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Linkage of Exchange Rate and Trade: Empirical Evidence from Pakistan

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Abstract

This study examines the relationship between the Real Effective Exchange Rate and Pakistan's exports and imports. This paper examines the processes occurring in Pakistan, namely the devaluation process and its impact on trade balances and the balance of payments. A time series dataset up to 2021 was acquired for the research, and after the unit root test for integrated variables, the long-run coefficients were estimated using the ARDL method. To further substantiate the existence of a long-term relationship between the variables, the limits test for cointegration was utilized. Consequently, the empirical data indicates that all coefficients of the independent variables have negative consequences for Pakistan's balance of payments. The boundaries test for cointegration assesses the existence of a long-term relationship. The author contends that devaluation has a minimal impact on Pakistan's balance of payments, necessitating alternative strategies to rectify trade balances. Furthermore, to augment its part of needs, the government must focus its efforts on promoting a higher amount of foreign direct investment through improved policies.

Keywords: Devaluation, Balance of Payments, REER, X/M, Bounds Test.

Introduction

This study demonstrates that the Real Effective Exchange Rate (REER) is a significant component of comprehensive indices concerning countries, such as Pakistan, that contend with trade deficits and various external sector challenges. Acquiring comprehensive information regarding the correlation between REER and trade flows is essential for formulating effective macroeconomic policies (Baharumshah & Ariff, 2022; Habib et al., 2021). In theory, devaluation of the exchange rate is anticipated to enhance trade balances, as exports will rise and imports will decline. However, the data from the developing country lacks credibility, and the impact of these drivers is moderate due to structural factors, export types, and policies (Choudhary et al., 2023; Javed & Mughal, 2022). This has led to an export structure focused on inexpensive technology and poor value addition, along with an import-sensitive export base, so diminishing the justification for devaluation as a means to sustain long-term export growth. Over the past few decades, fluctuations in foreign direct investment (FDI) have significantly affected a nation's currency, prompting

critical inquiries regarding local currency depreciation and its implications for trade and balance of payments metrics (Malik & Ahmed, 2023; Yousaf et al., 2022). This study seeks to analyze the impact of REER fluctuations on exports and imports in Pakistan from 1980 to 2021, employing the VAR-ADF technique to investigate long-term relationships. Previous work indicates that while currency devaluation yields short-term benefits, its long-term efficacy remains uncertain, particularly considering structural and policy shocks in developing nations (Hussain et al., 2023; Alam et al., 2021). The indicators of the Real Effective Exchange Rate (REER) regarding trade balances are negative for Pakistan, indicating that devaluation cannot be regarded as a remedy for balance of payment issues (Farooq & Sattar, 2023; Ahmed, Ahmed, Ahmad & Shahrin, 2022). Academics advocate for the development of intricate policy solutions to enhance export competitiveness, diversify exported goods, and attract foreign direct investment, as more efficacious measures for addressing trade deficits (Raza et al., 2023; Shaikh et al., 2021). This study employs cointegration using the ARDL bounds testing methodology, appropriate for time series data, to elucidate the relationship between REER and trade factors (Zaheer & Shahbaz, 2023; Rehman et al., 2022). This study engages in the discourse regarding the improvement of trade and external sector performance in Pakistan by examining strategies to mitigate the effects of devaluation while also advocating for measures to achieve general economic stability (Iqbal et al., 2023; Khan & Ullah, 2022). The structural narrative of developing economies often entails excessive reliance on raw material exports and capital goods imports, which reflects an endeavour to promote industrial development. This type of trade causes a significant depletion of national income due to the import cost, leading to persistent trade deficits and a decrease in international competitiveness. Such trends of currency depreciation are correlated with the trade balance. The economic risk of these nations escalates with disequilibrium, underscoring the significance of certain policy actions (Kemal & Alvie, 1975). The appreciation of the REER in Pakistan in the early 1980s was driven by two main factors: an elevated dollar value relative to other global currencies, particularly those of Pakistan's trading partners, and a significantly higher inflation rate compared to that of the state's principal trading partners. This occurred because of the pass-through effect on Pakistan's actual Effective Exchange Rate (REER) resulting from fluctuations in the actual exchange rate and trade balances due to the strengthening of the dollar. This highlights significance of external factors, such as exchange rate fluctuations, in shaping Pakistan's trade competitiveness and macroeconomic outcomes(Zaiby, 2009).The divergence in inflation rates between a country, as higher domestic inflation erodes the competitiveness of domestic goods and services in international markets. This, in turn, increases the relative value of the domestic currency, making exports more expensive and imports cheaper. The appreciated REER in turn leads to an accentuated trade deficit; thus, policy measures have to be taken to attain balance. Common measures used to accomplish this purpose include devaluation of the domestic currency as it increases the export edge, narrows the trade deficit and avert trade balance (Hyder & Mehboob, 2005). Various theories have established distinct frameworks for discrediting a native currency, with the most prevalent being the monetary method, elasticity approach, and absorption approach. All methodologies offer the chance to examine the phenomena of devaluation from many perspectives, together with the peculiarities of the economic context and underlying assumptions. The approach employed to determine various exchange rate profiles emphasizes demand and supply issues, asserting that devaluation mitigates trade imbalances by curtailing currency circulation through elevated interest rates. Elasticity, conversely, assesses the ability of trade in exporting or importing to react to fluctuations in the exchange rate, positing that devaluation enhances trade balance by rendering exports more competitive or reducing the demand for imports. The absorption method views devaluation as a strategy to diminish the means by which a country obtains resources to rectify trade deficits and achieve external payments equilibrium. The monetary technique views devaluation as a means to rectify a trade deficit by reducing the

money supply and increasing interest rates depending on demand and supply dynamics. The elasticity method hybrid involves analyzing the variation in trade volume in relation to fluctuations in exchange rates; it demonstrates that devaluation can enhance the trade balance by augmenting exports and reducing imports. Within the framework of the absorption strategy, devaluation is perceived as a policy with externally skewed effects that diminishes a nation's capacity to absorb resources, aiming to minimize the trade deficit and achieve current account equilibrium. These methodologies provide a framework for comprehending the theoretical concepts of currency depreciation and its economic implications (Alse & Oskooee, 1995). Recent critiques of economic growth have scrutinized the effects of currency devaluation on trade relations, which are a crucial and delicate aspect of the balance of trade and competitiveness. Initial data suggests that currency devaluations exert two primary effects on trade in every nation. Consequently, export items are typically less expensive for purchasers, as they contribute to the augmentation of export revenues. Conversely, imports become expensive for domestic buyers, likely resulting in decreased demand for imports. This split encapsulates the discursive analysis of foreign exchange regimes, specifically currency devaluation, which is posited as beneficial due to its enhancement of exports and reduction of imports, while simultaneously being detrimental as it results in elevated costs, diminished buying power, and a decline in welfare. The aforementioned can be summarized as the net barter gain, which depends on the following factors: the volume of imports and exports, the flexibility of supply and demand adjustments, and the actions of the counterpart. This state has numerous implications for the economy:

Export Competitiveness: Devaluation enhances export profitability in global markets. Importers worldwide might thereafter get export products at reduced prices. This may potentially augment export volumes with export income.
Import Costs: Conversely, devaluations elevate the prices of imported products and services, hence imposing elevated costs on our citizens. This contributes to inflationary pressures in the economy.
Trade Terms: If exports fall less than imports, the depreciation of the domestic currency amplifies trade demands. Nonetheless, if import prices increase at a greater rate than export prices, trading conditions may deteriorate.
Balance of Payments: Devaluation can impact on balance of payments by potentially reduce the trade deficit as exports become more competitive and imports become relatively more expensive. However, this occurrence depends on numerous factors. There is unpredictable decrease in the exchange rate of Pakistan. On the other side, facing issues to compete the international market due to high competition and maintaining international standard to survive in the international market. As a result, this affects the trade balances. Based on this assumption, the objective is identifying linkage of trade, and exchange rate in case of Pakistan.

Literature Review

Previous Studies have significantly influenced discourse and influence of fluctuation of exchange rate on the overall volume of trade it enables. Their findings indicated a negligible effect of exchange rate fluctuation on trade size with developed economies, have been widely cited and have contributed to a deeper understanding of this complex issue. However, the debate remains ongoing, with some studies challenging these findings and highlighting the potential risks and international trade is affected by the unpredictability of currency exchange rate fluctuations. The study by Hooper and Kohlhagen (1978) indicates that variations in exchange rates exerted a limited influence on trade volume in industrialized nations throughout the examined period. Nonetheless, the absence of a considerable effect in their analysis, exchange rate fluctuations may affect trade volume. under certain conditions or economies. among 1983, Cushman identified an inverse link

between exchange rate volatility and trade volume among industrialized nations. The trading volume is typically adversely impacted by exchange rate volatility. This contradictory empirical conclusion highlights that the impact of fluctuations in currency rates and trade volume may differ based on the specific economic context, commercial relationships, and marketing effects. The literature has, however, not provided conclusive evidence on this perspective, necessitating greater research into the dynamics of this relationship and its consequences for trade policy and economic decisions. The author utilizes the ARCH model to analyze Qian and Virangis (1994), thereby enhancing the understanding of exchange rate volatility and trade in six nations. Moreover, data indicates that exchange rate fluctuation diminishes exports in Australia, Canada, and Japan. It also reveals that exchange rate volatility is inversely correlated with exports in many countries. The adverse correlation illustrates that the uncertainty and risk linked to exchange rate volatility can impede international commerce and trade, mostly due to the threat that future exchange rate unpredictability poses to enterprises' export decisions. Qian and Virangis (1994) also provide supplementary information regarding the potential consequences of exchange rate volatility on commerce. Given these facts, the stability of currency rates is essential for fostering international trade. In this study, Siddiqui and colleagues present a wealth of data regarding the elements affecting the exchange rate of Pakistan's currency from 1996. The findings of their research indicate that government expenditure results in a diminished actual currency worth. This suggests that expansionary fiscal policies, which are characterized by increased government spending, exert a downward pressure on its monetary worth compared to others. On top of that, the research shows that TOT positively affects the real exchange rate, even if this correlation is statistically insignificant. It may be deduced from this those changes in Pakistan's commercial relations, the ratio of export prices to import prices, has little effect on the real exchange rate. Siddiqui and colleagues in 1996 in their research provides valuable insights for policymakers in Pakistan. These insights highlight the possible impact that fiscal policy may have on the currency rate, as well as the limited effect that variations in terms of trade could have on the real exchange rate. Utilizing their methodological framework and employing co-integration approaches, impulse response, and variance decomposition analysis, Papadopoulos and Zis (2000) evaluate the factors influencing the Drachma to ECU conversion rate. The aim is to examine the existence of a long-term relationship between the exchange rate and other pertinent factors utilizing co-integration methods on monthly data from January 1980 to December 1991. A variation decomposition was conducted to determine the percentage impacts of changes in the Drachma/ECU exchange rate due to innovations in money supply and interest rates. The authors can quantify the extent of variance in monetary and interest rates, thereby assessing the impact of these factors on exchange rate volatility. Papadopoulos and Zis (2000) employ fixed-effect regressions to analyze the determinants of the Drachma/ECU exchange rate. The findings of this study are significant for both scholarly inquiry and practical policy formulation.

Janjua and Ahmed (2006) examined the viability of implementing the PPP system in four South Asian nations: Sri Lanka, India, Bangladesh, and Pakistan, all of which are Islamic countries. The Purchasing Power Parity (PPP) theory about two currencies utilized in international trade posits that the price levels of goods and services in the two respective countries must align with the current exchange rate of the currencies. This research utilized co-integration analysis to examine the relationship between nominal exchange rates and relative price levels over the long term. The research indicates a minimal direct correlation between long-term nominal exchange rates and relative pricing levels in Bangladesh. Conversely, the lack of co-integration in both Sri Lanka and India suggests the absence of a long-term stable relationship between the two variables. Based on the findings for Pakistan, Relative pricing levels and nominal exchange rates cohesive strongly. This suggests that both variables remain constant in the long term. These insights are crucial for enhancing the comprehension of exchange rate characteristics and price volatility in these

economies. This literature study examines three arguments, arguing that devaluation has a minimal effect on Pakistan's balance of payments. The decision to devalue the currency in Pakistan did not result in substantial alterations to the balance of payments reserves. The primary empirical inquiry of this research is: What is the relationship between devaluation and the trade deficit in Pakistan? This research aims to assess the efficacy of depreciation as a policy tool. Devaluation can effectively manage the balance of payments by rendering exports less expensive and imports comparatively more costly, hence mitigating substantial trade deficits. This relationship, however, is contingent upon several interactional and elastic factors, including the sensitivity of export and import demand to exchange rate fluctuations, variations in the supply responses of domestic producers, and the overall global economic context (Dornbusch 1980; Krugman 1989; Obstfeld 1995). This remarkable enhancement in balance has been elucidated through the J-curve impact subsequent to a currency devaluation. Although the effect requires time, its significance is inconclusive and varies among economies (Magee 1973, Rose & Yellen 1989). Pakistan's commercial and financial environment is characterized by instability, mostly due to a volatile exchange rate that frequently results in currency devaluation (Kemal & Qadir, 2005; Shahbaz et al., 2011). Moreover, Pakistan's reliance on imported energy and both finished and raw industrial materials amplifies the beneficial impact of devaluation on trade accounts (Khan, 2011; Nasir & Kalirajan, 2016). The intense globalization has heightened rivalry in foreign markets, while challenging international standards have increased pressure on textiles and agricultural exports (Amjad & Khan, 2003; Sial & Anwar, 2018). Moreover, while devaluation may enhance export levels, the non-productive nature of exports and minimal value-added output diminish those benefits (Ahmed et al., 2019; Siddiqui & Malik, 2001). Factors such as the energy crisis, political instability, and erratic economic policies exacerbate the challenges faced by exporters (Siddiqui, 2009; Javaid & Waqar, 2019). The importation of critical commodities such as fuel, machinery, and raw materials increases import costs, frequently resulting in a heightened trade deficit in the short term (Hussain & Bashir, 2020; Zaman & Shah, 2011). Significantly, substantial unpredictable elements, such as volatility in global commodity prices and variations in the political relationships of host nations with other countries, introduce an additional layer to the interplay between exchange rates and trade balances in the context of Pakistan (Iqbal & Zahid, 1998; Saeed et al., 2015). Therefore, a methodological approach is necessary to develop a relationship between exchange rate and trade volume, incorporating both external and internal components, as well as the short-run and long-run effects of exchange rate variations in Pakistan (Bhatti, 1996; Hayat et al., 2017). This study aims to theoretically and/or empirically investigate the structural linkage between Pakistan and other nations during a historical era (Afzal, 2004; Akbar et al., 2020). Currency depreciation and the dynamics of trade relations necessitate a complicated and comprehensive policy consideration. Research from the past decade emphasises that exchange rate stability is crucial for enhancing exports, particularly in emerging nations (Baffes et al., 2011). Additionally, the concept of 'export-led growth' has arisen; the theory posits that a favourable nominal effective exchange rate stimulates economic growth by enhancing exports in reaction to foreign demand (Rodrik, 2008). The analysis of Pakistan indicates that although devaluation might yield positive productivity outcomes, structural changes aimed at enhancing productivity may serve as a beneficial complementary factor (Tariq et al., 2020). Remittances significantly influence trade deficits by serving as a key source of foreign cash, which can mitigate the effects of costly imports (Ghani & Owais, 2017). The agricultural sector mostly encounters issues related to trade, necessitating assistance to enhance competitiveness and production (Faridi et al., 2016). The significance of trade agreements and regional integration in positively influencing export performance must be duly acknowledged (Khan & Ali, 2018). The strategies implemented to promote innovation and technology utilization include: These precautions are essential for ensuring high-quality exports. Siddiqui and Ahmad (2021). This research aims to analyze the

impact of supply chain disruption and the challenges encountered by the export sector in Pakistan (Zafar and Raza in press). Furthermore, the concept of sustainable exports has become a topic of discussion due to global consumer concerns regarding sustainable products. An examination of fiscal policy and currency valuation indicates that the government effectively mitigates the adverse effects of trade (Rehman et al., 2023). To analyze FDI, GDP, REER, and the import-export ratio as differential measures of trade performance, rather than conventional balance of trade indicators (Lipsey, 2001; Razin & Sadka, 2007; Kumar & Pradhan, 2017; Tahir & Khan, 2017; Rahman & Ahmed, 2019). This type of measurement is beneficial for policymakers and researchers concerning potential effects.

Novelty of the Study

The literature extensively documents the reviews of FDI, GDP, and REER concerning trade balance. This study seeks to enhance the current macroeconomic literature by examining the impact of macroeconomic variables on the import-export ratio, seen as a measure of the country's trade performance. This article specifically analyzes the reciprocal interactive effects of FDI, GDP, REER, and the export-import ratio, highlighting new communication pathways among these variables concerning trade balances in Pakistan.

Data and Methodology

The GDP growth rate in Pakistan declined due to COVID-19; exports also decreased, while inflation climbed (State Bank of Pakistan, 2020).This adversely impacted Pakistan's commerce, with exports decreasing by 12.3% and imports declining by 10.5% in 2020 relative to 2019 (Pakistan Bureau of Statistics, 2020).Pakistan's commerce had a downturn, with exports decreasing by 12.3% and imports declining by 10.5% in 2020 relative to the preceding year (Pakistan Bureau of Statistics, 2020). The significant alteration in trade was the cause of an abrupt shift in trade patterns and the imposition of trade restrictions to manage the pandemic, presenting a formidable challenge for emerging and underdeveloped nations such as Pakistan (World Bank, 2020). This study examines the relationship between FDI, GDP, and REER and their impact on the import-export ratio in Pakistan's economy from 1980 to 2021. Consequently, the results of this article may assist in formulating strategies that enable policymakers to mitigate the effects of the pandemic on Pakistan's trade and economic lifecycle. This research builds upon the analysis by Asif & Rashid (2010), which spans from 1980 to 2021, utilizing the ARDL model for proposition analysis. Annual data is employed to capture the enduring characteristics of certain variables, and long-run co-integration is examined to elucidate the distinct advantages of time series analysis in representing Pakistan's macroeconomy. This initiative aims to examine the structural connections within the economy to provide useful insights that will improve policy formation and future research (Farooq et al., 2020). All variables utilized in the analysis were sourced from the World Bank's data repository. Coefficients for the Real Effective Exchange Rate (REER) were obtained to ascertain the Purchasing Power (PP) value for the measuring of the export-import ratio. The impact of the Real Effective Exchange Rate (REER) on the trade balance is examined by the subsequent econometric model:

$$\ln(X/M)_t = \alpha + \beta_1 \ln(REER)_t + \beta_2 \ln(GDP)_t + \beta_3 \ln(FI)_t + \varepsilon_t$$

This is represented by X/M, where X denotes exports and M signifies imports. They employ variables in their speech, abbreviated as FDI, REER, and GDP. In accordance with Asif and Rashid (2010), the quantity of exports and imports has the effect of stimulating actual trading partner earnings and buying power. The research conducted by Asif and Rashid (2010) suggests that in order to improve the real income of the economy, it is recommended that the value of β2 should be negative, while the value of β3 should be positive. Asif and Rashid (2010) and Onafowora (2003) both state the impact of the currency rate remains uncertain, with possibility that it will either surpass or fall below zero. Exports increased after the devaluation, raising the exchange rate. Due to import values, an increased exchange rate worsens trade balance.This will be noticeable in the big picture. One of the most crucial things to do in order to guarantee the reliability of time series analysis is to check that the variables that are being used are stationary. The Augmented Dickey-Fuller (ADF) test evaluates variable stationarity. This test serves as a vital diagnostic evaluation. The results of the ADF test will determine whether or not the variables are stationary, which will then provide information for further modeling and analysis. Listed below is the formula that is used to perform the unit root test.

$$\Delta X_t = \alpha_0 + \alpha_1 t + \alpha_2 X_{t-1} + \sum_{i=1}^{m} \propto_{3i} \Delta X_{t-1} + \varepsilon_t$$

And following ARDL equation used for the purpose of analysis of the selected model for long run and short run analysis:

$$\Delta \ln\left(\frac{X_{it}}{M_{it}}\right) = \beta_0 + \sum \beta_{1j} \Delta lnREER_{t-j} + \sum \beta_{2j} \Delta lnGDP_{t-j} + \sum \beta_{3j} \Delta lnFI_{t-j} + \sum \beta_{4j} \Delta \ln\left(\frac{X_{it-j}}{M_{it-j}}\right) + \gamma_1 \ln\left(\frac{X_{it-1}}{M_{it-1}}\right) + \gamma_2 lnREER_{it-1} + \gamma_3 lnGDP_{it-1} + \gamma_4 lnFI_{it-1} + \varepsilon_{it}$$

This study utilized the bound testing method to investigate cointegration within the ARDL research framework. Furthermore, the structures that encountered delays were detected utilizing the Schwarz Information Criterion (AIC).

Empirical Evidence

The Augmented Dickey-Fuller (ADF) unit root test showed that X/M is stationary after initial differencing (I (1)). In contrast, the other variables, which denoted by the symbol I (0), are considered to be stationary at their current levels. REER, GDP, and FI are considered. Limits testing or the (ARDL) model are highlighted by the unit root test. Both of these models are recommended by the researchers. Table 1 shows the exhaustive unit root test results (see appendix). The null hypothesis, which asserts that the series is either non-stationary or has a unit root, is used to perform the Augmented Dickey-Fuller unit root test. Evaluation of lag lengths ranging from 0 to 5 is carried out with the use of the Schwarz Information Criteria (SIC), that is employed to ascertain the ideal lag time for the examination. In order to provide the most efficient evaluation of the null hypothesis, the SIC is responsible for determining the ideal lag duration by

locating the value that is the least. The model criteria shown in Table 2 (refer to Appendix) demonstrate a positive fit: Durbin-Watson (2.187846), Adjusted R-Squared (0.893821), and R-Squared (0.90443). Table 2 presents the estimation findings of the short-term and long-term investigation. The Breusch-Godfrey Serial LM Test (1.106003, p-value = 0.3425) and the RESET (0.060952, p-value = 0.9517) were utilized in order to carry out diagnostic evaluations. The results of these evaluations confirmed that there were no concerns regarding serial correlation or inadequate model specification. Long-term variable relationships were tested using cointegration analysis limitations. The F-Statistic result (4.2675) surpasses the upper bound value (4.22), rejecting the null hypothesis. At 5% relevance. Table 3 shows cointegration analysis limitations test findings.(please refer to the appendix for further information). The link between X/M, REER, GDP, and FI is expected to have substantial coefficients over time. These coefficients are represented as follows:

$$\ln\left({}^{X}/_{M}\right) = 24.69833 - 2.640657\ln(REER) - 1.554407\ln(GDP) - 0.192206\ln(FI)$$

The equation shows that the X/M ratio is negatively correlated with all independent variables, including REER, GDP, and FDI. The study found that the real effective exchange rate (REER) primarily affects Pakistani trade. This implies that real effective exchange rate variations greatly impact country trade patterns.

Discussion

This study's findings contribute to the ongoing discourse on the efficacy of currency devaluation as a strategy for improving Pakistan's balance of payments. The results from the Augmented Dickey-Fuller (ADF) unit root test indicate that while the ratio of exports to imports (X/M) is stationary after differencing, the other macroeconomic variables (REER, GDP, and FDI) are stationary at their levels, revealing a complex relationship between these variables and trade dynamics in Pakistan (Maddala & Kim, 1998). The coefficient signs of REER, GDP, and FDI in the long-term equation are negative, suggesting that enhancements in these variables are more closely associated with deteriorating trade balances than with improvements in the trade balance. This aligns with previous research indicating that the proximity of current exchanges to trade balances in poor nations is a structural characteristic that generally eclipses seasonal fluctuations in currency prices (Khan & Haque, 2020). The coefficient of REER (-2.640657) was considerably negative, indicating the significance of the real effective exchange rate in Pakistan's trade dynamics. This result corroborates the theory proposed by Ahmed & de Jong (2008) that exchange rate volatility adversely impacts export growth, particularly when the export sector relies on a limited range of items. Moreover, the employed cointegration estimator indicated a long-term link, suggesting that both hypotheses of trade balance and long-run equilibrium warrant consideration in subsequent analyses of trade balance dynamics. The results of this study are significant for policymakers. However, contrary to conventional trade debt ideas on devaluation, this research has demonstrated that historical devaluation in Pakistan has failed to improve the balance of payments. This indicates a necessity to reevaluate policy considerations, specifically on the approach to enhancing export competitiveness via structural change rather than adjustments in exchange rates. The government could contemplate advantageous measures, including foreign investment, infrastructure development, and enhancement of export standards to establish a more

standardized trading environment (Iqbal & Zahid, 2019). Recent data indicate that Pakistani exports encounter structural issues, including energy expenses and political instability, which have historically hindered export growth (Siddiqui et al., 2021). These structural factors may necessitate strategy modifications to improve resilience against external shocks and augment the commercial performance of Pakistan's economy.

Conclusion

This research examines the impact of devaluation on trade balances of payments. The real effective exchange rate (REER) index serves as an indicator of depreciation. This study encompasses the years 1980 to 2021. Except for X/M, which remains stationary at D1, the stationary test indicates that all other variables are stationary at the level. Long-term variable relationships were analyzed using the ARDL model. Findings indicate that each independent component is significant and adversely affects Pakistan's trade balance. REER coefficient: -2.640657, indicating that devaluation does not significantly enhance trade balances or the balance of payments in Pakistan. Devaluation is an ineffective strategy for enhancing Pakistan's balance of payments. Considering that the recent devaluations have minimal impact on Pakistan's balance of payments, policymakers should focus on exploring diverse alternative strategies for devaluation. The government should promote foreign investment by implementing effective policies that elicit a favorable response from investors.

Future Directions

Given the findings of this study, future research should explore several avenues to deepen our understanding of the factors influencing Pakistan's balance of payments. First, a sector-specific analysis could be conducted to assess how different industries respond to currency devaluation, thereby identifying which sectors are most vulnerable or resilient. Moreover, studies employing actual destination-to-destination cross-sectional data that correlate structural changes, such as improvements in infrastructure and energy supply, with trade balances may yield valuable policy insights. In comparing Pakistan to other analogous developing economies that have undergone similar currency transformations, alternative solutions may be feasible within Pakistan's capacity. Furthermore, evaluating the correlation between political stability and trade performance may elucidate the uncoordinated elements influencing export growth. Incorporating behavioral economics perspectives could enhance our evaluation of how investor and consumer behavior influences trading relationships based on their perceptions of currency fluctuations. The incorporation of intricate, dynamic econometric models and simulations may offer a more insightful perspective for analysis and policy formulation by aiding researchers in comprehending the relationships between devaluation and other macroeconomic variables, thereby improving trade performance and the balance of payments for these nations.
The study's conclusions are pertinent for policymakers aiming to improve trade competitiveness, attract foreign direct investment, and achieve an appropriate trade balance through effective exchange rate management.

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Appendix

Table 1. ADF Unit Root Test

Variables	t-test	p-value	Stationary
X/M	(-6.47434)*	0.0000	I (1)
REER	(-2.05358)**	0.0397	I (0)
GDP	(-3.1657)**	0.0295	I (0)
FI	(-2.07532)**	0.0378	I (0)

Note: * & ** are 1% and 5% level of significance respectively

Table 2. Estimated Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnX/M	0.678094	0.109030	6.219325	0.0000
lnREER	-0.850043	0.246041	-3.454888	0.0014
lnGDP	-0.500373	0.136587	-3.663388	0.0008
lnFI	-0.061872	0.041575	-1.488203	0.1454
C	7.950538	2.171073	3.662032	0.0008
ECT (-1)	-0.321906	0.066111	-4.869142	0.0000
Long Run Estimates				
LNREER	-2.640657	0.626956	-4.211867	0.0002
LNGDP	-1.554407	0.275636	-5.639356	0.0000
LNFI	-0.192206	0.160894	-1.194608	0.2401
C	24.69833	4.209595	5.867151	0.0000

Table 3. Bound Test for Cointegration Analysis

Critical Value	Lower Bound	Upper Bound
1%	4.27	5.412
5%	3.078	4.022
10%	2.56	3.428