, structural, and institutional characteristics of Uganda necessitate a focused analysis. The persistent trade deficit and the volatile exchange rate environment underscore the need for a detailed examination of how exchange rate movements affect Uganda's trade balance.

The lack of empirical data on this relationship hampers policymakers' ability to devise strategies that can mitigate the adverse effects of exchange rate volatility on trade performance. This research aims to fill this gap by providing a comprehensive analysis of the impact of exchange rate fluctuations on Uganda's trade balance over the period from 2000 to 2020.

1.4. Purpose of the Study

The purpose of this study is to analyse the relationship between exchange rate fluctuations and Uganda's trade balance from 2000 to 2020.

1.5. Specific Objectives

1. To examine the trends in exchange rate fluctuations and trade balance in Uganda from 2000 to 2020.
2. To analyze the relationship between exchange rate fluctuations on Uganda's exports from 2000 to 2020.
3. To analyze the relationship between exchange rate fluctuations on Uganda's imports. From 2000 to 2020.

1.6. Research Questions

1. What are the trends in exchange rate fluctuations and trade balance in Uganda from 2000 to 2020?
2. How have exchange rate fluctuations affected Uganda's exports?
3. How have exchange rate fluctuations affected Uganda's imports?

1.7. Scope of the Study

1.8. Content Scope

This study delves into the intricate relationship between exchange rate fluctuations and Uganda's trade balance. Its primary objective is to conduct a comprehensive analysis of trends in exchange rate movements, export performance, and import patterns within the Ugandan economy. Furthermore, the research aims to identify and assess the key factors influencing exchange rate dynamics and their subsequent impact on the country's trade balance.

1.9. Time Scope

To capture the long-term trends and patterns in exchange rate behaviour and trade performance, this study spans a 20-year period from 2000 to 2020. This timeframe allows for the examination of how these variables have evolved over time, including periods of economic stability, volatility, and structural shifts in Uganda's economy.

1.10. Geographical Scope

The geographical focus of this research is exclusively on Uganda. The data collection and analysis will be centred on national-level economic indicators pertaining to exchange rates and trade balance. This concentrated approach enables a deep dive into the specific context of the Ugandan economy and avoids potential confounding factors associated with broader regional or global analyses.

1.11. Justification of the Study

Academic Contribution: This study seeks to enrich the existing body of knowledge by providing empirical evidence on the complex relationship between exchange rate fluctuations and trade balance in the context of a developing economy like Uganda. The findings are expected to contribute to the broader academic discourse on exchange rate economics and international trade, potentially inspiring further research in this area.

Policy Relevance: For policymakers, this research offers invaluable insights into the consequences of exchange rate movements on Uganda's trade performance. By understanding the factors driving exchange rate fluctuations and their impact on the trade balance, policymakers can develop more effective strategies to enhance exchange rate stability, promote exports, and manage import dependence. Ultimately, this can contribute to overall economic stability and growth.

Practical Implications: The study's findings are also relevant to entrepreneurs and businesses operating within the Ugandan economy. By illuminating the impact of exchange rate volatility on trade activities, this research can empower businesses to develop strategies for mitigating exchange rate risks, optimizing trade operations, and improving their overall competitiveness.

1.12. Conceptual Framework

Uganda’s trade balance, the difference between its exports and imports is a critical determinant of its economic performance. Exchange rate fluctuations, the variation in the value of the Ugandan shilling relative to other currencies can significantly influence the country’s trade position. This paper presents a conceptual framework to analyse the relationship between exchange rate fluctuation and Uganda’s trade balance drawing upon economic theories such as the J-Curve Theory and the Marshall-Lerner Condition. The framework is designed to investigate how variations in the exchange rate impact the volumes of exports and imports, and subsequently, the overall trade balance.

Chapter Two

Literature review

2.1 Introduction

This chapter provides a comprehensive review of the existing literature on the relationship between exchange rate fluctuations and trade balance. The review is organized around three specific objectives: examining the relationship between exchange rates and trade balances in Uganda, analysing the relationship between exports and exchange rates, and analysing the relationship between imports and exchange rates.

2.1.1 Empirical Review

Trends in exchange rate fluctuations and trade balance

A number of studies have documented the trends in exchange rate fluctuations and trade balance in various economies. The research paper titled "Exchange rate volatility and its effects on Uganda's trade balance provide substantial empirical evidence that supports the above statement. For Uganda, the period from 2000-2020 has witnessed significant fluctuations in exchange rate primarily driven by both domestic and international factors (Bank of Uganda 2020). The trade balance during this period has largely been negative with imports consistently exceeding exports reflecting structural issues in the economy (World bank 2020). Exchange rates are influenced by a myriad of factors including inflation rates, interest rates, political stability, and economic performance (Obstfeld & Rogoff, 1996). For Uganda, the period from 2000 to 2020 has seen significant fluctuations in the exchange rate, influenced by both domestic and international economic conditions (Bank of Uganda, 2020). The trade balance during this period has largely been negative, with imports consistently exceeding exports, reflecting structural issues in the economy (World Bank, 2020).

Impact of Exchange Rate Fluctuations on Exports and Imports

The impact of exchange rate fluctuations on exports and imports is a foundation of international economics. Usually, a depreciation of a country's currency makes its exports cheaper and imports more expensive improving the trade balance (Krugman & Obstfeld, 2009).

The Marshall-Lerner condition assumes elastic demand for both exports and imports. However, the efficacy of exchange rate adjustments in correcting trade imbalances is contingent on a myriad of factors, including the elasticity of demand for traded goods, domestic production capacity, and the time lag in the response of trade flows to exchange rate changes (Bahmani-Oskooee & Ratha, 2004).

Empirical evidence on the relationship between exchange rate fluctuations and trade balance is often country-specific. In the case of Uganda, research findings present a mixed picture. While some studies indicate that exchange rate depreciation positively impacts exports and negatively influences imports, ultimately improving the trade balance (Atingi-Ego, 2003), others highlight the structural constraints limiting the responsiveness of trade flows to exchange rate variations (Kasekende & Atingi-Ego, 2008)

Factors Influencing Exchange Rate Movements

Variations in the exchange rate are a result of both fundamental and non-fundamental economic factors, just like any other asset price. While news, expectations, and unforeseen internal and external economic shocks are examples of non-fundamental factors, the balance of payments, developments in fiscal and monetary policy, and the openness of the trade and payments regime are the economic fundamental determinants of exchange rate variations. (Bank of Uganda, 2019).

Economic fundamental considerations tend to explain the long-run behaviour of the exchange rate; however, their ability to explain the short-run behaviour of the exchange rate is restricted by the tendency for the unexpected to occur. As such, non-fundamental factors play a major role in determining the exchange rate's short-term behaviour. The specific qualities of each of these components determine their impact and degree on the Economy.

Understanding these factors is crucial for analysing their impact on the trade balance. For instance, high inflation rates can lead to a depreciation of the currency, making exports more competitive but also increasing the cost of imports (Dornbusch, 1976). Similarly, changes in interest rates can attract or repel foreign capital influencing the exchange rate and subsequently the trade balance (Mundell, 1963).

2.2 Challenges and Limitations

The potential of exchange rate adjustments to rectify trade imbalances is a cornerstone of economic policy. However, the efficacy of this tool is often curtailed by a confluence of structural and external factors.

Structurally, many economies grapple with limitations that hinder the full potential of exchange rate manipulations. Insufficient production capacity, a common challenge, prevents nations from capitalizing on a depreciated currency by increasing exports. When production is already maximized, a currency devaluation may instead fuel inflationary pressures. Moreover, a lack of export diversification can mitigate the benefits of exchange rate adjustments. Economies heavily reliant on a narrow range of products, particularly primary commodities, find their trade balances susceptible to global price fluctuations, overshadowing the impact of currency depreciation.

External factors also play a pivotal role in determining the success or failure of exchange rate policies. The overarching global economic climate significantly influences trade balances. A global recession, for instance, can depress export demand regardless of currency valuations. Conversely, a robust global economy can boost exports even with an appreciated currency. Furthermore, the trade policies of trading partners can counteract the effects of exchange rate adjustments. Protectionist measures, tariffs, and non-tariff barriers can erode export competitiveness, undermining the advantages gained from a depreciated currency.

Beyond these challenges, the impact of exchange rate adjustments is often delayed, a phenomenon known as the J-curve effect. This time lag between policy implementation and its desired outcome can limit the short-term effectiveness of these measures. Additionally, currency depreciation can contribute to inflationary pressures by increasing the cost of imports. If not carefully managed, inflation can erode the competitiveness gains achieved through exchange rate adjustments. For countries with substantial foreign-currency-denominated debt, a depreciated currency can escalate debt servicing costs, potentially exacerbating economic difficulties.

Chapter Three

Methodology

3.1 Introduction

This chapter gives an account about the methodology that was used to study the relationship between exchange rate fluctuations and Uganda's trade balance. The study employed a quantitative research design based entirely on secondary data. This approach ensured an empirical and statistical analysis of the relationship between the variables, aligning with the study's objectives and research questions.

3.2 Research Design

The study utilized a quantitative research design which employed econometric methods to analyze the relationship between exchange rate fluctuations and trade balance outcomes in Uganda. This design provided an objective framework to assess the statistical correlations and causal relationships between the variables under investigation.

3.3 Data Sources

The study relied entirely on secondary data from reputable institutions.

Quantitative Data: Time series data on exchange rates, trade volumes (exports and imports), and the trade balance for Uganda, covering the period from 2000 to 2020. This data was sourced from established institutions such as the Bank of Uganda (BOU), Uganda Bureau of Statistics (UBOS), World Bank, and the International Monetary Fund (IMF).

3.4 Data Collection Methods

The quantitative data was obtained from institutional databases and official publications. The time series data covered exchange rates, trade balance, export, and import volumes, all measured annually. This data provided a foundation for conducting the econometric analysis and testing the study's hypotheses.

3.5 Data Analysis Techniques

The primary analytical technique that was used in the study was Ordinary Least Squares (OLS) regression. OLS is a fundamental econometric method that was used to estimate the linear relationship between the dependent variables and the independent variable.

3.6 Ordinary Least Squares (OLS) Regression:

I used OLS regression to model the relationship between Uganda's trade balance (dependent variable), export volumes, and import volumes against exchange rates as the independent variables. The goal of OLS was to estimate the parameters of the linear equation:

$$\text{Trade Balance} = \beta 0 + \beta 1\text{Exchange Rate} + \epsilon t$$

$$\text{Export volume} = \beta 0 + \beta 1\text{Exchange Rate} + \epsilon t$$

$$\text{Import volumes} = \beta 0 + \beta 1\text{Exchange Rate} + \epsilon t$$

Where:

- Trade Balance, export volumes, import volumes are the dependent variables
- Exchange Rate is the main independent variable
- $\beta 0$ is the intercept term,
- $\beta 1$ is the coefficient for the respective independent variable, and
- ϵt is the error term, capturing the unobserved factors that influence the trade balance.

OLS was used to minimize the sum of the squared differences (residuals) between the observed and predicted values of the dependent variable. The minimization process resulted in the line of best-fit that explained the relationship between the independent variables and the dependent variable. (Wooldridge, 2019)

3.7 Key Steps in the OLS Procedure:

3.7.1 Model Specification:

The model was specified by selecting the dependent and independent variables. In this study, the trade balance, imports and exports were the dependent variables, and the independent variable was exchange rate fluctuations

3.7.2 Assumptions Testing

OLS regression is based on several assumptions, including linearity, independence of errors, homoscedasticity (constant variance of errors), and normality of error terms. Before running the regression, diagnostic tests were conducted to check for multicollinearity (using Variance Inflation Factor), autocorrelation (using the Durbin-Watson test). If any of these assumptions were violated, corrective measures such as data transformations or using robust standard errors would have been applied but that wasn’t the case.

3.8 Estimation of Coefficients:

Once the assumptions were validated, the OLS regression was used to estimate and determine the coefficients β1. This coefficient represented the change in the trade balance, exports and imports associated with a one-unit change in the respective independent variable, holding other variables constant.

3.9 Statistical Significance Testing

Hypothesis tests were conducted to assess the statistical significance of the estimated coefficients. The t-tests for individual coefficients and the F-test for the overall model fit were employed to determine whether the relationships between the variables was statistically significant. The F-statistic was used to test the overall significance of the regression model. It was used to evaluate whether at least one of the independent variables in the model was significantly related to the dependent variable. The F-statistic tested the null hypothesis that the entire regression coefficient was equal to zero simultaneously.

The t-statistic was also used to determine the significance of individual regression coefficients. It was simply used to test the null hypothesis that a particular coefficient (β) was equal to zero, which meant that the corresponding independent variable had no effect on the dependent variable.

3.10 Model Fit

The goodness-of-fit of the OLS model was evaluated using the R-squared statistic, which measured the proportion of the variance in the dependent variable explained by the independent variables. Adjusted R-squared was also considered to account for the number of predictors in the model.

3.11 Interpretation of Results:

The estimated coefficients were interpreted in terms of their economic significance. For instance, the sign and magnitude of the coefficient on exchange rate fluctuations provided insights into whether and how exchange rate volatility impacted Uganda's trade balance. A positive coefficient meant that exchange rate appreciation improved the trade balance, while a negative coefficient indicated the opposite effect.

3.12 Correlation Analysis

Correlation statistical test was used to measure the strength and direction of the linear relationship between variables. In this study, correlation analysis was used to help determine the level to which changes in the exchange rates were associated with changes in Uganda's trade balance. The correlation coefficient ranges between -1 and 1

Where;

-1 indicates a perfect positive correlation between the variables

1 indicates perfect negative correlation between the variables

0 indicates no linear relationship between the variables when ana

When analysing the relationship between exchange rates, trade balances, exports and imports, the Pearson correlation coefficient computed. It helped measure the linear relationship between two variables for example exchange rates and trade balances. The resulting coefficients were interpreted to show the relationship. A strong positive correlation suggested that an increase in one variable was associated with an increase in the other variable while a negative relationship suggested the other.

Chapter Four

Findings

4.1 Descriptive statistics

Below is the interpretation of the descriptive statistics exchange rates (EX2), imports (IM), exports (EXP) and trade balances (TB). This chapter provides the presentation and explanation of the data set obtained from world bank in US dollars analysed in SPSS and it is mostly comprised of tables obtained from the analysis.

	year	IM	TB	EXP	EX2
1	2000	1574000000	-.7180	6229787262.0000	.0006
2	2001	1649200885	-.8558	5973160602.0000	.0005
3	2002	1683991359	-.7089	5606041053.0000	.0006
4	2003	1736630328	-.9126	5136624429.0000	.0005
5	2004	2235303247	-1.5863	5011064767.0000	.0006
6	2005	2643536131	-1.1116	5010986453.0000	.0005
7	2006	3287270080	-1.3053	4933391166.0000	.0006
8	2007	4264158964	-.7992	4860378764.0000	.0006
9	2008	5638780554	-2.4718	4315617898.0000	.0004
10	2009	5680655163	-.9826	4760862665.0000	.0005
11	2010	6499961835	-2.8328	3528088786.0000	.0004
12	2011	7140847759	-1.8559	1167955779.0000	.0003
13	2012	7778185911	-3.8653	1591839903.0000	.0003
14	2013	7878152827	-3.9142	3398399881.0000	.0004
15	2014	8019222763	-2.9156	2524898009.0000	.0004
16	2015	8130049391	-1.0806	861569807.4000	.0003
17	2016	8278141532	-3.4183	3169963632.0000	.0004
18	2017	8366279617	-1.9952	1795676793.0000	.0003
19	2018	9730445194	-2.1285	727011324.6000	.0003
20	2019	10709407371	-1.8179	721626955.5000	.0003
21	2020	11003516708	-2.3207	716200000.0000	.0003

4.2 Trade balances and Exchange rates (TB, EX2)

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
TB	-1.885581	1.0338162	21
EX 2	.000426	.0001283	21

The mean of -1.885581 indicates that the average trade balance over the 21 years was negative meaning that imports exceeded imports by an average of 1.885581 hence a trade deficit. The standard deviation of 1.0338162 shows that there was a considerable variation in the trade balance across the observations. This suggests that trade balances in Uganda have fluctuated in the 21 years. The mean for exchange rates is $0.000426. this suggests that the value of Uganda's currency has remained relatively stable against the us dollar over the 21-year period. The standard deviation is $0.000128 exhibits a relatively low degree of variability indicating that the currency's value has been relatively stable with minimal fluctuations. And this is the same across both imports and exports

4.3 Exports and exchange rates (EXP)

Table 2: Descriptive Statistics

	Mean	Std. Deviation	N
EXP	3430530758.547619	1929796245.5144346	21
EX 2	.000426	.0001283	21

The mean value for the exports is approximately 3.43 billion USD over the 21 years. The standard deviation is 1.93 billion USD. This is relatively high meaning that there is a significant variation in exports across the 21 years.

4.4 Imports and exchange rates (IM)

Table 3: Descriptive Statistics

	Mean	Std. Deviation	N
IM	5901320839.00	3161774717.590	21
EX 2	.000426	.0001283	21

The mean value for imports is approximately 5.90 billion USD from 2000-2020. The standard deviation. The standard deviation is 3.16 billion USD. This deviation is relatively high and suggests that there is a significant variation in import values across the 21 years.

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4.5 Analysing the correlation matrix between exports, trade balances and exchange rates.

4.6 Correlations between TB and EX2

		TB	EX 2
Pearson Correlation	TB	1.000	.524
	EX 2	.524	1.000
Sig. (1-tailed)	TB	.	.007
	EX 2	.007	.
N	TB	21	21
	EX 2	21	21

The correlation coefficient between trade balances and exchange rates is 0.524. this indicates a moderate positive correlation between trade balance (TB) and Exchange rate (EX2) meaning that as the exchange rate increases the trade deficit tends to increase.

4.7 Correlation between exports and exchange rates

		EXP	EX 2
Pearson Correlation	EXP	1.000	-.871
	EX 2	-.871	1.000
Sig. (1-tailed)	EXP	.	.000
	EX 2	.000	.
N	EXP	21	21
	EX 2	21	21

The correlation coefficient between exports and exchange rates is -.871. this indicates a strong negative correlation between the two variables indicating that an increase in the exchange rates decreased exports significantly increasing the countries trade deficit in the 21 years.

4.8 Correlations between Imports and Exchange rates

		IM	EX 2
Pearson Correlation	IM	1.000	.931
	EX 2	.931	1.000
Sig. (1-tailed)	IM	.	.000
	EX 2	.000	.
N	IM	21	21
	EX 2	21	21

The correlation coefficient between imports and exchange rates is 0.931. this indicates a very strong positive correlation between imports and exchange rates meaning that as the exchange rate increases, imports tend to increase as well which worsened the trade balance as it increased the trade deficit of Uganda in the 21 years.

4.9 Regression analysis

4.10 Model Summary between exchange rates and trade balances

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.524[a]	.275	.237	.9032190	.275	7.202	1	19	.015	2.094

a. Predictors: (Constant), EX 2

b. Dependent Variable: TB

The R value is 0.524 indicates a moderate positive correlation between trade balances and exchange rate. The R square value is 0.275. this means that 27.5% of the variation in the trade balance can be explained by the exchange rate. The standard errors are relatively low indicating that the model is a good fit. The Durbin Watson figure is 2.094 and this suggests no significant autocorrelation. The p-value is 0.015 less than 0.05 indicating that the exchange rate is statistically significant predictor of trade balances.

4.11 Coefficients between exchange rates and trade balances.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-3.685	.699		-5.273	.000					
	EX 2	4225.164	1574.433	.524	2.684	.015	.524	.524	.524	1.000	1.000

a. Dependent Variable: TB

$$\mathbf{TB = \beta 0 + \beta 1EX2 + \varepsilon}$$

$$\mathbf{TB = -3.685 + 0.524EX2 + \varepsilon}$$

The coefficient for exchange rate is 0.524. this implies that a 1% increase in exchange rates increases trade balances by 52.4%. There is no multicollinearity given a VIF of 1.000.

4.12 Model Summary between exchange rates and imports.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.931[a]	.867	.861	720772658.8542422	.867	124.369	1	19	.000	1.931

a. Predictors: (Constant), EX 2

b. Dependent Variable: IM

The R square value is 0.867 meaning that 86.7% of the variation in the imports is being explained by the exchange rates. The standard errors are relatively low indicating that the model is a good fit. The Durbin Watson figure is 1.931 indicating that there is no autocorrelation between the actual and predicted values. The p-value is less than 0.05 indicating that exchange rate is a statistically significant predictor of imports.

4.13 Coefficients between exchange and imports

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-2536784547.803	557722215.800		-4.548	.000					
	EX 2	14011544507406.635	1256404076469.960	.931	11.152	.000	.931	.931	.931	1.000	1.000

a. Dependent Variable: IM

The coefficient for exchange rates is 0.931 indicating that a 1% in exchange increases imports by 93.1% The tolerance and VIF is 1.000 indicating that there is no multicollinearity.

4.14 Model Summary between exports and exchange

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.871[a]	.758	.745	1596379654.500	.758	59.455	1	19	.000	1.563

a Predictors: (Constant), EX 2

b Dependent Variable: EXP

The R square value is 0.758 meaning that 75.8% of the variation in the Exports is being explained by the exchange rates. The standard errors are relatively low indicating that the model is a good fit. The Durbin Watson figure is 1.563 indicating that there is no autocorrelation between the actual and predicted values. The p-value is less than 0.05 indicating that exchange rate is a statistically significant predictor of exports.

4.15 Coefficients exchange rates and exports.

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Correlations	Collinearity Statistics

		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	15039372778.418	1235252735.004		12.175	.000					
	EX 2	-21456587240144.723	2782705310569.408	-.871	-7.711	.000	-.871	-.871	-.871	1.000	1.000

a. Dependent Variable: EXP

The coefficient for exchange rates is -0.871 indicating that a 1% increase decreases exports by

87.1%. The tolerance and VIF value is 1.000 indicating that there is no multicollinearity in the data.

4.16 Conclusion

Trade balance and exchange rate

The findings revealed a negative trade balance with imports consistently exceeding exports. The descriptive statistics show that a mean trade deficit of approximately 1.98 billion USD highlighting Uganda's persistent struggle with maintaining a favourable trade balance. The correlation analysis revealed a moderate positive correlation (0.524) between exchange rates and trade balances indicating that as the Ugandan shilling depreciates, the trade deficit tends to widen. This relationship is further supported by the regression analysis where exchange rates are found to be statistically significant predictor of the trade balance.

Exports and exchange rates

The study found that Uganda's exports had a strong negative correlation (-0.871) with exchange rate fluctuations. This implies that as the exchange rate increases (Ugandan shilling depreciates), export volumes significantly decrease worsening the trade balance. The regression analysis confirmed that exchange rate fluctuations are a significant determinant of export performance explaining approximately 75.8% of the variance in export volumes.

Imports and exchange rates

Imports demonstrated a very strong positive correlation (0.931) with exchange rate fluctuation indicating that an appreciation in the Ugandan shilling leads to a significant increase in the import volumes. The regression model showed that exchange rates accounted for 86.7% of the variation in import volumes.

Chapter Five

Findings, conclusions and recommendations

5.1 Summary of the findings

The analysis in chapter four revealed several key insights into the relationship between exchange rate fluctuations and Uganda's trade balance.

Trade balance: Uganda trade balance has been consistently negative over the 21-year period driven by higher import volumes relative to exports. The depreciation in the Ugandan shilling tends to bring about the trade deficit.

Exports: The study highlighted a significant negative impact of exchange rate fluctuations on exports. As the Ugandan shilling appreciates, export volumes reduce indicating that Uganda's exports are highly sensitive to exchange rate movements.

Imports: the findings demonstrated a strong positive relationship between exchange rate appreciation and import volumes suggesting that a stronger shilling leads to an increase in the cost and volume of imports further deepening the Trade deficit.

5.2 Conclusion

The dissertation concludes that exchange rate fluctuations are a critical determinant of Uganda's trade balance. The persistent trade deficit is largely driven by the sensitivity of both exports and imports to exchange rate movements. While a depreciated shilling can make exports cheaper, the overall impact on the trade balance is negative due to the higher cost of imports and the uncertainty introduced into the economy.

The findings also suggested that Uganda's trade performance is heavily influenced by reliance on a narrow range of exports and its dependence on essential imports. This structural issue makes the country particularly vulnerable to exchange rate fluctuations which can lead to broader economic instability.

5.3 Recommendations

Based on the findings and conclusions of the study, the recommendations below are proposed to reduce the impact of exchange rate fluctuations on Uganda's trade balance.

Strengthening foreign exchange reserves; this study highlighted that exchange rate fluctuation displays a significant challenge to maintaining a stable trade balance. One of the most effective ways to manage this fluctuation is by strengthening foreign exchange reserves. These reserves allow the central bank to intervene in the foreign exchange market during periods of instability helping to stabilise the currency and reduce uncertainty for both exporters and importers. Uganda should prioritize accumulating foreign exchange reserves during periods of favourable economic conditions such as when export revenues are high or when FDI inflows are strong. The central bank could adopt a more aggressive reserve accumulation strategy, focusing on diversifying the reserve assets to include not just traditional currencies like the US dollar but also other stable currencies and assets that can provide higher returns and reduce risk. Additionally, policies that promote foreign exchange inflows like incentives for remittances from the diaspora or attracting more foreign investment should be strengthened.

Promoting export diversification; Uganda's reliance on a narrow range of exports, commodities especially agricultural products make its trade balance highly vulnerable to exchange rate fluctuations. Diversifying the export base would eliminate this risk by spreading it across a wider range of products and markets. The government of Uganda should develop and implement policies aimed at encouraging the growth of none traditional export sectors such as manufacturing, services and technology. This could involve providing targeted subsides or tax incentives for industries with high export potential, investing in research and development to improve product quality and innovation and establishing trade agreements that open new markets for Ugandan goods. Enhancing value addition in the agricultural sector is also very important. Uganda can capture more value and reduce its exposure to commodity price fluctuations on the international market.

Continuous monitoring and policy adjustment; Exchange rate fluctuations is a dynamic challenge that requires continuous monitoring and flexible policy adjustments. Proactive management of exchange risks can help mitigate the impact on the trade balance and the overall economic stability. Bank of Uganda in partnership with other relevant government bodies should establish a robust monitoring frame work to track exchange rate movements and identify emerging risks. This could involve using advanced economic modelling and forecasting tools to predict potential shocks and plan pre-emptive interventions. Regular policy reviews should conduct to assess the effectiveness of current measures and make necessary adjustments. The central bank should also maintain open communication with the private sector to ensure that businesses are aware and can prepare for potential exchange rate fluctuations.

Strengthening regional economic integration; regional economic integration offers Uganda the opportunity to stabilize its trade environment by reducing its reliance on volatile global markets. By engaging in regional trade agreements, Uganda can benefit from trade in local currencies and increased economic cooperation with neighbouring countries like Kenya, Tanzania, DRC and Rwanda, reducing exposure to exchange rate volatility.

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4 Appendices

4.3 Appendix 1

	year	IM	TB	EXP	EX2
1	2000	1574000000	-.7180	6229787262.0000	.0006
2	2001	1649200885	-.8558	5973160602.0000	.0005
3	2002	1683991359	-.7089	5606041053.0000	.0006
4	2003	1736630328	-.9126	5136624429.0000	.0005
5	2004	2235303247	-1.5863	5011064767.0000	.0006
6	2005	2643536131	-1.1116	5010986453.0000	.0005
7	2006	3287270080	-1.3053	4933391166.0000	.0006
8	2007	4264158964	-.7992	4860378764.0000	.0006
9	2008	5638780554	-2.4718	4315617898.0000	.0004
10	2009	5680655163	-.9826	4760862665.0000	.0005
11	2010	6499961835	-2.8328	3528088786.0000	.0004
12	2011	7140847759	-1.8559	1167955779.0000	.0003
13	2012	7778185911	-3.8653	1591839903.0000	.0003
14	2013	7878152827	-3.9142	3398399881.0000	.0004
15	2014	8019222763	-2.9156	2524898009.0000	.0004
16	2015	8130049391	-1.0806	861569807.4000	.0003
17	2016	8278141532	-3.4183	3169963632.0000	.0004
18	2017	8366279617	-1.9952	1795676793.0000	.0003
19	2018	9730445194	-2.1285	727011324.6000	.0003
20	2019	10709407371	-1.8179	721626955.5000	.0003
21	2020	11003516708	-2.3207	716200000.0000	.0003