

REVEALED COMPARATIVE ADVANTAGE INDEX: TRADE BETWEEN THE EU AND TÜRKIYE FOR ALL PRODUCT

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Abstract

This study delves into the dynamics of trade between the European Union (EU) and Türkiye, employing the Revealed Comparative Advantage (RCA) theory as its analytical framework. Focusing on the period from the fourth quarter of 2022 to the fourth quarter of 2023, the research offers a comprehensive analysis of bilateral trade relations at the All Product level. During the specified timeframe, the EU and Türkiye have navigated a multitude of economic and geopolitical factors, influencing the nature and patterns of their trade interactions. Against this backdrop, the RCA theory provides a valuable lens for understanding the comparative advantages each party possesses in their trade relationship. Through rigorous analysis of All Product level data, this study examines the trade flows, export structures, and comparative advantage indices of both the EU and Türkiye across various sectors and product categories. By calculating revealed comparative advantage indices, the research identifies the specific sectors where each party demonstrates a comparative advantage in trade. The findings of this study shed light on the intricacies of trade dynamics between the EU and Türkiye. Analysis at the All Product level offers a comprehensive understanding of the evolving specialization patterns and changes in comparative advantages over the specified period. Moreover, the research explores the implications of these findings for future trade relations between the EU and Türkiye. This research contributes significantly to the literature on EU-Türkiye trade relations by offering a detailed analysis based on All Product level data. The insights derived from this study hold valuable implications for policymakers, economists, and stakeholders involved in shaping the trajectory of bilateral trade cooperation and integration between the EU and Türkiye.

Keywords: *production; custom union; EU; Türkiye.*

JEL Classification: F10, F00.

1. INTRODUCTION

There are various methods for determining the product in which a country is competitive in foreign trade. In the following years, Balassa's (1965) Theory of Explained Comparative Advantage was developed and became one of the most frequently used methods explaining international competitiveness with foreign trade indicators. In the second part of this study, a literature review of

the Theory of Revealed Comparative Advantage for the world is presented. In the third part of the study, the methodological infrastructure of the Theory of Revealed Comparative Advantage, the data set and variables used are explained. In the following section, the results of the analysis of the European Union economy for the period 2022Q4-2023Q4 are shown and interpreted. The last part of the study contains general conclusions on the subject.

2. HISTORY OF THE CUSTOMS UNION AGREEMENT

The Customs Union Agreement is an agreement signed between Türkiye and the European Economic Community (EEC) in 1964. Also known as the Ankara Agreement, the Customs Union Agreement came into effect on December 1, 1964. Its aim is to strengthen commercial and economic relations to facilitate rapid development of the Turkish economy and improve the living conditions of the Turkish people. The agreement envisaged the integration of Türkiye into the EEC in three phases:

- **Preparation Phase:** Starting on December 1, 1964, Türkiye did not undertake any obligations during this phase.
- **Transition Phase:** Began with the Additional Protocol that came into effect in 1973. This phase aimed at the free movement of industrial and agricultural products and the completion of the Customs Union.
- **Final Phase:** Started on January 1, 1996. During this phase, Türkiye eliminated customs duties with the EEC and adopted the EEC's Common Customs Tariff for other countries.

The Customs Union not only involves the abolition of customs duties but also the obligation to harmonize with Community legislation in areas such as competition policy, intellectual and industrial property rights. This agreement is an important step towards Türkiye's integration into Europe and aims to strengthen economic relations.

The Customs Union Agreement signed between Türkiye and the European Union (EU) in 1996 has had various effects on the Turkish economy. Until 2023, the impacts of this agreement on the EU economy can be summarized as follows:

Benefits:

- **Increased Trade:** The Customs Union has facilitated increased trade between Türkiye and the EU, allowing Turkish products easier access to EU markets (Özdemir and Koç Aytekin, 2016).
- **Encouragement of Investments:** The agreement has encouraged investments from EU countries into Türkiye, contributing to economic growth (Directorate for EU Affairs, 2024).
- **Enhanced Competitiveness:** Turkish companies have expanded into larger markets, improving their technological infrastructure and reducing costs, thus enhancing their competitiveness.

Challenges:

- Competition Pressure: The free trade with the EU has increased competition in certain Turkish sectors, posing challenges for local producers (Özdemir and Koç AYTEKİN, 2016).
- Trade Imbalances: At times, trade imbalances have occurred in Türkiye's trade with the EU, leading to economic disparities.
- Harmonization Process: Adapting to EU regulations has been demanding for some sectors in Türkiye, resulting in additional costs (Directorate for EU Affairs; 2024).

3. LITERATURE REVIEW

Tuerxun and Adıgüzel (2017) aimed to analyse China's global competitiveness between 2006 and 2015 and used the method of Explained Comparative Advantage. In the study, China's foreign trade data were obtained from the TradeMap website and the ECI values of 97 chapters in the Harmonised System were calculated. According to the findings obtained, the researchers inferred that 46 chapters were competitive, 27 chapters were not competitive and 24 chapters were borderline in terms of competitiveness.

In the study conducted by Erkan and Batbaylı (2017), it is aimed to reveal the comparative advantages and competitiveness of the Organization of the Black Sea Economic Cooperation (BSEC) member countries in global markets. In the study, Explained Comparative Advantages (Balassa Index and Vollrath Index) were used. The findings of the study show that the BSEC countries have strong comparative advantages in the exports of raw materials and labour-intensive products in international markets.

Erkan *et al.* (2015), Türkiye's comparative advantage in vegetable exports in the world markets between 1993 and 2012 was measured with the help of the Index of Revealed Comparative Advantage. According to the results of the study, it was found that Türkiye has a significant comparative advantage in exports of vegetables and subgroups in global markets, however, these advantages have relatively decreased in recent years.

In his study, Ardiç (2017) calculated the Explained Comparative Advantage Index for Türkiye's export sectors between 2005 and 2016. According to the results of the research, it was determined that the country has comparative advantage in exports in the chapters of plant products, food industry products, textile products, glass and glassware, metals, vehicles.

4. METHODOLOGY AND DATA SET

In our study, the Explained Comparative Advantage Index was used. The idea of Explained Comparative Advantage was first put forward by Liesner (1958). The index, which was created to compare the competitiveness of the UK with the Common Market Countries, was operationalized by Balassa (1965).

The Balassa Index aims to explain whether there is an apparent advantage difference between countries without going into the cause of comparative advantage. The Balassa index compares a country's domestic specializations in a good with the world's specialization.

Here, RCAI shows the announced comparative advantage index of country j for good i.

$$\left(\text{RCAI} = \frac{X_{ij}/X_j}{X_{iW}/X_w} \right) \quad (1)$$

For equation (1) result:

- RCAI>1 indicates that country j has a comparative advantage in good i. That is, the share of that good in the country's total exports is larger than its share in world trade.
- If RCAI<1, it means that there is a comparative disadvantage in that good.

In this section, the results of the analysis of the European Union economy for the period 2022Q4-2023Q4 are shown and interpreted. The last part of the study contains general conclusions on the subject.

5. ANALYSIS RESULTS

In the data set, competitive advantage was calculated in 3 different categories in the calculations made for the periods considered from the production structure consisting of 99 subgroups. As shown in Table 2, 30 different products with RCAI values between 1 and 2 were found. When we look at these products, we see that industrial goods are predominantly included. In the second category, there are 4 different products with RCAI values between 2 and 3. These products are Iron and steel, Aircraft, spacecraft, and parts thereof, Tanning or dyeing extracts; tannins and their derivatives, Man-made filaments. In the last category, the groups of goods with an RCAI value greater than 3 in comparative competitive advantage are as follows; Man-made staple fibres, Wool, fine or coarse animal hair and Cotton.

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Appendix

Table 1. Product Label

All products
Vehicles other than railway or tramway rolling stock, and parts and accessories thereof
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...
Iron and steel
Plastics and articles thereof
Aircraft, spacecraft, and parts thereof
Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...
Pharmaceutical products
Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...
Organic chemicals
Miscellaneous chemical products
Articles of iron or steel
Paper and paperboard; articles of paper pulp, of paper or of paperboard
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...
Rubber and articles thereof
Essential oils and resinoids; perfumery, cosmetic or toilet preparations
Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...
Aluminium and articles thereof
Articles of apparel and clothing accessories, not knitted or crocheted
Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ...
Commodities not elsewhere specified

EUROPEAN FINANCIAL RESILIENCE AND REGULATION

All products
Copper and articles thereof
Footwear, gaiters and the like; parts of such articles
Beverages, spirits and vinegar
Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...
Articles of apparel and clothing accessories, knitted or crocheted
Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...
Miscellaneous articles of base metal
Miscellaneous edible preparations
Glass and glassware
Ships, boats and floating structures
Residues and waste from the food industries; prepared animal fodder
Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal
Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles ...
Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or ...
Albuminoidal substances; modified starches; glues; enzymes
Tobacco and manufactured tobacco substitutes; products, whether or not containing nicotine, ...
Cocoa and cocoa preparations
Man-made staple fibres
Live animals
Articles of stone, plaster, cement, asbestos, mica or similar materials
Meat and edible meat offal
Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable ...
Man-made filaments; strip and the like of man-made textile materials
Wood and articles of wood; wood charcoal
Preparations of cereals, flour, starch or milk; pastrycooks' products
Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof
Wool, fine or coarse animal hair; horsehair yarn and woven fabric
Miscellaneous manufactured articles
Ores, slag and ash
Salt; sulphur; earths and stone; plastering materials, lime and cement
Toys, games and sports requisites; parts and accessories thereof
Ceramic products
Zinc and articles thereof

All products
Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal ...
Products of the milling industry; malt; starches; inulin; wheat gluten
Coffee, tea, maté and spices
Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixtures ...
Cotton
Other base metals; cermets; articles thereof
Printed books, newspapers, pictures and other products of the printing industry; manuscripts, ...
Other made-up textile articles; sets; worn clothing and worn textile articles; rags
Knitted or crocheted fabrics
Raw hides and skins (other than furskins) and leather
Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere ...
Fertilisers
Nickel and articles thereof
Sugars and sugar confectionery
Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery
Photographic or cinematographic goods
Clocks and watches and parts thereof
Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; ...
Lead and articles thereof
Fish and crustaceans, molluscs and other aquatic invertebrates
Arms and ammunition; parts and accessories thereof
Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
Carpets and other textile floor coverings
Preparations of vegetables, fruit, nuts or other parts of plants
Headgear and parts thereof
Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn
Edible fruit and nuts; peel of citrus fruit or melons
Furskins and artificial fur; manufactures thereof
Products of animal origin, not elsewhere specified or included
Lac; gums, resins and other vegetable saps and extracts
Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations
Cereals
Musical instruments; parts and accessories of such articles
Works of art, collectors' pieces and antiques
Cork and articles of cork
Edible vegetables and certain roots and tubers

EUROPEAN FINANCIAL RESILIENCE AND REGULATION

All products
Tin and articles thereof
Preparations of meat, of fish, of crustaceans, molluscs or other aquatic invertebrates, or ...
Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork
Silk
Prepared feathers and down and articles made of feathers or of down; artificial flowers; articles ...
Umbrellas, sun umbrellas, walking sticks, seat-sticks, whips, riding-crops and parts thereof
Vegetable plaiting materials; vegetable products not elsewhere specified or included

Source: Trade Map

Table 2. Result of RCAI the EU between Türkiye

1<RCA<2	2<RCAI<3	3<RCAI
Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	Iron and steel	Man-made staple fibres
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	Aircraft, spacecraft, and parts thereof	Wool, fine or coarse animal hair; horsehair yarn and woven fabric
Plastics and articles thereof	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...	Cotton
Miscellaneous chemical products	Man-made filaments; strip and the like of man-made textile materials	
Paper and paperboard; articles of paper pulp, of paper or of paperboard		
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...		
Rubber and articles thereof		
Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ...		
Commodities not elsewhere specified		
Copper and articles thereof		
Miscellaneous articles of base metal		

1<RCA<2	2<RCAI<3	3<RCAI
Miscellaneous edible preparations		
Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal		
Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or ...		
Albuminoidal substances; modified starches; glues; enzymes		
Live animals		
Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable ...		
Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and cables and articles thereof		
Ores, slag and ash		
Salt; sulphur; earths and stone; plastering materials, lime and cement		
Zinc and articles thereof		
Knitted or crocheted fabrics		
Raw hides and skins (other than furskins) and leather		
Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery		
Photographic or cinematographic goods		
Lead and articles thereof		
Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn		
Furskins and artificial fur; manufactures thereof		
Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations		
Cork and articles of cork		

Source: computed by the author