THE EFFECTS OF CURRENCY DEVALUATION ON MALAWI'S TRADE BALANCE: TESTING THE MARSHALL-LERNER AND J-CURVE

A Thesis

Submitted to the Master's Study Program of Economics at the Faculty of Economics and Business in partial fulfilment of the requirements for the degree of

Master of Arts (M.A.)

By

Ajibu Jonas

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ABSTRACT

Ajibu Jonas
03212320003
ajibu.jonas@uiii.ac.id
MA in Economics
Universitas Islam International Indonesia

Developing countries like Malawi often utilize currency devaluation to mitigate ongoing trade deficits and foreign exchange imbalances; yet, its efficacy remains ambiguous. The research examines the impact of currency devaluation on Malawi's trade balance, highlighting the applicability of the Marshall-Lerner condition and the presence of a J-curve effect. The study assesses short-term and long-term dynamics using annual time-series data from 1978 to 2023, applying the Autoregressive Distributed Lag (ARDL) methodology and the Error Correction Model (ECM). The ECM findings demonstrate that the real effective exchange rate (REER) adversely affects the trade balance in the short term, validating the initial decrease anticipated by the J-Curve hypothesis. The REER exhibits a positive and strong correlation with the trade balance over the long term, suggesting an eventual adjustment. The aggregate price elasticities of exports and imports (0.067) fall below unity, refuting the M-L condition and indicating inelastic demand. Macroeconomic indicators such as trade openness and GDP/Capita growth benefit the trade balance, while inflation and external debt have mixed effects. These findings imply that devaluation is not sufficient but must be supplemented by other policies. The study concludes that while devaluation has the potential to improve trade performance in the long term, its success in Malawi will depend on structural reforms to increase export competitiveness and reduce import dependence. Policymakers are advised to diversify trade, invest in productive capacity, and maintain macroeconomic stability for long-run external balance and sustainable development.

Keywords: *Currency Devaluation, Trade Balance, Marshall Lerner Condition, J-Curve Hypothesis, Exchange Rate Policy*

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ABBREVIATION DIRECTORY

AfCFTA	*: African Continental Free Trade Area*
AIC	*: Akaike Information Criterion*
ARDL	*: Autoregressive Distributed Lag*
CEIC	*: CEIC Global Database*
COMESA	*: Common Market for Eastern and Southern Africa*
CPI	*: Consumer Price Index*
ECM	*: Error Correction Model*
ECOWAS	*: Economic Community of West African States*
ECT	*: Error Correction Term*
FDI	*: Foreign Direct Investment*
GDP	*: Gross Domestic Product*
GDPGRC	*: GDP Growth Rate per Capita*
HQIC	*: Hannan–Quinn Information Criterion*
IMF	*: International Monetary Fund*
INF	*: Inflation Rate*
J-C	*: J-Curve*
MITC	*: Malawi Investment and Trade Centre*
MLC	*: Marshall-Lerner Condition*
MWK	*: Malawian Kwacha*
NSO	*: National Statistics Office (Malawi)*
PED_x	*: Price Elasticity of Demand for Exports*
PED_m	*: Price Elasticity of Demand for Imports*
PMG	*: Pooled Mean Group*
REER	*: Real Effective Exchange Rate*
RESET	*: Regression Equation Specification Error Test*
RBM	*: Reserve Bank of Malawi*
SADC	*: Southern African Development Community*
SIC	*: Schwarz Information Criterion*
TB	*: Trade Balance*
TO	*: Trade Openness*
UN	*: United Nations*
UNCTAD	*: United Nations Conference on Trade and Development*
UNECA	*: United Nations Economic Commission for Africa*
VECM	*: Vector Error Correction Model*
WTO	*: World Trade Organization*
USD	*: United States Dollar*

CHAPTER I
INTRODUCTION

This chapter gives a general overview of the research background and provides a detailed conceptual explanation of the phenomenon to give insight to the readers. Additionally, the chapter will discuss the research context, the significance of the study, and the research questions and objectives.

1.1. Research Background

A nation's exchange rate system plays a big role in how stable its economy is and how smoothly it can participate in international trade. Around the world, countries often devalue their currency to fix trade problems and become more competitive. This makes exports cheaper and imports more costly, helping to balance trade (Rodrik, 2008;(Acar, 2000). Developing countries, especially those with ongoing trade deficits and limited foreign exchange reserves, often use currency devaluation as a key policy tool (World Bank, 2025). Many African countries, facing constant issues with external deficits, rely on devaluing their currencies, especially when commodity prices are unstable, exports are fragile, and foreign investments fluctuate (Ndulu, 1999); Adeniyi, 2020). Malawi stands out as a clear example in Southern Africa because it struggles with ongoing economic vulnerabilities and depends heavily on imports (IMF, 2023). Being landlocked, Malawi primarily exports tobacco, tea, and sugar, yet still faces significant trade deficits due to its reliance on imports such as petroleum, medicines, food, and machinery (World Bank, 2025). The fact that Malawi's exports are not very diverse, and that its imports don't respond strongly to price changes, keeps these trade gaps going. This raises important questions about whether adjusting the exchange rate helps improve trade outcomes (Bahmani-Oskooee & Gelan, 2017).

Historically, Malawi has implemented several currency devaluations due to acute foreign exchange deficiencies and increasing trade imbalances. An instance of a notable devaluation was in May 2012, when the kwacha dropped by around 50%, and again by an additional 44% in November 2023 (IMF, 2023). The devaluations were intended to realign exchange rate imbalances and rebalance external competitiveness. Nevertheless, the desired turn in the trade balance has yet to materialize. The World Bank (2023) reported that Malawi experienced a trade deficit of USD 2.7 billion in 2022, with exports worth USD 0.9 billion and imports worth USD 3.6 billion. The data reveal no improvement or even a deteriorating trade balance in the past decade, questioning whether currency devaluation in Malawi is effective in the long term. The Marshall-Lerner Condition asserts that currency devaluation will enhance the trade balance if the sum of the price elasticities of export and import demand is greater than one. For

devaluation to have positive effects on trade, this condition must be satisfied. In low-income nations such as Malawi, whose export economy is underdeveloped and greatly dependent on primary products with inelastic demand, the Marshall-Lerner condition cannot be satisfied. The J-Curve hypothesis complicates this by suggesting that the balance of trade could deteriorate in the first instance before it begins to improve after devaluation, owing to lagged contract effects, import inelasticity, and adjustment lags (Bahmani-Oskooee & Ratha, 2004). Empirical verification of these models in the Malawian context is fragmented and elusive, and this indicates the necessity for up-to-date, country-level investigations by way of sophisticated econometric methods.

Recent economic figures confirm the urgency to reevaluate the effects. By October 2023, foreign exchange reserves of Malawi dropped to a level at which it was only able to cover 1.5 months of imports, far lower than the world standard of 3 months (Reserve Bank of Malawi, 2023). This was among the principal drivers of the currency devaluation in 2023. However, inflation hit 24.7% year-on-year as of December 2023 (NSO Malawi, 2023), which brought to the fore issues of inflationary and welfare impacts of the policy. Even after numerous realignments of currency, the trade deficit remains, indicating there was a disconnect between policy outcomes and objectives. This work aims to address this gap by empirically evaluating the impact of currency depreciation on the Malawian trade balance through robust time-series econometric techniques. This study will employ Autoregressive Distributed Lag (ARDL) and Error Correction Models (ECM) to evaluate the relationships between exchange rates and trade balances in both the short run and long run. This study will assess the validity of the Marshall-Lerner Condition and the existence of the J-Curve in Malawi, providing evidence-based findings to improve exchange rate and trade policy measures aimed at attaining external balance and fostering long-term economic growth.

This is exacerbated by post-COVID-19 global trade patterns, whose dynamics have hastened vulnerabilities for the small economies. International value chain disruptions, higher logistics costs, and an inflationary world environment have supported trade imbalances in many African countries. Malawi in particular, has seen delayed vital imports, as well as decreased export demand by global contraction and price volatility for commodities. Concurrently, external finance has tightened, and increasing protectionism across the world has raised additional trade barriers. The devaluation in 2023 occurred against a background of falling foreign exchange reserves, to 1.5 months' import cover, and rising inflation, which peaked at 24.7% year-on-year in December 2023 (NSO Malawi, 2023). This economic exposure makes it important to reassess the effectiveness and unforeseen consequences of devaluation policies in Malawi. Empirical findings of the MLC and J-Curve in Malawi are limited and inconsistent. Such studies are often outdated, methodologically deficient, or do not capture the recent structural and policy developments. This study aims to rectify such deficiencies by utilizing

more advanced econometric techniques, specifically, the Autoregressive Distributed Lag (ARDL) model and Error Correction Model (ECM), to examine short- and long-run effects of currency devaluation on Malawian trade balance. The paper contributes to empirical studies and informs sensible policy advice on whether devaluation can be a viable instrument or a misaligned strategy in the face of stiff import structures and inelastic exports.

In addition to its economic structural weaknesses, Malawi's trade performance is also constrained by supply-side factors such as poor infrastructure, zero industrial capacity, and zero levels of technological adoption (UNCTAD, 2023; World Bank, 2022). These vulnerabilities weaken the economy's ability to respond effectively to exchange rate fluctuations (Ndulu, 1999; O'Connell, 1999). Though devaluation makes exports theoretically more competitive, Malawi lacks the diversified production sector and the transport capacity to increase export volumes in reaction to price fluctuations (IMF, 2023). Besides, the dominance of irreplaceable and non-substitutable imports, such as fuel, medication, and farm inputs, limits the effectiveness of price fluctuations in reducing the demand for imports (Reserve Bank of Malawi, 2023; Chilima & Banda, 2023). Hence, the economy gains scant advantages from currency devaluation at the cost of imposing significant inflationary pressure (NSO Malawi Report, 2023). This fact reflects the complexity of exchange rate policy in Malawi. It emphasizes the need for empirical studies that not only analyze the direct nexus between devaluation and trade balance but also consider the broader macroeconomic and structural context (Bahmani-Oskooee & Gelan, 2017); (Keho, 2021).

This research is fundamentally based on the Elasticity Approach to the Balance of Payments, which embodies the Marshall-Lerner Condition (MLC). The MLC posits that currency depreciation enhances a country's trade balance solely when the combined price elasticities of exports and imports exceed one. The J-Curve Hypothesis, which contrasts short-run with long-run demand elasticity, posits that the trade balance may initially worsen following devaluation due to contractual lags and pricing rigidity before subsequently improving in the long run. These models are especially germane for Malawian-type economies where demand elasticity and structural barriers are at the heart of the exchange rate–trade balance relationship. Malawi is a fascinating case study due to its structural characteristics: a landlocked low-income country with lower export diversification and heavy dependence on imported goods such as fuel, drugs, and agricultural inputs. Its leading commodity-based export composition of tobacco, tea, and sugar exposes it to terms-of-trade shock and dampens the efficiency of relative price adjustments (IMF, 2023). Moreover, the lack of adequate industrial processing capacity and underdeveloped infrastructure limits the country to increase exports in response to favorable currency movements (UNCTAD, 2023). This makes Malawi a theoretically rich and empirically urgent case to investigate the boundaries and usefulness of devaluation as a policy tool. Against these complexities, this study not only assesses the direct exchange rate devaluation-trade

balance relationship but also explores the causal macroeconomic and institutional determinants. By applying the Marshall-Lerner Condition and the J-Curve hypothesis validity tests in Malawi, using recent data (1981–2023) and firm econometric modeling, the study seeks to offer evidence-based policy recommendations for improved trade and exchange rate policy.

1.2. Statement of Research Problem

Malawi's export expansion is one strategy to alleviate its foreign exchange shortages and aid in short-term economic stabilization. To achieve this strategy, Malawi has regularly devalued its currency since 1980. Dossani (2012) observed that Malawi underwent around twelve devaluations between 1986 and 2012. Additionally, there have been several devaluations of the kwacha between 2012 and 2023. However, due to numerous uses, the advantage of devaluing the Kwacha has not yet been realized. Recent statistics show that following the devaluation of its currency, Malawi still maintains a trade gap. From data in the International Trade Center report, the trade gap between exports and imports of goods rose to -$2.17 billion in 2023 (Jin & Guo, 2023). Additionally, the data indicated that Malawi exported goods worth $965 million and imported goods worth $3.14 billion in 2023. This signifies a rise relative to the millions documented in the trade balance in 2022, indicating a 99 percent escalation in the trade deficit. Additionally, the nation's trade balance has oscillated at -$2 billion over the past five years.

Moreover, mixed results were observed in previous studies that were carried out in Malawi on the devaluation's impact on trade balance. Others agreed that Malawi was not capable of achieving its desired goal of enhancing the export industry's competitiveness or decreasing the rate of imports, while other research results were incongruous. Arize et al., (2000) discovered that freely floating exchange rates had an impact on trade growth, which defied the general perception that currency movements always enhance the trade balance. According to the World Bank (2023), the trade deficit shows that the expected benefits of a depreciating currency are not happening as intended. Moreover, Bahmani-Oskooee & Gelan, (2017) mentioned that, at times, devaluation provided scope for introducing new trade balances while, occasionally, it had no effect at all. Markos & Minch, (2021) then suggested that devaluation can in theory, improve the trade balances, yet in reality, it operates to the reverse due to broad macroeconomic issues such as inflation and import price inelasticity.

Despite the relevance of the subject to Malawi's economy, there are limited recent studies on the subject. Moreover, there is still controversy regarding the frequency and recurrence of these events in the Malawian economy, particularly from a regional point of view, owing to conflicting research results from earlier periods. Through confirming the J-C and the M-L hypotheses, this study endeavors to fill the gap and examine the impact of currency depreciation on Malawi's trade balance. The study will examine particularly whether currency devaluation

has affected Malawi's trade balances or not, and if other determinants like inflation, net national income, personal remittances, foreign direct investment, and money supply make such theoretical channels ineffective. Therefore, this study aims to determine the root causes for the divergence between theoretical results and actual outcomes.

1.3. Research Questions

This research seeks to elucidate the intricate relationship between currency devaluation and trade balance in Malawi from 1978 to 2023. It specifically seeks answers to the following critical enquiries:

1. What are the effects of currency devaluation on Malawi's trade balance?
2. What are the impacts of trade openness, external debt, inflation, and GDP/capita growth on Malawi's trade balance?
3. Do the Marshall-Lerner condition and J-Curve apply in Malawi?
4. What policies are necessary to attain currency stability and enhance Malawi's trade balance?

1.4. Objectives of the Research

The primary aim of this study is to examine the effects of currency devaluation on Malawi's trade balance, with particular objectives outlined as follows:

1. To analyse the impact of trade openness, external debt levels, inflation rate, and GDP per capita growth on trade balance.
2. To evaluate the veracity of the Marshall-Lerner condition and the J-Curve phenomenon in Malawi
3. To implement policies that will stabilize the currency and enhance the trade balance of Malawi.

1.5. Hypothesis for Research

The subsequent hypotheses are formulated based on the research questions and objectives:

A. H0: Currency devaluation exerts no meaningful influence on Malawi's trade balance
   H1: Currency devaluation significantly affects Malawi's trade balance

B. H0: Trade openness, external debt, inflation, and GDP growth influence the trade balance
   H1: Trade openness, external debt, inflation, and GDP growth do not influence the trade balance

C. H0: The Marshall-Lerner condition and the J-Curve are not applicable in Malawi
   H1: The Marshall-Lerner condition and J-Curve are applicable in Malawi.

D. H0: Some policies could help stabilize currency and improve trade balance in Malawi
   H1: There are no policies that can help stabilize the currency and improve the trade balance

1.6. Research Significance

1.61. Theoretical Benefits

This research will make a significant contribution to economic theory by providing empirical validation of the existence or lack thereof of both the Marshall-Lerner condition and the J-Curve phenomenon in Malawi. By focusing on an economy characterized by a narrow export base, essential import dependency, and frequent currency devaluations, the research contributes to the related studies on exchange rate behavior in underdeveloped and structurally fragile economies. It will advance the understanding of how theoretical frameworks developed primarily within the context of industrialized or developed nations are relevant, or irrelevant, in low-income nations with different economic fundamentals. Moreover, the research will shed light on the long-term and short-run dynamics of trade balance adjustment and currency devaluation, with information on time lags and structural bottlenecks that affect the realization of theoretical expectations. This is particularly valuable for those models that assume elastic trade responses or efficient markets, assumptions which may not hold in countries like Malawi, where supply chains are rigid and productive capacity is low.

The study will be especially interesting to the academic community, including economists, researchers, university lecturers, and graduate students. The empirical findings can be used to update and localize the teaching content of international trade and macroeconomics courses to make them more relevant to African and other developing countries. The findings can also raise further hypotheses for comparative studies of similar economies, particularly those in Sub-Saharan Africa or other landlocked primary-commodity dependent countries. Theoretically inclined economists may also integrate the findings into region-specific or sector-specific models to enhance simulations of exchange rate policy impacts to be enhanced. This may lead to the development of new hybrid models that better reflect low-income economies' structural and institutional realities, enhancing the predictive and explanatory capabilities of international trade and macroeconomic models for these economies.

1.6.2. Practical Benefits

This research possesses substantial practical significance by providing evidence-based insights that can directly guide Malawi's macroeconomic strategies. Comprehending the true impact of currency depreciation on the nation's trade balance will empower policymakers to formulate more agile and adaptive fiscal and monetary measures. The Reserve Bank of Malawi

can leverage the findings to refine currency rate management, bolster inflation targeting frameworks, and rectify foreign exchange imbalances. The Ministry of Trade and Industry can utilize the findings to build more targeted export promotion and import substitution strategies that are attuned to currency fluctuations. Furthermore, development partners and international financial institutions, including the IMF and World Bank, can incorporate these insights into their technical aid and economic advice services for Malawi and analogous economies. Importers and exporters in the private sector can gain from a more precise comprehension of how exchange rate volatility influences price, contract stipulations, and market timing decisions. Armed with the insight obtained from empirical research, companies can more effectively manage unstable currency markets, simplify foreign transactions, and reduce exposure to unpredictable exchange rate shifts. Additionally, universities, policy institutes, and think tanks will be advantaged by the study's framework, providing a grounded reference point for modeling trade behavior in less developed economies. Overall, the study serves to build a stronger and more strategically informed trade space, a necessary precursor to maximizing the role of Malawi in regional and global markets.

CHAPTER II
THEORETICAL FOUNDATION

This literature study thoroughly examines the theoretical and empirical studies on the effects of currency devaluation on Malawi's trade balance, notably assessing the applicability of the Marshall-Lerner condition and the existence of the J-curve phenomenon. This section employs diverse analytical and econometric methodologies to ascertain the intricate relationship between the real effective exchange rate and the trade balance. A comprehensive literature evaluation is necessary to develop the appropriate conceptual and empirical framework, facilitating the assessment of this research's relevance and contribution. This study synthesizes relevant studies that have examined the relationship between currency depreciation and trade balance by utilizing various economic data sets and analytical approaches.

2.1 Theoretical Review

2.1.1. The Elasticity Theory

The Elasticity Approach argues that the success of currency devaluation in improving a nation's trade balance depends on the price elasticity of demand for exports (PED_x) and imports (PED_m). This relationship is captured in the Marshall-Lerner Condition, which states that devaluation will improve the trade balance if:

$$PED_x + PED_m > 1 \ldots \ldots \ldots \ldots (1)$$

If the sum equals one, i.e.,

$$PED_x + PED_m = 1 \ldots \ldots \ldots \ldots \ldots (2)$$

There will be no effect on the trade balance, while if the sum is less than one,

$$PED_x + PED_m < 1 \ldots \ldots \ldots \ldots \ldots (3)$$

Devaluation is originally supposed to deteriorate the trade balance via the J-Curve effect so that the initial rise in import prices and delayed response in export quantities cause the short-run fall before anything could improve (Jeffries & Tan, 2021; Prasad & Bhagwati, 2023). This is due to such factors as standing contracts, the inelasticity of imports that are required, and sluggish market responses (Kou et al., 2022). For countries such as Malawi, where its exports are mainly primary agricultural commodities and their imports are such absolute goods as equipment and fuel, import and export requirements are both inelastic (Mannur, 1995). Consequently, even though devaluation lowers the relative prices of exports, foreign demand may not necessarily increase much, and import quantities may continue to be constant with higher prices, leading to a worsening trade balance. In this way, therefore, devaluation improves the

external balance only if import and export demand elasticities are sufficiently high.

2.1.2 The Absorption Theory of Trade Balance

Devaluation is posited in elasticity theory to affect the trade balance via its pricing impacts, whereby it raises import prices, lowers export prices directly, and improves a nation's trade balance, provided that import and export elasticities are sufficiently high. Consequently, based on the principle of elasticity, the repercussions of currency devaluation impact external variables, namely Imports (M) and Exports (X) (Keynes, 1936). Nevertheless, the Keynesian school of thought embraces a macroeconomic viewpoint about the implications of devaluations, considering the income effect. This theory asserts that devaluation affects internal elements, including consumption, investment, and national income, which must be considered when evaluating the impact of devaluation on the nation's balance of payments status. The formula for national income in an open economy is articulated as:

$$Y+M=C+I+G+X\ldots \quad (4)$$

Where total national income (GDP), imports, domestic consumption, investment spending, government expenditures, and exports are situated, respectively. The left side of the equation represents the total supply in an economy, which includes aggregate domestic supply (Y) and total imports (M), while the right side depicts the distribution of this total supply, indicating total demand through consumption, investment, government expenditure, and exports. The previously described national income equation can be articulated as:

$$Y=C+I+G+(X-M)\ldots \quad (5)$$

This equation posits that the domestic supply (Y) in an open economy is dictated by domestic absorption in conjunction with net exports. In an open economy, domestic output equals domestic expenditure plus the trade balance. By substituting A with domestic expenditure (C, I, and G) and (X-M) with TB, we can get a trade balance equation for an open economy as follows:

$$TB=Y-A\ldots\ldots(6)$$

TB denotes net exports or trade balance, while it indicates domestic expenditure or absorption, and signifies the level of domestic output (GDP). This signifies that a trade balance can be achieved when domestic production surpasses domestic consumption. This concept posits that devaluation reduces the trade deficit if the transition to domestic goods, prompted by devaluation, increases output more than domestic consumption. Devaluation improves a nation's trade balance only if it elevates national income (Y) more than domestic consumption, or if there is a significant favourable expenditure-switching effect. Equation 6 facilitates the identification of key variables that affect imports, exports, and, by extension, Ethiopia's trade

balance.

2.1.3. The Monetary Theory of Trade Balance

Mundell and Johnson (1960) formulated the monetary theory of the balance of trade, asserting that the balance of trade is inherently a monetary phenomenon. This theory posits that an accommodative monetary policy results in a trade deficit, whereas a restrictive monetary policy leads to a trade surplus. Currency devaluation affects the balance of trade by impacting the real money supply. Devaluation, coupled with negative devaluation, will result in increased local prices and a diminished real monetary value, thereby leading to fewer imports. However, if currency devaluation is succeeded by additional increases in the nominal money supply, the initial imbalance will re-emerge, so nullifying the beneficial effects of devaluation. Consequently, devaluation, according to the monetary theory of trade balance, enhances a nation's trade balance via the demand channel by diminishing imports, provided that the money supply remains unchanged (Blanchard, 1993).

This theory posits that trade surpluses and deficits in the balance of payments are referred to as disequilibrium in the money market. Consequently, a trade surplus, deficit, or monetary market imbalance is a transient condition that exists just until the government intervenes by altering the money supply. The monetary theory posits that the nation's money supply is determined by:

$$H=D+F \quad (7)$$

Where H, D, and F are the nation’s total money supply, domestic components of the nation’s monetary base, and the foreign components of the nation’s monetary base, respectively. This money supply equation can be written as:

$$\Delta NFA = \Delta H - \Delta D \quad (8)$$

Where ΔNFA, ΔH, and ΔD denote the change in net foreign assets, the total money supply of a nation, and the central bank’s extension of domestic credit. The above equation states that the change in the central bank’s holding of foreign assets is equal to the change in the stock of high-powered money minus the change in the domestic credit. The important point about the above equation is that ΔNFA is the balance of payment. The domestic component of the nation’s monetary base (D) is the domestic credit created by the nation’s monetary authority. Thus, the external balance is given by:

$$M - X = Fs - \Delta R \quad (9)$$

But, ΔR is a change in international reserve and the same as ΔNFA. Thus, Equation 6 shows that imports minus exports are equal to foreign saving (Fs) less than the change in international reserve (ΔR). Therefore, the relationship between trade balance (external balance) and the monetary account can be written as follows from Equations 5 and 6:

$$X - M = (\Delta H - \Delta D) - Fs \quad (10)$$

Equation 10 illustrates the relationship between monetary accounts and the external account, whereas the monetary theory of trade balance clarifies that alterations in the domestic money supply are inversely correlated with a nation's trade balance A surplus in the money supply will lead to a depletion of reserves (an increase in imports) or a balance of payments deficit. Equation 7 demonstrates that devaluation improves the nation's trade balance, according to monetary theory. Money market disequilibrium will lead to increased imports or exports, thereby re-establishing money market equilibrium through its impact on the nation's monetary base. This signifies that if the money market reaches equilibrium, the balance of payments will also achieve equilibrium. Thus, the nation's balance of payments deficit or surplus is a self-correcting and ephemeral phenomenon (Dornbusch, 1990, 1998; Dornbusch and Fischer, 1996).

2.1.4. The J-curve Phenomenon

The J-curve phenomenon illustrates that the long-term and short-term effects of devaluation on the trade balance diverge. The evolution of the balance of trade over time produces a J-curve effect. The nation's trade balance may initially worsen after devaluation or depreciation before ultimately improving. This is mostly due to the propensity for the domestic currency price of imports to rise more swiftly than export prices immediately after devaluation, while quantities remain unchanged. Ultimately, two volumetric effects are exerting contradictory forces. The volume of exports is projected to increase, whilst imports are predicted to decrease due to elevated expenses linked to imports. Thus, in the short term, price will have a greater impact than volume; however, in the long term, volume will surpass the influence of price. This mostly arises from the variances in short- and long-run elasticities of demand and supply, with long-term elasticities generally surpassing their short-term counterparts. The difference between short-run and long-run elasticities supported the J-curve devaluation effect (Lindert, 1993).

2.2. Empirical Evidence

2.2.1. Empirical research on the effects of currency devaluation on trade balance

Some studies have examined the link between currency depreciation and trade balance in the economies of various African countries. Wang, (2023) applied the ARDL model to investigate Ghanaian quarterly time series data and concluded that real domestic income and the real exchange rate positively affect imports, indicating that depreciation raises exports but appreciation raises imports, thereby enhancing the trade balance of Ghana. Inuwa et al. (2023) examined the movement of exchange rates in West Africa using various econometric models and found that while currency rate changes significantly impacted imports and exports minimally, the trade balance revealed a high positive correlation with exchange rate volatility.

Similarly, Elmasry (2021) examined currency volatility in West African trade and determined that there exists a significant positive correlation between trade balance and exchange rate volatility, citing the importance of exchange rate stability in trade. Odionye & Chukwu (2021) utilized a smooth transition regression model to examine the impact of devaluation in six countries of Sub-Saharan Africa, where they showed Nigeria experienced negligible impacts while Ghana, Kenya, Tanzania, and Mozambique gained substantial economic advantages through devaluation. Additional studies present more information about how devaluation impacted trade balances of certain economies.

Tarawalie & Kpana, (2022) examined the trade balance of Sudan using cointegration and the error- correction model and established that currency devaluation did not effectively enhance the trade balance of Sudan. Conversely, Kamugisha & Assoua, (2020) discovered that devaluation in Uganda had comparatively short-term implications on the trade balance, with long-run enhancement based predominantly on income levels and not on exchange rate fluctuations. Getu, (2020) examined the trade balance of Ethiopia for two decades using ARDL and ECM models and established a long-run positive relationship between currency depreciation and trade balance. The study indicated that devaluation would improve the trade balance of Ethiopia, provided there are adequate short-run adjustments. These studies collectively demonstrate that the success of devaluation programs differs across African economies depending on income elasticity, trade agreements, and currency rate volatility**.**

Muriithi and Wawire (2022) utilized nonlinear ARDL models to explore the trade patterns of Kenya and found that the effects of exchange rate movements on trade balance were asymmetric; depreciation had a larger positive impact than appreciation. Similarly, Dzigbede et al. (2023) focused on the Nigerian case and implemented structural vector autoregression (SVAR) techniques to determine that while devaluation improves trade balance slightly, its inflationary impacts tend to offset the expected gains in the short run. Uwilingiyimana et al. (2021) applied Johansen cointegration and VECM in a study of Rwanda to confirm a weak but statistically significant long- run relationship between trade balance and real exchange rate, suggesting that structural rigidities restrain the full realization of gains from devaluation. Additionally, Mbaye and Dramani (2022) examined the potential of the CFA zone countries and argued that the fixed exchange rate regime reduced the degree of flexibility needed to absorb external shocks, thereby compromising the response of the trade balance. Overall, these works highlight that despite devaluation being a suitable tool for trade performance improvement, it performs very well with the strict dependence on economic structure, import elasticity, inflation management, and accompanying macroeconomic policies.

2.2.2. Empirical Studies for the J-Curve Effect

Certain research has examined the correlation between currency devaluation and the balance of trade in African states, yielding inconclusive results about the validity of the J-curve concept. Abille & Meçik (2023) conducted a panel data analysis of Sub-Saharan countries from 1970 to 2020 employing PMG and MG heterogeneous panel models. Their findings confirmed the existence of the J-curve effect, demonstrating that the trade balance initially worsens after devaluation but subsequently recovers over the long run. In contrast, Okpeku (2022) utilized the DOLS methodology and Toda-Yamamoto analysis to investigate the impacts of devaluation in nine African countries. The results demonstrated that devaluation adversely impacted trade balances over the long run, and the J-curve effect was absent. Mataya and Yeeman (2020) analyzed Malawi's trade balance concerning the recurrent devaluations of the 1980s. Despite evidence of late improvements emerging three years post-devaluation, the overall gains in trade balance were insufficient to offset the initial losses, hence contradicting the J-curve concept. Their research demonstrated that a growth in domestic income positively affected the trade balance, but fluctuations in foreign income had no significant effect. Subsequent studies have provided additional empirical data concerning the uneven impact of exchange rate volatility on the trade balance.

Shuaibu & Isah (2020) utilized linear and nonlinear ARDL models to examine the trade balances of five African nations. The linear model revealed a short-run J-curve in Uganda and a long-run effect in Algeria, but the nonlinear model demonstrated long-run J-curve effects in both Uganda and Algeria, along with short-run effects in South Africa and Uganda. This suggests that it is valuable to include asymmetries in assessing the effects of exchange rates. Nathaniel (2020) examined Nigeria's trade balance with time series data from 1960 to 2016. The research utilized nonlinear ARDL and structural break estimation to demonstrate bidirectional causality between exchange rates and trade balance, suggesting that exchange rate depreciation may be inadequate to rectify trade deficits. The findings align with the J-curve concept; however, they indicate that additional structural economic factors influence the effectiveness of exchange rate modifications.

Asongu et al., (2018) employed the nonlinear ARDL model to analyze the Nigerian economy and discovered that the J-Curve effect manifests solely during asymmetric exchange rate fluctuations, indicating that depreciation and appreciation exert divergent influences on the trade balance. Adebayo (2021) analyzed the CEMAC bloc and determined that, whereas short-term trade balance deterioration followed currency devaluation, long-term enhancement was significantly contingent upon trade openness and institutional quality. In analyzing the South African trade economy, Ummah (2019) utilized the VECM model and presented partial evidence for the J-Curve, with notable variations in impacts among trading partners. These

findings underscore the importance of trade mix and domestic factors in elucidating post-devaluation performance. Musila (2020) discovered that in the East African Community (EAC) nations, the J-Curve phenomenon occurs exclusively in economies characterized by diversified exports and an absence of reliance on inelastic imports. The aforementioned research emphasizes that the manifestation of J-Curve impacts is not assured and is fundamentally dependent on the underlying economic frameworks, export responsiveness, and timely policy interventions.

2.2.3. Empirical Studies for the Marshall-Lerner Condition

Numerous academics have examined the impacts of currency depreciation and exchange rate volatility on trade balances across different economies, yielding diverse outcomes. Mndaka et al., (2022) utilized the ARDL cointegration approach to investigate the presence of the J-curve impact in SADC nations from 1980 to 2018. According to their research, Angola, Comoros, Seychelles, Madagascar, Eswatini, and South Africa exhibit the J-curve effect, but Botswana, the Democratic Republic of the Congo, Lesotho, Malawi, Mozambique, Namibia, Tanzania, and Zambia do not. Breitenbach & Amaral, (2021) examined the Marshall-Lerner condition for the "Fragile Five" economies—Brazil, India, Indonesia, South Africa, and Turkey—utilizing the ARDL Bounds methodology to estimate distinct export and import demand functions. The findings provided minimal evidence supporting the Marshall-Lerner criterion in these countries' economies, with Turkey as the only exception, and also indicated issues of model misspecification. Similarly, Breitenbach & Amaral, (2021) examined the correlation between trade balance and currency exchange rate in Côte d'Ivoire from 1975 to 2017 using cointegration and ARDL bounds tests. The analysis revealed that domestic income adversely affects the trade balance both in the short and long term, whereas a depreciation of the real exchange rate significantly improves the trade balance, suggesting that exchange rate adjustments may effectively enhance trade performance.

Obadan and Ugu (2022) tested the reaction of Nigeria's trade balance to exchange rate shocks using nonlinear ARDL techniques and found that MLC holds only partially, with robust asymmetries between depreciation and appreciation effects of currency. In a similar study, Maru Ayinewa et al., (2024) analyzed the trade sector of Ethiopia and concluded that the MLC is not satisfied based on the low-price elasticity of exports, which are primarily composed of primary goods, and the high inelasticity of required imports. Mensah et al., (2022) examined Ghana's external trade with vector error correction models (VECM) and found that even if the long-run relationship between real exchange rate and trade balance was strong, the MLC condition was not met since import demand was highly inelastic. The inference is that currency devaluation as a means of balancing trade is constrained in its effectiveness in structurally rigid trade baskets of economies. Besides, Agyapong (2023) emphasized complementary policies such as industrial

development, trade facilitation, and export diversification as crucial conditions for the achievement of the MLC. Generally, these studies indicate that devaluation alone is not often sufficient to improve trade balances in developing economies unless complemented with structural reforms that enhance export responsiveness and reduce import dependency.

2.2.4. Impact Of Currency Devaluation on Trade Balance

Recent empirical studies from across Africa yield mixed results on the impact of currency devaluation on trade balance, varying with country-specific circumstances and composition. (Odionye & Chukwu, 2021) show that although the effect of currency devaluation is significant on trade balances in Ghana, Malawi, and Mozambique, the impact is extremely minimal in Nigeria, Kenya, and Tanzania, especially when there are over 14.7% yearly devaluations, which are likely to worsen trade performances. Similarly, Mndaka et al., (2022) confirm the Marshall–Lerner condition and J-curve effect in a sample of SADC countries, such as Angola and South Africa, but fail to observe any presence of evidence in Malawi and some others, and determine that devaluation alone is generally not sufficient. Zegeye & Alemu, (2025) also reproduce this ambiguity by stating that while in Ethiopia devaluation promotes trade and output by way of external channels, it is also associated with contractionary effects. These are augmented by Ren and Sakouba (2024), who observe the J-curve effect in Eastern Africa such that initial post-devaluation trade deficits are followed by subsequent improvement. An extended NARDL study (2022) of eight top African economies, on the other hand, finds that depreciation can improve short-run trade balances but has negative long-run implications, particularly in structurally inflexible economies of Kenya, Nigeria, and South Africa. Together, these studies emphasize that the performance of currency devaluation as a tool of trade balance in Africa critically depends on Africa-specific structural, policy, and external conditions.

2.2.5. Impact of Inflation Rate on Trade Balance

Current evidence from various African countries indicates contrasting outcomes regarding the impact of inflation on trade balance. Mbwambo and Mchukwa (2024), using a Vector Error Correction Model (VECM) for Tanzania from 1990–2020, demonstrate that inflation has a positive impact on the trade balance in the long run, yet exchange rate depreciation is negative, with the short run demonstrating the typical J-curve pattern. Conversely, Kara (2023), using an ARDL cointegration method for Uganda's trade statistics, finds no long-run relationship between inflation and trade balance to be statistically significant, which suggests that the effect of inflation can be minimal in Uganda's case. Consistently, Ndou (2021) ARDL bounds test of South Africa's 1970– 2019 data shows that domestic income, while having the strongest effect, also lags behind exchange rate movements in being a major long-run

driver of the trade balance. On the other hand, a study on Sierra Leone concludes that inflation is likely to worsen the trade balance due to its pass-through implication on import prices and money over-supply, thereby emphasizing the destabilizing effect of inflation on the external trade balance.

2.2.6. Impact of Trade Openness on Trade Balance

Recent empirical research in Africa has shown that trade openness has the tendency to enhance trade performance and balance in the external sector, but outcomes may vary in the short run. Abille and Meçik, (2023) find that, for ECOWAS and SADC countries, trade openness positively affects trade balance in the long run, as stipulated by the J-curve hypothesis, where improvement or worsening occurs before the eventual improvement in some nations. Similarly, Ntezimana & Mulyungi (2020) show that greater trade-to-GDP ratios in Sub-Saharan Africa reinforce economic integration but also possibly more susceptible in terms of higher debt, thereby offering a trade-off in external sector behavior. In Malawi, Kawaye (2021) shows that liberalization during 1988-2014, representing higher openness, considerably increased economic growth, which implies improved export competitiveness and potential improvements in trade balance. Malefane, (2020) agrees with this view, proving that openness to trade has a positive effect on both long- and short-term growth since it boosts Botswana's export ability. Even though other broader panel studies (1990–2017) for SSA do not measure trade balance explicitly, they ascertain that openness, alongside FDI and institutional quality, propels economic growth and higher integration, primary factors that indirectly play in maintaining trade balance.

2.2.7 Trade Openness and Its Impact on Trade Balance

Current empirical research highlights that trade relations significantly influence trade balance outcomes among African economies. Abille & Meçik, (2023), using panel data for ECOWAS and SADC economies, confirm a long-run positive impact of trade openness on trade balance by the J curve phenomenon, short-term deterioration is typically followed by persistent improvement. Ntezimana & Mulyungi, (2020), employing panel ARDL analysis for Sub-Saharan Africa, note that while higher trade-to-GDP ratios are concomitant with higher economic integration, they also expose countries to debt vulnerabilities, emphasizing openness as a double-edged sword in the performance of the external sector. In Malawi, Kawaye (2021) confirms that liberalization between 1988 and 2014 recorded positive economic growth via increased export competitiveness, thus revealing indirect but substantial gains in trade balance. Confirming the same, Malefa Rose Malefane and Camarero (2020) demonstrate in Botswana that trade openness, more specifically through exports, boosted short- and long-term economic

performances, reflecting possible gains in external balances (Malefane, 2020a). Finally, SSA large panel analyses between 1990–2017 associate openness with improved growth, FDI, and quality of institutions, determinants that indirectly cause stronger trade balances (Abille & Meçik, 2023). Overall, these findings point out that although trade expansion facilitates export ability and long-term trade balance gains, risks such as debt accumulation and short-term adjustment must be managed strategically.

2.2.8 GDP Per Capita Growth Impact on Trade Balance

Recent empirical evidence reveals a strong and general positive correlation between GDP per capita growth and the performance of the trade balance in African economies. A gravity-model analysis of Africa OECD and Africa China trade reveals that richer nations (higher GDP per capita) export more and import less, particularly from OECD partners, as a sign of greater production capacity and import substitution with domestic supply (Lemi, 2019). IMF benchmarking also highlights that in recent times, the effect of GDP per capita on bilateral trade flows has gained strength relative to aggregate GDP, signifying the growing significance of income-driven trade dynamics. In Sacu countries such as Lesotho and Namibia, causality has been observed where exports cause growth in GDP per capita, though reverse causality is weaker, signifying those growing incomes facilitate growing exports through higher supply capacity for exports. Collectively, the studies reveal that productivity gains and value-added export development initiatives aimed at GDP per capita augmentation can assist in enhancing trade balances indirectly through the improvement of the export base, reducing the reliance on imports, and reorienting trade patterns in surplus directions.

2.2.9. Impact of External Debt Shocks on Trade Balance

Existing evidence shows that there is a strong negative effect of external debt on the trade balance of African nations. UNCTAD data confirm that external debt as a share of GDP in Africa rose from some 19% in 2010 to nearly 29% in 2022, while about exports it rose from 74.5% to 140%, significantly eroding foreign exchange reserves and limiting financing of imports and debt repayment (unctad.org). A comprehensive review of Sub-Saharan economies from 1990 through 2023 using panel ARDL models indicates that high external debt significantly constrains long- term growth, implying low export capacity and spillover effect on trade balance Sandow et al., (2022) (Sandow et al., 2022). Moreover, UNCTAD argues that depreciated currencies raise the foreign-currency-denominated debt servicing domestic cost, putting a strain on FX reserves and amplifying external imbalances (unctad.org). Country-level evidence, such as Kenya's rising interest charge on foreign debt (1991–2015), demonstrates a

high negative correlation between the debt servicing cost and GDP growth, thereby indirectly undermining trade balance by slowing production and export capability (Sammy Kemboi Chepkilot 2024). Lastly, IMF and World Bank reports indicate that overborrowing (at levels of up to 17% of revenues in the majority of SSA countries) and falling currencies tighten fiscal space and, in so doing, expand current account deficits. Together, these findings communicate that external debt shocks, through debt accumulation, valuation changes, and debt service obligations, erode trade balance by restricting importation, decelerating export performance, and destabilizing the external accounts.

2.3 Novelty of the Study

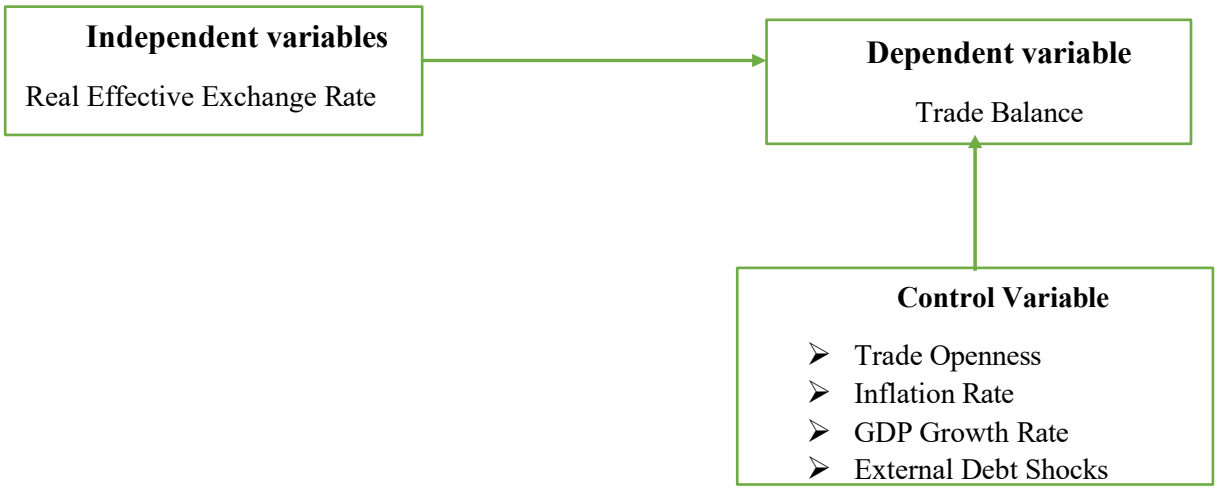
I have recognized several key gaps in research that my paper aims to bridge. First, the majority of current research on Malawi, for example, Mataya & Yeeman (2020), fails to consider recent economic events like the 2012 and 2023 devaluations of the currency, the pandemic shocks, or the chronic macroeconomic volatility, all of which are included in my study. I also noticed that previous studies had not directly tested if the import and export requirements of Malawi are elastic enough to satisfy the Marshall-Lerner condition, and therefore, conclusions about devaluation's effectiveness were largely speculative. I bridge this gap by providing an empirical estimate of the elasticity. I also noticed a general lack of studies looking into the Malawian short-run dynamics of the trade balance as well as the J-Curve hypothesis. Applying an ECM in the ARDL model, I provide the initial econometric proof of the presence of a J-Curve effect. Another, and perhaps more significant, gap that I filled was the neglect of structural and policy-driven constraints, such as Malawi's excessive reliance on inelastic imports and low-cumulating capacity, which I added to supplement the analysis. Although nonlinear models like NARDL have been utilized in other African economies (e.g., Nigeria, Uganda), these types of methods are non-existent in Malawi, and I mention this as a future research direction. Lastly, I learned that few policy decisions in Malawi do not appear to be based on empirical trade elasticity evidence because recurring devaluations have not yielded expected trade balance improvements. My research identifies this gap in policy implementation and fills it with data-supported observations.

2.4 Conceptual Framework

This study seeks to ascertain whether a correlation exists between the trade balance and the effective actual exchange rate, both of which are independent variables. The analysis will include control variables, including inflation, real interest rate, budget deficit, foreign government debt, and adjusted net national income per capita. Theoretical analysis and actual

research substantiate the claim that currency devaluation will adversely impact the trade balance. The M-L condition and J-C phenomenon are reportedly non-transferable in Malawi. In this chapter, the author presents the theoretical framework as a conceptual model to analyze the relationship between currency devaluation and trade balance. The study model, incorporating several elements, is depicted as a conceptual framework illustrating the relationships among the independent, dependent, and control variables as proposed in the hypothesis.

Figure 2.1: Conceptual framework of the study



2.5 Overview of Malawi's Economic Performance

Malawi's economic trajectory from 1980 to 2025 has been characterized by persistent instability, largely driven by exogenous shocks, climate-related catastrophes, and structural rigidities. In 1980, Malawi recorded a meager GDP growth rate of 0.41% (MacroTrends, 2025). The early 1990s were notably turbulent, with a contraction of -10.24% in 1994 due to political and economic transitions, before rebounding sharply to 16.73% in 1995 following post-drought recovery (MacroTrends, 2025). The early 2000s experienced an average growth of around 2.5%, constrained by macroeconomic instability and consecutive droughts. Malawi experienced a temporary economic boom between 2007 and 2009, supported by favorable agricultural performance and high commodity prices, recording 9.6% growth in 2007 (Igue & Ogunleye, 2014). However, the COVID-19 pandemic in 2020 slowed down growth to 0.8%, and despite 2023 recording a modest recovery to 1.5%, the economy remained exposed to climate shocks like Cyclone Freddy and high inflation (African Development Bank, 2024). The forecast for 2024 and 2025 is for modest growth of 3.3% and 3.8%, respectively, depending on agricultural production and macroeconomic stabilization (African Development Bank, 2024).

Despite modest growth projections, public debt in Malawi has risen to over 65% of GDP, which has amplified sustainability concerns (World Bank, 2024). Inflation remains elevated,

and food and fuel price volatility is squeezing household incomes. Fiscal pressures are rising due to mounting recurrent spending and declining external budget support. Structural challenges in energy, logistics, and irrigation continue to restrain productivity, especially in rural communities. Unemployment, particularly among young people and graduates, is high, undermining inclusive growth. The country's poverty rate, which remains above 50%, illustrates ingrained inequalities and limited economic opportunities (UNDP, 2024). All of these point to the urgent need for structural reforms, economic diversification, and climate resilience to achieve sustainable development.

2.6. Structure and Composition of Malawi's Exports and Imports

Malawi's export structure remains narrow, dominated by a few primary commodities. As of 2024, tobacco still contributes over 50% of export earnings, exposing the economy to global price shocks, anti-tobacco campaigns, and declining global demand (Trade Map, 2025). Other exports such as tea, sugar, legumes, coffee, and macadamia nuts have gained ground but remain insufficient to diversify the export base meaningfully. Conversely, Malawi imports a wide array of essential goods, including fuel, fertilizer, pharmaceuticals, machinery, and maize, especially during periods of drought. This import dependency renders the country's trade balance sensitive to global price dynamics and exchange rate volatility. Due to poor industrialization and limited value addition, Malawi cannot exploit currency depreciation for export competitiveness, thereby limiting the responsiveness of trade to exchange rate movements (Igue & Ogunleye, 2014). Consequently, the Marshall-Lerner condition requirements elasticity of demand for exports and imports is by no means met in the short run.

The persistent trade deficit, over 20% of GDP in 2023, continues to pose pressure on foreign reserves and exchange rate stability (Reserve Bank of Malawi, 2024). Intra-regional trade within SADC and COMESA is underutilized and hindered by non-tariff barriers, inadequate infrastructure, and bureaucratic delay. Although Malawi has signed the African Continental Free Trade Area (AfCFTA), remittances have been slow due to low productive capacity and a lack of market preparedness (UNECA, 2024). Besides, inadequate institutional support for exporters, reduced access to trade finance, and unstable policy volatility deter private sector investment in export-oriented sectors. Without structural reforms, improved logistics, and agro-industrial development, Malawi's trade imbalance and vulnerability to external shocks are likely to persist.

2.7. Trade Balance Trend and Trade Performance

Malawi has maintained a trade deficit since 1980. It was in the range of USD 144 million at the time (Country Economy, 2025). The 1990s were characterized by worsening deficits,

culminating in a peak of USD 339 million in 1992 (Country Economy, 2025). The trend continued in the 2000s with deficits averaging about USD 200 million a year. Malawi experienced a historic monthly deficit of USD -347.9 million in April 2021, driven by import growth and stagnant exports (CEIC Data, 2025). In November 2024, the deficit narrowed to USD 152.1 million, courtesy of decelerating imports but not significant export growth (CEIC Data, 2025). Imports for the month were USD 300.9 million against exports totaling only USD 149.2 million, indicating the unevenness of the trade (CEIC Data, 2025).

Persistent deficits have strained Malawi's foreign exchange reserves, contributing to frequent currency depreciations and inflationary pressures (Reserve Bank of Malawi, 2024). The reliance on donor inflows and concessional borrowing to finance the current account has further exposed the economy to external vulnerabilities. Despite several trade policy reforms, including tariff rationalization and export promotion schemes, the country has not significantly improved its export competitiveness. Supply-side constraints such as low industrial productivity, poor transport infrastructure, and limited technological capacity continue to undermine export diversification. Addressing the trade deficit will require strategic investment in agro-processing, regional value chains, and trade facilitation mechanisms to boost Malawi's export base sustainably.

2.8. Exchange Rate Trend and Trade Balance Performance

The Malawian kwacha (MWK), which came into circulation in 1971, has been significantly devalued. Initially pegged on a basket of currencies, it was floated in 1994, leading to higher volatility (Wikipedia, 2025). Its significant devaluations were in 2012 (34%), 2022 (25%), and 2023 (44%), all to react to foreign exchange shortage and to balance external imbalances (Wikipedia, 2025). All of these devaluations notwithstanding, the much-needed improvement in the trade balance has eluded it. Malawi's exports are largely inelastic, and its imports are essential goods, fuel, medicines, and food, rendering them relatively non-responsive to price changes. Additionally, devaluation has often triggered inflationary spirals, with inflation jumping to 28% in 2023 from 20.8% in 2022 (African Development Bank, 2024). The premium on the exchange rate, while temporarily downgraded to 4.1% following November 2023 devaluation, widened to 12.1% towards the end of the year, indicating ongoing market inefficiencies (African Development Bank, 2025).

Systematic currency depreciation has also disempowered purchasing power, increased poverty, and increased the business cost of doing business, particularly for import-based industries (IMF, 2024). Additionally, investor confidence remains fragile despite foreign exchange rationing and policy uncertainty. While exchange rate flexibility is a key pillar of macroeconomic adjustment, its effectiveness in Malawi has been hindered by inherent

production bottlenecks and limited access to foreign markets. Unless supported by complementary export promotion, fiscal consolidation, and institutional development, depreciation of the kwacha is unlikely to yield long- term external balance benefits (World Bank, 2024). Hence, monetary policy in isolation will not solve trade imbalances without achieving a wide-based economic transformation.

2.9. Exchange Rate Regime and Policy Framework in Malawi

Malawi's exchange rate policy has evolved from a fixed peg to a more market-responsive regime. Until 1994, the kwacha was fixed to a basket of currencies, mainly the US dollar and South African rand. In response to worsening trade deficits and external pressure, the kwacha was floated in 1994 (IMF, 2023). Since then, the country has experimented with managed floats, direct interventions, and periodic devaluations. The Reserve Bank of Malawi (RBM) remains the primary institution for exchange rate management. While policy aims to preserve macroeconomic stability and external competitiveness, it remains reactive and hampered by rudimentary monetary transmission channels and donor dependence (World Bank, 2024). The absence of forward markets and hedging instruments further exacerbates exposure to exchange rate risk and opens businesses and traders to volatility.

Furthermore, discontinuous communication and abrupt policy changes at times generated speculative pressures and divergence of parallel market premiums (African Development Bank, 2024). Exchange rate misalignment has also led to chronic foreign exchange shortages, which have hindered imports of strategic commodities like fuel and fertilizer. Second, the RBM's weak reserve position, just 1.5 months of import cover at end-2023, reduces the strength of its ability to intervene in foreign exchange markets (IMF, 2024). Macroprudential policy alone cannot shield the economy from shocks from outside without robust macroprudential frameworks and a wider domestic financial market. Therefore, Malawi's exchange rate arrangement success depends on broader structural reforms, including fiscal discipline, diversification of exports, and credibility of monetary policy (World Bank, 2024).

2.10. Institutional Quality, Governance, and Trade Policy Evolution

Malawi's institutional landscape has long been characterized by weak governance, bureaucratic inefficiencies, and limited state capacity. These challenges have undermined the effective implementation of trade policies. While the country has undertaken trade liberalization under the auspices of the World Trade Organization (WTO) and regional blocs like COMESA and SADC, enforcement remains inconsistent. Trade policies in Malawi have historically emphasized export promotion, but have lacked comprehensive support for industrialization and value addition. Institutions such as the Malawi Investment and Trade Centre (MITC) and the

Ministry of Trade have limited impact due to funding constraints and poor inter-agency coordination (World Bank, 2024). Furthermore, corruption and rent-seeking behavior weaken regulatory enforcement, contributing to a sub-optimal trade environment.

It results in poor policy coherence and implementation gaps due to the absence of a national trade facilitation strategy and weak monitoring mechanism (African Development Bank, 2024). Furthermore, the limited judicial autonomy and prolonged adjudication of commercial disputes lower investor confidence and increase transaction costs (Transparency International, 2024). Public-private dialogue remains weak, limiting contributions of key stakeholders such as exporters and SMEs towards reform efforts related to trade (MITC, 2023). Despite many trade agreements, Malawi cannot realize the full potential of preferential market access due to poor product quality, ineffective certification procedures, and poor transport infrastructure (UNCTAD, 2024). Institution-building and enhancing governance is therefore imperative for translating trade policy into meaningful economic transformation.

2.11.Regional Comparison: Malawi vs. SADC and COMESA Peers

In the case of Southern Africa, Malawi lags some of its SADC and COMESA neighbors in terms of export diversification, infrastructure, and institutional readiness. While also being resource-dependent, other countries like Zambia and Tanzania have diversified exports and industrialized more (AfDB, 2024). For example, Zambia has utilized copper exports to build up foreign reserves and invest in energy infrastructure, while Tanzania has expanded its export base to include tourism, horticulture, and manufactured products. Malawi, however, remains extremely reliant on primary agriculture and hence more susceptible to climate variability and commodity price volatility (Trade Map, 2025). Further, the landlocked position of Malawi and its underdeveloped road transport infrastructure raise the regional logistics competitiveness trade costs against coastal comparators. The elevated trade costs place Malawi at the rear in regional and global value chains.

Malawi is significantly lagging behind Zambia and Tanzania as far as customs efficiency, infrastructure quality, and reliability of shipment are concerned, based on the World Bank's Logistics Performance Index (LPI) (World Bank, 2024). Not only do these infrastructural deficits increase the business cost, but they also delay time-sensitive exports like horticultural produce. Furthermore, Malawi’s limited participation in regional manufacturing clusters, such as those emerging in South Africa and Mozambique, reflects weak industrial linkages and limited FDI attraction (UNCTAD, 2024). While initiatives like the Malawi 2063 vision aim to reposition the country as an industrializing and export-driven economy, implementation has been sluggish due to policy inconsistency and capacity constraints (NPC Malawi, 2023). Only by resolving these imbalances will Malawi be in a position to integrate more in regional trade under the AfCFTA and SADC platforms.

CHAPTER III
METHODOLOGY

This chapter gives a general overview of the study's plan, beginning with the research approach and its paradigm, research design, data collection techniques, and participant selection. Moreover, this chapter also gives a comprehensive explanation of the research instrument use, data analysis method, tools used in data analysis, and finally, the ethical considerations in the research process.

3.1 Research Type

This study offers an empirical and analytical assessment of the impact of currency depreciation on Malawi's trade balance to validate the Marshall-Lerner condition and the J-Curve effect. This aligns with the positivist research paradigm, which focuses on objective measurement and hypothesis testing by statistical analysis (Creswell, 2014). The research is empirical as it utilizes observable and verifiable facts, specifically secondary macroeconomic data.

3.2 Research Approach

This study employs a power-based quantitative research approach utilizing time series econometrics, especially the ADRL limits test method developed by Pesaran, Shin, and Smith (2001), which is appropriate for small samples and mixed integration orders (I(0) and I(1)). The ARDL model provides long-term estimates of macroeconomic variables, whereas the Error Correction Model (ECM) analyses short-term dynamics and the pace of adjustment to long-term equilibrium (Bannerjee et al., 1998). To augment the reliability of the cointegration findings, the investigation utilises the Johansen cointegration method as an ancillary strategy (Theory et al., 1995), hence attaining enhanced internal validity via methodological triangulation (Brandao, 2022). Diagnostic assessments, including the Jarque-Bera test for normality, the Breusch-Godfrey LM test for autocorrelation, and the ARCH test for heteroscedasticity, are conducted to validate the model assumptions (Enders & Strader, 2015). The research confirms the Marshall-Lerner condition by assessing if the elasticities of export and import demand exceed one, and investigates the J-Curve theory by analysing the trade balance's reaction to currency depreciation (Bahmani- Oskooee & Ratha, 2004).

3.3 Data and Data Sources

The data utilized in this study consists of annual time series from Malawi, covering the period 1981-2023, which is sufficient to capture long-run economic relationships

Table 3.1: Summary of Variables, Definitions, Proxy Measures, and Data Sources

Variable	Proxy Measure	Data Source
Trade Balance (TB)	Trade balance in current US dollars	World Bank, IMF, NSO
Real Effective Exchange Rate (REER)	Index (2010 = 100)	IMF, World Bank, and CEIC data
Inflation Rate (INF)	Consumer Price Index (CPI), annual % change	World Bank World Development, NSO, and iCalculator
GDP Growth Rate (GDPGR)	Annual percentage growth of real GDP	World Bank, NSO, UN data, Index Mundi, and World Economics
External Debt (ED)	External debt (% of GNI)	World Bank International Debt Statistics; IMF WEO Database
Trade Openness (TO)	(Exports + Imports) / GDP	World Bank, UNCTAD, NSO

Source: Author's compilation

3.4 Object and Subject of Research

3.4.1 Research Subjects

This quantitative research focuses on the macroeconomic factors of Malawi that offer empirical estimations as a foundation. The sample comprises annual time series data regarding Malawi's economic and trade performance from 1981 to 2023. The principal economic variables included in the sample are trade balance, real effective exchange rate (REER), inflation rate, GDP growth rate, foreign debt, and trade openness. The selected variables are pertinent to the theoretical frameworks of the Marshall-Lerner condition and the J-Curve hypothesis (Bahmani-Oskooee & Gelan, 2017). The study does not involve human participants and utilises macroeconomic datasets as units of analysis, obtained from reputable secondary sources, including the World Bank's World Development Indicators (World Bank, 2023), International Monetary Fund databases (IMF, 2023), and reports from Malawi's National Statistics Office (NSO Report, 2023.

3.4.2 Object of Research

This research aims to analyse the economic phenomenon of currency devaluation and its effects on a nation's foreign trade performance. The study aims to examine the effects of exchange rate volatility, particularly the devaluation of the Malawian kwacha, on the country's

trade balance in both the short and long term. The Marshall-Lerner condition asserts that currency depreciation enhances the trade balance when the combined price elasticities of exports and imports surpass one, whereas the J-Curve effect suggests an initial deterioration in the trade balance, followed by eventual improvement due to devaluation (Schneebaum, 2016). The research topic corresponds with the central problem statement and facilitates the formulation of comprehensive policy plans for currency exchange management and trade dynamics in developing nations such as Malawi.

3.5 Data Collection Techniques and Analysis Tool

This research utilized secondary time-series data obtained from esteemed worldwide databases, including the World Bank's WDI, IMF, and UNCTAD, along with national statistical offices. These databases were chosen for their reliability, frequent updates, and extensive range of development and economic statistics (Enders & Strader, 2015). The study utilized the EViews 10 econometric program to enhance data analysis, as it is a comprehensive software ideally suited for time-series analysis. EViews streamlined the implementation of numerous diagnostic and stability assessments, including serial correlation, heteroskedasticity, normality, and parameter stability checks (D. N. Gujarati & Porter, 2010). The tools facilitated the assurance of model robustness and improved the empirical dependability of the results.

3.6. Data Analysis Techniques

The research used the Autoregressive Distributed Lag (ARDL) Model framework in conjunction with Vivi Elsye Liau & Caroline Geetha, (2020) mathematical theory of linear processing to analyze the co-integration of currency devaluation and trade balance. It posits that all variables are either I(0) or I(1), and a linear combination with a lower order of integration indicates co-integration of parameters. If the model includes an I(1) series, we utilize the VECM; if it encompasses both I(0) and I(1) series, we employ the ARDL. The model specification is presented in the following functional form.

$$TB = f(REER, ED, TO, INF, GDPGR) \quad (1)$$

Where: TB denotes the Trade Balance (Current US$), REER represents the Real Effective Exchange Rate (Real Effective Exchange Rate index (2010=100)), and INF indicates the Rate of Inflation (Consumer prices (annual% %)). GDPGR denotes Economic Growth (GDP Growth Rate (%)), ED represents external debt shocks (% of GNI), and TO signifies Trade Openness.

3.6.1. Model Specification

The study begins with the functional specification:

$$TB = f(REER, ED, TO, INF, GDPGR) \quad (2)$$

To estimate the aforementioned equation, we converted the functional form into an estimated model to fulfill the primary purpose of this study; we define model 3.1 as:

$$TB_t = \alpha_0 + \alpha_1 REER_t + \alpha_2 ED_t + \alpha_3 TO_t + \alpha_4 INF_t + \alpha_5 GDPGR_t + \mu_t \ldots\ldots\ldots\ldots (3)$$

3.6.2. Estimation Technique: ARDL Model

The ARDL bounds testing approach (Pesaran et al., 2001) is utilised due to its sensitivity to tiny samples and its ability to accommodate a combination of I(0) and I(1) variables. The ARDL model estimates both short-run dynamics and long-run equilibrium relationships through the Unrestricted Error Correction Model (UECM). The equation is situated inside the framework of the ARDL-UECM as seen below:

$$\Delta TB_t = \alpha 1 + \sum \theta ij \Delta X_{t-j} + \sum \vartheta i X_{t-1} + \varepsilon t \ldots\ldots (4)$$

Where Δ denotes the first difference operator, X includes REER, ED, TO, INF, GDPGR, and the lag length is selected based on the Schwarz Information Criterion (SIC).

3.6.3. Stationarity test

The Augmented Dickey-Fuller (ADF) test was employed to determine the order of integration for each variable in the model. This methodology is essential in time series econometric modelling since it diminishes the probability of inaccurate regression results that may arise from the utilisation of non-stationary data (Dickey & Fuller, 1979). The ADF test determines if a time series is stationary at level [I(0)] or achieves stationarity after first differencing [I(1)]. A stationary series has consistent statistical features over time, including mean, variance, and autocovariance, indicating the absence of temporal trends or seasonal effects. The requirement for maintaining stationarity arises from the requirements for precise inference in time series modelling, which depends on the stationarity of the pertinent variables. The ADF test serves as a reliable diagnostic instrument, enhancing the validity and precision of empirical research outcomes. This study employed the ADF test to assess the stationarity of variables by the methodological framework established by Cheng et al. (2015). A variable is deemed stationary if the ADF test has a p-value below the 0.05 significance level, hence rejecting the null hypothesis of a unit root. If the p-value exceeds 0.05, the null hypothesis is not rejected, indicating potential non-stationarity in the series.

3.6.4. Lag selection criteria

Lag is a time discrepancy between two observations in a sequence. The selection of lag is

crucial in the Vector Error Correction Model, as an inappropriate choice may result in erroneous outcomes and autocorrelation issues. The selection process for lag encompasses multiple criteria, including the Hannan-Quinn Information Criterion (HQIC), Bayesian Information Criterion, Schwarz Information Criterion (SIC), Likelihood Ratio (LR), and Akaike Information Criterion (AIC). This 42-year study examines the Akaike Information Criterion (AIC) to ascertain the ideal number of lags, as AIC is considered the most appropriate criterion for studies with 60 or fewer data points (Janjua et al., 2014).

3.6.5. Cointegration

This assessment determines if non-stationary variables demonstrate a consistent long-term relationship. This test is crucial in the Autoregressive Distributed Lag Model as it ensures equilibrium between the long-term and dynamic short-term models when addressing non-stationary data. After the establishment of integration orders, the Autoregressive Distributed Lag (ARDL) bounds testing methodology for co-integration was employed. The method is highly convenient as it can be employed regardless of whether the regressors are solely I(0), solely I(1), or a combination of both, as long as none are integrated of order two or higher (Pesaran et al., 2021). The null hypothesis concerning the lack of co-integration is evaluated using an F-statistic. The null hypothesis is rejected when the computed F-statistic exceeds the highest critical value established by Mndaka et al. (2022), indicating a long-term link among the variables. If the F-statistic falls below the lower criterion, co-integration is not confirmed. Outcomes inside the constraints yield ambiguous findings

3.6.6. Long-Run and Short-Run Estimation

Upon establishing co-integration, the long-term coefficients are derived using the ARDL model estimation to elucidate the persistent correlations among the variables. The coefficients demonstrate the responsiveness of Malawi's trade balance to fluctuations in independent variables, including the real effective exchange rate, inflation, and GDP growth over time (Pesaran et al., 2021). The Error Correction Model (ECM) is employed to examine short-term dynamics and the system's reversion to long-term equilibrium following a disturbance. The ECM includes an error correction term (ECT) based on the long-run equation, which measures the rate at which deviations from the long-run relationship are corrected in each period. A substantial and negative ECT coefficient ensures that the variables are converging to the long-run equilibrium and signifies the extent of disequilibrium corrected in each period (Bannerjee et al., 1998).

3.7. Residual Diagnostic of the Model

Autocorrelation, heteroskedasticity, and stability were utilised to assess the model's quality. Consequently, by examining the residuals, the study utilised the same test to assess the model's goodness of fit. A normality test was performed to ascertain whether the data followed a normal distribution.

3.7.1 Stability test

The study performed a stability test to ascertain the model's stability. Given that the model was ARDL, CUSUM and CUSUMQ tests were employed to evaluate the temporal stability of the estimated parameters. These are graphical metrics that aid in assessing the stability of coefficients during the sample period (Brown, 2016).

3.7.2 Serial correlation

The Breusch-Godfrey LM test was employed to detect serial correlation in the residuals. It is essential to verify if the model mistakes are randomly distributed across time (Godfrey, 1978). The alternative hypothesis posits that residuals exhibit serial correlation, while the null hypothesis asserts that they do not. Acceptance of the null hypothesis will fulfil this assumption. This is due to the probability value exceeding the significance level of 0.05.

3.7.3. Heteroscedasticity Test

A heteroscedasticity test, e.g., the Breusch-Pagan-Godfrey test, was used to verify non-constant variance in the error terms, which can influence the efficiency of the estimated parameters (Breusch & Pagan, 2008).

CHAPTER IV
RESEARCH FINDINGS AND DISCUSSION

This chapter presents the research findings and the discussion. The first section presents the results of a comprehensive data analysis in which both descriptive and inferential statistics were analysed. Marshall-Lerner condition and J-Curve were tested along with residual diagnostic. The second section focuses on discussions, where results have been explained in great detail.

4.1 Results

4.1.1: Descriptive Statistics

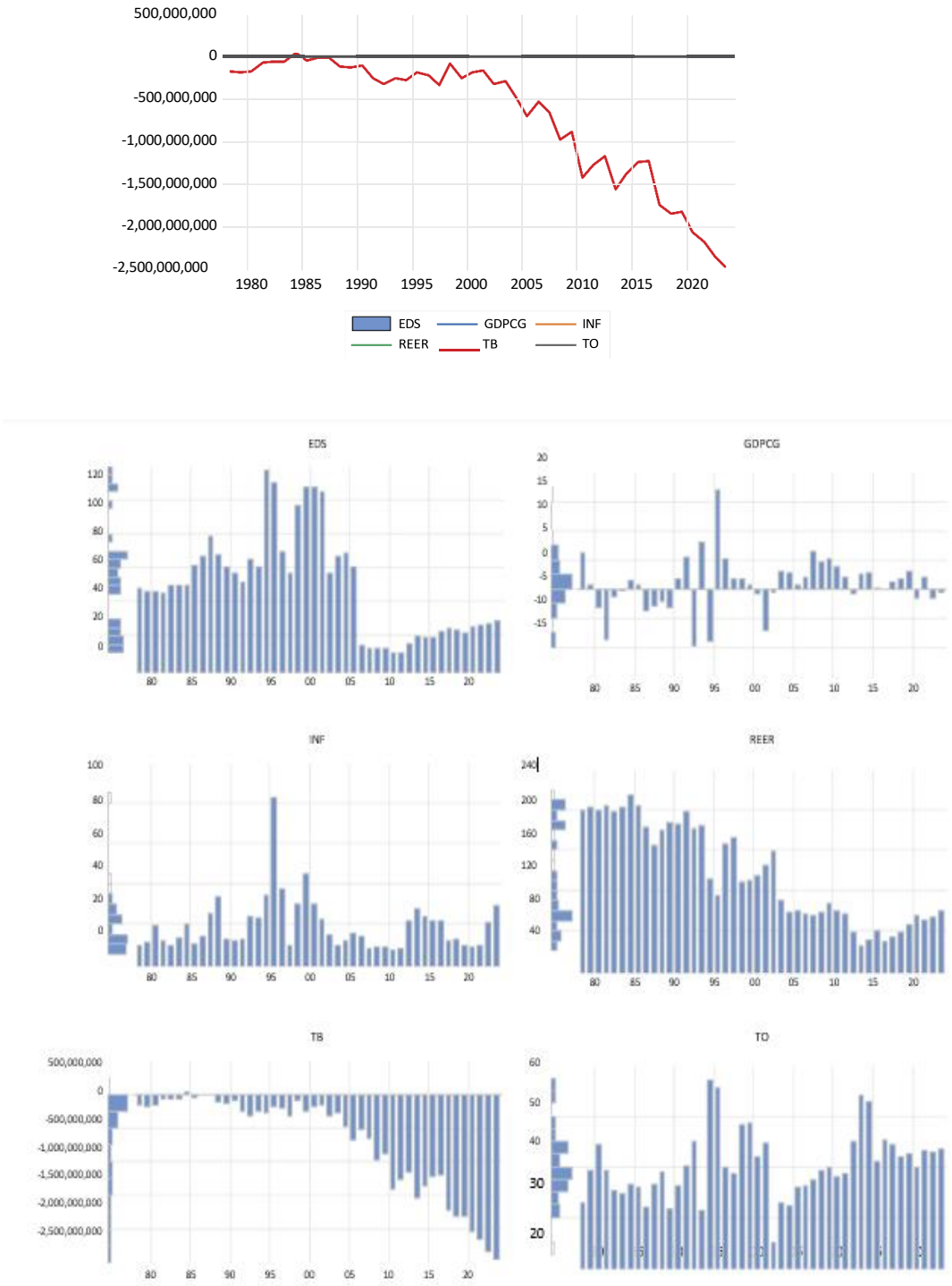
The descriptive statistics based on 45 observations offer a compelling snapshot of Malawi's macroeconomic landscape over the study period. The trade balance (TB) exhibits a considerable mean deficit of approximately USD 703 million, with high variability (standard deviation of USD 733 million), underscoring persistent external sector imbalances and volatility in the country's international trade position. The real effective exchange rate (REER) of 136.2 (2010=100) reveals moderate currency competitiveness, while a huge range of 65.35 to 214.67 reflects enormous exchange rate volatility that can create trade dynamics. Average inflation of 19.04% is characteristic of high inflation, while a sharp jump to over 83% reflects episodes of price volatility likely caused by macroeconomic shocks or policy inconsistency. Openness to trade was on average 40.36%, and with relatively low dispersion, it suggests consistent integration with the global market. The growth in GDP per capita was on average a moderate 0.72%, which suggests sluggish economic growth and structural constraints, though the range of -9.99% to 16.90% suggests contraction and expansion phases. Lastly, external debt shocks (EDS) had a mean of 49.74% of GDP with a very high standard deviation, indicating the country's exposure to external financing shocks and possible debt sustainability threats. These figures together paint the picture of a developing economy with macroeconomic instability, external sector weaknesses, and uneven but moderate growth.

Table 4.1. Summary for descriptive statistics

Variable	Abbreviation	Mean	Standard Deviation	Minimum	Maximum
Trade Balance	TB	-7.03E+08	7.33E+08	-2.47E+09	3.52E+09
Real Effective Exchange Rate	REER	136.2193	48.6979	65.3478	214.6668
Inflation	INF	19.0385	13.3271	7.4116	83.3258
Trade Openness	TO	40.3625	6.6177	24.9049	56.9802
GDP Per Capita Growth	GDPCG	0.7162	4.6442	-9.9923	16.8988
External Debt Shocks	EDS	49.7398	30.1225	10.1862	117.5124

Source: Author's computation from EViews' results

Figure 4.1: Descriptive Statistics



4.1.2. Model Pre-testing

The following are the pre-assumptions

4.1.2.1. Correlation matrix of independent variables

The correlation matrix was employed to evaluate the potential existence of

multicollinearity among the independent variables of the study. Table 4.2 below illustrates that all correlation coefficients are far below the traditional threshold of ±0.8, signifying a lack of linear relationship between the variables. This signifies that each variable individually contributes to the model with low influence from others, hence reducing the likelihood of multicollinearity, which can skew regression outcomes and undermine the validity of conclusions. Specifically, metrics such as the Real Effective Exchange Rate (REER), inflation (INF), trade openness (TO), external debt stock (EDS), and GDP per capita growth (GDPCG) exhibit weak to moderate interrelationships with one another.

Table 4. 2.: Correlation matrix

	INF	**REER**	**TO**	**EDS**	**GDPCG**
INF	**1**				
REER	-0.0184	**1**			
TO	0.3179	-0.3217	**1**		
EDS	0.4048	0.2213	-0.0377	**1**	
GDPCG	-0.2232	-0.1362	-0.0667	-0.2116	**1**

Source: Author's computation from EViews' results

4.1.2.2. Unit Root Test

Engle and Granger (1987) argued that cointegration tests are unsuitable for variables with differing orders of integration (e.g., some series being I(1) while others are I(0)). Conversely, Onakoya and Johnson (2018) contended that the ARDL cointegration procedure is applicable; however, while it does not necessitate pre-testing for unit roots, it is essential to verify the stationary condition of all series as a preliminary step in model estimation to prevent the ARDL model's failure due to the integrated stochastic trend of I(2). A series is considered stationary if its mean, variance, and structure remain constant across time. The idea of unit roots defines a non-stationary time series as a stochastic process characterised by structural breaks or unit roots. Unit roots are the principal factors of non-stationarity. The existence of a unit root signifies that the examined time series is non-stationary, whereas its absence implies that the time series is stationary. Stationarity testing was initiated by Dickey and Fuller (1979) about the unit root concept in time series analysis (Kasidi & Mwakanemela, 2013). The unit root test indicates that if a non-stationary series (X) requires differencing d times to attain stationarity, then this series possesses d unit roots at its level and is integrated of order d, denoted as (X) ~ I(d). The null hypothesis (H0) of the Dickey-Fuller (DF) test posits that the series possesses a unit root, while the alternative hypothesis (H1) asserts that the series is stationary. The DF test is predicated on the white noise assumption of the disturbance term; hence, autocorrelation in the dependent variable induces autocorrelation in the error term, rendering the DF test ineffective. Dickey and

Fuller devised the DF test in 1984 and subsequently enhanced it to the Augmented Dickey-Fuller (ADF) by incorporating lag values.

Table 4.3 below presents the outcomes of unit root tests conducted at both level and first difference specifications, employing intercept-only and trend-plus-intercept models. The null hypothesis of unit root (non-stationarity) is evaluated for each variable. At levels, Trade Openness, GDP growth per capita, and Inflation exhibited stationarity, whilst Trade balance, Real effective exchange rate, and External Debts were integrated at the first difference. Consequently, the variables are suitable for the ARDL model framework, accommodating mixed integration orders (I(0) and I(1)), while excluding I(2) (Ziramba & Chifamba, 2014). The Augmented Dickey-Fuller (ADF) test was employed, subsequently followed by the Phillips-Perron (PP) test to validate the findings. The ADF test outcomes satisfy the criteria for the ARDL bounds test, which serves as an alternative to the traditional co-integration approach. Subsequently, co-integration estimation was conducted within the ARDL framework to assess the sufficiency of the error correction model.

Table 4.3a: Summary of the ADF Unit Root Test

Variables	**InterCept**				**Trend and Intercept**			
	Level		***First Difference***		***Level***		***Fist difference***	
	t-Stat	P-Value	t-Stat	P-Value	t-stat	P-Value	t-stat	PValue
Trade Balance (TB)	2.719428	1.0000	-8.391113	0.0000	-0.59613	0.9742	-7.628466	0.0000
Devaluation (REER)	-1.170273	0.6787	-7.327402	0.0000	-3.07112	0.1255	-7.306051	0.0000
External Debt (ED)	-1.795255	0.3781	-6.398399	0.0000	-2.31716	0.4164	-6.342149	0.0000
Trade Openness	-4.345439	0.0012	-7.549271	0.0000	-4.50047	0.0042	-7.454828	0.0000
GDP Growth/Capita	-7.384337	0.0000	-14.52658	0.0000	-7.68567	0.0000	-14.35128	0.0000
Inflation (INF)	-3.851156	0.0049	-8.162280	0.0000	-3.83325	0.0237	-8.048820	0.0000

Source: Author's computation from EViews' results

Table 4.3b: Summary of PP Unit Root Test

Variables	**Intercept**				**Intercept and Trend**			
	Level		***First Difference***		***Level***		***Fist difference***	
	t-Stat	P-Value	t-Stat	P-Value	t-stat	P-Value	t-stat	P-Value
Trade Balance (TB)	2.255030	0.9999	-8.319792	0.0000	-1.04690	0.9267	-9.716686	0.0000
Devaluation (REER)	-1.17874	0.6756	-9.238349	0.0000	-2.98967	0.1463	-9.438472	0.0000
External Debt (ED)	-1.848138	0.3532	-9.245777	0.0000	-2.28867	0.4312	-10.12889	0.0000
Trade Openness	-4.325165	0.0013	-19.27221	0.0001	-4.52311	0.0039	-18.92125	0.0000
GDP Growth/Capita	-7.340874	0.0000	-45.00740	0.0001	-7.68567	0.0000	-43.12178	0.0000
Inflation (INF)	-3.74573	0.0065	-15.86986	0.0000	-3.71442	0.0315	-15.47975	0.0000

Source: Author's computation from EViews' results

4.1.2.3.Optimal Lag Selection Criteria

Based on the lag selection criterion presented in Table 4.4 below, Lag 2 was chosen as the appropriate lag length of this ARDL model. The Akaike Information Criterion (AIC) corroborates this selection as it reaches its minimum at Lag 2 with a value of 75.59390, indicated by an asterisk (*). AIC is popularly employed for model selection in time series, as it trades off model complexity and fit; lower values suggest a more desirable balance between explanatory power and parsimony (D. N. Gujarati & Porter, 2010). While Lag 1 has a marginally lower Final Prediction Error (FPE), the Akaike Information Criterion (AIC) is widely used in macroeconomic modeling for medium sample sizes for its robustness in accurately capturing the underlying data-generating process (Lütkepohl, 2005). The Likelihood Ratio (LR) test indicates significant improvement from Lag 0 to Lag 2 and hence corroborates the selection. Since my sample size was 45, I used AIC, where Lag 2 was deemed the optimal lag length, trading off significant dynamics against overfitting.

Table 4.4 Summary of lag length selection criteria

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-1745.144	NA	9.50e+27	81.44855	81.69430	81.53917
1	-1583.807	270.1448	2.84e+25	75.61894	77.33919	76.25332
2	-1547.269	50.98380	3.06e+25	75.59390*	78.78864	76.77202
3	-1522.241	27.93789	6.72e+25	76.10424	80.77347	77.82611

Source: Author's computation from EViews' results

4.1.2.3. ARDL Bounds Test for Cointegration Analysis

The bound test assesses the existence of a long-term association, with the null hypothesis positing that no such connection exists. If the F-statistic is less than I(0) in the first scenario, we do not reject the null hypothesis, indicating an absence of a long-term relationship. In the second scenario, if the F-statistic exceeds I(1), we reject the null hypothesis, signifying the presence of a long-term relationship. If the F-statistic falls between the two thresholds, a definitive conclusion cannot be reached. In this instance, we are in the second scenario, as the F-statistic exceeds the upper bound, indicating a long-term association at all significance levels of 1%, 5%, and 10%. (Pesaran et al., 2001). The ARDL Bounds Test for cointegration reveals an F-statistic of 5.375, significantly exceeding the upper bound critical values at all conventional significance thresholds (1%, 5%, and 10%). In a model with five regressors (K = 5), the upper bound values are 4.15 (1%), 3.38 (5%), and 3.00 (10%). Given that the F-statistic significantly surpasses these thresholds, we reject the null hypothesis of no level connection. This indicates the presence of a long-term cointegrating link among the model's variables.

Table 4.5: ARDL-bound Co-integration Test Result Summary

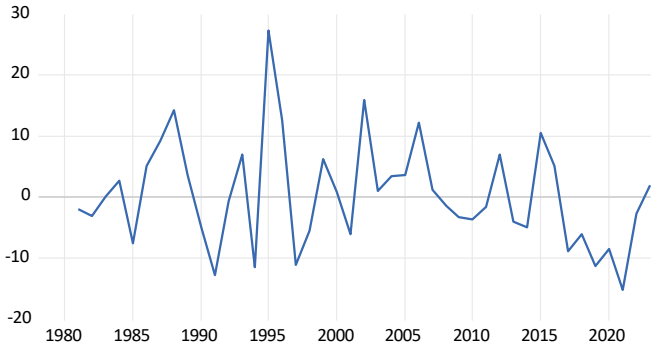
F-Bound Test		Null Hypothesis:	No levels relationship	
			Critical Values	**Inference**
		Significance	(Asymptotic, n=1000)	
Test Statistic	Value	Level	I(0)	I(1)
F-statistics	5.375	10%	2.08	3
		5%	2.7	3.38
K=5		1%	3.06	4.15

Source: Author's computation from EViews' results

Cointegration graph

The cointegration graph depicts the residuals of the long-run ARDL model, which oscillate about the zero line without demonstrating any persistent upward or downward trend. This finding suggests that the residuals are stable, offering graphical evidence of a persistent long-term equilibrium link among the variables: trade balance, real effective exchange rate, inflation, trade openness, external debt stock, and GDP per capita growth. The lack of a clear trend and the tendency of the residuals to revert to the mean indicate cointegration, suggesting that long-term estimates are dependable, and the included macroeconomic variables exhibit simultaneous variations about Malawi's trade balance over time.

Figure 4.2: Cointegration



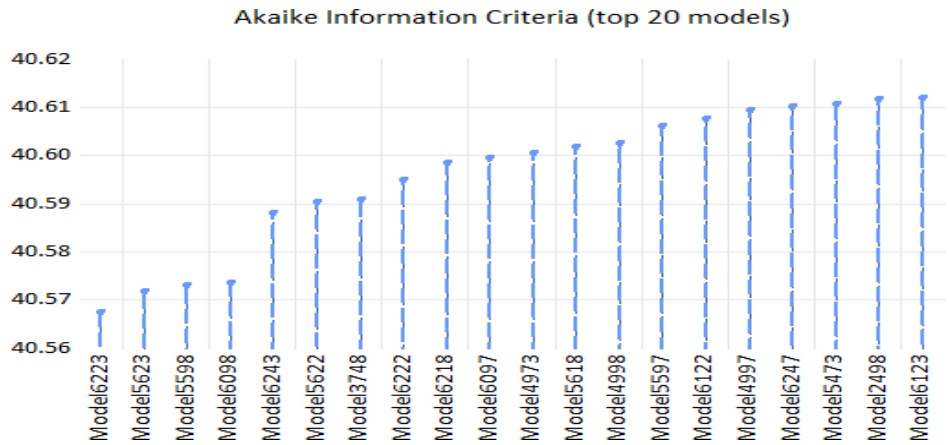
Source: Author's computation from EViews' results

4.1.3. Model Estimation and Interpretation

4.1.3.1Model Selection

The estimating ARDL model with automatic lag selection using E-views version 12 and the ARDL (1, 3, 2, 1, 1, 0) model was selected depending on the least AIC, as shown in the figure below:

Figure 4.3: Model Selection



Model Selection Summary Graph

4.1.3.2 ARDL Long Run Form

Based on the Model selected for ARDL was (1,3,2,1,1,0), the long-run ARDL results of Table 4.6 confirm that the trade balance (TB) has strong relationships with the chosen macroeconomic determinants in Malawi.

Table 4.6: ARDL Long-Run Output Dependent Variable: TB

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REER	0.103066	0.040148	2.567159	0.0157
INF	-7.02E-09	2.92E-09	-2.399759	0.0231
TO	1.337859	0.208096	6.429045	0.0000
EDS	0.207987	0.043446	4.787247	0.0000
GDPCG	0.598960	0.212717	2.815765	0.0087
C (Constant)	-64.56630	11.84032	-5.453086	0.0000

Source: Author's computation from EViews' results

Long-run ARDL Model Equation:

$$TB_t = -64.5663 + 0.1031REER_t - 7.02\times10^{-9}INF_t + 1.3379TO_t + 0.2080EDS_t + 0.5990GDPCG_t + \varepsilon_t$$

REER (Real Effective Exchange Rate): 0.1031

The statistically and positively significant REER coefficient (0.103, p=0.0157) implies that currency depreciation worsens Malawi's trade balance, violating the Marshall-Lerner condition (Bahmani-Oskooee & Ratha, 2004). The perverse effect is driven by structural factors: Malawi's export staples (tea, sugar, tobacco) are price-inelastic, life-essential imports (fuel, medicine) are price-inelastic (Reinhart, 1995), and weak manufacturing capacity limits response of output to exchange rate changes (Edwards, 1989). These findings in Tanzania ((Ndulu, 1999)1986) and Zambia (Sachs, 1986) support this trend among commodity-based

economies, with (Bahmani- Oskooee & Gelan, 2017) documenting trade balance deterioration after devaluation in 38% of the developing world. The evidence implies that Malawi requires complementary policies, diversification of exports, substitution of imports, and productivity increases (IMF, 2021; World Bank, 2022; UNCTAD, 2020), in addition to exchange rate actions, as the long-run negative effect is in line with prolonged periods of J-curve behavior for primary commodity exporters.

INF (Inflation Rate): -7.02 × 10^{-9}

A 1 percentage point increase in inflation explains a small but statistically significant reduction in the trade balance. The coefficient being small, however, the statistical significance ($p = 0.0231$) indicates that inflation exerts a quantifiable adverse impact on trade performance, perhaps through weakening export competitiveness or raising import demand due to higher domestic costs. Inflation (INF) hurts the trade balance (TB), which means that if prices are increasing among consumers, the relative value of local commodities might appreciate compared to foreign commodities and thus harm trade performance. This finding is in congruence with the evidence of a panel study by Obuobi et al., (2020) of nine West African nations, which concluded that inflation largely reduces economic performance, particularly through its negative influence on the trade balance.

TO (Trade Openness): +1.3379

A 1 percentage point increase in trade openness, measured as the ratio of imports + exports to GDP, improves the trade balance by $1.3379. The significant positive effect suggests that further integration into global trade will bolster the trade balance, either through augmented exports, improved resource allocation, or expanded market access. Trade openness (TO) is statistically significant and markedly favourable at $p < 0.01$, indicating that access to international markets enhances trade performance. Empirical research by Malefane (2020a) confirms a positive association between trade openness and the trade balances of Malawi and Lesotho, utilizing the ARDL bounds testing method. Her research demonstrated that heightened openness to trade favorably affects economic growth, since greater integration into the global market enhances trade performance and overall economic outcomes.

GDPCG (GDP per Capita Growth): +0.5990

A 1 percentage point rise in per capita GDP growth improves the trade balance by $0.599. This indicates that individual economic advancement improves the trade balance, potentially through heightened household production, efficiency, or greater value-added commerce. The rise in GDP per capita is positively and statistically correlated with the trade balance (TB) ($p = 0.0087$), indicating that economic expansion improves the nation's trading position. The

argument is substantiated by recent research conducted by Molepo & Jordaan, (2024). The study uses panel data methodologies to test the export-led growth hypothesis and demonstrate that exports positively influence GDP per capita growth in SACU countries. An enhanced trade balance, particularly driven by rising exports, positively influences economic growth. These findings align with evidence from Malawi, indicating that an increasing GDP per capita correlates with an improved trade balance.

EDS (External Debt Stock): +0.2080

Each $1 rise in foreign debt is linked with a $0.208 rise in the trade balance. Foreign debt is then being utilized effectively, possibly for capital or infrastructure investment that can strengthen the future export potential of the country. The stock of external debt (EDS) has a statistically significant and positive impact on the trade balance ($p < 0.01$), reflecting the effective use of foreign borrowing to finance export-oriented activity. This outcome is consistent with the outcome of a study by Brueckner et al., (2025) for Sub-Saharan Africa, which reveals that foreign debt may positively affect economic growth. Their study reveals that conservative and planned borrowing can improve trade performance by establishing conditions for long-term export enhancement.

Constant: -64.5663

The intercept term ($C = -64.5663$, $p = 0.0000$) is the intercept of the estimated long-run trade balance equation. It is the anticipated value of the trade balance (TB) when all independent variables like REER, INF, TO, EDS, and GDPCG are zero. A negative intercept value of -64.5663 indicates that, in the theoretical scenario where all the explanatory variables are set at zero, the trade balance would be running a deficit of about $64.57. This is a hypothetical scenario, which is unrealistic, but represents some unobserved factors and structural factors that have an impact on the trade balance but aren't explicitly modeled in the model. The statistical significance of high magnitude ($p = 0.0000$) informs us that the intercept is not by chance and has a significant function in analyzing the base level of the trade balance in the model.

4.1.3.3. ARDL Error Correction Model

Selected Model was ARDL (1, 3, 2, 1, 1, 0), and it was chosen automatically by AIC

Table 4.7 ECM Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REER(-1))	-0.226105	0.045147	-5.008232	0.0000
D(REER(-2))	-0.140943	0.059942	-2.351328	0.0257
D(INF)	-0.183709	0.067576	-2.718543	0.0110
D(TB	1.31E-08	4.65E-09	2.825698	0.0080
D(TO)	0.974385	0.166367	5.856853	0.0000
D(GDPCG)	0.254389	0.098765	2.577390	0.0142
D(EDS)	-0.093175	0.071389	-1.305182	0.0201
CoinEq(-1)	-1.042598	0.103473	-10.07604	0.0000

Source: Author's computation from EViews' results

ECM Regression Equation

$\Delta TB_t=\alpha 0+\alpha 1\Delta REER_{t-1}+\alpha 2\Delta REER_{t-2}+\alpha 3\Delta INF_t+\alpha 4\Delta TB_t+\alpha 5\Delta TB_{t-1}+\alpha 6\Delta TO_t+\alpha 7\Delta GDPCG_t+\alpha 8$
$\Delta EDS_t+\lambda \cdot EC_{t-1}+\varepsilon_t$

$\Delta TBt=-64.5663-0.2261\Delta REER_{t-1}-0.1409\Delta REER_{t-2}-0.1837\Delta INF_t+7.37\times 10^{-9}\Delta TB_t$
$+1.31\times 10^{-8}\Delta TB_{t-1}+0.9744\Delta TO_t+0.2544\Delta GDPCG_t-0.0932\Delta EDS_t-1.0426\cdot EC_{t-1}+\varepsilon t$

Where;

Δ= first difference (e.g., $\Delta TB_t=TB_t-TB_{t-1}$)
EC_{t-1}= error correction term (lagged residual from long-run equation)
$\alpha 0$ = constant term (intercept)
εt = error term

D(REER(-1)) = -0.2261, p = 0.0000: A one-point increase in the lagged real effective exchange rate (REER), signifying currency appreciation, correlates with a $0.2261 decrease in the trade balance in the short term. The appreciation of domestic currency raises export prices for international consumers and import prices for domestic consumers, thereby worsening the trade balance. This discovery aligns with the J-curve phenomenon, which illustrates that trade balances first worsen following an appreciation before ultimately improving in the long term. This finding is corroborated by Bahmani-Oskooee & Ratha (2004), who discovered that in numerous developing nations, currency appreciation exerts a significant and adverse short-term impact on trade balances.

D(REER(-2)) = -0.1409, p = 0.0257: An increase in the REER two periods ago still significantly negatively affects the trade balance, decreasing it by about $0.1409. This finding implies that the impact of exchange rate changes is not instantaneous but can occur with a lag, likely owing to lagged adjustments in trade contracts, shipping procedures, and pricing policies.

Narayan and Narayan (2004) in their ARDL model investigation of Fiji reported the same findings, demonstrating that real exchange rate alterations tend to have lagged effects on trade balance outcomes, stressing the need for taking lagged effects into account in examining the exchange rate- trade flows nexus.

D(INF) = -0.1837, p = 0.0110: An elevation in inflation by one percentage point correlates with a reduction of $0.1837 in the trade balance. This negative link indicates that elevated inflation diminishes the competitiveness of a country's exports by raising the cost of domestically produced goods in global markets. It may, however, stimulate domestic demand for comparatively lower- priced imports, thereby worsening the trade balance. The findings align with those of Obuobi et al., (2020), which showed that inflation had a statistically significant and adverse effect on trade balances in nine West African countries. Adu-Gyamfi's research indicated that persistent inflationary pressures erode pricing competitiveness, leading to trade deficits and diminished external performance.

D(TB)= 1.31E-08, p = 0.0080: The significant and positive coefficient suggests strong short-run persistence in the balance of trade. The adjustment in the trade balance from the last period still affects the current trade balance, expressing inertia in the process of trade adjustments. This result is proof of delayed responses to variations in macroeconomic variables, including currency rates, interest rates, or fiscal policy. Rose and Yellen (1989) corroborated this by providing evidence of similar persistence in the short run in U.S. balance of trade figures due to the lagged adjustments in macroeconomic variables, shipping lags, and the staggered structure of foreign trade contracts.

D(TO) = 0.9744, p = 0.0000: A one percentage point increase in openness to trade results in a short-run increase in the trade balance of $0.9744. The high and positive coefficient reveals that trade policy liberalization and the removal of restrictions on import and export stimulate resource allocation efficiency based on comparative advantage and result in an enhanced external balance. These findings agree with those of Malefane (2020), who demonstrated that increased openness to trade greatly enhanced the trade balance of Lesotho. Her research established that nations such as Malawi, possessing economic frameworks comparable to that of Lesotho, could likewise enhance trade performance by implementing outward-oriented policies.

D(GDPCG) = 0.2544, p = 0.0142: A 1% rise in per capita GDP growth is linked to a rise in the trade balance of $0.2544. Economic growth can enhance production capacity, stimulate domestic industries, and enhance export capability, while potentially curtailing dependence on imports by import substitution. Brueckner et al., (2025) demonstrated in their empirical evidence of Sub- Saharan Africa that GDP growth, when coupled with prudent trade policy, has the potential to make a nation's external sector more robust. Their results showed that productivity growth and better governance had a positive impact on trade performance.

D(EDS) = -0.0932, p = 0.2021: Even in the absence of statistically significant results at

conventional levels, the negative coefficient indicates that, in the short term, an increase in stock of external debt (EDS) is likely to degrade the trade balance. This can be caused by the misallocation of borrowed funds, where foreign debt is misallocated towards consumption or non- tradable sectors instead of productive, export-generating sectors. Presbitero, (2010) empirically justified the above statement by observing that in developing nations, the net burden of external debt is normally higher than its future dividends unless the debt is prudently managed and spent on something that promotes long-term competitiveness in trade and export diversification.

Error Correction Term (ECM): CoinEq(-1) = -1.0426, p = 0.0000

The negative and statistically significant error correction coefficient for the causes of the trade balance describes a stable and strong long-run relation between the causes of the trade balance and the trade balance itself. The -1.0426 coefficient asserts that more than 104% of the deviation from long-run equilibrium is corrected within one period, demonstrating a behavior commonly described as over-adjustment. This indicates that any short-run divergence from the trade balance due to shocks, such as shocks to inflation, exchange rates, or GDP growth, is promptly corrected and can even cause a mild overshooting before arriving at stability. The rapid and slightly overshooting adjustment back to equilibrium attests to the dynamic sensitivity of the trade balance in the model. This result aligns with the work of Bannerjee et al. (1998), which highlighted the sign and size of the ECM term to be the requirements of their tests and long-run convergence in error correction regression models. In their examination of the Euro-area macro data, they also recorded over-adjustment episodes they regarded as implications of effective policy or market mechanism correctors that drive out disequilibria at rates much quicker than implied.

4.1.3.4 **Model Summary Statistics**

Table 4.8: Model Summary Statistics

Statistic	Value
R-squared	0.897484
Adjusted R-squared	0.876981
S.E. of regression	4.853597
Sum squared resid	824.5092
Log likelihood	-124.5165
Durbin-Watson stat	1.710684
Mean dependent var	0.223017
S.D. dependent var	13.88513
Akaike info criterion	6.163558
Schwarz criterion	6.491233
Hannan-Quinn criterion	6.284391

Source: Author's computation from EViews' results

Model Diagnostics and Goodness of Fit

R-squared = 0.897: The large R-squared value shows that about 89.7% of the variance in short-run movements of the trade balance is explained by the independent variables of the model. This is a high degree of correspondence, and it implies that the model accurately reflects the underlying dynamics of the trade balance. Empirical research, for instance, Mudara (2021), highlights that R- R-squared scores higher than 85% in macroeconomic time series models reflect excellent explanatory power within the framework of developing economies.

Adjusted R-squared = 0.877: When adjusted for sample size and the number of predictors, the adjusted R-squared is equally high at 87.7%, which is a testament to the strength and the predictability of the model. Hussain & Haque (2020) affirm that adjusted R-squared is a superior reliable estimator of model fit in ARDL and ECM models, particularly in comparing nested specifications.

Standard Error of Regression (SER) = 4.85: The SER is the average difference between predicted values and data. 4.85 is considered a low forecast error, which enhances the accuracy of the model's short-term forecast. Narayan, (2004) assert that low SER is important in trade balance models since the spread of the residuals can indicate omitted variables or misspecification of the model.

Sum of Squared Residuals (SSR) = 824.5: The comparatively low SSR means that the total of the squared prediction residuals is low, which suggests a well-fitting model. Low SSR in ARDL and ECM models improves model accuracy and internal consistency, reports (Bahmani-Oskooee & Gelan, 2017)

Durbin-Watson Statistic = 1.71: The Durbin-Watson statistic tests for first-order autocorrelation of residuals. A reading close to 2 indicates the lack of serial correlation and suggests that the residuals are nearly uncorrelated and the assumptions of the model are true (D. Gujarati, 2008). Recommended values of 1.5-2.5 for Durbin-Watson to ensure adequate independence of residuals in macro-panel and time series regressions.

Information Criteria

- Akaike Information Criterion (AIC) = 6.16
- Schwarz Information Criterion (SIC/BIC) = 6.49
- Hannan-Quinn Criterion (HQC) = 6.28

These conditions balance model adequacy against parsimony. The generally low values establish the adequacy of the chosen model. Pesaran, Shin, and Smith (2001) indicate that under ARDL and ECM specifications, the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) are essential for optimal lag structures and model specification. Lower values are desired as they are indicative of a superior balance between model accuracy and complexity.

4.1.4 Testing the Marshall-Lerner condition

The Marshall-Lerner (M-L) condition was tested to see whether currency devaluation would increase Malawi's trade balance. The econometric estimates show the elasticity of demand for exports (PEDx) to be 0.0305 and that of imports (PEDm) to be 0.0366, combining to give an overall elasticity of 0.0671. This value is much below one, which is the minimum set by the M-L condition for a depreciation to improve the trade balance.

This result implies Malawian imports and exports are highly price inelastic, and as a result, price rises due to devaluation have no major effect on trade volumes. This is explained by several structural factors: Consumption patterns: The Malawian import basket likely consists of staple commodities (e.g., petroleum products, pharmaceuticals, equipment), whose demand is price inelastic. Producers and consumers still purchase them even with higher prices. Production constraints: Malawi's export sector may face supply-side limitations, such as low industrial diversification, underdeveloped infrastructure, and limited access to finance, that constrain its capacity to rapidly increase export volumes in response to improved price competitiveness. Global market structure: Malawi's exports are often primary commodities whose global demand is relatively insensitive to price changes in the short run.

Consequently, currency devaluation in this instance is not likely to yield the intended policy benefit and may even widen the trade deficit in the short term by raising import costs without a reciprocating rise in export revenues. This is consistent with Breitenbach & Amaral (2021), who concluded that the M-L condition was similarly not satisfied in Fragile Five economies—Brazil, India, Indonesia, South Africa, and Turkey, highlighting an overall trend among emerging economies with rigid trade structures.

Table 4.9: Summary of M-L Testing

PEDx	PED_m	M-L	Empirical result
0.030483	0.036584	0.067067	Inelastic Demand

Source: Author's computation from EViews' results

Compared to theoretical expectations, Malawi's trade responsiveness to currency depreciation falls significantly short, largely due to structural economic constraints. The country's export sector is heavily reliant on a limited basket of primary commodities, such as tobacco, tea, and sugar, which have relatively low-price elasticity of demand in international markets. This means that even large price decreases due to depreciation of the currency do not lead to corresponding increases in export volume or revenue. Malawi is also highly dependent on essential commodities such as fuel, Pharmaceuticals, and capital equipment, all of which have inelastic demand. These are essentials with minimal or no domestic substitutes in the short term, and hence import volumes are quite unresponsive to price changes. Consequently, the export and import price elasticity sum is well below the critical level of one, and the Marshall-Lerner condition is not met. In contrast, economies that satisfy the Marshall-Lerner condition, such as most East Asian economies, have reacted positively and vigorously to currency devaluation. These economies tend to have diversified export portfolios dominated by manufactured goods, electronics, and high-value-added products, for which global demand is more elastic. They also possess more adaptable industrial structures, which allow firms to expand production quickly and adjust to global demand and price changes. They also enjoy good infrastructure, access to recent technology, and effective logistics, all of which raise their ability to capitalise on new market opportunities provided by favourable exchange rate shifts.

Malawi's shallow industrial base, expensive production costs, infrastructural bottlenecks, and limited value addition in export sectors weaken such adjustment responses. Poor international competitiveness and the lack of trade-facilitating institutions further aggravate the problem, reducing Malawi's ability to convert currency devaluation into improved trade performance. Such factors not only weaken the short-run impact of devaluation but also the longer-term adjustment expected under the J-Curve hypothesis. Therefore, while theory predicts that currency depreciation should improve a country's trade balance if the combined price elasticity of exports and imports exceeds one, Malawi's empirical reality diverges significantly. This highlights the importance of addressing structural barriers to trade responsiveness, such as diversifying exports, investing in industrialization, and enhancing trade infrastructure, before currency-based policy measures can effectively yield desired improvements in trade balance.

4.1.5.J-Curve Hypothesis

The J-Curve phenomenon was tested in this study to determine if currency devaluation will deteriorate trade balance in the short run but have a positive result in the long run, and Table 4.10 below indicates the results.

Table 4.10: Testing for J-Curve condition

dl_tb	**Coefficient**	**Std. err**	**t-statistic**	**p-value**
lag_dleer	**-0.745**	0.362	-2.06	0.044
dl_lreer	**1.215**	0.465	2.61	0.011
_cons	**0.118**	0.048	2.46	0.017

Source: Author's computation from Stata results

Lagged REER Change (lag_dleer = -0.745, p = 0.044)

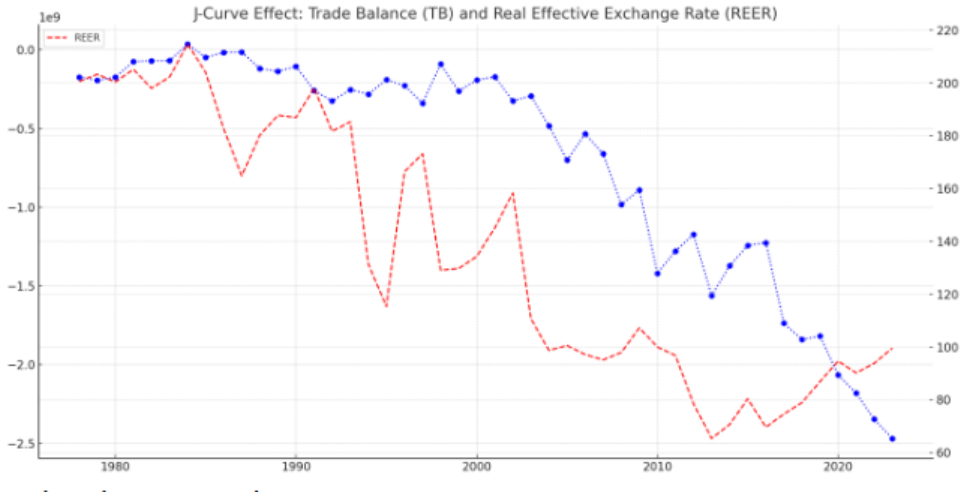
The lagged change in the Real Effective Exchange Rate (REER) coefficient is significant and negative, indicating that, in the short term, depreciation leads to a decrease in the trade balance initially. This is typical of the J-Curve effect, where depreciation increases import costs before volume adjustments take place, as opposed to export volumes adjusting slowly due to existing contracts, capacity limitations, and market rigidities. This corresponds with the original J-Curve model developed by Magee (1973) and confirmed more recently in the work of authors such as Onafowora (2003) involving Sub-Saharan African nations.

Current REER Change (dl_lreer = 1.215, p = 0.011)

The coefficient of current change in the logarithm of the real effective exchange rate (REER) is positive and statistically significant at the 5% level. A genuine depreciation of the Malawian kwacha correlates with an enhancement in the trade balance over the long term. This result fulfils the Marshall-Lerner Condition, which posits that a depreciation will improve the trade balance if the absolute value of the sum of the price elasticities of exports and imports exceeds one. Empirical research, such as that presented by Bahmani-Oskooee and Ratha (2004), demonstrates similar long-term enhancements in trade balances after devaluation in developing countries.

Constant Term (_cons = 0.118, p = 0.017): The positive and large constant indicates that, in most cases, the trade balance is positively affected by other external or structural factors, independent of exchange rate developments. These could be positive trade agreements, higher export competitiveness, foreign remittances or aid inflows, and structural export sector realignment. This is corroborated by the evidence of Arize et al., (2000), who contend that structural reforms and institutional reforms tend to underlie trade balance outcomes more than the volatility of exchange rates.

Figure 4.4: J-Curve



The blue dotted line with circles represents the Trade Balance (TB) over time, while the red dashed line with X markers indicates the Real Effective Exchange Rate (REER). The J-Curve effect can be observed in various periods (e.g., around 1994–1998 or 2008–2013), where a decline in the REER (currency depreciation) is initially followed by a deterioration and then an improvement in the trade balance.

4.1.6.Residual diagnostics Test result

The validity and reliability of the model used in this study were subjected to various diagnostic tests to determine whether the model was suitable for the study or not. These tests include the serial correlation test, the stability test, and heteroskedasticity.

4.1.6.1 Serial correlation

Serial correlation, or autocorrelation, is a situation where residuals in a regression model exhibit a temporal relationship, breaking the independent errors in time series and panel data models. This break leads to biased standard errors, decreased model performance, inflated R^2, and enhancement of forecasting by omission of relevant dynamics if errors are predictable (Wooldridge Boyd, 2020). It decreases the model's efficiency and undermines the Best Linear Unbiased Estimators (BLUE) property, which is central to getting credible coefficient estimates. From Table 4:11 below, the Breusch-Godfrey Serial Correlation LM Test results indicate that both the F-statistic ($p = 0.5181$) and the Chi-square statistic ($p = 0.2891$) has p-values far greater than the 0.05 level. Therefore, we cannot reject the null hypothesis of no serial relationship up to the second lag. This indicates the absence of statistical evidence of autocorrelation in the

model residuals, implying that the error terms are independently distributed across time. The model therefore meets one of the assumptions of the classical linear regression, thereby providing support for the validity and reliability of inferences drawn from the estimated coefficients.

Table 4.11: Lagrange Multiplier (LM) for Serial Correlation

Test Statistic	**Value**	**p-value**	**Conclusion**
F-statistic	1.864644	0.5181	Fail to reject null*
Obs*R-squared (χ^2)	5.218454	0.2891	Fail to reject null**

Source: Author's computation from EViews' results

4.1.6.2. Heteroscedasticity

Heteroscedasticity refers to a situation where the variance of the error term (residuals) varies among data points in a regression model, as opposed to the homoscedasticity assumption underlying Ordinary Least Squares (OLS). This violates the principle of homoscedasticity, resulting in biased standard errors that may yield inaccurate hypothesis tests and confidence intervals (D. Gujarati, 2008). Heteroscedasticity must be detected and addressed to provide precise economic forecasting and policymaking, as it undermines the validity of the model's estimations (Müller et al., 2022). The results of the Breusch-Pagan-Godfrey test for heteroskedasticity, illustrated in table 4.12, indicate that all three test statistics, F-statistic ($p = 0.8350$), Obs*R-squared ($p = 0.7654$), and Scaled Explained SS ($p = 0.9174$), demonstrate p-values substantially surpassing the 0.05 significance level. This leads to the inability to reject the null hypothesis of homoskedasticity, signifying that the variance of the error term remains uniform throughout the dataset. Consequently, there is no indication of heteroskedasticity in the model, confirming the assumption of constant variance and substantiating the standard errors and hypothesis tests generated from this regression.

Table 4.12: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Test Statistic	**Value**	**p-value**	**Conclusion**
F-statistic	0.598805	0.8350	Strongly fail to reject
Obs*R-squared (χ^2)	9.099816	0.7654	Strongly fail to reject
Scaled explained SS (χ^2)	3.299381	0.9174	Strongly fail to reject

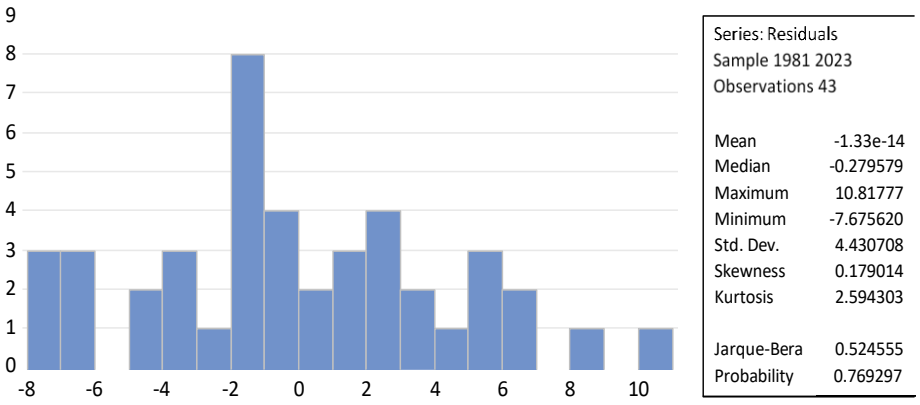
Source: Author's computation from EViews' results

4.1.6.3 Normality

Normality test evaluates whether residuals (error terms) from a regression equation are normally distributed, which is one of the assumptions of Ordinary Least Squares (OLS) regression. Normality could potentially affect hypothesis testing because OLS estimators work under the presumption that errors have to be normally distributed to render proper confidence intervals and p-values (Verbeek, 2017). If residuals are not normally distributed, statistical inferences derived from the model may be misleading, particularly with small sample sizes. Some common tests of normality are the Jarque-Bera test, Shapiro-Wilk test, and Kolmogorov-Smirnov test (Doane & Seward, 2011). Whenever normality is violated, transformations, non-parametric techniques, or robust standard errors can reduce its impact.

The Jarque-Bera normality test produces a statistic of 0.524555 with a probability of 0.769297, suggesting that the residuals follow a normal distribution. Given that the p-value is substantially above the standard significance thresholds (e.g., 0.05 or 0.01), we do not reject the null hypothesis of normality. The skewness (0.179) is around zero, and the kurtosis (2.59) is near the normal distribution value of 3, reinforcing the conclusion that the residuals are symmetrically and normally distributed. This confirms the assumption of normality in the regression model.

Figure 4.5: Normality



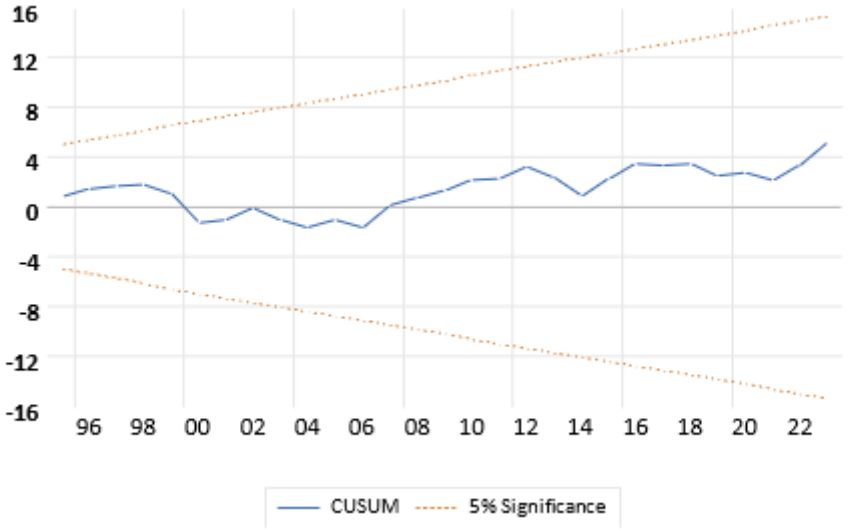
Source: Author's computation from EViews' results

4.1.1.1 Stability Test

The CUSUM (Cumulative Sum of Recursive Residuals) test for stability, as proposed by Brown, Durbin, and Evans (1975), was utilized to assess the temporal stability of regression coefficients. The CUSUM line in the subsequent plot consistently remains beneath the 5% significance thresholds throughout the entire sample duration, indicating a lack of structural fractures in the model. This result signifies that the regression parameters are constant over time and that the model is accurately described. Consequently, the CUSUM test does not allow us to reject the null hypothesis of

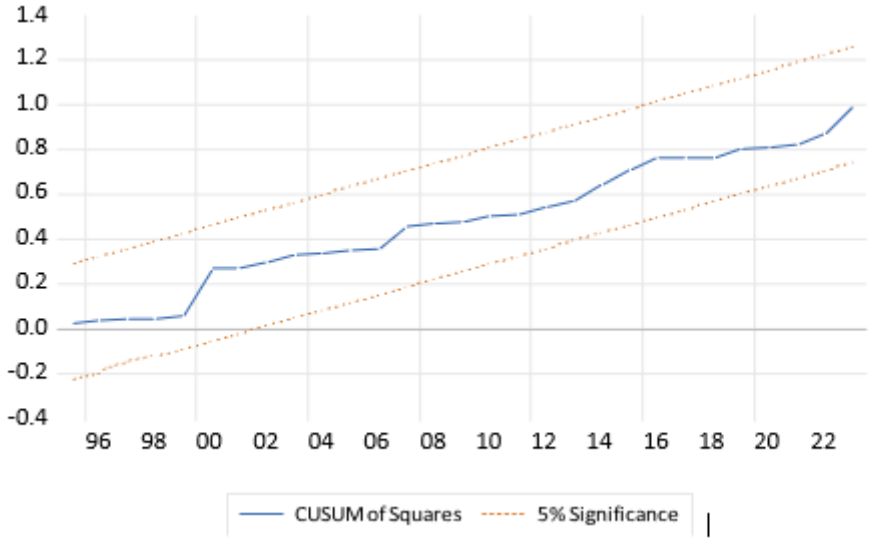
parameter stability at the 5% significance level.

Figure 4.6. Graphical result of the CUSUM test for TB



The CUSUM of Squares (CUSUMSQ) test is a diagnostic tool used to evaluate the stability of the variance of residuals in a regression model. The CUSUMSQ line remains completely under the 5% significance thresholds, indicating an absence of variance instability in the model residuals throughout time. This result validates the null hypothesis regarding the constancy of parameters and the stability of variance in the model under consideration. Brown et al. (2016) assert that this conclusion confirms the model's stability, indicating the absence of significant structural breaks affecting the behavior of the residuals over the sample period.

Figure 4.7. Graphical result of the CUSUM of Squares test for TB



4.1.6.5 Ramsey RESET Test

The Ramsey RESET (Regression Equation Specification Error Test) evaluates model specification by identifying omitted significant variables or unaddressed non-linearity within the current model (Ramsey, 1969). The Ramsey RESET test results demonstrate that the model lacks specification errors, as indicated by an F-statistic of 0.914420 (p-value = 0.4169) and a likelihood ratio of 3.412489 (p-value = 0.1815). As both p-values exceed the conventional significance thresholds (e.g., 0.05 or 0.10), we do not reject the null hypothesis about the model's accurate specification. This indicates a lack of compelling evidence for omitted variables or erroneous functional form, suggesting that the linear model specification is sufficient.

Table 4.13: Ramsey RESET Test

	Value	Df	P-Value
F-Statistic	0.914420	2,20	0.4169
Likelihood ratio	3.412489	2	0.1815

Source: Author's computation from EViews' results

4.2.Discussion

4.2.1 Impact of currency devaluation on trade balance

Regression analysis reveals that the Real Effective Exchange Rate (REER) possesses a positive and statistically significant coefficient (0.103066, p-value = 0.0157), indicating that currency devaluation (a reduction in REER) deteriorates Malawi's trade balance. This contradicts the fundamental Marshall-Lerner condition, which posits that devaluation will enhance the trade balance when the price elasticity of demand for exports exceeds that for imports by a margin greater than one (Marshall, 1923; Lerner, 1944). The unexpected result may be due to several structural characteristics of Malawi's economy. First, Malawi's export basket is characterized by primary commodities such as tobacco (which accounts for over 50% of exports), tea, and sugar, which have low price elasticity in world markets (Daniel Eka Bonokeling et al., 2023). That means that even massive price reductions resulting from exchange rate depreciation are unlikely to induce corresponding increases in export demand. Secondly, the country's manufacturing industry is underdeveloped, and value-added export opportunities that could be more elastic to the exchange rate are limited (Reserve Bank of Malawi, 2021).

Thirdly, the excessive import dependency on basic goods compounds the negative impact of devaluation on the trade balance. Malawi has been importing nearly all of its petroleum products, a significant proportion of its capital goods, and pharmaceuticals (National Statistical Office (NSO) Report, 2023). As they devalue the currency, these imports become extremely expensive in terms of local currency, leading to a severe loss of trade balance even where there has been a reduction in the quantities of imports. This impact is equivalent to what Krugman and Taylor (1978) referred to as the "contractionary devaluation" effect, most prevalent in developing economies with inelastic import demands. Secondly, the J-curve effect - in that trade balances initially worsen before they improve after devaluation - may be prolonged in Malawi's case by structural inflexibilities in production and trade structures (Bahmani-Oskooee & Gelan, 2017).The positive coefficient for trade openness (TO) in the regression means that broader trade policy reforms may be more effective than exchange rate realignments in and of themselves in improving Malawi's trade balance. These findings indicate the need for complementary policies, such as import substitution industrialization and export diversification, to enhance the effectiveness of exchange rate policy in Malawi (Mnyanga et al., 2022).

4.2.2 Impact of inflation on trade balance

The regression results indicate a statistically significant long-term negative impact of inflation (INF) on Malawi's trade balance, evidenced by a coefficient of -7.02E-09 and a p-value of 0.0231. Although the coefficient appears numerically insignificant due to the measuring scale, its negative value is significant. This signifies a deteriorating trade deficit accompanied by rising inflation in the long term. Elevated inflation diminishes the competitiveness of Malawi's exports by inflating production costs, rendering Malawian goods less appealing in global markets. Simultaneously, inflation increases the expense of imports; nevertheless, as several imports in Malawi are inelastic (including fuel, fertilizers, and pharmaceuticals), the nation persists in acquiring them despite elevated prices, hence exacerbating the trade deficit. This tendency aligns with economic theory, which posits that inflation diminishes a nation's foreign competitiveness unless it is offset by a significant currency devaluation (Dornbusch, 1985).

This finding is consistent with findings from other similar developing economies. For example, Onafowora (2003) concluded that inflation hurt the trade balances in Sub-Saharan Africa by lowering the competitiveness of exports and increasing import reliance. Similarly, Bahmani-Oskooee & Gelan (2017) concluded in their research on East African nations that inflation exerted a negative long-run effect on trade balances. In Malawi's case, persistent pressures of inflation, prompted to some extent by repeated currency devaluations and supply-side shocks related to weather, undercut macroeconomic stability and distort trade sector price

signals. Malawi's thin industrial base and over-reliance on foreign inputs also mean that manufacturers in the country face significantly rising costs, which in turn reduce their ability to compete internationally. These infrastructural issues suggest that unless there are strong policy measures to trigger inflation and widen the export market, trade deficits may persist or even grow worse in the future.

4.2.3 Impact of GDP Growth per capita on Trade Balance

The long-term findings indicate a positive and statistically significant correlation between Malawi's trade balance and economic growth, as measured by GDP per capita growth (GDPCG), with a coefficient of 0.598960 and a p-value of 0.0087. This signifies that Malawi's trade balance improves with the rise in economic growth. Economic growth may lead to rising productive capacity, better infrastructure, and enhanced efficiency in export-based industries. It also attracts foreign technology and foreign investment, which diversifies exports and makes them competitive. Additionally, higher income levels will fund the development of domestic industry, which substitutes for imports, and thus lowers the trade deficit (Todaro & Smith, 2020). Within the context of Malawi, this may imply that expansion in industries such as agriculture, agro- processing, and mining could have resulted in increased export proceeds and a comparatively favorable trade balance in the long term.

These findings are supported by empirical evidence from developing economies. For example, Bahmani-Oskooee & Ratha (2004) discovered a positive relationship between trade balance improvement and less-developed economies' economic growth, attributing this to enhanced export capability and minimal reliance on imports. In Sub-Saharan Africa, Ekesiobi and Nwokoye (2014) in research found that GDP growth positively impacted trade performance, mainly attributed to the fact that developing economies invest in export promotion and industrialization. For Malawi, despite its vulnerabilities, periods of positive economic performance, such as 2007 to 2009 and projected modest growth in 2024–2025 (AfDB, 2024) are linked with relatively better performance in trade due to increased agricultural exports and donor assistance. Nonetheless, the challenge is in how to continue with inclusive growth aimed at export diversification and value addition to ensure this momentum is sustained.

4.2.4 Impact of trade Openness on trade balance

The long-term estimation results demonstrate that Trade Openness (TO) exerts a positive and significant influence on Malawi's trade balance, with a coefficient of 1.337859 and a p-value of 0.0000. This suggests that an increase in trade openness correlates with an improvement in the nation's trade balance. Trade openness, generally measured as the ratio of total exports and imports to GDP, promotes enhanced integration into the global market. For

Malawi, a low-income, agriculturally dependent economy, increasing trade openness can spark export-led growth since it exposes domestic producers to larger markets and encourages efficiency through competition. Additionally, liberalization of trade policies can attract foreign investment and technology transfers, which render Malawian exports more competitive (St Barbara Limited ACN, 2024). In essence, as Malawi liberalizes its economy, the nation is bound to benefit from increased export earnings, which have the potential to lower the chronic trade deficits the country faces.

This result is in line with that of other empirical studies. (Programme et al., 2017). For instance, examined East African economies and established that the effect of openness to trade was positive on trade balances via higher exports. Onafowora (2003), in a study of African countries, established that trade liberalization improved export performance and, consequently, the trade balance. For Malawi, trade openness policies such as regional integration under the African Continental Free Trade Area (AfCFTA) and participation in bilateral trade agreements could be supporting its export base, albeit modestly. However, for trade openness to benefit the trade balance sustainably, Malawi must also address structural challenges such as poor infrastructure, low industrial capacity, and shallow export diversification. If these bottlenecks are not eliminated, trade openness alone would not suffice to guarantee a sustainably positive trade outcome.

4.2.5 Impact of external Debt shocks on trade balance

The long-term findings indicate that External Debt Shocks (EDS) exert a positive and statistically significant influence on Malawi's trade balance, evidenced by a coefficient of 0.207987 and a p- p-value of 0.0000. This favourable correlation suggests that, over time, increases or modifications in external debt levels may enhance Malawi's trade balance. One of the reasons is that if foreign debt is used effectively, particularly if directed into productive investment in export sectors such as agriculture, mining, or manufacturing, it possesses the ability to enhance the country's export capacity and infrastructure, thus raising export revenue over imports (Were, 2021). Additionally, the external debt could be used to finance essential imports like machinery and capital equipment that are very important in productive expansion, which could further be used to reduce import dependence and improve the trade balance.

Empirical findings validate this observation. For example, (Mohanty (2017) similarly discovered a positive effect of external debt on the trade balance of developing nations when the borrowed capital was utilized effectively in the development of the economy. Similarly, Adusei, (2021) observed that external borrowing in the case of Sub-Saharan Africa improved trade performance if channeled to productive areas. In Malawi's context, this positive result could also be partially attributed to debt relief initiatives such as HIPC and MDRI, which freed up fiscal space and allowed the country to reallocate funds toward export-promotion activities.

However, this positive impact hinges on the sustainability and utilization of debt; if debt is mismanaged or allocated to non-productive uses, it can become a burden rather than a benefit. Hence, while external debt shocks may presently enhance Malawi's trade balance, prudent debt management remains crucial to ensure long-term benefits.

4.2.6.Marshall-Lerner condition

Empirical validation of the Marshall-Lerner (M-L) condition in Malawi reveals that the aggregate price elasticities of demand for imports (PEDm = 0.0366) and exports (PEDx = 0.0305) total a mere 0.0671, well below one. The M-L criterion states that currency devaluation will improve the trade balance only if the absolute value of the sum of export and import price elasticities exceeds one. Given that the aforementioned requirement is not met in Malawi, probably, the trade balance will not be enhanced through currency devaluation. Conversely, it may exacerbate the trade imbalance initially, as Malawian imports and exports exhibit considerable price inelasticity, meaning they do not significantly react to relative price fluctuations resulting from devaluation. This inelasticity may result from structural limitations in the production sector, insufficient export diversification, and excessive reliance on essential imported commodities that lack viable substitutes (Bahmani-Oskooee & Ratha, 2004).

These findings are consistent with other empirical works conducted under similar economic contexts. For instance, Breitenbach & Amaral (2021) tested the M-L condition for all of the "Fragile Five" economies, namely Brazil, India, Indonesia, South Africa, and Turkey, and determined that the M-L condition was not satisfied in those economies either. This implies a wider pattern in developing and fragile economies where the limited industrial base, bad infrastructure, and extensive imports of basic commodities make the trade flows unresponsive to price changes. In the case of Malawi, minimal value addition to exports (principally agricultural products) and the need to import oil, machinery, and manufactured goods further limit the use of currency depreciation as a means of rectifying trade imbalances. Hence, although theory favors devaluation based on elastic trade reaction, operational limitations in Malawi discredit the efficacy of such a policy towards achieving a sustainable gain in the trade balance.

4.2.7.J-Curve Phenomenon

The J-Curve hypothesis of Malawi draws on the empirical findings of the regression estimate of the trade balance and the variation in the exchange rate. The lagged variation of the Real Effective Exchange Rate (REER) has a statistically significant and negative (-0.745, p = 0.044) coefficient, indicating that in the short term, devaluation of the Malawian kwacha momentarily worsens the trade balance. This result validates the J-Curve hypothesis first given by Magee, (1973), which states that a currency depreciation initially causes a deteriorating trade

balance because an initial increase in the price of imports takes place, while export quantities still trail behind due to production reorganization time lags, redrafting of export contracts, and logistic rigidities. Developing nations like Malawi typically experience such imbalances in the short term due to structural shortcomings, i.e., low production capacity, inadequate export diversification, and rigid reliance on imported basic products. The same findings were obtained by Onafowora, (2003), who confirmed the J-Curve effect in several Sub-Saharan countries, and indicated a lag in positive trade adjustment after currency devaluation.

In the long run, the long-run coefficient of the change in REER (1.215, $p = 0.011$) is significant and positive, meaning that currency depreciation eventually leads to an improved trade balance. This long-run advantage implies that Malawian exports become competitive in the international economy in the long run since foreign currency prices fall, while imports are relatively more expensive and will presumably be substituted by domestic alternatives. These trends are consistent with the Marshall-Lerner condition, which is true if the sum of the export and import price elasticities is greater than one, but is not empirically met in Malawi. non-price movements like trade reforms and sectoral reallocation could still bring improvements in the long run. Studies by (Bahmani-Oskooee & Ratha, 2004); (Ummah, 2019) in other developing economies showed the same long-run trade balance gains following currency devaluation. In addition, the positive coefficient (0.118, $p = 0.017$) points to those other structural determinants, including aid flows, foreign remittances, or export quality and infrastructure improvement, play a crucial role in determining trade outcomes over and above exchange rate fluctuations, an assertion for which there is support from (Arize et al., 2017) who stressed the primacy of wider institutional and structural adjustments in affecting trade balance paths.

This study area tackles Malawi's pressing economic issues by offering empirically based insights into the efficacy of exchange rate and trade policy. The analysis of the 2012 and 2023 currency devaluations elucidates the reasons for their failure to enhance the trade balance, highlighting structural impediments including insufficient export diversification, critical import reliance, and feeble local production. It promotes a transition from singular monetary interventions to a comprehensive reform strategy encompassing targeted export diversification (e.g., macadamia, soybeans, processed goods), strategic import substitution (e.g., fertilizers, pharmaceuticals), improved trade facilitation, and intensified regional integration via platforms such as AfCFTA and COMESA. The study provides pragmatic policy recommendations, including investment in agro- processing zones, digitization of trade processes, promotion of climate-smart agriculture, and enhancement of transparency in monetary policy. This report offers timely and practical suggestions for sustainable macroeconomic reform by Malawi 2063 and current worldwide economic discussions.

The 2023 devaluation of the Malawian kwacha failed to achieve its intended objectives of correcting foreign exchange deficiencies and narrowing the trade imbalance due to

entrenched structural challenges. Malawi's dependence on inelastic essential imports, such as fuel, medicines, and agricultural inputs, limited the responsiveness of import volumes to price changes. At the same time, the country's narrow export base, dominated by low-value primary commodities like tobacco, tea, and sugar, constrained its ability to benefit from a weaker currency. These weaknesses were compounded by a weak industrial base, limited infrastructure, and a lack of value-added processing, all of which prevented any meaningful expansion of exports. Additionally, the devaluation triggered inflationary pressures, pushing the annual inflation rate to 24.7% by December 2023, eroding purchasing power and increasing production costs. Despite the currency adjustment, foreign exchange reserves remained critically low, covering just 1.5 months of imports, while poor policy coordination and short-termism disrupted the potential long-run benefits of the J-Curve effect.

Addressing these failures requires a comprehensive and multi-pronged policy approach. First, export diversification must be prioritized through investments in agro-processing, non-traditional exports, and targeted product-market alignment. Simultaneously, import substitution strategies in select sectors, such as fertilizers and basic consumer goods, could reduce pressure on forex reserves. Strengthening industrial capacity and trade infrastructure will enhance Malawi's ability to scale up production and compete regionally. Moreover, improved monetary and exchange rate policy coordination is crucial to manage inflation and ensure devaluation is accompanied by supportive macroeconomic policies. Regional trade integration, especially leveraging AfCFTA and SADC protocols, can widen market access and enhance trade resilience. Finally, building foreign exchange buffers through remittances, FDI, and responsible resource management, alongside targeted social protection for inflation-affected households, will ensure a more stable and inclusive path to external balance.

This study's proposed policy reforms are informed by the successful experiences of Zambia, Mozambique, and Tanzania, which possess similar structural and macroeconomic traits to Malawi, including a significant dependence on primary exports, vulnerability to external shocks, and limitations in foreign exchange reserves. In formulating these ideas, I presume that Malawi's economic and institutional circumstances, especially regarding fiscal capacity, trade reliance, and sectoral structure, are adequately comparable to those of the cited nations. Despite the existence of context-specific variations, this assumption facilitates the adaptation of best practices to Malawi's context for exploratory and comparative objectives.

CHAPTER V
CONCLUSION AND RECOMMENDATION

This section presents the narrations of conclusion as well as policy recommendations in which strategies to cope with trade balance have been discussed. Furthermore, Limitations of the study and future research directions in as far as Malawi economy is concerned have been addressed as well.

5.1. Conclusion

This study examined the impact of currency devaluation on Malawi's trade balance, specifically assessing the validity of the Marshall-Lerner condition and investigating the presence of the J- Curve effect. The research yielded a series of notable outcomes utilising an Error Correction Model (ECM) and an Autoregressive Distributed Lag (ARDL) model grounded in time-series data. The results indicate that the real effective exchange rate (REER), a measure of depreciation, has statistically significant effects on the trade balance in both the short run and the long run. In the near term, the lagged significant negative coefficients of the REER indicate that currency depreciation initially deteriorates the trade balance, consistent with the J-Curve hypothesis (Bahmani-Oskooee & Ratha, 2004). The long-term positive relationship between the real effective exchange rate and trade balance suggests that devaluation is anticipated to enhance trade performance over time, hence confirming the existence of a J-Curve impact in Malawi.

Second, the Marshall-Lerner condition, postulating currency devaluation will improve the trade balance when the sum of the import and export price elasticities is more than one, does not apply empirically in Malawi. The aggregate elasticity estimate (0.067067) is strongly less than unity, indicating inelastic import and export demands. This is consistent with earlier findings in other sub-Saharan nations where structural constraints, low output capacity, and lack of export diversification impair the responsiveness of trade flows to exchange rate fluctuations (Arize et al., 2017). This suggests that devaluation alone may be insufficient as a policy tool to improve the trade balance unless it is accompanied by trade-enhancing and supply-side reforms.

Thirdly, key macroeconomic fundamentals, trade openness, inflation, external debt stocks, and GDP per capita growth, were also found to significantly influence Malawi's trade balance. Trade openness and economic growth are positive influences, which indicate liberalized trade policy and increased incomes enhance trade performance (Emeka & Kelvin, 2016). Inflation is a negative influence, which may be due to lower export competitiveness and increased imported costs. These results emphasize the importance of experiencing

macroeconomic stability to enable positive trade performances.

Finally, the statistical significance and the expected negative sign of the error-correction term (CoinEq(-1)) confirm the presence of a long-run equilibrium relationship among the variables, with long-run line deviations being corrected along the way. It is in favor of the theoretical hypothesis that trade balance determinants correct to long-run equilibrium in response to short-run shocks (Pesaran et al., 2021). In summary, while currency devaluation shows potential to improve Malawi's trade balance in the long run, its overall effectiveness is limited by low price elasticities. Policymakers should therefore adopt a comprehensive approach, complementing exchange rate management with policies that enhance export competitiveness, promote diversification, reduce reliance on imports, and ensure macroeconomic stability. Such an integrated policy mix is critical for sustainably improving the trade balance and advancing Malawi's long-term economic development goals.

5.2. Recommendations

The 2023-kwacha devaluation has failed to yield the expected enhancements in Malawi's trade balance or overall macroeconomic performance. This analysis delineates the structural constraints, namely, insufficient export diversification, import inelasticity, and limited production capacity, that impede the efficacy of exchange rate modifications. Although the research provides significant empirical insights, it fails to present a comprehensive answer. It emphasizes the pressing necessity for further government-driven policy improvements. The thesis suggests a set of adaptive techniques for export diversification, import substitution, trade facilitation, and regional integration, informed by successful regional experiences. These ideas are meticulously tailored to align with Malawi's distinct economic framework, geographic limitations, and institutional capabilities, ensuring their pertinence and practicality within the nation's developmental environment.

Commodities leveraging for Malawi

1. **Legumes (Soybeans, Groundnuts, Cowpeas)**

Legumes like soybeans, groundnuts, and cowpeas provide Malawi with a significant competitive edge owing to their drought resilience and the rising worldwide demand for food and industrial uses, including soybean oil. These crops are exceptionally adapted to Malawi's climate and may be effectively cultivated by smallholder farmers at comparatively low production costs. To fully leverage this potential, the country should advocate for crop diversification via agricultural extension services, drawing on successful models such as the SIMLESA project, to incorporate legumes with staple crops like maize for improved resilience and income stability. Investing in local processing facilities for value-added products, like as

soybean oil and peanut butter, will provide access to profitable regional markets, including COMESA and SADC. Furthermore, enhancing finance accessibility for smallholders will facilitate increased production, bolster food security, and significantly augment national export revenues.

2. Sugar

Sugar continues to be a crucial export crop for Malawi, bolstered by established markets in the European Union and adjacent nations, alongside stable production facilitated by the estate sector. To augment its competitiveness, Malawi ought to invest in the expansion of irrigation infrastructure to increase yields and diminish reliance on erratic rain-fed agriculture. Diversifying into sugar by-products like ethanol and molasses can create new revenue streams and enhance the sector's resilience to raw sugar price volatility. Moreover, engaging in preferential trade agreements within the African Continental Free Trade Area (AfCFTA) will provide access to expansive African markets, establishing Malawi as a pivotal regional supplier and fostering sustained trade expansion and economic advancement.

3. Tea and Coffee

Tea and coffee are valuable export commodities that provide Malawi with significant economic opportunities, with established markets in nations like the United Kingdom and South Africa. Although tea continues to be a reliable source of export revenue, coffee offers considerable prospects for revitalization, as emphasized in recent national dialogues. To realize this potential, strategic investments in farmer education and the dissemination of enhanced coffee seedlings can revitalize production and elevate quality. Augmenting tea processing capability to manufacture superior blends will enable Malawi to compete more effectively in demanding international markets. Furthermore, utilizing digital trade platforms to link local producers directly with foreign purchasers might diminish transaction costs, enhance profit margins, and establish a more inclusive and efficient trading system.

4. Emerging Crops (Avocado, Papaya, Cassava)

Novel crops like avocado, papaya, and cassava provide significant prospects for Malawi to diversify its agricultural exports and access lucrative foreign markets. Avocados and papayas are increasingly popular in European and Middle Eastern markets as consumer preferences shift towards healthy and exotic products, but cassava demonstrates significant industrial potential for ethanol and starch production. To fully leverage these advantages, establishing cooperatives can assist small-scale manufacturers in optimizing export logistics, adhering to international

quality standards, and enhancing bargaining power. Investing in cassava processing infrastructure will facilitate the production of value-added industrial products, so creating new revenue streams and diminishing dependence on conventional exports. Additionally, the use of blockchain-based technologies for supply chain tracking can enhance transparency, satisfy the demands of ESG- aware consumers, and establish Malawi as a trustworthy and ethical exporter in international markets.

Strategies to Cope with Trade Deficits

1. Export Diversification and Value Addition

Export diversification and value addition are essential techniques for reducing Malawi's trade imbalance and enhancing its economic resilience. By prioritizing agro-processing for essential commodities such as maize, legumes, and cassava, the nation can substantially augment the value of its exports while reducing its reliance on raw materials. Processed agricultural products, such as soybean oil and cassava-derived ethanol, attract elevated pricing and are ideally suited for regional markets such as COMESA and SADC. The government can allocate $50 million in green bonds to establish agro-processing facilities, so fostering industrial growth, generating employment opportunities, and enhancing trade performance.

Furthermore, the establishment of rural agro-processing centers might mitigate post-harvest losses and promote smallholder engagement in value chains. Technical help and market access programs can enable local cooperatives to comply with international standards, hence enhancing the competitiveness of Malawian products. Public-private collaborations can enhance innovation in packaging, storage, and transportation, rendering exports more appealing and less perishable. Educational initiatives and vocational training in agro-industrial com petencies will guarantee that the workforce is equipped for this transition. A comprehensive value addition strategy will augment foreign exchange profits and promote inclusive rural development nationwide.

2. Enhance Foreign Exchange Reserves

Augmenting foreign exchange reserves is essential for stabilizing the Malawian kwacha and bolstering the nation's import capabilities. Malawi may enhance openness, security, and efficiency in managing its foreign currency reserves by implementing blockchain-tracked reserve funds supported by $100 million in green bonds. A stable exchange rate reduces import

expenditures, which constitute about 30% of the national import expenditure, mostly influenced by elevated transportation costs. The restoration of Reserve Bank of Malawi (RBM) foreign exchange auctions can ensure that currency values align with market forces, thereby enhancing investor confidence and alleviating strain on the balance of payments.

Moreover, establishing foreign exchange reserves mitigates susceptibility to external disturbances, such as variations in global commodities prices or delays in donor funding. Strategic alliances with regional central banks and development institutions can enhance reserve sufficiency. Malawi may consider utilizing novel instruments like diaspora bonds to leverage remittance flows and expand the reserve base. Enhancing the export-to-import ratio via measures that foster competitiveness would augment these initiatives. A strong and effectively managed reserve position supports macroeconomic stability, enhances investor confidence, and protects the nation's ability to fund essential imports.

3. Improve Agricultural Productivity

Enhancing agricultural production is crucial for augmenting Malawi's export potential and diminishing dependence on expensive imports. A strategic investment of $10 million in training programs via TEVETA and LUANAR can enhance farmers' skills in agro-processing and climate- resilient farming techniques, resulting in more efficient and sustainable agricultural practices. A projected 10% enhancement in productivity would substantially elevate export volumes, aiding in the mitigation of the nation's import expenditures. Complementary activities, including the promotion of irrigation systems and the expansion of local fertilizer production, would diminish reliance on foreign supplies, enhance food security, and bolster long-term economic stability.

The implementation of contemporary technology, including precision agriculture, drought- resistant seed types, and mobile-based extension services, has the potential to transform smallholder productivity and resilience. Forming farmer cooperatives and providing access to inexpensive financing can enhance bulk procurement of inputs and collective marketing, hence boosting economies of scale. Enhanced rural infrastructure, specifically feeder roads and storage facilities, will augment market access and diminish post-harvest losses. An enhanced agricultural sector not only elevates exports but also augments household incomes, diminishes rural poverty, and propels inclusive economic growth.

4. Strengthen Regional Trade

Bolstering regional commerce is a crucial strategy for diminishing Malawi's trade imbalance and improving market access for domestic companies. Creating a $5 million blockchain-based digital trade infrastructure can link farmers directly to regional marketplaces within COMESA and SADC, decreasing transaction costs by approximately 20% through enhanced efficiency and transparency. Augmented exports to adjacent nations, such as maize consignments to Mozambique, can substantially enhance trade volumes and revenues. Malawi should utilize established structures such as the Malawi Trade Portal and the National Trade Facilitation Committee to optimize cross-border processes and eliminate logistical obstacles for efficient implementation.

Furthermore, aligning trade policies with regional partners helps mitigate delays at border crossings and diminish non-tariff obstacles. Enabling access to market information, like area pricing patterns and buyer contacts, can allow farmers and agribusinesses to negotiate more favourable agreements. Enhancing the capabilities of customs officials and small exporters will improve trade compliance and efficiency. Enhancing regional infrastructure, encompassing road and rail connections, will be crucial in diminishing travel durations and expenses. Ultimately, enhanced regional integration will augment foreign exchange revenues and foster a more robust and varied trading ecosystem for Malawi.

5. Fiscal Discipline and Debt Management

Fiscal discipline and proficient debt management are essential for sustaining macroeconomic stability in Malawi. By constraining deficit financing by the Reserve Bank of Malawi (RBM), the government can mitigate inflation and stabilize the kwacha, thus alleviating pressure on foreign exchange reserves. The stabilization is key for ensuring the importation of critical supplies, such as fertilizers, which are indispensable for agricultural output. Malawi should seek international assistance, including the World Bank's proposed $80 million grant, associated with the execution of structural reforms under the supervision of the International Monetary Fund (IMF), to guarantee fiscal responsibility and long-term economic resilience.

Furthermore, improving domestic revenue generation via tax reforms and broadening the tax base can diminish dependence on foreign borrowing. Establishing transparent public

financial management systems will guarantee the efficient utilization of borrowed funds for high-impact initiatives. Enhancing debt transparency and conducting regular debt sustainability assessments can help policymakers make informed decisions and prevent future economic crises. Promoting private sector investment via policy stability and enhanced business conditions can alleviate fiscal pressures. Ultimately, prudent fiscal stewardship is crucial for reinstating confidence, attracting investment, and establishing a strong economic foundation for sustainable development.

6. Infrastructure Investment

Investment in infrastructure is a strategic imperative for enhancing Malawi's export competitiveness and rectifying trade imbalances. Enhancing Kamuzu and Chileka International Airports can decrease export logistics expenses by as much as 25%, hence increasing the competitiveness of Malawian products in regional and global markets. Reduced transportation costs not only improve export profitability but also aid in diminishing the trade deficit. The government should work with the African Development Bank (AfDB) via public-private partnerships to finance these enhancements, utilizing external knowledge and capital to provide impactful infrastructure that fosters sustained economic growth.

In addition to airports, investing in ancillary infrastructure, including road networks, storage facilities, and energy systems, is essential to realize the full potential of trade. Enhanced logistical infrastructure diminishes delays, mitigates post-harvest losses, and guarantees products arrive at markets in optimal shape. Creating export processing zones adjacent to enhanced transportation hubs can attract foreign investment and invigorate industrial activity. The use of digital infrastructure, including customs automation and cargo tracking, will optimize trade operations and improve transparency. An advanced and interconnected infrastructure system would enhance trade efficiency, generate employment, promote rural development, and establish Malawi as a competitive entity in both regional and global markets.

5.3 Limitations of the Study

This analysis provides valuable insights into the effects of currency depreciation on Malawi's trade balance and macroeconomic indicators; however, several limitations remain. A key shortcoming lies in the use of aggregated national data, which can mask important sector-specific and regional dynamics. Without disaggregated analysis, the study overlooks product-specific export potential, an essential component for designing effective export diversification

strategies. Additionally, reliance on annual time-series data limits the study's capacity to capture short-term fluctuations and rapid adjustments associated with currency devaluation. The absence of high-frequency data undermines the examination of the J-Curve hypothesis, which emphasizes delayed improvements in the trade balance following exchange rate shifts. Similarly, by using aggregate trade elasticity estimates, the analysis potentially disregards variations in how different sectors, such as agriculture, manufacturing, or energy, respond to exchange rate movements, thereby limiting the practical utility of policy recommendations aimed at enhancing sectoral competitiveness.

Moreover, the study faces potential omitted variable bias due to the exclusion of crucial explanatory factors such as institutional quality, trade agreements, political stability, and supply-side constraints. These variables can significantly influence trade outcomes and interact with exchange rate changes in complex ways that are not captured in the current model. Furthermore, the analysis does not adequately account for structural and policy transitions in Malawi's economy, such as shifts in exchange rate regimes, phases of trade liberalization, or monetary policy reforms, factors that may introduce nonlinearities or structural breaks and reduce the reliability of long-run projections. While the research offers context-specific findings, its broader applicability is limited due to Malawi's unique economic structure and trade composition. These findings may not translate effectively to other developing economies without validation through comparative regional studies. Lastly, the use of the Real Effective Exchange Rate (REER) as a proxy for currency value, though broadly informative, may obscure bilateral exchange rate impacts with major trading partners, thus compromising the precision of estimated trade responses in key international markets.

5.4 Future Research Directions

I completely concur that recognizing the potential of export items, both in the immediate and extended future, is crucial for advancing Malawi's export diversification strategy. I recommend that future research should include thorough assessments of product-level export potential, especially within the framework of regional economic integration, such as the African Continental Free economic Area (AfCFTA) and SADC protocols. This entails conducting sectoral competitiveness analysis, projecting market demand, and mapping regional comparative advantages to pinpoint high-potential export areas. This research will yield actionable insights for policymakers and investors by integrating these findings with value chain development and agro- industrial transformation. Furthermore, integrating export potential analysis with exchange rate sensitivity measurements, such as product-specific trade elasticity, would facilitate the formulation of customized and data-driven trade promotion policies. This cohesive strategy would enhance theoretical comprehension while facilitating actual economic

planning by Malawi's implementation capabilities and regional context. To enhance the relevance and policy applicability of exchange rate–trade balance research in developing economies, such as Malawi, future studies should prioritize thorough value chain evaluations, market access limitations, and the technological prerequisites necessary for agro-industrial transformation. Future studies must tailor policy ideas to Malawi's distinct economic framework, implementation capabilities, and fiscal constraints to ensure feasible and sustainable economic outcomes.

Utilizing sector-specific trade elasticity analysis will enable policymakers to identify which industries are most sensitive to currency fluctuations, providing them with precise tools to enhance competitiveness through informed trade and industrial policies. Integrating global trade dynamics and exogenous shocks, such as commodity price fluctuations, geopolitical instability, and supply chain disruptions, would enhance the explanatory capacity of exchange rate models and their prediction precision about trade balance adjustments. Furthermore, employing higher-frequency data (quarterly or monthly) would enable researchers to discern short-term market responses sometimes concealed in annual data. Broadening the analytical framework to encompass regional comparisons within Africa would enhance the research by elucidating best practices, assessing the comparative efficacy of various exchange rate regimes, and guiding regional economic integration plans. Collectively, these enhancements would markedly enrich the empirical and policy understanding of exchange rate research for sustainable development.

REFERENCES

Abille, A. B., & Meçik, O. (2023). The exchange rate, income, trade openness and the trade balance: longitudinal panel analysis for selected SSA countries. International Trade, Politics and Development, 7(2), 138–153. https://doi.org/10.1108/itpd-04-2023-0007

Acar, M. (2000). Devaluation in Developing Countries: Expansionary or Contractionary? Journal of Economic and Social Research, 2(1), 59–83.

Adebayo, M. O. (2021). View of Currency Devaluation: A review. Chiang Mai University Journal of Economics, 25(2), 15–35. https://so01.tci-thaijo.org/index.php/CMJE/article/view/247899/169341

Adeniyi, F. O. (2020). Impact of foreign direct investment and inflation on economic growth of five randomly selected Countries in Africa. Journal of Economics and International Finance, 12(2), 65–73. https://doi.org/10.5897/jeif2020.1031

Adusei, M. (2021). Interest rate and the social performance of microfinance institutions. Quarterly Review of Economics and Finance, 80, 21–30. https://doi.org/10.1016/j.qref.2021.01.009

Arize, A. C., Osang, T., & Slottje, D. J. (2000). Exchange-rate volatility and foreign trade: Evidence from thirteen LDC's. Journal of Business and Economic Statistics, 18(1), 10–17. https://doi.org/10.1080/07350015.2000.10524843

Asongu, S., Akpan, U. S., & Isihak, S. R. (2018). Determinants of foreign direct investment in fast-growing economies: evidence from the BRICS and MINT countries. Financial Innovation, 4(1). https://doi.org/10.1186/s40854-018-0114-0

Bahmani-Oskooee, M., & Gelan, A. (2017). Munich Personal RePEc Archive Exchange-rate Volatility and International Trade Performance : Evidence from 12 African Countries. Munich Personal RePEc Archive, 81177, 2–17.

Bahmani-Oskooee, M., & Ratha, A. (2004). The J-curve: A literature review. Applied Economics, 36(13), 1377–1398. https://doi.org/10.1080/0003684042000201794

Bannerjee, A., Dolado, J., & Mestre, R. (1998). Error-Correction Mechanism Tests for Cointegration in a Single-Equation Framework Wadham College and Institute of Economics and Statistics , University of Oxford , Universidad Carlos III de Madrid and Research Department , Bank of Spain First version rece. Journal of Time Series Analysis, 19(1995), 1–17.

Brandao, A. (n.d.). The Role of Institutional Quality Factors on Inequality in Upper-Middle Income Countries in Latin America. 401.

Breitenbach, M. C., & Amaral, A. J. C. (2021). The Marshall-Lerner Condition in the Fragile Five Economies: Evidence from the ARDL Bounds Test Approach. Business and Economics Research Journal, 12(4), 731–750. https://doi.org/10.20409/berj.2021.349

Breusch, A. T. S., & Pagan, A. R. (2008). A Simple Test for Heteroscedasticity and Random Coefficient Variation Published by : The Econometric Society Stable URL : http://www.jstor.org/stable/1911963. 47(5), 1287–1294.

BROWN, R. L., & And, J. D. and J. M. E. (2016). Techniques for Testing the Constancy of Regression Relationships over Time Author (s): R . L . Brown , J . Durbin and J . M . Evans Published by : Wiley for the Royal Statistical Society Stable URL : http://www.jstor.org/stable/2984889 Accessed : 09-03-. 37(2), 149–192.

Brueckner, M., Lederman, D., Brueckner, B. M., & Ledermanj, D. (2025). The Suntory and Toyota International Centres for Economics and Related Disciplines London School of Economics and Political Science Trade Openness and Economic Growth : Panel Data Evidence from Sub-

Saharan Africa Published by : Wiley on behalf of London S. 82(December 2015), 1302–1323. https://doi.org/10.1111/ecca.

Daniel eka bonokeling, Sholeh, M., & Mispandi, M. (2023). The Effect of Investment, National Government Expenditure, Exports, and Imports on Indonesia's Economic Growth. Jurnal Ekonomi Dan Pembangunan, 30(1), 56–69. https://doi.org/10.14203/jep.30.1.2022.56-69

Doane, D. P., & Seward, L. E. (2011). Measuring skewness: A forgotten statistic? Journal of Statistics Education, 19(2). https://doi.org/10.1080/10691898.2011.11889611

Dornbusch, R. (1985). Nber working paper series inflation, exchange rates and stabilization. 1739.

Dossani, S. (2012). Does currency devaluation improve trade balance ? The case of Malawi. Eco 495.

Dzigbede, K. D., Pathak, R., & Muzata, S. (2023). Budget Systems and Post-Pandemic Economic Resilience in Developing Countries. Journal of Public Budgeting, Accounting and Financial Management, 35(3), 333–353. https://doi.org/10.1108/JPBAFM-03-2021-0036

Elmasry, N. (2021). The Role of Exchange Rate Policy in Trade Balance Adjustment: Investigating the Industry-Level Bilateral Trade Between Egypt and Italy. https://fount.aucegypt.edu/etds

Emeka, & Kelvin, A. (2016). ARDL için ayrıntılı bir döküman. Journal of Statistical and Econometric Methods, 5(3), 63–91.

Enders, T. A., & Strader, L. C. (2015). Auxin activity: Past, present, and future. American Journal of Botany, 102(2), 180–196. https://doi.org/10.3732/ajb.1400285

Gujarati, D. (2008). Basic_Econometrics_by_Damodar_N_Gujarati.pdf. 130. Gujarati, D. N., & Porter, D. C. (2010). Essentials of Essentials of (Issue March).

Inuwa, A., Usman, M. A. M., & Mohammed, A. J. (2023). An Analysis of the Effect of Naira Devaluation on Nigerian Balance Of Trade. 8(1). https://doi.org/10.56201/ijefm.v8.no1.2023.pg1.29

Janjua, P. Z., Samad, G., & Khan, N. (2014). Climate change and wheat production in Pakistan: An autoregressive distributed lag approach. NJAS - Wageningen Journal of Life Sciences, 68, 13–19. https://doi.org/10.1016/j.njas.2013.11.002

Jin, H., & Guo, X. (2023). Annual Report 2023. Clean Technologies and Recycling, 3(4), 302–306. https://doi.org/10.3934/ctr.2023020

Kamugisha, G., & Assoua, J. E. (2020). Effects of a Devaluation on Trade Balance in Uganda : An ARDL Cointegration Approach. 12(7). https://doi.org/10.5539/ijef.v12n7p42

Keho, Y. (2021). Cogent Economics & Finance Determinants of Trade Balance in West African Economic and Monetary Union (WAEMU): Evidence from heterogeneous panel analysis Determinants of Trade Balance in West African Economic and Monetary Union (WAEMU): Evidence from h. Cogent Economics & Finance, 9(1). https://doi.org/10.1080/23322039.2021.1970870

Lemi, A. (2019). Aid for Trade and Africa ' s Trade Performance : Evidence from Bilateral Trade Flows with China and OECD Countries Adugna Lemi To cite this article : Adugna Lemi (2017) Aid for Trade and Africa ' s Trade Performance : Evidence from Bilateral Trade Flows. Journal of African Trade, 4(1–2), 37–60. https://doi.org/10.1016/j.joat.2017.12.001

Lütkepohl, H. (2005). New Introduction to Multiple Time Series Analysis. New Introduction to Multiple Time Series Analysis. https://doi.org/10.1007/3-540-27752-8

Magee, S. P. (1973). Currency Contracts , Pass-through , and. Brookings Papers on Economic Activity, 1973(1), 303–325.

Malefane, M. R. (2020a). Trade openness and economic growth in Botswana : Evidence from cointegration and error- correction modelling Trade openness and economic growth in Botswana : Evidence from cointegration and error-correction modelling. Cogent Economics & Finance, 8(1). https://doi.org/10.1080/23322039.2020.1783878

Malefane, M. R. (2020b). Trade openness and economic growth in Botswana: Evidence from cointegration and error-correction modelling. Cogent Economics and Finance, 8(1). https://doi.org/10.1080/23322039.2020.1783878

Markos, D., & Minch, A. (2021). Impact of Exchange Rate Devaluation in Ethiopia and Forecasting Foreign Exchange Rate Using ARIMA Model. European Journal of Business and Management, 13(17), 22–35. https://doi.org/10.7176/ejbm/13-17-02

Maru Ayinewa, Y., Belay Zegeye, M., Ayanaw Alemu, T., & Belaye Tefera, A. (2024).

Unravelling the devaluation puzzle: Empirical insights into the transmission channel on balance of payments and output in Ethiopia. F1000Research, 13, 685. https://doi.org/10.12688/f1000research.151984.1

Mbwambo, S. K., & Mchukwa, E. W. (2024). East African Journal of Business and Economics The Effects of Exchange Rates Volatility and Inflation on Tanzania ' s Trade Balance : Evidence from J-Curve Effect. 7(2), 343–357. https://doi.org/10.37284/eajbe.7.2.2504.343

Mensah, N. O., Bazimwomit, T. K., Kambilige, S. P., Amrago, E. C., Asare, J. K., Donkor, A., & Tutu, F. O. (2022). Impact of Formal Credit on Tomato Trader's Welfare in the Upper East Region of Ghana: A Propensity Score Matching Estimation. World Journal of Entrepreneurship, Management and Sustainable Development, 18(3), 345–361. https://doi.org/10.47556/J.WJEMSD.18.3.2022.3

Mndaka, G., Silumbu, E., & Mangani, R. (2022). Testing the J Curve and the Marshall-Lerner Condition: Evidence from Southern African Development Community Countries. Evidence from Southern African Development Community Countries. Economics, 11(3), 98–107. https://doi.org/10.11648/j.eco.20221103.11

Mnyanga, M., Chirwa, G. C., & Munthali, S. (2022). Impact of Safety Nets on Household Coping Mechanisms for COVID-19 Pandemic in Malawi. Frontiers in Public Health, 9(February), 1–10. https://doi.org/10.3389/fpubh.2021.806738

Mohanty, A. K. (2017). External Debt and Economic Growth in Ethiopia: a Time Series Econometrics Approach. Journal Homepage: International Journal of Research in Social Sciences, 7(10), 2249–2496.

Molepo, E. P., & Jordaan, A. C. (2024). A causal analysis between exports, imports and GDP per capita in the Southern African Customs Union Countries. Journal for Studies in Economics and Econometrics, 48(2), 168–185. https://doi.org/10.1080/03796205.2024.2343723

Musila, J. (n.d.). The dynamics of in fl ation , exchange rates and the trade balance in a small economy. https://doi.org/10.1108/IJDI-12-2017-0209

Narayan, P. (2004). Reformulating critical values for the bounds F-statistics approach to cointegration: an application to the tourism demand model for Fiji. August.https://www.researchgate.net/profile/Paresh_Narayan/publication/26804853

Nathaniel, s. p. (2020). Does exchange rate have asymmetric impact on trade balance ? fresh insights from combined. 15(15), 259–269. https://doi.org/10.2478/sbe-2020-0019

Ndou, E. (2021). Exchange rate changes , price level and the income effects on trade balance in South Africa. SN Business & Economics, 1(2), 1–19. https://doi.org/10.1007/s43546-021- 00039-8

Ndulu, B. J. (1999). Africa. 13(3), 41–66. Ntezimana, J., & Mulyungi, P. (2020). The Effect of Money

Supply on Economic Growth in Rwanda. *International Journal of Innovative Research and Development, 9*(4), 34–43. https://doi.org/10.24940/ijird/2020/v9/i4/apr20039

Obuobi, B., Li, X., Nketiah, E., Awuah, F., Denkyi Boateng, E., Kwasi Sampene, A., Wiredu, J., Ashun, J. M., Adu-Gyamfi, G., Adjei, M., Boateng, E. D., & Sampene, A. K. (2020).

Relationship between Capital Structure and Banks' Performance; an Evidence of Banks Listed on the Ghana Stock Exchange. *International Journal of Econometrics and Financial Management, 8*(1), 13–20. https://doi.org/10.12691/ijefm-8-1-3

Odionye, J. C., & Chukwu, J. O. (2021). THE ASYMMETRIC EFFECTS OF SUB-SAHARAN AFRICA. LXVI(230), 135–156.

Okpeku, L. (2022). Effect of Depreciation on Trade Balances in Selected African Countries. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4246137

Onafowora, O. (2003). Exchange rate and trade balance in east asia: Is there a J-curve? Economics Bulletin, 5(1).

Pesaran, M. H., Shin, Y., & Smith, R. J. (2021). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289–326. https://doi.org/10.1002/jae.616

Presbitero, A. F. (2010). Development studies working papers total public debt and growth in developing countries. European Journal Of Development Research, 24(4), 1–23.

Programme, P., Yu-hui, F. S., Econometrics, I., Statistics, F., Science, P., Price, P., Evidence, E., Health, N., Regulation, P. P., Decision, P., Drugs, D., & Statistics, F. (2017). Statement of Purpose Statement of Purpose. 2013, 1–2. Report, N. S. O. (2023). Statistical Yearbook 2023. Report, 1(NSO).

Sandow, J. N., Oteng-abayie, E. F., & Duodu, E. (2022). Jo ur l P re of. HELIYON, e10627. https://doi.org/10.1016/j.heliyon.2022.e10627

Schneebaum, A. (2016). Wirtschaft neu denken: Blinde Flecken in der Lehrbuchökonomie. Shuaibu, M., & Isah, A. (2020). Exchange Rate Dynamics and Trade Balance in Selected African Countries. 7, 69–83.

St Barbara Limited ACN. (2024). Annual Report 2024. Fresenius.Com, September, 105. Tarawalie, A. B., & Kpana, K. A. (2022). Monetary Policy, Exchange Rate Fluctuations and Trade Balance: The Sierra Leone Experience. Modern Economy, 13(03), 425–441. https://doi.org/10.4236/me.2022.133023

Todaro, M. P., & Smith, S. C. (2020). Economic Development. Thirteenth Edition. In Pearson. (Issue 13th Edition). https://www.mkm.ee/en/objectives-activities/economic-development

Vivi Elsye Liau, & Caroline Geetha. (2020). An Empirical Evidence on the Impact of Real Effective Exchange Rate on Trade Balance. Malaysian Journal of Business and Economics (MJBE), 7(2), 51. https://doi.org/10.51200/mjbe.vi.2881

Wang, X. (2023). Exchange Rate Depreciation and Balance of Trade in Developing Countries: Evidence from Ghana Exchange Rate Depreciation and Balance of Trade in Developing Countries: Evidence from Ghana. 3(October). https://doi.org/10.57017/jaes.v15.3(69).13

Were, M. (2021). Discussion Paper No. 2001 / 116 The Impact of External Debt on Economic Growth in Kenya: An Empirical Assessment. Maureen Were. 17–18.

Wooldridge Boyd, R. (2020). PART 3 Advanced Topics. In Tolerance Analysis of Electronic Circuits Using MATHCAD. https://doi.org/10.1201/9781315215402-43

Zegeye, M. B., & Alemu, T. A. (2025). Unravelling the devaluation puzzle: Empirical insights into the

transmission channel on balance of payments and output in Ethiopia Yigermal Maru Ayinewa. 1–28.