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Research Article

Comparative Analysis of Turkey's Competitive Position in Agricultural Exports with Selected Competitor Countries

Türkiye'nin Tarım İhracatındaki Rekabetçi Konumunun Seçilmiş Rakip Ülkeler ile Karşılaştırmalı Analizi

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Abstract

This study measures Turkey's competitive strength in agricultural exports between 2014 and 2023 using Revealed Comparative Advantage (RCA) and Symmetric RCA (RSCA) indices and compares the findings with structurally similar economies such as Brazil, the United States, Canada, China, Italy, Spain, and the Netherlands. The data show that Turkey's agricultural exports rose from US$19.54 billion in 2014 to US$30.26 billion in 2023, with a period average of US$21.47 billion. In the agricultural sector, RCA values ranged between 1.56 and 1.85, averaging 1.67, while RSCA remained between 0.22 and 0.30, averaging 0.25, confirming Turkey's permanent comparative advantage. Comparatively, Brazil's average RCA and RSCA values are quite high at 5.87 and 0.71, respectively, while the US and Canada's RCA is 1.64 and 1.83, and their RSCA is 0.24 and 0.29. In Italy and Spain, the RCA ranges from 0.6 to 1.1 and the RSCA is mostly negative, while in the Netherlands, the RCA ranges from 0.95 to 1.10 and the RSCA varies between -0.02 and 0.05. As a result, Turkey has a stronger agricultural competitive position compared to similar European economies, but a medium-level position compared to producers with high RCA, such as Brazil and Ukraine. The fact that the RCA in Ukraine ranges from 4.57 to 8.44 and the RSCA from 0.64 to 0.79, and that the RSCA values in Turkey rose from 0.22 to 0.26 in the 2019–2023 period, highlights the importance of policies focused on higher added value and productivity.

Keywords: *Turkey, Agricultural Exports, Competitive Position, RCA, RSCA*

Öz

Bu çalışma, 2014 ile 2023 yılları arasında Türkiye'nin tarım ihracatındaki rekabet gücünü Açığa Çıkan Karşılaştırmalı Üstünlük (RCA) ve Simetrik RCA (RSCA) endekslerini kullanarak ölçmekte ve bulguları Brezilya, Amerika Birleşik Devletleri, Kanada, Çin, İtalya, İspanya ve Hollanda gibi yapısal olarak benzer ekonomilerle karşılaştırmaktadır. Veriler, Türkiye'nin tarım ihracatının 2014 yılında 19,54 milyar ABD dolarından 2023 yılında 30,26 milyar ABD dolarına yükseldiğini ve dönem ortalamasının 21,47 milyar ABD doları olduğunu göstermektedir. Tarım sektöründe RCA değerleri 1,56 ile 1,85 arasında değişirken, ortalama 1,67 olarak gerçekleşmiştir. RSCA ise 0,22 ile 0,30 arasında kalarak ortalama 0,25 olarak gerçekleşmiş ve Türkiye'nin kalıcı karşılaştırmalı üstünlüğünü teyit etmiştir. Karşılaştırmalı olarak, Brezilya'nın ortalama RCA ve RSCA değerleri sırasıyla 5,87 ve 0,71 ile oldukça yüksektir, ABD ve Kanada'nın RCA değeri ise 1,64 ve 1,83, RSCA değeri ise 0,24 ve 0,29'dur. İtalya ve İspanya'da RCA 0,6 ile 1,1 arasında değişirken, RSCA çoğunlukla negatiftir. Hollanda'da ise RCA 0,95 ile 1,10 arasında değişirken, RSCA -0,02 ile 0,05 arasında değişmektedir. Sonuç olarak, Türkiye benzer Avrupa ekonomilerine kıyasla daha güçlü bir tarımsal rekabet gücüne sahip olmakla birlikte,

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Brezilya ve Ukrayna gibi yüksek RCA'ya sahip üreticilere kıyasla orta düzeyde bir konumdadır. Ukrayna'da RCA'nın 4,57 ile 8,44 arasında, RSCA'nın ise 0,64 ile 0,79 arasında değişmesi ve Türkiye'de RSCA değerlerinin 2019-2023 döneminde 0,22'den 0,26'ya yükselmesi, daha yüksek katma değer ve verimliliğe odaklanan politikaların önemini vurgulamaktadır.

Anahtar Kelimeler: *Türkiye, Tarım İhracatı, Rekabetçi Konum, RCA, RSCA*

1. Introduction

1.1. Subject and Importance of the Research

The global agricultural sector plays a strategic role in ensuring food security and supporting the economy through trade diversification, rural development and increased foreign exchange earnings. However, factors such as climate change, vulnerabilities in regional supply chains, and increasing food demand are putting pressure on countries to reassess their agricultural production and foreign trade policies. In this context, analysing Turkey's position in agricultural exports determines its current competitive strength and provides important information for designing strategic policies.

Turkey ranks among countries with high agricultural production potential thanks to its diverse climate zones and product variety. According to data from the Turkish Statistical Institute (TÜİK), as of 2024, the number of people employed in the agricultural sector is 4.8 million, accounting for approximately 15% of total employment (TÜİK, 2024). According to data from the Turkish Exporters Assembly (TİM), the agricultural sector achieved its highest annual exports ever in 2024, reaching $36.2 billion. Again, while exports increased by 3.3% compared to 2023, the agriculture sector's share of total exports was 16%. According to 2024 data, fruit and vegetable products achieved exports worth $2.7 billion, and dried fruits and products achieved exports worth $1.9 billion. Therefore, Turkey attracts attention with its potential to be a reliable and sustainable supplier. Agriculture in Turkey plays a decisive role not only economically but also socially. Turkey's agricultural sector has a unique position among developing countries with both traditional production patterns and increasing export potential (TİM, 2024).

However, global agricultural trade is becoming increasingly competitive. Latin American, North American and Eastern European countries, in particular, are gaining significant market share in agricultural exports thanks to economies of scale, logistical infrastructure advantages and state-supported investment. In this context, it is important to evaluate Turkey's competitive edge against these countries and analyse changes in its foreign trade performance numerically (Bashimov, 2016). Moreover, the paper explicitly links Turkey’s agricultural export performance to structural determinants such as logistics infrastructure, cold-chain capacity and product-based export diversification. Recent work on Turkey and other middle-income economies shows that improvements in transport infrastructure, logistics performance and product diversification are key drivers of export competitiveness in agro-food trade (Tozanli, 2014; Hesse, 2008; Cadot et al., 2011; Kabak et al., 2018; Kaplan & Bozyiğit, 2021).

1.2. Purpose and Question of the Research

The primary objective of this study is to measure Turkey's export competitiveness in the agricultural sector for the period 2014–2023 and to compare the data obtained with selected competitor countries. To this end, analyses were conducted on an annual basis using both the Revealed Comparative Advantage (RCA) and the Symmetric RCA (RSCA) indices. This approach makes it possible to reveal structural changes over time and to objectively assess Turkey's international position.

The study seeks to answer the following question: ‘How has Turkey’s declared comparative advantage in the agricultural sector evolved between 2014 and 2023, and how does this trend compare to that of major global leaders and structurally similar countries?’

The following hypotheses were tested within the framework of this research question:

H1: Turkey has a revealed comparative advantage in the agricultural sector between 2014 and 2023.

H2: Turkey's agricultural RCA value is lower than that of the global leaders.

H3: Turkey's agricultural RSCA value is higher than that of structurally similar countries.

H4: Turkey's agricultural export competitiveness increased in the post-2020 period.

These hypotheses are structured in a way that allows for an analysis of Turkey's position in agricultural exports both in absolute terms and relatively.

1.3. Literature Review

Regarding the concept of competitive strength and its measurement, numerous studies exist that measure competitive strength using Revealed Comparative Advantages (RCA) and similar indices introduced by Balassa (1965). This section of the study provides brief information on some of the national and international studies conducted using Balassa's RCA index and other criteria.

Camanzi et al. (2003) analyzed Turkey's competitive strength in agricultural and food products vis-à-vis the EU. In their study, they used both the Lafay index and the Grubel-Lloyd index. As a result of their study, they found that Turkey has significant competitive strength vis-à-vis the EU, particularly in the export of fresh fruit, vegetables, and olive oil. Miral and Utkulu (2006) examined the competitiveness of the fresh fruit and vegetable sector against the EU between 1994 and 2005 using the RCA index. As a result of their study, they determined that the Turkish fresh fruit and vegetable sector has a comparative advantage over EU products. According to the results of their study, the Turkish fresh fruit and vegetable sector has an explained comparative advantage over the EU. In this context, grapefruit, citrus fruits, and walnuts are the products with the highest RCA values. Bayramoğlu (2010) analyzed the comparative advantage of agricultural products traded between Turkey and Azerbaijan in his study. In his study, he used the RCA index, export similarity ratio, and Vollrath indices. According to the results of his study, Turkey is in a more advantageous position in the European Union (EU) market, while Azerbaijan is in a more advantageous position in the Commonwealth of Independent States market. Çoban et al. (2010) analyzed the competitiveness of Turkey's agricultural sector vis-à-vis the EU using the RCA index. Their findings revealed that Turkey possesses a comparative advantage in fruits, vegetables, sugar, and sugar products. Bojnec and Ferto (2014) examined the competitiveness of the dairy and dairy product exports of the 27 EU member states using the RCA index, considering the period 2000-2011. According to the results of their study, countries that joined the EU later, such as Estonia, Latvia, Lithuania, and Poland, are more competitive in dairy product exports than countries such as Belgium, Denmark, France, Ireland, and the Netherlands. In his study, Saraçoğlu (2015) measured the competitiveness of Turkey's agricultural products using the Balassa index after the country signed the GB agreement in 1995. His study analyzed the competitiveness of hazelnut, raisin, dried apricot, and dried fig exports for the period 1995-2011. According to the results of his study, the competitiveness ranking for the relevant period was Turkey, Italy, Spain, and Germany for hazelnuts; Turkey, Italy, the Netherlands, and France for raisins; Turkey, Germany, the Netherlands, and the United Kingdom for dried apricots; and Turkey, France, Germany, and Italy for dried figs. Sarıçoban and Kösekahyaoğlu (2017) measured the competitiveness of Turkey's agricultural products using Vollrath's Relative Export Advantage index in their study. According to the results of their study, 24 of Turkey's 66 agricultural product groups have a comparative advantage in exports, while 42 product groups have a comparative disadvantage. Bashimov (2017) examined the competitiveness of Belarus' dairy and dairy product exports, considering the period 2000-2015. In this context, he used the RCA, RSCA, and TBI indices. According to the analysis results, Belarus has a significant competitive advantage in dairy and dairy product exports.

Existing studies on agricultural trade and competitiveness emphasise that export performance is jointly shaped by resource endowments, production capacity, product and market diversification, logistics performance and external demand conditions. Empirical contributions in this field frequently rely on trade-based indicators such as the Revealed Comparative Advantage (RCA) index and its extensions to measure sectoral competitiveness over time and across countries, and often complement these indicators with information on market concentration, quality upgrading and logistics constraints. Within this broad literature, a common finding is that strong agricultural potential does not automatically translate into sustained export competitiveness unless it is supported by appropriate trade, infrastructure and logistics policies.

For developing and emerging economies, a growing body of work uses RCA, RSCA and related indices to assess agricultural competitiveness in specific product groups or country groups. These studies typically examine how changes in production structure, trade agreements, exchange rate movements and

logistics costs affect the pattern of specialisation in agricultural and food products, and they document the role of product and destination diversification in reducing vulnerability to external shocks. In many cases, agricultural exporters from middle-income countries are shown to possess a revealed comparative advantage in a relatively narrow range of products, while facing increasing competition from both traditional suppliers and new entrants in global markets.

In the case of Turkey, several contributions have analysed agricultural export performance and competitiveness using different data and methods. Camanzi et al. (2003), for example, investigate Turkey's competitive position in selected agricultural and food products and show that the country has significant comparative advantages in Mediterranean products such as fruits and vegetables. Other studies focusing on Turkey and comparable exporters underline the importance of product and market diversification, quality differentiation and logistics investments for sustaining agricultural export growth and competitiveness (Bashimov, 2016; Boansi, 2014; Kabak et al., 2018; Kaplan and Bozyiğit, 2021). This literature also points out that shifts in global value chains, changes in trade policy and supply chain disruptions, including those observed during the COVID-19 period, can alter the relative position of agricultural exporters in a relatively short time.

Against this background, the present study contributes to the existing literature in two main ways. First, it provides a systematic time-series analysis of Turkey's agricultural export competitiveness between 2014 and 2023 based on RCA and RSCA indicators, thereby covering a recent period that includes the COVID-19 shock and its aftermath. Second, it offers a comparative perspective by jointly evaluating Turkey's performance vis-à-vis both global agricultural export leaders and a group of structurally similar countries. In doing so, the study updates and extends earlier evidence on Turkey's agricultural comparative advantage and places recent developments in a broader international context (Camanzi et al., 2003; Miral and Utkulu, 2006; Bayramoğlu, 2010; Çoban et al., 2010; Saraçoğlu, 2015; Sarıçoban and Kösekahyaoğlu, 2017).

2. Conceptual Framework

The concept of international competitiveness in agriculture is multi-dimensional and encompasses differences in resource endowments, production technologies, costs, quality, logistics performance and market access conditions (Hesse, 2008; Cadot et al., 2011). Classical trade theories, such as the theories of absolute and comparative advantage, provide the basic intuition that countries tend to specialise in and export goods for which they have lower relative opportunity costs (Lutz, 2008). More recent approaches emphasise that this underlying advantage becomes observable through actual trade patterns and market shares, which can therefore be used to infer a country's relative strength in specific sectors (Balassa, 1965; Laursen, 2015).

In empirical work, this idea is operationalised through trade-based indicators that summarise how strongly a country is specialised in a given sector compared with the rest of the world (Balassa, 1965; Laursen, 2015; Startienė & Remeikienė, 2014). Among these indicators, the Revealed Comparative Advantage (RCA) index proposed by Balassa has become one of the most widely used measures (Balassa, 1965). The RCA index compares the share of a sector in a country's exports with the share of the same sector in world exports. If the sector's share in the country's exports is larger than its share in world exports, the index takes a value greater than 1 and the country is said to have a revealed comparative advantage in that sector. Values below 1 indicate a revealed comparative disadvantage. In this way, RCA provides a simple, comparable and intuitive summary of export specialisation (Startienė & Remeikienė, 2014).

However, RCA values are not symmetrically distributed around 1, which makes cross-sector and cross-country comparisons less straightforward. To address this issue, the Revealed Symmetric Comparative Advantage (RSCA) index has been proposed as a transformation of RCA that maps the values onto an interval between −1 and +1 (Laursen, 2015). Positive RSCA values indicate a comparative advantage, negative values indicate a comparative disadvantage and values close to zero point to a neutral position. Because of its symmetric scale, RSCA allows for easier comparison of the strength of advantage or disadvantage across sectors and countries, while remaining directly linked to the underlying RCA values (Laursen, 2015; Bruno et al., 2023).

In the context of agricultural trade, RCA and RSCA indices are particularly useful for tracking how a country's export specialisation evolves over time and how its position compares with that of other exporters (Camanzi et al., 2003; Miral & Utkulu, 2006; Çoban et al., 2010; Boansi, 2014; Bashimov, 2017; Sarıçoban & Kösekahyaoğlu, 2017). They capture whether a country is consistently specialised in agriculture relative to world trade, whether this specialisation is strengthening or weakening and how its competitive position differs from that of global leaders and structurally similar economies. At the same time, it is important to recognise that these indicators are based solely on observed trade flows and do not directly incorporate information on production costs, productivity, quality or profitability (Laursen, 2015; Bruno et al., 2023). In this study, RCA and RSCA are used as the main trade-based indicators to evaluate Turkey's agricultural export competitiveness over the period 2014–2023. Time-series patterns of these indices are analysed to identify changes before, during and after the COVID-19 shock, and cross-country comparisons are conducted to position Turkey vis-à-vis global agricultural export leaders and a group of structurally similar countries. The interpretation of the results explicitly takes into account the advantages of these indicators in terms of simplicity and comparability, as well as their limitations stemming from the absence of direct information on productivity and cost structures.

3. Method

3.1. Research Design

This study is based on a quantitative, comparative analysis design structured to reveal Turkey's competitiveness in foreign trade in the agricultural sector. The research aims to present cross-sectional and temporal comparisons within a time series covering the period from 2014 to 2023. The methodology employs the Revealed Comparative Advantage (RCA) index, which was developed by Balassa (1965), as well as its symmetric transformation: the Revealed Symmetric Comparative Advantage (RSCA) indicators. These indicators measure the extent to which a country's export performance in a given sector is competitive relative to the global average.

The research design aims to evaluate Turkey's performance over time and its position on a global scale. In this context, RCA and RSCA values are calculated annually and analysed in comparison with those of both global leader countries and countries with similar structural characteristics to Turkey. This two-way comparison provides normative and analytical depth, enabling a multidimensional assessment of Turkey's agricultural competitiveness.

3.2. Data Sources and Sectoral Classification

All data sets used in the study were compiled from two reliable, widely used international sources: the World Trade Organization (WTO) and the Observatory of Economic Complexity (OEC). The OEC provided annual export data for Turkey and the comparison countries, broken down by product and sector (OEC, 2025). Global export figures and countries' total export volumes were used to cross-check the WTO data. The agricultural sector was defined in accordance with the WTO's 'Total Agricultural Products' classification (WTO, 2024). This included subcategories such as cereals, fruits and vegetables, oilseeds, nuts, and processed agricultural products. Harmonised System (HS) 1992 coding was used as the basis for data collection and only product groups with proven agricultural characteristics were included in the analysis. This classification was chosen to ensure statistical integrity and increase the reliability of sectoral comparisons.

3.3. Comparison Criteria and Country Selection

The study's basic comparative analysis framework is based on a two-level structure for comparison, consisting of global leader countries and countries with structural similarities. The aim of this structure is to compare Turkey's agricultural export performance in absolute terms with that of the world's strongest agricultural exporters, and in relative terms with countries that have similar economic and regional structures to Turkey. Therefore, the study seeks to answer the questions 'How competitive are we?' and 'Are we as competitive as expected?'

3.3.1. Global Leading Countries

This study evaluated the countries that ranked in the top four in terms of total agricultural export volume in 2023 in the 'global leaders' category. These countries provide a meaningful basis for comparison in

terms of both absolute export volume and their level of sectoral specialisation and structural competitiveness indicators (RCA and RSCA).

Thanks to its vast agricultural land, high productivity levels and export-oriented production capacity, Brazil is a leader in the global grain, sugar and meat markets. Large-scale industrial agricultural production has enabled the country to consistently achieve high RCA and RSCA scores. Meanwhile, the United States has become a major player in the production and export of high-value products thanks to its advanced agricultural technologies, high level of mechanisation, and investments in R&D. The country also ensures effective access to global markets for agricultural products through its logistics infrastructure and foreign trade agreements. Canada stands out for its organised, sustainable agricultural production systems. Its specialisation in cereals, oilseeds, and processed agricultural products enhances the country's international competitiveness. China plays a central role in global agricultural supply chains thanks to its production scale and foreign trade capacity. However, despite the recent increase in agricultural exports, the country generally maintains a production model based on domestic consumption, which limits RCA indicators (FAOSTAT, 2025).

3.3.2. Countries with Structural Similarities

To measure Turkey's sectoral competitiveness more realistically, four structurally similar countries were identified based on variables such as climate, product patterns, level of agricultural technology, and regional location. These countries allow for a more accurate contextual assessment of Turkey's performance.

Italy and Turkey share significant structural similarities in terms of their agricultural production structure and specialisation in products such as olives, grapes and tomatoes, both of which are characteristics of the Mediterranean climate. This country stands out in the production and export of high-value food products, setting itself apart through its branding and geographical indication policies. Spain is in direct competition with Turkey due to its strong position in the production of citrus fruits, olive oil and fruit and vegetables. Advanced irrigation systems and support from European Union agricultural policies are among the main factors increasing the country's competitiveness. The Netherlands is a model country where advanced technologies and logistics infrastructure are used extensively in agriculture, resulting in highly efficient production. Despite its small land area, its strong foreign trade network and the integration of its agriculture and industry sectors directly impact its export performance. Ukraine is comparable to Turkey in terms of its Black Sea coastline, extensive and fertile agricultural land, and specialisation in grain and oilseed production. Despite recent geopolitical developments, the country's agricultural export potential and comparative advantage remain high (FAOSTAT, 2025).

These countries provide a more realistic context in which to interpret Turkey's comparative advantage values in terms of geography, structure and sector. Additionally, concrete policy recommendations can be developed by examining the support mechanisms and export strategies implemented by these countries from a policymaker's perspective. Such a selection ensures that comparative analyses cover both normative (actual position) and strategic (ideal areas of development) dimensions. Thus, Turkey's competitive strength in agricultural exports is assessed both absolutely and relatively.

3.4. Index Calculation Method

The empirical analyses of the study are based on the RCA (Revealed Comparative Advantage) index developed by Balassa and the RSCA (Revealed Symmetric Comparative Advantage) index transformed into a symmetric form by Laursen. The RCA value was calculated using the following formula:

$RCA_{ij} = (X_{ij}/X_{it}) / (X_{wj}/X_{wt})$

This is where:

- Xij, country i's exports of product;
- Xit, country i's total exports;
- Xwj, global exports of product;
- Xwt, represents total global exports.

RCA > 1 value, it shows that Turkey has a comparative advantage in that sector.

The following transformation yields symmetrical RCA (RSCA):

$RSCA_{ij} = (RCA_{ij}-1) / (RCA_{ij}+1)$

The RSCA value ranges from -1 to +1, with positive values indicating superiority and negative values indicating relative disadvantage. Calculations were performed in Excel and analysed on an annual basis using country comparison tables. This allowed both periodic trends and differences between countries to be tracked numerically. By construction, the indices are calculated for each year between 2014 and 2023, so that the empirical analysis explicitly incorporates the COVID-19 shock years 2020–2021 into the overall trajectory of Turkey's revealed and symmetric comparative advantage in agriculture. In addition to RCA and RSCA, the analysis follows product concentration and diversification by computing, for each year in 2014–2023, the number of agricultural product groups in which Turkey records RCA>1 and the combined export share of the five largest product groups in total agricultural exports, so that growth in export value can be evaluated together with changes in export composition.

4. Findings

4.1. Turkey's Agricultural Exports

Turkey's agricultural export performance has shown steady growth throughout the 2014–2023 period and has gained remarkable momentum, especially in the post-pandemic period. This section analyses annual change trends, significant turning points, and structural transformation signals related to Turkey's total agricultural exports. The export data obtained over the ten-year period indicates that the growth in the sector is not merely a numerical increase but also signifies a significant transformation in terms of product diversity and logistics capacity. To underpin the discussion on product diversity and logistics, the study therefore reports the evolution of the number of product groups with RCA>1, the export share of the top five product groups and shifts in the geographical distribution of Turkey's main destination markets as indirect indicators of diversification and logistics performance.

Table 1. Turkey's Agricultural Export Value by Years (Billion USD)

Year	Agricultural Exports (Billion USD)
2014	19,54
2015	18,04
2016	17,58
2017	18,15
2018	18,78
2019	19,11
2020	19,96
2021	24,25
2022	29,05
2023	30,26
Average	21,47

Source: TIM, 2024

According to the data, Turkey's agricultural export value was approximately USD 19.54 billion in 2014, but showed a slight downward trend in 2015 and 2016. This decline is largely attributed to international price fluctuations, exchange rate volatility and shrinking demand from regional trading partners. However, exports began to increase again in 2017, and this trend continued in a limited but positive direction until 2020.

Despite the global trade contraction caused by the COVID-19 pandemic in 2020, it was an exceptional year for Turkey's agricultural exports. The value of exports reached USD 19.96 billion, showing an increase compared to the previous year. This increase is related to the agricultural sector gaining a more pivotal position in the global market during a period of heightened food security concerns. Supplementary trade statistics confirm the relative resilience of agricultural exports at the onset of the pandemic. According to official data from the Ministry of Agriculture and Forestry, during the January-April 2020 period, exports from agriculture-related sectors increased by approximately 2.9%, reaching

approximately US$7.8 billion, while exports from industrial and mining sectors decreased by 16.2% and 6.4%, respectively, compared to the same period in 2019 (Ministry of Agriculture and Forestry, 2020). In the broader January-July 2020 period, total agricultural exports increased by 3.9%, reaching approximately US$13.2 billion, while exports in most other sectors remained below their pre-pandemic levels (Anadolu Agency, 2020). This Trade data suggests that, unlike many other tradable sectors, agriculture maintained and even strengthened its export performance during the acute phase of the COVID-19 shock.

In the post-pandemic period (2021–2023), Turkey's agricultural exports gained momentum, reaching 30.26 billion USD by 2023. The surge experienced in 2021 and 2022 can be attributed to new logistics investments, an increase in fresh fruit and vegetable exports, and diversification of external demand. Product diversity in agriculture is supported by the increasing share of high value-added products such as citrus fruits, olives, figs, and cherries in export items.

Beyond the increase in total export value summarised in Table 1, complementary descriptive indicators also point to a simultaneous widening of Turkey's export basket and destination markets over the sample period. Sectoral reports for the mid-2010s indicate that by 2015 Turkey was exporting approximately 1,707 distinct agricultural and food products to 190 countries, while by 2018 around 1,800 different agro-food product types were being shipped to more than 190 destinations with an export value of about USD 17.7 billion. More recent investment promotion data show that in 2022 roughly 1,800 kinds of agricultural products were exported to over 190 countries, generating close to USD 30 billion in export revenue. Furthermore, cereals and pulses alone were delivered to 216 countries, autonomous regions and free zones in 2022, highlighting the breadth of Turkey's export reach even within a single product group. Taken together, these figures suggest that the post-2014 expansion of Turkey's agricultural exports cannot be explained solely by price or volume effects but has been accompanied by a sustained diversification in both product range and geographical coverage (COMCEC, 2019**;** TİM, 2024).

Table 2 provides complementary descriptive evidence on the evolution of product variety, market coverage and logistics capacity that underpins the quantitative RCA and RSCA results.

Table 2. Descriptive indicators of export diversification and logistics capacity in Turkey

Panel A Product and Market Diversification (Agricultural Exports)

Year or period	Indicator	Evidence	Source (short)
2014-2015	Product and destination variety	More than 1,600 varieties of agricultural products exported to around 180 countries; by 2015 about 1,707 agricultural and food products exported to 190 countries.	(COMCEC, 2019)
2018	Product variety and country coverage	Around 1,800 kinds of agricultural products exported to more than 190 countries with an export value of roughly USD 17.7 billion.	(Demirhan & Warfa, 2021).
2022	Product variety, country coverage and export value	Approximately 1,800 agricultural products exported to over 190 countries, generating about USD 30 billion of export revenue.	(TİM, 2024)

Panel B Logistics and cold chain capacity

Indicator	Year or period	Numeric evidence	Source (short)
Cold storage capacity level	2018	Total cold storage capacity around 14 million m^3; Turkey ranked among the top ten countries worldwide.	Tarım ve Orman Bakanlığı, 2021
Position in global cold storage market	2021	Turkey ranked eighth globally by refrigerated warehouse capacity; average warehouse size ≈ 729 m^3; refrigerated warehouse market development index ≈ 0.242.	Tarım ve Orman Bakanlığı, 2021
Logistics Performance Index ranking	2014–2018	Turkey ranked 30th in 2014, 34th in 2016 and 47th in 2018 among roughly 160 countries.	GFSI, 2014; GFSI, 2016; GFSI, 2018

Note: Values are approximate and refer to agricultural export and logistics indicators. Product diversity refers to the number of different categories of agricultural food products exported, while target scope refers to the number of partner countries (and, where applicable, autonomous regions and free zones). Minor differences between the export values in this table and those in Table 2 may be due to differences in scope and classification between data sources.

These descriptive indicators are consistent with empirical studies that link better logistics performance, cold-chain infrastructure and port connectivity to higher export volumes and a broader export basket. For Turkey, World Bank and OECD assessments emphasise that improvements in transport and logistics performance since the early 2000s have significantly strengthened the country's trade competitiveness, especially once performance is adjusted for income level. Scenario-based and econometric analyses further show that upgrades in logistics performance indices for Turkey and comparable exporters translate into larger and more diversified export baskets (Kabak et al., 2018; Kaplan & Bozyiğit, 2021; Shikur, 2022). Complementary case-study evidence from horticulture-exporting countries also demonstrates that investments in cold-chain logistics and refrigerated warehousing reduce post-harvest losses and improve export competitiveness in perishable products, echoing the role of cold storage capacity highlighted in Table 2 (Cavalier et al., 2014; Islam et al., 2022; Rukundo, 2024; Haque et al., 2025; Osmonkulova and Toibaeva, 2025).

When general trends are considered, the growth in Turkey's agricultural exports can be attributed to increased demand, infrastructure improvements in the sector, export incentives and enhanced access to foreign markets. Data from the last three years shows that public policies and private sector strategies aimed at increasing Turkey's agricultural competitiveness have been somewhat effective. However, to ensure the long-term sustainability of this growth, comprehensive solutions must be developed to address structural issues such as land fragmentation and inadequate irrigation infrastructure.

4.2. RCA and RSCA Values of Turkey

Turkey's published comparative advantage (RCA) and symmetric comparative advantage (RSCA) values for the agricultural sector are important indicators of trends in the country's sectoral competitiveness between 2014 and 2023. The annual RCA and RSCA values are shown below:

Table 3. Turkey's Agriculture Sector RCA and RSCA Values (2014-2023)

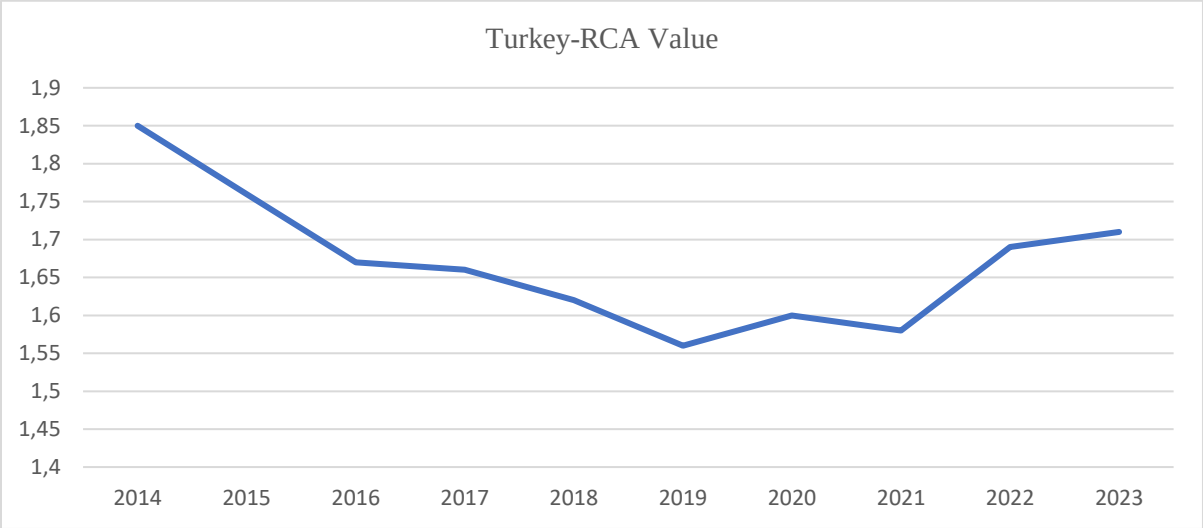
Year	**RCA Value**	**RSCA Value**
2014	1,85	0,30
2015	1,76	0,28
2016	1,67	0,25
2017	1,66	0,25
2018	1,62	0,24
2019	1,56	0,22
2020	1,60	0,23
2021	1,58	0,22
2022	1,69	0,26
2023	1,71	0,26
Average	**1,67**	**0,25**

Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

As shown in Table 3, Turkey's RCA values remain in a relatively narrow band between 1.56 (2019) and 1.85 (2014), with a period average of 1.67, while RSCA values range from 0.22 to 0.30 with an average of 0.25. These figures confirm that Turkey maintained a structural comparative advantage in agriculture throughout the 2014–2023 period.

Examining the RCA values shows that Turkey maintained a structural advantage by remaining above 1 throughout this period. On the other hand, RSCA values show a slight recovery trend, particularly after 2020. Average values suggest that Turkey has sustainable, albeit limited, competitive power in agricultural exports.

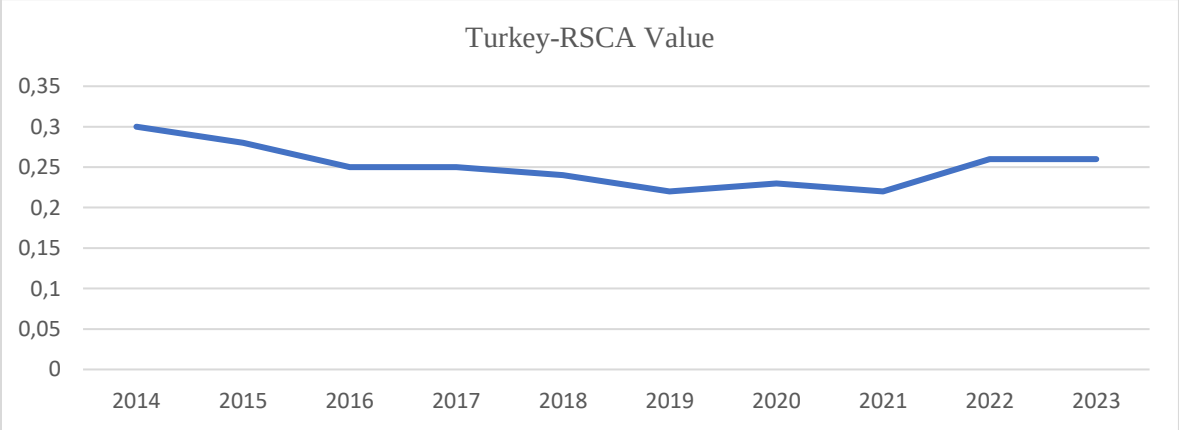
Figure 1. Turkey's RCA Curve



Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

Figure 1 shows how Turkey's RCA values in the agricultural sector have changed over the years. After achieving a high value of 1.85 in 2014, Turkey experienced a decline in subsequent years. However, this decline reached its lowest point in 2019, after which there was a gradual recovery in the post-pandemic period. The RCA is expected to approach 1.70 again in 2022 and 2023, indicating that Turkey is regaining momentum in agricultural exports. This can be attributed to the restructuring of the export basket, increased logistical flexibility and rising demand driven by concerns about global food security. Together with the numerical summary in Table 3, Figure 1 illustrates the initial decline in RCA values up to 2019 and their subsequent recovery after 2020.

Figure 2. Turkey's RSCA Curve



Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

As the symmetrical version of the RCA index, RSCA values reveal Turkey's relative competitive strength in greater detail. Examining the RSCA series reveals a downward trend from 0.30 to 0.25 during the period from 2014 to 2016. The index reached a low of 0.22 in 2019, rising to 0.26 in subsequent years. This reflects improvements in agricultural production infrastructure and cold chain logistics capacity, as well as positive shifts in regional demand following the pandemic. The fact that Turkey's RSCA value remains positive indicates that it has maintained a competitive presence in this sector. Figure 2, read alongside Table 3, confirms that Turkey's RSCA values remained positive and relatively stable, with a mild dip before 2019 and a gradual strengthening in the post-pandemic period.

Taken together, the persistence of RCA values above 1 and positive RSCA scores throughout the 2014–2023 period, including the COVID-19 years 2020–2021, indicates that Turkey's comparative advantage in the agricultural sector has been relatively resilient rather than being confined to the pre-pandemic years. This interpretation is consistent with the pandemic-era trade indicators discussed in Section 4.1, where agricultural exports expanded while total, industrial and mining exports contracted. The next section will analyse how Turkey's performance compares with that of global leaders and structurally similar economies.

4.3. Comparison with Global Leading Countries

Turkey's published comparative advantage (RCA) and symmetric RCA values for the agricultural sector provide an important indicator for analyzing trends in the country's sectoral competitiveness during the 2014–2023 period. The RCA and RSCA values calculated on an annual basis are presented below. These indicators reveal Turkey's comparative position relative to four major agricultural exporting countries—Brazil, the United States, Canada, and China—and provide an opportunity to assess the country's relative level of superiority.

Table 4. RCA and RSCA Values for Agriculture in Leading Countries Worldwide (2014–2023)

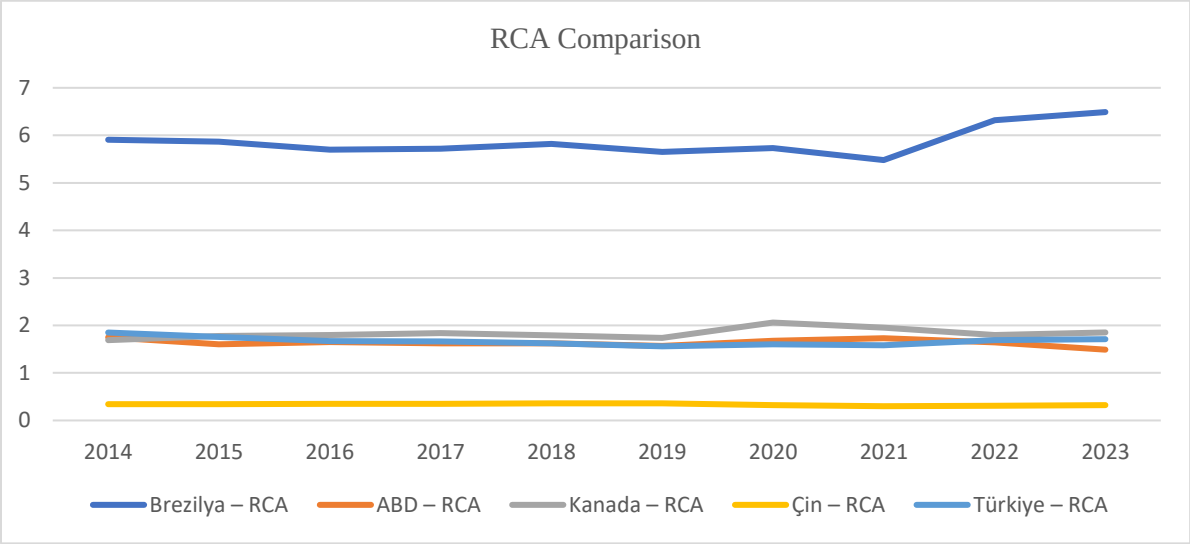
Country / Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average
Brazil – RCA	5,91	5,87	5,70	5,72	5,82	5,65	5,73	5,48	6,32	6,49	5,87
Brazil – RSCA	0,71	0,71	0,70	0,70	0,71	0,70	0,70	0,69	0,73	0,73	0,71
USA – RCA	1,75	1,60	1,65	1,62	1,62	1,57	1,68	1,73	1,64	1,49	1,64
USA – RSCA	0,27	0,23	0,25	0,24	0,24	0,22	0,25	0,27	0,24	0,20	0,24
Canada – RCA	1,69	1,78	1,80	1,84	1,79	1,74	2,06	1,95	1,80	1,85	1,83
Canada – RSCA	0,26	0,28	0,29	0,30	0,28	0,27	0,35	0,32	0,29	0,30	0,29
China – RCA	0,34	0,34	0,35	0,35	0,36	0,36	0,32	0,30	0,31	0,32	0,33
China – RSCA	–0,49	–0,50	–0,48	–0,49	–0,48	–0,47	–0,52	–0,54	–0,53	–0,51	–0,50
Turkey – RCA	**1,85**	**1,76**	**1,67**	**1,66**	**1,62**	**1,56**	**1,60**	**1,58**	**1,69**	**1,71**	**1,67**
Turkey – RSCA	**0,30**	**0,28**	**0,25**	**0,25**	**0,24**	**0,22**	**0,23**	**0,22**	**0,26**	**0,26**	**0,25**

Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

Numerically, Table 4 shows that Brazil's average RCA and RSCA values over 2014–2023 are 5.87 and 0.71, respectively, whereas Turkey's averages are 1.67 and 0.25. The United States and Canada record average RCA values of 1.64 and 1.83 and RSCA values of 0.24 and 0.29, respectively, while China's average RSCA of -0.50 signals a persistent comparative disadvantage in agriculture.

Table 4 shows Turkey's competitiveness level in the agricultural sector compared to the world's leading exporting countries. Brazil is the clear leader in terms of both RCA and RSCA. The US and Canada are in the middle range, but show a stable superiority. China, on the other hand, is at a structural disadvantage. Turkey's average RCA value is just below that of developed countries such as the United States and Canada, while its RSCA value follows a similar trend to these countries. This indicates that Turkey has increased its agricultural competitiveness, particularly in the period after 2020.

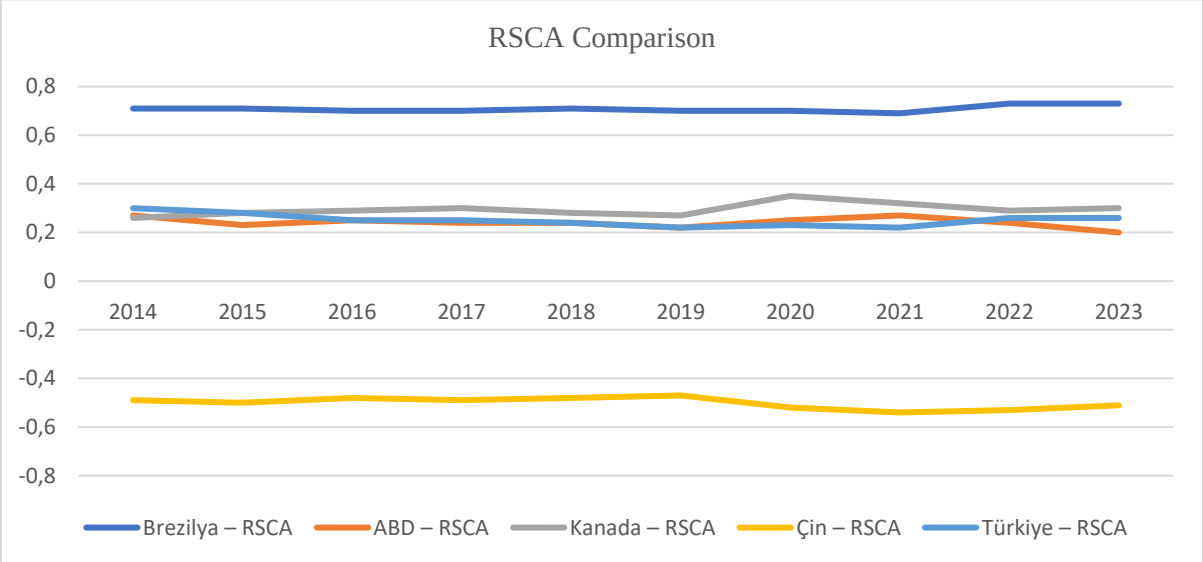
Figure 3. Turkey and Global Leaders – RCA Comparison



Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

Figure 3 clearly reflects Brazil's clear superiority in the sector, while showing that Turkey is at a similar level to the United States and Canada. Turkey's RCA values have shown an upward trend since 2019.

Figure 4. Turkey and Global Leaders – RSCA Comparison



Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

The RSCA comparison shows that Turkey has a positive comparative advantage in agriculture and that this has grown stronger over time. While Brazil's RSCA values remain consistently high, Turkey stands out from China's negative values, demonstrating a structural advantage. Turkey's RSCA gains after 2020 reflect its growing involvement in global food supply chains and increasing logistics capacity. However, this interpretation of rising logistics capacity is based on such indirect trade-based indicators and should be regarded as suggestive rather than definitive evidence on logistical infrastructure and performance.

While Turkey's agricultural sector remains at an intermediate level compared to global leaders, 10-year trends, particularly the recent recovery, indicate significant potential in this area. While the gap with leading countries such as Brazil remains significant, Turkey's competitive level, which is comparable to

that of Canada and the United States, suggests a position that could be further enhanced through strategic policies. Focusing on modernisation and branding in this sector could further elevate Turkey's position.

4.4. Comparison with Structurally Similar Countries

In order to analyze Turkey's competitive strength in agricultural exports from a more comprehensive perspective, it is necessary to compare it not only with global leaders but also with countries that have similar economic and geographical structures. In this context, a comparative analysis has been conducted with Italy, Spain, the Netherlands, and Ukraine, which have similar production patterns, regional agricultural capacity, and foreign trade structures to Turkey. Below are the RCA and RSCA values for these countries for the period 2014–2023.

Table 5. RCA and RSCA Values in Structurally Similar Countries (2014–2023)

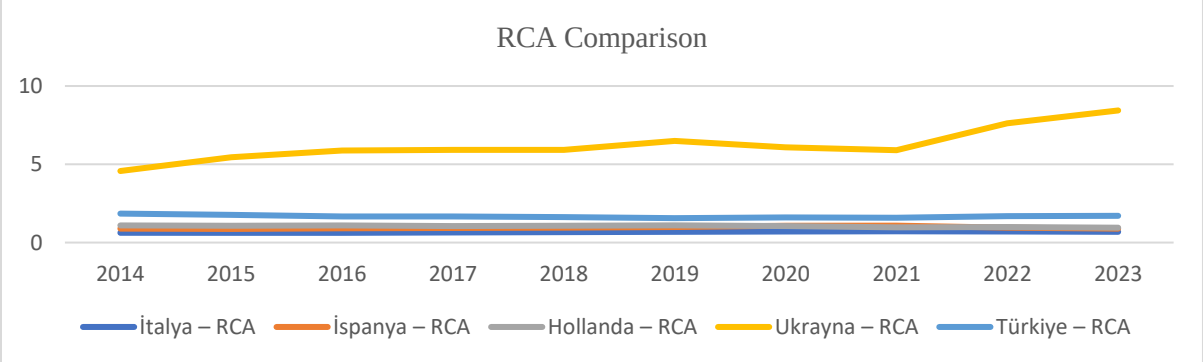
Country / Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average
Italy – RCA	0.63	0.62	0.62	0.65	0.67	0.69	0.71	0.72	0.70	0.69	0.67
Italy – RSCA	–0.23	–0.23	–0.23	–0.22	–0.20	–0.18	–0.17	–0.16	–0.18	–0.18	–0.20
Spain – RCA	0.88	0.87	0.92	0.93	0.96	1.00	1.07	1.08	0.96	0.90	0.96
Spain – RSCA	–0.07	–0.07	–0.04	–0.04	–0.02	0.00	0.03	0.04	–0.02	–0.05	–0.02
Netherlands – RCA	1.09	1.07	1.09	1.06	1.08	1.10	1.05	0.97	0.99	0.95	1.05
Netherlands – RSCA	0.04	0.03	0.04	0.03	0.04	0.05	0.03	–0.02	–0.01	–0.02	0.02
Ukraine – RCA	4.57	5.45	5.87	5.93	5.92	6.50	6.08	5.90	7.62	8.44	6.23
Ukraine – RSCA	0.64	0.69	0.71	0.71	0.71	0.73	0.72	0.71	0.77	0.79	0.72
Turkey – RCA	**1.85**	**1.76**	**1.67**	**1.66**	**1.62**	**1.56**	**1.60**	**1.58**	**1.69**	**1.71**	**1.67**
Turkey – RSCA	**0.30**	**0.28**	**0.25**	**0.25**	**0.24**	**0.22**	**0.23**	**0.22**	**0.26**	**0.26**	**0.25**

Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

In terms of levels, Table 5 indicates that Ukraine's RCA fluctuates between 4.57 and 8.44 with a period average of 6.23 and its RSCA between 0.64 and 0.79 with an average of 0.72, whereas Turkey's average RCA and RSCA values are 1.67 and 0.25. By contrast, Italy, Spain and the Netherlands record average RSCA values around zero or negative, indicating a much weaker or borderline comparative advantage in agricultural exports.

Based on the data presented in Table 5, Ukraine is the clear leader in this group with high RCA and RSCA values. Turkey ranks second, particularly ahead of Spain, the Netherlands, and Italy in terms of RSCA, demonstrating a stable and growing competitive advantage. Italy's consistently negative RSCA values indicate a structural disadvantage, while Spain and the Netherlands show fluctuating and borderline values.

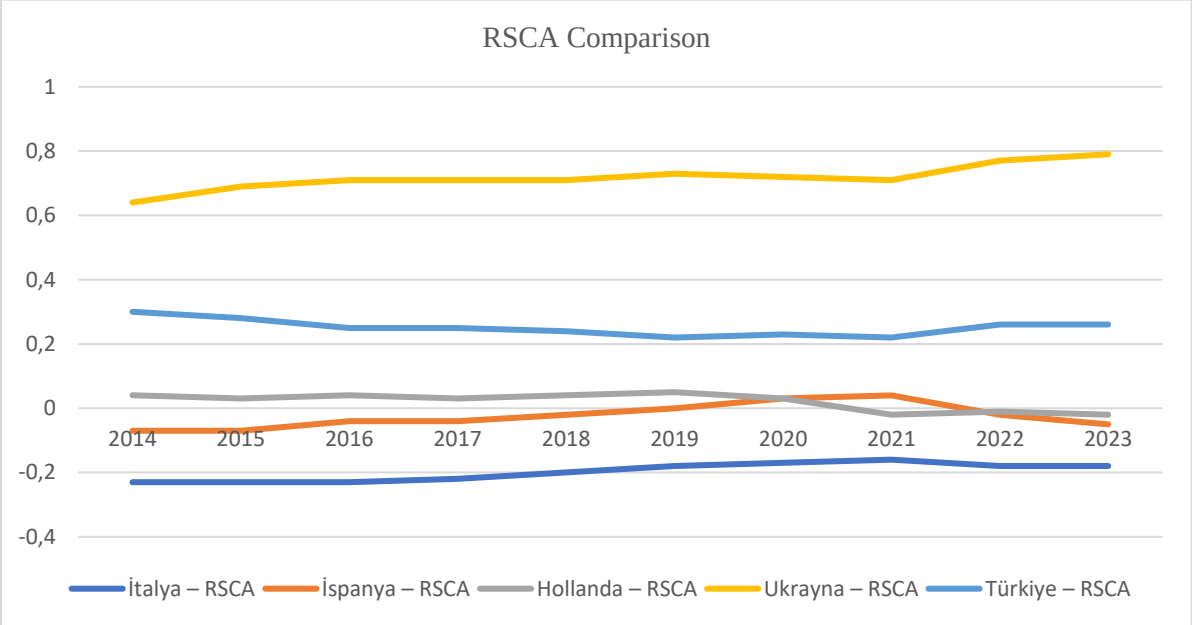
Figure 5. Turkey and Similar Countries – RCA Comparison



Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

RCA curves show that, among similar countries, Turkey ranks second in terms of average RCA values. While Ukraine's leadership may not be a direct target for Turkey, given its agricultural land area and grain-focused production power, it is clear that Turkey has a more competitive structure than developed markets such as Italy, Spain and the Netherlands.

Figure 6. Turkey and Similar Countries – RSCA Comparison



Source: RCA and RSCA values were calculated by the author using data from UN Comtrade, 2024 and the World Bank, 2024.

The RSCA comparison clearly shows that Turkey has a positive comparative advantage in agricultural exports. While the RSCA values of the Netherlands and Spain sometimes approach the neutral zone, Turkey's remain consistently positive. This suggests that Turkey has developed a stable and sustainable export profile.

When compared to structurally similar countries, this analysis shows that Turkey has a stronger comparative advantage in agricultural exports, particularly compared to European countries. When countries with absolute advantages, such as Ukraine, are excluded, Turkey most clearly demonstrates its competitive advantage among this group of countries. Continued investment in agricultural infrastructure and encouragement of product-based differentiation strategies are important for maintaining and deepening this advantage.

5. Discussion

Turkey's agricultural export performance during the period from 2014 to 2023 has shown remarkable growth in terms of quantitative growth indicators and published comparative advantage indices (RCA and RSCA). Throughout this period, Turkey has maintained and occasionally strengthened its competitive position in the agricultural sector, achieving steady export growth and establishing itself as a major player in global agricultural trade. The consistent presence of RCA values above 1 statistically confirms Turkey's comparative advantage in this sector, while positive RSCA values suggest that this advantage has become structural and represents a competitive strength that is independent of short-term fluctuations. The acceleration observed, particularly after 2020, can be attributed to global food security concerns triggered by the pandemic, Turkey's ability to demonstrate flexibility among exporting countries, and the impact of structural policies in the domestic market.

The discussion in this section is grounded in the descriptive patterns reported in Tables 1–4 and Table 2 and in the time profiles depicted in Figures 1–6, which jointly summarise the evolution of Turkey's export values, RCA and RSCA indices and comparative position vis-à-vis benchmark countries.

From a time series analysis perspective, the downward trend in the RCA and RSCA indices between 2014 and 2019 indicates weaknesses and structural bottlenecks in the sector. These issues can be attributed to factors such as productivity problems among small-scale producers, inadequate irrigation infrastructure and limited integration of the export value chain. However, the recovery observed after 2020 was thanks to the restructuring of food supply chains, an increased share of high-value product groups such as fresh fruit and vegetables in exports, and investments in logistics infrastructure. Widespread adoption of cold chain systems and technological advancements in storage and packaging have improved the quality of agricultural exports, thereby supporting their competitiveness.

The benchmarking data of the study has provided an opportunity to evaluate Turkey's position not only in terms of its performance over time, but also in a global context. Comparisons with global leaders reveal a significant gap between Turkey and countries with absolute advantages, such as Brazil. However, when compared with developed countries such as the United States and Canada, Turkey's performance is relatively balanced. Turkey follows a trajectory that is quite close to the average RCA and RSCA levels of these countries and has been able to achieve stronger values at times in the period after 2020. This situation shows that Turkey has developed strategic competitiveness in certain product groups. For example, Turkey is a leader in the global market for products such as cherries, figs and citrus fruits, and RSCA values show much more pronounced superiority in these products.

Comparisons with structurally similar countries have provided a more realistic and applicable frame of reference for evaluating Turkey. Analyses conducted with European countries such as Italy, Spain and the Netherlands show that Turkey outperforms these countries in terms of RSCA. Italy's consistently negative RSCA values, for example, reveal a structural disadvantage in terms of agricultural competitiveness, whereas Turkey's positive and increasing RSCA value demonstrates that its relative superiority is based on solid foundations. While Ukraine's leadership in RCA and RSCA is understandable given its vast agricultural land and high grain production capacity, it is noteworthy that Turkey has outperformed structurally similar countries outside of Ukraine.

These findings demonstrate Turkey's strategic advantages in the agricultural sector, but also highlight various challenges regarding the sustainability of these advantages. Potential areas that could further enhance Turkey's competitiveness include integrating small-scale production structures with marketing capacity, making agricultural production resilient to climate change, obtaining product quality certificates, and branding in line with international standards. Furthermore, the long-term increase in RSCA values is related not only to an increase in export volumes, but also to specialisation in product groups and reliability in foreign markets.

From a policy perspective, the pattern of rising RSCA values in the post-2020 period together with the widening of Turkey’s export basket and destination markets is also in line with the broader literature on export diversification and logistics. Studies on developing and emerging economies report that diversification of export products and markets is associated with higher and more stable growth, particularly when countries move into higher value-added agricultural and food products (Hesse, 2008; Cadot et al., 2011; Benli, 2018). At the same time, empirical work on Turkey and other agricultural exporters shows that improvements in logistics performance indices, trade facilitation and cold-chain infrastructure are positively correlated with export volumes and competitiveness in agro-food trade (Tozanli, 2014; Kabak et al., 2018; Kaplan & Bozyiğit, 2021; Osmonkulova and Toibaeva, 2025; Shikur, 2022; World Bank, 2014). These findings provide an external empirical benchmark that supports the interpretation of Turkey’s post-pandemic recovery in RCA and RSCA values as being underpinned by structural improvements in logistics capacity and product-based differentiation rather than purely cyclical factors.

6. Conclusion and Policy Recommendations

This study aims to evaluate Turkey's position relative to global leaders and similar countries by analysing its competitiveness in agricultural exports from 2014 to 2023 using the revealed comparative advantage (RCA) and symmetric RCA (RSCA) indices. The findings show that Turkey exhibited a positive comparative advantage in agriculture in general during the decade in question and gradually strengthened this advantage, particularly after 2020. While RCA values consistently exceeding 1 confirm Turkey's relative advantage across the sector, the positive and upward trend of RSCA values

indicates this advantage is becoming structural. Benchmarking analyses have revealed Turkey's level of competition with global leaders Brazil, the USA and Canada. Turkey, which has similar RCA and RSCA levels with Canada and the USA, offers a moderate but sustainable competitive position compared to these countries. Brazil, on the other hand, showed a clear leadership in this period, making a difference in terms of both indices and export volume. China's negative RSCA values, on the other hand, revealed its structural weaknesses. In order to narrow the gap with these countries, Turkey needs to improve not only its export volume but also its export value chain.

Comparisons with structurally similar countries, namely Italy, Spain, the Netherlands and Ukraine, reveal Turkey's relative advantage more clearly. Excluding Ukraine, Turkey has emphasised its competitiveness by achieving higher RCA and RSCA values compared to the other three countries. This advantage is based on product diversity, agricultural production capacity, credibility in foreign markets and logistics infrastructure investments.

In line with these findings, and in light of recent empirical work on export diversification, logistics performance and agro-food trade in Turkey and comparable economies, the following policy recommendations can be developed. Deepening Infrastructure and Logistics Investments: Expanding cold chain systems, storage and transport infrastructure in rural areas will support the sustainability of RSCA values by improving export quality. Turkey-specific studies that link logistics performance to trade outcomes, as well as cross-country evidence for agricultural exporters, show that improvements in transport infrastructure, customs efficiency and cold-chain capacity are systematically associated with higher export volumes and greater competitiveness in agro-food trade. World Bank and OECD assessments similarly underline that Turkey’s above-average logistics performance, once adjusted for income level, has been an important driver of its export growth. Recent market data indicating that Turkey’s cold-chain logistics market is expected to grow from about USD 2.0 billion in 2024 to roughly USD 3.6 billion by 2032 further suggests that sustained investment in this area can reinforce the country’s comparative advantage in perishable agricultural products

Product-based Differentiation and Branding: Turkey should concentrate its competitive advantage especially in fruits, vegetables and processed products. Geographical marking, organic certification and promotion of these products in foreign markets should be supported. This focus is consistent with empirical studies showing that Turkey already exhibits strong revealed comparative advantage in fresh fruit, vegetables, nuts and selected processed products, and with the broader literature documenting that export diversification into higher value-added and more differentiated products supports growth and stabilises export revenues in developing economies

Small Producer Integration: Integration of small-scale farmers into the export chain should be ensured by increasing co-operative and digital marketing opportunities. Evidence from horticulture-exporting countries shows that contract farming, producer organisations and co-operative arrangements reduce transaction costs and facilitate joint investment in cold-chain and logistics infrastructure, thereby improving export performance and rural livelihoods. Strengthening farmer co-operatives and producer organisations in Turkey can therefore be seen as a complementary channel to scale up logistics capacity and product-based differentiation in agricultural exports.

Climate Resilient Agricultural Policies: Irrigation technologies, seed breeding and sustainable agricultural practices should be prioritised against climate change. This recommendation is consistent with international evidence that climate-resilient agricultural practices and improved water management help to preserve comparative advantage in climate-sensitive crops and stabilise export performance over the long run.

Foreign Trade Policy Harmonisation: Harmonisation of agricultural policies with international trade agreements will contribute to reducing non-tariff barriers to access foreign markets. These priorities are aligned with COMCEC policy recommendations on promoting agri-food trade networks among OIC member countries, which emphasise the harmonisation of trade procedures, quality standards and logistics-related regulations to reduce non-tariff barriers in agricultural trade.

Overall, Turkey has a moderate but rising competitiveness in the agricultural sector. Supporting this strength with strategic reforms and investment-oriented policies will enable the country to become a stronger actor in agricultural exports, both in terms of volume and quality. A central limitation of the

study is that arguments regarding product diversification and logistics capacity rely on export data and proxy indicators rather than detailed micro-level information on infrastructure, transport costs and cold-chain capacity, which future research could address.

Despite these contributions, the analysis is subject to several limitations. First, the empirical strategy is descriptive and relies exclusively on RCA and RSCA indices and simple diversification indicators constructed from aggregated WTO, OEC and TIM data, so the results cannot be interpreted as causal effects of logistics or policy variables on export performance. Second, the use of total agricultural exports as the unit of analysis obscures within-sector heterogeneity across specific product groups and destination markets, which may be important for understanding the micro foundations of comparative advantage. Third, arguments regarding product diversification, logistics performance and cold-chain capacity are based on export outcomes and secondary proxy indicators rather than on direct micro-level data on infrastructure, transport costs or firm behaviour. Finally, the ten-year window 2014–2023, although long enough to cover the COVID-19 shock, does not allow for an evaluation of longer-run structural breaks or the full impact of very recent policy changes. Future research that combines product- and destination-level data with firm-level and infrastructure indicators, and that estimates causal models alongside alternative competitiveness indices, would help to address these limitations and refine the policy implications.

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Araştırma Makalesi

Comparative Analysis of Turkey's Competitive Position in Agricultural Exports with Selected Competitor Countries

Türkiye'nin Tarım İhracatındaki Rekabetçi Konumunun Seçilmiş Rakip Ülkeler ile Karşılaştırmalı Analizi

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Genişletilmiş Özet

Bu çalışma, 2014-2023 döneminde Türkiye'nin tarım ihracatındaki rekabetçi konumunu nicel olarak ortaya koymayı ve bu konumu hem küresel lider ülkeler hem de yapısal olarak benzer ekonomilerle karşılaştırarak değerlendirmeyi amaçlamaktadır. Bu çerçevede Açığa Çıkan Karşılaştırmalı Üstünlük endeksi ve onun simetrik dönüşümü olan RSCA kullanılarak Türkiye'nin tarımsal karşılaştırmalı üstünlüğünün düzeyi, seyri ve sürekliliği analiz edilmekte, bulgular Brezilya, Amerika Birleşik Devletleri, Kanada ve Çin gibi büyük ihracatçılar ile İtalya, İspanya, Hollanda ve Ukrayna gibi benzer üretim desenine sahip ülkelerle karşılaştırılmaktadır.

Çalışmanın veri seti Dünya Ticaret Örgütü, UN Comtrade, Dünya Bankası, OEC, TİM ve TÜİK gibi kurumsal kaynakların tarım ürünleri ve toplam ihracat istatistiklerinden oluşturulmuştur. Tarım sektörü, DTÖ'nün toplam tarımsal ürünler sınıflandırmasına göre tanımlanmış, HS 1992 temelli alt ürün grupları kullanılmıştır. Önce Türkiye ve karşılaştırma ülkelerinin tarımsal ihracat değerleri ve büyüme eğilimleri ortaya konmakta, ardından yıllık bazda hesaplanan RCA ve RSCA endeksleri yardımıyla ülke karşılaştırmaları yapılmaktadır. Analize, Türkiye'nin tarımsal ihracatında ürün sayısı ve hedef ülke sayısındaki artış, ilk beş ürün grubunun toplam içindeki payı ve soğuk zincir ile lojistik kapasiteye ilişkin ikincil göstergeler de eşlik etmektedir.

Bulgular, Türkiye'nin tarım ihracatının 2014 yılında 19,54 milyar ABD dolarından 2023 yılında 30,26 milyar ABD dolarına yükseldiğini ve dönem ortalamasının yaklaşık 21,47 milyar ABD doları olduğunu göstermektedir. 2015-2016 yıllarında gözlenen kısmi gerilemeye rağmen, 2017 sonrası dönemde ihracat yeniden artış eğilimine girmiş, Kovid-19 şokunun yaşandığı 2020 yılında dahi tarım ihracatı artmaya devam etmiş ve diğer sektörlere kıyasla görece dayanıklı bir performans sergilemiştir. 2021-2023 döneminde ise hem değer hem de ürün ve pazar çeşitliliği bakımından daha belirgin bir hızlanma gözlenmektedir. Aynı dönemde Türkiye'nin 180'in üzerinde ülkeye yaklaşık 1700-1800 farklı tarım ve gıda ürünü ihraç ettiği, soğuk hava deposu kapasitesi ve tedarik zinciri altyapısının da kayda değer biçimde güçlendiği görülmektedir.

RCA sonuçları, Türkiye'nin 2014-2023 boyunca tarımda yapısal bir karşılaştırmalı üstünlüğe sahip olduğunu ortaya koymaktadır. Endeks değerleri 1,56 ile 1,85 arasında dar bir bantta seyretmekte ve dönem ortalaması 1,67 düzeyinde gerçekleşmektedir. RSCA değerleri ise 0,22 ile 0,30 arasında değişmekte ve ortalama 0,25 ile tarımsal rekabet gücünün pozitif ve kalıcı olduğunu teyit etmektedir. 2014-2019 döneminde her iki endekste de kademeli bir gerileme, 2019 sonrası dönemde ise yeniden toparlanma söz konusudur. Özellikle 2020 sonrasında RSCA değerlerindeki artış, tarımsal arz

güvenliğinin öne çıktığı küresel konjonktürde Türkiye'nin gıda tedarikçisi rolünü güçlendirdiğini ima etmektedir.

Küresel lider ülkelerle yapılan kıyaslama, Brezilya'nın hem RCA hem RSCA bakımından açık ara önde olduğunu, Türkiye'nin ise ABD ve Kanada'ya yakın, Çin'den ise belirgin biçimde daha avantajlı bir konumda yer aldığını göstermektedir. Brezilya'da tarımın RCA değeri 6'ya yaklaşan seviyelerde ve RSCA 0,70'in üzerindedir. ABD ve Kanada'da RCA değerleri 1,6-1,8 bandında, RSCA ise 0,24-0,29 aralığındadır. Buna karşılık Çin'in tarımda RCA değeri 1'in altında, RSCA değeri ise belirgin biçimde negatiftir ve ülkenin bu sektörde yapısal bir dezavantaja sahip olduğunu işaret etmektedir. Türkiye'nin ortalama 1,67'lik RCA ve 0,25'lik RSCA değerleri, ülkeyi küresel liderlerin altında ancak ABD ve Kanada ile aynı ligde, Çin'in ise üzerinde konumlandırmaktadır. Yapısal olarak benzer ülkelerle karşılaştırmalarda ise daha farklı bir tablo ortaya çıkmaktadır. İtalya, İspanya ve Hollanda'nın tarımda ortalama RSCA değerleri sıfıra yakın ya da negatiftir; bu ülkeler daha çok sanayi ve hizmet ağırlıklı uzmanlaşma desenleriyle öne çıkmaktadır. Buna karşılık Ukrayna, geniş tarım arazileri ve tahıl odaklı üretim yapısı sayesinde 6'nın üzerinde RCA ve 0,7'nin üzerinde RSCA değerleriyle grup lideridir. Türkiye, bu küme içinde özellikle RSCA bakımından İtalya, İspanya ve Hollanda'nın açık biçimde önünde yer almakta ve Ukrayna'nın ardından ikinci sıraya yerleşmektedir. Bu bulgu, Türkiye'nin Avrupa'daki benzer ekonomilere göre tarımsal rekabet gücünün daha yüksek olduğunu ortaya koymaktadır.

Çalışmanın tartışma kısmında, tarımsal rekabet gücündeki artışın yalnızca fiyat ve döviz kuru etkileriyle açıklanamayacağı, ürün ve pazar çeşitlenmesi, soğuk zincir ve lojistik kapasitedeki iyileşmeler ve belli ürün gruplarında (yaş meyve sebze, kuruyemiş, zeytin ve zeytinyağı gibi) uzmanlaşmanın belirleyici olduğu vurgulanmaktadır. Bununla birlikte küçük ölçekli üretim yapısı, arazi parçalanması, sulama ve girdi verimliliği gibi alanlarda devam eden yapısal sorunların rekabet üstünlüğünü sınırlayan faktörler olduğuna dikkat çekilmektedir. Lojistik performans ve tarımsal ihracat arasındaki pozitif ilişkiye işaret eden uluslararası bulgular, Türkiye'ye yönelik bulgularla birlikte değerlendirildiğinde, ulaştırma altyapısı, liman bağlantıları ve soğuk zincir yatırımlarının devamının stratejik önem taşıdığı sonucuna varılmaktadır. Bununla birlikte, çalışmanın betimleyici bir yapıda olduğu ve RCA ile RSCA endekslerine dayandığı, dolayısıyla lojistik ve politika değişkenlerinin ihracat üzerindeki etkilerinin nedensel olarak ölçülmediği vurgulanmakta, gelecekte ürün ve firma düzeyinde mikro veri kullanılarak yapılacak araştırmaların politika önerilerini daha da keskinleştirebileceği ifade edilmektedir.

Sonuç olarak makale, Türkiye'nin tarımda orta düzeyde fakat yükselen bir uluslararası rekabet gücüne sahip olduğunu, bu gücün 2020 sonrası dönemde daha da belirginleştiğini ve özellikle Avrupa'daki benzer ekonomilerle karşılaştırıldığında göreli bir üstünlüğe işaret ettiğini göstermektedir. Çalışma, bu çerçevede dört ana politika alanına dikkat çekmektedir. İlk olarak, kırsal alanlarda depo, soğuk zincir ve taşımacılık altyapısının güçlendirilmesi, özellikle bozulabilir ürünlerde kalite kaybını azaltarak ihracat performansını destekleyecektir. İkinci olarak, coğrafi işaret, organik sertifikasyon ve marka odaklı tanıtım politikaları yoluyla yüksek katma değerli ürünlerde uzmanlaşmanın derinleştirilmesi önerilmektedir. Üçüncü olarak, küçük üreticilerin kooperatifler ve dijital platformlar üzerinden ihracat zincirine entegrasyonu, ölçek ekonomilerinden yararlanmayı ve lojistik yatırımların tabana yayılmasını kolaylaştıracaktır. Son olarak, iklim değişikliğine uyumlu sulama, tohum ve üretim tekniklerine öncelik veren tarımsal destekler ile dış ticaret anlaşmalarının tarımsal rekabet gücünü gözeten biçimde uyumlaştırılması, Türkiye'nin tarımsal karşılaştırmalı üstünlüğünü uzun vadede korumasına ve derinleştirmesine katkı sağlayacaktır.