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Exploring the Link Between Provincial Exports and Economic Growth: Evidence from Türkiye[1]

Abstract. Exports play a vital role, particularly for developing countries, and economic growth remains a central goal for all nations. Over time, numerous approaches have sought to understand and explain the causal relationship between exports and macroeconomic indicators, with extensive studies conducted on the subject. This research examines the relationship between exports and economic growth using panel data analysis at the provincial level in Türkiye, offering a unique perspective compared to traditional country-level analyses. Given that international trade is often studied at the national or enterprise level, this province-focused approach provides distinctive insights. The study covers the period from 2004 to 2020 and employs the Westerlund ECM Cointegration Test, Panel ARDL, and Dumitrescu & Hurlin Causality Test as analytical methods. The findings reveal both cointegration and bidirectional causality between provincial exports and economic growth. Furthermore, increases in exports positively impact economic growth in both the short and long term. Notably, the effect is more pronounced in provinces with well-developed tourism and industrial sectors.

Keywords: Exports, Economic Growth, Export-led Growth Model, Province Export, Province Economic Growth, Regional Development

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Связь между региональным экспортом и экономическим ростом: на примере Турции

Аннотация. Экспорт играет ключевую роль для экономического развития стран, особенно – для развивающихся. Существует множество подходов, помогающих понять и объяснить причинно-следственную связь между экспортом и макроэкономическими показателями. В настоящем исследовании проведена оценка взаимосвязи между экспортом и экономическим ростом с использованием панельного анализа данных на уровне именно турецких провинций, а не всей Турции в целом. Учитывая, что международная торговля часто исследуется на национальном уровне или уровне предприятий, этот подход, ориентированный на даннные по провинциям, представляет особую значимость. Исследование охватывает период с 2004 по 2020 гг. и в качестве аналитических методов использует тест коинтеграции ECM Вестерлунда, панельную модель ARDL и тест причинности Думитреску и Херлина. Результаты показывают как коинтеграцию, так и двунаправленную причинно-следственную связь между экспортом из провинций и экономическим ростом. Кроме того, увеличение экспорта положительно влияет на экономический рост как в краткосрочной, так и в долгосрочной перспективе. Примечательно, что эффект более выражен в провинциях с хорошо развитым туризмом и промышленным сектором.

Ключевые слова: экспорт, экономический рост, модель экспортоориентированная модель роста, экспорт из провинций, экономический рост провинций, региональное развитие

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Introduction

The relationship between exports and economic growth has been a subject of extensive academic and policy interest for decades. Exports are widely regarded as a critical driver of economic growth, particularly in developing countries. The global experience of developed nations further illustrates the importance of exports in fostering growth.

As a developing country, Türkiye has undergone substantial economic transformations, with exports serving as a key element in promoting growth and enhancing competitiveness in recent years. According to the World Bank (2023)[1], For Türkiye, this ratio stands at 35.3 %, compared to just 3.1 % in the 1970s. This reflects Türkiye's significant progress in adapting to globalization and fostering globally competitive companies. Over the last two decades, Türkiye's exports rose from $47 billion in 2003 to approximately $254 billion by the end of 2022 (ITC, 2024), a six-fold increase underscoring its growing role in global trade. Notably, Istanbul has emerged as a leading province driving this export growth.

In development literature, the impact of exports on economic growth is referred to as export-oriented growth. Export-led growth, which is synonymous with free trade or openness, represents an export-oriented development strategy (Yaprakli, 2007). While the export-economic growth relationship has attracted significant interest, much of the existing research focuses on cross-country studies, which often fail to capture its nuanced and complex dynamics. Given the varying experiences of provinces within a country, a more granular examination is necessary.

Although micro-level studies exist, they primarily explore factors influencing the performance of enterprises in exports and the role of specific variables in shaping it. However, studies linking enterprise-level export gains to macroeconomic indicators remain scarce, revealing a critical gap between the fields of economics, business administration, and international trade. This research aims to address this gap by analysing how the exports of enterprises in specific provinces impact the broader economy, particularly the economy of the province where they operate.

This research contributes to the existing body of literature by examining how exports from enterprises in Turkish provinces impact provincial economic growth. Using a comprehensive dataset from Türkiye's major provinces and econometric techniques, the study explores the causal relationship between exports and economic growth. It also investigates the variability of this

[1] World Bank, (2023). World Export/GDP Ratios. Date of Access: 24.03.2023, https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS?locations=TR

relationship across different provinces, aiming to provide recommendations for dealing more effectively with the country's regional disparities in terms of exports.

The findings are expected to offer valuable insights for policymakers, stakeholders, and academics. For policymakers, the study will provide a clearer understanding of exports' role in boosting economic growth and competitiveness, aiding the development of effective trade policies. Stakeholders will gain a deeper understanding of the factors driving growth and competitiveness in various provinces, helping inform investment decisions. For academics, the research offers a province-level analysis of the export-economic growth nexus, outlining avenues for future research.

Overall, this study fills an important gap by analysing the export-economic growth relationship at the provincial level in Türkiye. The study also shares findings regarding the implications for different Turkish regions, including the Mediterranean, Marmara, Aegean, Black Sea, Central Anatolia, Southeastern Anatolia, and Eastern Anatolia (Özçağlar, 2015).

Theoretical Framework

Exports play a crucial role in boosting the economies and competitiveness of both countries and provinces. While exports are vital for economic growth, it is essential to first understand the theoretical foundations of their relationship, including key theories on economic growth and export orientation.

Endogenous economic growth models form the main theoretical basis for this research, with foundational work by Romer (1986) and Lucas (1988). Romer's (1986) approach emphasizes the role of technological advancements in economic growth. He argued that exporting the value generated by technological progress fosters economic integration, driving growth. This view also highlights the importance of human capital alongside technological development. Romer's ideas build on Arrow's (1962) work and are connected to the technological deficit hypothesis (Posner, 1961) and the skilled labour theory (Keesing, 1965; Keesing, 1966). These theories suggest that technological advantages and skilled labour contribute to higher export revenues.

Lucas (1988) further supported this by asserting that human capital development enhances productivity, which in turn drives economic growth. Building on Romer and Lucas, researchers such as Grossman and Helpman (1989) expanded on the concept of endogenous growth. They argued that technological advancements not only foster economic growth but also influence trade policy by creating new products, which provide comparative advantages in foreign trade and drive economic growth through increased exports.

This body of work, which highlights factors such as technology and human capital, contributes to a broader understanding of the connection between international trade and economic growth. A key perspective that emerges from this is the export-led economic growth hypothesis.

Within the export-led growth theory, increasing exports are considered a key driver of economic growth. It is argued that a nation's growth depends not only on the amount of labour and capital in its economy but also on the expansion of its export volume (Medina-Smith, 2001). Proponents of this hypothesis argue that exports directly induce economic growth. Balassa's (1985) study highlights the impact of factors such as changes in investment rates, labour force growth, trade policies, and the mix of exported products on economic growth. It suggests that better economic growth occurs when an open economic policy is pursued and exports are encouraged. Similarly, Chenery (1961) argues that exports of comparatively superior products can stimulate economic growth, while also emphasizing the importance of a country's development level. Krueger (1978) points to real-world examples, such as Brazil and South Korea, where increased exports between 1960 and 1975 led to significant economic growth. However, the study also notes that country-specific conditions should be considered when examining exports and economic growth.

Theoretically, the endogenous growth model highlights the role of investments in human capital, research and development, and technological progress as drivers of long-term economic growth. In contrast, the export-led growth model posits that higher exports lead to economic growth by boosting productivity and providing access to foreign markets. Both models, however, recognize the importance of a solid economic environment and favourable conditions for businesses. Therefore, the endogenous growth and export-led growth models can be connected by viewing exports as one of the factors that contribute to overall investment and innovation, thereby driving endogenous growth. Given this perspective, the relationship between exports and economic growth at the provincial level presents a valuable research opportunity once the theoretical connections between the two approaches are established.

Literature Review

Exports play a crucial role in promoting economic growth and competitiveness of countries. For this reason, it would make sense to look at the studies investigating the relationships and interactions between these two variables. This study aims to offer a fresh perspective on the literature by examining the relationship between exports and economic growth at the provincial level. To do so, it will focus on key factors that influence this relationship.

First, exports create job opportunities not only within exporting firms but also in supporting industries such as transportation, storage, and marketing. This can help reduce unemployment and improve the standard of living in a province. Numerous studies at the country level have shown a significant positive effect of exports on employment or a negative effect on unemployment (Aktakas et al., 2013; Gül & Kamaci, 2012; Ayhan, 2018; Göçer et al., 2013; Eygü, 2018; Karakuş & Atabey, 2021).

Second, exporting firms generate substantial revenue by selling their products abroad, which can lead to increased tax revenues for local governments, which can then be used to provide public goods and services. As a result, local producers, especially those not engaged in foreign trade, may increasingly sell to the public sector. This creates a chain effect, benefiting subsidiary industries and other local producers. Previous studies have also shown that taxation policies directly or indirectly affect economic growth (Siverekli Demircan, 2003; Turan, 2008; Topal, 2017; Demir & Sever, 2017).

Exports also promote diversification across industries and products. By accessing foreign markets, countries and provinces can reduce their reliance on specific sectors, making their economies more resilient to economic shocks. Provinces that rely on a single product are particularly vulnerable to demand fluctuations, which can negatively impact the economy (e.g., through production reductions, layoffs, and debt). Research has shown that companies that diversify their products and enter different markets are better equipped to manage risks (Caves, 1981; Scherer, 1980). These companies also often have easier access to financing due to reduced risks (Benito-Osorio et al., 2012). Ultimately, the strength of an economy is closely tied to the success of its businesses, and exporting enterprises play a crucial role in driving economic growth.

Innovation and productivity are key factors in the relationship between exports and economic growth. Exporting companies often need to be more innovative and productive to remain competitive in foreign markets, which can lead to the adoption of new technologies and improvements in product quality and thus have positive spillover effects on other sectors of the local economy. Previous studies have shown that innovation enhances the export performance of companies (Sarihan & Tepeci, 2017; D'Angelo, 2010; Wang & Guıan, 2009; Halpern & Muraközy, 2012). Additionally, a country's investment in innovation and R&D can significantly boost its exports (Özer & Çiftçi, 2009; Coşkun & Eygü, 2020; Külünk, 2018). These findings at the level of individual enterprises and at the national level provide valuable insights into how exports impact the economic growth of provinces, particularly in the context of innovation.

Lastly, exports allow countries to access foreign markets, which is crucial for their economic development. Gaining access to diverse markets can enhance competitiveness and stimulate the local economy. When considered at the provincial level, access to foreign markets becomes even more important, which is supported by previous research evidence in this literature review. Overall, exports can play a crucial role in boosting provincial economic growth and competitiveness. By fostering job creation, increasing revenue, diversifying the economy, promoting innovation, and providing access to foreign markets, exports can have a positive impact on a province's economic well-being.

Before analysing data on Turkish provinces, the following studies will provide a deeper understanding of the national-specific contexts.

Akcan and Metin (2018) analysed the relationship between foreign trade and economic growth in Türkiye over two periods: pre-crisis and post-crisis. Their findings show that, in the pre-crisis period, Türkiye experienced both import – and export-led growth, in line with endogenous economic growth theories. In contrast, the export-led growth hypothesis gained more attention and relevance in the post-crisis period. Yaprakli (2007) found a positive and unidirectional causality from total and industrial exports to economic growth in Türkiye. Telatar, Değer, and Doğanay (2016) found that exports of low and medium-technology products had a positive and statistically significant effect on Türkiye's economic growth. Uğur (2021) examined the impact of exports on growth in emerging market economies from 1987 to 2018 using panel cointegration analysis. The findings indicate that a 1 % increase in exports leads to a 0.11 % increase in economic growth for ten selected emerging market economies. These studies are

significant for the scope of this research, and it is also valuable to explore literature from other countries for comparative insights.

Doğan (2021) found that economic growth leads to an increase in exports, but exports do not affect economic growth in Kyrgyzstan. Fatemah and Qayyum (2018) argue that exports, along with other variables, play an important role in both the long – and short-run economic growth of Pakistan. Kalaitzi and Chamberlain (2020), working with data from the United Arab Emirates, found a long-run relationship between exports and economic growth. Krajisnik, Gojkovic, Josipovic, and Popovic (2020) demonstrated that an increase in exports significantly and positively affects the economic growth of Bosnia and Herzegovina. Mensah and Okyere (2020) discovered a reciprocal relationship between exports and economic growth in Ghana.

In addition to these studies, recent research has examined the relationship between export differentiation and economic growth (Sarin et al., 2022; Canh and Thanh, 2022; Zafar et al., 2022). These studies are valuable as they show that economic growth can be influenced not only by exports but also by their sub-dimensions, highlighting the need to examine the export-economic growth relationship from diverse perspectives. Additionally, recent work has explored the relationship between non-oil exports and economic growth (Adepapo, 2023), and models examining the export-economic growth link while considering carbon emissions (Iqbal et al., 2023). This growing body of literature suggests that, as the world continues to evolve, new variables and samples will emerge to enhance our understanding of the changing dynamics in the export-economic growth context.

These studies and theoretical foundations demonstrate that the export-economic growth relationship is observable in many contexts. However, the majority of research has focused on the national level. While there are some regional development studies, they are relatively few compared to national-level studies, and research at the provincial level remains limited. Since exporting begins with an entrepreneur's decision, studies conducted at the country or regional level cannot fully capture the nuances of this relationship. Although enterprise-level research is more common, it remains at the micro-level. Conducting studies at the provincial level offers the opportunity to develop more targeted policies. This study, with its unique dataset and sample, presents an original academic opportunity to explore this relationship.

Methodology, Empirical Model and Dataset

4.1. Methodology

The empirical analyses are performed using the Westerlund ECM panel cointegration test, panel ARDL and (Dumitrescu and Hurlin, 2012) causality test. The ECM panel cointegration test suggested by (Westerlund, 2007) investigates the long-run relationship between the variables. Westerlund (2007) uses the conditional error correction model in equation (1) while performing the cointegration test.

$$\alpha_i(L)\Delta y_{it} = \delta_{1i} + \delta_{2it} + \alpha_i(y_{it} - 1 - \beta_i' x_{it} - 1) + \\ + \gamma_i(L)'\upsilon_{it} + e_{it} \qquad (1)$$

Equation 1 shows that conditional error correction model for yit in L lag operator and eit is the error term. In model, δ_{1i} and δ_{2it} show that deterministic elements that respectively, a constant and a linear time trend. The vector bi defines a long-run equilibrium relationship between xit and yit . Any deviation from the long-run equilibrium relationship leads to a correction of $-2< \alpha_i \leq 0$ rate, and ai is called the error correction parameter. If the error correction rate is less than zero ($\alpha_i < 0$), it implies that yit and xit are cointegrated. On the other hand, there is no error correction if the $\alpha_i = 0$ condition is valid, and which implies that y_{it} and x_{it} are not cointegrated. In summary, $\alpha_i = 0$ is tested in the hypothesis testing (Westerlund, 2007).

While investigating the cointegration relationship between the variables, two test statistics (Ga and Gt) based on the weighted average of the individual short-term coefficients and two test statistics (Pa and Pt) based on the panel as a whole are calculated. The Westerlund ECM panel cointegration test gives reliable results in estimating with small samples and overcoming the negative effects of cross-section dependence (Westerlund, 2007). In order to calculate the long – and short-term coefficients of the variables, mean group (MG) and pooled mean group (PMG) estimators are used within the framework of the panel ARDL approach.

Lastly, the causality relationship between exports and economic growth is examined by the granger panel causality test proposed by Dumitrescu and Hurlin (2012). This test is performed using the model in the equation (2):

$$y_{i,t} = \alpha_i + \sum_{k=1}^{K} \gamma_i^{(k)} y_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} x_{i,t-k} + \varepsilon_{i,t} \qquad (2)$$

In equation (2), *x* and *y* are two stationary variables. ai are the individual effects that are

supposed to be fixed in the time dimension. *K* is lag orders that are identical for all cross-section units of the panel. $\gamma_i^{(k)}$ are autoregressive parameters and $\beta_i^{(k)}$ are the regression coefficients slopes to differ across groups. Ei,t is the error term (Dumitrescu and Hurlin, 2012). The null hypothesis is that the coefficient bi is equal to zero. The alternative hypothesis states that some of the bi's is nonzero under the assumption that the model is heterogeneous. If the alternative hypothesis is accepted, it is decided that there is causality from x to y in some of the units.

4.2. Econometric Model and Dataset

In this study, we test the effect of provinces' exports on growth of the provinces' economy econometrically using province-level data.

Equation (3) shows the econometric model:

$$Lngdp_{it} = \beta_0 + \beta_1 lnexport_{it} + \varepsilon_{it} \qquad (3)$$

In equation (3), lngdpit is the dependent variable, lnexportit is the independent variable and eit is the error term. β_0 denotes the constant term and β_1 denotes the independent variable parameter. lngdp is the production levels in dollars and lnexport is the export of provinces in dollars. In addition, all variables have been transformed into logarithmic form. The analysis includes the period of 2004–2020. The dataset is obtained from the database of the Turkish Statistical Institute[1].

Empirical Findings

Table 1 presents descriptive statistics. The average value of lngdp and lnexport is 10.29 and 8.75, respectively, in this period. lngdp has a smaller standard error than lnexport, which means that the export values differ more among the provinces.

The stationarity of the series is examined. However, panel unit root tests, which are used to assess the stationarity of panel data, are highly sensitive to cross-sectional dependence. Therefore, the cross-sectional dependence of the series is first tested using the CD test proposed by Pesaran (2004). As shown in Table 2, the results of the Pesaran CD test reject the null hypothesis of cross-sectional independence for two variables, indicating that the series exhibit cross-sectional dependence.

Pesaran (2007) developed the cross-sectionally augmented ADF (CADF) test to assess the stationarity of series with cross-sectional dependence. This test accounts for cross-sectional dependency. Given the presence of cross-sectional dependence in all series, the stationarity of the series is tested using the CADF unit root test. The results of the unit root tests, shown in Table 3, are performed separately for the constant and constant+trend models. It is observed that the lngdp and lngrowth series are stationary at the 1 % significance level after the first difference.

The series are cointegrated at I (1). In this framework, the Westerlund ECM panel cointegration test and panel ARDL approach are performed. Table 4 shows the Westerlund ECM panel cointegration test. The bootstrap process is run since there is a cross-section dependency problem in the series. Both group statistics (Gt & Ga) and panel statistics (Pt & Pa) indicate that there is a cointegration relationship between the variables.

The Panel ARDL approach, proposed by Pesaran, Shin, and Smith (1999), is used in this study to estimate the long – and short-run coefficients. The estimates are presented in Table 5. First, the Hausman test is conducted to choose between the mean group (MG) and pooled mean group (PMG) estimators. The null hypothesis of the Hausman test is that "the difference in coefficients is not systematic," meaning that the coefficients do not vary across sections. If the null hypothesis is not rejected, the PMG estimator is preferred. The Hausman test results show that the null hypothesis is not rejected, so the PMG results are considered.

In the long run, a 1 % change in lnexport positively affects lngdp by 1.49 %. In the short run, a 1 % change in lnexport leads to a positive effect of 0.25 % on lngdp at the end of the first period. Both the long – and short-run coefficients are statistically significant. Additionally, the error correction term (ECT) is negative and statistically significant, indicating that the error correction mechanism is functioning and there is a long-term relationship.

The coefficients for the short-term effect were obtained for each cross-section using the PMG estimator. The results are shown in Table 6. The effect of the lnexport variable on the lngdp variable can be evaluated on province level as well as in the Turkish economy. According to the empirical results, the 10 provinces in which the changes in lnexport in the Turkish economy have the most impact on the lngdp of the provinces are,

[1] Export data: https://data.tuik.gov.tr/Bulten/DownloadIstatistikselTablo?p=fNJt7KrgLQTJ8aH/Ot8MENdOUMKIySIi9pvPXeaERX6/RWICUhOzznydl6jFXnvS, Date of Access: 24.03.2023
GDP data: https://data.tuik.gov.tr/Bulten/DownloadIstatistikselTablo?p=Vka0O8782PUPlpyQ50jtETq8XZ0ODMDscMBzFBn1AbG5aN7KQe48KDdkqxYqjbzD, Date of Access: 24.03.2023

Table 1

Descriptive Statistics

	Observations	Mean	Std. Dev.	Min.	Max.
lngdp	1 377	10.29	0.69	8.67	13.04
lnexport	1 377	8.75	1.26	4.15	12.61

Source: Authors' calculationse

Table 2

Pesaran CD Cross-Section Dependency Test

	CD-test	p-values	mean ρ	mean abs (ρ)
lngdp	234.46	0.000	1.00	1.00
lnexport	212.885	0.000	0.91	0.91

Source: Authors' calculation s

Table 3

Pesaran CADF Panel Unit Root Test

	t–bar (constant)	cv5	cv1	t–bar (constant+trend)	cv5	cv1
lngdp	–1.454	–2.070	–2.180	–1.954	–2.570	–2.700
Δlngdp	–2.823***	–2.070	–2.180	–2.699***	–2.570	–2.700
lnexport	–1.698	–2.070	–2.180	–1.836	–2.570	–2.700
Δlnexport	–2.704***	–2.070	–2.180	–2.805***	–2.570	–2.700

*** indicates that stationarity is at the 1 % significance level. Source: Authors' calculations

Table 4

Westerlund ECM Panel Cointegration Test

Statistic	Value	z-value	p-value	bootstrap p-value
Gt	–3.175	–19.020	0.000	0.000
Ga	–4.134	–0.657	0.255	0.000
Pt	–13.427	–7.568	0.000	0.000
Pa	–2.105	–3.352	0.000	0.000

Source: Authors' calculations

Table 5

MG and PMG Estimation Results

	MG			PMG		
	Coef.	Std. Err.	z (prob.)	Coef.	Std. Err.	z (prob.)
lnexport	1.365	0.351	3.88 (0.000)	1.494	0.133	11.15 (0.000)
	Short–run Coefficients	Short–run Coefficients				
Δlnexport	0.156	0.019	8.19 (0.000)	0.252	0.026	9.38 (0.000)
constant	0.361	0.089	4.05 (0.000)	–0.078	0.013	–5.95 (0.000)
ECT	–0.20	0.024	0.02 (0.000)	–0.052	0.004	–12.74 (0.000)
	Hausman Test (χ^2) = 0.72 (0.7289)					

Note: The optimum lag length of the model was determined by considering the Akaike information criterion. Source: Authors' calculations

respectively, as follows; Gaziantep, Izmir, Aydin, Muğla, Konya, Denizli, Istanbul, Antalya, Kayseri, and Mersin. Information on the population, leading industry, exports, GDP, number of foreign inbound tourists, and geographical region for provinces is available in Table 6 and 7.

In four of these provinces, the tourism sector accounts for more than 35 % of total production, while in the remaining four, industrial production holds more than a 50 % share. This situation indicates that when the service sector and the industrial sector dominate total production in these provinces, the impact of exports on economic growth is more significant.

For 41 out of 52 provinces in Turkey, where industrial production exceeds 30 % of total

Table 6

Socio-Economic Indicators of Provinces in Turkey

Province	Population1 (Millions) (2022)	Leading Industry2 (2022)	Export3 (Millions $) (2022)	GDP2 (Millions TRY) (2022)	Number Foreign Inbound Tourist4 (2020)*	Geographical Region of the Province5
Adana	2,274	Services	3.117	308.089	47.345	Mediterranean
Adıyaman	0,635	Public Administration	97	50.200	12	SE Anatolia
Afyon	0,747	Services	385	85.154	N/A	Aegean
Ağrı	0,510	Public Administration	42	28.623	69.005	E Anatolia
Aksaray	0,433	Manufacturing	214	57.970	N/A	C Anatolia
Amasya	0,338	Public Administration	135	37.736	26	Black Sea
Ankara	5,782	Services	12.004	1.329.809	175.764	C Anatolia
Antalya	2,688	Services	2.760	505.568	3.256.568	Mediterranean
Ardahan	0,092	Public Administration	4	10.539	14.218	E Anatolia
Artvin	0,169	Services	59	27.712	425.022	Black Sea
Aydın	1,148	Services	1.200	143.554	1.909	Aegean
Balıkesir	1,257	Manufacturing	913	188.038	3.283	Marmara
Bartın	0,203	Manufacturing	32	20.378	447	Black Sea
Batman	0,634	Manufacturing	220	51.725	6	SE Anatolia
Bayburt	0,084	Public Administration	0,065	8.287	N/A	Black Sea
Bilecik	0,228	Manufacturing	147	47.222	N/A	Marmara
Bingöl	0,282	Public Administration	12	22.227	5	E Anatolia
Bitlis	0,353	Public Administration	10	23.859	N/A	E Anatolia
Bolu	0,320	Manufacturing	177	60.097	N/A	Black Sea
Burdur	0,273	Manufacturing	267	37.116	N/A	Mediterranean
Bursa	3,194	Manufacturing	12.778	609.195	3.510	Marmara
Çanakkale	0,559	Manufacturing	213	102.518	1.218	Marmara
Çankırı	0,195	Manufacturing	307	27.533	N/A	C Anatolia
Çorum	0,524	Services	1.886	53.320	N/A	Black Sea
Denizli	1,056	Manufacturing	4.450	165.127	2.583	Aegean
Diyarbakır	1,804	Public Administration	419	128.794	6.092	SE Anatolia
Düzce	0,405	Manufacturing	353	59.690	N/A	Black Sea
Edirne	0,414	Services	86	61.082	1.804.051	Marmara
Elazığ	0,591	Public Administration	366	60.398	5.784	E Anatolia
Erzincan	0,239	Services	28	35.161	8	E Anatolia
Erzurum	0,749	Public Administration	25	67.613	609	E Anatolia
Eskişehir	0,906	Manufacturing	1.302	165.444	18.458	C Anatolia
Gaziantep	2,154	Manufacturing	11.197	309.752	24.695	SE Anatolia
Giresun	0,450	Public Administration	347	38.497	1.525	Black Sea
Gümüşhane	0,144	Public Administration	64	13.024	N/A	Black Sea

Continuation Table 6 on the next page.

Continuation Table 6

Province	Population1 (Millions) (2022)	Leading Industry2 (2022)	Export3 (Millions $) (2022)	GDP2 (Millions TRY) (2022)	Number Foreign Inbound Tourist4 (2020)*	Geographical Region of the Province5
Hakkari	0,275	Public Administration	99	23.280	19.569	E Anatolia
Hatay	1,686	Services	4.065	196.317	75.018	Mediterranean
Iğdır	0,203	Services	110	18.670	49.425	E Anatolia
Isparta	0,445	Services	274	55.976	1.320	Mediterranean
Mersin	1,916	Services	6.162	309.948	23.722	Mediterranean
İstanbul	15,907	Services	124.661	4.564.280	5.001.981	Marmara
İzmir	4,462	Manufacturing	17.014	972.237	297.232	Aegean
Karabük	0,252	Manufacturing	328	30.532	N/A	Black Sea
Karaman	0,260	Manufacturing	310	40.381	N/A	C Anatolia
Kars	0,274	Public Administration	1	21.705	21	E Anatolia
Kastamonu	0,378	Services	328	48.712	120	Black Sea
Kayseri	1,441	Manufacturing	3.911	211.510	59.647	C Anatolia
Kırıkkale	0,277	Manufacturing	12	46.306	N/A	C Anatolia
Kırklareli	0,369	Manufacturing	343	74.069	213.667	Marmara
Kırşehir	0,244	Manufacturing	368	32.062	N/A	C Anatolia
Kilis	0,147	Public Administration	111	17.407	60.039	SE Anatolia
Kocaeli	2,079	Manufacturing	14.462	622.576	14.964	Marmara
Konya	2,296	Manufacturing	3.299	320.885	14.117	C Anatolia
Kütahya	0,580	Manufacturing	347	81.099	N/A	Aegean
Malatya	0,812	Manufacturing	456	75.853	906	E Anatolia
Manisa	1,468	Manufacturing	3.153	247.398	N/A	Aegean
Kahramanmaraş	1,177	Manufacturing	1.411	142.449	105	Mediterranean
Mardin	0,870	Services	1.412	89.328	20	SE Anatolia
Muğla	1,048	Services	1.014	192.832	670.013	Aegean
Muş	0,399	Public Administration	202	29.319	40	E Anatolia
Nevşehir	0,310	Services	120	36.047	192	C Anatolia
Niğde	0,365	Manufacturing	66	41.355	N/A	C Anatolia
Ordu	0,763	Services	296	64.129	1.927	Black Sea
Osmaniye	0,559	Manufacturing	375	58.930	N/A	Mediterranean
Rize	0,344	Public Administration	232	37.446	187	Black Sea
Sakarya	1,080	Manufacturing	5.275	169.161	15.696	Marmara
Samsun	1,368	Services	1.318	155.506	47.762	Black Sea
Siirt	0,331	Public Administration	72	26.302	N/A	SE Anatolia
Sinop	0,220	Public Administration	33	22.179	94	Black Sea
Sivas	0,634	Services	104	72.690	402	C Anatolia
Tekirdağ	1,142	Manufacturing	3.057	285.930	6.888	Marmara
Tokat	0,596	Public Administration	44	46.907	N/A	Black Sea
Trabzon	0,818	Services	1.090	83.604	27.856	Black Sea
Tunceli	0,084	Public Administration	0,216	11.287	N/A	E Anatolia
Şanlıurfa	2,170	Services	308	138.917	663	SE Anatolia

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Province	Population1 (Millions) (2022)	Leading Industry2 (2022)	Export3 (Millions $) (2022)	GDP2 (Millions TRY) (2022)	Number Foreign Inbound Tourist4 (2020)*	Geographical Region of the Province5
Şırnak	0,557	Public Administration	839	48.076	230.255	E Anatolia
Uşak	0,375	Manufacturing	439	54.907	14	Aegean
Van	1,128	Public Administration	26	61.591	19.652	E Anatolia
Yalova	0,296	Manufacturing	581	57.991	12.004	Marmara
Yozgat	0,418	Public Administration	57	39.242	N/A	C Anatolia
Zonguldak	0,588	Manufacturing	597	93.359	5.907	Black Sea

SE= South Eastern; C=Central; E= Eastern; Sources: 1= Turkish Statistical Insitute Population Statistics, (2023) https://data.tuik.gov.tr/Bulten/Index?p=49685 (Accessed at: 31.01.2024); 2= Turkish Statistical Institute, GDP Reports (2023) https://data.tuik.gov.tr/Bulten/Index?p=Il-Bazinda-Gayrisafi-Yurt-Ici-Hasila-2022-45867 (Accessed at: 31.01.2024); 3= Turkish Statistical Institute Export Reports, (2023) https://data.tuik.gov.tr/Bulten/DownloadIstatistikselTablo?p=BOgc6m9TQpMgmt/BezpENEP9hOEStvM6B3b8bTSR1E7vsksnbL3vtEX8WxPeP8SV (Accessed at: 31.01.2024); 4= Association of Turkish Travel Agencies, Statistics (2024) https://www.tursab.org.tr/istatistikler/diger-istatistikler (Accessed at: 31.01.2024); 5= Özçağlar (2015), Geographical Regions of Turkey, http://tucaum.ankara.edu.tr/wp-content/uploads/sites/280/2015/08/semp4_2.pdf (Accessed at: 31.01.2024)

Table 7

Shares of Sectoral Production in Total Production in Provinces (2022)

	Agricultural Sector	Industrial Sector	Tourism Sector	Other Services Sector	Public Sector	Construction Sector
Adana	8,87	46,39	22,22	9,73	8,71	4,08
Adıyaman	15,57	35,66	14,78	10,52	17,62	5,86
Afyon	22,28	35,56	18,10	8,20	11,14	4,72
Ağrı	25,44	9,17	16,66	10,39	32,13	6,21
Aksaray	24,10	39,15	18,47	6,00	8,25	4,02
Amasya	23,87	28,64	17,24	10,02	17,26	2,98
Ankara	1,67	37,33	18,59	24,71	12,34	5,37
Antalya	8,71	19,95	40,41	18,38	7,47	5,08
Ardahan	39,78	9,79	14,08	8,28	23,55	4,51
Artvin	10,79	22,49	19,25	10,13	14,13	23,21
Aydın-9	14,75	38,57	19,15	11,82	10,22	5,49
Balıkesir	11,08	48,89	18,08	9,50	9,12	3,33
Bartın	14,46	39,93	15,97	9,91	13,49	6,23
Batman	6,97	50,94	12,97	7,82	16,74	4,56
Bayburt	38,09	6,38	8,01	10,95	31,05	5,51
Bilecik	4,88	70,87	9,84	5,56	5,50	3,35
Bingöl	12,59	21,00	10,37	11,36	35,29	9,40
Bitlis	21,99	9,23	14,47	10,06	34,83	9,41
Bolu	7,84	54,33	19,84	6,76	8,66	2,56
Burdur	19,60	39,38	16,50	9,77	11,90	2,84
Bursa	3,30	63,48	17,48	8,41	4,39	2,94
Çanakkale	21,33	41,33	14,58	7,98	9,43	5,35
Çankırı	14,76	51,36	11,99	7,51	11,42	2,96
Çorum	21,04	31,30	19,30	11,65	13,52	3,20
Denizli	8,58	57,90	15,95	8,08	7,21	2,28
Diyarbakır	16,06	19,89	18,01	13,64	24,33	8,07
Düzce	4,75	59,89	19,62	6,69	6,35	2,70
Edirne	20,82	32,27	20,06	10,37	12,81	3,66

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	Agricultural Sector	Industrial Sector	Tourism Sector	Other Services Sector	Public Sector	Construction Sector
Elazığ	12,64	27,04	16,51	13,64	21,19	8,98
Erzincan	13,83	37,85	17,75	9,13	17,58	3,85
Erzurum	21,01	14,43	16,82	14,82	25,28	7,64
Eskişehir	5,71	61,96	14,07	7,59	8,22	2,44
Gaziantep	3,85	66,10	15,18	5,95	5,91	3,01
Giresun	11,60	34,33	17,15	14,18	17,91	4,83
Gümüşhane	18,45	23,21	12,40	16,52	23,64	5,78
Hakkari	7,83	6,30	8,93	11,40	59,76	5,77
Hatay	7,32	42,64	28,61	7,98	10,40	3,05
Iğdır	28,71	5,58	28,61	7,97	25,29	3,85
Isparta	19,28	31,71	16,18	11,92	17,95	2,96
İstanbul	0,09	33,77	34,44	22,31	4,46	4,94
İzmir	3,63	53,56	22,56	10,78	6,13	3,35
Kahramanmaraş	8,48	63,38	10,95	5,67	8,48	3,04
Karabük	5,85	52,99	18,75	7,84	12,01	2,55
Karaman	28,82	43,65	8,80	7,02	8,44	3,28
Kars	30,02	9,54	12,10	10,99	32,91	4,44
Kastamonu	15,69	37,09	15,99	10,30	14,81	6,12
Kayseri	5,33	55,67	17,05	9,36	8,89	3,71
Kırıkkale	6,12	67,51	8,77	5,32	9,26	3,01
Kırklareli	8,95	61,76	12,41	5,49	6,75	4,64
Kırşehir	16,87	52,35	11,24	5,93	11,09	2,53
Kilis	21,44	36,99	11,71	7,55	17,77	4,54
Kocaeli	0,49	67,48	19,68	6,56	3,43	2,37
Konya	16,64	45,33	18,24	8,41	8,50	2,89
Kütahya	8,80	59,11	12,37	7,71	8,62	3,39
Malatya	9,24	42,03	15,07	11,46	17,09	5,12
Manisa	10,92	64,45	11,27	5,38	5,39	2,58
Mardin	13,16	26,03	36,81	6,07	15,16	2,77
Mersin	11,73	27,66	35,95	7,40	7,94	9,32
Muğla	13,92	19,62	35,49	14,11	9,19	7,67
Muş	31,42	12,14	18,91	8,65	24,57	4,31
Nevşehir	21,80	23,36	26,32	11,75	13,78	2,99
Niğde	28,14	35,14	13,89	7,98	12,23	2,61
Ordu	14,61	33,16	18,39	14,60	14,67	4,56
Osmaniye	10,16	56,69	12,13	7,46	10,64	2,92
Rize	11,19	30,33	19,90	12,69	13,82	12,06
Sakarya	4,52	63,62	16,48	6,56	5,96	2,86
Samsun	10,51	33,14	26,63	12,15	13,50	4,07
Siirt	19,57	19,10	12,44	9,02	32,54	7,32
Sinop	23,35	25,37	15,00	14,92	16,80	4,55
Sivas	16,45	33,00	17,34	11,62	16,09	5,49
Şanlıurfa	29,85	21,39	17,30	9,58	16,99	4,90
Şırnak	7,80	7,70	41,28	6,42	33,24	3,55
Tekirdağ	2,89	75,20	10,76	5,59	3,24	2,33
Tokat	21,80	24,29	16,89	12,04	20,51	4,47
Trabzon	6,46	24,72	28,96	16,38	17,25	6,23
Tunceli	12,78	6,11	6,07	10,28	59,90	4,87
Uşak	8,80	56,73	12,69	10,56	7,72	3,49
Van	14,66	11,73	21,06	14,35	33,61	4,59

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	Agricultural Sector	Industrial Sector	Tourism Sector	Other Services Sector	Public Sector	Construction Sector
Yalova	1,60	71,01	11,29	6,61	5,50	3,99
Yozgat	23,84	20,06	16,87	12,03	17,80	9,39
Zonguldak	3,19	65,56	10,84	6,43	6,95	7,03

Turkish Statistical Institute Population Statistics, (2023) https://biruni.tuik.gov.tr/medas/?locale=en (Accessed at: 05.02.2024), While making sectoral distinctions, it was used to regional sectoral output data (NACE Rev.2 classification) that was retrieved from the Turkish Central Dissemination System, Calculation was made with the following formulas. Agricultural Sector = Agriculture, Forestry And Fishing (A) / Industrial Sector = Manufacturing, Mining And Quarrying And Other Industry (BTE) + Of Which: Manufacturing (C) / Tourism Sector = Wholesale And Retail Trade, Transportation And Storage, Accommodation And Food Service Activities (GTI) / Other Services Sector = Information And Communication (J) + Financial And Insurance Activities (K) + Real Estate Activities (L) + Professional, Scientific, Technical, Administration And Support Service Activities (M,N) + Other Services(RTU) / Public Sector = Public Administration, Defence, Education, Human Health And Social Work Activities (OTQ) / Construction Sector = Construction (F)

Table 8

Province-Base PMG Estimation Results

	Province	Coef.	Std. Err.	Prob.		Province	Coef.	Std. Err.	Prob.
1	Gaziantep	0.7184	0.0842	0.000	42	Tokat	0.2130	0.1105	0.054
2	İzmir	0.7099	0.0747	0.000	43	Çankırı	0.2073	0.0775	0.007
3	Aydın	0.6939	0.1274	0.000	44	Şanlıurfa	0.1909	0.0709	0.007
4	Muğla	0.6646	0.1347	0.000	45	Karabük	0.1898	0.0908	0.037
5	Konya	0.6596	0.1123	0.000	46	Çanakkale	0.1789	0.0847	0.035
6	Denizli	0.6586	0.0901	0.000	47	Zonguldak	0.1783	0.0863	0.039
7	İstanbul	0.6545	0.1098	0.000	48	Nevşehir	0.1675	0.0802	0.037
8	Antalya	0.6508	0.2415	0.007	49	Bartın	0.1385	0.0607	0.023
9	Mersin	0.5874	0.0940	0.000	50	Osmaniye	0.1249	0.0502	0.013
10	Kayseri	0.5874	01223	0.000	51	Kilis	0.1230	0.0491	0.012
11	Bursa	0.5791	0.1280	0.000	52	Artvin	0.2059	0.1297	0.117
12	Ankara	0.5573	0.1097	0.000	53	Sinop	0.1670	0.1618	0.302
13	Adana	0.5533	0.1142	0.000	54	Bilecik	0.1374	0.1209	0.256
14	Uşak	0.5270	0.1139	0.000	55	Edirne	0.1062	0.1270	0.403
15	Kütahya	0.5259	0.0756	0.000	56	Şırnak	0.0847	0.0933	0.364
16	Tekirdağ	0.5023	0.0986	0.000	57	Yalova	0.0815	0.0706	0.249
17	Hatay	0.5014	0.1044	0.000	58	Kırklareli	0.0799	0.0774	0.302
18	Eskişehir	0.4976	0.1503	0.001	59	Çorum	0.0734	0.0648	0.257
19	Karaman	0.4830	0.1186	0.000	60	Manisa	0.0730	0.0968	0.451
20	Balıkesir	0.4797	0.1601	0.003	61	Van	0.0453	0.0989	0.647
21	Kahramanmaraş	0.4677	0.1327	0.000	62	Elazığ	0.0420	0.0600	0.483
22	Afyon	0.4616	0.1042	0.000	63	Kastamonu	0.0370	0.0398	0.353
23	Niğde	0.4075	0.1269	0.001	64	Ağrı	0.0290	0.8241	0.725
24	Malatya	0.3990	0.1546	0.010	65	Amasya	0.0118	0.1054	0.911
25	Giresun	0.3764	0.1600	0.019	66	Bayburt	0.0055	0.0262	0.834
26	Sivas	0.3764	0.1578	0.017	67	Adıyaman	0.0023	0.0748	0.975
27	Isparta	0.3758	0.1625	0.021	68	Erzincan	-0.001	0.0423	0.972
28	Bolu	0.3587	0.0902	0.000	69	Kars	-0.005	0.0247	0.828
29	Düzce	0.3204	0.1290	0.013	70	Muş	-0.015	0.0226	0.500
30	Iğdır	0.2967	0.1214	0.015	71	Siirt	-0.026	0.0261	0.312
31	Diyarbakır	0.2846	0.1437	0.048	72	Gümüşhane	-0.042	0.1312 1312	0.854
32	Kırşehir	0.2828	0.1293	0.029	73	Kırıkkale	-0.046	0.0498	0.352
33	Mardin	0.2798	0.1200	0.020	74	Hakkari	-0.047	0.0605	0.435

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	Province	Coef.	Std. Err.	Prob.		Province	Coef.	Std. Err.	Prob.
34	Samsun	0.2759	0.0729	0.000	75	Tunceli	-0.069	0.0576	0.167
35	Burdur	0.2694	0.0828	0.001	76	Bitlis	-0.094	0.0857	0.268
36	Trabzon	0.2653	0.1486	0.074	77	Bingöl	-0.108	0.0946	0.148
37	Sakarya	0.2431	0.1096	0.027	78	Ardahan	-0.108	0.0911	0.175
38	Kocaeli	0.2400	0.0976	0.012	79	Erzurum	-0.116	0.1483	0.431
39	Rize	0.2307	0.1176	0.058	80	Batman	-0.117	0.0757	0.121
40	Ordu	0.2303	0.1248	0.065	81	Yozgat	-0.123	0.0816	0.130
41	Aksaray	0.2290	0.0945	0.015					

Source: Authors' calculations

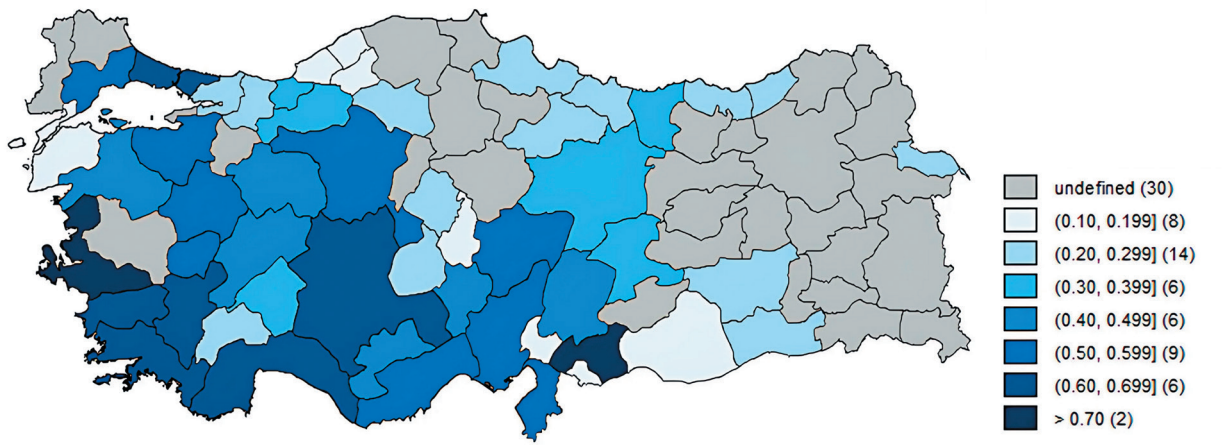

Figure 1: *The Province-Based Short-Term Estimation Results (Authors' calculations are performed using GeoDa software)*

Table 9

Dumitrescu and Hurlin (2012) Causality Test

		Statistic	Prob.
H0 : lnexport does not Granger-cause lngdp. H1 : lnexport does Granger-cause lngdp for at least one panel.	Z-bar	14.19	0.000
	Z- bar tilde	4.27	0.000
H0 : lngdp does not Granger-cause lnexport. H1 : lngdp does Granger-cause lnexport for at least one panel.	Z-bar	44.57	0.000
	Z- bar tilde	17.57	0.000

Source: Authors' calculations

production, the export-led growth hypothesis is valid. However, this is not the case in provinces dominated by the public sector or agriculture. Specifically, in provinces where public or agricultural production makes up more than 30 % of total production, the hypothesis does not apply. In terms of impact, a 1 % increase in lnexport in İzmir and Gaziantep results in an economic growth of approximately 0.7 %. This rate exceeds 0.5 % in 17 provinces and ranges between 0 % and 0.5 % in 35 provinces. In 30 provinces, there is no statistically significant effect of lnexport on lngdp.

Figure 1 summarizes the data for the provinces mentioned above. The effect is notably higher in tourism and industrialized regions. Istanbul and Antalya attract the most foreign tourists in the country (Kaya, 2021), with İzmir and Muğla also being key tourism destinations in the Aegean region (Köksal, 1988). Additionally, Gaziantep's significance in gastronomic tourism (Suna and Alvarez, 2019) is important (see Table 6). Provinces like Gaziantep, İzmir, Istanbul, Muğla, and Antalya show the highest impact of lnexport on lngdp. In contrast, the effect is lower in provinces with a high agricultural share in total production, and there is no statistically significant effect in many provinces in Eastern and Southeastern Anatolia and northern Central Anatolia.

In conclusion, the study delves into the causal connection between the natural logarithm of Gross Domestic Product (lngdp) and the natural logarithm of exports (lnexport). The results of the causality test, as conducted in accordance with Dumitrescu and Hurlin (2012), are presented in Table 9. When exploring this causal relationship, Dumitrescu and Hurlin (2012) recommend employing Z-bar statistics with an asymptotic distribution when the data exhibit T>N characteristics, and Z-bar tilde statistics when T<N characteristics are evident, as suggested by Göçer (2013). Consequently, these findings indicate a bidirectional causal link between the lnexport and lngdp variables.

Conclusion

Economic growth is a critical variable influencing the welfare levels of national economies. In this context, understanding the factors that drive economic growth is a key concern in the field of economics. The relationship between international trade and economic growth has been debated in economic theory for many years. While import substitution policies were prominent in earlier periods, export-oriented growth strategies have gained traction in specific phases. Türkiye has recently experienced substantial economic growth, driven significantly by exports.

This research examines the link between provincial exports and economic growth in Türkiye from 2004 to 2020 and this province-level focus distinguishes it from much of the existing academic literature. Within this framework, the study employs panel data analysis to estimate the impact on the national economy as a whole. Additionally, it provides province-level econometric results to assess how exports have influenced the economic growth of individual provinces. Moreover, this study tackles a critical issue by examining the significant economic disparities among provinces, driven by variations in exports, industrial structures, employment levels, population density, and other factors.

Using the panel ARDL approach, long – and short-term coefficient estimates were calculated following an analysis of the cointegration relationship. The findings reveal that a 1 % increase in exports in the Turkish economy led to a 1.49 % increase in economic growth in the long term and a 0.25 % increase in the short term. Moreover, there is bidirectional causality between exports and economic growth. Short-term, province-level estimations show that the effect of exports on economic growth is particularly significant in touristic regions where service exports are prominent. Similarly, exports strongly support economic growth in industrialized provinces in Western and Central Anatolia. However, provinces in the eastern, southeastern, and northern regions—apart from Gaziantep—exhibit either weak or statistically insignificant effects of exports on economic growth. The findings suggest that regions with well-developed tourism and industrial sectors experience a more pronounced influence of exports on economic growth. In light of these results, the export-oriented economic growth model in the Turkish economy could be further strengthened by increasing investments in the industrial sector. Conversely, this model does not operate effectively in regions dominated by agriculture and livestock sectors.

A significant portion of Türkiye's exports are directed toward European Union countries. However, in recent years, Türkiye has increasingly targeted new markets, such as the Middle East, Africa, and Asia. The findings of this research highlight that provinces with different levels of product diversification can play a pivotal role in accessing these new markets.

While the positive impact of exports on economic growth in developing countries is well-documented (e.g., Fatemah and Qayyum, 2018; Kalaitzi and Chamberlain, 2020; Krajisnik et al., 2020; Okyere, 2020), this study highlights the need to examine export dynamics at the provincial level. It argues for a shift from macroeconomic analyses to more detailed, micro-level studies, revealing how the role of exports in fostering economic growth varies across provinces. Notably, the findings show that expanding industrialization to less developed regions could significantly boost Türkiye's overall economic growth.

The recent earthquake disaster in Türkiye has highlighted the urgent need to distribute value-added industries more evenly across regions. Given the large earthquakes predicted for the Marmara region, relocating industries that determine development in this area to other suitable regions could reduce regional vulnerabilities and promote nationwide economic growth. Furthermore, as highlighted in the literature, policies to distribute industrial production more evenly across provinces could yield additional benefits, such as job creation (Aktakas et al., 2013; Gül and Kamaci, 2012; Göçer et al., 2013), strengthening local economies (Turan, 2008; Topal, 2017), mitigating sectoral risks through diversification (Caves, 1981; Scherer, 1980), fostering nationwide innovation and technological advancement (Wang and Guan,

2009; Külünk, 2018), and improving regional access to international markets.

Türkiye already possesses a competitive economy capable of standing alongside many global players across a range of product categories. By implementing the policy recommendations derived from this research and related studies, Türkiye could further enhance its comparative advantages, reaching even higher levels of economic growth in the future.

References

Adedapo, O. (2023). Analysis of Non-Oil Exports–Economic Growth Relationship in Nigeria: The Role of Institutional Qualities. *The Journal of Developing Areas, 57*(4), 107–122. https://doi.org/10.1353/jda.2023.a908649

Akcan, A. T., & Metin, İ. (2018). The effects of foreign trade on economic growth: Turkey case. Turkish Studies, 13(14), 1-14. http://dx.doi.org/10.7827/TurkishStudies.13138 (In Turkish)

Aktakas, B. G., Mike, F., Aytun, C., & Laleh, M. M. (2013). The Relationship of Sectoral Export-Employment: The Case of Turkey (2004–2011). *Çukurova Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi [Journal of Çukurova University Faculty of Economics and Administrative Sciences], 17*(1), 37–50. (In Turkish)

Arrow, J. K. (1962). The Economic Implications of Learning by Doing. *The Review of Economic Studies, 29*(3), 155–173. https://doi.org/10.2307/2295952

Ayhan, F. (2018). An Analysis of the Relationship between Export, Import and Employment Levels in Turkey Economy. *Çankırı Karatekin Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi [Cankırı Karatekin University Journal of the Faculty of Economics and Administrative Sciences], 8*(2), 115–135. https://doi.org/10.18074/ckuiibfd.398753 (In Turkish)

Balassa, B. (1985). Exports, Policy Choices, and Economic Growth in Developing Countries After The 1973 Oil Shock. *Journal of Development Economics, 18*(1), 23–35. https://doi.org/10.1016/0304–3878(85)90004-5

Benito-Osorio, D., Guerras–Martín, L. Á., & Zuñiga-Vicente, J. Á. (2012). Four Decades of Research on Product Diversification: A Literature Review. *Management Decision, 50*(2), 325–344. https://doi.org/10.1108/00251741211203597

Canh, N. P., & Thanh, S. D. (2022). The Dynamics of Export Diversification, Economic Complexity and Economic Growth Cycles: Global Evidence. *Foreign Trade Review, 57*(3), 234–260. https://doi.org/10.1177/0015732520970441

Caves, R. E. (1981). Diversification and Seller Concentration: Evidence From Changes, 1963-72. *The Review of Economics and Statistics, 63*(2), 289–293. https://doi.org/10.2307/1924100

Chenery, H. B. (1965). Comparative Advantage and Development Policy. *Surveys of Economic Theory* (pp. 125–155). Palgrave Macmillan. https://doi.org/10.1007/978-1-349-00460-7_2

Coşkun, H., & Eygü, H. (2020). Investigation of R & D Expenditures and Export Relations: The Case of Turkey. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi [Journal of Social Sciences of Mus Alparslan University], 8,* 233–242. https://doi.org/10.18506/anemon.761623 (In Turkish)

D'Angelo, A. (2010). Innovation and Export Performance: A Study of Italian High-Tech SMEs. *Journal of Management & Governance, 16*(3), 393–423. http://dx.doi.org/10.1007/s10997-010-9157-y

Demir, M., & Sever, E. (2017). The Relationship Between Tax Revenues and Economic Growth: A Panel Data Analysis on the OECD Countries. *Aksaray Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi [Journal of Aksaray University Faculty of Economics and Administrative Sciences], 9*(2), 51–66. (In Turkish)

Demircan, E. S. (2003). Effects of Taxation on Economic Growth and Development. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi [Journal of Erciyes University Faculty of Economics and Administrative Sciences],* (21), 97–116. (In Turkish)

Doğan, B. (2021). Causality Relationship Between Foreign Trade and Economic Growth in Kyrgyzstan. In C. Buyar (Eds.), *Kırgızistan Araştırmalari [Kyrgyzstan studies]* (p. 91). Bishkek: BYR Publishing House. (In Kyrgyz)

Dumitrescu, E.-I., & Hurlin, C. (2012). Testing for Granger Non-Causality in Heterogeneous Panels. *Economic Modelling, 29*(4), 1450–1460. https://doi.org/10.1016/j.econmod.2012.02.014

Eygü, H. (2018). Investigation of the Relationship Between Inflation, Unemployment and Foreign Trade: The Case of Turkey (1990–2017). *Kastamonu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi [Kastamonu University Journal of Faculty of Economics and Administrative Sciences], 20*(2), 96–112. (In Turkish)

Fatemah, A., & Qayyum, A. (2018). Modeling the Impact of Exports on The Economic Growth of Pakistan. *Turkish Economic Review, 5*(1), 56–64. http://dx.doi.org/10.1453/ter.v5i1.1584

Göçer, İ. (2013). Effects of R&D Expenditures on High Technology Exports, Balance of Foreign Trade and Economic Growth. *Maliye Dergisi [Journal of Public Finance Studies],* (165), 215–240. (In Turkish)

Göçer, İ., Mercan, M., & Peker, O. (2013). Export, Foreign Direct Investment and Unemployment: The Case of Turkey. *Business and Economics Research Journal, 4*(1), 103–120. (In Turkish)

Grossman, G. M., & Helpman, E. (1989). Product Development and International Trade. *The Journal of Political Economy, 97*(6), 1261–1283. https://doi.org/10.1086/261653

Gül, E., & Kamacı, A. (2012). Effects of Foreign Trade on Employment: A Panel Data Analysis. *Anadolu Üniversitesi Sosyal Bilimler Dergisi [Anadolu University Journal of Social Sciences], 12*(4), 23–32. (In Turkish)

Halpern, L., & Muraközy, B. (2012). Innovation, Productivity and Exports: The Case of Hungary. *Economics of Innovation and New Technology, 21*(2), 151–173. https://doi.org/10.1080/10438599.2011.561995

Iqbal, A., Tang, X., & Rasool, S. F. (2023). Investigating the Nexus Between CO2 Emissions, Renewable Energy Consumption, FDI, Exports and Economic Growth: Evidence from BRICS Countries. *Environment, Development and Sustainability, 25*(3), 2234–2263. https://doi.org/10.1007/s10668-022-02128-6

ITC. (2024). *Export Statistics of Türkiye.* 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 (Date of access: 31.01.2024).

Kalaitzi, A. S., & Chamberlain, T. W. (2020). Merchandise Exports and Economic Growth: Multivariate Time Series Analysis for The United Arab Emirates. *Journal of Applied Economics, 23*(1), 163–182. https://doi.org/10.1080/15140326.2020.1722384

Karakuş, M., & Özen Atabey, A. (2021). The Relationship Between Youth Unemployment, Export and Economic Growth: An Empirical Analysis for Turkey. *Alanya Akademik Bakış [Alanya Academic Review Journal], 5*(2), 865–882. https://doi.org/10.29023/alanyaakademik.889070 (In Turkish)

Kaya, M. (2021). A Research on Image of Destinations in Turkey that Welcome Most Foreign Tourists. *Güncel Turizm Araştırmaları Dergisi [Current Tourism Research Journal], 5*(1), 117–130. https://dx.doi.org/10.32572/guntad.871547 (In Turkish)

Keesing, D. B. (1965). Labor Skills and International Trade: Evaluating Many Trade Flows with a Single Measuring Device. *The Review of Economics and Statistic, 47*(3), 287–294. https://doi.org/10.2307/1927711

Keesing, D. B. (1966). Labor Skills and Comparative Advantage. *The American Economic Review, 56*(1/2), 249–258.

Köksal, A. (1988). Tourism Geography of Aegean Region. *Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi [Ankara University Journal of the Faculty of Languages and History-Geography], 32*(1-2), 57–61. (In Turkish)

Krajišnik, M., Gojković, B., Josipović, S., & Popović, S. (2020). Impact of Exports on Economic Growth in Bosnia and Herzegovina. *Acta Economica, 18*(32), 59–84. https://doi.org/10.7251/ACE2032059K

Krueger, A. O. (1978). *Foreign Trade Regimes and Economic Development: Liberalization Attempts and Consequences*. National Bureau of Economic Research.

Külünk, İ. (2018). Relationship Between R&D Expenditures, Export and Growth in Turkey: 1996–2016. *Uluslararası Ekonomik Araştırmalar Dergisi [International Journal of Economic Studies], 4*(2), 73-82. (In Turkish)

Lucas, E. R. (1988). On The Mechanics of Economic Development. *Journal of Monetary Economics, 22*(1), 3–42. https://doi.org/10.1016/0304–3932(88)90168-7

Medina-Smith, E. J. (2001). Is the Export-Led Growth Hypothesis Valid for Developing Countries? A Case Study of Costa Rica. *United Nations Conference on Trade and Development, Policy Issues in International Trade and Commodities Study Series,* (7). United Nation Publication.

Mensah, A. C., & Okyere, E. (2020). Causality Analysis on Export and Economic Growth Nexus in Ghana. *Open Journal of Statistics, 10*(05), 872–888. https://doi.org/10.4236/ojs.2020.105051

Özçağlar, A. (2015). Türkiye'nin Coğrafi Bölgeleri ile İstatistik Bölgelerinin Uygulamada Yarattıkları Sorunlar ve Çözüm Önerileri [The Geographical and Statistical Regions of Turkey and Their Problems in Practice and the Solution Suggestions]. *TUCAUM IV. National Geography Symposium Proceedings Book* (pp. 5–20). (In Turkish)

Özer, M., & Çiftçi, N. (2009). Relationship Between R&D Expenditures and Exports: A Panel Data Analysis for OECD Countries. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi [Dumlupınar University Journal of Social Sciences], 23*(3), 39–49. (In Turkish)

Pesaran, M. H. (2004). General Diagnostic Tests for Cross Section Dependence in Panels. SSRN *Electronic Journal*. http://dx.doi.org/10.2139/ssrn.572504

Pesaran, M. H. (2007). A Simple Panel Unit Root Test in the Presence of Cross-Section Dependence. *Journal of Applied Econometrics, 22*(2), 265–312. https://doi.org/10.1002/jae.951

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association, 94*(446), 621–634. https://doi.org/10.1080/01621459.1999.10474156

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

Romer, M. P. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy, 94*(5), 1002–1037. https://doi.org/10.1086/261420

Sarıhan, A. Y., & Tepeci, M. (2017). Effects of Manisa exporters' innovation capabilities on export performances. *Uluslararası Yönetim İktisat ve İşletme Dergisi, ICMEB17 Özel Sayısı [International Journal of Management Economics and Business, ICMEB17 Special Issue],* 867–879. (In Turkish)

Sarin, V., Mahapatra, S. K., & Sood, N. (2022). Export Diversification and Economic Growth: A Review and Future Research Agenda. *Journal of Public Affairs, 22*(3), e2524. https://doi.org/10.1002/pa.2524

Scherer, F. M. (1980). *Industrial Market Structure and Economic Performance.* Rand McNally College Pub.

Suna, B., & D.Alverez, M. (2019). Gastronomic Identity of Gaziantep: Perceptions of Tourists and Residents. *Advances in Hospitality and Tourism Research (AHTR), 7*(2), 167–187. https://doi.org/10.30519/ahtr.571666

Telatar, O. M., Değer, M. K., & Doğanay, M. A. (2016). The effect of technology intensity product export on economic growth: the case of turkey (1996:Q1-2015:Q3). *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi [Atatürk Üniversitesi Trends in Business and Economics], 30*(4), 921–934. (In Turkish)

Topal, M. H. (2017). The Impact of Tax Structure on Economic Growth: An Empirical Evidence from OECD Countries. *Siyaset, Ekonomi ve Yönetim Araştırmaları Dergisi [Research Journal of Politics Economics and Management], 5*(3), 183–206. https://doi.org/10.25272/j.2147-7035.2017.5.3.13 (In Turkish)

Turan, T. (2008). The Effects of Fiscal Policy Tools on Economic Growth: A Literature Review. *Sayıştay Dergisi [Journal of Turkish Court of Accounts],* (69), 17–35. (In Turkish)

Uğur, B. (2021). The Effect of Exports on Economic Growth in Selected Emerging Market Economies: Panel Co-Integration Analysis. *Uluslararası Ekonomik Araştırmalar Dergisi [International Journal of Economic Studies], 7*(2), 17–29. (In Turkish)

Wang, G. B., & Guan, J. C. (2009). The Impact of Technological Innovation on Export Performance: Evidence from a Cross-Country Analysis. 2009 IEEE International Conference on Intelligent Computing and Intelligent Systems (pp. 393–397). IEEE. https://doi.org/10.1109/ICICISYS.2009.5358136

Westerlund, J. (2007). Testing for Error Correction in Panel Data. *Oxford Bulletin of Economics and Statistics, 69*(6), 709–748. https://doi.org/10.1111/j.1468-0084.2007.00477.x

Yapraklı, S. (2007). Causality Between Exports and Economic Growth: An Econometric Analysis on Türkiye. *ODTÜ Gelişme Dergisi [METU Studies in Development], 34*(1), 97–112. (In Turkish)

Zafar, M. W., Saleem, M. M., Destek, M. A., & Caglar, A. E. (2022). The dynamic linkage between remittances, export diversification, education, renewable energy consumption, economic growth, and CO2 emissions in top remittance-receiving countries. *Sustainable Development, 30*(1), 165–175. https://doi.org/10.1002/sd.2236

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