AN EX ANTE EVALUATION OF FREE TRADE AGREEMENTS:

THE CASE OF TURKEY AND BRAZIL

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AN EX ANTE EVALUATION OF FREE TRADE AGREEMENTS: THE CASE OF TURKEY AND BRAZIL

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ABSTRACT

An Ex Ante Evaluation of Free Trade Agreements: The Case of Turkey and Brazil

As globalization spreads out all over the world, developing countries such as Turkey and Brazil become more vulnerable to global economic developments. Free trade agreements (FTA) can be viewed as one of the measures to reach the speed of economic globalization. Within this context, Turkey wants to sign a free trade agree agreement with Common Market of the South (MERCOSUR) which Brazil is a member of. This study tries to specify the determinants of a potential increase in trade volume, exports and imports between Turkey and Brazil and to investigate in which sectors there will be a revealed comparative advantage between Turkey and Brazil.

The study analyses trade volume, export and import trade flows between two countries from 1995 to 2014 by using gravity model. The results show that the growth in GDP and PPP of both countries positively affects the trade volume and export to Brazil, import from Brazil. On the other hand, as trade cost decreases, trade volume and export to Brazil increase. Revealed comparative advantage (RCA) index is also used in this study to determine which sectors will have bigger RCA. The panel data consists of RCA of 16 different product groups between 1990 and 2014. The results show that Brazil can benefit from its RCA in animal products, vegetables, food products, minerals and wood while Turkey can benefit from its RCA in textiles and clothing, stone and glass, metals, machinery and electronics, transportation and plastic or rubber products.

ÖZET

Serbest Ticaret Anlaşmalarının Bir Ön Değerlendirmesi: Türkiye-Brezilya Örneği

Küreselleşme tüm dünyada yayılmaya devam ettikçe, Brezilya ve Türkiye gibi gelişmekte olan ülkeler küresel ekonomik gelişmelere daha açık hale geldiler. Serbest ticaret anlaşmaları (STA) dünyadaki küreselleşmenin hızını yakalamanın yollarından biri olarak görülebilir. Bu bağlamda, Türkiye, Brezilya'nın da bir üyesi olduğu MERCOSUR ile bir STA imzalamak istemektedir. Bu çalışma, Brezilya ve Türkiye arasındaki ithalat, ihracat ve ticaret hacmindeki olası bir artışın belirleyicilerini bulmaya ve hangi sektörlerde bir açıklanmış karşılaştırmalı üstünlük olacağını tespit etmeye çalışmaktadır.

Bu çalışma, iki ülke arasındaki 1995 ve 2014 yılları arasındaki ithalat, ihracat ve toplam ticaret hacmini çekim modeli kullanarak inceler. Sonuçlar, her iki ülkenin de gayri safi yurt içi hasıla ve satın alma gücü paritesindeki artışın iki ülke arasındaki ticareti, Türkiye'nin Brezilya'ya ihracatını, Brezilya'dan yapılan ithalatını olumlu olarak etkilediğini göstermektedir. Öte yandan, ticaret maliyeti düştükçe, Brezilya'ya olan ihracat ve iki ülke arasındaki ticaret hacmi artmaktadır. Hangi sektörlerin daha çok açıklanmış karşılaştırmalı üstünlüğü olacağını tespit etmek için ise açıklanmış karşılaştırmalı üstünlükler endeksi kullanılmıştır. Panel veri, 1990 ve 2014 yılları arasındaki 16 farklı ürün grubundan oluşmaktadır. Sonuçlar, Brezilya'nın hayvan ürünleri, gıda ürünleri, mineraller ve tahta ürünlerindeki, Türkiye'nin ise tekstil ve giyim, taş ve cam, metal, makine ve elektronik, ulaştırma ve plastik-kauçuk grubundaki ürünlerinin açıklanmış karşılaştırmalı üstünlüğünden yararlanabileceğini göstermektedir.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

CAN	Andean Community of Nations
CGE	Computable General Equilibrium
CU	Customs Union
EFTA	European Free Trade Association
EU	European Union
FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GTAP	The Global Trade Analysis Project
MoE	Republic of Turkey, Ministry of Economy
MERCOSUR	Common Market of the South
NAFTA	North American Free Trade Agreement
PPP	Purchasing Power Parity
PTA	Preferential Trade Agreement
RCA	Revealed Comparative Advantage
TUIK	Turkish Statistical Institute
WITS	World Integrated Trade Solutions
WTO	World Trade Organization
WWI	The First World War
WWII	The Second World War

CHAPTER 1

INTRODUCTION

Countries use many types of reginal trade agreements to handle their international economic relations. Customs union, economic integration agreements, free trade agreements and partial scope agreements are types of regional trade agreements. As of January 2019, there are 291 regional trade agreements and 258 of them are FTAs according to the World Trade Organization (2019). North American Free Trade Agreement (NAFTA) is one of the most important FTAs which entered into force in 1994. It has three member countries which are Mexico, USA and Canada. The European Economic Area can be considered as another important FTA which was formed in 1992 and has 31 full member countries as of 2019. These members are EFTA countries and EU member countries. Moreover, there are many other FTAs over the world. Therefore, it is clear that there is a global apparent trend towards FTA.

Since the first free trade agreement (hereafter, FTA) of Turkey with European Free Trade Association (EFTA) in 1992, Turkey has signed 36 FTAs with many countries from different regions such as Middle East, Eastern Europe, Asia and Latin America (MoE, 2019). 11 of these FTAs have been annulled as these countries have become a member of European Union (EU).

Since the late 1980s Turkey has been trying to keep up with the pace of globalization by strengthening its economic relations with its current partners and adding new ones. As of May 2019, Turkey is negotiating FTAs with 17 countries and country blocs: Japan, Ukraine, Peru, Indonesia, Colombia, Ecuador, Mexico, Thailand, Pakistan, Dem. Rep of Congo, Djibouti, Cameroon, Chad, Seychelles, Gulf

Cooperation Council, Libya and MERCOSUR. Among the others, possible free trade activities between Turkey and MERCOSUR, which is a commercial union with its four full members - Brazil, Argentina, Uruguay and Paraguay - motivates this thesis, taking the geographical distance, similarities and differences of incomes, economic activities and growth policies. As Levaggi (2011) proposes, Latin American countries can become good commercial partners for Turkey, especially Brazil, Mexico, Argentina and Chile. Trade volume between Turkey and members of MERCOSUR between 2014-2018 is shown in Table 1.

Table 1. Trade Volume between Turkey and Members of MERCOSUR

Years	Argentina	Brazil	Uruguay	Paraguay	Total
2014	466,726	2,522,931	96,748	391,915	3,478,322
2015	352,802	2,250,608	204,067	157,670	2,965,148
2016	509,061	2,121,753	271,478	279,454	3,181,747
2017	609,559	2,929,832	430,377	330,115	4,299,884
2018	527,186	3,747,597	542,122	146,816	4,963,723

Source: TUIK, 2019

More than two third of the trade volume with MERCOSUR is done with Brazil. Moreover, Brazil is also the biggest trade partner of Turkey in all Latin American countries in terms of trade volume between 2014 and 2018.

In an overall approach to export volume to MERCOSUR and Latin America, Table 2 shows that more than one third of total exports to Latin America is done with members of MERCOSUR between 2014 and 2018 although a decreasing trend exists.

Table 2. Exports of Turkey to Latin America and Share of MERCOSUR

Years	Latin America	MERCOSUR	Share of MERCOSUR (%)
2014	2,534,437	1,065,434	42
2015	1,954,445	658,536	33
2016	1,778,834	534,811	30
2017	2,214,700	652,966	29
2018	2,971,777	863,992	29

Source: TUIK, 2019

Rapidly growing export volume in the last three years hints on strengthening relations between Turkey and MERCOSUR. Indeed, data shows that the trade volume between Turkey and Latin America increased tenfold between 1995 and 2009. Moreover, the 2023 objective of Turkey is to increase the trade volume with Latin America up to 30 billion dollars. Being on good terms with MERCOSUR is a key to penetrate into Latin America market. All in all, a possible FTA with MERCOSUR will certainly reshape and most probably be shaped by the trade between Turkey and Brazil.

Although Turkey is very willing to build a trade bridge with MERCOSUR, there is not enough research on potential effects of such an agreement. This thesis is motivated to contribute to the literature by analysing the existing and potential trade between Turkey and Brazil within the theoretical framework provided by the existing models.

This thesis aims to explain the determinants of trade flow between Turkey and Brazil, to explore how both countries can benefit from each other's comparative and competitive advantages, and to forecast which product groups are likely to be affected in case of an FTA between Turkey and MERCOSUR. The benefits and costs of FTA for the signatory parties and the world trade in general differ from the ones of multilateral trade agreements such as World Trade Organization (WTO) or General Agreement on Tariffs and Trade (GATT). The WTO rules enforce its members to non-discrimination among their trade partners as it is explained in the section devoted to WTO. However, by signing an FTA the importer country provides a privilege for the exporter country creating a discriminatory effect. The exporter country is favoured among all the other producers of the same product. This may

result in economic inefficiency. In that respect, the thesis analysis FTAs in detail in different perspectives.

The structure of the thesis is as follows: The second chapter briefly discusses the process of economic integration in the world and the role of FTAs in the integration process with their benefits and costs. The third chapter describes the effects of FTAs on both parties. The fourth chapter lists methods to evaluate the (potential) effects of FTAs and explain the methods used in this study. The data is analysed and results are discussed in the fifth chapter. The final chapter concludes with the further discussions and the macroeconomic policy implications of the results.

CHAPTER 2

ECONOMIC INTEGRATION

2.1 A brief history of economic integration

It wouldn't be wrong to define globalization as the strong interdependence among countries, cultures, economies and populations. The main engine of growing ties all around the world is the trade in goods and services, financial instruments, technology and information. In different literatures, the history and phases of globalization are identified differently. Even if one concentrates on economic globalization, it is still possible to find different definitions of periods in analysing the process. The aim of this thesis is to analyse the possible impacts of a free trade agreement between two developing countries. Therefore, this section analyses the phases with respect to the trade expansions and contractions through trade agreements or conflicts. In this regard, the accelerated economic integration which is a natural part of globalization process can be traced back to the late 19th century. It is not wrong to state that economic globalization has three waves having different characteristics in terms of the number of the trading nations and trade relations among them; the first waves covered the period between 1870 and the start of the First World War (WWI), the second wave started after the Second World War (WWII) and continued till 1980s and the third wave can be assumed to be going on. (World Bank, 2002)

The start of the first wave of globalization coincides with the first free trade pact, so called Cobden–Chevalier Treaty. It was signed in 1860 between France and Great Britain. This agreement increased the trade volume between two countries. It remained in force until France terminated the agreement in 1892, when it introduced protectionist measures. This wave is also the era of important inventions such as

steam engine, electricity and telegraph. These inventions reduced the cost of transportation of goods and increased the world trade. Moreover, they also helped people to immigrate easier than before. Many European people immigrated from Europe to the Americas.

WWI interrupted the first wave and led to protectionism. Many nations were affected by the Great Depression that started in USA in 1930s. Then, feeling the negative burden of being intensely interrelated countries started to protect their national industries. Therefore, they raised their customs tariffs in order to adjust the balance of payments. This self-defence policy prevented the trade activities. Especially during the WWII between 1939-1945, self-sufficient economies were the major target of national economic policies .

The second wave of globalization started after WWII. After these big catastrophes, countries wanted to increase cooperation among themselves in many fields and integrate more. In accordance with this purpose, GATT was signed in 1947 in order to reduce the tariffs and trade barriers. USA was an important economic leader in this time period. Protectionism was reined in, trade barriers came down, transport costs continued to fall (World Bank, 2002).

The fall of Berlin wall was a dramatic symbol of the changing economic world order and the third wave of globalisation. Not only the socialists and communists, but also almost all of the developing countries that insist on following import substitution policies started to integrate with international markets started. (Johnson, 2016). The world realized the unused capacity of labour force in developing countries as they made up of a substantial number of world population. In less than a half century, developing countries have gained important increases in the exports of both their goods and services, and they started to be dominant in

manufacturing industries. The transformation period created an anticipation of global power to shift from west to east (Glennie and Straw, 2012). It looks like that as of 2019 the globalization may enter a new phase as the trade wars between the USA and China creates a turmoil and increases the uncertainty regarding the future of world trade (Li, He and Lin, 2018).

2.2 The World Trade Organization

As the trade activities expanded in late 1980s, bilateral agreements between countries were realized to be unsatisfactory. WTO was founded in 1994 to replace GATT. It started to operate on 1 January 1995 under the Marrakesh Agreement. Today, the aim of the WTO is not only to manage the relations among its members regarding the trade of goods but also trade of services and the intellectual property rights. Moreover, WTO has a body for disputes among member states. The organizational structure consists of Council for Trade in Goods, Council for Trade-related Aspects of Intellectual Property Rights, Council for Trade in Services, and Trade Negotiations Committee (WTO, 2016).

The WTO played crucial role in the third wave of the globalization by adopting the following five rules for trade liberalization:

- Non-discrimination: It is practiced by two rules: The first one is Most Favored Nations rule. It means that if a member country makes a favour for another member country, it should do the same for all the other countries. The second one is national treatment policy. It means that the imported goods and nationally produced goods should be treated in the same way. Imported goods from member countries should not be exposed to any trade barrier.

- Reciprocity: Countries should make concession in order to promote free trade while they expect from the other member countries to make concessions as well.
- Binding and enforceable commitments: A member country can change its commitments. However, it should compensate for the losses of the affected countries. If the other countries claim that their losses are not made up, they can set up a dispute settlement.
- Transparency: Member countries should publish trade regulations that they have made so that the other member countries can be aware of the changes in the trade policies of member countries.
- Safety valves: Member countries can restrict the trade only under certain circumstances: trade measures for non-economic objectives, trade measures to prevent unfair competition and trade measure for economic objectives.

As of April, 2019, WTO has 164 member countries. Some of the founder members are Argentina, Brazil, Canada, USA, EU, and India. China became a member in 2001 while Russia became a member in 2012. Turkey has been a member of WTO since 26 May, 1995.

Various studies analyse the impacts of WTO on world trade and its members. The literature certainly agrees on that WTO expanded the worlds' trade. Goldstein, Rivers and Tomz (2007) demonstrate that both GATT and WTO have significantly increased world trade since 1946. Kohl (2013) argues that WTO positively affects the volume of trade among its members. Moreover, membership affects the trade with the rest of the world but what is important is the extent of member countries' commitments.

WTO is the unique organization at the international level that promotes the free or less restricted trade. Thus, it is not surprising that the trade volume increases

with successful activities of such a big organization. However, the trade should be fair not only free. In that respect, WTO is highly criticized both by the developing countries and the free trade promoters. Solanki (2012) and Grammling (2010) analyses these critiques. Those critiques can be classified under the following dimensons: Credibility, accountability, transparency, legitimacy and relevance. Some developing countries assert that WTO is not enough credible as the developed countries are not enforced to follow their commitments in the Uruguay Round.

Secondly, WTO is not accountable enough for the rules and regulations as it is heavily driven by powerful member countries. Thirdly, WTO has not sufficiently improved its transparency policy. Especially the decision-making process is accused to be not clear. Fourthly, WTO should encourage all members to promote sustainable growth and better living standards. Finally, the nature of WTO is harmed by preferential trade agreements (PTAs). Therefore, it should establish regulations to prevent PTAs as it is supposed to be relevant to its objectives.

Dispute settlements are organized by WTO in order to solve the conflicts among members regarding the trade relations. For example, dispute settlement activities of Turkey include 17 cases as complaint and respondent (WTO, 2016). Fung, Garcia-Herrero and Siu (2009) analyse both benefits and costs of WTO and they suggest that strong countries may put pressure on weak countries with or without a membership of WTO, but the existence of WTO is likely to lessen the effect of strong countries. So, developing countries can have better opportunities to increase their trade volume with the world. Yet, it is not easy to disprove what Subramanian and Wei (2007) find out: The effects of WTO in increasing world trade is immense but the benefits are distributed unfairly.

Indeed, as Ramos (2007) shows in her dissertation, the role of bilateral trade agreements is crucial in defining the patterns and direction of international trade flows. She shows that the effects of trade barriers are significantly high in determining the bilateral trade. The next section, introduces and analyses the free trade agreements.

2.3 What is an FTA?

Since the end of second world war, many important developments have occurred to encourage free trade all over the world. Identifying these factors are beyond the aim of this thesis. Aside the WTO, the economic unions and free trade agreements (FTAs) were initiated by the countries who were willing to enjoy the benefits of trade. An FTA is an economic agreement between two or more parties, which allows these parties trade with each other without any political restrictions against trade. Parties of the agreement keep implementing tariffs on the products or services which are produced in the other countries.

The process of signing an FTA changes if the signatory is a block of countries so that an FTA can also be a way of linking the regional integration to a global one. For instance, if EU wants to sign an FTA with a trade partner, European Commission does the negotiation with the trading country. Finally, European parliament approves the agreement. After the agreement enters into force, all of the EU member countries abide by the rules of the agreement.

Baldwin (1993) predicted that number of FTAs should increase in acceleration. An FTA forces the non-member countries to move toward free trade agreements as the FTA of their trade partners makes them disadvantaged. Baier,

Bergstrand and Mariutto (2014) confirm this prediction and define this increase as one of the most significant international economic events over the last two decades. Trade agreements can be signed in many different forms and shapes.

Kohl, Brakman and Garretsen (2013) explain this heterogeneity by 17 trade-related policy domains and 9 institutional quality indicators as given in Figure 1. Trade related policy domains are the issues that trade agreements deal with. 13 of trade-related policy domains are mandated by WTO which can be defined by standard trade provisions. For instance, EU- Turkey Customs Union includes products except agricultural products. NAFTA encompasses all of these policy domains.

Determinants of Heterogeneity in Trade Agreements		
Trade-related Policy Domains		Institutional Quality Indicators
WTO Standards	Non-WTO Standards	
Agriculture	Capital Mobility	Consultations
Anti-Dumping and Countervailing Measures	Competition	Definition
Customs Administration	Environment	Dispute Settlement
Export Restrictions	Labour	Duration and Termination
Import Restrictions		Evolutionary Clause
Intellectual Property Rights		Institutional Framework
Investment		Objectives
Public Procurement		Plan and Schedule
Sanitary and Phytosanitary Measures		Transparency
Services		
State Aid		
State Trading Enterprises		
Technical Barriers to Trade		

Figure 1. Determinants of heterogeneity in trade agreements
Source: Kohl, Brakman and Garretsen, 2013

Kohl, Brakman and Garretsen (2013) shows that whether the effect of FTAs on world's trade volume is positive or negative depends on these determinants. Therefore, it can be asserted that the scope of FTAs is quite important.

2.4 The role of FTAs in the growth of world trade

Since 1950s, the world trade has grown substantially. Many economists explain the causes in many different ways. Krugman (1995) attributes the reason to the technological changes. Developments in transportation have led to lower transportation costs, and communication technology has made the trading easier and cheaper. Most importantly, the economies of scale and the use of new technologies took the costs of the production down and gave rise to higher qualities.

Feenstra (1998) lists four reasons for the economic growth: Trade liberalization, decline in transportation cost, GDP growth, and vertical specialization and outsourcing. Moreover, he puts forward that while about 40% of the growth can be explained by trade liberalization and decline in transportation cost, the rest is mainly explained by GDP growth, and vertical specialization and outsourcing.

Baier and Bergstrand (2001) analyse the 16 Organization for Economic Co-operation and Development (OECD) countries and the growth of world trade among themselves between 1950s and 1980s to explain the reason for this growth. They find that real GDP growth can explain about 67–69% of the growth of the world trade, trade agreements and tariff reductions can explain about 23–26% and declines in transportation cost can explain 8–9%.

Boudreaux (2015) also lists economic growth as one of the benefits of free trade. He proposes that freeing trade decreases imported-input cost. In other words, manufacturers can produce at lower costs thanks to decrease in imported-input.

Therefore, there is inverse proportion between production costs and economic growth. As the production costs decline thanks to free trade, economic growth will increase.

Although the above-mentioned studies present more than one factor to explain the growth of world trade, it can be asserted that their common point is that FTAs play a significant role in the liberalization of world trade. However, cost and benefit analysis of FTAs for each partner countries is a little more complicated issue. Being different than multilateral trade liberalization, free trade agreements create asymmetric opportunities for partners. In this thesis, different dimensions, namely negotiation, implementation, trade creation and trade diversion possibilities, are taken into consideration one by one in explaining the potential effects of FTA on trade partners.

2.5 Negotiation of FTAs

Negotiation process is an important issue for signing FTAs. It takes a long time for many countries to reach an agreement in the negotiation process of FTAs crating a lot of transaction costs. The proposal, the negotiation, the signing and the implementation of FTA can be considered as the main parts which make up the negotiation process.

Mölders (2012) explains the negotiation process in detail and comes up with some findings. The first finding shows that if the number of participating countries increases or one of the partners is a politico-economic union, the negotiation stage prolongs. For example, if EU is one of the participating parties, the negotiation process becomes longer as EU represents more than one stakeholder. Moser and Rose (2012) agree with this finding and they also maintain that trade negotiations are

protracted when the participating countries are far away from each other geographically.

The second finding by Mölders (2012) is that democratic countries finish the negotiation process faster as they cooperate more during this process. Moser and Rose (2012) also agree with this finding and they add one more finding that negotiations finish faster when the participating countries are richer.

Another finding by Mölders (2012) is that the ratification process prolongs if the democratization and political constraints are higher in partner countries. In other words, control and checks may prolong the ratification process in the parliaments.

2.6 Implementation of FTAs

Although many economists put forward free trade can be considered as a necessary macroeconomic step for economic growth, how to make the transition from tariffs, quotas and restrictions to free trade is a controversial issue (Irwin, 2008). One important issue in the implementation of FTAs is the role of origin. It signifies where the imported goods are produced. It is mainly used to determine tariffs and restrictions which will be applied for the imported good. The role of origin help signatory countries of the FTA to prevent the abuse of the agreement by third parties.

Two important factors for the success of an FTA are path dependence and deepness of integration (Cassing, 2007). Path dependence means that the impact of an FTA also depends on the future trade agreements which will be made by partners. In other words, the potential agreements can lessen the impact of an FTA. The second factor, deepness of integration is another important concept which shows the level of economic freedom an FTA allows. While traditional FTAs allow free

movement of goods, new agreements with deeper integration may include movement of labour and fiscal capitals.

2.7 Trade creation and trade diversion

The benefits that may be derived from FTAs depend on how the FTA in effect changes the way and volume of trade between the signatory countries and their other trade partners. The trade barrier reduction provided by an FTA spurs the competitiveness of imported products from FTA partners against the domestic production and against the imports from other countries (Arnold, 2003). In that respect, an FTA is in force may change the trade volume and the way of trade in two directions: trade creation and trade diversion.

Trade creation means that as the cost of imported good A decreases, demand for imported good A from new FTA partner increase and the domestic production is substituted. This lead to an increase in trade volume of imported good A. The trade creation enforces the domestic producers to compete with more efficient rivals in their market.

Trade diversion means that although the demand for imported good A from new FTA partner increase, the domestic production do not decrease significantly but the volume of imported good A from other supplier countries decrease. So, the trade of an imported good divert from other suppliers to new FTA partner and domestic producers. Trade diversion is likely when the other importers of the product are more efficient than the importer FTA partner. The domestic producers may also substitute the decreased volume of imports from other countries as well as FTA partners. Therefore, the volume of overall trade does not increase but the way of trade diversified.

Bruce (2003) explains the difference between trade creation and trade diversion by stating that trade creation is more likely to produce a net economic benefit while trade diversion is less likely to be beneficial to the importing country. Indeed, the negative effects of a potential trade diversion can be balanced by FTAs which are signed by different importers of the product. The most efficient producer can be provided privileges in this way whereas different products from different importers create a wide variety in the market. Shujiro and Misa (2007) show that FTAs generate trade creation effect while trade diversion effect caused by FTAs are limited.

2.8 What are the potential effects of free trade and FTAs?

The criticism to free trade generally formed by business practitioners more than academics. One of the main arguments against free trade is related to transformation of the role of developing countries in worlds trade. As the manufactured production in developed countries shifts toward developing countries, developed countries experience a lot of problems such as unemployment, widening income inequality and raising social tensions. Moreover, as developing countries make some concessions in order to produce at low costs, they are alleged to generate bad working conditions and environmental harm (Chmielewski, 2016).

Fletcher (2010) also criticizes free trade by proposing that trade is not sustainable as the sources are not infinite. Moreover, the workers who lose their jobs in developed countries have more difficulty than anticipated to find new jobs in more technological industries and it is not guaranteed that gains from cheaper imports will compensate losses from lowered salaries.

On the other hand, free trade has been favoured by a significant number of economists. Free trade is promoted in many senses. One reason put forward by Bradford, Grieco and Hufbauer (2005) is that free trade increases national income and GDP per capita under specified conditions such as the existence of comparative and competitive advantages and technological spillovers.

An important benefit of free trade is related with climate. A study done by Antweiler, Copeland and Taylor (1998) shows that there is a significant relation between openness to international markets and pollution concentrations. 1% increase in output and income caused by openness to the international market decreases the pollution concentrations by 1%. Briefly, free trade is not harmful for the environment if it is managed well.

FTA's can be considered as taking steps into free trade and can be expected to increase the trade volume. Besides, FTA's other effects on the economic activity are not insignificant.

Froning (2000) list them in four categories. Free trade promotes competition and innovation, generates economic growth, spreads democratic values, and raises economic freedom.

Amadeo (2015) adds to benefits of FTAs with more dynamic business climate, lower government spending to subsidize local producers, more foreign direct investment, expertise, technology transfer, and employment opportunities. A study done by Ulaşan (2012) to investigate the relationship between openness to international trade and economic growth shows that there is a positive significant relationship between many types of openness variables and long-run economic growth.

Another important characteristic of FTAs is their contagiousness (Baldwin and Jaimovich, 2010). When two parties, let's say country A and B, sign an FTA, it forces the trade partners of country A and B to sign an FTA with country A and B. Metaphorically, signing an FTA creates a domino effect and the degree of this contagion is determined by the significance of the partners' market.

Better public health is another benefit of FTAs. United Nations Development Programme (2012) states that access to medicine and treatment is made easier by FTAs. Especially least developed countries can benefit from FTAs for the public health as access to medicine and treatment can become affordable thanks to FTAs.

An unusual benefit of FTAs is proposed by Martin, Mayer and Thoenig (2010). FTAs provide political forum for countries to discuss their political issues. This situation increases the opportunity to avoid conflicts among member countries of FTAs.

Because Turkey can sign FTAs only after EU signs an FTA with the partner country, FTAs are much more important for Turkey than any other country. Savaşer (2013) lays emphasis on this issue by stating that Turkish exporters need FTAs in order to compete in equal circumstances with other countries' exporters as FTA partners of EU can export to Turkey without any tariff even if they do not sign an FTA with Turkey.

CHAPTER 3

FTAS OF TURKEY AND MERCOSUR

3.1 FTAs of Turkey

Turkey has tried to catch up with the economic globalization. In 1951, it signed GATT which took effect in 1948. WTO replaced GATT on 1 January 1995 and Turkey became a member of WTO on 26 March 1995. Moreover, it applied for membership to EEC in 1959, shortly after its foundation with the Treaty of Rome in 1957. An association agreement called Ankara Agreement was signed by Turkey and EEC in 1963. Afterwards, Turkey and EU signed Customs Union agreement in 1995. Turkey became officially a candidate country to join EU in 1999.

Apart from these initiatives, FTAs are also viewed as important economic enterprises in order to increase trade volumes with neighbouring and nearby countries with the aim of penetrating into new markets. Turkey started to sign FTAs in 1990s and had 4 FTAs until 2005. On the other hand, Turkey has signed 36 FTAs with various partners up to now. So, 2005 can be viewed as a milestone for Turkey to sign FTAs.

11 of these FTAs have been cancelled as these countries have become a member of European Union (EU). Moreover, FTAs with Syria and Jordan were annulled in 2011 and 2018 respectively. These partners are EFTA (1992), Israel (1997), Macedonia (2000), Bosnia-Herzegovina (2003), Palestine (2005), Tunisia (2005), Morocco (2006), Egypt (2007), Syria (2007), Georgia (2008), Albania (2008), Serbia (2010), Montenegro (2010), Chile (2011), Jordan (2011), South Korea (2013), Mauritius (2013), Malaysia (2015), Moldova (2016), Faroe Islands (2017) and Singapore (2017).

3.1.1 EFTA

The FTA between EFTA countries and Turkey was signed in 10 December, 1991 and entered into force in 1992. EFTA countries comprised of the Republic of Iceland, the Principality of Liechtenstein, the Kingdom of Norway, Austria, Finland and Sweden and the Swiss Confederation. However, Austria, Finland and Sweden seceded from the union after they became a member of the EU. The agreement compassed the processed agricultural products, industrial products, and fishery products.

Table 3 shows that Turkey's export volume has grown more than 7 times and import volume from EFTA has grown more than 4 times since the FTA entered into force.

Table 3. Trade Volume between Turkey and EFTA Countries

Years	Export	Import	Trade Balance
1992-EFTA 3	298,428	791,106	-492,678
2018-EFTA 4	2,275,474	3,610,859	-1,335,385

Source: TUIK, 2019

When the trade volume between Turkey and EFTA in the first year of the agreement and last year is analysed, it is seen that trade deficit has continued over the last decade except a few years such as 2009, 2015 and 2016.

3.1.2 Israel

One of the oldest FTAs of Turkey is with Israel. It was signed on 14 March, 1996 and entered into force in 1997. The agreement removed tariff and non-tariff barriers for merchandise trade, measures for balance of payment, state monopolies. Furthermore, it established protection for intellectual, industrial and commercial property rights. The major export product groups are spare parts and metal products and the main import product group is petroleum products and lubricants. The main

export products are bars and rods of iron or non-alloy steel, motor cars and other motor vehicles principally designed for the transport of people and insulated wire, cable and other insulated electric conductors while the main import products are petroleum oils and oils obtained from bituminous minerals, polymers of propylene or of other olefins and electric generating sets and rotary converters.

When the first year and last year of the FTA are compared, table 4 shows that Turkey's exports to Israel have grown about 10 times while imports of Turkey from Israel have grown more than 7 times since the implementation of FTA.

Table 4. Trade Volume between Turkey and Israel

Years	Export	Import	Trade Balance
1997	391,513	233,681	157,832
2018	3,894,519	1,714,355	2,180,164

Source: TUIK, 2019

When the trade volume between Turkey and Israel in the first year of the agreement and last year is analysed, it is obvious that a favourable trade of balance for Turkey has continued. Moreover, the trade surplus has grown about 13 times.

3.1.3 Macedonia

The FTA between Macedonia and Turkey was signed on 7 September, 1999 and entered into force in 2000. Like the previous two agreements, the agreement included removal of tariff and non-tariff barriers and protection for intellectual, industrial and commercial property rights. The major export product groups are textile products, machinery and electronics, and metals while main import product groups are iron and steel and cotton. More specifically, parts and accessories of the major vehicles, electrical machinery and equipment, and parts suitable for use solely or principally with motors are the main export products while motor cars and other motor vehicles

principally designed for the transport of people, automated teller machines, and boards, panels, consoles for electric control are the main import products.

Table 5 shows that Turkey's exports to Macedonia have grown more than 3 times while imports of Turkey from Macedonia have grown more than 10 times since the implementation of FTA.

Table 5. Trade Volume between Turkey and Macedonia

Years	Export	Import	Trade Balance
2000	107,765	10,469	97,295
2018	396,884	107,928	288,956

Source: TUIK, 2019

When the trade volume between Turkey and Macedonia in the first year of the agreement and last year is analysed, it is observed that a favourable trade of balance for Turkey has continued since the implementation of FTA. Moreover, trade surplus has grown about three times.

3.1.4 Bosnia and Herzegovina

The FTA between Turkey and Bosnia and Herzegovina was signed on 3 July, 2002 and entered into force in 2003. Some of the issues which the agreement affects are the quantity restrictions, agriculture policy between two countries, animal and phytosanitary health measures, and other general provisions. The major export product groups are machinery, plastic and plastic products while the major import product groups are vegetable products and metals. While the main export products are tubes, pipes, hoses and fittings of plastics, washing machines, and refrigerators, the main import products are iron and steel, and cereals.

Table 6 demonstrates that Turkey's exports to Bosnia and Herzegovina have grown more than 6 times while imports have grown more than 30 times since the implementation of FTA.

Table 6. Trade Volume between Turkey and Bosnia and Herzegovina

Years	Export	Import	Trade Balance
2003	63,227	8,342	54,884
2018	420,227	241,221	179,006

Source: TUIK, 2019

When the trade volume between Turkey and Bosnia Herzegovina in the first year of the agreement and last year is analysed, it is clear that a favourable trade of balance for Turkey has continued.

3.1.5 Palestine

The FTA between Turkey and Palestine was signed on 20 July, 2004 and entered into force in 2005. The agreement included some rules such as quantity restrictions, internal taxation and some other general provisions. The major export products are cereals, wheat and tobacco while the major import products are edible fruits, but they are very few.

Turkey's exports to Palestine have grown more than eight times and imports have grown more than 21 times since the implementation of the FTA as is shown in table 7. The trade balance has continued in favour of Turkey and reached at 70 million dollars in 2018.

Table 7. Trade Volume between Turkey and Palestine

Years	Export	Import	Trade Balance
2005	9,401	303	9,097
2018	77,569	6,659	70,909

Source: TUIK, 2019

When the trade volume between Turkey and Palestine in the first year of the agreement and last year is analysed, it is apparent that a favourable trade of balance for Turkey has continued since the implementation of FTA. Furthermore, the trade surplus has grown about eight times.

3.1.6 Tunisia

The FTA between Turkey and Tunisia was signed on 25 October, 2004 and entered into force in 2005. Animal and phytosanitary measures, economic and technic cooperation, and state monopolies are some of the issues which have been regulated by the agreement. Spare parts, electronics and machinery and textile products are some major export groups while mineral and chemical product groups are major import groups. Motor vehicles for the transport of people and goods, woven fabrics of cotton, refrigerators are major export products while fertilizers, petroleum oils and diphosphorus pentoxide are major import products.

Table 8 indicates that Turkey's exports to Tunisia have grown more than 3 times while imports from Tunisia have increased about 55% since the implementation of the FTA.

Table 8. Trade Volume between Turkey and Tunisia

Years	Export	Import	Trade Balance
2005	294,785	117,372	177,412
2018	904,662	182,079	722,582

Source: TUIK, 2019

When the trade volume between Turkey and Tunisia in the first year of the agreement and last year is analysed, it is clear that a favourable trade of balance for Turkey has continued.

3.1.7 Morocco

The FTA between Turkey and Morocco was signed on 7 April, 2004 and entered into force in 2006. Invisible items of trade, foreign direct investment, intellectual property rights are a few of the issues which the agreement has regulated. Car and spare parts, precious stones are some major exports to Tunisia while car and spare parts and phosphoric acid are some of the main imports.

Turkey's exports to Morocco have grown more than 3 times while imports from Morocco have grown about 4 times since the implementation of the FTA as shown in table 9.

Table 9. Trade Volume between Turkey and Morocco

Years	Export	Import	Trade Balance
2006	551,377	173,902	377,474
2018	1,989,621	715,715	1,273,906

Source: TUIK, 2019

When the trade volume between Turkey and Morocco in the first year of the agreement and last year is analysed, it is seen that a favourable trade of balance for Turkey has continued.

3.1.8 Syria

The FTA between Turkey and Syria was signed on 22 December, 2004 and entered into force in 2007. Some of the issues regulated by the agreement are animal and phytosanitary measures, intellectual, industrial and commercial property rights and rules of origin. Animal and vegetable fats, cement and wheat are some of the export products while cotton and unclassified products are some import products.

Table 10 shows that Turkey's exports to Syria grew about 2 times and imports increased about 30% in 2011.

Table 10. Trade Volume between Turkey and Syria

Years	Export	Import	Trade Balance
2007	797,765	259,282	538,483
2011	1,609,861	336,646	1,273,214
2018	1,344,913	69,388	1,275,524

Source: TUIK, 2019

However, both exports and imports dramatically decreased in 2018 compared with 2011. The biggest reason for the abnormalities in trade between Turkey and Syria is the civil war in Syria and the FTA between Turkey and Syria was annulled in 2011.

3.1.9 Egypt

The FTA between Turkey and Egypt was signed on 27 December, 2005 and entered into force in 2007. Intellectual property rights, rules of origin, and removal of tariff and non-tariff barriers are some issues regulated by the agreement. Fuel products, metals and transportation and spare parts are some of the major export product groups. Chemicals, textiles and clothing and plastic products are some major import product groups. Petroleum oils and oils obtained from bituminous minerals, iron bars and rods or non-alloy steel, motor cars and other motor vehicles principally designed for transportation of people are the main export products while polymers of propylene, carbon and suits, jackets, trousers and ext. are the main import products.

Table 11 shows that both Turkey's exports to Egypt and imports from Egypt have grown more than 3 times since the agreement was signed.

Table 11. Trade Volume between Turkey and Egypt

Years	Export	Import	Trade Balance
2007	902,702	652,987	249,715
2018	3,053,570	2,190,936	862,633

Source: TUIK, 2019

When the trade volume between Turkey and Egypt in the first year of the agreement and last year is analysed, it is seen that the trade surplus has continued in favour of Turkey.

3.1.10 Albania

The FTA between Turkey and Albania was signed on 22 December, 2006 and entered in 2008. Dumping, taxation and industrial and commercial property rights are some of the issues which the agreement regulated. Metals, wood and machinery and electronics are some export products. Iron and steel is the biggest import product group with a share of 61%. Bars and rods of iron, parts suitable for use with the

machinery of headings and particle board of wood while bars and rods of iron are the main export products.

As shown in table 12, Turkey's export to Albania has increased about 30% while imports from Albania have decreased about 63% since the agreement entered into force.

Table 12. Trade Volume between Turkey and Albania

Years	Export	Import	Trade Balance
2008	305,736	36,696	269,040
2018	408,744	22,163	386,581

Source: TUIK, 2019

When the trade volume between Turkey and Albania in the first year of the agreement and last year is analysed, it is seen that the trade surplus has continues I favour of Turkey and it has increased about 43%.

3.1.11 Georgia

The FTA between Turkey and Georgia was signed on 21 October, 2007 and entered into force in 2008. Quantity restrictions, rules of origin, intellectual property rights are a few issues regulated by the agreement. Plastic products and machinery are some of the export product groups while textile and clothing, metals and chemicals are some import product groups. More specifically, tubes, pipes, hoses and fittings of plastics, refrigerators, and freezers are the main export products while bars and rods of iron, t-shirts, singlets, and other vests, and fertilizers are the main import products.

Table 13 shows that the exports of Turkey to Georgia have increased about 31%. But imports from Georgia has fallen by half since the first year of FTA.

Table 13. Trade Volume between Turkey and Georgia

Years	Export	Import	Trade Balance
2008	997,844	525,040	472,803
2018	1,315,185	233,871	1,081,313

Source: TUIK, 2019

When the trade volume between Turkey and Georgia in the first year of the agreement and last year is analysed, it is clear that the trade surplus has continued in favour of Turkey and it has increased more than 2 times.

3.1.12 Montenegro

The FTA between Turkey and Montenegro was signed on 26 November, 2008 and entered into force in 2010. Rules of origin, substitutions, competition rules regarding enterprises, intellectual, industrial and commercial property rights are a few of issue regulated by the agreement. Some of the major export products are machinery and electronics, textiles and clothing and metals while the main import product is metals with a share of about 70%.

Table 14 shows that Turkey's export to Montenegro have increased about 3 times and imports from Montenegro have increased about 2 times since the implementation of the FTA.

Table 14. Trade Volume between Turkey and Montenegro

Years	Export	Import	Trade Balance
2010	27,179	6,213	20,965
2018	79,394	14,217	65,177

Source: TUIK, 2019

When the trade volume between Turkey and Montenegro in the first year of the agreement and last year is analysed, it is seen that the trade surplus has continued in favour of Turkey.

3.1.13 Serbia

The FTA between Turkey and Serbia was signed on 1 June, 2009 and entered into force in 2010. Safeguard measures, balance of payment measures and animal and phytosanitary health measure are a few issues which were regulated by the

agreement. Textiles and clothing, machinery and electronics, and metals are some of the major export products while cooper, iron and steel and spare parts are some import products.

Table 15 shows that Turkey's export to Serbia have increased more than 2 times and imports from Serbia have increased about 3 times since the implementation of the FTA.

Table 15. Trade Volume between Turkey and Serbia

Years	Export	Import	Trade Balance
2010	306,114	109,523	196,590
2018	867,854	326,295	541,558

Source: TUIK, 2019

When the trade volume between Turkey and Serbia in the first year of the agreement and last year is analysed, it is clear that a favourable trade of balance for Turkey has continued.

3.1.14 Chile

The FTA between Turkey and Chile was signed on 14 July, 2009 and entered into force in 2011. Anti-dumping, safeguard measures, balance of payment measures contribute to the issues regulated by the agreement. Some of the major export products are motor vehicles, iron and steel products, and machinery while the main import product is cooper with a share of about 65%.

As shown in table 16, the exports of Turkey to Chile have increased about 3 times and imports of Turkey from Chile have decreased about 22% since the implementation of the FTA.

Table 16. Trade Volume between Turkey and Chile

Years	Export	Import	Trade Balance
2011	130,616	474,340	-343,724
2018	386,205	370,583	15,622

Source: TUIK, 2019

When the trade volume between Turkey and Chile after the implementation of FTA is analysed, it is observed that trade deficit has continued in favour of Chile, but it also has lessened in favour of Turkey over the last five years. Therefore, exports of Turkey to Chile which were done in 2018 surpassed the exports of Chile to Turkey.

3.1.15 Jordan

The FTA between Turkey and Jordan was signed on 1 December, 2009 and entered into force in 2011. Some of the issues regulated by the agreement are state monopolies, competition rules, subsidies, and structural adjustment. The major export product is petroleum based lubricating oils and the main import products are different kinds of minerals.

The table 17 shows that the exports of Turkey to Jordan have increased about 70% and imports of Turkey from Jordan have increased about 47% since the agreement entered into force. Therefore, it is observed that the trade surplus has continued in favour of Turkey. It has grown about 73% and reached at 763 million dollar in 2018.

Table 17. Trade Volume between Turkey and Jordan

Years	Export	Import	Trade Balance
2011	506,838	66,480	440,358
2018	860,871	97,847	763,023

Source: TUIK, 2019

The FTA between Jordan and Turkey was annulled on 22 November, 2018 owing to notification of termination done by Jordan.

3.1.16 Mauritius

The FTA between Turkey and Mauritius was signed on 9 August, 2011 and entered into force in 2013. Internal taxation, quantity restrictions, anti-dumping, and

intellectual, industrial and commercial property rights were among the issues regulated by the agreement. Iron and steel, electrical machinery and medicines are the main export products and cotton and clothing products are the main import products.

As shown in table 18, the exports of Turkey to Mauritius have increased about 72% while imports of Turkey from Mauritius have decreased about 64% since the agreement entered into force. Therefore, the trade surplus has continued in favour of Turkey.

Table 18. Trade Volume between Turkey and Mauritius

Years	Export	Import	Trade Balance
2013	40,346	7,784	32,562
2018	69,429	2,775	66,654

Source: TUIK, 2019

When the trade volume between Turkey and Mauritius in the first year of the agreement and last year is analysed, it is seen that trade surplus has nearly doubled in favour of Turkey.

3.1.17 The Republic of Korea

The FTA between Turkey and the Republic of Korea was signed on 1 August, 2012 and entered into force in 2013. Invisible items of trade, intellectual property rights, competition and transparency are some issues regulated by the agreement. Pharmacy products and machinery are the main export products and electrical machinery, plastic products, iron and steel are the main import products.

Turkey and the Republic of Korea has been trade partners for a long time. The table 19 shows that there is a double increase in the annual export growth rate of Turkey between 2013 and 2018 although the trade deficit has continued unfavourably for Turkey.

Table 19. Trade Volume between Turkey and the Republic of Korea

Years	Export	Import	Trade Balance
2013	460,050	6,088,317	-5,628,267
2018	929,106	6,342,937	-5,413,831

Source: TUIK, 2019

When the trade volume between Turkey and the Republic of Korea in the first year of the agreement and last year is analysed, it is observed that trade deficit has continued.

3.1.18 Malaysia

The FTA between Turkey and Malaysia was signed on 17 April, 2014 and entered into force in 2015. Rules of origin, economic and technical cooperation, transparency are some issues regulated by the agreement. Military vehicles, carpets, iron and steel are the main export products and palm oil, clothing, and electronic circuits are some of the major import products.

As shown in table 20, the imports from Malaysia have increased about 59% although exports of Turkey to Malaysia have not increased dramatically.

Table 20. Trade Volume between Turkey and Malaysia

Years	Export	Import	Trade Balance
2015	357,082	1,339,167	-982,084
2018	365,405	2,132,978	-1,767,573

Source: TUIK, 2019

When the trade volume between Turkey and Malaysia in the first year of the agreement and last year is analysed, it is clear that the trade deficit is still far away from closing down.

3.1.19 Moldova

The FTA between Turkey and Moldova was signed on 11 September, 2014 and entered into force in 2016. Some of the issues regulated by the agreement are rules of

origin, removal of tariff and non-tariff barriers, customs transactions, economic and technical cooperation. Textile products such as knitwear, some machinery and plastic products are main export exports while sunflower is the main import product.

Table 21 shows that as export and import volumes have escalated. However, as the agreement is very recent, it is not possible to analyse the effects of the FTA.

Table 21. Trade Volume between Turkey and Moldova

Years	Export	Import	Trade Balance
2017	678.885	400.178	278.707
2018	438.020	352.145	85.875

Source: TUIK, 2019

When the trade volume between Turkey and Moldova in the first year of the agreement and last year is analysed, it is seen that a favourable trade of balance for Turkey has continued. However, both exports of Turkey and import from Turkey have dramatically decreased.

3.1.20 Faeroe Islands

The FTA between Turkey and Faeroe Islands was signed on 16 December, 2014 and entered into force in 1 October, 2017. Removal of tariff and non-tariff barriers, intellectual property rights, transparency and customs procedures are some of the issues handled in the agreement. The main exports are iron and steel products and petroleum oils while one of the main imports is coalfish fillets.

As shown in table 22, the export volume of Turkey to Faeroe Islands has increased more than two times and the import volume from Faeroe Islands has increased double.

Table 22. Trade Volume between Turkey and Faeroe Islands

Years	Export	Import	Trade Balance
2017	264	134	130
2018	672	267	405

Source: TUIK, 2019

As the agreement is very recent, it is not possible to analyse the effects of the agreement.

3.1.21 Singapore

The FTA between Turkey and Singapore was signed on 14 October, 2015 and entered into force in 1 October, 2017. Trade of goods, rule of origin and trade in services are three of the issues handled in the agreement. Petroleum oils and iron and steel products are two of main export products while plastic products and medical drugs are two of various import products.

The table 23 shows that both exports of Turkey and imports from Singapore did not increase dramatically in 2018 as compared with the first year of the agreement. However, it is observed that trade surplus has continued in favour of Turkey.

Table 23. Trade Volume between Turkey and Singapore

Years	Export	Import	Trade Balance
2016	262.382	147.737	114.645
2018	266.175	160.455	105.720

Source: TUIK, 2019

The FTA between both countries is very recent. Therefore, it seems that it is not possible to analyse its effects.

3.1.22 Analysis of FTAs of Turkey

Having briefly analysed the trade volumes and letter of agreements, it is seen that Turkey has great potential to increase trade volume with its FTA partners. However, FTAs of Turkey with EFTA, The Republic of Korea and Malaysia have not changed the trade balance between Turkey and these partners. The trade deficit has continued in favour of EFTA, The Republic of Korea and Malaysia. Moreover, FTAs of Turkey

with Israel, Macedonia, Bosnia Herzegovina, Palestine, Tunisia, Morocco, Egypt, Albania, Georgia, Montenegro, Serbia, Mauritius and Moldova have not changed the trade balance between Turkey and these thirteen partners, either. The trade surplus has continued in favour of Turkey.

The only FTA which Turkey has signed and has changed the trade balance between Turkey and its FTA partner is the FTA which was done with Chile. When the trade volume between the first and last year of the agreement is analysed, it is observed that trade deficit has lessened in favour of Turkey after the FTA went into force in 2011. Moreover, Turkey has experienced its first trade surplus in trade with Chile in 2018. This change in trade balance becomes much more important considering that Chile is the only Latin American country which Turkey has signed an FTA with.

3.2 FTA Paradox between Turkey and EU

West Germany, Netherlands, Luxembourg, Belgium, France and Italy founded the European Economic Community (EEC) in 1957 with the Treaty of Rome in order to establish an economic integration among member countries. Turkey officially made an membership application to EEC in 1959. Both parties signed an association agreement called Ankara Agreement in 1963. This agreement made a long term gradual accession plan for Turkey to CU. This plan consisted of three phases which are preparatory phase (1964-1970), transition phase (1973 – 1995), and completion (1996).

The Customs Union Decision was taken by Turkey and EU in 1995. It became effective on 1 January 1996. With the Customs Union's entry into force, Turkey agreed the economic conditions of the EU of which it was not a member.

Although the full economic integration to CU has contributed to Turkish Economy a lot, Turkey assumed some heavy obligations. Two of these harsh responsibilities are stated below:

- Turkey pre-accepts all commercial agreements which the European Union will make with other non-member countries.
- Turkey has to agree to make a deal with all the countries upon the consent and approval of the EU. If Turkey makes such a deal without the consent and approval of the EU, it carries the authority to prevent such a deal between Turkey and the other country.

These obligations entail Turkey to act dependent on the EU in its international economic relations. Although Turkey opened its national market to the EU countries by removing the customs tariff, Turkish national market did not have enough power to make competition with European markets. In addition to these negative effects, Turkey was expecting a full membership into the EU by accepting the CU. However, it has not lead to the membership negotiations between Turkey and the EU.

On the contrary to these positive expectations, the EU also did not included Turkey into its FTAs with third parties. This situation badly affects Turkish economy's trade balance since third parties which have signed and FTA with EU can have access to Turkish market without any customs tariff while Turkey continues to pay for customs tariffs to these third countries unless these countries sign an FTA with Turkey. Upon Turkey's insistence, the EU has added "Turkey Clause" in its FTAs with third countries. This clause states that it is expected from the third country to sign an FTA with Turkey under the guidance of the EU. Yet, this clause does not have any cogency for the third parties to make a deal with Turkey.

Because of this unfair situation, Turkey has to pay much more attention to its FTA policy. What is more, Turkey can only sign an FTA with countries which has already signed an FTA with the EU. Some of the countries that have already signed an FTA with the EU but not with Turkey are Mexico (2000), South Africa (2000), Algeria (2007), Colombia (2013), Peru (2013), Ukraine (2014), Ecuador (2017), and Canada (2017). An analysis done by Tekçe (2015) shows that since a new trade policy called "Global Europe" was declared by EU in 2006, EU has started to sign FTA with many third countries. This situation has become a big challenge for Turkish economy.

Being able to sign an FTA only with the countries that have made an agreement with the EU has very adverse effects on Turkish Economy. Apart from that, it also thwarts Turkey from making agreement with countries that do not want to sign an FTA with EU. For instance, if a country agrees to sign an FTA with Turkey, but not with EU, then Turkey has to wait this country to sign an FTA with EU first.

Tezbaşaran (2011) states that Turkey starts to lose its competitive power against countries which have signed an FTA with EU and do not want to sign an FTA with Turkey as these countries do sell their products to Turkey without any tariff and Turkish products exported to these countries are still under tariff and quota restrictions. This situation leads to unfair competition.

Akman (2010) puts emphasis on the public view of Turkish people on the negative effects of FTAs of EU on Turkish economy. He put forwards that FTA policy of EU raises up sceptical view in Turkey towards Turkey's process of membership to EU.

3.3 Latin America and MERCOSUR

Countries usually pursue two courses in foreign politics and economics: Global integration and regional integration. The most famous example of regional integration is EU. In this sense, according to Peterson (2004), Latin America has a choice in its future in terms of regional integration. Andean Community of Nations (CAN), G3 Free Trade Agreement and Dominican Republic - Central America Free Trade Agreement (CAFTA-DR) and Common Market of the South (MERCOSUR) are some of the economic and political bloc in Latin America.

Members of CAN are Bolivia, Ecuador, Colombia, Peru. It was founded in 1969 with six member countries. However, Chile and Venezuela withdrew from CAN in 1976 and 2006 respectively. It has a population of 110 million and a GDP of about US$ 750 billion.

G3 Free Trade Agreement was signed by Mexico, Colombia and Venezuela in 1995. However, Venezuela withdrew from the agreement in 2006. The agreement affects a population of some 180 million people. Moreover, Mexico and Colombia has a GDP of about US$ 1,500 billion.

The Dominican Republic, Costa Rica, El Salvador, Guatemala, Nicaragua and Honduras are the member countries of CAFTA-DR. The agreement affects a population of 55 million people. The GDP of CAFTA-DR is US$ 352 billion. MERCOSUR is also an economic initiative that offers promise of economic development. It is a political and economic agreement among four Latin American countries. Brazil, Argentina, Paraguay, Uruguay are the founding members of the union. Venezuela joined it in 2012. However, MERCOSUR suspended Venezuela in 2016 due to its failure to maintain commitments. It has a population of 267 million people. Moreover, it has a GDP of about US$ 3,000 billion. When these four

economic integrations compared, it can be put forward that the biggest economic integration in Latin America in terms of both population and GDP is MERCOSUR.

3.4 FTAs of MERCOSUR

Up to now, some of the countries with which MERCOSUR has signed FTAs are Chile, Israel, Egypt, Palestine, Lebanon and South Africa. Apart from these ongoing negotiations, MERCOSUR signed an FTA with Andean Community in 2005 which has four members: Bolivia, Ecuador, Colombia and Peru.

EU and US have also been attempting to sign an FTA with MERCOSUR. Negotiations between EU and MERCOSUR started in 1995 with an Interregional Framework Agreement. After 24 years of negotiation, both parties are very far away to conclude the agreement. While at the beginning of the negotiations the EU had more advantages, it has lost many of its advantages owing to last financial crisis. On the other hand, MERCOSUR has made both economic and social reforms. Therefore, we can maintain that the roles of both unions have reversed. According to Hancock (2012), MERCOSUR's recent popularity as a trading partner gives an added incentive to EU to conclude an agreement before it loses the advantage of being MERCOSUR's largest trading partner.

According to Wehner (2006), EU and US have different intentions in signing an FTA with MERCOSUR. EU seeks to promote economic growth along with developmental issues and the integration process of other regions through interregional cooperation agreements and FTA talks. Hancock (2012) argues that the EU needs to decrease its budget deficits and increase growth, and an FTA with MERCOSUR will help it to achieve both goals. Boyer and Schuschny (2008) analyse expectations of both sides: from the point of view of the MERCOSUR countries, the

results suggest that the FTA would be beneficial to foster their exports, especially in the case of light manufactures. Exports of EU to MERCOSUR would be increased, particularly in heavy manufactures sectors. In terms of GDP the results remain positive in the case of all the MERCOSUR countries in all simulated scenarios.

On the other hand, the US strategy is based on the trade not aid policy. US has the conviction that the promotion of market economies is the way to development. Schott (2002) shares the same opinion: US firms have already enjoyed good access to the Mexican market thanks to NAFTA. Moreover, the Free Trade Agreement of the Americas can also help US economy to have access to the other countries in the South America. Vaillant and Ons (2003) support the idea "liberalization excluding some sensitive products". That is to say, MERCOSUR producers in some agricultural industries will have significant comparative advantages. Meanwhile, in the United States various agricultural industries should be against the agreement. Although it is not a determinant from a political economy point of view, in general, the consumers in both parts would benefit from the agreement given its liberalizing character. Therefore, it can be expected a net aggregate welfare gain on both sides.

Turkey has an increasing trade volume with MERCOSUR countries. The trade volume between Turkey and MERCOSUR was about US$ 2 billion in 2009 and ten years later it became about US$ 6 billion in 2018. Moreover, MERCOSUR can be considered the biggest economic and political bloc with its GDP of US$ 3,000 billion and a population of about 267 million people. Therefore, signing an FTA with MERCOSUR can be a good opportunity to enter into Latin American Market.

As a natural result of Turkey's target to be a global player, economic relations with Latin America is gaining importance. Levaggi (2012) emphasizes that this cooperation has benefits for both sides. He puts forward that Latin America and Caribe have many opportunities for Turkish diplomacy. Likewise, Latin American countries can have different interests in collaboration with Turkey.

In accordance with these aims, Turkey started an enterprise to sign an FTA with MERCOSUR. The first exploratory talks were done in Buenos Aires on 22 April, 2008. A few months later, frame agreement was signed in San Miguel de Tucuman (Argentine). On 22 November 2008, the first round of FTA negotiation talks was held in Ankara. The second round was also held in Ankara in 2010.

CHAPTER 4

METHODS TO EVALUATE EFFECTS OF FTAS

FTAs are quite important macroeconomic policies for countries as an FTA directly affects the economic relations between the two parties. If these parties are developing countries, it becomes more significant to analyse the potential effects of an FTA before signing it. Therefore, assessing the potential benefits and costs of an FTA before its implementation is crucial for both public and private stakeholders. Similarly, checking whether its objectives have been met or not after its implementation is necessary to make adjustments (Plummer, Cheong and Hamanaka, 2010). There are many ways to assess the impacts of FTAs. They can be classified as qualitative assessment methods and quantitative assessment methods.

4.1 Qualitative assessment of FTAs

If a researcher wants to assess the impacts of a potential or ex FTA, interviews and questionnaires with private stakeholders can be applied as they would reflect the interest of private stakeholders.

4.2 Quantitative assessment of FTAs

Methods which use economic data can be viewed as tools for quantitative assessment. A quantitative analysis of free trade assessment generally consists of two methods which are used as ex ante and ex post assessment tools. Trade indicators such as revealed comparative advantage (hereafter, RCA), the methods for assessing the impacts of FTA in an individual market such as the SMART (Software for Market Analysis and Restrictions on Trade), computable general equilibrium models

are viewed as ex ante assessment tools while preference indicators, welfare indicators and gravity model are viewed as ex post assessment tools. The figure 2 shows the division of these methods.

	Model 1	Model 2	Model 3
Ex ante methods	Trade Indicators (Revealed Comparative Advantage)	Assessing the FTA in a single market (Software for Market Analysis and Restrictions on Trade)	Computable General Equilibrium (the GTAP Model)
Ex post methods	Preference Indicators	Welfare Indicators	The Gravity Model

Figure 2. Classification of assessments of FTAs

4.2.1 Ex ante methods

There are a number of quantitative methods to analyse the possible effect of FTAs before its implementation. Some of these so called ex ante methods are briefly introduced.

4.2.1.1 Trade indicators

Analysts need data and tools to make inferences about the results of trade policies. Mikic and Gilbert (2007) define trade indicators as an index or a ratio that can be used to describe and assess the state of trade flows and trade patterns of a particular economy or economies and can be used to monitor these flows and patterns over time or across economies/regions. Although there are many trade indicators such as intraregional trade share, revealed comparative advantage, complementarity, export similarity and ext, revealed comparative advantage and complementarity are suitable methods for the purpose of this study.

4.2.1.2 Revealed comparative advantage index

David Ricardo put forward comparative advantage theory which states that some countries are good at some sectors while the others are good at the other sectors. Therefore, these countries should specialize in sectors at which they are already good. Based on this theory, Balassa (1965) introduced revealed comparative advantage index (RCA). It is used to analyse in which sectors/goods countries have comparative advantage. It can be defined as an index to determine in which goods or services a country have more advantage to produce. Below is the formula of revealed comparative advantage.

$RCA=(X_{ij} / X_{it}) / (X_{nj} / X_{nt})$

X_{ij} is $country_i$'s export of $good_j$

$X_{it\ is}$ $country_i$'s total export

X_{nj} is world's export of $good_j$

X_{nt} is world's total export

If the index is between 0 and 1, the country cannot be said to have a comparative advantage in this goods or service. If the index is above 1, it can be stated that the country has comparative advantage. Based on revealed comparative advantage, Plummer, Cheong and Hamanaka (2010) state that the difference between countries' RCA indices should be analysed to determine if the countries are suitable FTA partners. As the difference between countries' RCA indices gets larger, they become more suitable FTA partners.

4.2.1.3 Trade complementarity index

Countries may have comparative advantage in some goods or services. This situation provides them with advantage in the export of these goods or services. However,

there may be cases where the target country may not import the goods or services in which exporter country have comparative advantage. To determine which goods or services overlap between export country and target country, the complementarity index is used. In other words, complementarity can be defined as an overall measure of the degree to which what one country has to sell matches what another wants to buy (Mikic and Gilbert, 2007). Below is the formula of the complementarity index.

$TC_{ip} = 100(1 – sum(|M_{ir} – X_{ip}| / 2))$

TC_{ip} = the trade complementarity of country p in good i

X_{ip} = the share of good i in the total exports of country p

M_{ir} = the share of good i in the total imports of country r

4.2.1.4 Assessing the FTA in a single market

The previous methods assess the FTA for all the sectors and the sole effect of the FTA partner, not other countries. The Software for Market Analysis and Restrictions on Trade (SMART) analyses the effect of the FTA on a single market. More specifically, it analyses the changes in the import of a market. Although importing from the FTA partner has advantages, there are cases when importing from non-FTA partner countries is favourable. Therefore, an FTA does not guarantee import from FTA partner. Plummer, Cheong and Hamanaka (2010) add that there are five important data for SMART to analyse the effect of trade policy change:

- The import value from each foreign partner

Each foreign partner may have a different price for the same or variety of the commodity.

- The tariff faced by each foreign partner

Each foreign partner may face different tariff for the same commodity.

- The import demand elasticity for the commodity
- The export supply elasticity for the commodity
- The substitution elasticity between varieties of the commodity

4.2.1.5 Computable general equilibrium

Since the implementation of several FTAs in the early 1990s, Computable General Equilibrium (CGE) modelling has become one of the most important empirical tool to assess their impacts. One of the suitable models, the computable general equilibrium model is used for ex ante assessment and consists of equations and a database. Such an ex ante method is very significant because it determines both supply and demand. The CGE model is especially equipped in order to take into account all the details between both markets. In other words, this modelling analyses socioeconomic effects of a policy shock on related and neighbour countries. Because of its systemic nature, the extensive economy-wide effects expected from policy shocks associated with trade openness require the use of general equilibrium analysis as one of the main used quantitative tools (Boyer and Schuschny, 2008).

4.2.1.6 The global trade analysis project model

The Global Trade Analysis Project (GTAP) is an international community network of established institutions and researchers that makes possible and promotes trade policy analysis by means of a fluid exchange of useful information and modelling frameworks. (Boyer and Schuschny, 2008) A multi-country and multi-sector general equilibrium model, the GTAP Model is based on neo-classical hypothesis. It assumes constant returns to scale and perfect competition.

According to Yontem, McDonald and Perraton (2007), the most complete and widely available database for use in global computable general equilibrium (CGE) modelling is produced by the GTAP project. Its database has become generally accepted as the preferred database for global trade policy analysis and is used by nearly all the major international institutions and many national governments. This model takes into account of three aggregations: regions, sectors, and factors. GTAP 7 model will be used in this study. It presents researchers 112 different regions, 57 sectors, and 5 factors. Regions can be determined by the researchers; they can be individual countries or a group of countries like EU25, Sub-Saharan Africa, or MERCOSUR. In terms of sectors, GTAP model provides you with a list of predetermined sectors and related sectors can be chosen by the researchers. Lastly, factors consist of five options: Land, unskilled labor, skilled labor, capital and natural resources.

4.2.2 Ex post methods

Analysing ex post effects of an FTA after its implementation is as important as analysing potential effects of an FTA before its implementation. An important advantage in analysing costs of an FTA is that it provides policy makers with data to determine if there is an increase in trade volume and if the FTA affects the welfare (Plummer, Cheong and Hamanaka, 2010).

4.2.2.1 Preference indicators

There are some preference indicators some of which are coverage rate, utility rate, utilization rate.

4.2.2.2 Welfare indicators

Welfare effects of FTAs can be analysed in two ways: qualitative and quantitative. Qualitative analysis can be done by comparing trade creation and trade diversion. Vinerian Model (1950) states that the agreement can be viewed as beneficial when the effect of trade creation is larger than the effect of trade creation. Quantitative analysis can be done by investigating the trade volume, intra-union terms of trade, and extra-union terms of trade. Lloyd and Maclaren (2004) propose that these three indicators are directly related with welfare of member countries.

4.2.2.3 The gravity model

Many people view the gravity as a natural phenomenon which was proposed by Newton. Head (2003) defines the gravity model as a short hand representation of supply and demand forces. It is explained by Albert Einstein as a feature of space-time geometry rather than an ordinary force. It tries to explain the force of attraction between objects. It depends on both size and proximity.

The gravity model of trade was first proposed by Jan Tinbergen in 1962 and used in order to estimate the trade flows. Since Tinbergen first used it, it has been used in various studies. Baier and Bergstrand (2007) attribute the reason why the gravity model has used extensively over nearly 50 years to analyse the trade flows to its strong explanatory power. The explanatory power of the gravity model (R^2) is usually between 60% and 80%. Bacchetta et al. (2012) support this idea by stating that many trade models need gravity in order to work. Frankel (1997) adds two more reasons for the success of the gravity model which are enhanced theoretical foundations and a recent interest among economists for the relation between trade and geography.

It assumes that the countries which have common borders or are close to each other trade more compared to countries which do not have a common border or are far away from each other. Moreover, it assumes that as the GDP of countries increases, the trade between them increases. Therefore, the economic size of countries are positively related to their trade volume while the geographical distance is negatively related to their trade volume. Plummer, Cheong and Hamanaka (2010) state that they can be used to analyse the effects of important economic and political developments such as FTAs, WTO memberships, migration flows, currency unions, and foreign direct investment.

There are many studies which propose that there is a direct link between trade and GDP. One of the studies done by Shepherd (2012) supports that there is a positive correlation between trade and GDP and this correlation is nearly the same for GDP of both exporter and importer countries. Another study done by Tatlıcı and Kızıltan (2011) investigates export volume of Turkey with 46 countries between 1994-2007. This study also finds that there is a significant correlation between Turkey's export and GDPs of Turkey and its 46 partners.

As the trade becomes globalized, trade cost declines over years. A study done by Novy (2009) supports this idea by giving the example that trade costs of US with its big partners Mexico and Canada declined on average by some 40% between 1970 and 2000.

Head (2003) states that there is not a direct relation between shipping freight costs and distance travelled. Moreover, distance does not change the cost of packaging, loading and unloading. Although Head (2003) puts forward that distance is not a quite important issue anymore for trade, he admits that some factors such as

time during shipment, costs of synchronization, communication and cultural distance make distance important.

Anderson and Wincoop (2001) claim that bilateral national trade levels are reduced by borders at plausible and substantial magnitudes. There are numerous efforts, both at macro and micro level, to reduce the effects of borders on bilateral trade. Wilson, Mann and Otsuki (2004) put these efforts under the concept *trade facilitation*. They assert that trade facilitation is comprised of concrete border elements and inside the border elements. While the former includes port efficiency and customs administration, the latter includes domestic regulatory environment and the infrastructure to enable e-commerce. Wilson, Mann and Otsuki (2004) measures the relationship between trade facilitation and trade volume by using gravity model in a cross country study. They find that the developments in trade facilitation measures enhance the trade volume, both exports and imports.

Ramos, Zarzoso and Burguet (2012) view time, number of documents, cost of trade and information technology achievements as proxies for trade facilitation. They also emphasize that trade facilitation is more important than tariffs under some circumstances such as level of development and sectors. More specifically, trade facilitation performs better for developed countries than developing countries. Moreover, trade facilitation works better for differentiated and high-technology sectors than basic consumption goods.

CHAPTER 5

METHODOLOGY AND DATA

In this chapter, two research questions are handled. Firstly, the gravity model is used to analyse the determinants of bilateral trade potentials between Turkey and Brazil in the scenario of an FTA between Turkey and MERCOSUR. Secondly, revealed comparative advantage of each product group of Turkey is analysed to determine which sectors will be affected more and which sectors will have a comparative advantage.

5.1 The gravity model

We will first test the bilateral trade potentials between Turkey and Brazil using gravity model. The data covers variables such as GDP of Turkey, GDP of Brazil, PPP of Turkey, PPP of Brazil, trade costs, trade volume, export to Brazil and import from Brazil between 1995 and 2014. All the data is taken from the World Integrated Trade Solution (WITS) software and Turkish Statistical Institute (TUIK) as it is presented in appendix. The table 24 shows the independent variables of bilateral trade between Turkey and Brazil.

Table 24. Independent Variables of Bilateral Trade between Turkey and Brazil

Independent Variables	Definition	Source
GDP_t	Gross domestic product of Turkey	WITS
GDP_b	Gross domestic product of Brazil	WITS
PPP_t	Purchasing power parity of Turkey	WITS
PPP_b	Purchasing power parity of Brazil	WITS
$COST_{tb}$	Trade costs between Turkey and Brazil	WITS

In this study, GDP and PPP of both countries and trade costs between two parties are determined as independent variables. Apart from GDPs and PPPs, calculating international trade costs is always challenging because trade costs do not only

include distance and shipment cost but also tariffs and exchange rate. In this study, a model proposed by Novy (2009) is used to calculate international trade costs between Turkey and Brazil. WITS has used this model to produce trade costs dataset for 178 countries for years.

The table 25 shows the dependent variables of the study. Trade volume between both countries, export from Turkey to Brazil and import from Brazil to Turkey are determined as dependent variables of this study. Panel data for each variable covers 20 years between 1995 and 2014. Natural logarithm of data is used in this study.

Table 25. Dependent Variables of Bilateral Trade between Turkey and Brazil

Dependent Variables	Definition	Source
TV_{tb}	Trade Volume between Turkey and Brazil	TUIK
EX_{ib}	Export from Turkey to Brazil	TUIK
IM_{ib}	Import from Brazil to Turkey	TUIK

The model below is used to analyse the effects of independent variables on trade volume between Turkey and Brazil;

$$\ln TV_{tb} = \alpha_t + \beta 1 \ln GDP_t + \beta 2 \ln GDP_b + \beta 3 \ln COST_{tb} + u_{tb}$$

In order to analyse the effects of independent variables on export to Brazil, the model below is used;

$$\text{In } EX_{tb} = \alpha_t + \beta 1 \ln GDP_t + \beta 2 \ln PPP_b + \beta 3 \ln COST_{tb} + u_{tb}$$

The effects of independent variables on import from Brazil are analysed by using the model below;

$$\ln IM_{tb} = \alpha_t + \beta 1 \ln GDP_b + \beta 2 \ln PPP_t + \beta 3 \ln COST_{tb} + u_{tb}$$

The table 26 shows the regression analysis results of trade volume between both countries. When the trade volume data is analysed, it is seen that Adjusted R Square is quite high with 0.98%. This means that 0.98% of the total variability is accounted by the model.

Table 26. Regression Analysis of Trade Volume between both Countries

Trade Volume				
Regression Statistics			Coefficients	Sig.
Multiple R	0.99	Constant		0.06
R Square	0.98	GDP_t	0.80	0.00
Adjusted R Square	0.98	GDP_b	0.54	0.00
Observations	20	$COST_{tb}$	-1.13	0.02
Significance F	0.00			

Significance F is far below 0.05. So, we can reject the null hypothesis and we can claim that there is a significant relation between trade volume and GDP of both countries and trade cost. Sig. levels for GDP of both Turkey and Brazil and trade cost are below 0.05. Therefore, there is a significant relation between trade volume and these independent variables. The impact of GDP of Turkey and Brazil is positive while there is an inverse proportion between trade cost and trade volume. This means that as Turkey and Brazil gets wealthier, trade between both partners increases. Furthermore, as trade cost decreases, trade volume increases.

The table 27 shows the regression analysis results of export from Turkey to Brazil. When the export data is analysed, it is seen that Adjusted R Square is quite high with 0.98%. This means that 0.98% of the total variability is accounted by the model.

Table 27. Regression Analysis of Export to Brazil

Export to Brazil				
Regression Statistics			Coefficients	Sig.
Multiple R	0.99	Constant		0.00
R Square	0.98	GDP_t	0.43	0.01
Adjusted R Square	0.98	PPP_b	0.55	0.00
Observations	20	$COST_{tb}$	-6.31	0.00
Significance F	0.00			

Significance F is far below 0.05. So, we can reject the null hypothesis and we can claim that there is a significant relation between export to Brazil and GDP of Turkey, PPP of Brazil and trade cost. Sig. level for each independent variable is far below 0.05. Therefore, it can be claimed that there is a significant relation between export

to Brazil and these independent variables. The impact of GDP of Turkey and PPP of Brazil is positive. So, it can be asserted that as Turkey gets wealthier, and PPP of Brazil increases, export volume from Turkey to Brazil increases as well. On the other hand, there is an inverse proportion between trade cost and trade volume. As trade cost decreases, trade volume increases.

The table 28 shows the regression analysis results of import of Turkey from Brazil. When the import data is analysed, it is seen that Adjusted R Square is quite high with 0.99%. This means that 0.99% of the total variability is accounted by the model.

Table 28. Regression Analysis of Import from Brazil

Import from Brazil				
Regression Statistics			Coefficients	Sig.
Multiple R	0.99	Constant		0.98
R Square	0.97	GDP_b	0.44	0.00
Adjusted R Square	0.97	PPP_t	1.05	0.00
Observations	20	$COST_{tb}$	-0.25	0.69
Significance F	0.00			

Significance F is far below 0.05. So, we can reject the null hypothesis and we can claim that there is a significant relation between import from Brazil to Turkey and GDP of Brazil, PPP of Turkey and trade cost. Sig. levels for GDP of Brazil and PPP of Turkey is far below 0.05. Therefore, it is possible to state that there is a significant relation between import from Brazil and GDP of Brazil and PPP of Turkey. But it is not possible to state that there is a significant relation between import from Brazil and trade cost. The impact of GDP of Turkey and PPP of Brazil is positive. This means that as GDP of Brazil and PPP of Turkey increases, import from Brazil also increases.

When all the data regarding trade volume, export of Turkey to Brazil, import of Turkey from Brazil is analysed together, it is seen that a very high percentage of total variability is explained by the model. More specifically analysed, the

significance F of three models indicates that there is a significant relation between trade volume, export, import and independent variables.

GDP of Turkey and Brazil has an positive impact on trade volume. So, it can be asserted that as the GDP of both countries grows, the trade volume between two countries increases.

GDP of Turkey and PPP of Brazil have a positive impact on export of Turkey to Brazil. So, it can be asserted that as GDP of Turkey and PPP of Brazil increases, the export from Turkey to Brazil increases.

GDP of Brazil and PPP of Turkey have a positive impact on import from Brazil to Turkey. So, it can be asserted that as GDP of Brazil and PPP of Turkey increases, import from Brazil to Turkey increases.

As for trade costs between Turkey and Brazil, it is observed that there is an inverse proportion between trade cost and trade volume and export. In other words, as trade cost decreases, both trade volume and export increase. Therefore, it can be stated that as trade cost between both countries increases, trade volume and export to Brazil from Turkey increase.

5.2 Revealed comparative advantage

The second research question of this study is to evaluate which sectors will be affected and which sectors will have comparative advantage if a potential FTA between MERCOSUR and Turkey will be signed and will come into effect. Revealed comparative advantage index is used to obtain desired outcomes as it can be seen as one of the best indicators to show the comparative advantage.

Panel data used in this study covers the period between 1990 and 2014. The data is taken from World Integrated Trade Solutions of World Bank (2019). The

exports of both countries are classified as 15 different sectors plus the group of miscellaneous products and this classification is done by World Bank. These product groups have been exported since 1990s and have had important export shares. The table 29 briefly shows export volumes of the product groups and their share in total exports between 1990 and 2014.

Table 29. Share of Product Groups in Total Exports in 1990 and 2014

HS Code	Product Groups	1990	Share (%)	2014	Share (%)
01-05	Animal Products	336,194	2.6	2,123,312	1.3
06-15	Vegetables	1,829,207	14.1	8,391,359	5.3
16-24	Food Products	848,181	6.5	7,499,340	4.8
25-26	Minerals	402,895	3.1	3,946,818	2.5
27-27	Fuels	296,347	2.3	5,885,703	3.7
28-38	Chemicals	611,243	4.7	5,231,624	3.3
39-40	Plastic or Rubber	250,154	1.9	8,695,600	5.5
41-43	Hides and Skins	742,077	5.7	893,296	0.6
44-49	Wood Products	102,127	0.8	3,077,578	2.0
50-63	Textiles and Clothing	4,322,558	33.4	29,039,408	18.4
64-67	Footwear	38,207	0.3	760,472	0.5
68-71	Stone and Glass	320,493	2.5	11,231,770	7.1
72-83	Metals	1,896,447	14.6	20,805,384	13.2
84-85	Mach. and Elec.	687,548	5.3	23,282,053	14.8
86-89	Transportation	204,681	1.6	19,837,112	12.6
90-99	Miscellaneous	71,017	0.5	6,909,327	4.4
	All Products	$12,959,381	100%	$157,610,158	100%

Source: WITS, 2019

Total export volume of Turkey increased more than 12 times between 1990 and 2014. When the data of share of product groups in total exports is analysed in detail, it is observed that the product groups which increased its share in total export volume are footwear, fuel products, machinery and electronic products, minerals, plastic and rubber products, stone and glass, transportation and wood. On the other hand, the product groups which decreased its share in total export volume are animal products, chemicals, food products, hides and skin, metals, textiles and clothing, vegetables.

The table 30 shows that volume and share of import product groups from Brazil vary a lot in 2014. Five major product groups in 2014 which are vegetable,

minerals, food products, wood and metals account for nearly 80% of total exports of Brazil to Turkey. However, machinery and electronics, textiles and clothing and chemicals and plastic or rubber are also important export categories for Turkey.

Table 30. Rank of Imported Product Groups from Brazil in 2014

	Product Group	Import Product Share (%)
1	Vegetable	22.26
2	Minerals	22.25
3	Food Products	13.29
4	Wood	11.08
5	Metals	10.72
6	Mach and Elec	7.93
7	Textiles and Clothing	3.96
8	Chemicals	3.55
9	Plastic or Rubber	2.28
10	Transportation	0.89
11	Miscellaneous	0.75
12	Footwear	0.35
13	Stone and Glass	0.29
14	Hides and Skins	0.21
15	Animal	0.17
16	Fuels	0.03

Source: WITS, 2019

When import products in table 31 are analysed in detail, it is seen that iron ores and concentrates, soya beans, chemical wood pulp, tobacco, coffee, semi-finished products of iron or non-alloy steel are the leading export products of Brazil in 2014.

Table 31. List of Some of the Main Import Products from Brazil in 2014

HS 4 Code	Products	Share (%)
2601	Iron ores and concentrates, including roasted iron pyrites	22.17
1201	Soya beans, whether or not broken	17.44
4703	Chemical wood pulp, soda or sulphate, other than dissolving grades	7.96
2401	Unmanufactured tobacco; tobacco refuse	7.66
7207	Semi-finished products of iron or non-alloy steel	6.49
0901	Coffee, whether or not roasted or decaffeinated	4.51
2304	Oilcake and other solid residues resulting from the extraction of soya-bean oil	4.29

Source: TUIK, 2019

5.2.1 The RCA of Turkey over the Years

The revealed comparative advantage of countries may change over the years. The table 32 shows the change in the RCA of Turkey between 1990 and 2014. In order to ignore the sudden changes, mean of the first and last five years data is taken as shown in table 32.

Table 32. RCA of Turkey in 16 Product Groups between 1990 and 2014

	Product Group	Trend	M of Years 1990-1994	M of Years 2010-2014
1	Animal Products	Down	0.63	0.32
2	Chemicals	Up	0.26	0.42
3	Food Products	Down	2.47	1.25
4	Footwear	Up	0.27	0.44
5	Fuels	Up	0.13	0.21
6	Hides and Skins	Down	4.32	1.32
7	Mach and Elec	Up	0.24	0.66
8	Metals	Up	1.68	1.90
9	Minerals	Down	2.61	1.88
10	Plastic or Rubber	Up	0.35	1.17
11	Stone and Glass	Up	0.97	1.01
12	Textiles and Clothing	Down	6.12	5.74
13	Transportation	Up	0.10	1.65
14	Vegetable	Down	3.11	1.60
15	Wood	Up	0.08	0.54
16	Miscellaneous	Up	0.23	0.38

Source: WITS, 2019

When the data is analysed, it is seen that Turkey has lost some part of its RCA in some product groups while it has gained more RCA in some other product groups. The product groups with up trend in their RCA are chemicals, footwear, fuel products, machinery and electronics, metals, plastic or rubber, stone and glass, transportation, and wood. On the other hand, animal products, food products, hides and skins, minerals, textiles and clothing and vegetables are in the down trend in their RCA. Moreover, when we compare share in total export and RCA of product groups, it is observed that chemicals and metals decreased their share in total export

but they increased their RCA. On the other hand, minerals increased their share in total export but they decreased their RCA.

5.2.1.1 Animal products

Export volume of animal products increased about 6 times between 1990 and 2014 as shown in figure 3. However, as total increase in export volume is about 12 times, the increase in the export of animal products can be viewed insufficient.

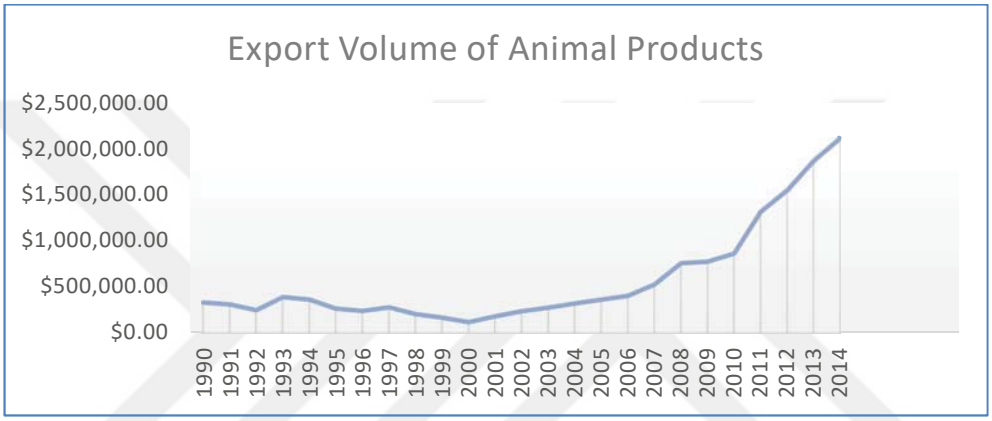

Figure 3. Export volume of animal products between 1990 and 2014
Source: WITS, 2019

Figure 4 shows that Turkey did not get an RCA above point 1.00 in animal products between 1990 and 2014. Moreover, while the average of RCA in animal products between 1990-1994 was 0.63, it fell to an average of 0.32 between 2010-2014.

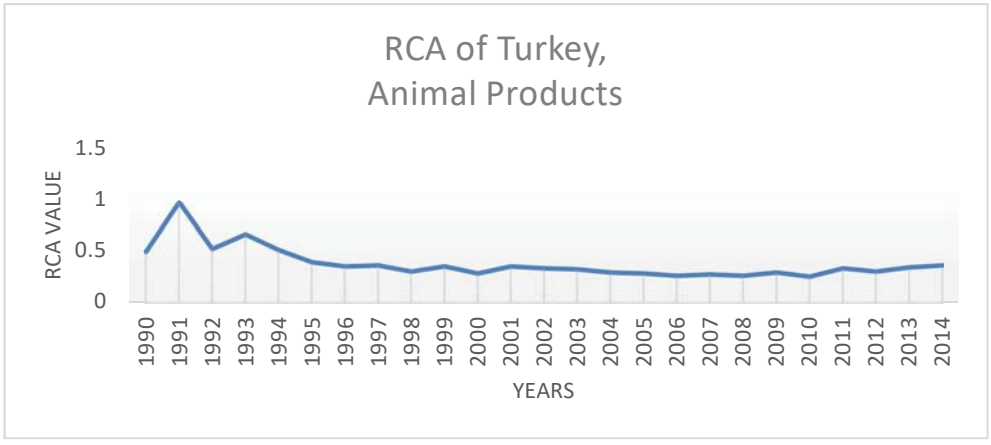

Figure 4. RCA of Turkey for animal products between 1990 and 2014
Source: WITS, 2019

5.2.1.2 Chemical products

Export volume of chemicals increased about 8 times between 1990 and 2014 as shown in figure 5. However, the increase in the export of chemicals can be viewed insufficient as total increase in export volume is more than 12 times.

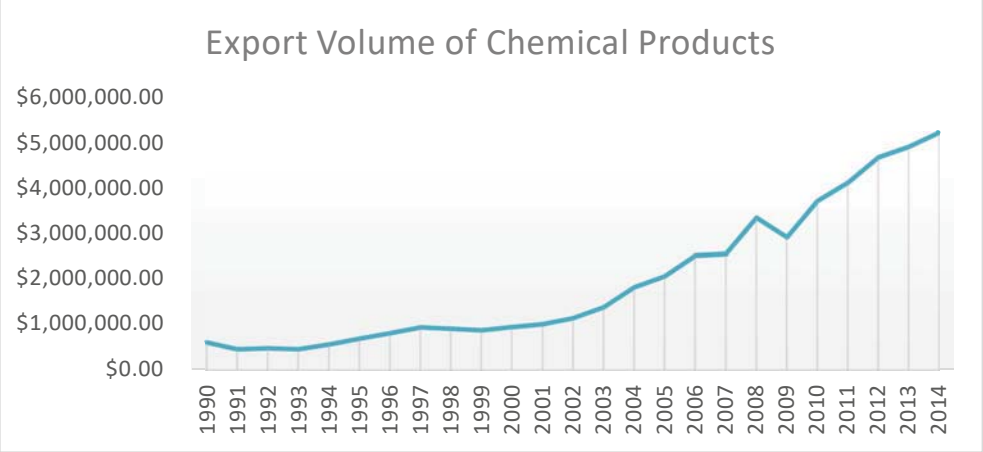

Figure 5. Export volume of chemical products between 1990 and 2014
Source: WITS, 2019

It is understood from figure 6 that the average of RCA of chemical products between 1990 and 1994 was 0.26. Although RCA of chemical products increased to an average of 0.42, it did not pass the point 1.00 threshold. This shows that there is a potential for chemical products to increase its RCA. However, this potential was not fully explored.

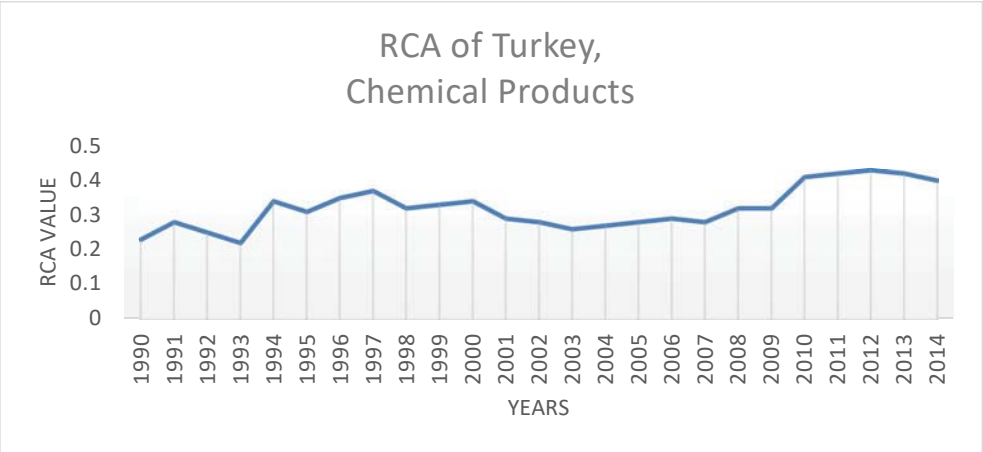

Figure 6. RCA of Turkey for chemicals between 1990 and 2014
Source: WITS, 2019

5.2.1.3 Food products

Figure 7 shows that export volume of Turkey in food products increased about 8 times between 1990 and 2014. However, the increase in the export of food products can be viewed insufficient as total increase in export volume is more than 12 times.

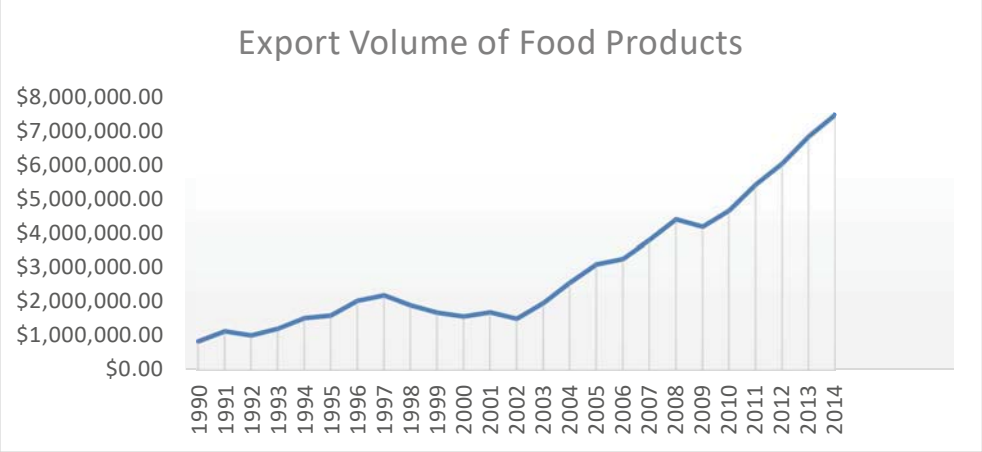

Figure 7. Export volume of food products between 1990 and 2014
Source: WITS, 2019

RCA of food products is still above point 1.00 as shown in figure 8. But Turkey has lost a major part of its advantage in food products. Şahinli (2014) also comes up with the same conclusion with his study of revealed comparative advantage on 601 agricultural items between 2000 and 2011 that Turkey is losing its comparative advantage of agricultural products in comparison to the global market.

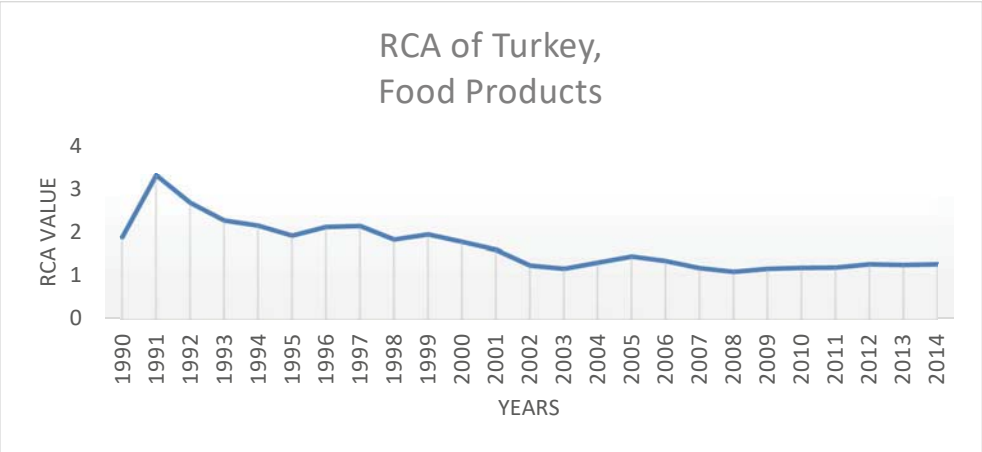

Figure 8. RCA of Turkey for food products between 1990 and 2014
Source: WITS, 2019

5.2.1.4 Footwear

The figure 9 shows that export volume of footwear increased about 20 times between 1990 and 2014. The increase in the export of footwear can be viewed quite sufficient as total increase in export volume is more than 12 times.

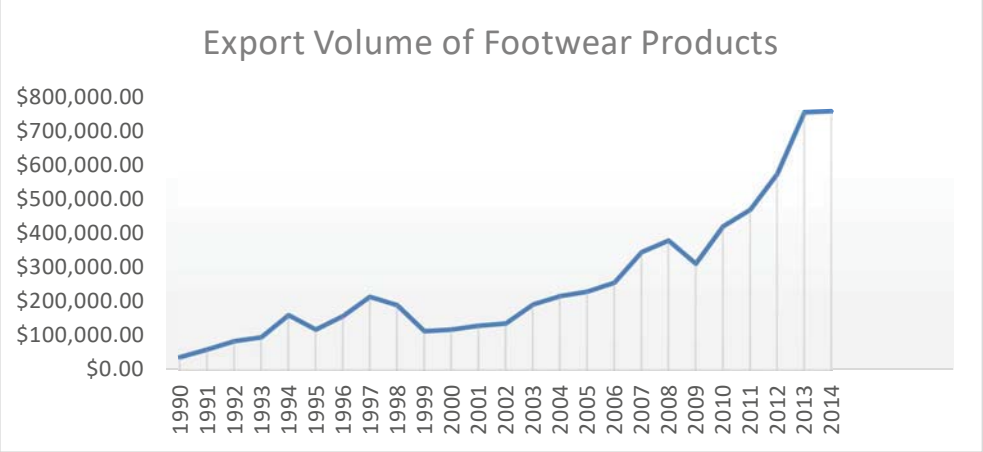

Figure 9. Export volume of footwear products between 1990 and 2014
Source: WITS, 2019

Figure 10 shows that RCA of footwear followed an unstable way between 1990 and 2014. Although footwear increased its RCA from 0.27 (the average of first five years) to 0.44 (the average of last five years), it is still far below 1.00. This shows that there is a potential for Turkey to increase RCA of footwear in the following years.

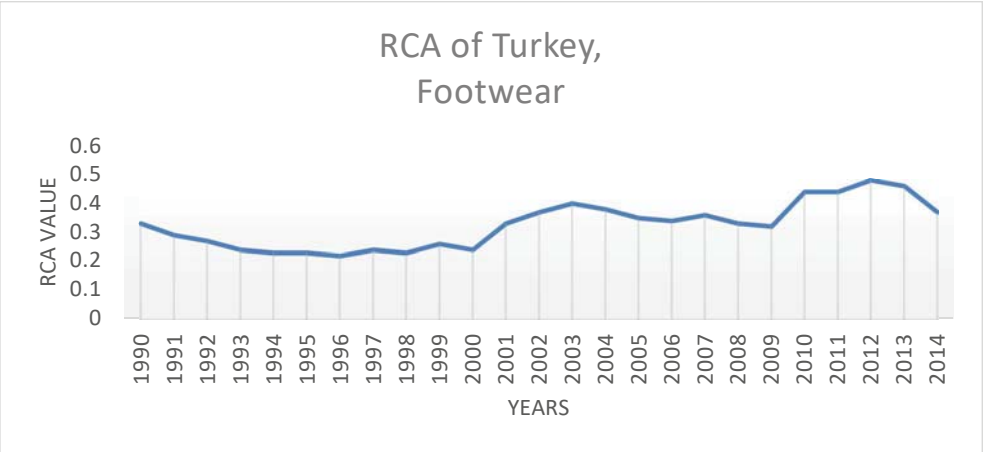

Figure 10. RCA of Turkey for footwear between 1990 and 2014
Source: WITS, 2019

5.2.1.5 Fuel products

Export volume of fuel products increased about eight times between 1990 and 2014 as shown in figure 11. However, the increase in the export of fuel products can be viewed insufficient as total increase in export volume is more than 12 times.

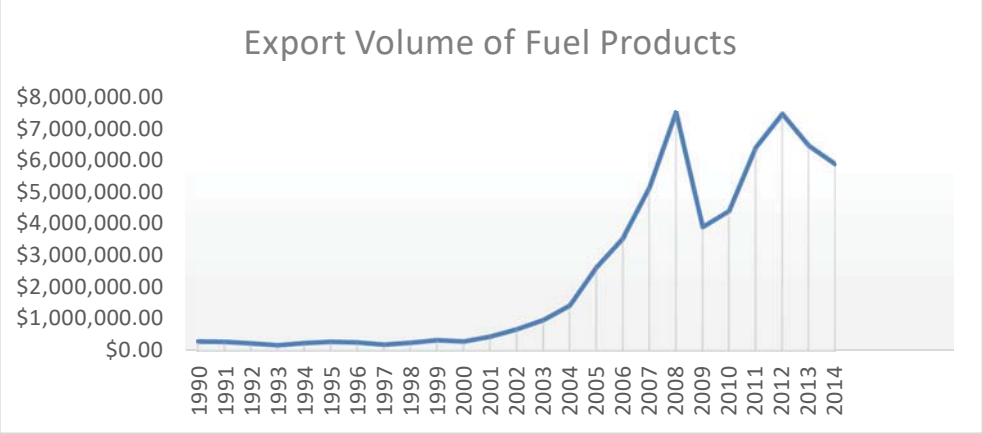

Figure 11. Export volume of fuel products between 1990 and 2014
Source: WITS, 2019

Moreover, it is seen that there is a fluctuation in the export of fuel products between 2007 and 2014. This situation can be explained by the increase in oil price in 2008. Price per barrel of oil reached about $100. Figure 12 indicates that RCA of fuels was unstable. However, fuel products, such as petroleum products and lubricants, gained comparative advantage and increased their average RCAs from 0.13 to 0.21. However, they could not have passed the threshold for 25 years.

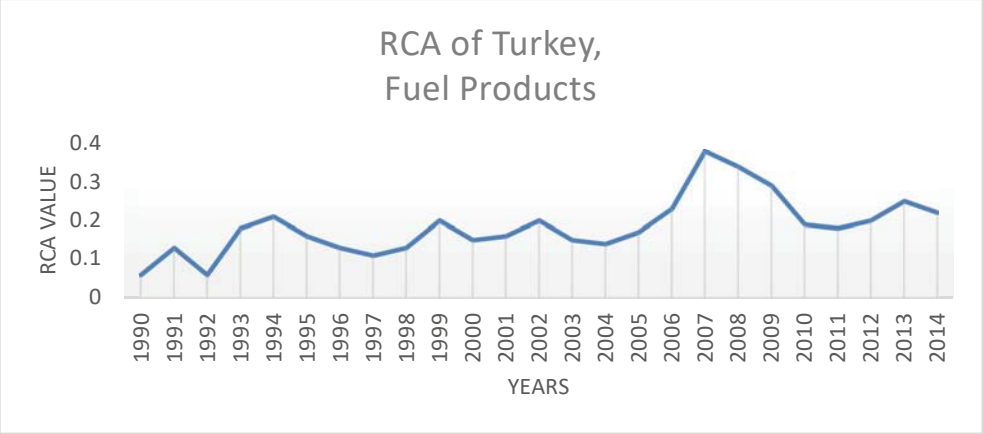

Figure 12. RCA of Turkey for fuel products between 1990 and 2014
Source: WITS, 2019

5.2.1.6 Hides and skins

Figure 13 shows that the export volume of hides and skins increased about 1.2 times between 1990 and 2014. However, the increase in the export volume of hides and skins can be viewed quite insufficient as total increase in export volume is more than 12 times.

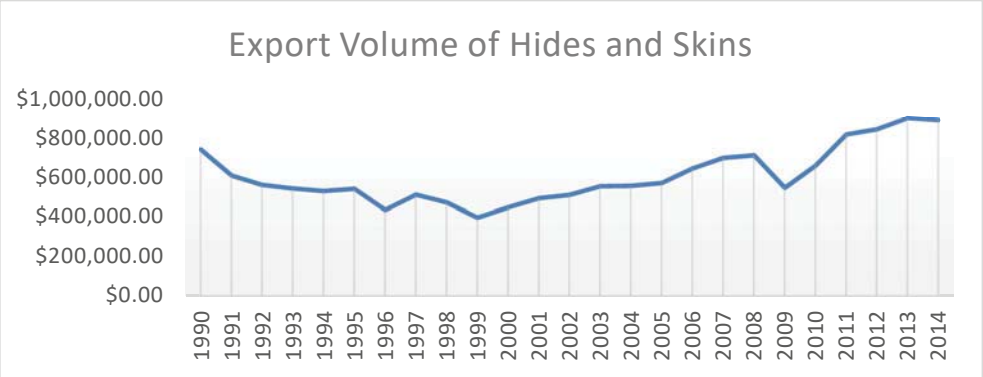

Figure 13. Export volume of hides and skin between 1990 and 2014
Source: WITS, 2019

Figure 14 indicates that a dramatic decrease was felt in hides and skins sector. Its average RCA fell from 4.32 to 1.32 between 1990-1994 and 2010-2014. Although the RCA of the sector is still above 1.00, it seems that the down trend will continue unless any measure is taken. This shows that some subsidies should be allocated to hides and skins sector.

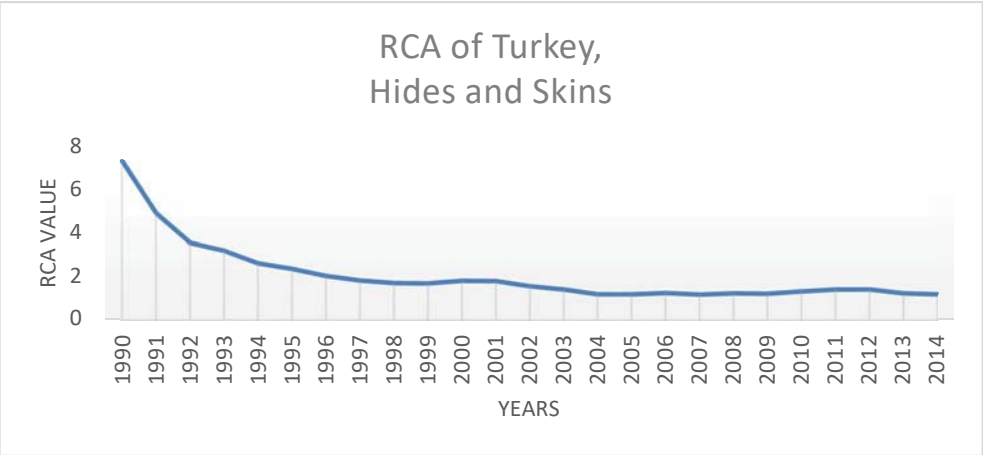

Figure 14. RCA of Turkey for hides and skins between 1990 and 2014
Source: WITS, 2019

5.2.1.7 Machinery and Electronics

Export volume of machinery and electronics increased about 33 times between 1990 and 2014 as shown in figure 15. This increase in the export of machinery and electronics can be viewed surprising since total increase in export volume is more than 12 times. Moreover, the increase in this product group is the fourth in all product groups.

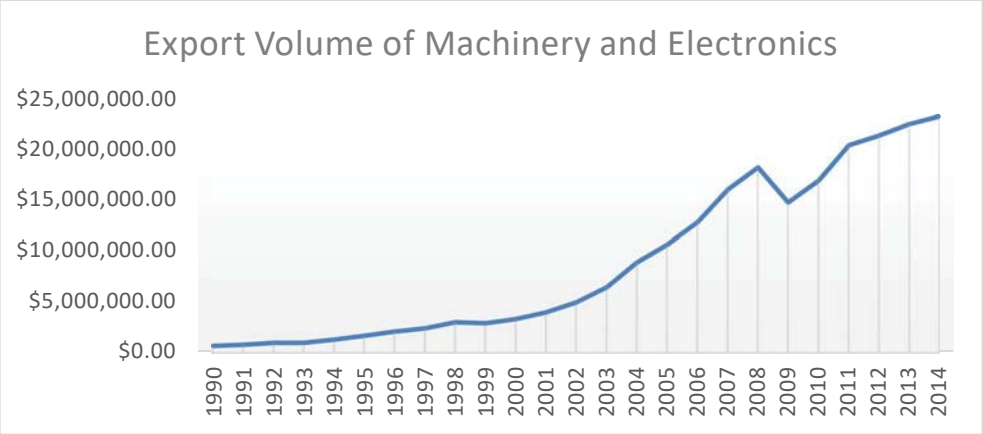

Figure 15. Export volume of machinery and electronics between 1990 and 2014
Source: WITS, 2019

The figure 16 demonstrates that the average RCA increased from 0.24 to 0.66 between the first and last five years. However, it is still below 1.00. As Turkey is a developing country, it is good to observe that machinery and electronics are gaining comparative advantage. Yet, it is still below the desired level.

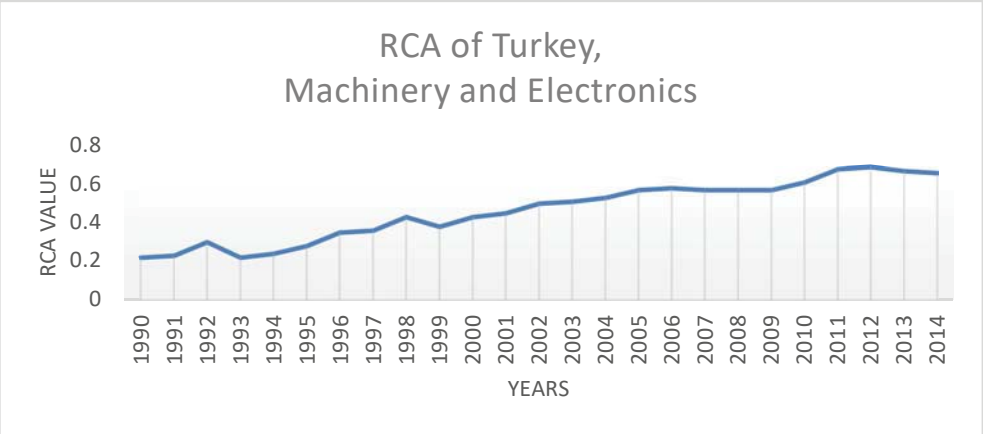

Figure 16. RCA of Turkey for machinery and electronics between 1990 and 2014
Source: WITS, 2019

5.2.1.8 Metal products

Figure 17 shows that export volume of the metal products increased about 11 times between 1990 and 2014. This increase nearly matches with the increase in total export of all product groups.

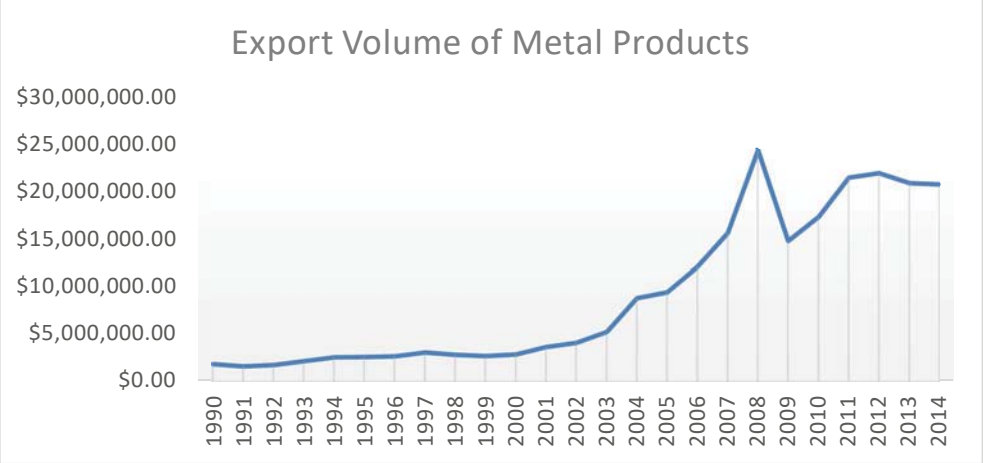

Figure 17. Export volume of metal products between 1990 and 2014
Source: WITS, 2019

The figure 18 displays that there is a slight increase in the RCA of metal products from 1.68 to 1.90 between 1990-1994 and 2010-2014 although it fluctuated between 1990 and 2014. This shows that there is a potential in metals sector waiting to be explored.

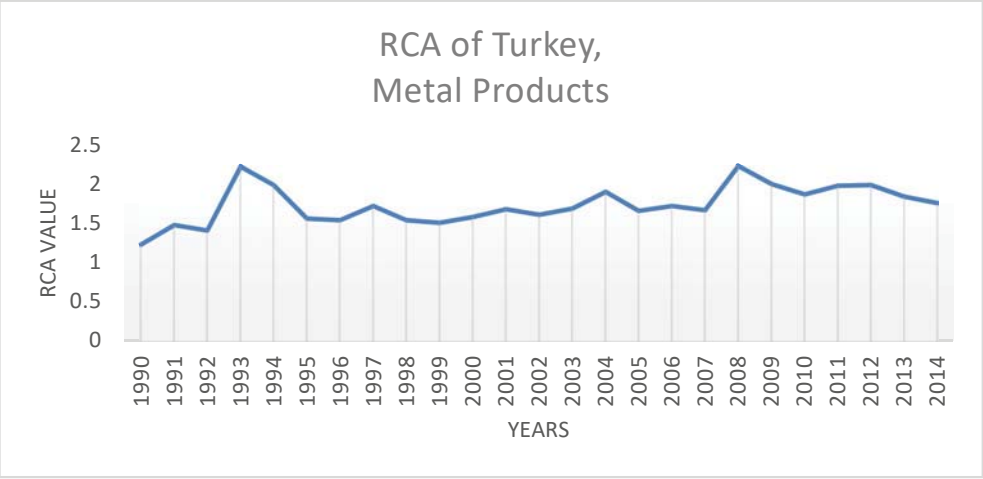

Figure 18. RCA of Turkey for metal products between 1990 and 2014
Source: WITS, 2019

5.2.1.9 Minerals

The figure 19 shows that the export volume of the minerals increased about 10 times between 1990 and 2014. This increase in the export volume of minerals nearly matches with the increase in total exports.

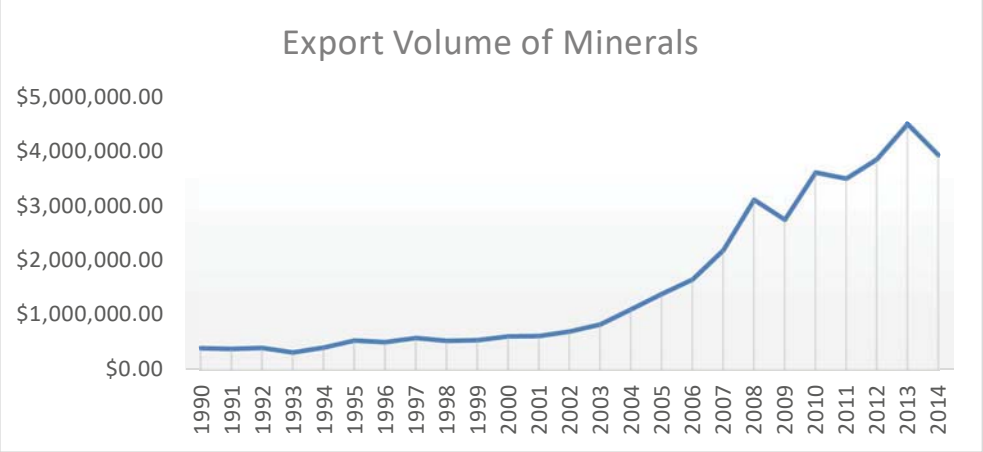

Figure 19. Export volume of minerals between 1990 and 2014
Source: WITS, 2019

The figure 20 demonstrates that the average RCA of minerals fell from 2.61 to 1.88 between the first and last five years. This figure also shows that minerals was partially ignored. There is a downtrend in the RCA of minerals and it started to decrease its revealed comparative advantage over years. However, its RCA is still above point 1.00.

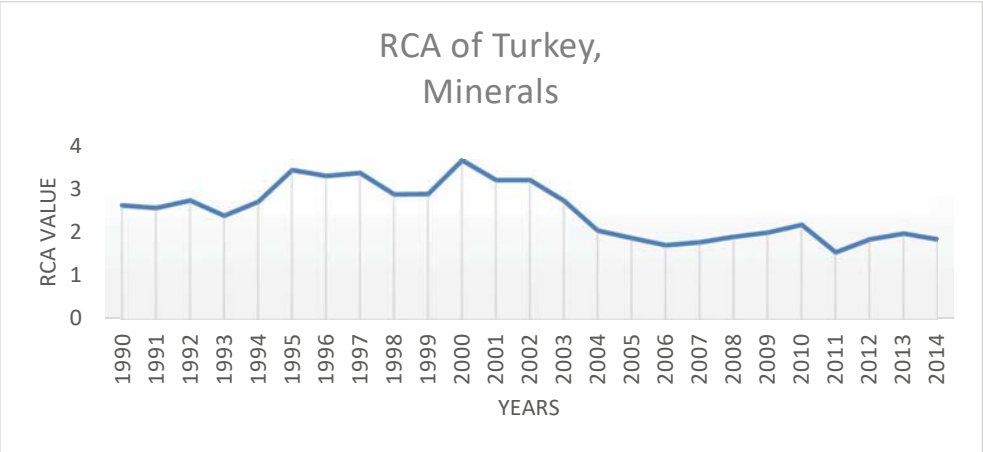

Figure 20. RCA of Turkey for minerals between 1990 and 2014
Source: WITS, 2019

5.2.1.10 Plastic or rubber

Export volume of plastic or rubber increased about 34 times between 1990 and 2014 as shown in figure 21. This increase can be viewed pretty good since total increase in export volume is more than 12 times. Moreover, the increase in the export volume of plastic or rubber is the third in all product groups.

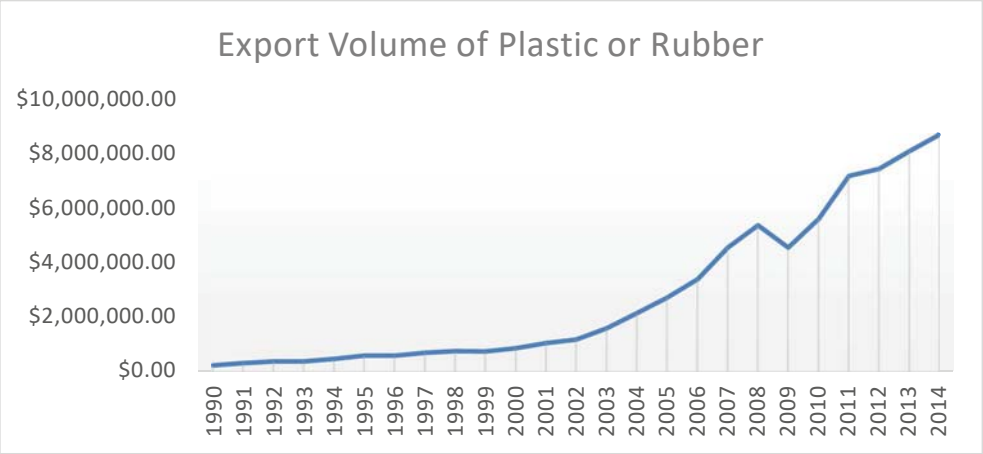

Figure 21. Export volume of plastic or rubber between 1990 and 2014
Source: WITS, 2019

Figure 22 shows that plastic or rubber sector had a very dramatic increase from 0.35 to 1.17 between 1990-1994 and 2010-2014. As of 2014, it achieved to have an RCA above point 1.00. It is clear that this up going trend will continue for plastic or rubber sector.

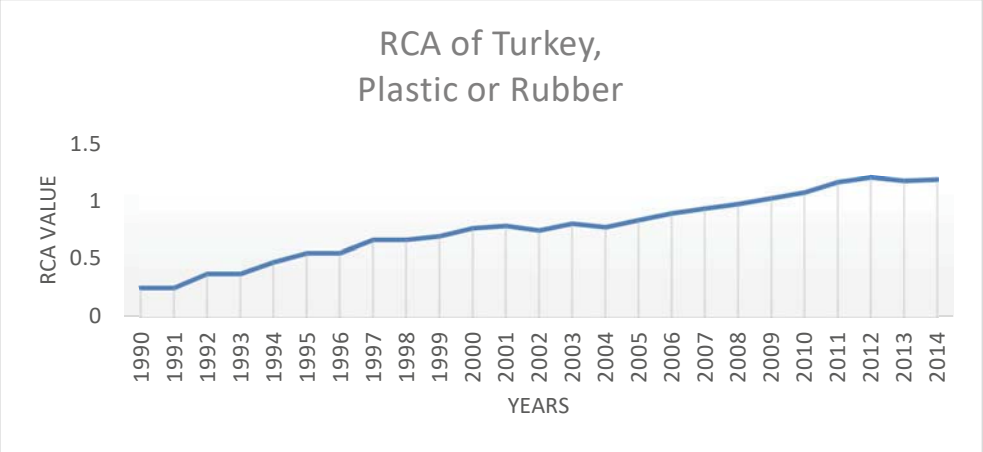

Figure 22. RCA of Turkey for plastic or rubber between 1990 and 2014
Source: WITS, 2019

5.2.1.11 Stone and glass

Export volume of stone and glass increased about 35 times between 1990 and 2014 as shown in figure 23. This increase can be viewed quite sufficient since total increase in export volume is more than 12 times. Moreover, the increase in the export volume of stone and glass is the second in all product groups.

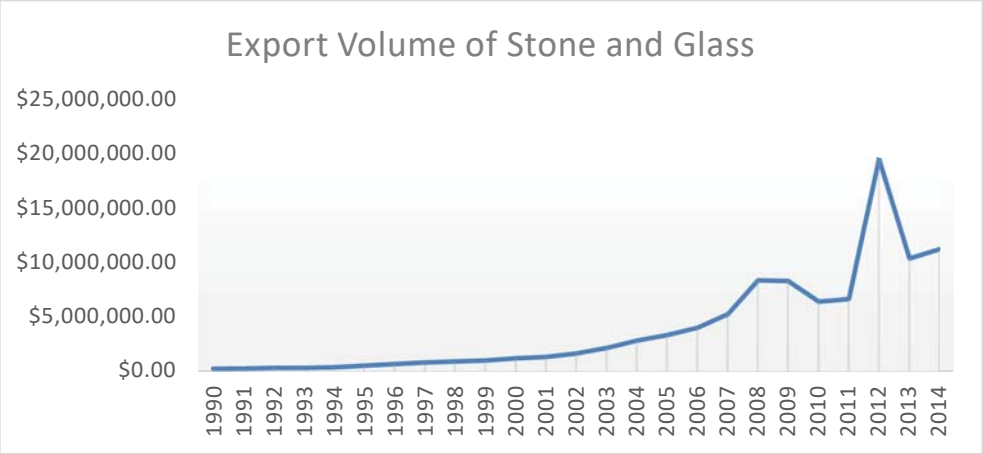

Figure 23. Export volume of stone and glass between 1990 and 2014
Source: WITS, 2019

Stone and glass is one of the natural resources of Turkey. The figure 24 shows that RCA of stone and glass fluctuated over the course of 25 years. It peaked in 2006 and then started to decrease its RCA. However, it is clear that there is a slight increase in the stone and glass sector from 0.97 to 1.01 between 1990-1994 and 2010-2014.

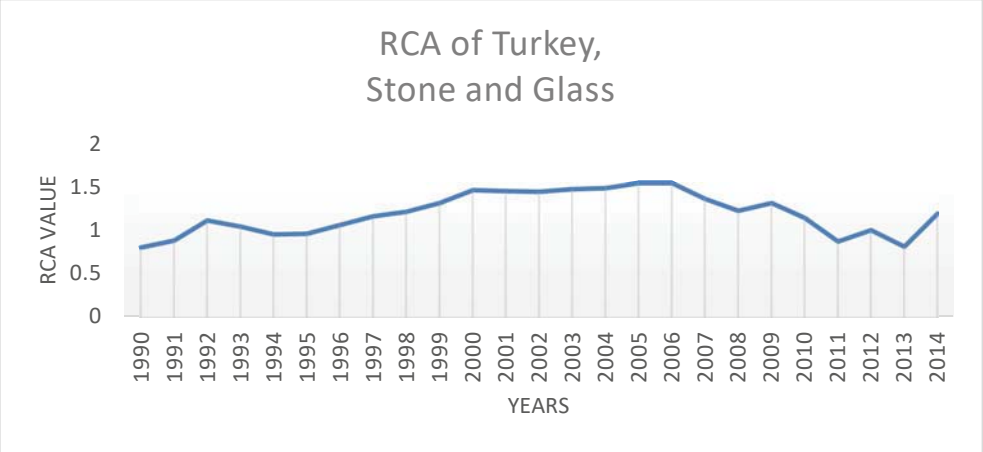

Figure 24. RCA of Turkey for stone and glass between 1990 and 2014
Source: WITS, 2019

5.2.1.12 Textiles and clothing

Export volume of textiles and clothing increased about 6 times between 1990 and 2014 as shown in figure 25. This increase in the export of textiles and clothing is nearly half of the increase in total export volume.

Figure 25. Export volume of textiles and clothing between 1990 and 2014
Source: WITS, 2019

Textile and clothing is one of the sectors which is quite important for Turkey. It is well known that Turkey has always been a strong competitor in textile and clothing sector in the world. The figure 26 demonstrates that there is a slight decrease in the RCA of Turkey in textiles and clothing from 6.12 to 5.74 between 1990-1994 and 2010-2014.

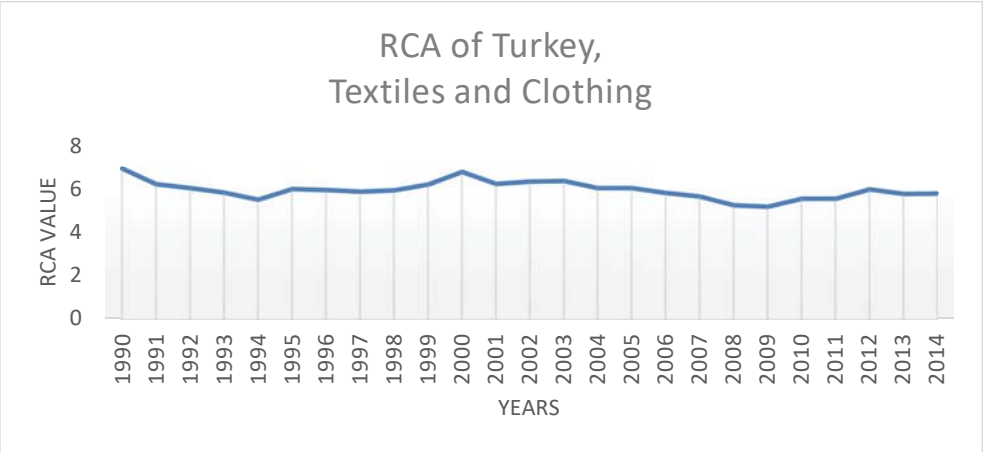

Figure 26. RCA of Turkey for textiles and clothing between 1990 and 2014
Source: WITS, 2019

5.2.1.13 Transportation

Export volume of transportation, especially automotive sector increased about 97 times between 1990 and 2014 as shown in figure 27. This increase in the export of transportation can be viewed quite sufficient. Moreover, the increase in the export volume of transportation is the first in all product groups.

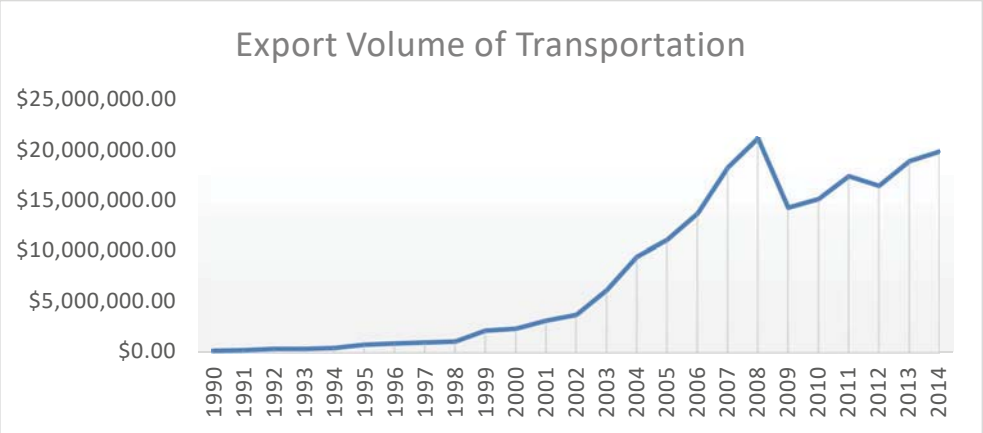

Figure 27. Export volume of transportation between 1990 and 2014
Source: WITS, 2019

Transportation sector is another important one in which Turkey has strong competition power. It is quite clear from the figure 28 that there is a very dramatic increase in transportation sector from 0.10 to 1.65 between 1990-1994 and 2010-2014. On the other hand, it is observed that transportation sector had its peak in 2008. After then, its RCA remained stable till 2014.

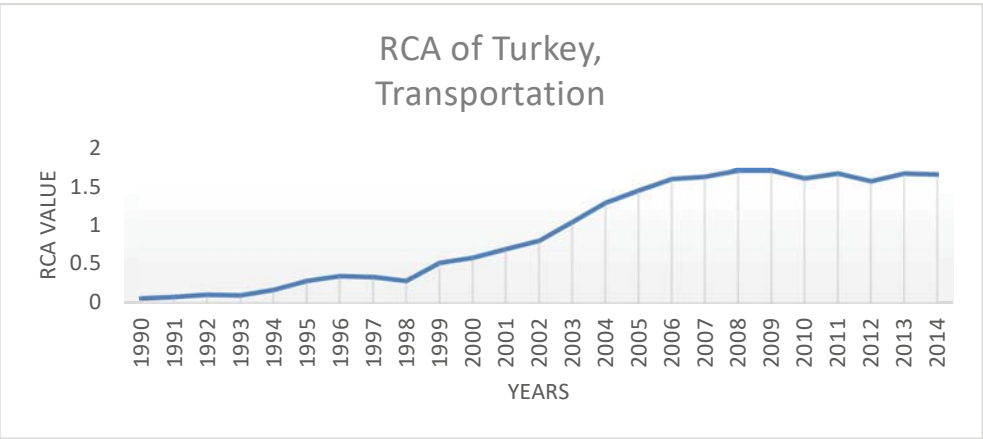

Figure 28. RCA of Turkey for transportation between 1990 and 2014
Source: WITS, 2019

5.2.1.14 Vegetables

Export volume of vegetables increased about 4.5 times between 1990 and 2014 as shown in figure 29. However, the increase in the export of vegetables can be viewed quite insufficient as total increase in export volume is more than 12 times.

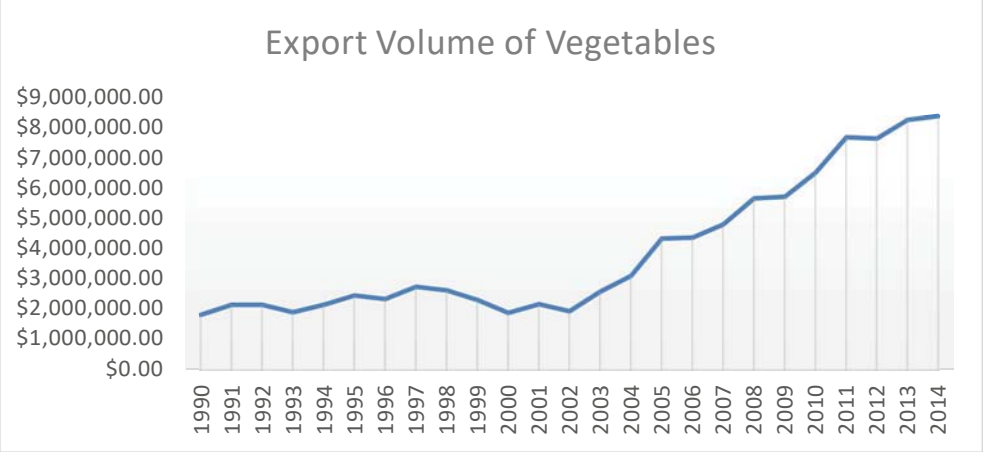

Figure 29. Export volume of vegetables between 1990 and 2014
Source: WITS, 2019

Turkey has been cultivating and exporting vegetables for long years. However, it is seen from figure 30 that average RCA of vegetables decreased from 3.11 to 1.60 between 1990-1994 and 2010-2014 and it has lost an important part of its RCA. Erkan et al. (2015) come up with the same conclusion that although vegetables have a comparative advantage, it has decreasing its RCA in recent years.

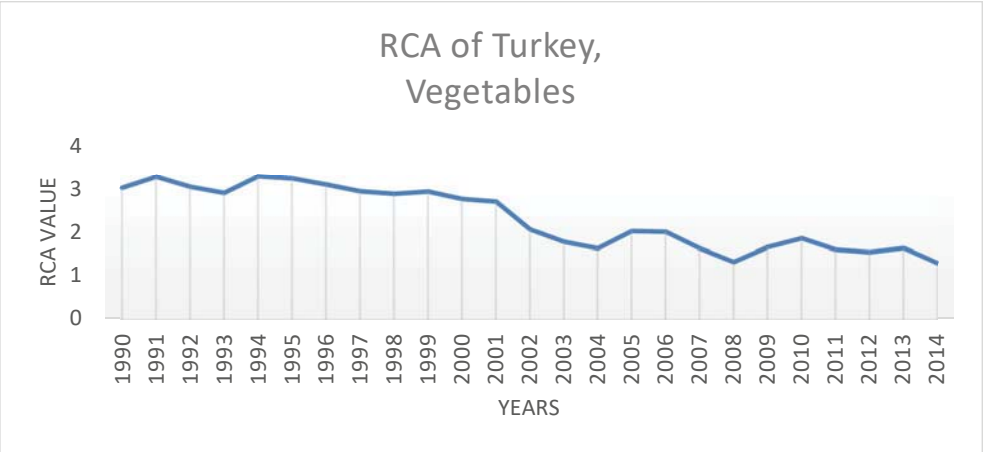

Figure 30. RCA of Turkey for vegetables between 1990 and 2014
Source: WITS, 2019

5.2.1.15 Wood products

Export volume of wood products increased about 30 times between 1990 and 2014 as shown in figure 31. This increase in the export of wood products can be viewed sufficient since total increase in export volume is more than 12 times. Moreover, the increase in the export volume of wood products is the fifth in all product groups.

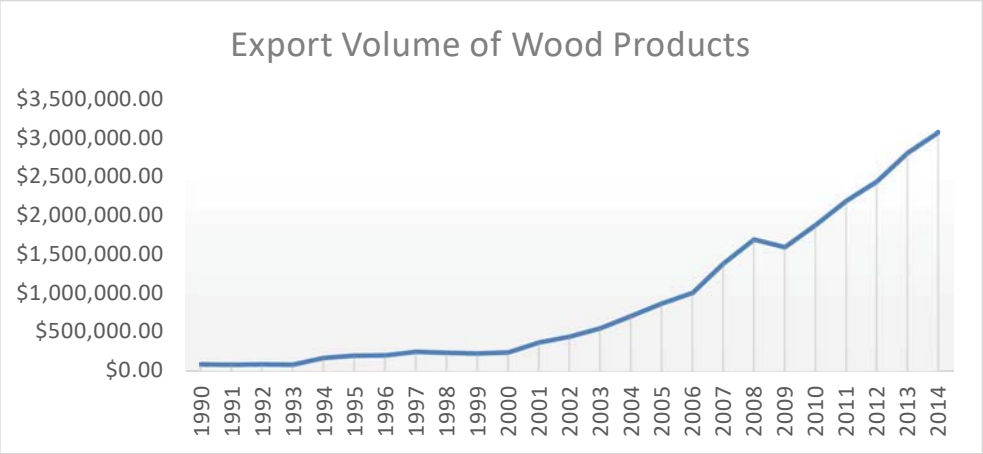

Figure 31. Export volume of wood products between 1990 and 2014
Source: WITS, 2019

Wood sector is one of the sectors in which Turkey has been increasing its comparative advantage over the years. The figure 32 shows that wood sector has steadily increased its RCA from 0.08 to 0.54 between 1990-1994 and 2010-2014. However, it is still below the threshold.

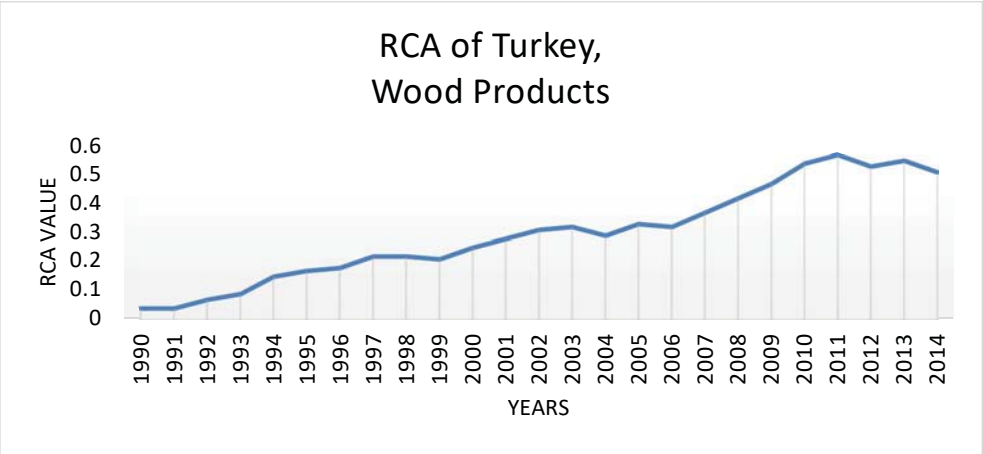

Figure 32. RCA of Turkey for wood products between 1990 and 2014
Source: WITS, 2019

5.2.2 The RCA of Brazil over the years

RCA of different product groups of Brazil has been changing over the years such as Turkey's RCA. The table 33 shows the change by providing average of RCA between 1990-1994 and 2010-2014 in 16 different product groups.

Table 33. RCA of Brazil in 16 Product Groups between 1990 and 2014

	Product Group	Trend	M of years 1990-1994	M of years 2010-2014
1	Animal	Up	1.07	3.05
2	Chemicals	Down	0.65	0.57
3	Food Products	Down	4.28	3.95
4	Footwear	Down	3.92	0.79
5	Fuels	Up	0.16	0.56
6	Hides and Skins	Up	1.25	1.70
7	Mach and Elec	Down	0.39	0.27
8	Metals	Down	2.53	0.95
9	Minerals	Up	8.94	10.47
10	Plastic or Rubber	Down	0.67	0.55
11	Stone and Glass	Down	0.70	0.4
12	Textiles and Clothing	Down	0.56	0.31
13	Transportation	Up	0.51	0.77
14	Vegetable	Up	2.59	4.76
15	Wood	Up	1.25	1.97
16	Miscellaneous	Up	0.34	0.35

Source: WITS, 2019

The RCA of Brazilian export groups has changed over the time. It is seen that there is a dramatic increase in the RCA of animal products (from 1.07 to 3.05) and vegetables (from 2.59 to 4.76). Moreover, some increase is observed in the RCA of fuels (from 0.16 to 0.56), hides and skins (from 1.25 to 1.70), minerals (from 8.94 to 10.47), transportation (from 0.51 to 0.77) and wood (from 1.25 to 1.97). However, fuels and transportation are still below 1.00 although they are increasing their RCA.

On the other hand, the RCA of footwear and metals decreased substantially. The RCA of footwear fell to 0.79 and lost its comparative advantage. Likewise, the RCA of metals fell to 0.95. Moreover, some slight decreases are seen in chemicals (from 0.65 to 0.57), food products (from 4.28 to 3.95), machinery and electronics

(from 0.39 to 0.27), plastic or rubber (from 0.67 to 0.55), stone and glass (from 0.70 to 0.40), textiles and clothing (from 0.56 to 0.31).

5.2.3 Comparison of the RCA of Turkey and Brazil

Apart from analysing RCAs of both countries, it is also necessary to analyse the total export volume of both countries and the world in 16 different product groups. The table 34 shows the total export volume of Turkey, Brazil and world in 16 different product groups in 2014. The table 34 also demonstrates that Turkey's total export volume is lower than Brazil's total export volume in 2014. Moreover, Brazil's total export volume of animal, vegetable and food products are quite high compared with Turkey's export volume in these product groups. On the other hand, Turkey's export of textile and clothing is also quite high compared with Brazil's export volume in this product group.

Table 34. Total Export of Turkey, Brazil and World in 16 Product Groups in 2014

	Product Group	Turkey's Export	Brazil's Export	World Exports
1	Animal	2,124,082	17,528,426	348,574,061
2	Vegetable	8,398,998	37,182,238	545,164,027
3	Food Products	7,502,623	26,012,938	538,994,859
4	Minerals	3,951,156	29,185,784	241,559,207
5	Fuels	5,900,816	20,650,307	1,745,993,090
6	Chemicals	5,234,827	11,430,730	1,449,427,262
7	Plastic or Rubber	8,699,421	5,532,670	688,688,259
8	Hides and Skins	893,535	3,049,850	116,238,766
9	Wood	3,078,615	9,559,704	391,533,339
10	Textiles and Clothing	29,058,122	2,544,909	713,235,757
11	Footwear	760,706	1,244,059	145,857,467
12	Stone and Glass	11,232,855	4,754,270	783,624,124
13	Metals	20,832,834	16,128,556	1,096,809,227
14	Machinery and Electronics	23,295,961	16,943,524	3,983,588,130
15	Transportation	19,839,201	16,139,113	1,606,848,877
16	Miscellaneous	6,911,184	7,211,319	1,468,112,747
	Total	157,714,945	225,098,405	15,864,249,207

Source: WITS, 2019

5.2.3.1 Animal products

Animal products are exported by many countries all over the world. The figure 33 shows 82 countries with an RCA above point 1.00 between 2010 and 2014. It is also seen that many countries in both North America and South America is good at animal products. Moreover, Australia, India, some East African countries, Germany, France, Spain also export animal products substantially.

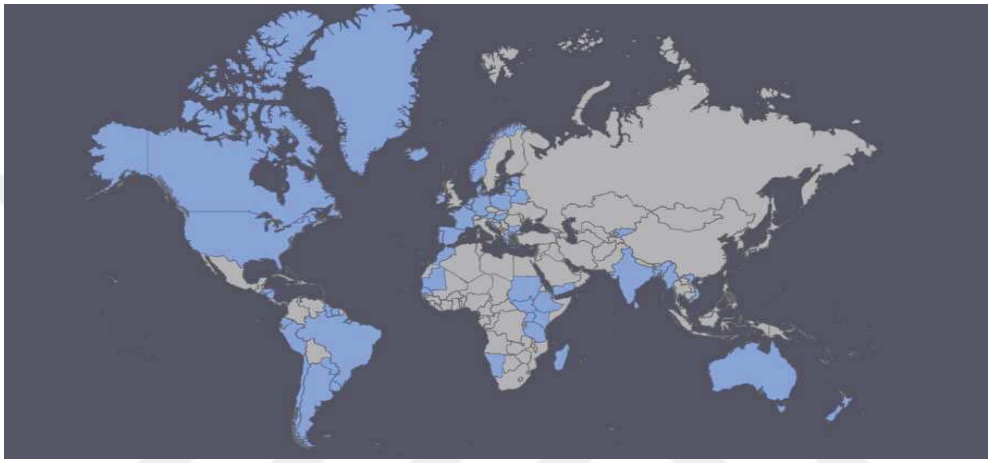

Figure 33. Countries with an RCA for animal products
Source: WITS, 2019

More specifically, US is the biggest animal products exporter with a share of 8.9% in total world export of animal products. Brazil is the 6th biggest exporter with a share of 5%. However, Turkey has a small share of 0.6% as shown in table 35. Over the last decade, Turkey has been suffering from the insufficient supply of animal products. So, its export of animal products is quite below the Brazilian export of animal products. The RCA of Turkey is below 1.00 while the RCA of Brazil is above 3.00. Moreover, RCA of Brazil is about 10 times higher than RCA of Turkey. So, it can be said that Brazil has a comparative advantage over Turkey in animal products.

Table 35. Animal Products Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA Turkey 2010-2014	RCA, Brazil 2010-2014
Animal	2,124,082	17,528,426	348,574,061	0.32	3.05

Source: WITS, 2019

5.2.3.2 Vegetables

Vegetables are cultivated in many countries all over the world. However, there is always the need for some countries to import vegetables. The figure 34 shows 94 countries which have an RCA in vegetables above point 1.00 according to the average RCA of the years 2010-2014. As shown in the figure 34, many countries in North America and Latin America, Australia, some East Asian countries, West and East African countries, Turkey and some other European countries also export vegetables.

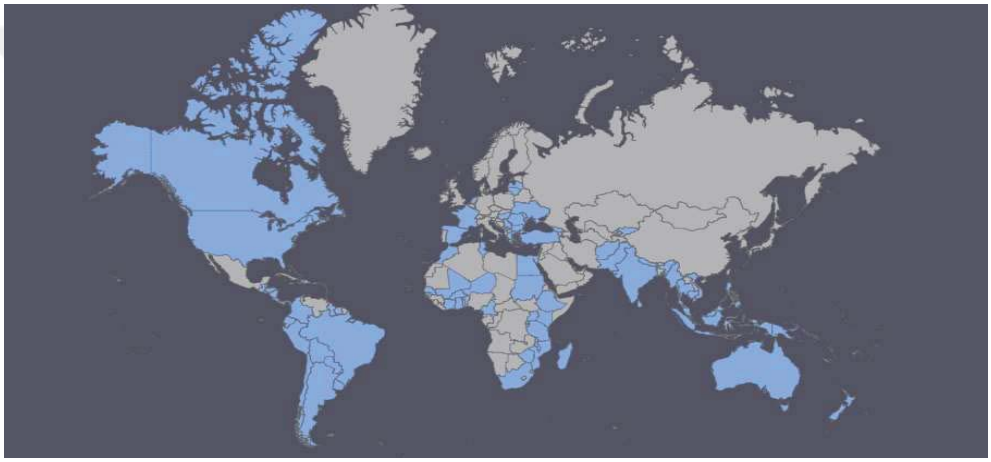

Figure 34. Countries with an RCA for vegetables
Source: WITS, 2019

The biggest exporter in vegetables is US with a share of 14.34%. As shown in table 36, Brazil is the second biggest exporter with a share of about 7% and Turkey has a share of 1.5%. Moreover, the table 36 also shows that RCA of both Turkey and Brazil is above 1.00. However, RCA of Brazil is about 3 times higher than RCA of Turkey.

Table 36. Vegetables Export of Turkey and Brazil in 2014 and their RCA

Product Group	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Vegetable	8.398.998	37.182.238	545.164.027	1.6	4.76

Source: WITS, 2019

5.2.3.3 Food products

Food products is one of largest export products in the world exports. Figure 35 shows 92 countries with an RCA of food products above 1.00. The biggest food product exporters are respectively USA (8.5%), Germany (8.2%), Netherlands (7.5%), France (6.9%), China (5.3%) and Brazil (4.8%). On the other hand, Turkey's export of food products accounts for about 1.4% of total world food export.

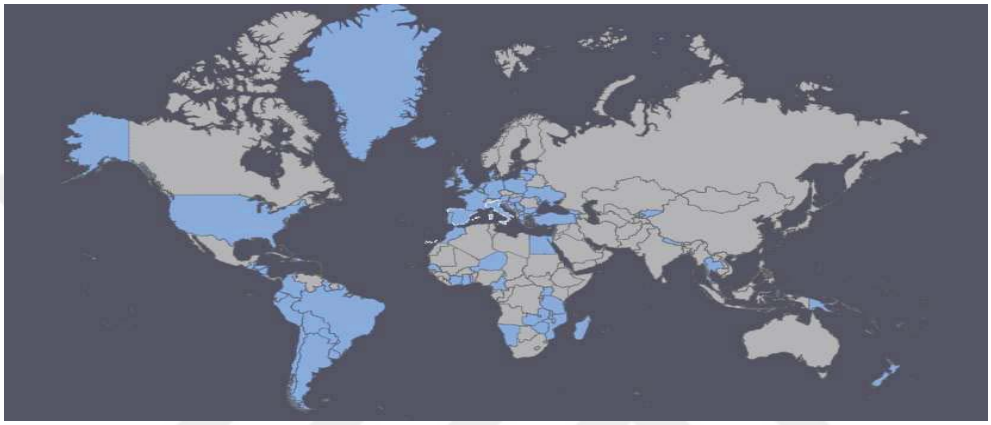

Figure 35. Countries with an RCA for food products
Source: WITS, 2019

Latin American countries, US, many European countries, and some East African countries export most of the food products. Both Turkey and Brazil are food producer countries. Brazil is good at producing sugar, coffee, pineapple, maize, cacao and chocolate. Brazil has a share of about 5% in world export of food products while Turkey has a share of 1.4% as shown in Table 37. RCA of both Turkey and Brazil for food products is above 1.00. However, RCA of Brazil is more than 2 times higher than RCA of Turkey. MoE (2016) states that hazelnut, dried apricots, olive oil, canned olive, and yeast are advantageous food products.

Table 37. Food Products Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Food Products	7.502.623	26.012.938	538.994.859	1.25	3.95

Source: WITS, 2019

5.2.3.4 Minerals

Mineral exports are largely done by countries that are heavily involved in mining. Figure 36 shows 63 countries which have an RCA above the point 1.00. The biggest minerals exporters are Australia (nearly 30%), Brazil (12%), Chile (8.27%), South Africa (5%), United States (4.64%), Peru (4.5%) and Canada (4%). While Brazil is the second biggest mineral exporter, Turkey is the 11th with a share of 1.64%. Nearly half of mineral exports is done by three countries which are Australia, Brazil and Chile. It is seen that Latin America, Australia, South and East Africa, India and Kazakhstan do the most of minerals export in the world.

Figure 36. Countries with an RCA for minerals
Source: WITS, 2019

Although both Brazil and Turkey are important mineral exporters, Brazil's export of minerals are seven fold bigger than Turkey's export of minerals. Brazil has a share of about 12% in total export of minerals in world while Turkey has a share of only 1.64% as shown in table 38. RCA of both Turkey and Brazil for minerals is above the point 1.00. However, RCA of Brazil is about 5 times higher than RCA of Turkey.

Table 38. Minerals Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Minerals	3,951,156	29,185,784	241,559,207	1.88	10.47

Source: WITS, 2019

5.2.3.5 Fuels

One of the biggest export product groups in world is fuels. Figure 37 shows 56 countries which have an RCA of fuels above the point 1.00. Saudi Arabia, Russia, Kuveyt, Iran, Nigeria, United Arab Emirates, Angola, Venezuela and Norway are among the biggest fuel exporter countries. Figure 37 also shows that some Middle East countries, some African countries, Canada and Russia do the most of fuel exports in the world.

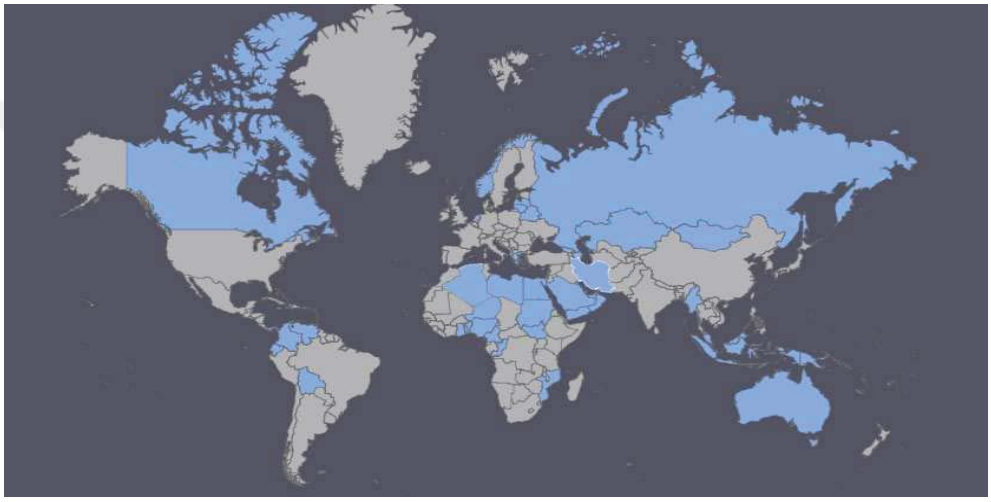

Figure 37. Countries with an RCA for fuels
Source: WITS, 2019

Table 39 shows that Brazil has about a share of 1.2% in total export of fuel products in the world and Turkey has a share of 0.33% in total export of fuel products in the world. The table 39 also shows that RCA of both Turkey and Brazil in fuel products is below point 1.00. Therefore, the potential to increase trade volume in fuels is quite low.

Table 39. Fuels Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Fuels	5,900,816	20,650,307	1,745,993,090	0.33	0.83

Source: WITS, 2019

5.2.3.6 Chemicals

Chemicals is one of the largest export products in the world. However, there are only 41 countries which have an RCA above point 1.00. Figure 38 shows these 41 countries. A very big part of chemical exports is done by many European countries and United States as shown in figure 38. Germany (12.67%), United States (11.30%), China (7.54%), Belgium (7.43%), Switzerland (6.18%), France (5.92%), Netherlands (5.43%), Ireland (4.72%), United Kingdom (4.69%) are big chemical exporter countries.

Figure 38. Countries with an RCA for chemicals
Source: WITS, 2019

The table 40 shows that Brazil has a share of 0.79% in total export of chemicals in the world while Turkey has a share of 0.36% in total export of chemicals in the world. It also shows that RCA of both Turkey and Brazil is below point 1.00. Therefore, the potential to increase trade volume in chemicals is quite low.

Table 40. Chemicals Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Chemicals	5,234,827	11,430,730	1,449,427,262	0.42	0.57

Source: WITS, 2019

5.2.3.7 Plastic or rubber

The number of countries which export plastic or rubber and have an RCA above point 1.00 is quite limited as shown in figure 39. An important part of exports in plastic or rubber is done by many European countries and United States. China (13.17%), Germany (11.52%), United States (11.38%), Japan (5.46%), Belgium (5.45%), Netherlands (4.47%) and France (4.16%) are main important exporter countries.

Figure 39. Countries with an RCA for plastic or rubber
Source: WITS, 2019

Table 41 shows that Turkey has a share of 1.26% in world export of plastic or rubber while Brazil has a share of about 0.8%. The table 41 also shows that RCA of Turkey in plastic or rubber is above point 1.00 while RCA of Brazil in plastic or rubber is below point 1.00. Moreover, RCA of Turkey is about 2 times higher than RCA of Brazil.

Table 41. Plastic or Rubber Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Plastic or Rubber	8,699,421	5,532,670	688,688,259	1.17	0.55

Source: WITS, 2019

5.2.3.8 Hides and skins

Hides and skins are a significant industrial product group which is used while manufacturing many products. Figure 40 shows 47 countries which have an RCA above point 1.00 for hides and skins. China, India, some European countries and Argentina and Brazil are seen to have a revealed comparative advantage. China (30.18%), Italy (13.15%), Hong Kong-China (8.54%) and France (6.86%) export many hides and skins products. Nearly 60% of hides and skins exports are done by these four countries.

Figure 40. Countries with an RCA for hides and skins
Source: WITS, 2019

Table 42 shows that Brazil has a share of 2.62% in world export of hides and skins while Turkey has a share of 0.77%. The table 42 also shows that RCA of both countries is above point 1.00. However, RCA of Brazil is 0.4 higher than RCA of Turkey.

Table 42. Hides and Skin Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Hides and Skins	893,535	3,049,850	116,238,766	1.7	1.32

Source: WITS, 2019

5.2.3.9 Wood

Wood is a significant industrial product which is used in many sectors such as furniture, construction, paper making and ext. Figure 41 shows 54 countries which have a revealed comparative advantage for wood sector. United States, many European countries and few African countries are seen to have a revealed comparative advantage as shown in figure 41. United States (10.51%), Germany (10.08%), China (10.08%), Canada (7.60%), Sweden (4.70%), Finland (3.84%), France (3.33%), Italy (3.15%) are important wood exporters.

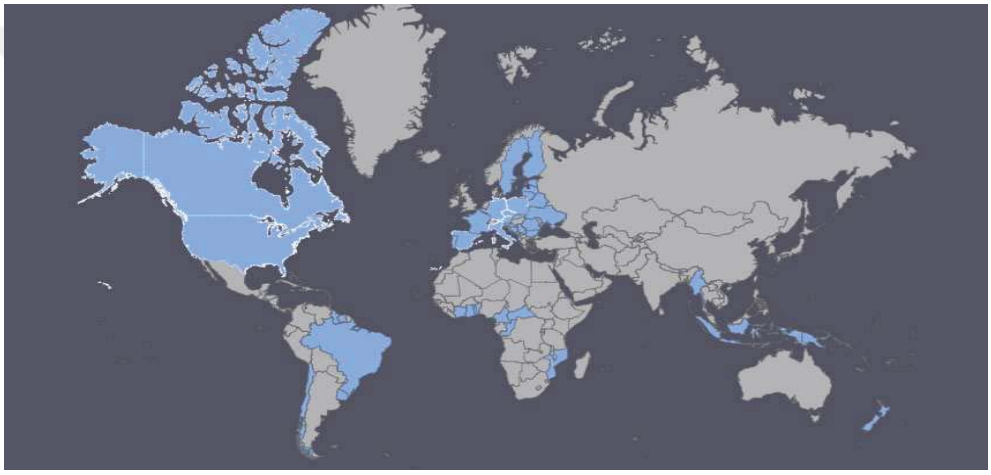

Figure 41. Countries with an RCA for wood
Source: WITS, 2019

The table 43 shows that Brazil has a share of 2.44% in total export of wood in the world. However, Turkey has a share of 0.79% in total export of wood in the world. RCA of Brazil is above point 1.00 while RCA of Turkey is below point 1.00. Moreover, the table 43 also shows that RCA of Brazil is about 3 times higher than RCA of Turkey.

Table 43. Wood Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Wood	3.078.615	9.559.704	391.533.339	0.54	1.97

Source: WITS, 2019

5.2.3.10 Textiles and clothing

Textiles and clothing are a significant income source for many developing countries as it is a labour intensive market. Figure 42 shows 58 countries with an RCA above point 1.00 for textiles and clothing. China (40.33%), India (5.41%), Italy (5.14%), Germany (4.93%), Hong Kong, China (4.10%), Turkey (4.07%) are big exporter countries in textiles and clothing. First three countries do the export of half of textiles and clothing in the world.

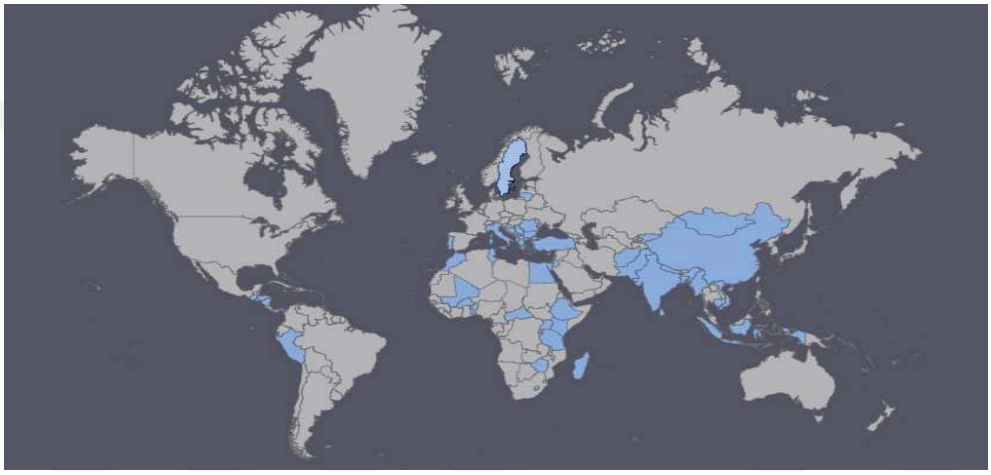

Figure 42. Countries with an RCA for textiles and clothing
Source: WITS, 2019

Table 44 shows that Brazil has a share of 0.36% in total export of textiles and clothing in the world. However, Turkey has a share of 4.07% in total export of textiles and clothing in the world. RCA of Turkey is above point 1.00 while RCA of Brazil is below point 1.00 as shown in table 44. Moreover, RCA of Turkey is about 16 times higher than RCA of Brazil.

Table 44. Textiles and Clothing Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Textiles and Clothing	29,058,122	2,544,909	713,235,757	5.74	0.31

Source: WITS, 2019

5.2.3.11 Footwear

There are few countries which are heavily involved in footwear industry. Figure 43 shows 34 countries which have an RCA above point 1.00 for footwear. China, India, some European countries are seen to have revealed comparative advantage. China (48.37%), Italy (8.72%), Germany (4.34%), Belgium (nearly 4%), Hong Kong, China (3.44%) and Indonesia (3.06%) are significant footwear exporter countries. 60% of footwear exports are done by first three countries, namely China, Italy, and Germany.

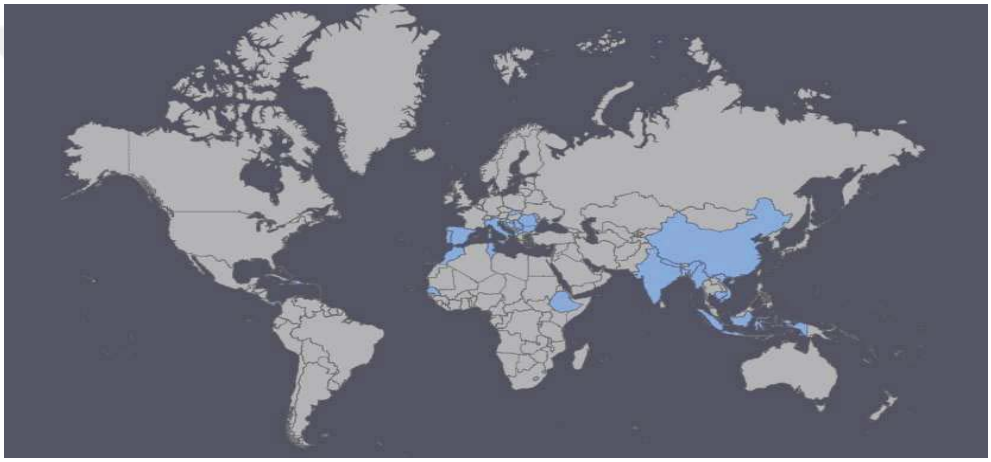

Figure 43. Countries with an RCA for footwear
Source: WITS, 2019

Table 45 shows that Brazil has a share of 0.85% in total export of footwear in the world and Turkey has a share of 0.52% in total export of footwear in the world. The table 45 also shows that RCA of both Turkey and Brazil is below point 1.00. Therefore, the potential for both countries to increase trade volume in footwear is quite low.

Table 45. Footwear Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Footwear	760,706	1,244,059	145,857,467	0.44	0.79

Source: WITS, 2019

5.2.3.12 Stone and glass

Stone and glass are significant industrial raw materials for many sectors such as construction, decoration, kitchenware, and ext. Figure 44 shows 57 countries with a revealed comparative advantage in stone and glass. Australia, India, some European countries including Turkey and several African countries are seen to have revealed comparative advantage. China (14.33%), Switzerland (11.93%), Hong Kong, China (10.91%), United States (9.65%), United Kingdom (7.26%) are important exporter countries.

Figure 44. Countries with an RCA for stone and glass
Source: WITS, 2019

Table 46 shows that Turkey has a share of 1.43% in total export of stone and glass in the world. However, Brazil has a share of about 0.61% in total export of stone and glass in the world. RCA of Turkey is above point 1.00 while RCA of Brazil is below point 1.00 as shown in table 46. Moreover, RCA of Turkey is about three times higher than RCA of Brazil.

Table 46. Stone and Glass Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Stone and Glass	11,232,855	4,754,270	783,624,124	1.01	0.4

Source: WITS, 2019

5.2.3.13 Metals

Metals are very significant raw materials for construction, automobile industry, white appliances, and ext. Figure 45 shows 62 countries with an RCA above point 1.00 for metals. Australia, India, most of the European countries including Turkey and South African countries, Canada and few Latin American countries are seen to have revealed comparative advantage. Some big exporter countries of metals are China (16.80%), Germany (10.33%), United States (7.20%), Japan (5.84%), Italy (4.68%), France (3.55%), Netherlands (3.18%), Canada (3.08%).

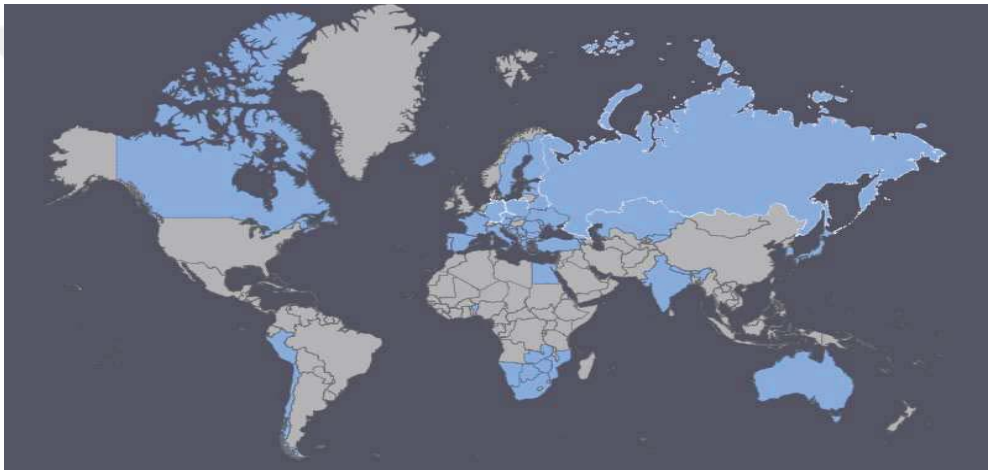

Figure 45. Countries with an RCA for metals
Source: WITS, 2019

Table 47 shows that Turkey has a share of 1.9% in total export of metals in the world while Brazil has a share of 1.47% in total export of metals in the world. Table 47 also shows that RCA of Turkey is above point 1.00 while RCA of Brazil is just below point 1.00. Moreover, it is seen that RCA of Turkey is two times higher than RCA of Brazil.

Table 47. Metals Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Metals	20,832,834	16,128,556	1,096,809,227	1.9	0.95

Source: WITS, 2019

5.2.3.14 Machinery and electronics

Machinery and electronics are largely produced by developed countries and some East Asian countries. Figure 46 shows 29 countries with an RCA above point 1.00 for machinery and electronics. China, some European countries and the United States are seen to have revealed comparative advantage. China (24.37%), Germany (10%) United States (9.64%), Hong Kong, China (7.74%), Japan (5.76%), Singapore (4.42%) are some big exporter countries.

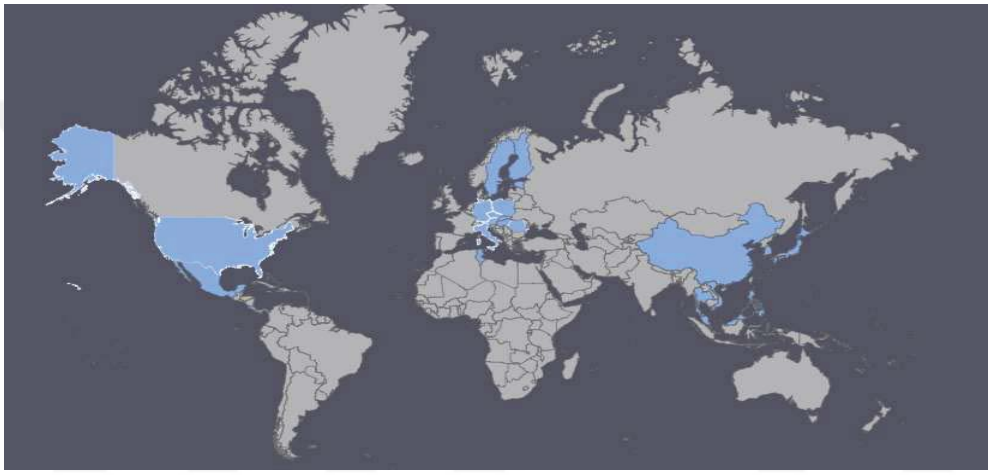

Figure 46. Countries with an RCA for machinery and electronics
Source: WITS, 2019

Table 48 shows that Turkey has a share of 0.58% in world export of machinery and electronics. RCA of both Turkey and Brazil is below point 1.00 as shown in table 48. Therefore, the potential to increase trade volume in machinery and electronics is quite low.

Table 48. Machinery and Electronics Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Machinery and Electronics	23,295,961	16,943,524	3,983,588,130	0.66	0.27

Source: WITS, 2019

5.2.3.15 Transportation

Transportation vehicles and spare parts are one of the biggest sectors in the world exports. However, there are only 32 countries which have an RCA above point 1.00 for transportation as shown in figure 47. The United States, Canada, Mexico, Argentina, Japan, many European countries including Turkey are seen to have revealed comparative advantage. Some big exporters are Germany (19.38%), Japan (10.07%), United States (9.68%), France (6.70%), Mexico (5.67%), Canada (4.54%).

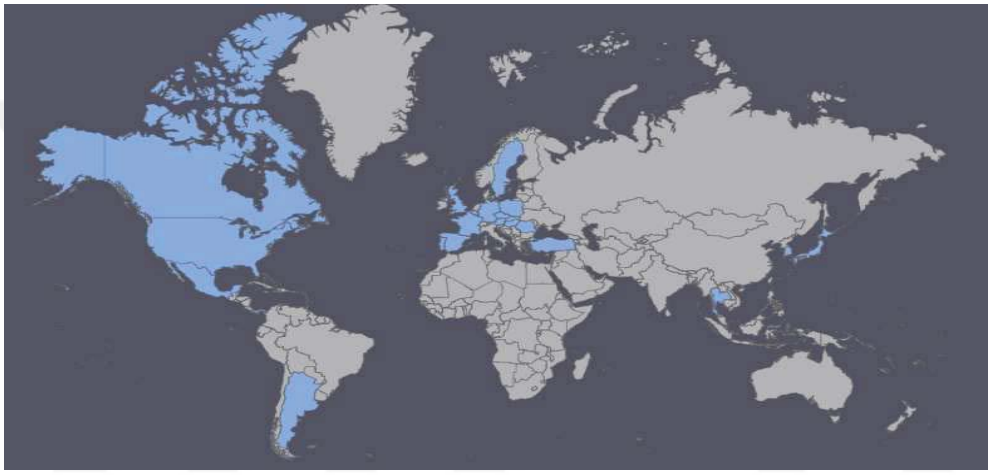

Figure 47. Countries with an RCA for transportation
Source: WITS, 2019

The table 49 shows that Turkey has a share of 1.23% in total export of transportation in the world while Brazil has a share of 1.00% in total export of transportation in the world. RCA of Turkey is above point 1.00 while RCA of Brazil is below point 1.00 as shown in table 49. Moreover, RCA of Turkey is about 43% higher than RCA of Brazil.

Table 49. Transportation Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Transportation	19,839,201	16,139,113	1,606,848,877	1.24	0.70

Source: WITS, 2019

5.2.3.16 Miscellaneous products

The rest of the exports are classified under the miscellaneous. United States (19.47%), China (15.64%), Germany (12.11%), Japan (6.16%) export many miscellaneous products. Turkey has a share of 0.47% in world export of miscellaneous products. RCA of both Turkey and Brazil is below point 1.00 as shown in table 50. Therefore, the potential to increase trade volume in other products is quite low.

Table 50. Miscellaneous Products Export of Turkey and Brazil in 2014 and their RCA

Product	Export of Turkey	Export of Brazil	World Total Export	RCA, Turkey 2010-2014	RCA, Brazil 2010-2014
Miscellaneous	6,911,184	7,211,319	1,468,112,747	0.38	0.35

Source: WITS, 2019

5.2.4 Detailed analysis of import products

After having analysed product groups, it can be also beneficial to analyse main import products from Brazil in 2014. Table 51 shows the main import products from Brazil and their import share in total import from Brazil.

Table 51. The Main Import Products and Share in Total Import from Brazil

HS 4 Code	Products	Import Share
2601	Iron ores and concentrates, including roasted iron pyrites	22.17%
1201	Soya beans, whether or not broken	17.44%
4703	Chemical wood pulp, soda or sulphate, other than dissolving grades	7.96%
2401	Unmanufactured tobacco; tobacco refuse	7.66%
7207	Semi-finished products of iron or non-alloy steel	6.49%
0901	Coffee, whether or not roasted or decaffeinated	4.51%
2304	Oilcake and other solid residues resulting from the extraction of soya-bean oil	4.29%

Source: WITS, 2019

Table 52 shows the countries from which Turkey import the same products and their rank.

Table 52. Main Import Partners for the Listed Products

Products	1st Country	2nd Country	3rd Country	4th Country	5th Country
Iron ores and concentrates, including roasted iron pyrites	Brazil (35%)	Sweden (21%)	Russia (20%)	Ukraine (13%)	Finland (5%)
Soya beans, whether or not broken	Paraguay (28%)	Brazil (27%)	US (24%)	Ukraine (16%)	Argentina (4%)
Chemical wood pulp, soda or sulphate, other than dissolving grades	US (25%)	Brazil (21%)	Sweden (10%)	Finland (9%)	Portugal (8%)
Unmanufactured tobacco; tobacco refuse	Brazil (32%)	US (11%)	India (10%)	Germany (8%)	Malawi (7%)
Semi-finished products of iron or non-alloy steel	Ukraine (36%)	Russia (25%)	United Kingdom (21%)	Brazil (4%)	China (3%)
Coffee, whether or not roasted or decaffeinated	Brazil (%71)	Holland (7%)	Italy (6%)	Switzerland (3%)	Germany (3%)
Oilcake and other solid residues resulting from the extraction of soya-bean oil	Argentina (38%)	US (27%)	Brazil (21%)	Paraguay (11%)	Ukraine (0.2%)

Source: WITS, 2019

Iron ores and concentrates make up 22.17% of total import done from Brazil in 2014. Moreover, Brazil's export of this product supplies 35% of Turkey's total import, making Brazil the first country in terms of export of iron ores and concentrates. However, customs duty of Iron ores and concentrates is 0% for third countries. So it is not possible to state that the share of Brazil in Turkey's import of iron ores and concentrates would increase even if an FTA were signed between Turkey and MERCOSUR.

Secondly, soya beans make up 17.44% of total import done from Brazil in 2014. While Brazil exports 27% of Turkey's total import of soya beans, Paraguay is the biggest exporter of soya bean in Turkey's import with a share of 28%. Moreover, it is observed that Paraguay, Brazil, and Argentina, which are member countries of MERCOSUR, supplies nearly 60% of Turkey's soya bean import. However, customs duty of soya bean is 0% for third countries. So, a direct increase in the import volume of soya bean from Brazil is not expected in the scenario of a Turkey-MERCOSUR FTA.

The third biggest import product from Brazil is chemical wood pulp. Brazil has the second biggest share in Turkey's chemical wood pulp import. While the first country is US, Sweden, Finland and Portugal are EU countries. Therefore, Turkey has already been in a Customs Union with EU countries. However, customs duty of chemical wood pulp is 0% for third countries. Therefore, a direct increase in the import volume of chemical wood pulp from Brazil is not expected even in the scenario of a Turkey-MERCOSUR FTA.

Unmanufactured tobacco is the fourth biggest import product from Brazil with a share of 7.66% in total import. The first biggest country of unmanufactured tobacco export to Turkey is also Brazil with a share of 32%. The other exporter countries, which are US, India, Germany, Malawi, have a lower share of 11%, 10%, 8%, 7% respectively. Although Turkey levied a customs duty on unmanufactured tobacco imported from US in 2018, the customs duty of unmanufactured tobacco is 0%. Therefore, a direct increase in the import volume of unmanufactured tobacco from Brazil is not expected even in the scenario of a Turkey-MERCOSUR FTA.
The fifth biggest import product from Brazil is semi-finished products of iron or non-alloy steel. Brazil has a very low share of 4% in import volume of Turkey. Moreover,

the customs duty of semi-finished products of iron or non-alloy steel is 0%. That's why, a direct increase in the import volume of chemical wood pulp from Brazil is not expected even in the scenario of a Turkey-MERCOSUR FTA.

Coffee, whether or not roasted or decaffeinated, is the sixth biggest import product from Brazil. With a 80% import share, Brazil is the biggest coffee exporter for Turkey. Netherlands, Italy, Switzerland and Germany have very low share between 7% - 3%. So, it is expected that the import volume of coffee from Brazil would increase in the scenario of a Turkey-MERCOSUR FTA.

Oilcake and other solid residues resulting from the extraction of soya-bean oil are the seventh biggest import product from Brazil. 3 member of MERCOSUR, Argentina, Brazil and Paraguay have 76 % share in the import of this product. However, the customs duty for oilcake and other solid residues resulting from the extraction of soya-bean oil is 0% for third countries. So, a direct increase in the import volume of this product from Brazil is not expected even in the scenario of a Turkey-MERCOSUR FTA.

CHAPTER 6

CONCLUSION

Since the end of WWII, countries have been trying to cooperate among themselves to increase their trade capacity. In accordance with this aim, GATT (1948) can be viewed as one of the first initiatives and WTO (1995) is another significant initiative to liberalize world trade. Moreover, FTAs play an important role in the liberalization of trade.

FTAs can be signed under different conditions and this leads to heterogeneity but they basically allow free movement of goods and services among member parties. Moreover, FTAs have an important role in the growth of world trade in addition to GDP growth, lower transportation costs, improvement in communication technologies, and vertical specialization and outsourcing. Negotiation process of FTAs is influenced by many factors such as number of participating countries, geographical distance, democratization level and wealth level of participating countries.

There are many benefits of FTAs some of which are competition and innovation, economic growth, spread of democratic values, economic freedom, dynamic business climate, lower government spending on subsidizes for local producers, more foreign direct investment, expertise, technology transfer, employment opportunities, less pollution, improvement in public health.

When FTAs of Turkey are analysed, it is seen that Turkey had 4 FTAs before 2005. However, since then, it has signed 15 more FTAs which have entered into force. So, 2005 can be viewed as the milestone for Turkey to sign FTAs. When the trade flows after the implementation of FTAs are analysed, it is observed that Turkey

has substantially increased its trade volume with its FTA partners. On the other hand, the only FTA partner with which Turkey has changed the trade direction to trade surplus is Chile.

In this study, it is aimed to measure determinants of a potential increase in trade flows between Turkey and Brazil and envisage potential revealed comparative advantage of 16 product groups. In accordance with this purpose, the gravity model and revealed comparative advantage are used.

When the trade flow between 1995 and 2014 is analysed, it is seen that a quite high percentage of total variability can be explained by the independent variables. Regression statistics show that there is a significant relation between dependent variables which are trade volume between Brazil and Turkey, export to Brazil, import from Brazil and independent variables which are GDP of both countries, PPP of both countries and trade cost.

Firstly, there is a significant relation between trade volume and GDP of Brazil and Turkey and trade cost. GDP of Brazil and Turkey has a positive impact on trade volume. This shows that as GDP of Brazil and Turkey grows, trade volume between two countries increases. This finding matches with the study done by Martinez-Zarzoso and Nowak-Lehmann (2003) which aims to analyse the determinants of MERCOSUR-EU trade flows. It also shows that exporter and importer incomes affect bilateral trade flows positively. Moreover, as trade cost decreases, trade volume increases.

Secondly, there is a significant relation between export to Brazil and GDP of Turkey and PPP of Brazil and trade cost. GDP of Turkey and PPP of Brazil have a positive impact on trade volume while there is inverse proportion between trade cost and export to Brazil. This shows that as GDP of Turkey and PPP of Brazil grows,

export to Brazil increases. On the other hand, as trade cost decreases, export to Brazil increases.

Thirdly, there is a significant relation between import from Brazil and GDP of Brazil and PPP of Turkey. GDP of Brazil and PPP of Turkey have a positive impact on import from Brazil. This shows that as GDP of Brazil and PPP of Turkey grows, import from Brazil increases.

RCA of both countries in different sectors or product groups have been changing over the years. In this study, RCA of both countries between 1990 and 2014 is analysed. The panel data shows the trends in RCA of 16 different product groups.

Turkey has a fluctuating RCA for animal products, yet it is clear that it continues to lose its RCA for animal products. RCA for chemicals is also fluctuating, but there is a slight increase in RCA of chemicals and is still below one. It is obvious that Turkey is losing its comparative advantage in food products and it seems that this downtrend will continue. Footwear has a non-uniform flow but it continues to increase its RCA. Fuels continues to increase, yet it is still far below 1. There is a dramatic decrease in RCA of hides and skins. It is about to lose its comparative advantage. Machinery and electronics continues to increase its RCA, though it is still below one. Metals is one of product groups which enjoys increase trend. Minerals has a fluctuating RCA and continues to lose its RCA. Plastic or rubber is one of the promising product groups as it has a sharp increase and it has passed point 1. Stone and glass is another promising product groups although it has an escalating RCA. Textiles and clothing has a small part of its RCA, but it still has a very good RCA. Automobiles and spare parts have a very sharp increase and transportation becomes one of the promising product groups. There is a dramatic decrease in RCA

of vegetables and it seem to lose its comparative advantage. Wood continues to increase its RCA and becomes one of the promising product groups.

Table 53 shows the product groups of which RCA increases while table 54 shows the product groups of which RCA decreases. Generally speaking, there is dramatic decrease in RCA of food products, vegetables, hides and skins. Important subsidies should be allocated to producers of these product groups. Moreover, RCA of animal products continues to be below one and this shows that subsidies for animal products should continue. Fuels, chemicals, footwear, machinery and electronics has an upward RCA, yet they are still below one. Moreover, plastic or rubber, stone and glass, transportation, wood and metals continue to rise their RCA and they can be classified as promising product groups.

Table 53. Turkey's Product Groups with an Increase Trend

	Still below one	Pass one	Continues to increase
Increase trend	Fuels, chemicals, footwear, machinery and electronics,	Plastic or rubber, stone and glass, transportation, wood	Metals

Source: WITS, 2019

Table 54. Turkey's Product Groups with a Downtrend

	Still above one	Drop to below one	Continues to be below one
Downtrend	Food product, hides and skins, minerals, textiles and clothing, vegetables		Animal products

Source: WITS, 2019

When RCA of Brazil in these product groups are compared, it is observed that Brazil has comparative advantage in some products groups while Turkey has comparative advantage in some others. RCA of animal products of Brazil has a sharp increase while Turkey's RCA is still below one. RCA of food products of Turkey is still far below the RCA of Brazil. RCA of Brazil in machinery and electronics,

metals, plastic or rubber, stone and glass, textiles and clothing is in downtrend while Turkey's RCA in these product groups is increasing. Brazil's RCA in minerals is quite high and increasing while Turkey's RCA is decreasing. RCA of Brazil in vegetables is increasing while Turkey's RCA is losing its comparative advantage. RCA of wood in both countries are increasing.

When RCA of Turkey and Brazil and shares of both countries in world exports are analysed, animal products, vegetables, food products, minerals and wood can be viewed as sensitive products for Turkey. On the other hand, plastic or rubber products, textiles and clothing, stone and glass, metals, machinery and electronic products and transportation products can be viewed as prominent product groups for Turkey.

To the best of our knowledge, this is the first study to analyse the determinants of a potential increase in trade flows between Turkey and Brazil in case of an FTA between Turkey and MERCOSUR, to investigate the comparative advantages of Turkey in 16 product groups in a period of 25 years and to compare the comparative advantages of Turkey and Brazil. Therefore, this study is aimed to fill a gap to show the competitive power of Turkey in the scenarios of FTAs as it depicts the trends in the RCAs of Turkey and makes suggestions for the products groups to be affected in a case of an FTA between Turkey and Brazil.

For further studies, product groups may be expanded and a more detailed analysis can be made for small groups of products. CGE model can also be used to measure the effects of a potential economic reform between two parties within the world economy. Impact of transportation cost can also be studied. Determinant of potential increase in trade flows can be analysed with more independent variables, as well.

APPENDIX

GRAVITY MODEL DATA

Independent Variables of Trade Volume between Turkey and Brazil, Export to Brazil and Import from Brazil

	GDP of Turkey	GDP of Brazil	PPP of Turkey	PPP of Brazil	Trade Cost
2014	$798,797,266,164	$2,417,046,323,842	$10,304	$11,729	151.50
2013	$823,242,587,457	$2,465,773,850,935	$10,800	$12,072	157.62
2012	$788,863,301,225	$2,460,658,440,428	$10,539	$12,157	152.67
2011	$774,754,155,821	$2,614,573,170,732	$10,538	$13,039	155.62
2010	$731,168,051,637	$2,208,872,214,643	$10,112	$11,121	165.64
2009	$614,553,921,935	$1,667,020,106,032	$8,624	$8,475	175.28
2008	$730,337,495,198	$1,695,824,517,396	$10,382	$8,707	184.88
2007	$647,155,131,630	$1,397,084,381,901	$9,310	$7,247	184.35
2006	$530,900,094,645	$1,107,640,325,472	$7,727	$5,808	190.99
2005	$482,979,839,089	$891,629,970,424	$7,117	$4,731	191.87
2004	$392,166,275,623	$669,316,239,316	$5,856	$3,596	194.21
2003	$303,005,303,085	$558,320,116,997	$4,587	$3,041	198.17
2002	$232,534,560,443	$507,962,741,820	$3,571	$2,806	203.36
2001	$196,005,289,736	$559,372,502,338	$3,054	$3,135	192.23
2000	$266,567,532,790	$655,421,153,321	$4,215	$3,729	209.78
1999	$249,751,469,675	$599,388,879,705	$4,009	$3,462	222.56
1998	$269,287,100,882	$863,723,395,088	$4,390	$5,065	210.95
1997	$189,834,649,111	$883,199,443,414	$3,143	$5,260	205.79
1996	$181,475,555,283	$850,425,828,276	$3,052	$5,145	210.58
1995	$169,485,941,048	$785,643,456,467	$2,896	$4,827	221.00
1994	$130,690,172,297	$558,111,997,497	$2,269	$3,483	223.23
1993	$180,169,736,364	$437,798,577,640	$3,177	$2,774	212.76
1992	$158,459,130,435	$400,599,250,000	$2,839	$2,578	222.21
1991	$150,027,833,333	$602,860,000,000	$2,732	$3,942	240.85
1990	$150,676,291,094	$461,951,782,000	$2,791	$3,072	248.73

Source: WITS, 2019

Dependent Variables of Trade Volume between Turkey and Brazil, Export to Brazil and Import from Brazil

	Trade Volume	Export to Brazil	Import From Brazil
2014	$2,522,931,517	$794,186,310	$1,728,745,207
2013	$2,344,902,045	$936,095,843	$1,408,806,202
2012	$2,772,853,523	$1,002,759,403	$1,770,094,120
2011	$2,957,825,225	$883,471,294	$2,074,353,931
2010	$1,962,075,940	$614,551,000	$1,347,524,940
2009	$1,494,096,687	$388,206,717	$1,105,889,970
2008	$1,741,895,244	$318,027,480	$1,423,867,764
2007	$1,402,582,871	$229,913,652	$1,172,669,219
2006	$1,056,663,995	$121,881,519	$934,782,476
2005	$902,033,747	$103,457,889	$798,575,858
2004	$635,648,128	$69,355,258	$566,292,870
2003	$451,991,585	$50,165,495	$401,826,090
2002	$285,069,892	$48,978,714	$236,091,178
2001	$301,938,676	$89,817,583	$212,121,093
2000	$344,184,424	$41,679,353	$302,505,071
1999	$259,857,622	$33,658,078	$226,199,544
1998	$451,294,221	$43,921,432	$407,372,789
1997	$377,984,541	$47,873,084	$330,111,457
1996	$334,861,236	$43,156,454	$291,704,782
1995	$296,304,913	$28,430,590	$267,874,323
1994	$227,028,084	$21,019,990	$206,008,094
1993	$298,944,686	$48,112,908	$250,831,778
1992	$214,053,714	$14,744,620	$199,309,094
1991	$241,250,160	$22,705,251	$218,544,909
1990	$185,384,059	$11,763,262	$173,620,797

Source: TUIK, 2019

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