EVALUATING ECONOMIC RESILIENCE: LIGHTING THE NEXUS BETWEEN TURKISH IMPORTS AND FOREIGN EXCHANGE RESERVES

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Abstract:

This study investigates the relationship between Türkiye's imports and foreign exchange reserves, aiming to provide detailed information about Türkiye's economic dynamics by using data from October 2002 to July 2022 and several robust methodologies, including ARDL Bound tests, Johansen co-integration tests, FMOLS, DMOLS and VECM Granger. The findings reveal a stable long-term balance between imports and foreign exchange reserves and a bidirectional causality that enriches the understanding of the dynamic interaction. This study advances the academic discourse on Türkiye's economic resilience and provides valuable information to policymakers navigating the complex landscape of import-reserve dynamics in Türkiye.

Keywords: ARDL Bound Test, Foreign Exchange Reserves, Imports, VECM

1. Introduction

With global economic integration, international trade has created a vital trade dynamic by making world economies interdependent. The flow of labor, capital, goods, services and information across country borders has profoundly affected the global economic system. Vulnerability to external shocks is affected by factors such as size, location and resource endowment (Raddatz, 2007; Zaibet et al., 2022; Irwin, 2020). Despite the economic and social benefits of trade in products and services, it has potential negative effects. Countries must carefully consider the complex systems that control their import policies. Accurate import forecasts, managing international trade, and formulating effective policies have required researchers to constantly examine macroeconomic factors that explain changes in import demand (Ahad & Dar, 2018). Examining the relationship between foreign exchange reserves and the structure of imports is essential in this context.

International reserves refer to assets under the control of a country's monetary authority and are essential for understanding and managing the complex dynamics of global economic interdependence. The Central Bank of the Republic of Türkiye (CBRT) states that these assets are ready-to-use, convertible and accepted as international payment instruments. These include international standard gold, convertible currency assets, special drawing rights and the International Monetary Fund's (IMF) reserve position (CBRT, 2023).

Foreign exchange reserves are critical in the economies of developing countries. These reserves are vital for reducing the negative effects of internal and external shocks, ensuring timely payment of the country's external debt, and strengthening confidence in international financial markets and environments. The Central Bank maintains and supervises foreign exchange and gold reserves. The main aims are to protect confidence in monetary and exchange rate policies, facilitate the preparation of foreign currencies needed to pay Treasury debt, improve the country's economic resilience in the face of sudden fluctuations in the financial system, and promote confidence in the national economy. Foreign countries are part of the mandate of the Central Bank. Banks prioritize the nation's interests and use a risk management strategy to detect, assess and manage risks when managing reserves (CBRT, 2023).

Foreign exchange reserves describe a country's foreign currency holdings and other assets with a foreign currency value. Typically held by the central bank, these reserves have several uses, including controlling foreign lending, promoting international trade, and stabilizing the value of the national currency. Major currencies, including the US dollar, the euro, the Japanese yen and others, can be included in foreign currency reserves. Gold, special drawing rights (SDRs), and other liquid assets may also be included in reserves. Countries maintain foreign exchange reserves to meet their international trade and debt payment responsibilities, as well as to ensure the stability of their currencies and inspire confidence in foreign investors. The difference between a country's imports and exports, or trade balance, can affect its foreign exchange reserves. A nation experiences a trade imbalance if it regularly imports more products and services than it exports. Conversely, there is a trade surplus when exports exceed imports.

A persistent trade imbalance can pressure a country's foreign exchange reserves because it forces the country to spend more in foreign currency on imports than it receives on exports. Countries can use foreign exchange reserves to close a budget deficit, correct balance of payment imbalances, or stabilize their currencies during economic turmoil. This practice is critical in times of recession or external shock in the economy of the relevant country. A country usually pays for the goods or services it imports using currencies accepted in international trade. Foreign exchange reserves are significant if the importing country's currency is not accepted in international trade.

Theoretical and empirical studies have focused more on factors such as relative prices and domestic income indicators to understand the determinants of import demand. This exploration spans developed economies (Carone, 1996; Giovannetti, 1989; Marston, 1971; Tang, 2003) and developing nations (Arize and Malindretos, 2012; Aziz and Bhaban, 2012; Bahmani-Oskooee and Rhee, 1997; Dutta and Ahmed, 1999; Emran and Shilpi, 1996; Hossain, 1995; Islam and Hassan, 2004; Mah, 1997; Sinha, 2001).

Foreign exchange reserves are essential in shaping and financing import demand, especially in developing countries with fixed or partially flexible exchange rates. Reserves are important international liquidity constraints determining a country's ability to import essential goods and services. In this context, the increase in foreign exchange reserves is expected to lead to increased imports of goods and services (Arize and Osang, 2007).

This research aims to develop knowledge about Türkiye's economic resilience in the face of dynamics in global trade by taking advantage of the theoretical foundations and empirical

findings of previous studies that emphasize the importance of foreign exchange reserves, especially in import-demand functions (Moran, 1989; Dutta and Ahmed, 1999; Arize, Malindretos, and Grivoyannis 2004).

This study also aims to separate the short- and long-term effects of imports on reserves with an empirical analysis and to shed light on the dynamics affecting Türkiye's economic environment. Foreign exchange reserves and imports are closely related to countries' economic stability and international trade. The interaction between imports and foreign exchange reserves significantly affects economic resilience within complex networks of global economic dynamics. In addition, international investors actively follow international reserves because they measure countries' financial strength (Kılcı, 2019).

This study enriches the scientific discourse and offers practical implications for policymakers and stakeholders navigating Türkiye's complex economic resilience environment. This study uses an analytical approach to decipher the processes affecting Türkiye's economic resilience.

2. Literature Review

Research on the link between import dynamics and foreign exchange reserves provides a wealth of information by examining the complexities countries must manage to maintain their economic resilience in the face of globalization. Cheng and Zhu (2020), Nikensari, Puspitasari, and Pujiati (2020), Hariadi, Tayibnapis, and Irawati (2020), and Al Abri, Saboori, and Al Humaidi (2023) and Effiong (2022) provide insightful perspectives that clarify ideal reserve scales, alternative import tactics, lag effects, and the impact of reserves on import demand.

Various economies and exchange rate regimes examine the connection between foreign exchange reserves and import demand. According to Heller (1966), the opposing connection theory states that a high inclination to import lowers the demand for international reserves since it results in a lower marginal adjustment cost. Frenkel (1974) countered, establishing a positive correlation between reserve holdings and the size of the foreign trade sector, which indicates vulnerability to external shocks. Arize, Malindretos, and Grivoyannis (2004) found a positive long-term effect of foreign exchange reserves on import demand in Pakistan, Africa, Latin America, and Asia. Conversely, Sultan (2011) discerned differences in short-run and long-run equilibria for India, with imports exhibiting inelasticity in the former and elasticity in the latter concerning income and relative prices. Tennakoon (2010), examining Sri Lanka, revealed that foreign exchange availability supported import demand for intermediate and investment goods but not consumer goods. Emran and Shilpi (2010) proposed a LaGrange multiplier approach to estimate income and price elasticities in the context of foreign exchange constraints.

As this study pivots from international perspectives to the Turkish context, synthesizing these foreign studies lays the groundwork for understanding how the relationship between foreign exchange reserves and import dynamics unfolds in Türkiye's specific economic milieu.

The international reserves of a country, reflective of its financial strength and closely scrutinized by international investors, have emerged as a critical factor in assessing financial stability (Kılcı, 2019). As described by the IMF, conventional standards entail contrasting net

international reserves with short-term external debt and comparing a nation's level of international reserves with the ideal reserve amount, generally set at 25% of annual imports (Kılcı, 2019). Kılcı (2019) found that although reserves were deemed sufficient for the first approach, they appeared insufficient for the second approach. This discrepancy highlights the difficulty of assessing reserve adequacy and the need to understand the variables influencing this relationship.

Aydın, Ceylan, and Kapusuzoğlu (2022) show that the demand for foreign exchange reserves increased across economies, negating the predictions that a flexible exchange rate regime would reduce demand. A more flexible exchange rate regime significantly accelerates the adjustment of the reserve-currency balance rather than reducing reserve demands. The study results require re-evaluating the relationship between reserve demands and exchange rate regimes for Türkiye.

Konat, Zeren and Ergün (2017) conducted a study that eliminated the gap in traditional models that exclude foreign reserves in import demand functions. According to the study, there is a causal relationship between imports and international reserves. The results highlight the role of reserves in influencing import dynamics, especially in periods of negative shocks.

Demir (2020) evaluates reserve adequacy indicators for Türkiye by considering the money supply, short-term external debt and reserve ratios corresponding to imported goods and services. The study concludes that reserves reach the optimal level when above 1.87% of the average imports of goods and services.

Özbay (2021) identifies a two-way causal relationship between imports and industrial pro-reduction. This relationship highlights the complex relationship between overseas trade, industrial production and the need for foreign exchange reserves to maintain economic stability.

Süleymanlı (2022) examines the gross foreign exchange reserve adequacy of the Central Bank of the Republic of Türkiye (CBRT) and concludes that inflation and short-term external debt affect the possibility of foreign exchange reserves falling below the optimal reserve ratio.

Foreign exchange reserves are essential in international finance because they affect a country's capacity to control changes in its balance of payments and stable exchange rates (Cheng and Zhu, 2020). These are vital signs of a country's economic resilience and connections to the world economy. Drawing attention to the difficulties experienced by many countries, including Türkiye, enlightening information is provided in the literature on the connection between foreign exchange reserves and import models.

Cheng and Zhu (2020) contribute to the debate on the ideal amount of foreign exchange reserves that China should have. They determined that China's reserves were within the ideal range in 2016. Their findings highlight the importance of determining the optimum level of reserves for effective economic management, which dovetails with the broader theme of assessing economic resilience.

Nikensari, Puspitasari, and Pujiati (2020) discuss the link between ASEAN countries' economic growth, imports, and foreign exchange reserves. They emphasize how vital GDP and foreign exchange reserves are in determining import demand. More importantly, their research suggested other import tactics, such as cooperation or

noncooperation, to address challenges arising from the depletion of foreign exchange reserves.

Hariadi, Tayibnapis, and Irawati (2020) contribute to the literature by assessing how Indonesia's exports and imports affect its foreign exchange reserves. This study highlights the importance of understanding the lagged effects of exports and imports on foreign exchange reserves and offers valuable lessons for countries struggling with similar challenges.

Effiong (2022) reveals a negative and significant effect of foreign exchange reserves, while the long-term import demand function reveals a positive but negligible effect. Al Abri, Saboori, and Al Humaidi (2023) empirically investigated the relationship between Oman's import demand and foreign exchange reserves. The results show that domestic prices significantly affect total imports. At the same time, foreign exchange reserves have little impact on import demand, suggesting a possible weakening of the relationship between reserves and imports. This study emphasizes the importance of local economic factors and advocates encouraging competition and efficient local production in areas such as food security.

Controlling trade imbalances, maintaining currency value stability, and meeting international payment obligations, including import payments, depend primarily on a country's foreign exchange reserves. The correlation between imports and foreign exchange reserves indicates a country's economy's general condition and participation in international trade. Economic resilience depends significantly on standards for assessing reserve adequacy, annual imports and short-term external debt (Kılcı, 2019). Aydın, Ceylan and Kapusuzoğlu (2022) emphasize that despite the flexibility of exchange rate regimes, the demand for international reserves increases across economies. Konat, Zeren and Ergün (2017) contribute to this discourse by highlighting the overlooked role of international reserves in the import demand function. In this context, the authors reveal the critical role of foreign reserves in influencing import dynamics. Demir (2020) touches upon Türkiye's reserve adequacy indicators, which consider the money supply, short-term external debt and reserve rates for imported goods and services. Özbay (2021) noted that industrial production, foreign trade and exchange reserves are interdependent for economic stability. Süleymanlı (2022) considers the macroeconomic factors affecting the ideal reserve threshold value. In the study examining the gross foreign exchange reserve adequacy of the Central Bank,

A detailed understanding of the relationship between foreign exchange reserves and import patterns in Türkiye leads to a better assessment of economic resilience. This study draws on the results of studies in the literature to better understand and evaluate Türkiye's economic environment and how well it can cope with the challenges of international trade.

3. Methodology and Data

A robust and comprehensive technique is essential for understanding the complex relationship between Türkiye's imports and foreign exchange reserves. The empirical study uses carefully selected data from the Electronic Data Distribution System (EVDS) of the Central Bank of the Republic of Türkiye, covering the months from October

2002 to July 2022. This study has a rich context due to the numerous economic developments and global dynamics that characterized this period.

The basis of the analytical framework is autoregressive distributed delay (ARDL) bound testing. This technique works well with small sample numbers and can capture short- and long-term dynamics. This method offers insights into the temporal nature of the relationship between Türkiye's imports and foreign exchange reserves and enables the investigation of causal relationships between the two.

Johansen cointegration and the ARDL bounds tests are used to determine whether a long-term equilibrium relationship exists between the examined variables. This advanced technique helps identify key comovements between Turkish imports and foreign exchange reserves, paving the way for a comprehensive understanding of their interaction.

The dynamic ordinary least squares (DOLS) and fully modified ordinary least squares (FMOLS) approach are also used in research. These methods help optimize parameter estimates and address potential endogeneity issues. Considering the dynamic nature of the relationship, these methods enable a more accurate identification of the factors affecting Turkish imports and foreign exchange reserves over time.

Another critical component of the analytical toolbox is the Granger causality test for the vector error correction model (VECM). Revealing the time sequence of their interactions permits the investigation of the directional causation between Turkish imports and foreign exchange reserves.

These approaches point to a comprehensive strategy that covers the complex and dynamic relationship between Türkiye's imports and foreign exchange reserves. These robust approaches act as a compass, directing us through the complex landscape of economic dynamics in Türkiye as we make our way through the empirical data.
This study investigated the dynamic association between international reserves utilizing the ARDL cointegration technique. The association is stated as follows:

$$lnRESERVE = \alpha_0 + \alpha_1\, lnIMPORT_t + u_t$$

Where lnIMPORT and lnRESERVE show the logarithm of IMPORT and RESERVE. µ is the disturbance term, and t is the period.

4. Findings

Table 1 presents descriptive statistics for two key variables, IMPORT (representing import levels) and RESERVE (representing foreign exchange reserves), over 238 data points. The mean and median are close for both Import and Reserve, suggesting a relatively symmetrical distribution. IMPORT and RESERVE have relatively low standard deviations, indicating moderate variability around the mean. Negative skewness in both Import and Reserve suggests a longer left tail, indicating that extreme values are likelier on the lower side. Jarque-Bera Test p-values for both Import and Reserve are very low (close to zero), suggesting that the data is not normally distributed. The negative skewness and non-normality, as indicated by the Jarque-Bera test, suggest a potential asymmetry in the distribution of both variables.

Table 1. Descriptive Statistics

	IMPORT	RESERVE
Mean	9.587584	11.57339
Median	9.711260	11.71299
Maximum	10.29809	12.02931
Minimum	8.295798	10.42891
Std. Dev.	0.410817	0.401545
Skewness	-1.130644	-1.497452
Kurtosis	3.830450	4.031835
Jarque-Bera	57.54713	99.50519
Probability	0.000000	0.000000
Sum	2281.845	2754.467
Sum Sq. Dev.	39.99868	38.21355
Observations	238	238

Table 2 presents the results of unit root tests for the variables IMPORT and RESERVE at different levels (constant and trend) and their first differences. IMPORT is non-stationary at the level. Also, with a constant and trend, IMPORT is likely non-stationary at the level. With the constant term, RESERVE is stationary at the level. With a constant and trend, the evidence for stationarity is inconclusive. Without a constant and trend, RESERVE is likely non-stationary at the level. Both IMPORT and RESERVE exhibit strong evidence of stationarity in their first differences. The first differences of IMPORT and RESERVE are likely stationary.

Table 2. Stationary Research

	Level	PP	
		IMPORT	RESERVE
Constant	t-Statistic	-2.6522*	-3.2366**
Constant & Trend	t-Statistic	-3.6402**	-1.9565
No Constant & Trend	t-Statistic	1.6991	2.4689
	First Difference	d(IMPORT)	d(RESERVE)
Constant	t-Statistic	-24.3205***	-12.3750***
Constant & Trend	t-Statistic	-24.4990***	-12.5964***
No Constant & Trend	t-Statistic	-23.5795***	-12.0207***
	Level	ADF	
		IMPORT	RESERVE
Constant	t-Statistic	-2.0373	-3.4737***

Constant & Trend	t-Statistic	-2.7597	-2.2842
No Constant & Trend	t-Statistic	1.3142	2.2760
	First Difference	d(IMPORT)	d(RESERVE)
Constant	t-Statistic	-4.1948***	-12.3716***
Constant & Trend	t-Statistic	-4.1965***	-12.6923***
No Constant & Trend	t-Statistic	-3.8808***	-12.0207***

*, **, *** are denotes significance levels at 10%, %5 and %1, respectively.

Table 3 presents the results of the Unrestricted Co-integration Rank Test, specifically the Trace and Max-Eigen tests, which are used to determine the number of cointegrating equations. The Trace and Max-Eigen tests provide strong evidence of co-integration, indicating a stable long-term relationship between the variables under consideration. The rejection of the null hypothesis implies at least 2 cointegrating equations, emphasizing a robust and statistically significant long-term relationship in the data.

Table 3. Johansen Co-Integratıon Results

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.083329	34.19400	20.26184	0.0003
At most 1 *	0.057999	13.92155	9.164546	0.0059
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.083329	20.27245	15.89210	0.0096
At most 1 *	0.057999	13.92155	9.164546	0.0059
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

The ARDL F-test is employed to assess the presence of a long-term relationship between the variables. In Table 4, the test statistics are evaluated to determine the statistical significance of the relationship. The F-statistic exceeds the critical values at all significance levels, indicating a statistically significant long-term relationship between the variables. This finding supports the rejection of the null hypothesis, suggesting that there is indeed a level relationship between the variables.

Table 4. ARDL F Test

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.525365	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Table 5 provides insights into the long and short-run dynamics of the relationship between IMPORT and RESERVE. A positive coefficient indicates that, in the long run, an increase in Turkish imports is associated with an increase in foreign exchange reserves. In the short run, a change in the lagged value of foreign exchange reserves leads to a change in the current reserves. This coefficient represents the speed at which the system adjusts to restore equilibrium. CointEq(-1) coefficient on the lagged error correction term indicates the short-run impact of any deviation from the long-run equilibrium. The long-run estimates indicate a positive relationship between Turkish imports and foreign exchange reserves, each influencing the other positively.

Table 5. Long and Short-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IMPORT	0.634306	0.160452	3.953253	0.0001
C	5.627042	1.565261	3.594954	0.0004
EC = RESERVE – (0.6343*IMPORT + 5.6270)				
ECM Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RESERVE(-1))	0.179371	0.062449	2.872271	0.0045
CointEq(-1)*	-0.035022	0.007882	-4.443518	0.0000
R^2	0.096211			
Adjusted R^2	0.092349			
Durbin-Watson stat	1.982844			

Table 6 shows the results of the FMOLS and DOLS regressions, with the dependent variable RESERVE and the independent variable IMPORT. FMOLS and DOLS indicate a robust positive relationship between imports and foreign exchange reserves. The coefficients for the IMPORT variable are similar in both models, suggesting a consistent impact of imports on reserves. The results suggest that changes in import levels contribute significantly to variations in Türkiye's foreign exchange reserves over the specified period.

Table 6. FMOLS and DOLS Estimates

FMOLS				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IMPORT	0.927534	0.050388	18.40791	0.0000
C	2.688959	0.483781	5.558220	0.0000
R-squared	0.823630			
Adjusted R-squared	0.822879			
DOLS				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IMPORT	0.922317	0.051296	17.98037	0.0000
C	2.738399	0.492754	5.557335	0.0000
R-squared	0.861820			
Adjusted R-squared	0.859417			

The diagnostic tests presented in Table 7 offer insights into the reliability and robustness of the estimated model. The coefficient of determination, denoted by R^2, indicates that the model explains approximately 9.62% of the variability in the dependent variable. The Durbin–Watson test suggests that the model adequately captures any systematic patterns in the residual errors. Moving to the assessment of heteroskedasticity suggests the absence of strong evidence to reject the null hypothesis of homoskedasticity. The Breusch–Godfrey LM test provides no significant evidence of serial correlation. The Ramsey Reset Test suggests evidence against the null hypothesis of correct model specification, prompting a closer examination of the model's functional form. CUSUM and $CUSUM^2$ tests in Figure 1 suggest that the model is stable over the estimation period, providing additional confidence in the validity of the estimated relationships.

Table 7. Diagnostic Test

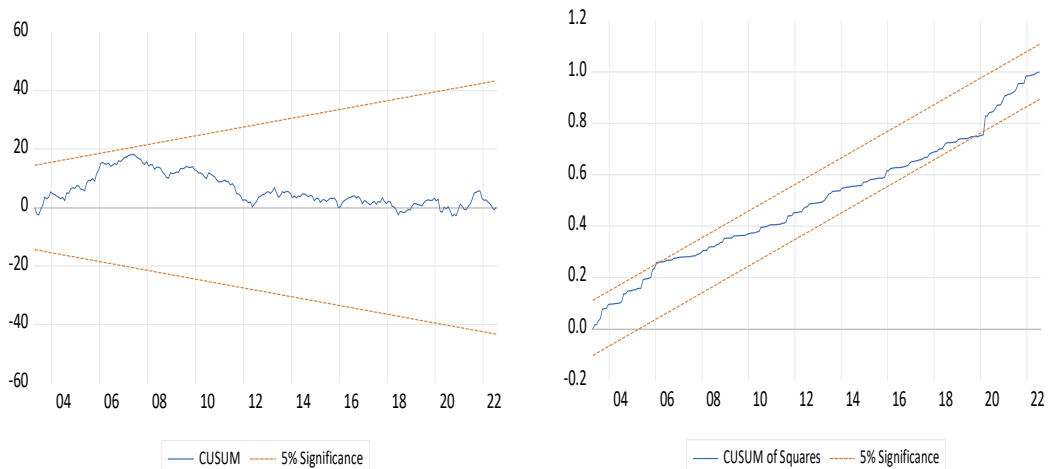| Tests	Coeff/prob.
R^2	0.096211
Durbin–Watson test	1.982844
Heteroskedasticity Test: ARCH	2.215222 (0.1114)
Breusch–Godfrey LM test	1.726058 (0.1803)
Ramsey Reset Test (F-Statistic)	2.520383 (0.0827)

Figure 1. Cusum and Cusum Square

VECM Granger causality/block homogeneity Wald tests examine the causal relationship between changes in RESERVE and Türkiye's IMPORTS with a two-period lag. Findings for both variables are shown, shedding light on how they interact. When IMPORT is excluded, the Wald test for the dependent variable RESERVE shows statistical significance. The findings show that changes in Türkiye's imports in the previous two periods were an important Granger cause of changes in foreign exchange reserves. In contrast, removing RESERVE from the Wald test reveals statistical significance for the dependent variable IMPORT. The result reveals that changes in foreign exchange reserves over the past two decades are a critical Granger cause of changes in Turkish imports.

As a result, according to the VECM Granger causality test results, there is a two-way causality relationship between changes in Türkiye's imports and foreign exchange reserves. The statistical significance of both tests highlights the dynamic interaction between Turkish imports and foreign exchange reserves over the given lag period, suggesting that historical values of one variable can provide information to help predict the other variable.

Table 8: VECM Granger Causality Results

Excluded	Wald Chi-sq	df	Prob.
D(IMPORT,2)	18.76278	4	0.0009
All	18.76278	4	0.0009
D(RESERVE,2)	22.70408	4	0.0001
All	22.70408	4	0.0001

5. Discussion and Conclusion

The comprehensive analysis offers insights into the intricate relationship between Turkish imports and foreign exchange reserves. The results from the Johansen co-integration test underscore a robust and statistically significant long-term relationship,

substantiating the existence of at least two cointegrating equations. This suggests a stable equilibrium, affirming the enduring connection between the variables considered. The application of the ARDL F-test further bolsters this conclusion, revealing a compelling statistical significance in the long-term relationship between Turkish imports and foreign exchange reserves. The consistently surpassing F-statistics across significance levels accentuates the substantive levels relationship between the variables, providing empirical support for rejecting the null hypothesis. Delving into the dynamics, the ECM elucidates the long and short-run influences. A positive coefficient indicates a mutually reinforcing relationship, where an upswing in Turkish imports corresponds to an augmentation in foreign exchange reserves over the long term. The short-term dynamics, captured by the lagged error correction term, illuminate the rapid adjustments to restore equilibrium following any deviations.

The concurrent application of FMOLS and DOLS further affirms the positive relationship. The consistent coefficients for the IMPORT variable in both models underscore the robust impact of imports on Türkiye's foreign exchange reserves throughout the specified timeframe.

The VECM Granger causality reveals bidirectional causality between Turkish imports and changes in foreign exchange reserves. Notably, past values of Turkish Imports Granger cause changes in foreign exchange reserves, and vice versa. This reciprocal influence highlights the dynamic interplay between the two variables, emphasizing their mutual sensitivity and responsiveness.

The findings reveal a stable long-term balance and bidirectional causality between imports and foreign exchange reserves, enriching the understanding of Türkiye's economic dynamics. The study's findings, also delving into the dynamics between Turkish imports and foreign exchange reserves, resonate with and extend the insights garnered from previous studies in the literature. This study contributes to the existing body of literature and aligns with and extends upon the findings of several seminal works in the field. This study corroborates earlier research, such as Arize, Malindretos, and Grivoyannis (2004), which underscores the reciprocal causal link between foreign exchange reserves and import dynamics, particularly in developing nations.

The study by Nikensari, Puspitasari, and Pujiati (2020), which examines import options in reaction to diminishing foreign exchange reserves, presents opposing viewpoints. Even though the results highlight a strong and long-lasting association, more research is necessary to fully understand the strategic ramifications of controlling imports in the face of resource volatility. This contradiction draws attention to how complicated the relationship is, necessitating careful policy analysis.

A parallel is provided by Effiong's (2022) observations regarding the impact of foreign exchange reserves on import demand in Nigeria, highlighting the significance of comprehending both short- and long-term dynamics. The Error Correction Model (ECM) illustrates the rate of adjustment and the dependency of Turkish imports and foreign exchange reserves over time, which aligns with Effiong's emphasis on elasticity coefficients.

Additionally, this research aligns with Cheng and Zhu's (2020) investigation of the ideal size of China's foreign exchange reserves. Their investigation of optimal reserves is reflected in the importance of stability and equilibrium in co-integration results. However, the analysis adds value to the conversation by revealing the dynamic interaction and reciprocal causal relationship between Turkish imports and foreign exchange reserves.

Furthermore, the study both agrees with and deviates from critical Turkish studies. Like Kılcı (2019), this study emphasize comprehension while acknowledging the difficulty of determining reserve adequacy. The conclusion of bidirectional causality is consistent with Aydın, Ceylan, and Kapusuzoğlu 's (2022) findings regarding exchange rate regimes, which contradicts common wisdom. Unlike Konat, Zeren, and Ergün (2017), this research reveals a two-way causal relationship, offering an alternative viewpoint on how reserves influence imports.

Combining different approaches consistently indicates a significant, reciprocal, and long-lasting relationship between Turkish imports and foreign exchange reserves. These findings provide insight into the factors influencing Türkiye's economic resilience in the international arena and add to the body of knowledge within academia while bearing practical consequences for policymakers. The insights from this study can help with more informed and efficient decision-making in international commerce and financial management as discussions on economic strategy develop.

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