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ARAŞTIRMA MAKALESİ • RESEARCH ARTICLE

EXPORTS AND ECONOMIC GROWTH: A CASE OF TÜRKİYE

İHRACAT VE EKONOMİK BÜYÜME: TÜRKİYE ÖRNEĞİ

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Öz

Ekonomik büyüme, ülkelerin temel makroekonomik hedefidir. İhracat ise açık ekonomiler için ekonomik büyümeyi artırmada önemli bir araçtır. İhracat ile genişleyen pazar sonucunda üretim artacak, kaynaklar daha etkin kullanılacak ve verimlilik artacaktır. Türkiye'de 1980 sonrası dönemde ithal ikameci sanayileşme stratejisi yerine ihracata yönelik sanayileşme stratejisi benimsenmiştir. Serbestleşme ile büyüme hedefinin ihracata dayandırıldığı yeni bir makroekonomik politika yaklaşımı geliştirilmiştir. Bu çalışmada, 1980-2023 dönemi için Türkiye'de ihracat ve ekonomik büyüme arasındaki ilişki Johansen Eşbütünleşme testi ve Vektör Hata Düzeltme (VEC) Granger Nedensellik testi yapılarak analiz edilmiştir. Çalışma sonuçlarına bağlı olarak politika önerileri sunulmuştur.

Anahtar Kelimeler: İhracat, ekonomik büyüme, nedensellik

Jel Sınıflandırması: F43, F14, C32, O40

Abstract

Economic growth is the main macroeconomic target of countries and is an important tool for open economies to increase economic growth. As a result of the expanding market with exports, production will increase, resources will be used more effectively and productivity will be achieved. In the post-1980 period in Türkiye, an export-oriented industrialization strategy was adopted instead of an import-substitution industrialization strategy. With liberalization, a new macroeconomic policy approach was developed in which the growth target was based on exports. In this study, the relationship between exports and economic growth in Türkiye for 1980-2023 period was analized by conducting Johansen Cointegration test and Vector Error Correction (VEC) Granger Causality test. Policy recommendations have been proposed due to study results.

Key Words: Exports, economic growth, causality

Jel Clasification: F43, F14, C32, O40

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Introduction

The relationship between exports and economic growth has been frequently discussed after the Second World War. In the 60s and 70s, the discussions of neo-classical economists on whether free trade acts as an engine affecting growth or as an auxiliary function intensified. In the new growth theories that emerged in the 80s, it was put forward that free trade is the main factor in spreading knowledge and technology (Giles ve Williams, 1999: 2, Thenuwara, 1994: 2, Yapraklı, 2007:98).

The import substitution approaches adopted after the Cold War were put aside at the end of the 70s and emphasis was given to export-oriented growth strategies. In this context, the positive effects of exports on growth were frequently identified in the studies conducted. In particular, increasing foreign exchange inflows along with increasing exports play an important role in balancing the balance of payments, while an increase in production is possible by increasing imports of intermediate goods, investment goods, final goods and technology. By benefiting from economies of scale, growing companies achieve lower costs and efficient production (Palley, 2011:3, Fryges, 2006:1, Aytaç, 2017: 215).

Increased competition by entering international markets improve resource allocation, spread of technical knowledge, spread of new technologies, efficiency increase in the economy, and contribute to the acquisition of new skills that provide high quality and the formation of an effective price mechanism. Exports provide various new opportunities both at home country and abroad such as reducing labor costs, increasing foreign demand for domestic goods, stimulating new investments, thus making more investments in these sectors, specialization and benefiting from comparative advantages (Aktaş, 2009: 35-36).

Four different types of causality relationship can occur between exports and economic growth. The existance of a causality relationship from export to growth is called “Export-Led Growth”, the existance of a causality relationship from growth to export is called “Growth Driven Exports”. Also there may exist mutual causality relationship and finally, there may not be a causality link between exports and economic growth (Korkmaz & Aydın, 2015: 50).

According to "Export-Led Growth" the driving force of growth is exports. With the increase in exports, total factor productivity will increase and resources will be shifted from unproductive areas to the export sector (Alancıoğlu & Bayraktutan, 2023, p. 402). The hypothesis argues that

country aims to increase production capacity by opening up to international markets. This is based on three arguments; countries with different labor-capital ratios can benefit from trade, opening up is beneficial for rent-seeking, entering international markets is beneficial for growth. In this way, trade will stimulate growth through productivity increase, achived by information dissemination and technology. (Alimi & Muse, 2012: 3). Growth-Led Exports hypothesis is based on the view that economic growth encourages exports. According to Bhagwati, an increase in GDP leads to trade expansion unless the supply and demand pattern triggered by growth creates an anti-trade bias (Henriques & Sadorsky, 1996: 542). According to Vernon when the new produced goods are subject to international trade, the international competitiveness of the country will increase and exports will be encouraged. (Korkmaz & Aydın, 2015, p. 52). The mutual relationship between economic growth and exports shows the existance of interaction between variables. The productivity of economies increases exports. Especially when costs decrease due to the effect of economies of scale, mutual relationship appears (Dawson & Sanjuán-López, 2013: 48).

Academicians and policymakers generally accept exports as a factor that promotes economic growth in developing countries. There are various arguments supporting this hypothesis. It is not possible to achive economic growth only with domestic market performance which is restricted by market limitations. Since exports provide access to foreign markets, growth can be stimulated by expanding aggregate demand. Therefore, by encouraging export-led growth in developing countries, not only an increase in the volume of exports is achieved but also a positive impact on output appears through productivity (Dreger & Herzer, 2013: 42).

Türkiye implied import substitution industrialization policy until 1980, with the expectation of acceleration of industrialization. When the oil crisis emerged in 1970, Türkiye experienced an exchange bottleneck. When problems appeared in foreign deficit and inflation, policies started to be questioned (Özcan & Özçelebi, 2013: 2). Türkiye switched to export-oriented industrialization policy. In 1986, customs tariffs were gradually abolished due to General Agreement on Trade and Tariffs (GATT) agreement. By 1989, the value of the domestic currency increased, which weakened the competitiveness of export sectors and decreased the volume of exports (Aytekin, 2015: 73-74).

At 5 April 1994, a stabilization program was announced, but the external deficit couldn’t be solved and expanded in time (Karataş & Duman, 2022: 11). In 1994 and 2001, crises emerged,

ollowing a series of structural changes in free market economy. In these periods imports increased while exports degreased (Danışoğlu, 2013: 6-8). After the crisis period, there was an increase in exports until the 2008 Global Financial Crisis. However, due to the impact of the 2008 crisis, exports lost momentum again (Bahtiyar & Güdenoğlu, 2023: 463).

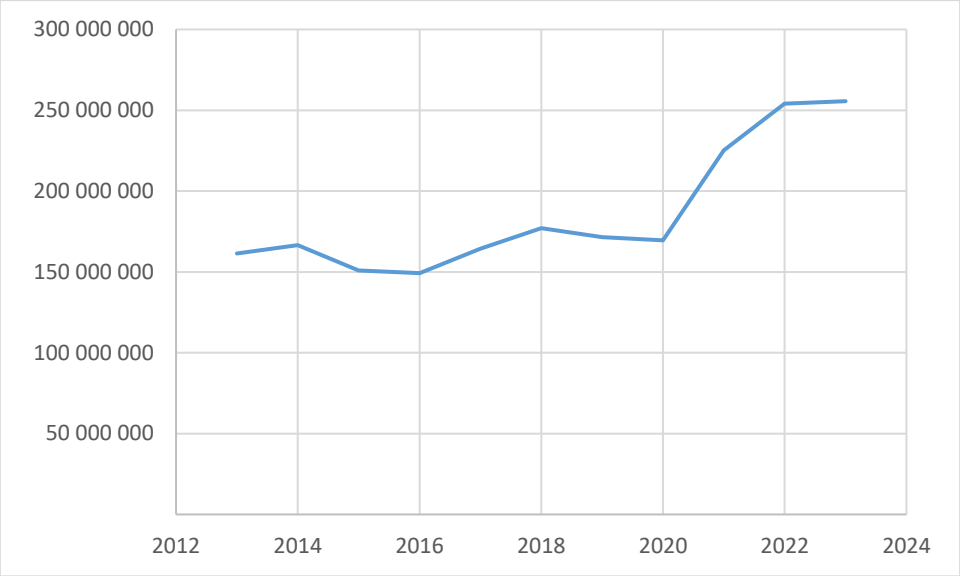

Figure 1: Türkiye's Exports-2013-2023 (Hundred US dolar)

The COVID-19 pandemic has caused significant deteriorations in Türkiye's foreign trade, in parallel with world trade. Türkiye's exports contracted in April and May 2020 and recovered in June. However, exports decreased again as the severity of the pandemic increased. While Türkiye's total exports decreased by 5.1% in 2020, it increased by 33% in 2021.

During this period, a new position emerged where Türkiye benefited from the disruption in the global supply chain. The East dependency of developing countries resulted problems in supply security and Türkiye emerged as a nearby supply region. The high inflationary environment and the Russia-Ukraine War that began in February 2022 had serious global effects. The contraction in global trade that began towards the end of 2022 became even more markable in 2023. In addition to this general effect, due to the effects of the earthquake and the elections in Türkiye. exports grew by approximately % 0.6 (TİM, 2022:53-60). Table 1 shows the composition of top 20 chapter in Türkiye's exports in 2023. This distribution shows the added value and export revenue obtained due to the structure of the products are low. Also the external dependent structure of production reduces competitiveness of products in international markets.

Table 1: Türkiye's Exports According to General Trade System by Top 20 Chapters, 2023 (Thousand US $)

Total	**23 547 645**
Vehicles other than railway or tramway rolling-stock, parts thereof	2 868 130
Boilers, machineries and mechanical appliances, parts thereof	2 318 509
Mineral fuels, minerals oils and product of their distillation	1 264 937
Electrical machinery and equipment, parts thereof	1 402 561
Articles of iron and steel	951 238
Precious stones, precious metals, pearls and articles thereof	1 126 328
Plastic and articles thereof	1 008 970
Iron and steel	816 090
Knitted and crocheted goods and articles thereof	1 001 778
Non knitted and crocheted goods and articles thereof	891 468
Edible fruits and nuts, peel of melons or citrus fruits	423 640
Furniture	482 790
Aluminium and articles thereof	533 418
Rubber and articles thereof	367 582
Preparations of vegetables, fruits or other parts of plants	284 589
Animal, vegetable or mikrobial fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	386 956
Inorganic chemicals, organic or inorganic compounds	295 504
Carpets, mats matting and tapestries	268 581
Salt, sulphur, earths and stones, plastering materials, lime and cement	287 433
Preparations of cereals, flour or starch or milk	245 950
Other Chapters	6 321 191

Tuik, 10.12.2024

1.Literature

Studies examining the relationship between exports and growth have achieved different results due to selected country/country group and different periods. Some of the national and international studies in the literature are given in Table 2.

Table 2: Selected Emprical Studies

Autors	**Period**	**Method**	**Results**
Bozatli, Bal and Albayrak (2023)	1998Q1-2021Q4	Time Domain and Frequency Domain Causality Methods	Study supported export-led growth for related period in Türkiye.
Autors	**Period**	**Method**	**Results**
Bajo-Rubio (2023)	1850-2020	Granger Causality Tests	Study results showed that exports stimulated economic growth.

Kim, etc (2022)	1981-2015	Johansen Cointegration Test Toda-Yamamoto Granger Causality Test	Study showed a causality relationship from exports to economic growth in Myanmar.
Kalaitz and Chamberlain (2021)	1975-2016	Johansen Cointegration Test, Causality Tests, Wald Test	Study conducted for the Gulf Cooperation Council provided evidence supporting causality relationship from exports to growth in the short run for the United Arap Emirates, while the opposite was valid for Bahrain. A bidirectional causality between exports and growth for Kuwait was found. In the long run from exports to growth causality was confirmed for Bahrain. Results also showed that economic growth caused exports in Kuwait and Saudi Arabia.
Baktemur (2021)	2003Q1-2020Q3	Diks and Panchenko Causality Test	The study found a unidirectional causality relationship from exports to growth in Türkiye.
Mishu, Chowdhury and Zayed (2020)	1980-2017	Johansen Cointegratin Test Granger Casualty Test	A significant and unidirectional relationship between exports and growth was found in Bangladeshi.
Kollie (2020)	2000-2017	Panel Cointegration Test Granger Causality Tests	Study conducted for 10 selected ECOWAS members. The results showed that export-led growth hypothesis is valid for these countries.
Hassan (2020)	1990-2018	Cointegration, Granger Causality Tests	The study examined causality relationship between exports and economic growth in the Middle East, North Africa, and South Asia countries during the relevant period. No causality detected between economic growth and exports for Middle Eastern and North African countries. However for South Asian countries, unidirectional causality from economic growth to exports were found.
Bahramian and Saliminezhad (2020)	1960-2018	Granger Causality,	Study examined the causality relationship between exports and economic growth in Türkiye, resulted with a positive relationship from economic growth to exports.

Autors	**Period**	**Method**	**Results**
Mensah and Okyere (2020)	2010-2019	Granger Causality Cointegration	The study based on monthly data on Ghana's exports and economic growth showed a bidirectional long-run relationship between exports and economic growth.
Çetin and Ackrill (2018)	1997-2014	Toda Yamamoto Causality Test	Export-led growth determined in Slovakia for relevant period.
Dura, Beşer and Acaroğlu (2017)	1992-2014	Diks and Panchenko Causality Test	Study analyzed the relationship between exports and economic growth in Türkiye and showed a causality from exports to economic growth.
Aytaç (2017)	2001-2016	Granger Causality Test	A causality relationship was found from economic growth to exports.
Topallı (2017)	1984-2015	Boostrap Panel Granger Causality Test	Causality found for Türkiye, Indonesia and Thailand, and from growth to exports for South Korea. No causality relationship determined between growth and exports in China, India, Philippines and Malaysia.
Uysal and Sat (2015)	1997-2004	Granger Causality Test	A mutual causality relationship between exports and growth.was found in Russia.
Yavuz (2012)	1949-2010	Time Series Analysis Granger Causality Test Cointegration Test	Study analyzed the relationship between exports and economic growth in the relevant period which was divided into two sub-periods (1949-1979 and 1980-2010). According to the results of the Granger causality test, a unidirectional causality relationship was obtained from exports to economic growth in both periods.
Nasreen (2011)	1975-2008	Panel Regression Data Analysis	According to the study results of homogeneous panel regression data analysis for selected Asian countries, significant effects of economic growth on exports. According to the non-homogenous panel regression data analysis results, mutual casualty was achieved between economic growth and exports.
Takım (2010)	1975-2008	Granger Causality Test	It was concluded that the export increase did not support Türkiye's growth in the relevant period.
Naim and	1996-2009	Granger Causality Test Toda Yamamoto	The study conducted to test the export-led growth hypothesis in India during the relevant period. As a result of the

Ahmad (2010)		Causality Test	study, a causality relationship was found from growth to exports.
Bilgin and Şahbaz (2009)	1987-2007	Toda Yamamoto Causality Test	A unidirectional causality was found from exports to industrial production index in the relevant period in Türkiye.
Yapraklı (2007)	1970-2005	Granger Causality Test	A unidirectional causality relationship was found from exports to economic growth in Türkiye.
Erdoğan (2006)	1923-2004	Johansen Cointegration Test Granger Causality Test	Long run relationship was found. A unidirectional causality relationship was detected between growth to exports at a 5% significance level and a bidirectional causality relationship at a 10% significance level.
Awokuse (2005)	1963-2001	VAR Analysis	Export-led growth hypothesis examied in Korea and a bidirectional causality relationship between exports and economic growth was found.

2.Data And Metodology

In this study, the relationship between exports and economic growth was investigated for 1980-2023 period in Türkiye. The variables expressed in logarithmic form and data provided from Organisation for Economic Co-operation and Development (OECD). Analyses carried out by Eviews 13.0 and exports and gross domestic product represented by EX and GDP respectively.

The stability of series investigated by Augmented Dickey-Fuller (ADF) unit root test, developed by Dickey and Fuller (1979). Johansen cointegration test developed by Johansen (1991) was used to investigate the cointegration relationship between variables. Johansen Cointegration test is conducted by the help of equation (1). The matrix π rank shows the long term relationships between variables and is equal to the number of independent cointegration vectors. According to Johansen cointegration test if the rank of π is equal to zero, there is no cointegration, if it is equal to one there is one cointegration relationship, and if it is equal to two two cointegration relationships exists.

$$\Delta yt = \sum_{i=1}^{k-1} \pi_i \Delta y_{t-1} + \pi y_{t-k} + \varepsilon_t \qquad (1)$$

Granger causality test based on Vector Error Correction Model was used to determine the direction of the relationship between the variables. VEC Granger Causality test used to eliminate the imbalances due to information lost in long run by taking the differences of the series for stationarity.The equations in the model developed by Engle-Granger (1987) expressed with equations 2 and 3.

$$\Delta Y_t = \alpha_1 + \sum_{i=1}^{m} \beta_{1i} \Delta X_{t-i} + \sum_{i=1}^{n} \lambda_{1i} \Delta Y_{t-i} + \gamma_1 ECT_{t-1} + \varepsilon_{1t} \qquad (2)$$

$$\Delta Y_t = \alpha_2 + \sum_{i=1}^{m} \beta_{2i} \Delta X_{t-i} + \sum_{i=1}^{n} \lambda_{2i} \Delta Y_{t-i} + \gamma_2 ECT_{t-1} + \varepsilon_{2t} \qquad (3)$$

3.Emprical Results

The stationary of series tested by ADF unit root tests. Series were not stationary at the level. Since the calculated t-statistics values were greater than Mac Kinnon critical value at %5 significant level, the stationarity of series observed at first differences (Table 3). The characteristic roots of the model are contained within the unit circle which also confirms the stability of the VAR model (Figure 2). Appropriate lag length for VAR Model determined as 2 due to final predicting error (FPE), Akaike Information Criteria (AIC), Schwarz Information Criteria (SC) and Hannan-Quinn Information Criteria (HQ).

Table 3: ADF Unit Root Test Results

Variable	**ADF**	
	Level Test Statistics	First Difference Test Statistics
GDP	-2.124.959	-6.656.576
	(0.5177)	(0.0000)
EX	-2.216.150	-7.147.612
	(0.4689)	(0.0000)
Mac Kinnon Critical Value (%5)	-3.51	-3.52

*Values in parenthesis show probability values.

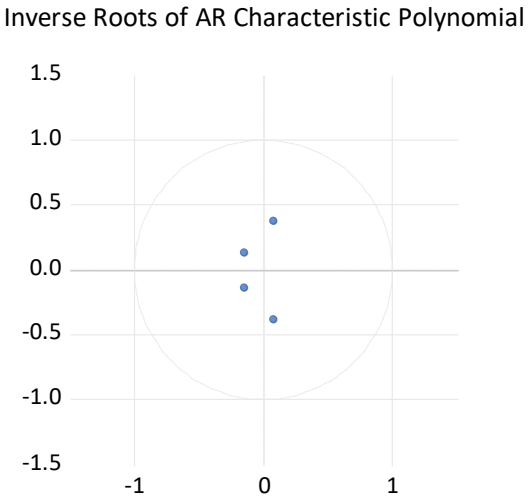

Figure 2: Characteristic Roots

Long-term relationship investigated by Johansen cointegration test. The H0 hypothesis which states no or less cointegrated relationship between the variables, while the alternative hypothesis indicates that there are r cointegration relationships between variables. In Johansen Cointegration test if the trace statistic and Max-Eigen statistic are bigger than critical value the null hypothesis is rejected. The test results showed 2 cointegrated vectors at %5 significance level and long term relationship accepted between exports and economic growth (Table 4).

Table 4: Johansen Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No.of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Probability
None	0.412254	38.57945	15.49471	0.0000
At most 1	0.336019	16.78959	3.841465	0.0000
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No.of CE(s)	Eigenvalue	Max-Eigen	Critical Value	Probability
None	0.412254	21.78986	14.26460	0.0027
At most 1	0.336019	16.78959	3.841465	0.0000

The causality relationship examined by VEC Granger Causality test. Since probablity values were less than 0.05, null hypothesis was rejected at, 5% significance level for exports and economic growth, it was accepted that mutual causality relationship exist between variable (Table 5).

Table 5: VEC Granger Causality Test Result

Dependent Variable: DGDP		
Independent Variable	Chi-sq	Probability
DEXP	9.588421	0.0083
Dependent Variable: DEXP		
Independent Variable	Chi-sq	Probability
DGDP	7.086158	0.0289

4. Conclusion

The relationship between exports and economic growth in Türkiye between 1980 and 2023 was examined. Firstly it was examined whether the series contained a unit root and it was determined that the variables were stationary in the first difference. Johansen cointegration test was performed to investigate the long-term relationship and 2 cointegrated vectors achieved showing long term relationship between variables. The way of causality investigated by VEC Granger causality test and mutual relationship have been found. The results of the study are consistent with the analysis results carried out by Kalaitz and Chamberlain (2021), Mensah and Okyere (2020), Uysal and Sat (2015), Nasreen (2011), Erdoğan (2006) and Awokuse (2005).

With the structural transformation that took place in Türkiye after 1980, a growth which based on exports was targeted. The analysed period contains the new form adapted from 1980 until today. Study results indicated both Export-Led Growth" and "Growth Driven Exports" were valid for Türkiye at related period. Due to the effect of exports on economic growth, the acceleration to be achieved in economic growth will provide the opportunity for more production and more exports, and as a result of this mutual relationship, the country's welfare will increase.

In particular, the issue of producing and exporting high value-added products should be supported and incentives should be increased in this regard. The contribution of top 20 chapters in export for 2023 seems to be low which shows the need of specialization in high value added goods. Structural change in exports composition should be realized, product diversity should be ensured and export structure should be transformed. Also increasing the number of free trade agreements and preferential trade agreements with countries that Turkey has determined as target markets can create more competitive condition for Türkiye.

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