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EXCHANGE RATE AND IMPORT DEMAND FOR WHEAT IN UGANDA: AN EMPIRICAL INVESTIGATION

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ABSTRACT

This study empirically investigates the relationship between exchange rate and import demand for wheat in Uganda using annual time series data for the period 1983–2024 obtained from the World Bank and the Food and Agriculture Organization. Wheat import quantity, measured in metric tons, is used as the dependent variable, while the official exchange rate (LCU/US$, period average) is used as the independent variable. The study employs the Vector Error Correction Model (VECM) technique to examine both the short-run and long-run dynamics between exchange rate and wheat import demand. The VECM results reveal a significant long-run relationship between exchange rate and wheat import demand in Uganda. The error correction term in the wheat import demand equation is negative and statistically significant (coefficient = -1.374033; t = -4.53724), indicating that deviations from long-run equilibrium are corrected rapidly, with about 137.4% of disequilibrium adjusted within a period. In the short run, the first lag of exchange rate changes has a positive and statistically significant effect on wheat import demand (coefficient = 1.774429; t = 2.67442), implying that exchange rate movements increase wheat import demand in Uganda. The wheat import demand equation also demonstrates good explanatory power (Adjusted R^2 = 0.565097; F-statistic = 10.61530). The study recommends that policymakers should promote exchange rate stability through sound macroeconomic policies to minimize excessive fluctuations that may distort wheat import demand and threaten food security in Uganda.

KEYWORDS: *VECM, Exchange rate; Wheat import demand; Uganda*

INTRODUCTION

Exchange rate movements play a critical role in shaping international trade flows, particularly in import-dependent economies such as Uganda. Fluctuations in exchange rates affect the domestic prices of imported commodities, purchasing power, and overall trade competitiveness. In developing countries where agricultural imports are essential for food security and industrial production, exchange rate instability may significantly influence import demand patterns (Krugman & Obstfeld, 2018; Nahabwe & Kagarura, 2026). Wheat is one of the major imported food commodities in Uganda due to increasing urbanization, changing dietary preferences, population growth, and the expansion of the baking and food processing industries. Despite Uganda's favourable agro-climatic conditions for agriculture, domestic wheat production remains insufficient to satisfy growing demand, making the country heavily reliant on wheat imports (FAO, 2023).

Over the years, Uganda has experienced substantial exchange rate fluctuations associated with trade liberalization, inflationary pressures, balance of payment challenges, and external economic shocks. The depreciation of the Uganda shilling against major foreign currencies, particularly the United States dollar, has raised concerns regarding the affordability and sustainability of food imports such as wheat. Since wheat imports are largely invoiced in foreign currency, exchange rate volatility may increase import costs and affect import demand behavior among traders and consumers. Understanding the relationship between exchange rate movements and wheat import demand is therefore important for designing appropriate trade, monetary, and food security policies in Uganda (World Bank, 2024).

Existing empirical studies on exchange rate and import demand have largely focused on aggregate imports, trade balances, or broad macroeconomic indicators, with limited attention given to specific strategic commodities such as wheat in Uganda. Furthermore, many previous studies concentrated on developed economies or used conventional

econometric techniques that inadequately capture both short-run dynamics and long-run equilibrium relationships. This creates a knowledge gap regarding the extent to which exchange rate fluctuations influence wheat import demand in Uganda over time. Consequently, this study employs the Vector Error Correction Model (VECM) approach to examine both the short-run and long-run relationship between exchange rate and wheat import demand in Uganda using annual time series data from 1983 to 2024.

The study is important because wheat constitutes a major component of Uganda's food imports and contributes significantly to household consumption and industrial food processing. Findings from this study will provide useful insights to policymakers, importers, and monetary authorities on how exchange rate movements affect wheat import demand and food security. The study will also contribute to the existing empirical literature on exchange rate and import demand relationships in developing economies, particularly in Sub-Saharan Africa.

LITERATURE REVIEW

The relationship between exchange rates and import demand has attracted considerable attention in international trade and macroeconomic literature. Theoretically, exchange rate movements influence import demand through changes in the relative prices of imported goods. According to the elasticity approach to the balance of payments theory, depreciation of a domestic currency makes imports more expensive, thereby reducing import demand, while appreciation lowers import costs and increases import demand (Krugman & Obstfeld, 2018). Similarly, the absorption approach argues that exchange rate fluctuations affect domestic expenditure patterns and external trade balances through changes in aggregate demand and purchasing power (Alexander, 1952). These theories suggest that exchange rate dynamics are key determinants of import behaviour in open economies.

Globally, several empirical studies have examined the relationship between exchange rates and import demand with mixed findings. Bahmani-Oskooee & Kara (2005) found that exchange rate depreciation significantly reduced import demand in both developed and developing economies due to increased import prices. Similarly, Arize, Osang & Slottje (2008) established that exchange rate volatility negatively affected import demand and international trade flows by increasing uncertainty in international transactions. However, some studies reported positive or insignificant relationships depending on the structure of the economy, import dependence, and the elasticity of demand for imported commodities.

At the regional level, studies in Africa indicate that exchange rate fluctuations strongly influence import demand because many African economies rely heavily on imported food products and manufactured goods. Yiheyis (2013) found that exchange rate depreciation reduced import demand in several Sub-Saharan African countries due to rising import costs and declining purchasing power. Similarly, Musila & Newark (2019) observed that exchange rate instability constrained trade performance and increased import expenditure in East African economies. However, these studies mainly focused on aggregate imports and did not specifically examine strategic agricultural commodities such as wheat.

In Uganda, empirical studies on exchange rate and import demand remain limited. Existing studies have largely concentrated on exchange rate volatility, inflation, exports, and aggregate trade balances, with minimal attention given to commodity-specific import demand. Yet wheat imports have continued to rise due to urbanization, population growth, and expanding food processing industries despite fluctuations in the Uganda shilling. This creates a contextual and methodological gap regarding how exchange rate movements specifically affect wheat import demand in Uganda over time. Therefore, this study contributes to the literature by employing the Vector Error Correction Model (VECM) to capture both the short-run dynamics and long-run equilibrium relationship between exchange rate and wheat import demand in Uganda.

The conceptual framework of the study is based on the relationship between exchange rate and wheat import demand. Wheat import demand, measured by wheat import quantity in metric tons, is the dependent variable, while the official exchange rate (LCU/US$, period average) is the independent variable. The study assumes that fluctuations in exchange rates influence the cost of wheat imports and consequently affect the quantity of wheat imported into Uganda.

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DATA AND METHODS

This study employs a quantitative research design based on annual time series data to empirically examine the relationship between exchange rate and import demand for wheat in Uganda. The quantitative design is appropriate because it enables statistical analysis of the relationship between the study variables over time and facilitates objective interpretation of empirical findings (Creswell, 2014; Nahabwe & Kagarura, 2025). The study uses secondary data covering the period 1983–2024 obtained from the World Bank and the Food and Agriculture Organization databases. Wheat import demand, measured in metric tons, is used as the dependent variable, while the official exchange rate (LCU/US$, period average) serves as the independent variable.

The study adopts a census sampling design in which all annual observations for the study period are included in the analysis. This approach is preferred because time series studies require complete historical observations to capture long-run and short-run dynamics accurately (Gujarati & Porter, 2009; Nahabwe & Kagarura, 2025). The variables are transformed into natural logarithms to reduce heteroscedasticity, stabilize variance, and allow interpretation of coefficients in elasticity form.

Data analysis is conducted using descriptive statistics and econometric techniques. Preliminary analysis includes trend analysis and unit root tests to determine the stationarity properties of the variables and avoid spurious regression results. The Augmented Dickey-Fuller (ADF) test is employed to establish the order of integration of the variables (Dickey & Fuller, 1979; Nahabwe & Kagarura, 2025). Thereafter, the Johansen cointegration test is applied to determine the existence of a long-run equilibrium relationship between exchange rate and wheat import demand (Johansen, 1988). Since the variables are cointegrated, the Vector Error Correction Model (VECM) is estimated to capture both the short-run dynamics and long-run adjustments between the variables. The VECM approach is appropriate because it combines short-run fluctuations with long-run equilibrium correction, making it suitable for analysing cointegrated time series data (Engle & Granger, 1987). Diagnostic tests, including serial correlation and stability tests, are also conducted to ensure the reliability and robustness of the estimated model results.

RESULTS AND THEIR DISCUSSION

The descriptive statistics (Appendix 1) indicate substantial variations in both wheat import demand and exchange rate movements in Uganda during the period 1983–2024. Wheat import quantity recorded a mean of 272,886.4 metric tons with a maximum value of 780,732.2 metric tons and a minimum value of 1,976.89 metric tons, reflecting the increasing dependence on wheat imports over time. The large standard deviation (269,842.6) suggests considerable fluctuations in wheat import volumes, possibly driven by population growth, urbanization, and changing consumption patterns. Similarly, the official exchange rate averaged 1,840.323 LCU/US$ with a maximum of 3,757.263 and a minimum of 1.538625, indicating substantial depreciation of the Uganda shilling over the study period (Nahabwe & Kagarura, 2026). Both variables exhibit positive skewness, implying moderate asymmetry in their distributions, while the Jarque-Bera probabilities are statistically insignificant, suggesting that the variables are approximately normally distributed (Gujarati & Porter, 2009; Nahabwe et al., 2025).

The Vector Error Correction Model (VECM) results (Appendix 6) reveal the existence of a significant long-run relationship between exchange rate and wheat import demand in Uganda. The error correction term in the wheat import demand equation is negative and statistically significant (coefficient = -1.374033; t = -4.53724), indicating that deviations from long-run equilibrium are corrected rapidly, with approximately 137.4% of disequilibrium adjusted within one period. This finding confirms the existence of a stable long-run relationship between exchange rate movements and wheat import demand. In the short run, the first lag of exchange rate changes positively and significantly affects wheat import demand (coefficient = 1.774429; t = 2.67442), implying that exchange rate fluctuations increase wheat import demand in Uganda. The wheat import demand equation further demonstrates relatively strong explanatory power, with an Adjusted R^2 of 0.565097 and an F-statistic of 10.61530.

These findings are consistent with Bahmani-Oskooee & Kara (2005), who established that exchange rate movements significantly influence import demand through changes in import prices and purchasing power. The results also support the findings of Musila & Newark (2019), who observed that exchange rate fluctuations affect trade flows in East African economies. However, unlike some previous studies that reported a negative relationship between exchange rate depreciation and import demand, this study finds a positive short-run relationship between exchange rate changes and wheat import demand. This unique finding may be explained by Uganda's high dependence on

imported wheat and the limited domestic substitutes available for wheat-based products. Consequently, importers may continue importing wheat despite exchange rate depreciation due to persistent domestic demand from households and food processing industries.

The study therefore demonstrates that exchange rate dynamics are an important determinant of wheat import demand in Uganda and highlights the vulnerability of the country's food import sector to exchange rate instability. These findings underscore the need for policies aimed at promoting exchange rate stability and enhancing domestic wheat production to reduce excessive dependence on imports.

LIMITATIONS

Despite providing important insights into the relationship between exchange rate and wheat import demand in Uganda, this study has several limitations. First, the study relies entirely on secondary annual time series data obtained from the World Bank and the Food and Agriculture Organization databases. Secondary data may contain measurement errors, inconsistencies, or missing observations that could affect the accuracy and reliability of the estimated results (Gujarati & Porter, 2009; Nahabwe et al., 2025). In addition, the use of annual data limits the number of observations available for analysis and may fail to capture short-term fluctuations in exchange rates and import demand behaviour.

Secondly, the study focuses only on exchange rate as the explanatory variable affecting wheat import demand, yet import demand may also be influenced by other macroeconomic factors such as income levels, inflation, trade policies, population growth, and domestic wheat production. Excluding these variables may lead to omitted variable bias and limit the comprehensiveness of the findings (Wooldridge, 2013; Nahabwe & Kagarura, 2026). Thirdly, although the Vector Error Correction Model (VECM) is appropriate for examining both short-run and long-run relationships among cointegrated variables, the model assumes linear relationships between variables and may not adequately capture possible nonlinearities or structural breaks arising from economic crises, policy reforms, or external shocks during the study period (Enders, 2015; Nahabwe & Kagarura, 2026).

Finally, the study is limited to Uganda and focuses specifically on wheat imports; therefore, the findings may not be generalized to other commodities or countries with different trade structures and macroeconomic conditions. Nevertheless, despite these limitations, the study provides useful empirical evidence regarding the role of exchange rate movements in influencing wheat import demand in Uganda.

CONCLUSION

This study examined the relationship between exchange rate and wheat import demand in Uganda using annual time series data for the period 1983–2024. The study establishes that exchange rate dynamics are an important factor influencing Uganda's dependence on wheat imports and the stability of the country's food import sector. The findings demonstrate that fluctuations in the exchange rate have meaningful implications for import behaviour, food availability, and trade performance in an economy that relies heavily on imported wheat products to satisfy growing domestic demand. The study further confirms the importance of maintaining macroeconomic stability and strengthening domestic agricultural production in order to reduce vulnerability arising from external market shocks and currency instability. Overall, the study contributes to the empirical literature on exchange rate and import demand relationships in developing economies and provides evidence that can guide policymakers in designing appropriate monetary, trade, and food security policies in Uganda.

RECOMMENDATIONS

Based on the findings of this study, several policy, programme, and research recommendations are proposed to address the effects of exchange rate movements on wheat import demand in Uganda.

The study recommends that monetary authorities, particularly the Bank of Uganda, strengthen exchange rate stabilization policies aimed at reducing excessive volatility of the Uganda shilling. Exchange rate instability was found to significantly influence wheat import demand, implying that macroeconomic instability may expose the economy to import cost shocks and food insecurity risks. Therefore, maintaining a relatively stable exchange rate through prudent monetary policy, foreign reserve management, and inflation targeting is essential (Mishkin, 2016). In addition, trade policy should consider strategic buffering mechanisms, such as hedging instruments for importers, to reduce the adverse effects of exchange rate fluctuations on essential food imports.

Government should strengthen programmes aimed at promoting domestic wheat production to reduce overreliance on imports. This may include subsidizing wheat farmers, improving access to improved seed varieties, expanding irrigation schemes, and enhancing agricultural extension services. Such interventions would help reduce the pressure on foreign exchange demand for wheat imports and improve national food self-sufficiency (FAO, 2023). In addition, value chain development programmes should be enhanced to support agro-processing industries and reduce post-harvest losses, thereby improving local wheat supply.

Future studies could extend the analysis by incorporating additional macroeconomic variables such as income levels, inflation, population growth, and trade openness to provide a more comprehensive understanding of import demand behaviour. Furthermore, researchers may consider using higher-frequency data (quarterly or monthly) and nonlinear econometric models to capture potential structural breaks and asymmetries in exchange rate effects (Enders, 2015; Nahabwe et al., 2025). Comparative studies across East African economies are also recommended to establish regional differences in the exchange rate–import demand nexus.

REFERENCES

1. *Alexander, S. S. (1952). Effects of a devaluation on a trade balance. IMF Staff Papers, 2(2), 263–278.*
2. *Arize, A. C., Osang, T., & Slottje, D. J. (2008). Exchange-rate volatility in Latin America and its impact on foreign trade. International Review of Economics & Finance, 17(1), 33–44.*
3. *Bahmani-Oskooee, M., & Kara, O. (2005). Income and price elasticities of trade: Some new estimates. The International Trade Journal, 19(2), 165–178.*
4. *Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). Sage Publications.*
5. *Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. Journal of the American Statistical Association, 74(366), 427–431.*
6. *Enders, W. (2015). Applied econometric time series (4th ed.). Wiley.*
7. *Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction: Representation, estimation and testing. Econometrica, 55(2), 251–276.*
8. *Food and Agriculture Organization (FAO). (2023). FAOSTAT database. Rome: FAO.*
9. *Gujarati, D. N., & Porter, D. C. (2009). Basic econometrics (5th ed.). McGraw-Hill.*
10. *Johansen, S. (1988). Statistical analysis of cointegration vectors. Journal of Economic Dynamics and Control, 12(2–3), 231–254.*
11. *Krugman, P., & Obstfeld, M. (2018). International economics: Theory and policy (11th ed.). Pearson Education.*
12. *Mishkin, F. S. (2016). The economics of money, banking and financial markets (11th ed.). Pearson Education.*
13. *Musila, J. W., & Newark, J. (2019). Exchange rate volatility and trade flows in East Africa. African Development Review, 31(4), 455–468.*
14. *Nahabwe, P. K. J., & Kagarura, W. R. (2025). Foreign direct investment and exports as a capacity to import vis-à-vis trade balance in Sub-Saharan Africa. Journal of Economics and Behavioral Studies, 17(4), 75–87.*
15. *Nahabwe, P. K. J., & Kagarura, W. R. (2026). Foreign exchange rate and GDP growth vis-à-vis trade balance in Sub-Saharan Africa. Journal of Economics and Behavioral Studies, 18(1), 28–41.*
16. *Nahabwe, P. K. J., & Kagarura, W. R. (2026). Government expenditure and inflation vis-à-vis trade balance in Sub-Saharan Africa. Journal of Economics and Behavioral Studies, 18(1), 59–74.*
17. *Nahabwe, P. K. J., et al. (2025). Foreign direct investment and trade balance in Sub-Saharan Africa. International Journal of Southern Economic Light, 13(1), 1–13.*
18. *Nahabwe, P. K. J., et al. (2025). Foreign exchange rates and trade balance in Sub-Saharan Africa. International Journal of Global Economic Light, 11(1), 1–12.*
19. *Nahabwe, P. K. J., et al. (2025). Government expenditure and trade balance in Sub-Saharan Africa. EPRA International Journal of Economic Growth and Environmental Issues, 13(1), 15–28.*
20. *Wooldridge, J. M. (2013). Introductory econometrics: A modern approach (5th ed.). South-Western Cengage Learning.*
21. *World Bank. (2024). World Development Indicators database. Washington, DC: World Bank.*
22. *Yiheyis, Z. (2013). Exchange rate and import demand in developing countries: Evidence from Africa. Journal of African Trade, 1(1), 45–58.*

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APPENDICES

Appendix 1: Descriptive statistics

Statistic	WHEAT_IMPORT_QUANTITY (Metric Tons)	OFFICIAL_EXCHANGE_RATE (LCU/US$, period avg.)
Mean	272,886.4	1,840.323
Median	216,183.5	1,768.100
Maximum	780,732.2	3,757.263
Minimum	1,976.89	1.538625
Std. Dev.	269,842.6	1,247.364
Skewness	0.434276	0.149373
Kurtosis	1.686037	1.906998
Jarque-Bera	4.341545	2.246828
Probability	0.114089	0.325168
Sum	11,461,230	77,293.56
Sum Sq. Dev.	2.99E+12	63,792,589
Observations	42	42

Appendix 2: ADF unit-root test - LNWHEAT (level)

Item	Value
Null hypothesis	LNWHEAT has a unit root
Exogenous terms	None
Lag length	0 (automatic, SIC, maxlag = 9)
ADF statistic	0.994512
Probability	0.9127
1% critical value	-2.622585
5% critical value	-1.949097
10% critical value	-1.611824
Decision	Fail to reject unit root; LNWHEAT is non-stationary at level

Appendix 3: ADF unit-root test - LNWHEAT (first difference)

Item	Value
Null hypothesis	D(LNWHEAT) has a unit root
Exogenous terms	None
Lag length	0 (automatic, SIC, maxlag = 9)
ADF statistic	-5.937004
Probability	0.0000
1% critical value	-2.624057
5% critical value	-1.949319
10% critical value	-1.611711
Decision	Reject unit root; D(LNWHEAT) is stationary

Appendix 4: ADF unit-root test - LNEXR (level)

Item	Value
Null hypothesis	LNEXR has a unit root
Exogenous terms	None
Lag length	0 (automatic, SIC, maxlag = 9)
ADF statistic	1.963452
Probability	0.9868
1% critical value	-2.622585
5% critical value	-1.949097
10% critical value	-1.611824
Decision	Fail to reject unit root; LNEXR is non-stationary at level

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Appendix 5: ADF unit-root test - LNEXR (first difference)

Item	Value
Null hypothesis	D(LNEXR) has a unit root
Exogenous terms	None
Lag length	0 (automatic, SIC, maxlag = 9)
ADF statistic	-2.447446
Probability	0.0157
1% critical value	-2.624057
5% critical value	-1.949319
10% critical value	-1.611711
Decision	Reject unit root at 5%; D(LNEXR) is stationary

Appendix 6: VECM estimates

Sample (adjusted): 1987-2024. Observations: 38. Lag interval (in first differences): 1 to 2. Deterministic specification: Case 3 (Johansen-Hendry-Juselius), constant in cointegrating relation and short-run dynamics.

Variable	D(LNWHEAT,2) coeff.	Std. error	t-stat.	D(LNEXR,2) coeff.	Std. error	t-stat.
COINTEQ1	-1.374033	0.30283	-4.53724	-0.002379	0.07783	-0.03057
D(LNWHEAT(-1),2)	0.265304	0.21866	1.21333	0.034197	0.05620	0.60850
D(LNWHEAT(-2),2)	0.023100	0.15972	0.14463	-0.004802	0.04105	-0.11697
D(LNEXR(-1),2)	1.774429	0.66348	2.67442	0.017674	0.17053	0.10364
D(LNEXR(-2),2)	0.938875	0.70426	1.33313	-0.219809	0.18101	-1.21436
C	0.051220	0.09223	0.55534	-0.023982	0.02371	-1.01167

Model statistic	D(LNWHEAT,2)	D(LNEXR,2)
R-squared	0.623868	0.078946
Adjusted R-squared	0.565097	-0.064969
S.E. equation	0.556618	0.143060
F-statistic	10.61530	0.548561
Akaike AIC	1.810065	-0.907164
Schwarz SC	2.068631	-0.648597

Appendix 7: VEC residual normality test

Component	Skewness χ^2	Skewness p-value	Kurtosis χ^2	Kurtosis p-value	Jarque-Bera	JB p-value
1	4.397463	0.0360	0.783826	0.3760	5.181289	0.0750
2	0.019666	0.8885	0.598433	0.4392	0.618099	0.7341
Joint	4.417129	0.1099	1.382260	0.5010	5.799388	0.2146

Appendix 8: VEC residual heteroskedasticity test

Test / component	Statistic	df	Probability
Joint chi-square test	40.32343	30	0.0988
res1*res1: chi-square	14.18286	10	0.1648
res2*res2: chi-square	8.375467	10	0.5922
res2*res1: chi-square	15.31700	10	0.1209