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GEOGRAPHICAL INTENSITY AND DIVERSIFICATION OF EXPORTS IN MALATYA PROVINCE: AN EVALUATION FOR THE YEARS 2004-2019

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Abstract

Malatya is one of the top thirty exporting provinces in Turkey thanks to its geographical location and other characteristics. Malatya has managed to diversify its exports and export markets over the years. This study aims to calculate the market concentration in the exports of Malatya province for the period 2004-2019. For this purpose, foreign trade concentration index and Herfindahl-Hirschman index were used. As a result of the analyses made according to both indices, it has been revealed that market diversification has increased and there is no concentration in the foreign trade of Malatya province.

Keywords: Malatya, foreign trade, competitiveness, market concentration, export diversification

Jel Codes: F10, F14, R11.

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1. Introduction

The process of international economic integration has been mainly driven by technological advancements, economic catalysts, and trade liberalisation policies in the second half of the 20th century. The ongoing process has led to a rapid growth in world trade compared to production levels. At the beginning of 21th century the intensification of foreign trade competition become evident and influenced by various factors including geographical, cultural and historical proximity (Iapadre, 2006).

The initial phase of Türkiye's economic transformation commenced in the 1980s, and followed by a subsequent period often referred to as the second wave of transformation, which began in the early 2000s. Following the 1980s, the Turkish economy underwent a significant transformation, dominated by an export-oriented growth strategy becoming the dominant approach. However, after the 2001 economic crisis, the sharp depreciation of the Turkish lira, coupled with a decline in domestic demand, urged the companies to seek opportunities in foreign markets. From 2003 onwards, the external performance of the Turkish economy gradually improved, especially due to start of full membership negotiations with the European Union (EU). These developments, coupled with the spread of industrialisation across Anatolian cities in the second half of the 1980s, contributed to an increase in the contribution of these cities to the manufacturing-led export performance of the Turkish economy (Pamuk, 2007: 35-36). While increasing export rates has been a fundamental goal for the Turkish economy since the 1980s, today the new goal is to have access to different and distant country markets instead of traditional trading partners. These goals alone highlight the importance of geographical diversification of exports for the Turkish economy (12^{th} development plan, 2023).

A substantial body of theoretical and empirical research has demonstrated the crucial significance of export product and market diversification. Furthermore, export concentration and diversification can serve to relieve the impact of global financial fluctuations. It is also important in terms of increasing the stability of export earnings, reducing excessive fluctuations in income activities and securing economic growth (Wilhelms, 1967; da Costa Neto & Romeu, 2011). The province of Malatya provides a case in point. A detailed analysis of total exports may reveal discrepancies in export concentration by product, as observed in the case of dried fruit or apricot exports.

Located in the eastern region of Türkiye, Malatya has been affected by the developments of foreign trade liberalisation. Ranked among the top 30 exporting provinces in Türkiye, Malatya is considered a significant export base in the region, with an increasing trend in exports.

As a matter of fact, in the 16-year period from 2004 to 2019, which constitutes the reference for this study, Türkiye's exports increased approximately two and a half times while Malatya's exports increased nearly four times (TIM, 2022a). This study aims to assess the concentration of Malatya's exports. In the international and especially the literature on Türkiye, a limited number of studies have been conducted analysing the geographical concentration of exports on a province basis. In this sense, this study is the first study to measure the concentration of Malatya's exports and is also expected to contribute to the literature in this regard. The relevant analysis was conducted for the period 2004-2019, with the market concentration of Malatya province's exports being measured according to the trade concentration ratio index (TCI) and Herfindahl-Hirschman index (HHI) indices.

The study is comprised of five chapters including the introduction. The second section presents a synthesis of the existing literature on studies analysing province-based export concentration in Türkiye. The third section presents data on the economy and exports of Malatya province. The fourth section of the study is the methodology and analysis section. The final section presents the conclusion.

2. Literature Review

A limited number of studies have examined the exports and export performance of provinces in Türkiye. One study by Ekmen Özçelik (2016), analysed the diversification of Eskisehir's exports within the framework of 'intensive and extensive margins' and Balassa's (1965) Revealed Comparative Advantages (RCA) index. The analysis covering the years 2005 to 2014 revealed that Eskisehir outperforms Türkiye in terms of RCA index values. However, the new products exported from the city do not contribute significantly to its export growth. Furthermore, the study found that selecting new products correctly could lead to increased exports.

Kuşat (2018) analyzed the foreign trade competitiveness of the TR 61 Region (Antalya, Isparta and Burdur) and its provinces in the region and in Türkiye with RCA index. The results of the 2017 data analysis indicated that the TR61 region has a comparative advantage according to the RCA index. Another study measuring regional competitiveness with the RCA index was conducted by Karakaş (2020) for the 'agriculture and forestry' sector, covering the years 2002-2018.

In the study by Karadayı (2019), concentration ratios for exports and imports of Denizli, South Aegean (TR 32) and Türkiye were analysed for the years 2012-2016 with TCI and

provincial export concentration coefficient (PECR) indexes. For 2016 data, it was determined that there was a moderate market concentration for the exports of Denizli and the TR32 region. Furthermore, Filiz & Sayın (2020) analysed the global competitiveness of the 'vegetable seed production' sector for Antalya province within the framework of Porter's 'Diamond Model', which revealed that the relevant sector has a medium level of market competitiveness.

Gökmen (2021) calculated the export concentration level of Kastamonu province with TCI and Gini-Hirschman Index (GHI) indexes for the years 2004-2019. The findings of the study indicate that the exports of Kastamonu province are concentrated in a limited number of countries, with a high degree of geographical concentration. However, this concentration was on the decline. Süygün (2021) employed the TCI and GHI to measure the product and market (country) concentration of Mersin province exports for the years 2011-2020. The results (similar to the product concentration) indicated a moderate level of market concentration.

Şen (2021) analysed trade intensity within the scope of the HHI and the Trade Intensity Index for the geographical export diversity of Gaziantep province for the years 2010-2019. The calculations based on the HHI index and the Trade Intensity Index demonstrate that Gaziantep has diversified its export markets over the years, accompanied by an increase in the geographical diversity of its exports.

3. Economy and Exports of Malatya Province

The apricot trade represents a significant component of the economy of Malatya province, which is a prominent global and Turkish centre for apricot cultivation. Despite the fact that apricot cultivation has constituted one of the primary export products of Malatya since the 1980s, it can be asserted that the sectoral distribution of the provincial economy is characterised by a balanced structure (Malatya Governorship, 2024). Figure 1 below illustrates the sectoral distribution of gross domestic product (GDP) in Türkiye and in the Malatya economy in 2020. Accordingly, the Malatya economy has a composition similar to the Turkish economy. The sectors with the highest share of GDP in the Malatya economy are services, industry and agriculture, respectively, like the Turkish economy. In 2020, the industrial sector accounted for 19.7% of the Turkish economy, while this rate was 15.6% for the Malatya economy. Conversely, the agricultural sector represented 6.6% of the Turkish economy, while 10.7% of Malatya's GDP was derived from the agricultural sector.

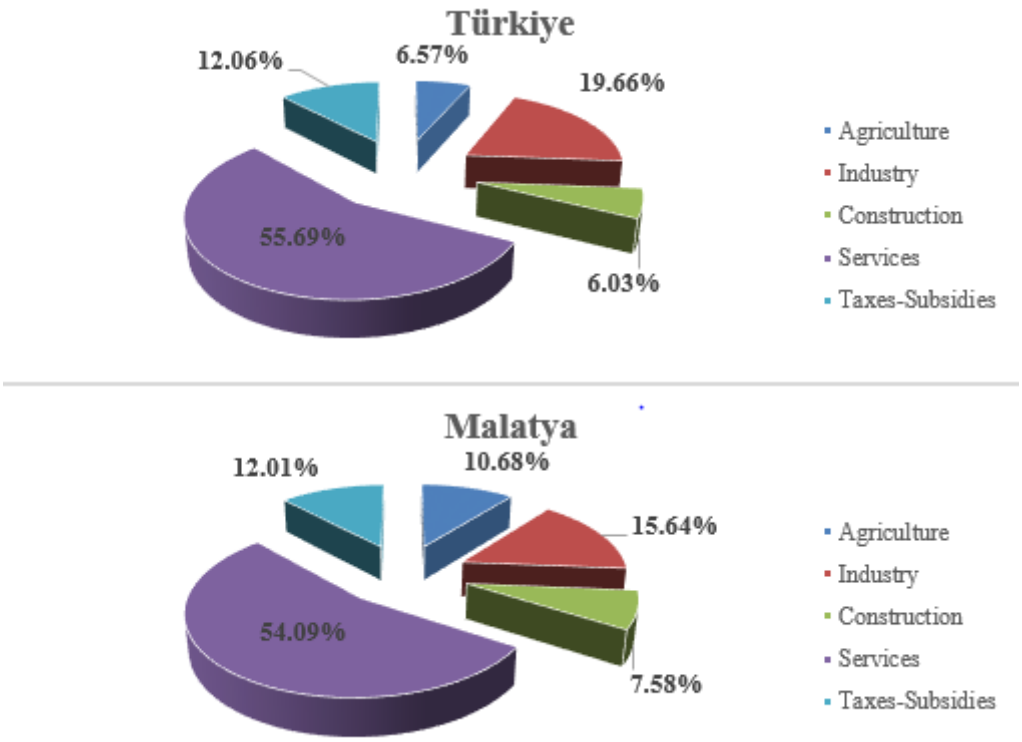

Figure 1

*Sectoral Breakdown of Gross Domestic Product for Türkiye and Malatya (2020)**

Source: TURKSTAT, 2024a.

Note: *Related data are taken from the series 'Gross domestic product by province, by branch of economic activity (A10), chained volume, index and rates of change, 2004-2022'. The data have been revised by TURKSTAT. As the data belong to the chained volume index, there is no summation.

Another indicator of the Malatya economy is the GDP values based on ₺ and $, as illustrated in Figure 2 below. Accordingly, the economy of Malatya, which was approximately $2.4 billion (3.4 billion ₺) in 2004, exhibited continuous growth, with the exception of 2006 and 2009, the year of the global financial crisis. It reached its peak in foreign currency terms with a value of $5.6 billion (10.6 billion ₺) by the end of 2013. Subsequently, the economy experienced a continuous decline in dollar terms, reaching a value of $4.2 billion in 2020. In terms of Turkish lira, Malatya's GDP exhibited a continuous increase due to the depreciation of the Turkish lira, reaching 29 billion 219 billion in 2020.[1]

[1] While the average $ exchange rate was 1.52 ₺ in 2004-2013, it increased to 7.01 ₺ as of 2020 (CBRT, 2024).

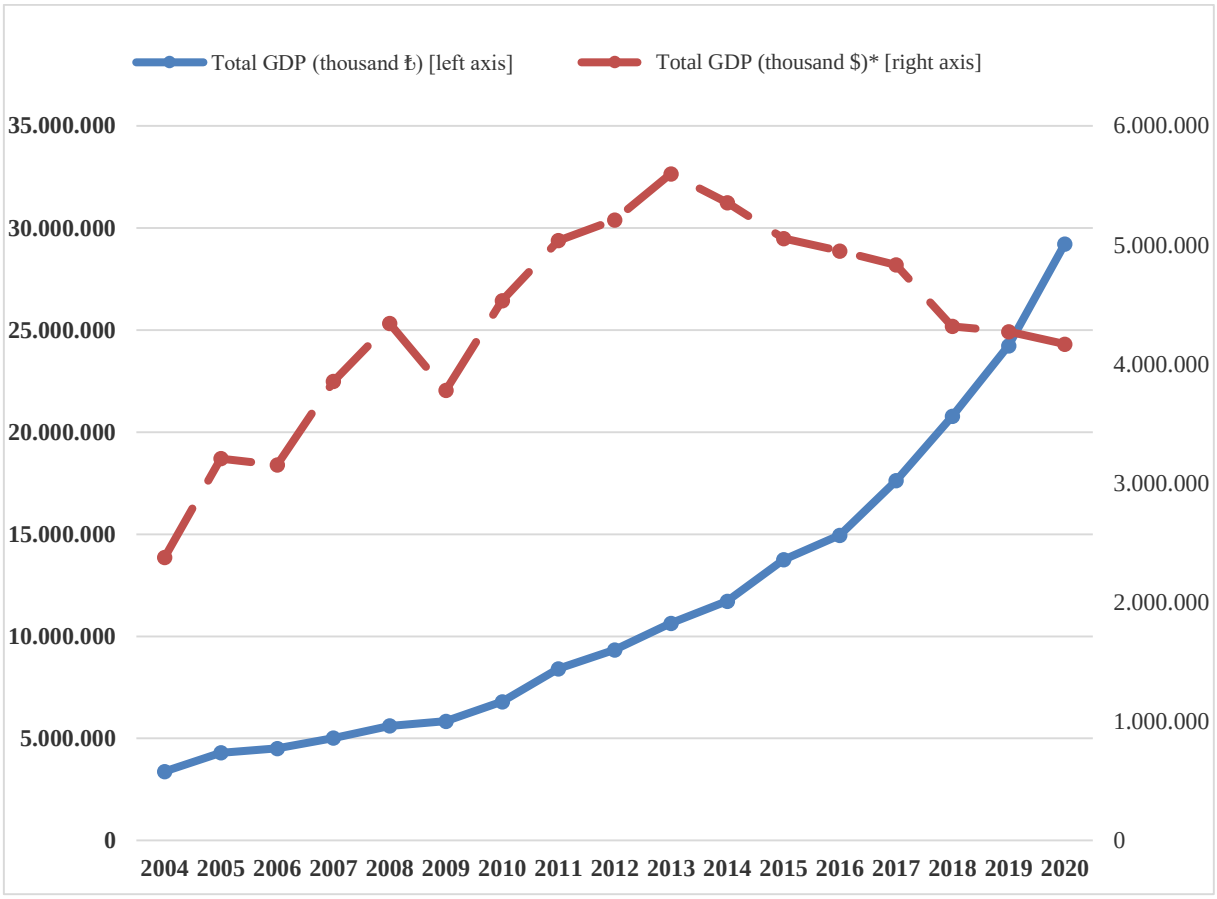

Figure 2

GDP of the Malatya economy (2004-2020, ₺ and US $, x 1000)*

Source: TURKSTAT, 2024b & CBRT (2024).

Note: *The $-based GDP for the Malatya economy has been calculated by the author by dividing the GDP data in ₺ by the CBRT annual data (Statistical data, 2024) by US dollars.

The similar situation in Figure 2 is also seen in the GDP per capita data in Figure 3. According to the relevant data, while the GDP per capita in USD terms for Malatya was $3,357 (4,807 ₺) in 2004, this indicator reached its peak in 2013 with $7,334 (13,957₺) and continuously decreased to $5,168 (36,381 ₺) in 2020. The economy of Malatya is naturally affected by the Turkish economy and the decline and increase in GDP followed a similar trend. Indeed, this is also proven by the fact that the ratio of Malatya's GDP per capita to Türkiye's average GDP per capita (average 57.5%) does not deviate much over the period (2004-2019).

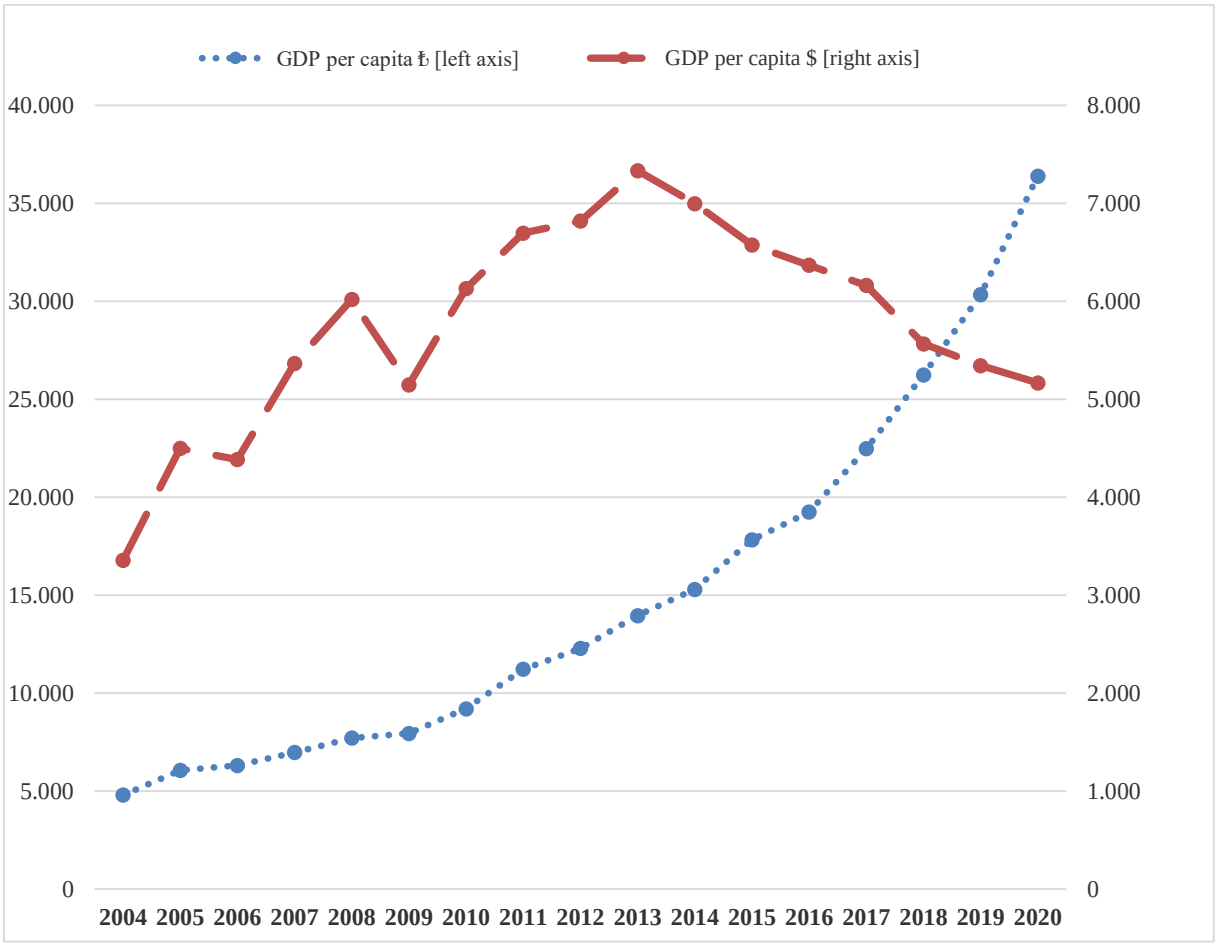

Figure 3

GDP per capita for the Malatya economy (2004-2020, ₺ and US $, x1000)

Source: TURKSTAT, 2024b & CBRT, 2024.

Note: *Per capita GDP data in $ for Malatya economy is calculated by the author by dividing the GDP data in ₺ by the CBRT (Statistical data, 2024) US $.

According to data from the TURKSTAT (2024b)[2] and the TIM (2022a), the ratio of exports to GDP for the years 2004-2019 was 6.3% in the Malatya economy, which had a foreign trade surplus during that period. Therefore, it can be posited that exports do not constitute a significant component of the city's economy. The primary reason for this discrepancy is that a significant number of companies engaged in apricot exports primarily utilise ports in provinces such as Mersin, Izmir and Istanbul for their exports. Thus, the exports that should be actually registered to Malatya are included in the data of these provinces. Indeed, the 2010 Apricot Research Report of the Fırat Development Agency indicates that Malatya's apricot exports

[2] The foreign trade data in the province-based (Malatya) indicators of TURKSTAT (2024b) commence after 2013. Accordingly, the pertinent ratio was determined by the author through the division of the provincial export data published by TIM (2022a) by the GDP figures of TURKSTAT (2024b), as illustrated in Figure 2).

exceed its total exports.[3] Nevertheless, the ratio of exports to GDP, which was 4.14% in 2004, increased to 8.88% in 2019 (TIM, 2022a).

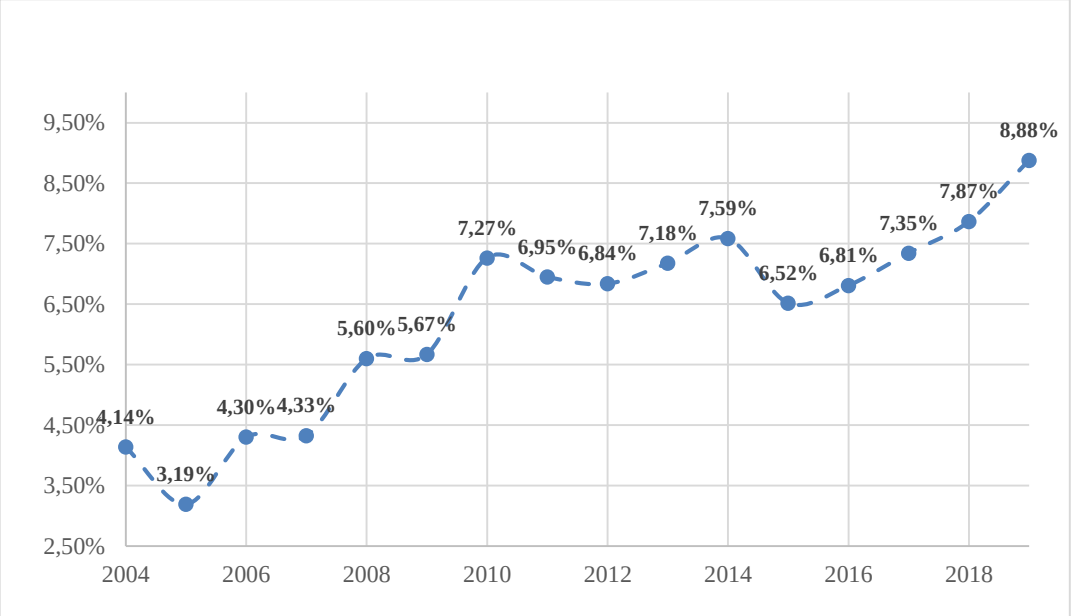

Figure 4

*Ratio of Malatya province exports to GDP (2004-2019, %)**

Source: Calculated by the author with TIM (2022a), TURKSTAT (2024b) and CBRT (Statistical data, 2024) data.

Note: *While calculating the relevant ratio, export data are compiled from TIM (2022a) and GDP data are compiled from TURKSTAT (2024b). In the relevant databases, $-based GDP figures for the Malatya economy are available, GDP data in ₺ are calculated by the author by dividing the CBRT annual (Statistical data, 2024) by US $.

The sectoral structure of exports is another important data to be evaluated when analysing Malatya's exports. As shown in Figure 5, traditional products dominate Malatya's exports. Considering that over the years Malatya has produced about 70 percent of the world's dried apricots (Malatya Governorship, 2024; FKA, 2010), it is an expected result that exports of dried fruits and products account for about 53.9 % of Malatya's exports. This sector is followed by exports of ready to wear and apparel with a share of around 21%. If the export share of 3.3% is evaluated together with textile and raw materials, the share of the textile sector in Malatya's exports increases to approximately 25%. These sectors are followed by exports of livestock and

[3] The years included in the 'Apricot Research Report' (FKA, 2010:26) are 1995-2009. As indicated in the related report, the quantity of apricots exported between 2004 and 2009 was 581,7 million kg, generating a total export revenue of 1,399 billion $.

aquaculture products with a share of 3.7%, cereals, pulses, oil seeds and products industry with a share of about 3%, and chemicals and chemical products with a share of 2.3%.

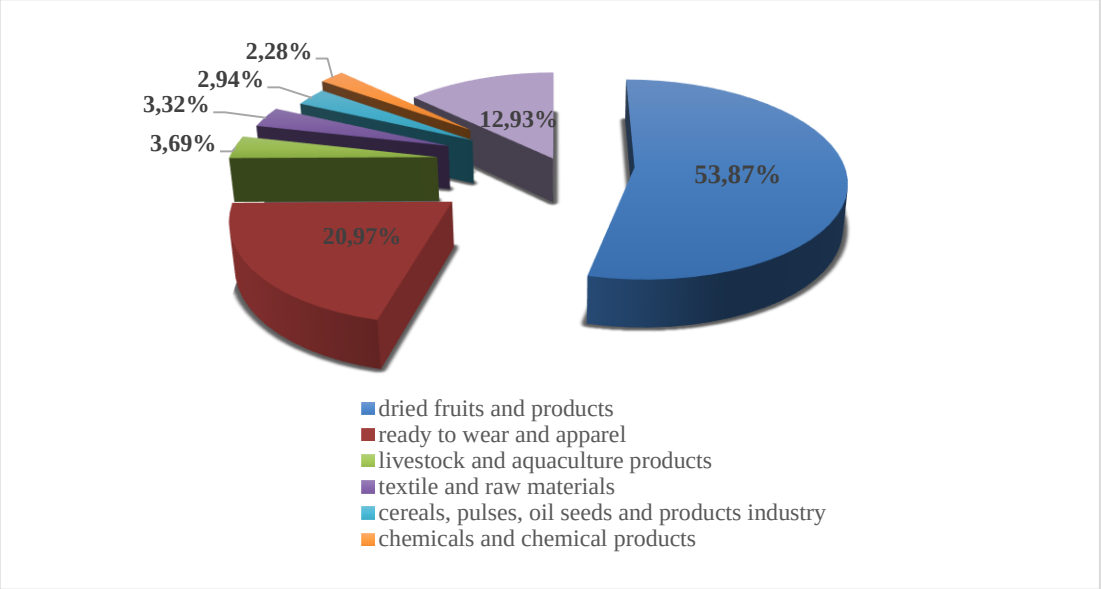

Figure 5

Sectoral distribution of Malatya province exports (2004-2019, average %)

Source: The data was compiled by the author with the assistance of TIM (2022b).

Table 1 presents the export figures for Malatya and Türkiye, along with the ratio of Malatya's exports to Türkiye's overall exports. The final column of Table 1 presents the rank of Malatya's exports among the 81 provinces. Accordingly, between 2004 and 2019, Türkiye's exports (in US $ terms) increased from approximately $64 billion to $166 billion (2.6 times), while Malatya's exports increased from $98.5 billion to $380 billion (3.9 times). Although these figures indicate a higher rate of increase in Malatya's exports than that of Türkiye, Malatya's ranking on the basis of provinces has not changed significantly. While Malatya was the 28th most exporting province in Türkiye in 2004, it dropped one place to 29th in 2019. As illustrated in the fourth column of Table 1, Malatya's contribution to Türkiye's exports has remained relatively constant over time. The ratio, which was 1.5 per thousand in 2004, increased to 2.3 per thousand in 2019.

While Malatya's exports reached their highest value in 2014, with $406 million, it subsequently decreased and failed to follow a balanced course. It is evident that the most significant factor contributing to this phenomenon is the fact that Malatya's exports are predominantly comprised of agricultural products and dried apricots. In contrast to the supply curves of other products, the supply of agricultural products exhibits a lag in response to price changes. In addition to inputs, climatic conditions also matter as independent variables in the

production functions of agricultural products. Similarly, the price and income elasticity of the demand for agricultural products is low (Karluk, 2014: 212). In the case of Malatya apricot, in addition to the aforementioned factors, fluctuations in exports are also observed due to issues such as the lack of price and quality stability, as well as the packaging and marketing of the product as originating from other countries after it is exported (FKA, 2010: 41-45).

Table 1.

Exports of Malatya and Türkiye (2004-2020, US $)

Years	Malatya's Exports[a]	Türkiye's Exports[b]	Export rate[c]	Row No.[d]
2004	98,485,550	63,798,811,561	%0.15	28th
2005	102,418,967	73,426,151,051	%0.14	29th
2006	135,687,527	85,761,134,208	%0.16	26th
2007	166,765,309	105,925,486,460	%0.16	29th
2008	243,090,008	127,498,828,135	%0.19	27th
2009	214,318,969	97,074,673,464	%0.22	28th
2010	329,442,813	112,139,382,744	%0.29	25th
2011	350,221,960	133,301,459,479	%0.26	26th
2012	356,360,878	137,709,928,695	%0.26	26th
2013	401,780,855	145,443,260,295	%0.28	25th
2014	406,394,109	151,292,662,445	%0.27	25th
2015	329,580,129	133,664,526,884	%0.25	27th
2016	343,555,648	131,676,179,334	%0.26	27th
2017	354,952,384	147,315,872,625	%0.24	27th
2018	339,552,439	163,532,568,555	%0.21	29th
2019	379,552,439	165,959,754,610	%0.23	29th
2020	301,147,193	156,286,763,847	%0.19	32nd

Notes: [a]The total exports of Malatya in the relevant year, [b]The total of provincial exports figures compiled from TIM in the relevant year (total exports by province). [c]In order to follow similar series, the calculation of Turkey's total exports only includes 'province-based figures' for 2014 and 2015. The following is a ranking of Malatya's exports in the 81 provinces of Türkiye.

Source: Compiled by the author with data from TIM (2022a and 2022c).

The most significant variable observed in Table 2 is that six of the 10 countries in Malatya's total exports are EU members as of the period. Indeed, approximately 48.3% of Malatya's total exports between 2004 and 2019 were made to EU countries (TIM, 2022a). As mentioned in the last row of the table, the USA is the leading export destination for Malatya, accounting for approximately 10% of total exports. Spain follows with a share of 9.1%, while Germany ranks third with a share of 8.4%. Russia, which is not a member of the EU, ranks fourth in total exports with a share of 8.1% despite a decreasing share in exports. Between the years 2004 and 2012, 13.3% of Malatya's total exports were made to Russia, which was the first country in Malatya's exports for the relevant years. Nevertheless, exports to this country have exhibited a consistent decline, with the share of exports to Russia reaching 2.9% in 2019 (Table 3).

Table 2.

Top 10 export destinations of Malatya[a] (2004-2019, %)

	USA	Germany	Australia	France	Holland	Iraq	England	Spain	Italy	Russia
2004	13.7%	11.5%	7.0%	5.5%	4.0%	6.3%	9.4%	1.5%	3.3%	10.5%
2005	8.8%	10.0%	6.3%	4.7%	4.0%	9.4%	7.8%	1.3%	3.8%	12.6%
2006	12.7%	9.5%	4.4%	5.6%	3.3%	2.8%	6.6%	1.0%	4.1%	15.3%
2007	15.9%	12.3%	3.5%	6.7%	2.9%	2.5%	5.8%	1.0%	3.2%	16.8%
2008	13.5%	10.9%	4.1%	6.5%	2.3%	2.4%	5.0%	0.9%	3.0%	17.6%
2009	12.5%	10.5%	3.7%	6.3%	2.7%	3.4%	4.3%	0.9%	3.1%	16.2%
2010	13.2%	9.1%	3.0%	5.0%	2.2%	2.7%	6.5%	9.0%	7.1%	13.6%
2011	10.3%	10.1%	2.7%	5.1%	3.1%	4.9%	6.3%	8.2%	11.5%	11.1%
2012	8.7%	7.3%	2.1%	5.5%	2.1%	14.2%	6.1%	7.2%	9.2%	9.3%
2013	7.6%	7.9%	1.6%	3.5%	1.4%	13.7%	3.6%	9.1%	9.4%	7.6%
2014	9.1%	8.6%	1.7%	4.3%	2.1%	9.8%	3.3%	11.9%	8.3%	4.4%
2015	10.3%	5.7%	2.8%	4.1%	1.8%	6.9%	3.6%	14.6%	8.2%	3.3%
2016	8.4%	7.8%	2.0%	5.6%	2.3%	5.3%	3.5%	15.1%	10.6%	2.8%
2017	8.9%	7.5%	1.6%	4.2%	2.0%	5.7%	4.3%	15.2%	11.5%	3.2%
2018	8.5%	7.3%	1.6%	3.9%	2.2%	3.1%	3.6%	13.8%	9.3%	3.3%
2019	7.0%	5.9%	1.0%	2.9%	4.9%	13.6%	5.9%	9.1%	8.0%	2.9%

2004-19 total[b]	10.0%	8.4%	2.5%	4.7%	2.5%	7.3%	4.9%	9.1%	8.0%	8.1%

Notes: [a]With regard to the aggregate exports of Malatya province for the period spanning 2004 to 2019, [b]The ratios of exports to total exports for the period 2014-2019.

Source: Compiled by the author with data from TIM (2022a).

In addition to these countries, Iraq, Türkiye's eastern neighbour and one of the two countries geographically closest to Malatya, has also emerged as an important export partner. While Iraq's share of Malatya's total exports is 7.3%, the data show significant inconsistencies over the years. In fact, while Iraq's share in Malatya's exports averaged 4% in 2004-2010, and the average value of exports was around $6.6 million, in 2011 total exports increased to $17.25 million and the share to 5%, and in 2012 exports increased to $50 million and Malatya's share in total exports increased to 14.2%. After 2013, exports to Iraq declined steadily, reaching over $50 million in 2019 (Table 2, TIM, 2022a and 2022c). These results could be due to other exports to third countries or could be interpreted as purely cyclical. In fact, although Türkiye's total exports to Iraq increase in the relevant years, these rates are far from explaining Malatya's export increases. In 2011 and 2012, Türkiye's exports to Iraq increased by 37.27% and 30.04% respectively (TIM, 2022a).

4. Methodology and analysis

Exports strengthen the capital structure, support the labour market and thus employment. In this respect, a positive impact on the economic activity of the exporting province can be expected. An equally important factor as the volume and the value added share of exports is to increase the market diversity of exports. The more limited the geographical diversity of exports, the more sensitive they are to economic fluctuations in the partner countries/regions. Similarly, the more diversified the country/region's export partners are, the less demand-related risks firms and the local economy face and the more leverage they have for export-oriented policies (Erlat & Akyüz, 2001; Fonchamnyo & Akame, 2017; Şen, 2021: 145-146). Moreover, another issue to consider when measuring the export performance of a province or region is that geographic/country diversification at the firm level is more important than product diversification in terms of export earnings (Dalgıç & Fazlıoğlu, 2015: 20-21).

Product diversification in exports takes place in two different manners: horizontal diversification (the achievement of a larger product scale at the same stage of production) and vertical diversification (the shift from primary to secondary and tertiary products in order to take advantage of different stages of processing). In market diversification, it is necessary to

make market/geographical distinctions (such as developed and developing countries) (Wilhelms, 1967: 46).

Concentration is defined as the ownership or control of the majority of economic activities and resources by a small number of units (a small percentage) (Yıldırım et al. 2016: 38-39). In this context, the degree of concentration is considered to depend on the distribution of exports among exporting countries. An increase in the number of exporting countries or their percentage in exports is associated with an increase in concentration and a decrease in competition, or vice versa. Recently, various indices have been used to evaluate export markets and potential. The HHI and TCI are the main ones.

4.1. Trade Concentration Ratio Index (TCI)

Concentration analysis can be calculated for a specific group of firms, products, sectors (chapters) markets or countries. It is simply calculated to show the total share of a certain number of firms, products, sectors, countries or markets in the foreign trade of a country or a province. The relevant index value varies between 0 and 100. An index value approaching 100 indicates full concentration and 0 indicates no concentration (Meilak, 2008: 36; Küçükkiremitçi et al. 2010: 3; Erkan&Sunay, 2018: 46).

The formula of the relevant index is given in Equation 1 below:

$$TCI = \sum_{i=1}^{n} P_i * 100 \qquad \text{(E.1)}$$

The TCI in E.1 is the foreign trade concentration ratio, while P_i is the share of a firm, product, industry, country or market. In this analysis, TCI is the export concentration ratio of Malatya province, while P_i is the export share of the country to which Malatya exports. Although it is observed in the literature that TCI-4, TCI-8 or TCI-12 are usually calculated, there is no specific rule in this regard. The choice of which indices to be calculated in the literature is arbitrary (Meilak, 2008: 37). The indices to be calculated in this study are TCI-1, TCI-2, TCI-4, TCI-8 and TCI-12, respectively. TCI-1: the share of the country with the largest exports in total exports for the relevant period. TCI-2: the shares of the two largest exporting countries in total exports for the relevant period. TCI-4: shares of the four countries with the highest exports in total exports for the relevant period. TCI-8: shares of the eight countries with the highest exports in total exports for the relevant period. TCI-12: shares of the 12 countries with the highest exports in total exports for the relevant period.

The TCI-4 concentration ratio indicates that there is a low concentration between 0-25, a moderate concentration (decreasing competition) between 31-50, and a high concentration

(competition is becoming less and less) after 51 (Kozáková & Barteková, 2020: 293). In order to eliminate the potential for subjectivity in different measurements, some applied studies have accepted that the 50% level in TCI-4 corresponds to the 70% level in TCI-8 (Yıldırım et al. 2016: 41). A similar method will be employed in this study.

Table 3

TCI values of Malatya province (2004-2019, %)

Years	First ranked export partner	TCI-1	TCI-2	TCI-4	TCI-8	TCI-12
2004	**USA**	13.66%	25.16%	45.12%	68.13%	81.39%
2005	**Russia**	12.59%	22.63%	40.82%	63.58%	75.36%
2006	**Russia**	15.27%	27.95%	44.10%	62.33%	73.22%
2007	**Russia**	16.76%	32.61%	51.58%	66.93%	75.98%
2008	**Russia**	17.57%	31.04%	48.43%	64.17%	73.81%
2009	**Russia**	16.18%	28.73%	45.49%	60.05%	69.96%
2010	**Russia**	13.63%	26.87%	45.00%	66.61%	75.82%
2011	**Italy**	11.51%	22.65%	43.03%	67.56%	77.51%
2012	**Iraq**	14.23%	23.48%	41.43%	67.49%	77.21%
2013	**Iraq**	13.73%	23.17%	40.17%	62.48%	71.26%
2014	**Spain**	11.85%	21.69%	39.45%	59.96%	70.68%
2015	**Spain**	14.58%	24.91%	40.01%	56.73%	67.50%
2016	**Spain**	15.08%	25.67%	41.87%	59.59%	70.38%
2017	**Spain**	15.25%	26.71%	43.07%	61.89%	73.09%
2018	**Spain**	13.80%	23.08%	38.84%	55.84%	68.43%
2019	**Iraq**	13.64%	22.73%	37.80%	58.84%	70.35%

Source: Calculated by the author with TIM (2022a) data.

The initial analysis of Table 3 reveals that while Russia was the leading exporter to Malatya during the initial years of the analysis (2005-2010), Spain emerged as the dominant exporter in the following years (2014-2018). Once more, in the period under review, Türkiye's eastern neighbour Iraq was the country with the highest exports for three years (2012, 2013 and 2019), while the USA (2004) and Italy (2011) were the countries with the highest exports on

once each. While the most intensive exports were made to EU countries in six of the 16 years analysed, the EU countries that stand out in the TCI-2 and TCI-4 indices are Italy, Spain, Germany, France and the UK[4]. Upon analysis of Table 3 based on TCI-4, it becomes evident that the USA, with the exception of 2013, and Germany, in 2015 and 2019, consistently occupy the top four positions. According to TCI-4 values, it can be concluded that the geographical concentration of Malatya's exports is moderate. The relevant index value is approximately 43% on average, with the value exceeding 50% only in 2007 (51.58%). As Yıldırım et al. (2016: 41) observe, the 50% level in TCI-4 corresponds to 70% in TCI-8. This suggests that TCI-8 also exhibits a moderate level of concentration. The 16-year average value for TCI-8 is approximately 63 %, with the highest value observed in 2004 at 68.13 %.

Another noteworthy outcome of the TCI data is the observed decline in the geographical density of Malatya's exports. While the TCI-1, which was 13.66% in 2004, remained almost unchanged at 13.64% in 2019, Malatya's total exports (in dollar terms) quadrupled as previously mentioned. In the same years, TCI-2 decreased by approximately 3%, TCI-4 by 7%, TCI-8 by 9%, and TCI-12 by 11%. This situation indicates a diversification in export partners for Malatya.

4.2. Herfindahl- Hirschman Index (HHI)

The Hirschman-Herfindahl Index (HHI) market/country concentration index, that has gained considerable popularity in recent times, was first developed by Hirschman in 1945. Hirschman's (cited in Yakovlev & Spleen, 2022: 664) primary objective in developing the index was to demonstrate that gains from trade are not reflected in a proportional manner across countries, which leads to an asymmetry of trade dependence between countries. The first method for measuring trade intensity is the index developed by Hirschman (1980) and subsequently standardised by Herfindahl. For a category of n groups, the square of the ratio of each product category to total exports is calculated. Consequently, the Hirschman-Herfindahl Index (HHI) is calculated by summing the squared shares (da Costa Neto & Romeu, 2011: 7; Şen, 2021: 149). The relevant index is provided in E.2 below.

$$HHI = \sum_{k=1}^{n} s_k^2 \qquad \text{(E.2)}$$

In E.2, s_k represents the ratio of each country's export share (Malatya's) to its total exports over the specified period. An index value of 1 indicates a high concentration of exports, which is defined as a high proportion of trade with a small number of countries. Conversely, an index

[4] The UK is a member of the EU in 2004-2019, when the analysis was carried out.

value approaching 0 indicates a high degree of export diversification, which is defined as a wide range of trade (da Costa Neto & Romeu, 2011: 7). An index value between 0 and 0.3 is indicative of a market penetration strategy (no concentration)[5] (Trabold, 1995: 581). Additionally, various methodologies are employed in the computation of the HHI[6]. Nevertheless, the HHI (10) and the HHI (60) are included together, as there is a greater focus on the higher categories (Meilak, 2008: 40).

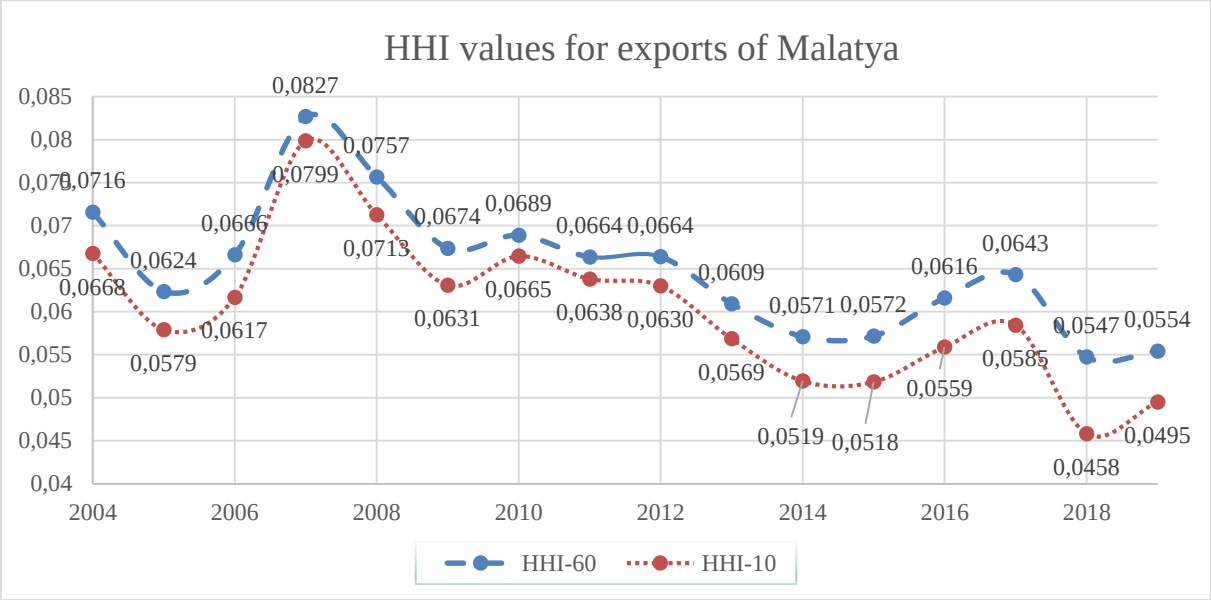

Figure 6

HHI index results for Malatya's exports (2004-2019, HHI-10[a] and HHI-60[b])

Source: Calculated by the author with TIM (2022a) data.

Notes: [a]HHI-10: The ten countries with the highest exports from Malatya (see Table 2). [b]HHI-60: The sixty countries with the highest exports from Malatya (see Appendix Table 1).

Figure 6 presents the HHI values for the top 10 (HHI-10) and top 60 (HHI-60) countries in Malatya's exports (2004-2019). As illustrated in Figure 6, the average geographical diversity of Malatya for the years 2004-2019 is 0.065 for HHI-60 and 0.0603 for HHI-10. The HHI-60 value exhibited a downward trend, declining from 0.0716 in 2004 to 0.0554 in 2019. In a similar

[5]An increase in the upper bound to 0.4 results in a rise in the proportion of firms identified as having expanded their export efforts, with a range of between 21% and 31%. An additional increase in the upper bound, for instance to 0.5, does not appear to be a suitable option. The value of the HHI can only reach or exceed 0.5 if the largest export market accounts for at least 50 % of export revenues. This is a fact that is difficult to reconcile with the concept of market expansion (Trabold, 1995: 581-582).

[6]To illustrate, Şen (2021) included the first ten countries in the analysis for the exports of Gaziantep province, while Erlat & Akyüz (2001) made calculations for 14 countries and Seymen & Bilici (2009) for 27 EU members.

manner, the HHI-10 value decreased from 0.0668 in 2004 to 0.495 in 2019. The highest values in the HHI-60 and HHI-10 indices were recorded in 2007, with values of 0.0827 and 0.0799, respectively.

The results of both indices demonstrate that there is no concentration of exports in geographical terms for Malatya. Instead, there is a gradual increase in geographical diversity. This prevents the province from being dependent on a limited number of markets and is also important in terms of reducing risks and ensuring sustainable export income (Montes Ninaquispe, 2024: 11).

5. Results

Today, exports has emerged as a pivotal driver of national and regional economic growth. In the context of intensifying global competition, it is imperative that export revenues be both sustainable and subject to continuous growth. One method of enhancing the rigidity and stability demand of exports is through diversification of both the products and the goods being exported. Furthermore, it is becoming increasingly important to assess the export performance of different regions, provinces, and/or cities, as well as countries. In this context, the objective of this study is to quantify the geographical/market diversity in exports from Malatya province for the period between 2004 and 2019.

The exports of Malatya province have demonstrated a notable growth trend, with a nearly four-fold increase from 2004 to 2019. While Malatya's exports exhibited a continuous increase between 2004 and 2014 in terms of value, they experienced a decline from this year to 2019. Nevertheless, the geographical diversity of Malatya's exports have continued to expand over the years.

A number of indices have been developed to measure the market diversity of export goods. In this study, two different indices, which are widely used in the literature, were employed to assess the market diversity of export goods from Malatya province between 2004 and 2019. According to TCI calculations, the leading countries in Malatya's exports were Russia (for the years 2005-2010) and Spain (for the years 2014-2018). Iraq (for the years 2012, 2013 and 2019), USA (for the year 2004) and Italy (for the year 2011) were the leading exporters of Malatya for certain years in the period analysed, according to the TCI-1 index. Germany, France and the UK (according to the TCI-2 and TCI-4 indices) were the other prominent countries. When these results are evaluated collectively, it becomes evident that the USA, Germany and Spain have a particular significance in Malatya's exports. Conversely, while the TCI results indicate that the market (geographical) intensity of Malatya's exports is at a medium level, this

intensity is gradually declining. It is observed that European countries (especially the EU) have increased their share in Malatya's exports. Furthermore, the increasing integration of Malatya with the EU and the developments in the direction of accelerating possible EU membership may also positively affect Malatya's exports.

A second index, the HHI, was calculated to analyse the geographical concentration of Malatya's exports. In this case, the HHI was applied to both the top ten countries in exports (HHI-10) and the top 60 countries (HHI-60). The results of both indices demonstrate that exports are distributed across a diverse range of markets, indicating a lack of concentration.

In the academic literature, there are few studies that focus on the city's economy in the context of export competitiveness and/or geographical concentration in exports. Nevertheless, a considerable proportion of the exports of numerous cities and regions, including Malatya, exhibit primary product characteristics. Consequently, location and destination are significant determinants of exports. It is similarly important to study the city-based geographical diversity of exports in terms of potential returns. Indeed, the 12th Development Plan (2024: 46) identifies the expansion of geographical diversity in exports as a long-term objective. In this regard, the study addresses a significant gap in knowledge pertaining to both Malatya and the regional economies. Moreover, it provides a foundation for more detailed studies to be conducted in the future. Conducting this analysis in the context of sector and export destination will facilitate more detailed and in-depth analyses of the export structure of the province. This approach may facilitate the formulation of future plans and the enhancement of the province's export potential.

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Appendix Table 1

The sixty countries with the highest exports from Malatya (2004-2019)

ALGERIA	INDIA	REPUBLIC OF SOUTH KOREA
AUSTRALIA	IRAN	ROMANIA
AUSTRIA	IRAQ	RUSSIAN FEDERATION
AZERBAIJAN	ISRAEL	SAUDI ARABIA
BELARUS	ITALY	SENEGAL
BELGIUM	JAPAN	SERBIA + MONTENEGRO
BRAZIL	KYRGYZSTAN	SINGAPORE
BULGARIA	LEBANON	SLOVENIA
CANADA	LETONIA	SPAIN
CHILE	LITHUANIA	SUDAN
CROATIA	MALAYSIA	SWEDEN
CZECHIA	MEXICO	SWITZERLAND
DENMARK	MOROCCO	SYRIA
EGYPT	NETHERLANDS	TANZANIA
FINLAND	NEW ZEALAND	TURKISH REPUBLIC of NORTHERN CYPRUS
FRANCE	NORWAY	TURKMENISTAN
GERMANY	PEOPLE'S REPUBLIC OF CHINA	UKRAINE
GREECE	POLAND	UNITED ARAB EMIRATES
HONG KONG	PORTUGAL	UNITED KINGDOM
HUNGARY	REPUBLIC OF SOUTH AFRICA	UNITED STATES OF AMERICA