DOI: https://doi.org/10.37075/EA.2025.4.06 Economic Alternatives, 2025, Issue 4, pp. 1095-1118

Understanding the Nexus Between Imports, Growth, Export and Foreign Debt Dynamics of an Emerging Market: The Case of Türkiye

Received: 05.11.2024
Available online: 30.12.2025

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Abstract

In economic research, the trade deficit in developing countries has consistently been a critical and chronic issue. The examination of imports, which is the primary cause of the trade deficit, is of great importance in this regard. This study has a goal to identify the determinants of imports. Türkiye, as a country that has been grappling with the challenges of being classified as a developing nation for years, has consistently experienced imports surpassing exports. For developing countries like Türkiye, debts and economic growth are as important as the concepts of trade deficit and imports. This study aims to examine the effects of industrial production, the private sector's external debt trend, and exports as proxies for growth on Türkiye's imports. Time series data covering from January 2005 to December 2023 was used in the study. The Autoregressive Distributed Lag (ARDL) method is utilized to identify cointegration among variables, followed by causality analyses employing the Toda-Yamamoto method to enhance the research findings. The results revealed that independent variables are cointegrated with imports. Additionally, production, exports, and debts are identified as Granger causes of imports. These results are of critical importance in demonstrating that Türkiye's exports and production are also dependent on imports.

Keywords: Export-Import Analyzes, Economic Growth, Foreign Debt, ARDL, Toda-Yamamoto

JEL: F10, F34, F43, C22

1. Introduction

While globalization increases international trade, competition in trade becomes critical for developing countries. One of the main reasons for this is the pressure faced by domestic producers due to the fact that any demand within the country can now be met from anywhere in the

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world. This pressure implies that if domestic producers cannot compete, the demand for imported goods is likely to increase further. Developing countries face a significant balancing problem at this point. Steps taken to increase exports amid the formation, rise, and continuity of imports not only focus on trade balance but also tie into the financial balance of the country. Securing the foreign exchange required for imports highlights another significant problem.

The foreign exchange inflow desired through exports is an important resource for developing countries, but it often proves insufficient due to the prevalent trade deficits. This is where the issue of debts comes into play. In situations where there are not enough monetary reserves, countries naturally need to borrow. In fact, this need often stem from the requirements of the businesses within these countries. In developing countries, it sometimes reaches a point where even the production needed to meet domestic demand, not just what is required for exports, relies on the financing that comes from this debt money. External debts by the private sector becomes crucial at this point, providing the necessary funds for production and the subsequent exports. This sometimes causes balance of payment issues when imported goods puts pressure together with external debts (Mangir and Ayhan, 2019). Therefore imports and debts dilemma offers a valuable research question over developing countries.

For Türkiye, the situation is somewhat more complex. In Türkiye, where a significant portion of exports relies on imported raw materials (Akbas and Senturk, 2013), imports are also a crucial source for meeting local demands. Türkiye has experienced a substantial increase in imports for many years, and similarly, external debts have also been on the rise (TSI, 2024). In 2004, Türkiye's imports amounted to 97 billion USD, but by 2023, they had reached 361 billion USD, reflecting nearly a fourfold increase (ITC, 2024a). Similarly, external debt rose from 165 billion USD in 2004 to 506 billion USD in 2023, almost doubling (TRCB, 2024). On the other hand, although Türkiye's exports increased from 63 billion USD to 255 billion USD during the same period (ITC, 2024b), showing a similar growth rate to imports, the trade deficit has persisted. Moreover, debates continue regarding the dependence of exports and production on imports. In this context, examining Türkiye's exports stands out as a unique research idea, both to understand the country's commercial and economic structure and to contribute to the scientific literature.

The idea of conducting research on Türkiye's import dynamics became particularly appealing due to the practical foreign trade and debt dynamics. Additionally, the scarcity of studies specifically focused on imports in the literature further motivated researchers to pursue this study. While the literature includes numerous studies on debt, trade openness (TO), and economic growth (EG) in various contexts, the limited number of studies where imports are examined as a dependent variable positions this research as a valuable contribution to addressing a gap in the academic field. In this study, it was deemed appropriate to establish a model encompassing all the aforementioned concepts, aiming to reveal the relationship between Türkiye's imports, exports, external debts by the private sector, and production. To achieve this objective, the theoretical framework of the research was first constructed using a series of approaches from international trade, EG, and debt theories. Subsequently, the literature review

included studies that specifically examined the relationships between imports, foreign trade, EG, and debts. Finally, the research tested the theoretical framework and model using two different econometric methods, arriving at valuable findings that will shed light on developing countries through the example of Türkiye.

2. Theoretical Framework

The reasons why a country engages in international trade can be explained by the ideas of international economic thinkers spanning hundreds of years. Theories proposed by economists like Smith (1776/1948) and Ricardo (1821) focus on the advantages that countries possess. Subsequently, Heckscher (1919) and Ohlin (1933) scientifically explained why countries participate in international trade by distinguishing resources in terms of advantages. Over the decades, theories based on technology (Posner, 1961; Vernon, 1966) have also been proposed. Indeed, considering technology as a resource is consistent with the resource-based view (Barney, 1991). All these theoretical approaches are directly related to the resource management which is one of the fundamental problems of economics. In the context of this research, it is appropriate to explain the model based on the factor endowment theory, considering the resources that Türkiye has or lacks in terms of its imports. Ultimately, it can be said that the country engages in imports to access resources it does not possess.

The view that imports are carried out to enable exports can be associated with classical EG theories. However, explaining the debts caused by imports or the relationship between debts and imports requires more than this. The growth cum debt approach, proposed by Singer (1949), has the potential to be explanatory at this point. This theory emphasizes that due to insufficient domestic savings to finance investments, external debts is used to create resources. These resources, in turn, finance investments, ensuring production, and consequently, EG (Guvenoglu, 2024). The origin of this financial deficit can be explained using the twin deficit approach proposed by Chenery & Strout (1966), one of which is that export revenues do not cover import expenses. From this perspective, the theoretical foundations of the relationship between debts and imports can be expressed in this way. Additionally, considering that production through borrowing requires imported inputs, and these imported inputs contribute to the export of the produced goods, it is accurate to say that these theoretical approaches provide sufficient explanatory power for the model of this research.

3. Literature Review

Foreign trade is a fundamental source of economic interaction between countries. Factors such as globalization, technological advancements, changes in transportation and communication, and liberalization policies have contributed to the rapid spread of international trade activities among world economies. Through foreign trade, economies have gained the opportunity to position themselves within global economic activities. In this context, foreign trade has enabled countries to conduct transactions in global markets, discover new market opportunities, enhance competitiveness, access and utilize technology, obtain new and high-quality products, identify new investment areas, expand production capacities, and create employment opportunities. These gains are particularly crucial for the growth and

development of economies. At this point, a significant interaction between foreign trade and EG becomes evident. Indeed, in Smith's (1776/1948) Theory of Absolute Advantage and Ricardo's (1821) Theory of Comparative Advantage, foreign trade is emphasized as a factor that stimulates EG. Although the relationship between foreign trade and EG has been debated in the literature for many years, there is still no consensus on the direction of this relationship.

It would be beneficial to reference recent studies that examine the relationship between foreign trade and EG using country-specific cointegration and causality analysis methods. Alsamara et al. (2019) demonstrated that TO in Türkiye positively influences EG and identified a bidirectional causality relationship between TO and EG. Similarly, Cevik et al. (2019) established a bidirectional causality relationship between TO and EG in Türkiye. Coban et al. (2020) determined that TO in Nigeria has a positive long-term impact on EG. Islam (2021) found that TO in Saudi Arabia positively affects EG in both the short and long term, with a unidirectional causality flowing from TO to EG. In contrast, Kumari et al. (2021) found no cointegration or causality relationship between TO and EG in India. Akhter et al. (2022) discovered that foreign trade negatively impacts EG in Kazakhstan in both the short and long term. Rakshit (2022) observed that TO has a negative long-term effect on EG in India. Shahid et al. (2022) provided evidence that EG in China significantly influences the trade deficit in both the short and long term, with a unidirectional causality from EG to the trade deficit. Sunde et al. (2023) found that TO in Namibia positively affects EG in both the short and long term. Dahal et al. (2024) concluded that total trade volume positively impacts EG in Nepal. Finally, Hidayat et al. (2024) demonstrated that net exports have no effect on EG in Indonesia. Considering that TO is often defined as the sum of imports and exports, it is essential to examine the relationship between imports and EG in a bidirectional manner. Not only is the impact of imports on EG frequently overlooked, but the determinants of imports are also significant yet often neglected issues.

It is also important to highlight studies that examine the relationship between foreign trade and EG from various perspectives. Osei et al. (2019) found that in low-income countries in Africa, EG significantly enhances TO, while in lower-middle-income countries, EG has a weak and negative effect on TO. Blavasciunaite et al. (2020) observed that the trade balance negatively impacts average EG in 28 EU countries. Intisar et al. (2020) provided evidence from 19 Asian countries (West and South Asia) indicating that TO positively influences EG in both regions. Furthermore, they demonstrated the existence of bidirectional causality between TO and EG in West Asian countries. Conversely, they presented evidence of unidirectional causality from EG to TO in South Asian countries. Oloyede et al. (2021), focusing on the Economic Community of West African States (ECOWAS) and the Southern African Development Community (SADC), found no significant relationship between TO and EG within Africa's regional economic communities (RECs). Yameogo and Omojolaibi (2021) concluded that TO increases EG in the long run across 40 Sub-Saharan African countries and identified unidirectional causality from EG to TO. Chhabra et al. (2023) found that in BRICS countries, TO has a negative short-term effect and a positive long-term effect on EG. At the country level, they provided

evidence that TO positively impacts EG in South Africa but negatively affects growth in Brazil and India. Sghaier (2023) determined that TO positively influences EG in North African countries, including Tunisia, Morocco, Algeria, and Egypt. Nam and Ryu (2024) demonstrated that high trade tariffs and trade volumes positively impact EG in 10 ASEAN member countries. Sarigul and Apak (2024) found bidirectional causality between TO and EG in the short term for a panel of 29 middle-income countries. In their country-specific analysis, they observed long-term relationships between EG and TO in nine countries. These studies also shows how imports might be related to the EG.

The two fundamental components of foreign trade transactions are imports and exports. Indicators of imports and exports provide significant insights into a country's foreign trade position. The relationship between imports, exports, and EG is also one of the key research topics in economic literature. EG indicates that a country's income levels, or in other words, its capital accumulation, are high. In such cases, an increase in consumption and investment expenditures is expected. Accordingly, in countries with high levels of EG, purchasing power rises, leading to increased demand for foreign goods and services, which subsequently boosts imports. Moreover, higher income levels in countries also foster a tendency to make new investments, thereby increasing production. When raw materials, intermediate goods, and capital goods needed in the production process are sourced from abroad, the volume of imports also rises. This indicates that increases in national income lead to increases in imports. In the Keynesian import function, it is also stated that, assuming other conditions remain constant, there is a positive relationship between national income and imports. The increase in national income leading to higher imports, or causing imports, is referred to in economic literature as the "import-led growth hypothesis." Indeed, studies by Aluko and Adeyeye (2020), Raghutla and Chittedi (2020), Usman and Bashir (2022), and Ali et al. (2023) have demonstrated that EG causes an increase in imports and that EG has a positive effect on imports.

Just as EG influences imports, imports also impact EG. Through their import activities, countries can acquire the goods and services they require from foreign nations. This process results in an outflow of foreign currency from the country. Consequently, import activities are perceived as a drain on national resources, which is often believed to adversely affect the economy. Economic literature includes discussions about the potential negative effects of import expenditures on EG. Indeed, recent empirical studies provide evidence of the detrimental impact of imports on EG, some of which are summarized below. But still one can easily see that these studies are quite limited and literature has a gap in import-EG relationship.

Alsamara et al. (2019) found that energy imports negatively affect EG in Türkiye. Yoon (2019) demonstrated that information and communication technology imports have no significant impact on EG in high-income countries across 13 Asia-Pacific nations. Kumar et al. (2020) identified a negative effect of imports on EG in selected South Asian countries, including Bangladesh, India, Pakistan, and Sri Lanka. Usman and Bashir (2022) concluded that imports negatively influence EG in China. Velaj and Bezhani (2022) provided evidence that goods imports adversely impact EG in Albania. Mawutor et

al. (2023) showed that imports negatively affect EG in both the short and long term in Ghana. Sunde et al. (2023) demonstrated that imports have a detrimental impact on EG in both the short and long term in Namibia. Dahal et al. (2024) determined that imports negatively influence EG in Nepal. A conclusion can be drawn on these studies with a belief that some sectoral affects of imports might not represent the whole imports of a country.

The outflow of foreign currency from a country due to import activities—essentially the transfer of national income abroad—has been empirically demonstrated in numerous studies to negatively impact EG. However, it is also recognized that many countries engage in significant import activities. This is particularly true for less developed and developing nations, which rely on imports to acquire essential resources that directly influence their production processes, such as raw materials, capital goods, energy inputs, and technology. As a result, the dependence of these countries on imports for their production needs leads to elevated levels of import activities. Countries engaged in import activities utilize these inputs to produce goods and services, which they subsequently export to generate foreign exchange income. The influx of foreign currency resulting from exports is expected to positively influence EG by increasing national income. Furthermore, exporting countries gain the opportunity to enter new international markets, thereby increasing demand for the goods and services they produce. This, in turn, leads to greater production within these countries. Moreover, export activities increase the likelihood that countries will benefit from economies of scale, thereby enhancing their levels of efficiency. Consequently, it is widely believed that exports have a positive impact on EG. This positive effect of exports on EG is referred to in the economic literature as the "export-led growth hypothesis." Indeed, studies conducted by Sultanuzzaman et al. (2019), Temiz-Dinc and Gokmen (2019), Coban et al. (2020), Kumar et al. (2020), Raghutla and Chittedi (2020), Bajo-Rubio (2022), Bilgili et al. (2022), Ji et al. (2022), Velaj and Bezhani (2022), Can et al. (2023), Sunde et al. (2023), Alawadhi et al. (2024), Moyo and Amoah (2024), Oncel et al. (2024), and Srdelić and Dávila-Fernández (2024) provide empirical evidence supporting the notion that exports positively affect EG and validate the export-led growth model.

It is essential to emphasize the significant role of import activities in achieving EG through exports. As previously mentioned, particularly in less developed and developing countries, the inputs required for production are obtained through imports. These imported inputs are utilized in the production process to generate goods and services, which are subsequently exported to promote EG. This highlights the relationship between exports and imports, demonstrating that imports can indirectly contribute positively to EG through exports. This positive effect of imports on EG is known in economic literature as the "import-led growth hypothesis." Several recent studies have provided empirical evidence supporting the idea that imports positively influence EG. Below is a summary of some of these studies.

Aluko and Adeyeye (2020) found a unidirectional causal relationship from imports to EG in seven countries in the short term and five countries in the long term among 41 African nations. Additionally, they observed a bidirectional causal relationship between imports and EG in only one country in the short term and in three countries in the long term. Raghutla and Chittedi (2020) established that the import-led growth model

is valid in Russia. Carrasco and García (2021) reported that the import of high technology and capital goods has a significant impact on EG in 19 developing countries. Khan and Khan (2021) noted a positive effect of imports on EG in Oman, identifying a unidirectional causal relationship from imports to EG. Wamalwa and Were (2021) determined that imports lead to an increase in output levels in Kenya and established a unidirectional causal relationship from imports to output. Can et al. (2023) demonstrated that import diversification positively affects EG in the E7 countries (Brazil, Türkiye, Russia, Indonesia, India, China, and Mexico) in the long term, identifying a unidirectional causal relationship from import diversification to EG. Bolukbasi and Civcir (2024) provided evidence that the import of intermediate goods positively influences EG in Türkiye. Moyo and Amoah (2024) showed that imports have a positive impact on EG in Ghana. Srdelić and Dávila-Fernández (2024) found that imports positively influence EG in Croatia.

The fact that import transactions lead to a decrease in income, while export transactions result in an increase in income, gives rise to the concept of trade balance in foreign trade operations. Specifically, the difference between export revenues and import expenditures reflects the trade balance. A positive difference indicates a trade surplus, whereas a negative difference signifies a trade deficit. Consequently, achieving a trade surplus is often established as a policy goal for national economies. Within this framework, increasing exports to generate more export revenues and/or reducing imports to decrease import payments are viewed as significant policy objectives concerning foreign trade operations. However, particularly in less developed and developing countries, the dependency on imports for production and export operations poses a significant barrier to reducing import transactions or, in other words, to cutting back on import expenditures. This raises the issue of financing import expenditures. In this process, the inadequacy of export revenues in financing import expenditures especially directs the private sector to seek foreign resources. Thus, resources obtained through external debts provide financing opportunities for import expenditures. At this point, a relationship between import transactions and external debts emerges. The relationship between imports and other components of foreign trade and external debts has been empirically examined in some studies in the literature.

Bolukbas and Peker (2017) demonstrated that external debts in Türkiye is significantly influenced by both the terms of foreign trade and commercial openness. They observed that the explanatory power of these two factors on external debts is equal. Additionally, they found that following a contractionary external debt shock, both foreign trade terms and commercial openness variables responded by increasing. They also provided evidence of a one-way causal relationship from external debt to commercial openness and foreign trade terms. Butkus and Seputiene (2018) obtained findings confirming the debt-growth relationship in 152 countries and the dependence of the debt threshold on institutional quality. They noted that institutional quality alone is insufficient to prevent the negative impact of debt on growth, emphasizing that the trade balance is a more critical factor in determining the threshold level of the debt-growth relationship than institutional quality. Ibhagui (2018) showed that external debt has been effective in correcting current account deficits over time

in most countries in Sub-Saharan Africa. He also found that countries with high openness have experienced significant increases in current account deficits due to rising external debt. Maes et al. (2019) discovered that exporting firms in Belgium tend to engage in more short-term borrowing compared to non-exporting firms. They provided evidence of a positive relationship between the short-term borrowings used by exporting firms and the assets they present as collateral against these borrowings. Khan et al. (2021) found that military expenditures generally increase the external debt burden in 35 countries that import weapons. Regionally, the results show that military spending has a positive and significant impact in the Middle East and North Africa, South and East Asia, and Latin America. However, they identified a negative and insignificant effect in the regions of Sub-Saharan Africa, Europe, and Central Asia. They further demonstrated that in the regions of Central Asia, Southeast Asia, and Latin America, foreign trade reduces the countries' debt burden, while a positive relationship exists between foreign trade and external debt in Europe and Sub-Saharan Africa. Akin and Gunes (2022) investigated the sustainability of external debts in the Fragile Five countries, examining the relationship between variables that create external debt (imports, current account central bank foreign currency reserves, and interest payments) and those that reduce it (exports, central bank foreign currency reserve returns, and net transfers). The analysis revealed that the external debt sustainability of the relevant countries is weak. Furthermore, they showed that only Mexico has strong external debt sustainability, while Türkiye is the weakest country in terms of external debt sustainability. Atawnah et al. (2023) proved that increasing firms' import penetration in the USA positively affects short-term borrowing through gaining external competitiveness. They also found that due to the presence of high information asymmetry, lenders determine the loans they provide to firms on a short-term basis.

4. Data and Methodology

4.1. Data

The econometric model used in this study clarifies the dynamics of Türkiye's imports by integrating variables such as exports, EG, and the foreign debt of the private sector. Türkiye's imports are measured in terms of monthly values, expressed in thousands of dollars. Exports are also quantified in the same units. Industrial production, which serves as a proxy for EG, is represented by monthly index data. Additionally, the data related to the foreign debt of the private sector is gathered using monthly debt figures. Detailed information about the datasets can be found in the Table 1 below.

Table 1. Data and sources used in the research

Variable	Description	Period (Monthly)	Source
lnimp	Imports of Türkiye	2005(1) - 2023(12)	International Trade Center
lnipi	Industry Production Index of Türkiye	2005(1) - 2023(12)	Turkish Statistical Institute
lnexp	Exports of Türkiye	2005(1) - 2023(12)	International Trade Center
lnpfd	Private Sector Foreign Debt	2005(1) - 2023(12)	Central Bank of Türkiye

The dataset's time period has been chosen based on the earliest date available for all relevant variables. Timeframes where data for all variables are concurrently complete have been pinpointed, as displayed in Table 1. To analyze the factors impacting Türkiye's imports during this timeframe, a model incorporating these variables has been constructed. Furthermore, the theoretical framework and literature review have significantly guided the development of this model and the selection of the research variables.

4.2. Methodology

4.2.1. Co-integration Tests

The empirical methodology selected for this investigation is the *"ARDL bounds testing approach"* as introduced by Pesaran, et al. (2001). This method circumvents the stringent cointegration requirements typically associated with traditional cointegration tests, as well as the inefficiencies inherent in multivariate models (Pesaran et al., 2001). Moreover, the *"ARDL bounds testing approach"* offers statistically robust predictions, particularly beneficial in scenarios involving small or limited samples (Altintas, 2013). In the context of this study, the following model has been formulated to evaluate the potential influence of exports, external debts, and EG on the quantity of imports from Türkiye.

$$lnimp = \alpha_0 + \alpha_1\, lnipi_t + \alpha_2\, lnexp_t + \alpha_3\, lnpfd_t + \varepsilon_t \quad (1)$$

In this context, α0 stands for the *"constant term",* ε signifies the *"random error term",* and t indicates the *"time period"* ranging from t=1,2,...,216. The initial step in the *"ARDL"* procedure includes performing a *"bounds test";* if the results are positive, both long-term and short-term coefficients can subsequently be estimated. To carry out the *"bounds test",* an *"unrestricted error correction model (UECM)"* is first estimated using the least squares method. Hence, Model (1) can be adapted to the *"UECM"* as follows:

$$\begin{aligned}\Delta lnimp = {} & \omega_0 + \omega_1\, lnimp_{t-1} + \omega_2\, lnipi_{t-1} \\ & + \omega_3\, lnexp_{t-1} \\ & + \omega_4\, lnpfd_{t-1} \\ & + \sum_{i=1}^{p_1} \varphi_{1i}\, \Delta lnimp_{t-i} \\ & + \sum_{i=0}^{p_2} \varphi_{2i}\, \Delta lnipi_{t-i} \\ & + \sum_{i=0}^{p_3} \varphi_{3i}\, \Delta lnexp_{t-i} \\ & + \sum_{i=0}^{p_4} \varphi_{4i}\, \Delta lnpfd_{t-i} + \varepsilon_t \quad (2)\end{aligned}$$

In this context, ω_0 denotes the *"constant term",* εt represents the *"random error term",* Δ signifies the *"first difference operator",* and pi indicates the *"lag length of the respective variable".* At this stage, using Model (2), the null hypothesis posits the *"absence of a long-run co-integration relationship"* among the variables, stated as "H_0: ω1 = ω2 = ... = ω4 = 0". This is examined against an alternative hypothesis, articulated as "Ha: ω1 ≠ ω2 ≠ ... ≠ ω4 ≠ 0", using the *"Wald or F-statistic"* [FIII(lnimp/lnexp,lnipi,lnpfd)] (Pesaran et al., 2001). Subsequently, the test statistic value is compared with the critical values provided in Pesaran et al. (2001). For this comparison, if the variables' stationarity levels are I(0) or I(1), the table's lower or upper critical value is employed, respectively. If the *"t-statistic"* is smaller than the lower critical value, it is concluded that there is no co-integration relationship. Conversely, if the calculated statistic surpasses the upper critical value,

it is determined that *"co-integration"* exists. If the computed statistic lies between the upper and lower critical values, no conclusion can be drawn regarding co-integration. If all variables possess a stationarity degree of I(0), the table's lower critical value is used, and if all variables hold a stationarity degree of I(1), the table's upper critical value is utilized. In both scenarios, if the calculated *"t-statistic"* exceeds the table value, it is concluded that a co-integration relationship is present.

To determine the ideal lag length for all variables in the "*Unrestricted Error Correction Model (UECM)",* various regression models are estimated, which total (p + 1)k, where p denotes the chosen maximum lag length and k represents the number of explanatory variables in the model (Ciftci & Yildiz, 2015). This estimation process employs information criteria such as *"Akaike"* or *"Schwarz"*. According to Pesaran et al. (2001), it is crucial to ensure that the *"UECM"* does not exhibit autocorrelation issues for the *"bound test"* to be valid. Moreover, the model must pass *"diagnostic tests"* addressing *"heteroscedasticity", "specification error",* and *"non-normality"* for robustness. If the *"bound test"* indicates a long-run relationship among the variables, the analysis advances to the second phase. Here, an overall *"ARDL model"* is estimated once again employing the *OLS* method, where the dependent variable is regressed on its own lags and the lags of the explanatory variables (Pesaran & Shin, 1998). Within this context, the general *"ARDL"* (q1, q2, q3, q4) model derived from Model (1) is displayed below:

$$lnimp = \theta_0 + \sum_{i=1}^{q_1} \theta_{1i}\, lnimp_{t-i} + \sum_{i=0}^{q_2} \theta_{2i}\, lnipi_{t-i} + \sum_{i=0}^{q_3} \theta_{3i}\, lnexp_{t-i} + \sum_{i=0}^{q_4} \theta_{4i}\, lnpfd_{t-i} + v_t \quad (3)$$

In Equation (3), θ0 signifies the *"constant term",* vt designates the *"random error term",* and qi stands for the *"lag length"* of the respective variable. As per the Granger Representation Theorem, when there is a cointegration relationship between two or more time series, an *"Error Correction Model (ECM)"* that accurately mirrors this relationship and the short-run dynamics will also exist (Engle & Granger, 1987). Thus, in the third and final phase of the *"ARDL"* procedure, utilizing the general *"ARDL model",* an *"Error Correction Model (ECM)"* is formulated to connect the long-run relationship with short-run dynamics. This model is then estimated via the *"OLS method".* Correspondingly, the *"ECM"* derived from Model (1) and subsequently Model (3) can be formally articulated as follows:

$$\Delta lnimp = \lambda_0 + \sum_{i=1}^{r_1} \lambda_{1i}\, \Delta lnimp_{t-i} + \sum_{i=0}^{r_2} \lambda_{2i}\, \Delta lnipi_{t-i} + \sum_{i=0}^{r_3} \lambda_{3i}\, \Delta lnexp_{t-i} + \sum_{i=0}^{r_4} \lambda_{4i}\, \Delta lnpfd_{t-i} + \sigma ECT_{t-1} + \mu_t \quad (4)$$

In Equation (4), the *"constant term"* is indicated by λ0, while μt denotes the *"random error term".* The symbol Δ is used to denote the *"first difference operator",* and ri represents the *"lag length"* of each variable, which aligns with the lag lengths in Model (3) but adjusted to qi - 1. Within this framework, the differenced lagged terms capture the short-run dynamic processes, whereas the term ECTt-1 signifies the *"lagged error term"* originating from the long-run cointegration equation. This term, known as the *"error correction term",* portrays the rate at which variables return to their equilibrium levels following a short-run disturbance. In order for the system to rectify short-run imbalances and progress towards long-run equilibrium, it is imperative that the coefficient of the *"error correction term"* (σ) is not only statistically significant but also negative (Ciftci & Yildiz, 2015).

4.2.2. Causality Tests

To investigate the causal relationships between variables, the *"Toda-Yamamoto causality tests* have been employed. The approach introduced by Toda and Yamamoto in 1995 involves estimating *"VAR models"* to perform *"Granger causality tests".* This method is often considered favourable as it bypasses certain preconditions required for unit root tests (Cetin & Seker, 2013; Aksoy et al., 2020). Unlike the *"Granger causality test",* which requires the series to be stationary or cointegrated at identical levels, the *"Toda-Yamamoto approach"* does not impose this restriction. The following equation method of the *"Toda-Yamamoto VAR model",* as formulated by Siami-Namini in 2017, provides an essential foundational explanation for deploying this test.

$$y_t = u_0 + \sum_{i=1}^{k} a_{1t}\, y_{t-1} + \sum_{i=k+1}^{d_{max}} a_{2t}\, y_{t-i} + \sum_{i=1}^{k} \beta_{1t}\, x_{t-i} + \sum_{i=k+1}^{d_{max}} \beta_{2t}\, x_{t-i} + \varepsilon_{1t} \quad (5)$$

$$x_t = \emptyset_0 + \sum_{i=1}^{k} y_{1t}\, x_{t-1} + \sum_{i=k+1}^{d_{max}} y_{2t}\, x_{t-i} + \sum_{i=1}^{k} \delta_{1t}\, y_{t-i} + \sum_{i=k+1}^{d_{max}} \delta_{2t}\, y_{t-i} + \varepsilon_{2t} \quad (6)$$

In the *"Vector Autoregression (VAR) model",* "k" signifies the *"maximum number of lags",* and "d_max" denotes the *"highest level of integration among the variables"* (Daly et al., 2024). To examine causality from variable x to variable y (β1t=0) and from variable y to variable x (δ1t=0) within the model's equations, we establish the null hypotheses and evaluate them using the *"Wald test"* (Uzokwe & Onjiye, 2021). Hypotheses of the *"Toda-Yamamoto"* procedure are structured in the following manner

H_0= The variable A does not Granger-cause variable B.

H_1= The variable A Granger-causes variable B.

If the p-value from the analysis is less than the predetermined significance levels (e.g., 1% or 5%), the null hypothesis (H_0) is rejected, indicating acceptance of the alternative hypothesis (H_1). Conversely, if the p-value is greater than the significance threshold, the

null hypothesis is not rejected, suggesting that Variable A does not Granger-cause Variable B.

The research utilized time series analysis to assess potential causal relationships among the investigated variables. To achieve this, *"unit root tests"* were initially performed to identify the maximum level of stationarity of the variables. Specifically, the *"Augmented Dickey-Fuller (ADF) unit root test"* (Dickey & Fuller, 1981) and the *"Phillips-Perron (PP) unit root test"* (Phillips & Perron, 1988) were employed to assess unit root presence. Each unit root test was applied independently, and the highest stationarity level for each series was determined and subsequently compared. Following this, the appropriate lag length for the analysis was established based on the unit root test outcomes. The *"Toda-Yamamoto causality test"* was then utilized to investigate potential causality between the variables and to identify the direction of any identified relationships.

4.3. Findings

4.3.1. Findings of ARDL Bound Tests

Table 2 showcases the findings from the *"Augmented Dickey-Fuller"* and *"Phillips-Perron structural break unit root tests"* performed for the variables. Initially, each variable was assessed for stationarity in its level form. Should a variable prove to be non-stationary at the level, its first differences were subsequently examined for stationarity.

Upon evaluating the findings revealed in Table 2, it becomes certain that the prerequisites for employing the *"ARDL"* procedure are satisfactorily fulfilled. Moreover, following the completion of the *"unit root tests",* the *"Toda-Yamamoto approach"* was deemed suitable for application. For the implementation of this method, the maximum level of integration was determined to be d_

Table 2. Unit root test results

Level								
Variable	**ADF**				**PP**			
	Intercept		**Trend and Intercept**		**Intercept**		**Trend and Intercept**	
	T-Statistic	**Prob.**	**T-Statistic**	**Prob.**	**T-Statistic**	**Prob.**	**T-Statistic**	**Prob.**
lnimp	-1,9070	0,3285	-2,1701	0,5026	-3,1692	0,0236	-3,8740	0,0152
lnipi	-1,8247	0,3676	-5,1492	0,0002	-1,7393	0,4097	-4,9421	0,0004
lnexp	-1,2242	0,6635	-4,1688	0,0062	-2,9216	0,0450	-7,3599	0,0000
lnpfd	-1,1019	0,7146	-2,9899	0,1383	-1,8167	0,3714	-4,7370	0,0009
1. Difference								
Variable	**ADF**				**PP**			
	Intercept		**Trend and Intercept**		**Intercept**		**Trend and Intercept**	
	T-Statistic	**Prob.**	**T-Statistic**	**Prob.**	**T-Statistic**	**Prob.**	**T-Statistic**	**Prob.**
lnimp	-13,4687	0,0000	-13,4246	0,0000	-23,6510	0,0000	-23,5339	0,0000
lnipi	-10,1374	0,0000	-10,1481	0,0000	-20,9806	0,0000	-21,9213	0,0000
lnexp	-11,4541	0,0000	-11,4207	0,0000	-42,4413	0,0001	-43,0887	0,0001
lnpfd	-6,0886	0,0000	-6,3462	0,0000	-9,2519	0,0000	-9,7302	0,0000

max = 1, and the optimal *"lag length"* for the *"VAR model"* was identified as k = 5, as per the *"Schwarz Information Criterion".*

Table 3 provides a summary of the *"boundary test"* results conducted during the initial stage of the *"ARDL"* procedure. The computed F-statistic for the joint significance of the one-period lagged level variables in the *"UECM"* surpasses the upper critical value at the 5% significance threshold. As a result, the null hypothesis asserting no cointegration among the variables is rejected. This result is significant, suggesting that the variables exhibit long-run co-movement, and holds up robustly under diagnostic testing.

As illustrated in Table 3 and Figure 1, the *"diagnostics test"* results have been consistent, ensuring the reliability of subsequent analyses. Following the verification of a long-run relationship among the variables through the *"boundary test",* the second stage of the *"ARDL"* procedure can commence. In this stage, the general *"ARDL model"* will be estimated using the *"OLS technique"* to determine the *"long-run coefficients"* [Model (1)]. The estimation process involved using a maximum lag length of 4, as suggested

Table 3. ARDL bound test (co-integration) analysis

Estimated Model (T=64)	F-Statistics	Critical Values	Lower Limit	Upper Limit	Result
FIII(lnimp/lnipi, lnexp, lnpfd)	12.07461*	1%	3.29	4.37	H_0 rejected
		5%	2.56	3.67	
		10%	2.20	3.09	
Diagnostic Tests: $\chi^2(1)_{S.C.}$= 0.3941 (0.6749), $\chi^2(1)_{Het.}$= 1.0627 (0.3935), F_{Res}= 0.0889 (0.9292), J.-B.$_{Nor}$= 0.1900 (0.9093)					

Note: *; indicates significance at the 1% level. The "UECM model" was estimated with a maximum lag of "4", and based on the "Schwarz Information Criterion", a model with lag components (3,3,0, 0) was selected. Critical values represent the critical values derived from Pesaran et al. (2001). "Diagnostic tests" display the "diagnostic test" statistics for the chosen "UECM model", with the values in parentheses representing probability values. Here, S.C.; denotes the "Breusch-Godfrey autocorrelation LM test", Het.; the "ARCH changing variance LM test", Res.; "Ramsey's RESET test", Nor.; the "Jarque-Bera normality test".

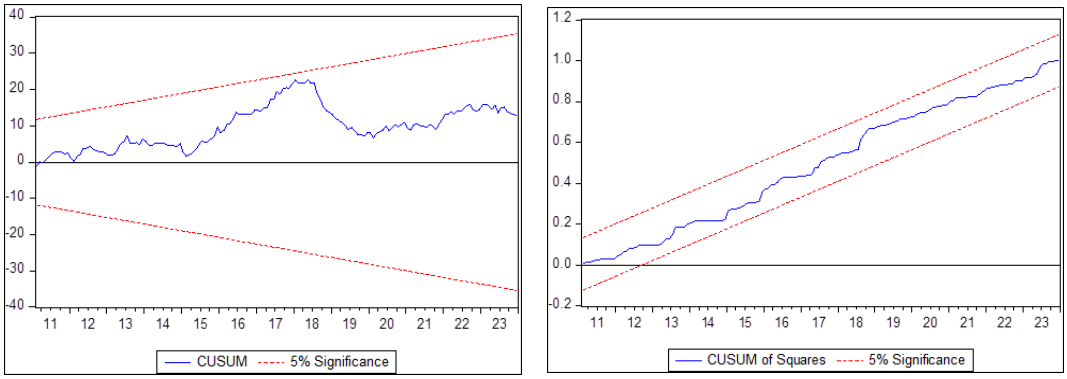

Figure 1. CUSUM and CUSUMSQ results

by the *"Schwarz Information Criterion"*. Consequently, the most appropriate model was identified as *"ARDL"*(3,3,0,0), and Model (1) was computed based on the coefficients derived from this specification. To capture the short-run dynamics associated with the long-run model, an *"error correction model"* was subsequently estimated. The estimated coefficients for both terms equations are detailed in Tables 4 and 5.

Based on the long-run coefficients detailed in Table 4, it is evident that lnpfd exert a statistically significant but negative impact on lnimp at the 10%. But, an increase in lnexp positively and significantly influences lnimp at the 5%, indicating that as lnexp rise, so do

Table 4. ARDL (3,3,0,0) estimation results with long run coefficients

Variable	Coefficient	Std. Error	t-statistic	Probability
c	1.094644	0.272757	4.013263	0.0001
lnimp(-1)	-0.235294	0.046797	-5.02797	0.0000
lnipi(-1)	-0.314866	0.063417	-4.964992	0.0000
lnexp	0.438227	0.060628	7.228158	0.0000
lnpfd	-0.018937	0.012641	-1.498122	0.1361
d(lnimp(-1))	-0.470742	0.073734	-6.384352	0.0000
d(lnimp(-2))	-0.175404	0.068502	-2.560572	0.0114
d(lnipi)	0.261647	0.165551	1.580462	0.1160
d(lnipi(-1))	0.588775	0.158091	3.724267	0.0003
d(lnipi(-2))	0.497223	0.16145	3.079728	0.0025
Variable	**Long Run**			
	Coefficient	**Std. Error**	**t-statistic**	**Probability**
lnipi	-1.33818	0.360079	-3.716348	0.0003
lnexp	1.862465	0.286147	6.508778	0.0000
lnpfd	-0.080484	0.042513	-1.893146	0.0602
c	4.652241	1.182576	3.93399	0.0001

Table 5. Error correction model estimation results for lnimp

Variable	Short Run			
	Coeffecient	**Std. Error**	**t-statistic**	**Prob.**
d(lnimp(-1))	-0,470742	0,066139	-7,117461	0,0000
d(lnimp(-2))	-0,175404	0,064721	-2,710164	0,0075
d(lnipi)	0,261647	0,159937	1,635934	0,1039
d(lnipi(-1))	0,588775	0,151816	3,878215	0,0002
d(lnipi(-2))	0,497223	0,156411	3,178952	0,0018
ECT (t-1)	-0,235294	0,029899	-7,869629	0,0000

Table 6. Results of Toda-Yamamoto causality tests

Dependent Variable	Independent Variable	d_{max}	k	Chi-Sq. Test Stat.	Chi-Sq. P Value	Relationship and Direction
IMP	EXP	1	5	20,7186	0,0009	EXP → IMP
	IPI			11,2553	0,0465	IPI → IMP
	PFD			17,0527	0,0044	PFD → IMP
IPI	IMP	1	5	5,0617	0,4084	None
	EXP			6,1257	0,2942	None
	PFD			11,5454	0,0416	PFD → IPI
EXP	IMP	1	5	13,1717	0,0218	IMP → EXP
	IPI			23,1696	0,0003	IPI → EXP
	PFD			16,6512	0,0052	PFD → EXP
PFD	IMP	1	5	14,0830	0,0151	IMP → PFD
	IPI			14,3179	0,0137	IPI → PFD
	EXP			15,1677	0,0097	EXP → PFD

lnimp. Furthermore, the results demonstrate that an increase in lnipi substantially reduces lnimp, aligning with international economic theories such as Smith's (1776/1948) and Ricardo's (1821). In the subsequent phase of the *"ARDL approach",* the focus shifts to examining short-run relationships. Within this context, the short-run model incorporates lagged values of the error terms from the previously estimated *"ARDL"(*3,3,0,0) model. The estimation outcomes are presented in Table 5.

The findings indicate that the lagged values of lnimp exert a significantly negative impact at the 5% significance level in the short-run, with this effect persisting for a duration of two months. Due to the optimal lag length, it was not possible to observe the effect of lnexp and lnpfd on lnimp. Notably, despite an observed increase in lnipi within the subsequent two months, lnimp continued to rise. These results offer a substantial foundation for the discussion in the following sections of the study.

4.3.2. Findings of Toda-Yamamoto Tests

Upon finalizing the *"unit root tests"* and *"ARDL bound tests",* the *"Toda-Yamamoto approach"* was employed. To implement this method, the stationarity level was set at d_max = 1, and the optimal lag length for the *"VAR model"* was identified as k = 5, according to the *"Schwarz Information Criterion".* Table 6 below presents the outcomes of the *"Toda-Yamamoto test".*

According to the information obtained from Table 6 above:

- Exports, EG and private sectors foreign debt are the granger cause of imports separately.
- Private sectors foreign debt is the granger cause of EG.

- Imports, EG and private sectors foreign debt are the granger cause of exports separately.
- Imports, EG and export are the granger cause of private sectors foreign debt separately.

The discussion section presents an evaluation of the study, along with a thorough discussion of these findings.

5. Discussion and conclusions

With the globalization process, commercial activities between countries have accelerated. These international commercial activities shape the growth processes of economies. In this process, economies with high export power gain significant advantages. Economies with low export power or those dependent on imports for their exports, on the other hand, face fundamental macroeconomic issues such as trade deficits. A trade deficit occurs when import expenditures exceed export revenues. Experiencing a trade deficit generally leads to significant costs for national economies. At this point, the relationship between foreign trade, EG, and external debts becomes important. In this context, examining the phenomenon of imports, which causes a trade deficit, and identifying the factors affecting imports are crucial. Within this framework, this study analyzes the impact of exports, EG, and private sector external debt on imports in Türkiye for the period 2005-2019. The analysis reveals that EG has a positive short-run and a negative long-run effect on imports, exports have a positive long-run effect on imports, and private sector external debt negatively affects imports in the long run. The findings in question are extremely valuable in uncovering the determinants of imports in Türkiye and are also significant in terms of offering various insights. In the short term, as production-based EG increases, the rise in imports can be attributed to the reliance of production on imported inputs. On the other hand, the decrease in imports as production-based EG increases in the long term indicates that Türkiye has the potential to provide the necessary resources for production in the long run. Similarly, the increase in imports with rising exports aligns with the core assumption of the study, which is that Türkiye's exports are dependent on imports, illustrating that the inputs required for exports are sourced through imports. The fact that the external debt of the private sector reduces imports in the long-term points to a tendency of sectors to refrain from imports as their debt burden grows and they face financial constraints. Given these details, the findings that present imports as a dependent variable are believed to hold unique value. Additionally, it has been shown that there is a bidirectional causality relationship between imports, exports, and private sector external debt, and a one-way causality from EG to imports. The causality analysis results also support the findings of the cointegration tests, thereby providing robustness to the research.

The findings obtained from the empirical analysis align with the studies investigating the relationship between imports and EG by Aluko & Adeyeye (2020), Raghutla & Chittedi (2020), and Usman & Bashir (2022). Additionally, considering that the trade deficit also encompasses imports, it can be stated that the results align with some studies (see Alsamara et al., 2019; Cevik et al., 2019; Coban et al., 2020). Besides the similarity of the study's findings to those in the literature, it is also possible to say that they point to important theoretical aspects.

In the context of factor endowment, it can be considered completely normal for

Türkiye, which experiences resource scarcity, to turn to imports according to the views of Heckscher (1919) and Ohlin (1933). It is possible to explain the theoretical alignment by considering Türkiye's need to import these production factors in order to participate in international trade and sell its products, given the country's shortage of various production factors. On the other hand, while engaging in these imports, the aim is to direct resources towards production and exports, which leads to debts in line with the growth cum debt approach expressed by Singer (1949). Thus, borrowing is not used directly to generate domestic resources but rather to provide imported resources. Indeed, the results of causality tests prove relationships between imports, exports, and production. Thus, imports can be seen as the cause of the deficit as expressed by Chenery & Strout (1966). This situation indicates that Türkiye's inclination towards imports is due to the lack of production capabilities necessary for exports according to the factor endowment theory. Despite the reliance on imported inputs, the exports generated are insufficient to cover the debt arising from imports, leading to the occurrence of a twin deficit.

The comparison of the relationship between debts and imports presented by the research findings with studies in the literature has been extremely limited. This is because the number of current studies examining this relationship in the literature is very scarce. However, it is possible to say that parallel findings have been reached with studies that find that debts affect imports (Bolukbas & Peker, 2017; Akin & Gunes, 2022; Atawnah et al., 2023), establish a relationship between debts and EG (Butkus & Seputiene, 2018), and observe the relationship between debts and exports (Maes et al., 2019).

6. Limitations

The model in the research is designed to explain imports and is based solely on the example of Türkiye. Additionally, the industrial production index data is used to assess EG on a monthly basis. Another limitation related to the variables is that only private sector external debts data have been used. Despite these limitations, it can be stated that the research model remains valid in the theoretical context and in the context of observed similarities in the literature. Indeed, the theoretical framework and the gaps in the literature justify the research model.

7. Theoretical Implications

The integration of trade and growth theories to support the model throughout the research indicates a highly innovative approach. Furthermore, the absence of similar research where imports serve as the dependent variable, and variables like exports, production, and external debts are collectively utilized to elucidate it, underscores a significant contribution to the literature. Given the trade deficits encountered by developing nations such as Türkiye, it is advisable for future studies to employ similar models to gain a deeper comprehension of countries' imports. Additionally, it would be advantageous for forthcoming research to encompass other developing countries and explore the impacts of imports using diverse models, with imports as the dependent variable. Furthermore, it should be noted that the methods used in research can vary. Specifically, different econometric studies conducted on groups of countries, in addition to single-country samples, are believed to more clearly reveal the relationships between imports and other economic indicators in developing countries. The relationships uncovered between imports

and other variables in this research will illuminate various theoretical research models and stimulate the emergence of new ideas.

8. Practical Implications

As a developing country, Türkiye's example offers valuable insights for other developing nations through this study. The model and findings presented in the context of production, export, and external debt provide insights into sustainable EG, monetary policies, and foreign trade policies in developing countries. It is possible to assert that an export dependent on imports is financially unsustainable, and that over the long term, an EG driven by domestic production could reduce imports, thereby resolving the issue of external borrowing. From this perspective, recommendations could be made to prevent the private sector from resorting to external debts by offering low-interest local borrowing options which is linked to interest rate decisions by governments, thereby informing monetary policies. Additionally, measures could be introduced to support trade policies, such as imposing restrictions on the export of domestically produced raw materials or adding extra taxes on import substitutes within the country. One of the most critical observations is the dependence of production on external debts from the private sector, highlighting the need to enhance the financial circumstances of producers for sustainable EG, particularly in Türkiye and other developing countries.

Additionally, as indicated by the cointegration test results, the relationship between production and imports is very strong. Therefore, it is advisable for Türkiye to utilize its production capabilities effectively and implement measures to decrease the reliance on imports in production. Moreover, since it can be inferred that the raw materials needed for long-run exports are also obtained from Türkiye's imports, it is crucial to underscore production capabilities once more. Indeed, given that production, imports, and external debts are all identified as Granger causes of exports, the urgency to address this critical cycle becomes more apparent with robust empirical evidence. It is recommended that Türkiye concentrates on enhancing exports and EG in a way that minimizes external debts and imports. To ensure the successful implementation of this recommendation, several specific steps should be considered. One such step is for ministries to determine the raw material requirements for production and export, and to explore the possibility of meeting these requirements domestically. If feasible, it would be beneficial to encourage domestic producers. Another step involves analyzing sectoral production and export diversification within the country to accelerate the export needed to address trade and current account deficits caused by imports and import-dependent debts. Based on the findings from this analysis, it is recommended to raise awareness among companies with export potential. Additionally, increasing efforts at the ministerial level to help existing exporters penetrate more global markets is crucial. To prevent external borrowing, enhancing export credit facilities and implementing policies that provide low-interest options are suggested. Furthermore, providing training on pre-financing and post-financing options to companies engaged in foreign trade can help reduce the burden of borrowing and imports by ensuring that employees are well-versed in foreign trade payment methods.

References

Akbas, Y. E., & Senturk, M. (2013). Dependency of Import and Export of Turkey: An Ampirical Application for Selected Countries. *Ege Academic Review*, 13(2), 195-208.

Akhter, S., Mir, M. A. and Megits, N. (2022). The linkage between international trade and economic growth in Kazakhstan. *Journal of Eastern European and Central Asian Research* (JEECAR), 9(6), pp. 1021-1033. Retrieved from https://doi.org/10.15549/jeecar.v9i6.1019

Akin, T. ve Gunes, S. (2022). Dış borçların sürdürülebilirliği: Kırılgan beşli ülkeleri panel eşbütünleşme analizi. *Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty*, 9(3), pp. 1605-1629. Retrieved from https://doi.org/10.30798/makuiibf.913340

Aksoy, E., Teker, T., Mazak, M. and Kocabiyik, T. (2020). Kripto paralar ve fiyat ilişkileri üzerine bir analiz: Toda-Yamamoto nedensellik analizi ile bir inceleme. *Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (37), pp. 110-129.

Alawadhi, A., Salih, S., Aljaber, A. and Al-Qudsi, S. (2024). Determinants of Kuwait long-run and short-run economic growth. *OPEC Energy Review*, 48(4), pp. 1-20. Retrieved from https://doi.org/10.1111/opec.12304

Ali, A., Fatima, N., Ali, B. J. A. R. and Husain, F. (2023). Imports, exports and growth of gross domestic product (GDP)-A relational variability Analysis. *International Journal of Sustainable Development & Planning*, 18(6), pp. 1681-1690. Retrieved from https://doi.org/10.18280/ijsdp.180604

Alsamara, M., Mrabet, Z., Barkat, K. and Elafif, M. (2019). The impacts of trade and financial developments on economic growth in Turkey: ARDL approach with structural break. *Emerging Markets Finance and Trade*, 55(8), pp. 1671-1680. Retrieved from https://doi.org/10.1080/1540496X.2018.1521800

Altintas, H. (2013). Türkiye'de petrol fiyatları, ihracat ve reel döviz kuru ilişkisi: ARDL sınır testi yaklaşımı ve dinamik nedensellik analizi. *Uluslararası Yönetim İktisat ve İşletme Dergisi* 9(19), pp. 1–30.

Aluko, O. A. and Adeyeye, P. O. (2020). Imports and economic growth in Africa: Testing for granger causality in the frequency domain. *The Journal of International Trade & Economic Development*, 29(7), pp. 850-864. Retrieved from https://doi.org/10.1080/09638199.2020.1751870

Atawnah, N., Zaman, R., Liu, J., Atawna, T. and Maghyereh, A. (2023). Does foreign competition affect corporate debt maturity structure? Evidence from import penetration. *International Review of Financial Analysis*, 86, 102539. Retrieved from https://doi.org/10.1016/j.irfa.2023.102539

Bajo-Rubio, O. (2022). Exports and long-run growth: The case of Spain, 1850–2020. *Journal of Applied Economics*, 25(1), pp. 1314-1337. Retrieved from https://doi.org/10.1080/15140326.2022.2152562

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), pp. 99-120.

Bilgili, F., Kuskaya, S., Unlu, F. and Gencoglu, P. (2022). Export quality, economic growth, and renewable-nonrenewable energy use: non-linear evidence through regime shifts.

Environmental Science and Pollution Research, 29(24), pp. 36189-36207. Retrieved from https://doi.org/10.1007/s11356-022-18601-8

Blavasciunaite, D., Garsviene, L. and Matuzeviciute, K. (2020). Trade balance effects on economic growth: Evidence from European Union Countries. *Economies*, 8(3), pp. 1-15. Retrieved from https://doi.org/10.3390/economies8030054

Bolukbas, M. and Peker, O. (2017). Ticari Dışa Açıklık ve Dış Ticaret Hadleri Dış Borçlanma Üzerinde Etkili mi? Türkiye İçin Bir Analiz. *Sosyoekonomi*, 25(34), pp. 213-225. Retrieved from https://doi.org/10.17233/sosyoekonomi.319465

Bolukbasi, H. and Civcir, I. (2024). Imported inputs, balance of payments and economic growth: A model and a test on the case of Turkey. *Structural Change and Economic Dynamics*, 70, pp. 319-332. Retrieved from https://doi.org/10.1016/j.strueco.2024.02.013

Butkus, M. and Seputiene, J. (2018). Growth effect of public debt: The role of government effectiveness and trade balance. *Economies*, 6(62), pp. 1-27. Retrieved from https://doi.org/10.3390/economies6040062

Can, M., Ahmed, Z., Ahmad, M. and Oluc, I. (2023). Economic progress in emerging countries: the roles of diversification of import and export products and energy consumption. *Environment, Development and Sustainability*, 26, pp. 18207–18229. Retrieved from https://doi.org/10.1007/s10668-023-03386-8

Carrasco, C. A. and Tovar-García, E. D. (2021). Trade and growth in developing countries: The role of export composition, import composition and export diversification. *Economic Change and Restructuring*, 54(4), pp. 919-941. Retrieved from https://doi.org/10.1007/s10644-020-09291-8

Cetin, M., and Seker, F. (2013). Doğrudan yabancı yatırımlar ve ihracat ilişkisi: gelişmekte olan ülkeler üzerine bir nedensellik analizi. *Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 8(1), pp. 121-142.

Cevik, E. İ., Atukeren, E. and Korkmaz, T. (2019). Trade openness and economic growth in Turkey: A rolling frequency domain analysis. *Economies*, 7(41), pp. 1-16. Retrieved from https://doi.org/10.3390/economies7020041

Chenery, H. B. and Strout, A. M. (1966). Foreign assistance and economic development. *The American Economic Review*, 56(4), pp. 679-733.

Chhabra, M., Giri, A. K. and Kumar, A. (2023). What shapes economic growth in BRICS? Exploring the role of institutional quality and trade openness. *Economic Papers: A journal of applied economics and policy*, 42(4), pp. 347-365. Retrieved from https://doi.org/10.1111/1759-3441.12378

Ciftci, F. and Yildiz, R. (2015). Doğrudan yabancı yatırımların ekonomik belirleyicileri: Türkiye ekonomisi üzerine bir zaman serisi analizi. *Business & Economics Research Journal*, 6(4), pp. 71-95.

Coban, O., Onifade, S. T., Yussif, A. R. B. and Haouas, I. (2020). Recon sidering trade and investment-led growth hypothesis: New evidence from Nigerian economy. *Journal of International Studies*, 13(3), pp. 98-110. Retrieved from https://doi.org/10.14254/2071-8330.2020/13-3/7

Dahal, A. K., Bhattarai, G. and Budhathoki, P. B. (2024). Impact of foreign trade and foreign direct investment on economic growth: Empirical insights from Nepal. *Problems and Perspectives in Management*, 22(1), pp. 390-400. Retrieved from http://dx.doi.org/10.21511/ppm.22(1).2024.32

Daly, H., Abdulrahman, B. M. A., Ahmed, S. A. K., Abdallah, A. E. Y., Elkarim, S. H. E. H., Sahal, M. S. G., ... & Elshaabany, M. M. (2024). The dynamic relationships between oil products consumption and economic growth in Saudi Arabia: Using ARDL cointegration and Toda-Yamamoto Granger causality analysis. *Energy Strategy Reviews*, 54, 101470.

Dickey, D. A. and Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 1057-1072.

Engle, R. F. and Granger, C. W. J. (1987). Co-integration and error correction: Representation, estimation and testing. *Econometrica*, 55(2), pp. 251-276.

Guvenoglu, H. (2024). Türkiye'de Kamu ve Özel Sektör Dış Borçları ile Ekonomik Büyüme İlişkisinin Analizi. *Gümüşhane Üniversitesi Sosyal Bilimler Dergisi*, 15(1), pp. 137-157.

Heckscher, E. (1919). The effect of foreign trade on the distribution of income. In *American Economic Association, Readings in the Theory of International Trade*. Philadelphia: Blakiston, 1949, pp. 272–300

Hidayat, A. M., Purwanda, E., Hadijah, H. S. and Sodik, G. (2024). Impact of exchange rates, inflation, foreign direct investment, government spending, and economic openness on exports, imports, and economic growth in Indonesia. *Journal of Infrastructure, Policy and Development*, 8(6), 3270. Retrieved from https://doi.org/10.24294/jipd.v8i6.3270

Ibhagui, O. W. (2018). External debt and current account adjustments: The role of trade openness. *Cogent Economics & Finance*, 6(1), pp. 1446247. Retrieved from https://doi.org/10.1080/23322039.2018.1446247

Intisar, R. A., Yaseen, M. R., Kousar, R., Usman, M. and Makhdum, M. S. A. (2020). Impact of trade openness and human capital on economic growth: A comparative investigation of Asian countries. *Sustainability*, 12(7), 2930. Retrieved from https://doi.org/10.3390/su12072930

Islam, M. S. (2021). Is the trade-led growth hypothesis valid for the Kingdom of Saudi Arabia? Evidence from an ARDL approach. *Fudan Journal of the Humanities and Social Sciences*, 14(3), pp. 445-463. Retrieved from https://doi.org/10.1007/s40647-021-00314-w

ITC. (2024a). International Trade Center, List of importing markets for a product exported by Türkiye, Access: https://www.trademap.org/Country_SelProductCountry_TS.aspx?nvpm=1%7c792%7c%7c%7c%7cTOTAL%7c%7c%7c2%7c1%7c1%7c2%7c2%7c1%7c2%7c1%7c1%7c1, Accessed at: 12.09.2024.

ITC. (2024b). International Trade Center, List of supplying markets for a product imported by Türkiye, Access: https://www.trademap.org/Country_SelProductCountry_TS.aspx?nvpm=1%7c792%7c%7c%7c%7cTOTAL%7c%7c%7c2%7c1%7c1%7c1%7c2%7c1%7c2%7c1%7c1%7c1 Accessed at: 12.09.2024.

Ji, X., Dong, F., Zheng, C. and Bu, N. (2022). The influences of international trade on sustainable economic growth: An

economic policy perspective. *Sustainability*, 14(5), 2781. Retrieved from https://doi.org/10.3390/su14052781

Khan, A. M. and Khan, U. (2021). The stimulus of export and import performance on economic growth in Oman. *Montenegrin Journal of Economics*, 17(3), pp. 71-86. Retrieved from https://doi.org/10.14254/1800-5845/2021.17-3.6

Khan, L., Arif, I.. and Waqar, S. (2021). The impact of military expenditure on external debt: The case of 35 arms importing countries. *Defence and Peace Economics*, 32(5), pp. 588-599. Retrieved from https://doi.org/10.1080/10242694.2020.1723239

Kumar, M., Nargis, N. and Begam, A. (2020). Export-led growth hypothesis: Empirical evidence from selected South Asian Countries. *Asian Journal of Economic Modelling*, 8(1), pp. 1-15. Retrieved from https://doi.org/10.18488/journal.8.2020.81.1.15

Kumari, R., Shabbir, M. S., Saleem, S., Yahya Khan, G., Abbasi, B. A. and Lopez, L. B. (2021). An empirical analysis among foreign direct investment, trade openness and economic growth: evidence from the Indian economy. *South Asian Journal of Business Studies*, 12(1), pp. 127-149. Retrieved from https://doi.org/10.1108/SAJBS-06-2020-0199

Maes, E., Dewaelheyns, N., Fuss, C. and Van Hulle, C. (2019). The impact of exporting on financial debt choices of SMEs. *Journal of Business Research*, 102, pp. 56-73. Retrieved from https://doi.org/10.1016/j.jbusres.2019.05.008

Mangir, F., & Ayhan, F. (2019). Oecd ülkelerinde ikiz açık hipotezinin geçerliliği: panel veri analizi. *Social Sciences*, 14(5), 2011-2026. DOI: 10.29228/TurkishStudies.37402

Mawutor, J. K. M., Sogah, E., Christian, F. G., Aboagye, D., Preko, A., Mensah, B. D. and Boateng, O. N. (2023). Foreign direct investment, remittances, real exchange rate, imports, and economic growth in Ghana: An ARDL approach. *Cogent Economics & Finance*, 11(1), 2185343. Retrieved from https://doi.org/10.1080/23322039.2023.2185343

Moyo, G. and Amoah, D. A. (2024). Impact of import and export on the economic growth of Ghana. *International Journal of Engineering and Management Research* (IJEMR), 14(1), pp. 7-13. Retrieved from https://doi.org/10.5281/zenodo.10624023

Nam, H. J. and Ryu, D. (2024). Does trade openness promote economic growth in developing countries? *Journal of International Financial Markets, Institutions and Money*. 93. Retrieved from https://doi.org/10.1016/j.intfin.2024.101985

Ohlin, B. G. (1933). *Interregional and International Trade*. USA: Harvard University Press.

Oloyede, B. M., Osabuohien, E. S. and Ejemeyovwi, J. O. (2021). Trade openness and economic growth in Africa's Regional Economic Communities: Empirical evidence from ECOWAS and SADC. Heliyon 7(5), e06996. Retrieved from https://doi.org/10.1016/j.heliyon.2021.e06996

Oncel, A., Saidmurodov, S. and Kutlar, A. (2024). Financial development, export and economic growth: Panel data evidence from Commonwealth of Independent States. *The Journal of International Trade & Economic Development*, 33(1), pp. 29-56. Retrieved from https://doi.org/10.1080/09638199.2022.2164045

Osei, D. B., Sare, Y. A. and Ibrahim, M. (2019). On the determinants of trade openness in low-and lower–middle-income countries in Africa: How important is economic growth?. *Future Business Journal*, 5(2), pp. 1-10. Retrieved from http://dx.doi.org/10.1186/s43093-019-0002-8

Pesaran, M. H., Shin Y. and Smith R. S. (2001). Bound testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), pp. 289–326.

Pesaran, M. H. and Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. (Ed.) S. Strom, *Econometrics and Economic Theory in the 20th Century* (pp. 371-413). Cambridge: Cambridge University Press.

Phillips, P. C. and Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), pp. 335-346.

Posner, M. V. (1961). International Trade And Technical Change. (Ed.: D.M.Lamberton(Eds.). In: *Economics of Innovation and Knowledge*. London: Penguin Modern Economics.

Raghutla, C. and Chittedi, K. R. (2020). Is there an export- or import-led growth in emerging countries? A case of BRICS countries. *Journal of Public Affairs*, 20(3), e2074. Retrieved from https://doi.org/10.1002/pa.2074

Rakshit, B. (2022). Dynamics between trade openness, FDI and economic growth: Evidence from an emerging economy. *Journal of International Trade Law and Policy*, 21(1), pp. 16-41. Retrieved from https://doi.org/10.1108/JITLP-01-2021-0004

Ricardo, D. (1821). *On the Principles of Political Economy*. London: 3rd Edition by J. Murray, Batoche Books, Kitchener, 2001.

Sarigul, H. and Apak, S. (2024). Economic growth, energy consumption, and trade openness nexus: Evidence from net energy importing middle-income countries. *Panoeconomicus*, 71(3), pp. 345-371. Retrieved from https://doi.org/10.2298/PAN211102024S

Sghaier, I. M. (2023). Trade openness, financial development and economic growth in North African countries. *International Journal of Finance & Economics*, 28(2), pp. 1729-1740. Retrieved from https://doi.org/10.1002/ijfe.2503

Shahid, R., Shijie, L. and Shah, A. H. (2022). Developing long-and short-run nexus between industrial growth, economic growth, and trade balance of China. *Environmental Science and Pollution Research*, 29(12), pp. 17772-17786. Retrieved from https://doi.org/10.1007/s11356-021-17104-2

Siami-Namini, S. (2017). Granger causality between exchange rate and stock price: A Toda Yamamoto approach. *International Journal of Economics and Financial Issues*, 7(4), 603-607.

Singer, H. W. (1949). Economic Development in Under-developed Countries, *Social Research*, 16(1), pp. 1-11.

Smith, A. (1948). *Wealth of Nations: Volume 2* (H. Derin, Çev.). Milli Eğitim Basımevi. (Publised original in 1776)

Srdelić, L. and Dávila-Fernández, M. J. (2024). International trade and economic growth in Croatia. *Structural Change and Economic Dynamics*, 68, pp. 240-258. Retrieved from https://doi.org/10.1016/j.strueco.2023.10.018

Sultanuzzaman, Md R., Fan, H., Mohamued, E. A., Hossain, Md I. and Islam, M. A.

(2019). Effects of export and technology on economic growth: Selected emerging Asian economies. *Economic Research-Ekonomska Istraživanja*, 32(1), pp. 2515-2531, Retrieved from https://doi.org/10.1080/1331677X.2019.1650656

Sunde, T., Tafirenyika, B. and Adeyanju, A. (2023). Testing the impact of exports, imports, and trade openness on economic growth in Namibia: assessment Using the ARDL cointegration method. *Economies*, 11(3), 86. Retrieved from https://doi.org/10.3390/economies11030086

Temiz Dinc, D. and Gokmen, A. (2019). Export-led economic growth and the case of Brazil: An empirical research. *Journal of Transnational Management*, 24(2), pp. 122-141. Retrieved from https://doi.org/10.1080/15475778.2019.1609895

Toda, H. Y. and Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics*, 66(1-2), pp. 225-250.

TRCB. (2024). Turkish Republic Central Bank, Foreigh debt stocks of Türkiye, Access: https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket, Accessed at: 12.09.2024

TSI, (2024), Turkish Statistical Institute Foreign Trade and National Calculations Statistics, Access: https://data.tuik.gov.tr/Kategori/GetKategori?p=dis-ticaret-104&dil=1, Accessed at: 12.09.2024.

Usman, K. and Bashir, U. (2022). The effects of imports and economic growth in Chinese economy: a granger causality approach under VAR framework. *Journal of Risk and Financial Management*, 15(11), 531. Retrieved from https://doi.org/10.3390/jrfm15110531

Uzokwe, A. E., & Onyije, I. (2020). Renewable and non-renewable energy consumption and economic growth-a case of Nigeria. *SSRG Int J Econ Manage Stud* (SSRG-IJEMS), 7(1), 1-9.

Velaj, E. and Bezhani, E. (2022). The impact of import and Export to GDP growth–the case of Albania. *Review of Economics and Finance*, 20, pp. 791-796. Retrieved from https://doi.org/10.55365/1923.x2022.20.89

Vernon, R. (1966). International investment and international trade in the product cycle. *The Quarterly Journal of Economics*, 80(2), pp. 190–207. Retrieved from https://doi.org/10.2307/1880689

Wamalwa, P. S. and Were, M. (2021). Is it export-or import-led growth? The case of Kenya. *Journal of African Trade*, 8(1), pp. 33-50. Retrieved from https://doi.org/10.2991/jat.k.210818.001

Yameogo, C. E. W. and Omojolaibi, J. A. (2021). Trade liberalisation, economic growth and poverty level in Sub-Saharan Africa (SSA). *Economic Research-Ekonomska Istraživanja*, 34(1), pp. 754–774. Retrieved from https://doi.org/10.1080/1331677X.2020.1804428

Yoon, S. C. (2019). The impact of ICT goods imports on economic growth: Evidence from Asia-Pacific countries. *Journal of Korea Trade*, 23(7), pp. 1-12. Retrieved from https://doi.org/10.35611/jkt.2019.23.7.1