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COMPETITIVENESS OF THE TURKISH AGRI-FOOD SECTOR IN TRADE WITH THE EUROPEAN UNION

Key words: international trade, export, competitive position, export specialization, comparative advantages, agri-food sector, Turkey, the EU

ABSTRACT. The purpose of this study was to assess the competitive position of the Turkish agri-food sector in trade with the European Union. The study focused on agri-food products arranged as per the Harmonized Commodity Description and Coding System (HS 1-24), and relied on data collected in two years, 2010 and 2022, retrieved from UNCTAD and Eurostat resources. The authors used the Widodo product mapping scheme to arrange the products. The results provide grounds for concluding that Turkey and the EU witnessed growth in bilateral agri-food trade. Between 2010 and 2022, the exports from Turkey to the EU increased by 89% whereas imports went up by 84%. In the years covered by the study, Turkey had the greatest comparative advantage and the highest degree of export specialization in the following product groups: preparations of vegetables, fruit and nuts (HS 20), fish and crustaceans (HS 03), vegetables (HS 08) and edible fruit and nuts (HS 07). Conversely, Turkey showed no comparative advantages in (and was a net importer of): cocoa and cocoa preparations (HS 18), cereals (HS 10) and meat and edible meat offal (HS 02). The mix of products traded can be viewed as rational and consistent with the classical theory of trade. Turkey's comparative advantages provided a source of a beneficial specialization. In turn, imported products were those in which Turkey is not self-sufficient.

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INTRODUCTION

The collaboration between Turkey and the European Union began under the 1963 Association Agreement which provided for a strengthening of economic cooperation and bilateral trade. The then European Economic Community gave Turkey the status of an associate member, and received its formal application for European Union (EU) membership in 1987 [Jabkowski and Stawicka 2016]. Ten years later, Turkey's accession to the EU was halted at the Luxembourg Summit. However, a customs union has been in place between Turkey and the EU since 1995 [EC 2023]. At the 1999 Helsinki meeting, the European Council canceled their previous decision and officially declared Turkey an EU candidate country. The accession negotiations started in 2005 [Chojan 2011], but have stalled since 2018 due to political reasons (breach of the rule of law, violations of democracy and fundamental human rights in Turkey) [EC 2023].

Competitiveness at economy or sector level is a problem that takes on particular importance in the context of progressing globalization. However, the term "competitiveness" may be looked at from different angles, as it currently has ca. 400 diverse definitions [Harasim 2018, Jabkowski 2023]. The reason for there being so many of them is the difference in the way competitiveness is approached to in each scientific discipline. The most general definition of competitiveness is an operator's ability to gain a competitive edge over others. The operators can be countries, regions, enterprises, cities or people. In turn, a competitive edge can be viewed as being successful, witnessing consistent growth or experiencing an increase in market share or wealth [Kruk 2010, Misala 2011]. Competitiveness can be considered as rivalry between operators for the largest possible market share [Lubiński et al. 1995], or as the status of their rivalry at a given point in time [Gorynia 1998]. Note also the difference between international competitive position and international competitive capacity. The former usually refers to an operator's share in the international environment, and represents a static approach that shows the outcome of competing [Fagerberg 1988]. The latter, in turn, is a dynamic, factor-based approach that relates to competitive capacity in the long run [Kraciuk 2017].

So far, no standardized universal metrics have been developed to evaluate competitiveness, and no measurement methods have become widespread [Łukiewska 2019]. Agri-food products represent a specific category of tradable goods, let alone due to the differences in soil, climate and natural conditions between regions [Pawlak and Jabkowski 2018]. In the literature on the subject, agri-food competitiveness was addressed by authors such as Laura Carraresi and Alessandro Banterle [2015], Iwona Szczepaniak et al. [2018, 2019], Tamás Mizik et al. [2020], Karolina Pawlak and Walenty Poczta [2020], Bojan Matkovski et al. [2022], Yonas Bahta and Salomo Mbai [2023], Paweł Kraciński [2023] and Katarzyna Łukiewska [2023]. However, their research did not tackle the competitiveness of agri-food products exported from Turkey to EU markets.

Due to the potential of the Turkish agri-food sector, the question arises whether and how much competitive pressure from Turkish exporters can be experienced by EU agri-food producers. Therefore, having in mind the differences in the agricultural production mix and scale between Turkey and the European Union, the main goal of this study was formulated as assessing the competitive position of the Turkish agri-food sector in trading with the EU.

MATERIALS AND METHODOLOGY OF STUDIES

Turkey's competitive position was assessed in absolute and relative terms. The study presented the amount and balance of trade in selected agri-food products between Turkey and the EU. The next step consisted in determining the level of export specialization and indicating the comparative advantages. This was done using share-of-trade indicators, i.e. the Revealed Symmetric Comparative Advantage (RSCA) and the Lafay's Trade Balance Index (TBI). Once calculated, the indicators served as basis for developing a product mapping matrix in order to enable a better visualization of the competitive position of selected agri-food products. The matrix allowed to arrange the selected product groups traded with the EU in accordance with their competitive position in 2010 and 2022. This time scope can be considered sufficient to examine the changes that resulted from the integration of the EU and the Turkish markets under the customs union arrangement. This study relies on data resources of the United Nations Conference on Trade and Development (UNCTAD) and of the Statistical Office of the European Union (Eurostat). The procedure focused on agri-food products arranged as per the Harmonized Commodity Description and Coding System (HS 1-24).

The Revealed Symmetric Comparative Advantage (RSCA) indicators were calculated based on a modified standard Balassa Revealed Comparative Advantage (RCA) ratio:

$$\text{RSCA}_{ij} = (RCA_{ij} - 1) / (RCA_{ij} + 1)$$

where: RCA_{ij} – Revealed Comparative Advantage, i – product, j – country.

RSCA values vary in the range of [-1, 1], with positive and negative values being indicative of the existence and absence of a comparative advantage, respectively. As the reliability of research based solely on RSCA is called into question [De Benedictis and Tamberi 2002], the analyses were extended with the trade balance indicator, which enabled a more trustworthy interpretation of comparative advantages. Combined with the Lafay's Trade Balance Index (TBI), RSCA allows to build a matrix that can be used in arranging the products by comparative advantage and by trade balance. This is possible because TBI values also fall into the interval [-1, 1].

The index is expressed with the following formula:

$$TBI_{ij} = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij})$$

where: X – exports, M – imports, i – product, j – country.

Positive TBI values mean the country is specialized in exporting the product concerned, and represent a trade surplus. In turn, negative values are interpreted as the absence of export specialization, and indicate that the country is a net importer of the product (or product group) concerned [Lafay 1992, Pawlak and Smutka 2022].

Table 1. Arranging the products by comparative advantage and by degree of export specialization using the Widodo method.

Group B Comparative advantages Net importer (RSCA > 0 and TBI < 0)	Group A Comparative advantages Net exporter (RSCA > 0 and TBI > 0)
Group D Absence of comparative advantages Net importer (RSCA < 0 and TBI < 0)	Group C Absence of comparative advantages Net exporter (RSCA < 0 and TBI > 0)

Source: [Cieślik 2021]

The RSCA and TBI indexes were used in structuring a matrix which splits the agri-food product groups covered by this analysis into four groups by level of comparative advantage and of export specialization (Table 1) [Widodo 2009]. The benefit of the matrix is that it allows to tell whether the country has a revealed comparative advantage in a particular product group, and if it is a net importer or exporter of certain commodities. The author of this method, Tri Widodo, believed that a situation may occur where a country has a revealed comparative advantage in producing a commodity ($RSCA_{ij} > 0$) while not being a net exporter of it. In another case, a country may have a negative $RSCA_{ij}$ for a specific commodity which does not necessarily mean it is a net importer of it [Cieślik 2021].

RESULTS OF THE STUDY

The globalization process makes international trade more and more important, and encourages the manufacturers to keep production growing. By establishing businesses and trade companies, entrepreneurs accelerate socioeconomic development at country level. In turn, international trade is among the major drivers of sustainable economic growth [Alnour and Önden 2023].

The European Union is an important trade partner for Turkey [Antonucci and Manzocchi 2006]. Between 2010 and 2022, agri-food exports from Turkey to the EU grew by 89%, reaching EUR 6 billion. Agri-food imports also went up (by 84%), and fluctuated around EUR 3.6 billion in 2022 (Figure 1). Turkey is a large country, with ca. 50% of land under agricultural use and a favorable climate for agricultural production. This translates into a large production scale which, in turn, has a strong impact on export volumes. European customers show great demand and have a high purchasing power. Furthermore, that market is very attractive to Turkey because of its geographic proximity [Bugała 2016].

The mix of agri-food exports from Turkey to the EU did not change significantly over the study period. In 2010, edible fruit and nuts had the largest share (39%) in exports, which dropped by 9.9 percentage points in 2022 (Figure 2). Despite a major decline in

Figure 1. Bilateral agri-food trade between Turkey and the EU in 2010 and 2022

Source: own compilation based on Eurostat data
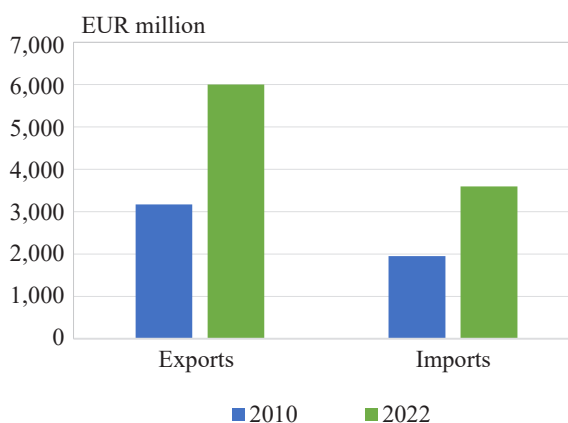
relative terms, edible fruit and nuts continued to play a dominant role in agri-food exports from Turkey to the EU. Ranked second in the export mix, preparations of vegetables, fruit and nuts had a share of 22.4% both in 2010 and 2022. The share of vegetables was 8.8% in 2010, and increased to 10.9% in 2022. In turn, fish and crustaceans grew the most in importance in Turkish exports to the EU, as their share nearly doubled between 2010 and 2022 (from 5.7% to 10.5%).

Other commodities accounted for 24% and 27% of total agri-food exports from Turkey to the EU in 2010 and 2022, respectively, and included diverse products offered in response to changing market conditions, technologies, and consumer preferences.

In 2010-2022, the mix of agri-food imports from the EU to Turkey was more diversified than exports, and underwent noticeable changes. In 2022, the largest share in imports (17%) was that of diverse food preparations, which went up by 9.5 percentage points against the base year (Figure 3). The next product group with the relatively highest share in imports were non-alcoholic and alcoholic beverages (6.2% in 2010 and 11.9% in 2022).
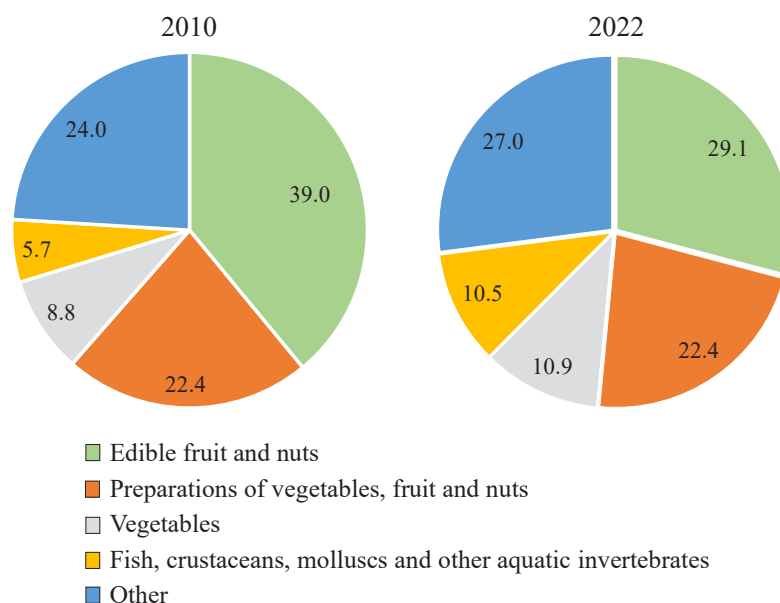
Figure 2. Mix of agri-food exports from Turkey to the EU in 2010 and 2022
Source: own compilation based on Eurostat data

In 2022, cocoa and cocoa preparations accounted for 9.8% of agri-food imports from the EU to Turkey, whereas the share of tobacco was 8.3%. The latter group witnessed the greatest drop (by more than 10 percentage points) in the share in imports of all commodity groups covered by this analysis (from 18.6% in 2010). The importance of imports of oilseeds and oleaginous fruit and cereals declined by 4 and 3 percentage points, respectively. In 2022, other commodity groups had a 39.1% share in imports (vs. 28.9% in 2010).

The procedure for arranging the product groups by level of comparative advantage (RSCA) and by degree of export specialization (TBI) based on the Widodo method demonstrated that in 2010, Turkey had significant comparative advantages in and positive net exports of edible fruit and nuts (HS 08), preparations of vegetables, fruit and nuts (HS 20), vegetables (HS 07) and fish and crustaceans (HS 03) (Figure 4). Products attributed to group A, i.e. those of which Turkey was a net exporter and in which it had the greatest comparative advantages in its trade with the EU, accounted for a total of 81.3% of all agri-food exports from Turkey to the EU market, and resulted in a positive trade balance of over EUR 2.3 billion (Table 2). When it comes to trade in food preparations (HS 21), Turkey did not have any comparative advantage, but was a net exporter of them (group C).
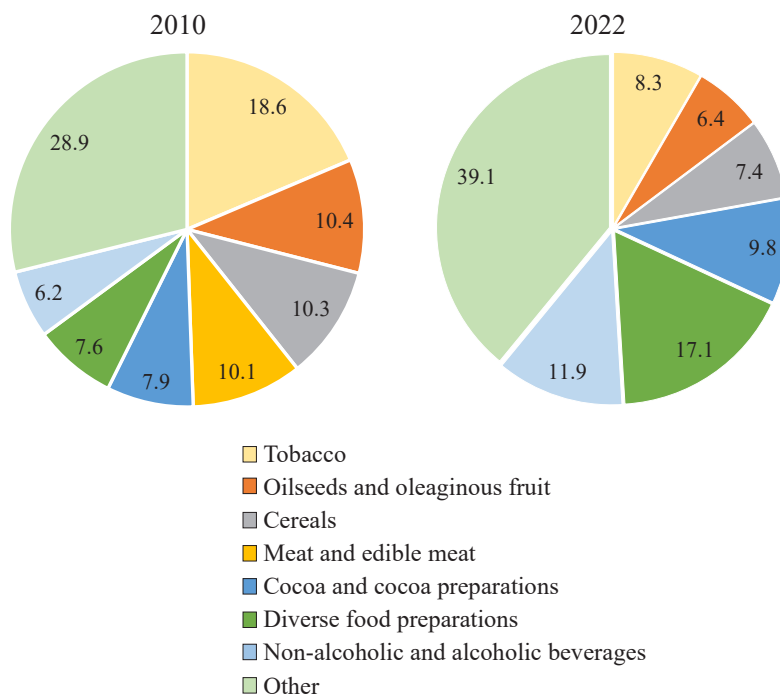
Figure 3. Mix of agri-food imports from the EU to Turkey in 2010 and 2022

Source: own compilation based on Eurostat data

Table 2. Shares of agri-food product groups traded between Turkey and EU in 2010 and 2022 arranged using the Widodo method

Group	Share in total [%]		Balance [EUR million]	Share in total [%]		Balance [EUR million]
	exports to EU	imports from EU		exports to EU	imports from EU	
	2010			2022		
A	81.3	6.2	2,309.8	80.8	5.4	4,242.3
B	-	-	-	-	-	-
C	5.3	9.3	10.3	4.6	9.4	5.0
D	13.3	84.5	-946.5	14.6	85.2	-1,406.8

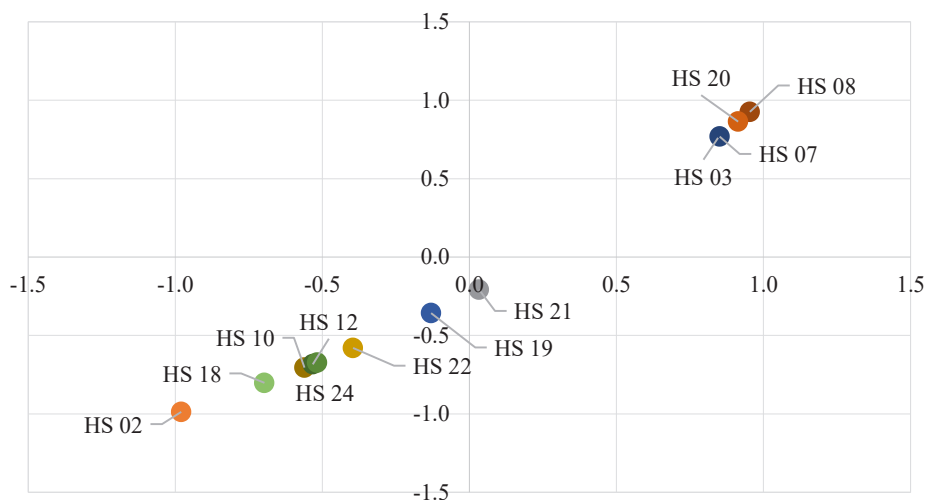Source: own compilation based on Eurostat data

Figure 4. Arranging the key groups of traded agri-food products by comparative advantage level and by export specialization degree in 2010 (the Widodo method)

Source: own compilation based on Eurostat data

These commodities accounted for 5.3% of total revenue from agri-food exports to the EU. The other seven key product groups falling in group D (which means no comparative advantage and no export specialization) had a total share of 13.3% in exports to the EU. In turn, imports of these products (group D) accounted for 84.5% of total agri-food imports from the EU to Turkey in 2010, translating into a trade deficit of EUR 946.5 million (Table 2).

The procedure for arranging the products by level of comparative advantage (RSCA) and by degree of export specialization (TBI) based on the Widodo method demonstrated that in 2022, just like in 2010, Turkey had comparative advantages in and positive net exports of edible fruit and nuts (HS 08), preparations of vegetables, fruit and nuts (HS 20), vegetables (HS 07) and fish and crustaceans (HS 03) (Figure 5).

In 2022, the share of 4 product groups of group A (in which Turkey showed a comparative advantage and of which it was a net exporter) was over 80.8% of total agri-food sales from the Turkish market to the single European market. In 2010, that share was at a similar level, but importantly the trade balance nearly doubled in 2022 as it went beyond EUR 4.2 billion (Table 2).

In 2022, preparations of cereals, flour, starch or milk (HS 19) fell in group C (as opposed to group D in 2010), which means that despite not showing comparative advantages, Turkey shifted from being a net importer to a net exporter of these products within 12 years.
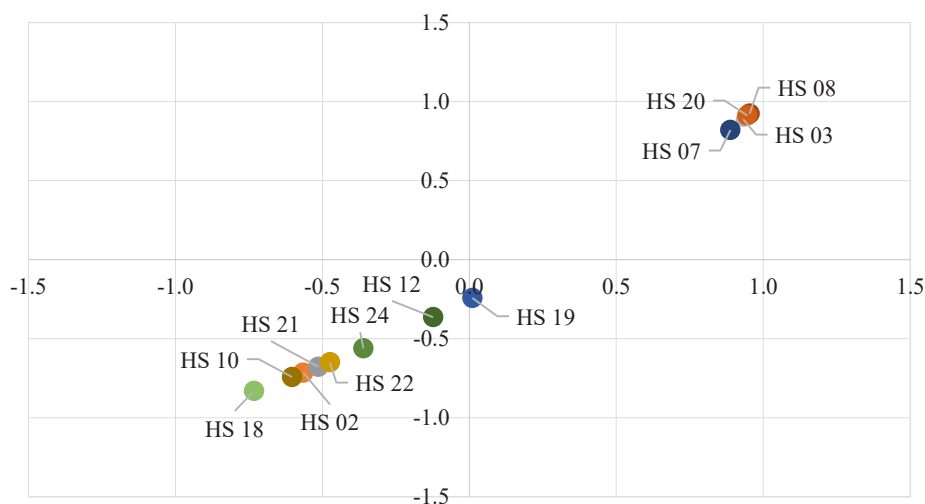
Figure 5. Arranging the key groups of traded agri-food products by comparative advantage level and by export specialization degree in 2022 (the Widodo method)

Source: own calculations based on Eurostat data

The sales of that product group (HS 19) to the EU accounted for 4.6% of Turkey's total revenue derived from agri-food exports (Table 2). In 2022, most products of importance to the mix of bilateral trade between Turkey and the EU fell once again in group D. Moreover, certain food preparations (HS 21) shifted to the part of the matrix which corresponds to Turkey being a net importer. Other products covered by the analysis did not change their position, meaning that Turkey remained a net importer of them and did not show any comparative advantages. Also worth noting is that trade deficit in group D grew to reach EUR 1.4 billion.

CONCLUSIONS

Globalization plays a key role in shaping today's international trade. In 2010-2022, Turkey, a major partner of the EU, sought the development of bilateral agri-food trade. The opening of better opportunities for trade encouraged the manufacturers to scale up production. In the case of Turkey, a country with an important production potential and appropriate climate conditions, this translated into rapid development of exports to the EU.

The European Union is among the main outlets for Turkish agri-food producers; in 2022, Turkish exports to the EU reached EUR 6 billion. Although their share in exports to the EU declined over the study period, edible fruit and nuts held a dominant position in

the exports mix. The analyses carried out in this paper provide grounds for concluding that the mix of agri-food imports from the EU to Turkey changed more than that of exports. The diversity of products imported to Turkey reflects the far greater diversification of needs of the Turkish market. Note however the significant decline in tobacco imports to Turkey, which may be the consequence of changing consumer preferences.

Employing the Widodo method in analyzing the comparative advantages and the level of export specialization allows to tell whether the mix of commodities traded is consistent with the principle of comparative costs and if it can be considered rational. The groups of products in which Turkey showed comparative advantages did not change over the study period, and consisted of: fruit and nuts; preparations of vegetables, fruit and nuts; vegetables (HS 07); and fish and crustaceans. They held a dominant share in exports while also generating a positive trade balance which doubled between the years covered by the study. The groups of commodities of which Turkey was a net importer and in which it had no comparative advantage primarily included products in which Turkey is not self-sufficient. From that perspective, it may be concluded that the mix of goods traded was rational and consistent with the classical theory of trade, i.e. the comparative advantages generated by Turkey provided a basis for a beneficial export specialization.

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KONKURENCYJNOŚĆ SEKTORA ROLNO-SPOŻYWCZEGO TURCJI W HANDLU Z UNIĄ EUROPEJSKĄ

Słowa kluczowe: handel międzynarodowy, eksport, pozycja konkurencyjna, specjalizacja eksportowa, przewagi komparatywne, sektor rolno-spożywczy, Turcja, UE

ABSTRAKT. Celem badań była ocena pozycji konkurencyjnej sektora rolno-spożywczego Turcji w handlu z Unią Europejską. Zakres przedmiotowy badań obejmował produkty rolno--spożywcze uporządkowane według zharmonizowanego systemu oznaczania i kodowania towarów (HS 1-24), a zakres czasowy dotyczył danych za lata 2010 i 2022. W badaniach wykorzystano dane pochodzące z zasobów UNCTAD i Eurostat. W badaniach posłużono się metodą pozycjonowania produktów za pomocą macierzy Widodo (mapowanie produktów). Na podstawie wyników badań można wskazać, że bilateralny handel produktami rolno-spożywczymi między Turcją a UE zwiększył się. W 2022 roku względem 2010 roku eksport z Turcji do UE wzrósł o 89%, natomiast import zwiększył się o 84%. W badanych latach Turcja miała najwyższy poziom przewag komparatywnych i stopień specjalizacji eksportowej w zakresie takich grup produktowych, jak: przetwory z warzyw, owoców i orzechów (HS 20), ryby i skorupiaki (HS 03), warzywa (HS 08) oraz owoce i orzechy jadalne (HS 07). Z kolei brak przewag komparatywnych i status importera netto odnotowano dla: kakao i przetworów z kakao (HS 18), zbóż (HS 10) oraz mięsa i podrobów jadalnych (HS 02). Można uznać, że struktura asortymentowa badanej wymiany handlowej jest racjonalna i ukształtowana zgodnie z klasyczną teorią handlu. Przewagi komparatywne generowane przez Turcję były źródłem korzystnej specjalizacji, natomiast przedmiotem importu były produkty, w zakresie których Turcja nie miała samowystarczalności żywnościowej.

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