

ABSTRACT

KARAGOZ, ALI. An Econometric Analysis for Turkey and the European Union Customs Union. (Under the direction of Kathryn Boys.)

This study presents an econometric analysis for the estimation of Turkish import demand and export supply before and after customs union agreement signed by the EU which is the most significant trade partner of Turkey. The study also investigates the behavioral change in Turkish imports and exports after customs union agreement. The estimation employing country and year fixed effects specification indicates that the supply of exports to EU in terms of price after customs union has not significantly changed. The empirical analysis exhibits that the demand of Turkish imports from the EU in terms of income has significantly decreased after customs union agreement. The study also shows that the Turkish export supply to the EU in terms of income has tended downward after customs union. The analysis concludes that the customs union between 1996 and 2015 has generated at least a 33.5% increase in Turkey's exports to the EU, corresponding to 270 billion USD.

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An Econometric Analysis for Turkey and the European Union Customs Union

by
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DEDICATION

I would like to dedicate this study to my precious family and my lovely daughter Şevval.

BIOGRAPHY

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1. Introduction

The international trade of products, services, and capital has benefitted from recent, substantial improvements in availability and efficiency of transportation and communication infrastructure. The value of world merchandise exports increased about eight fold in the period of 1980-2015 (World Trade Organization, 2013; World Trade Organization, 2016). In addition to these developments, the removal of trade barriers also plays an important role in facilitating trade among countries. In this sense, the establishment of the World Trade Organization (WTO) in 1995, the proliferation of regional trade agreements, and increased economic integration between countries, have had a significant impact on trade facilitation.

The customs union is an enhanced form of a free trade agreement. It is a kind of trade agreement that may provide trade creation or trade diversion for member country. In addition to removing tariffs among member countries, customs union also includes the application of same tariffs to third countries (Feenstra and Taylor, 2011). There are many customs unions currently in place. Mercosur which is signed between four South American countries, the European Union (EU), Eurasian Economic Union (EEU), and East African Community (EAC) are examples of customs union (Andriamananjara, 2011).

Turkey, as a significant upper middle-income country is the member of the G20 and has a crucial geostrategic position between Europe and Asia. In last 15 years, per capita income in the country has increased almost three-fold and has reached about \$9,000 in 2016 (World Bank, 2016a). Turkey's population is around 80 millions (Turkish Statistical Institute, 2017c). The country has made significant improvement in international trade between 1990-2015 and increased its export value more than 11 times.

Furthermore, Turkey diversified its exporting partners; there was an increase in the number of countries to which 95% of Turkey's exports were exported to from 39 countries to 71 countries between 1990 and 2015 (UN Comtrade, 2017).

Turkey has preferred the EEC and EU membership, which is geographically close union, as a strategic choice for economic development and political coherence (Republic of Turkey Ministry of Foreign Affairs, 2017). The European Economic Community (EEC) was started in 1958 with the aim of economic cooperation among six member states. The EEC was transformed into a political union, European Union (EU) in 1993 with an aim to increase economic and political cooperation and strengthen democracy within member states. Through the EU, the free movement of money, services and goods, citizens' free travel throughout the EU, and single currency among members (European Union, 2017a) were implemented. In this way, the EU helps to improve economic growth (European Union, 2017b) and offers significant benefits to its 28 member countries.

Turkey has taken various steps since 1959 to become a member of EEC and oneday the EU. Beginning with an association agreement in 1963, and preparatory, transition, and completion phases, the customs union between Turkey and EU came into force on January 1, 1996. All tariffs, quantitative restrictions and fees for commercial transactions in most economic sectors between Turkey and the EU have been removed through the Customs Union (CU) Agreement (Delegation of the European Union to Turkey, 2017). In other words, free movement of goods has been introduced with the CU Agreement. The free movement includes the sector of processed agricultural goods and the most of industrial goods, but excluded agricultural goods and services,(Republic of Turkey Ministry of Customs and Trade, 2017), coal and steel products.

In 1999 Turkey was officially recognized as a candidate for full membership, and since 2005, Turkey has been negotiating full membership to the European Union (Republic of Turkey Ministry of Foreign Affairs, 2017).

The EU is a crucial trading partner to Turkey. In 2005, about 50% of Turkey's total trade volume in 2005 was with the EU. This ratio has decreased in more recent years and became around 41% in 2015 (Turkish Statistical Institute, 2017a), since Turkey has been diversifying its foreign trade partners, especially after the last financial crisis. In this context, it is meaningful for many researchers to examine how the world's 17th largest economy, Turkey, has been affected by the customs union. Understanding the effects of the customs union, which is a very important axis in the foreign trade of Turkey, is crucial for policy makers as they move forward in further negotiations with the EU and other trading partners.

Many studies using descriptive statistics, gravity models, synthetic control method, and computable general equilibrium models have previously explored this subject. While some studies find that the customs union has resulted in significant trade creation effects for Turkey (Aytug et al., 2015; Neyapti et al., 2007), others have determined that this trade creation effect on Turkey's exports is insignificant (World Bank, 2014). Using a regression approach, this study uses a new dataset to examine the effects of EU-Turkey customs union on Turkey's foreign trade. This analysis covers the period of 1990-2015 and the 72 countries which which Turkey has has traded 95% of its imports and exports in 2014 and 2015 (UN Comtrade, 2017).

The thesis consists of the following sections: in Chapter 1 general information about Turkey's economy and foreign trade, European Union customs union and Turkey-EU

relations are presented. Chapter 2 presents a review of the theoretical and empirical literature concerning international trade and customs unions. Studies which have examined the Turkey-EU customs union are particularly focused on. In Chapter 3, a discussion of the empirical model and data used in this analysis are presented. Chapter 4 presents and discusses the empirical results and their implications; Chapter 5 concludes and offers suggestions for future research.

1.1. General Information About Turkey's Economy and Foreign Trade

1.1.1. Turkey's Economy

Turkey is the 17th largest economy in the world. This upper middle-income country extends between south-eastern Europe and the Middle East, and has a Gross Domestic Product (GDP) of around \$800 billion (Figure 1). Turkey politically and economically is significant a nation since it is the member of the G20, the Organisation for Economic Co-operation and Development (OECD), and is an important contributor of Official Development Assistance (ODA) (World Bank, 2016a).

In last 15 years, per-capita income in Turkey has increased almost three-fold and now it is about \$9,000 (World Bank, 2016a). Its population is around 80 million in 2016 (Turkish Statistical Institute, 2017c). Compound annual growth rate of Turkey's GDP between 1990 and 2015 was calculated 6.44%; moreover, the average annual growth rate between 2010 and 2015 was 5.2% (World Bank, 2017). Between 2000 and 2013, moderate poverty rate decreased from 10% to 2.6%, and extreme poverty rate was nearly zero% in 2013 (World Bank, 2017).

The percent of employment to total population increased from 41 to 44.8 between 2004 and 2014, and the unemployment rate was 9.2% in 2014 (World Bank, 2017). The effective macroeconomic and fiscal policies of stable governments, the stimulation of educated and young labor, and entrepreneurial potential of businessmen have played important roles in this success story (World Bank, 2016a).

According to Central Bank of the Republic of Turkey data (2016), foreign direct investment (FDI) inflows between 2002 and 2015 were \$132.5 billion USD while FDI exports for same period were 33.4 billion USD. The same data showed that 99.7% of the FDI inflows came from 49 countries and 98.3% of the FDI exports went to another 49 countries in the same period (Central Bank of the Republic of Turkey, 2016).

As seen in Figure 2, FDI inflows for Turkey accelerated after 2004 because of the political stability, developments in regulatory environment, and the start of the EU membership negotiations (Becker et al., 2016). Between 2009-2013, EU was the source of nearly 75% of total FDI inflows to Turkey (World Bank, 2014). As observed in Figure 2, Turkey obtained the largest foreign direct investment inflows in the years of 2006, 2007 and 2011, which annually amounted to between \$16-19 billion USD. As it is known these years were before and after the last financial crisis. More recently, the annual values of total FDI inflows in 2014 and in 2015 were 8.6 billion USD, and 12.1 billion USD, respectively (Central Bank of the Republic of Turkey, 2016). As an upper middle-income country, Turkey has a significant potential to increase its FDI inflows due to big market size, fair labor costs, capable workforce, well infrastructure, R&D capacity and improving service sector (Becker et al., 2016).

1.1.2. Turkey's Foreign Trade

According to WTO (2016) and Turkish Statistical Institute (2017b), while Turkey's share of world total exports was 0.4 per cent in 1993, increased to 0.9% in 2015. Similarly, Turkey's share from world total imports increased from 0.8% in 1993 to 1.2% in 2015 (Turkish Statistical Institute, 2017b; WTO, 2016). As seen in Table 1, Turkey is the 31st largest exporting country and 21st biggest importer in the world.

Given its economic size, it is estimated that there is a potential for Turkey to further increase its export ranking (Ata, 2012). Turkey has made significant progress in foreign trade between 1990-2015 since the export value increased more than 11-fold. Importantly, during this time, the number of Turkey's trading partners also increased. As described in Table 2, while the value of 95% of Turkey's exports were destined to 39 countries in 1990, Turkey diversified its exports to 71 countries by 2015. The major destination countries of Turkey's products in 2016 as seen in Table 3 were Germany, United Kingdom, Iraq, Italy and USA (Turkish Statistical Institute, 2017d).

The main export products of Turkey in 2015 were motor vehicles, machinery, precious stones, knitted clothing, electrical machinery and apparatus, untreated clothing, articles of iron or steel (Turkish Exporters Assembly, 2016). According to Turkish Statistical Institute (2017e) data, the composition of exports between 1996 and 2015 differed in terms of the Broad Economic Categories (BEC) as seen in Figure 3. The share of capital goods exports increased from 5% in 1996 to 11% in 2015. On the other hand, the share of consumption goods exported which was 53% in 1996 decreased to 41% in 2015. Lastly, a slight increase is observed in the share of intermediate goods exports which were 42% in 1996 and 48% in 2015.

Turkey also has diversified the sources of its imports. Between 1990-2015, the number of trading partners from which 95% of Turkish goods were imported increased from 38 countries to 48 countries. Turkey imported the most from China, Germany, Russia, USA and Italy in 2016 as seen in Table 3 (Turkish Statistical Institute, 2017d). The top import products in 2015 were mineral fuels (e.g. petroleum) and mineral oils, machinery, electrical machinery and equipment, motor vehicles, iron and steel, plastics and its products (Turkish Exporters Assembly, 2016). The composition of Turkish imports between 1996 and 2015 also changed as seen in Figure 4. For instance, the share of capital goods among imports increased from 9% in 1996 to 14% in 2015. Furthermore, the share of capital goods imports which were 24% in 1996 slightly decreased to 17% in 2015. Finally, the share of intermediate goods imports remained nearly stable which were 67% in 1996 and 69% in 2015 (Turkish Statistical Institute, 2017e).

The EU is Turkey's most significant trading partner since the biggest share of both its imports and exports come from this partner. In 2015, the EU share in Turkey's trade were 44.5% for exports and 38 % for imports. The same shares in 1995 were 51.2% for export and 47.2 % for import respectively as seen in Table 4. As a result, the share of EU trade in Turkey's foreign trade has been decreasing despite the increase in trade value since Turkey has diversified its foreign trade with other nations.

As observed in Figure 5, the foreign trade deficit percentage tends to slightly decrease between 1990 and 2015 due to the increase in exports relative to imports . Exports increased 11-fold while imports went up nine-fold in the same period (Turkish Statistical Institute, 2017a).

According to Turkish Statistical Institute (2017a) data, in 1996 56.9% of Turkey's total foreign trade deficit was with the EU. The same ratio was 23.2% in 2015. As a result, Turkey's trade deficit with the EU has been considerably declining. This is important because it shows that Turkey has been diversifying its foreign trade partners and decreasing its dependency on the EU. This is preferable to distribute risk factors in case of hard times.

1.2. General Information About European Union Customs Union

The world, especially Europe, was in ruin following WWII. Millions of people died or became permanently disabled. Transportation infrastructure and buildings were largely destroyed in many locations. The governments of the European countries started looking for a solution to the crisis of confidence after this devastation. The idea emerged that increasing trade and economic dependence between European countries could reduce the crisis of confidence (Aysun, 2011). It was thought that deeper economic integration may provide significant opportunities for economic development after the devastation. Similarly, economic associations could create reasonable solutions to existing security concerns (Aysun, 2011).

During the cold war period (~1945-1991), there were different economic alliances in the western block and the eastern (communist) block of Europe. The Council for Mutual Economic Assistance (COMECON) was one of the most important economic associations for the eastern block (Aysun, 2011). On the other hand, the OECD, the European Free Trade Association (EFTA), and the European Economic Community (EEC) were established in the western block to resolve the existing security concerns and to increase economic associations (Aysun, 2011).

After the Treaty of Rome, the EEC was established in 1957 as a remarkable example of regionalism and economic association in Western Europe (Urata, 2002). The EEC customs union between France, West Germany, Italy, Belgium, the Netherlands and Luxembourg, which came into force in 1958 provided strong synergy between member nations (Andriamananjara, 2011). Common external tariff for the EU customs union was negotiated over 11 years, from 1957 to 1968 (Andriamananjara, 2011).

Enlargement, as the joining process for the membership, gave Europe a promising economic and political power. Additional Western European countries, were added in 1973, 1981, and 1986 during the “first enlargement” and subsequent countries joined the union (European Union, 2017b). Over time, the structure of association has strengthened and turned into an economic and political union, the European Union (EU) (European Union, 2017a), which was established in 1993 .

After the collapse of communist regimes in 1989, countries in Central and Eastern Europe progressively joined to the EU during the period 2004-2007. Currently, the EU has enlarged to 28 members after it was joined by Croatia in 2013 (European Union, 2017b). United Kingdom voted in 2016 to exit from the EU membership. This decision of Britain to exit the EU, dubbed “Brexit” was unexpected by many. The UK is currently scheduled to leave the EU in March 2019; the consequences of this exit, both for the future of the UK and the EU, are very much unknown.

1.3. The History of the EU and Turkey Relations, Turkey and EU Customs Union

Seeking a path for economic development after World War II, Turkey was in search of political and economic associations. Thus, Turkey went towards a potential political and economic alliance with Western European countries since it was considered as strategic preference for Turkey's political and economic development (Republic of Turkey Ministry of Foreign Affairs, 2017). Not only strategic choice but also there were also some special reasons for Turkey to join the EEC. The first reason is to take part in a political association established in Western Europe for the long run (Kazgan, 1985). The second one is to potentially benefit from economic cooperation offered by the EEC (Kazgan, 1985). Due to these reasons and strategic preference, Turkey became a member of the western block during the cold war as opposed to the communist block.

Turkey applied to join in the EEC in 1959. After application process, the Ankara Agreement, which provided a new relationship between EEC and Turkey, was signed in 1963. The main goal of the Ankara Agreement was not only to include Turkey in the CU with European Economic Community, but also to allow Turkey to work toward full EEC, and later EU membership as a long term goal (Oz, 2012). Three stages of increased economic integration between the EEC and Turkey which were detailed in the Ankara Agreement. In the preparatory stage, Turkey was to improve its economic conditions with contribution of EEC to meet obligations for other stages. The second stage was a transitional stage that included working to establish the CU and to more closely align economic policies in EEC and Turkey. The final stage required a closer coordination in economic policies and the establishment of the CU (Ankara Agreement, 1963).

In 1970, an Additional Protocol to Ankara Agreement was signed “*on which set out a timetable for the abolition of tariffs and quotas on goods circulating between Turkey and the EEC*” (World Bank, 2014, p.1). By this protocol, the EEC unilaterally abolished all tariffs on industrial products imported from Turkey except some textiles and petroleum products, and all quotas except on some silk products (Additional Protocol, 1970).

The extent of economic integration between Turkey and the EU was enhanced by the approval of customs union agreement in the EC-Turkey Association Council. Negotiations on CU were extended for the period of next 25 years due to political and economic tensions between the involved parties (Oz, 2012); this agreement was approved in 1995 and came into force in 1996 (Andriamananjara, 2011). This agreement aimed to facilitate market integration including the following features which are common characteristics of customs unions (Feenstra and Taylor, 2011):

- The elimination of all kinds of tariffs and quotas among members;
- The equalization of tariffs against third countries;
- The application of joint tariff rates against the outside countries.

According to a World Bank (2014) study, Turkey experienced significant improvement in enhancing their trade exports, foreign direct investment (FDI) inflows, and in improving the competitiveness of domestic market, after joining the customs union. The total value of trade between Turkey and European Union more than quadrupled between 1996 and 2016 (Turkish Statistical Institute, 2017a). Also FDI inflows to Turkey increased after joining the CU; at their peak before the recent financial crisis, inflows were 19.1 billion USD in 2007 (World Bank, 2014).

Turkey between 1980 and 1990 was successful in transition from a government controlled economy to a market-based economy (Togan, 2012). The process of preparing for, and entering into membership in this customs union also had significant impacts on other aspects of Turkey's economy. Turkish industrialists and businessmen experienced and benefited from increased competition with European rivals after the removal of trade borders (Togan, 2012).

From Turkey's perspective, the customs union, however, brought some problems along with its benefits. Firstly, Turkey is not a full member in the EU and is not allowed to be involved in decision making process about the technical legislations and common trade policy since Turkey's status in the related committees is only observing but not voting. The situation creates political and technical obstacles for Turkey (World Bank, 2014). Secondly, Turkish businesspeople are not allowed to move freely to the EU because of visa limitations by the EU. However, the EU businesspeople could move more freely compared to Turkish ones (Oz, 2012). This situation wastes the time of Turkish businesspeople. Lastly, restraining road transportation permits coming from the EU cause additional costs and create difficulties for Turkish exporters (Oz, 2012). Turkish authorities keep negotiations up with EU side to develop commercial relations and upgrade CU on the grounds of mutual benefit to eliminate these problems (Republic of Turkey Ministry of Foreign Affairs, 2017). In 1999, Turkey was officially accepted as an EU candidate country. In 2005, admission negotiations were initiated and since then Turkey has been negotiating for full membership to the European Union. However, the degree of negotiations has not reached to the expected level due to

political reasons arising from some EU member states (Republic of Turkey Ministry of Foreign Affairs, 2017). Lastly, it may be stated that due to its geostrategic position, the EU will not be able to give up easily from Turkey. On the other hand, it is clear that even if all the conditions of membership are fulfilled, the admission of Turkey's membership to the EU is doubtful since it is clear that the economic and political conditions of Central and Eastern European countries, admitted as members in the 2004 and 2007 enlargements, were not brighter than Turkey.

2. Literature Review

The chapter begins by introducing free trade agreements and customs unions. In particular, studies on the effects of the various customs union from the world, especially the customs unions of Eurasian Economic Union (EEU) and East African Community (EAC), are examined. Lastly, analyses of the customs union between the EU and Turkey are examined.

2.1. International Trade and International Trade Agreements

According to WTO statistics, the value of world merchandise exports, which was 2.03 trillion USD in 1980, rose to 15.98 trillion USD in 2015 (WTO, 2013; WTO, 2016). This reflects a growth in world merchandise by an average of 6.26% annually in this period.

In Table 1, the largest fifteen merchandise importer and exporter countries in 2015 are presented. As seen in Table 1, China, Germany and the United States accounted for around 30% of world merchandise total trade value in 2015. On the other hand, developing countries such as China, Mexico, India and Russian Federation managed to be among the top fifteen countries in the world trade. While the share of developing countries in the world merchandise exports was around 30% in 2000, it increased to 43% in 2015. Similarly, the share of developing nations in the world merchandise imports increased from 28% in 2000 to 41% in 2015 (WTO, 2016). It is clear that the role of developing nations in the world merchandise trade is increasing; this is perhaps, especially true among Asian countries.

In addition to the trade in goods, one could also consider the trade in capital. Foreign direct investment (FDI) is the flow of capital paid by a firm to buy all or part of a company in foreign country (Feenstra and Taylor, 2011).

FDI also played an important role in helping to accelerate international trade. Improvements in technology transfer, capital formation, increasing competitiveness and employment, and increased environmental protections have been attributed to FDI flows (UNCTAD, 1999). Developing nations who attract significant amounts of FDI are often able to accelerate their economic activities. For example, China and other Asian countries attracted the largest FDI stock that was \$5,886 billion as of 2015. Latin America's FDI stock was \$1,718 billion as of 2015 while FDI stock in Africa had \$740 billion as of 2015 (UNCTAD, 2017).

There are many reasons for the increase of international trade. The groundbreaking improvements in availability and efficiency of transport and communication have greatly reduced the cost of trade (WTO, 2013). Furthermore, the success of the political order that prevailed after the World War II had a significant role in the increase of the international trade. The rising of US hegemony, the emergence of the Bretton Woods System, China's economic reform policies in 1979 and subsequently, and the closing of the Cold War period in 1989, offered structural contributions to globalization and the increase of international trade (WTO, 2013). More recently, regional trade agreements have also significantly contributed to the increase in international trade. The establishment of the World Trade Organization (WTO) in 1995 provided multilateral negotiations to decrease tariff rates among the member countries. Lower tariff rates and reduction of trade constraints became important reasons for the facilitation of trade among the members of WTO and also the increase on the number of regional trade agreements (Feenstra and Taylor, 2011). These types of agreements are discussed further below.

Most developed and developing countries have been setting up regional trade agreements (RTAs) and preferential trade agreements (PTAs) to increase their competitiveness and improve their benefits by reduction of the trade restrictions (Feenstra and Taylor, 2011). It is possible to aggregate trade agreements into three primary types; partnerships or cooperative agreements, free trade agreements and customs unions (Feenstra and Taylor, 2011). The latter two of these are particularly relevant to this analysis.

Trade contracts signed between two or more partners are defined as regional trade agreements. Free trade agreements and customs unions are described as regional trade agreements (Feenstra and Taylor, 2011). Free trade agreements (FTA) generally reduce tariffs and other trade barriers among member countries. Trade barriers includes all factors impacting the trade of goods and services negatively such as taxes for imported goods, transportation costs, wars and natural disasters (Feenstra and Taylor, 2011). After FTA, individual member countries' tariff rates and other forms of trade barriers have applied to nonmember countries remain unaffected (Feenstra and Taylor, 2011). Additionally, according to Global Preferential Trade Agreements Database, there have been 330 FTAs currently in the world (World Bank, 2017b). The North American Free Trade Agreement (NAFTA), which is established between the USA, Canada and Mexico, Turkey-South Korea FTA and Turkey-Egypt FTA are just three examples of free trade agreements. Members are bound to report to the WTO notifications of new trade agreements which they have made and involved in. In this regard, 124 notifications were reported for the period of 1948-1994, which was before WTO, while the notifications after 1995 have exceeded 400 (World Trade Organization, 2017).

Another type of trade agreement is customs union (CU) which has an enhanced scope beyond free trade agreements. Customs union includes the elimination of tariffs among members in the union and also the application of the common customs tariffs determined by member states against third countries (Feenstra and Taylor, 2011). Many customs unions are in place. Mercosur which is signed between four South American countries, the European Union (EU), Eurasian Economic Union (EEU) and East African Community (EAC) are a few examples of customs unions (Andriamananjara, 2011). As the focus of this study, customs unions are considered more deeply below.

Custom unions may provide trade creation or trade diversion effects for member and nonmember countries. If, due to a reduction in imports tariffs from a member country, a consumer pays less money for the same product or producer makes more sales, the customs union has led to trade creation effects. In this case there are consumer and/or producer surplus benefits which lead to increased welfare effect (Feenstra and Taylor, 2011). Trade diversion occurs when import sources are diverted from efficient nonmember exporters in favour of less efficient CU member countries (Feenstra and Taylor, 2011).

Besides the static effects of the customs unions, there are also certain dynamic effects that can be observed over a longer period. Initially, the market growth that comes with the CU integration process can have a positive dynamic effect on a member country's growth rate. Other important dynamic impact is the economies of scale benefits for the member country to reach the larger market area (Kreinin, 1964), and the potential to enhance capacity of research development, to further specialize in production and to introduce or enhance an innovation culture. Finally, the decrease of uncertainty and risk stemming from

foreign trade, and the increase in the capacity to obtain foreign direct investments are also significant dynamic effects of customs unions (Kreinin, 1964).

2.2. Empirical Literature Examining Trade Impact of Customs Union

Customs unions have been the focus of research throughout the second half of 20th century. The pioneering work in the literature that sets out the issue of custom unions was carried out by Jacop Viner. Viner studied the topic in depth by writing the book called "Customs Union Issue" in which he analyzed trade creation and diversion effects of customs unions (Viner, 1950). Subsequently, Meade (1955) and Lipsey (1960) focused on the theory of customs union, expanding and modifying Viner's analysis in their works (Cooper and Massell, 1965). Mundell (1964) contributed to the customs union theory by examining the effect of the terms of trade (Temiz, 2009) while Corden (1972) incorporated economies of scale considerations and customs union theory.

A large body of empirical research has also examined aspects of customs unions. Some studies analyze the impacts of CU's on specific industries, while others focus on the creation or diversion effects, or on total trade impacts. The customs unions of the European Union (EU), Eurasian Economic Union (EEU), and East African Community (EAC) have been particularly well studied.

To analyze the impact of the EEU customs union of Kazakhstan, Belarus and Russia, Dzianis (2012) examined the trade creation and diversion effects on six importing and six exporting industries between 1996 and 2010. Using both static and dynamic model specifications, Dzianis (2012) found statistically significant trade creation effects for importing industries.

These results provide strong evidence for the effect of this customs union among Kazakhstan, Belarus and Russia in terms of trade creation within the examined industries.

Sugaipova (2015) investigated the effects of Eurasian Economic Union (EEU) on trade flows of Belarus, Russia and Kazakhstan which are the members of EEU. Her analysis did not focus on certain chosen industries like Dzianis (2012), but instead examined the general impacts of EEU on trade flows by using a PPML approach over the 2010-2013 data period. This approach was adopted because it was useful for the elimination of heteroskedasticity and the omission of bias which are the common two problems in the gravity models. She found that the bilateral exports' rise was positive and significant owing to EEU, and that the EEU expanded the trade flows of members by around 150%.

The trade impacts of the East African Community (EAC), both among members, and between EAC members and non-members has also been investigated by several authors. Tebekew (2014) studied Ethiopia's trade with three EAC member countries - Kenya, Tanzania and Uganda. EAC countries have a customs union between them but Ethiopia is not a member of that CU. This study explores the potentials on bilateral trade and export of Ethiopia with EAC countries employed a gravity model of the period 2004-2012. Tebekew (2014) found that Ethiopia had untapped bilateral trade potential with EAC countries. He concluded that Ethiopia could benefit from more economic integration within East Africa. Buigut (2016) also analyzed the EAC with the goal to estimate the impact of the customs union agreement for East African Community. He used a gravity model to examine the period of 2000-2013 panel data with 49 trading partners around the world. In the analysis, PPML estimation was used for checking robustness of results.

This analysis concluded that this customs union generated created a 22.1% increase on the trade among EAC countries.

2.3. Literature Regarding Turkey and European Union

Several studies have examined the impacts of the customs union between Turkey and the European Union. These studies employed a number of different research approaches including descriptive statistics, gravity models, synthetic control methods, and computable general equilibrium models. The analyses on different approaches are come up more deeply below.

Mercenier and Yeldan (1997) examined the impact of the EU Customs Union on foreign trade of Turkey using an intertemporal general equilibrium approach. In the analysis, some negative effects like the loss of domestic chemical industry's producers stemming from the removal of customs tariffs against the European Union were included on Turkey's terms of trade. Also the study claimed that the EU full membership for Turkey would be beneficial since it would lead to the removal of non-tariff barriers. As a conclusion, they stated that it was more beneficial for the Turkish economy to prefer a form of trade relationship with the European Union including the elimination of non-tariff barriers instead of only customs union. In their ex-ante analysis of the customs union's economic implications, Harrison et al. (1997), found a different result from Mercenier and Yeldan (1997). Using a computable general equilibrium model to estimate welfare gains, the authors found that Turkey's welfare would increase by 1-1.5% of its GDP after the CU implementation.

Karaman et al. (2006) sought to analyze the impact of the CU on disaggregated industrial goods and an aggregated import demand function for Turkey. They used an econometric approach which used panel data with random effects specifications to examine imports between 1982 and 2004. In their analysis, 19 EU member countries and 16 non-EU member countries were considered; justification of the selection of the 16 non-EU member countries was that these nations generated 81% of total import of Turkey except the EU in 2000. The authors indicated that import demand was income elastic but price was inelastic. Their analysis also found that the CU generated trade creation effects for the automotive, machineries, and mechanical appliances sectors. However, trade diversion effects for iron and steel imports were found. No trade effects were observed for the plastic and organic chemicals sectors.

Neyapti et al. (2007) estimated the effect of the EU CU on the Turkish trade using a panel dataset of 150 EU and non-EU countries over the period of 1980-2001. They would like to estimate import and export level with the help of GDP, real exchange rate (RER), and the dummy variables to capture membership effect of the CU. The authors found that the EU customs union had positive and statistically significant effect on Turkey's foreign trade. Importantly, the increase in the imports from the EU is bigger than the increase in the rate of exports to the EU after CU agreement. They reported that Turkey's exports have become more reactive than before for the RER fluctuations after joining the CU. They also stated that the overvalued Turkish currency posed a serious risk for Turkey's exports. It was our inspiring study while setting up the model.

In an analysis of the manufacturing sector, Adam et al. (2008) also stated that Turkey's full membership in the EU would create greater benefit to Turkey through the export of industrial goods. The authors employed a gravity model which included 24 OECD countries and covered a period between 1988 and 2004 to examine the export effects of the CU on the bilateral trade of the EU and Turkey. The authors showed that the exports among the 15 EU countries decreased after the formation of the CU. They concluded that the increase on the exports of the EU-15 countries to Turkey were 65% while the rise of Turkish exports to the EU-15 countries were 31%.

Another econometric model using 1990-2007 panel data with fixed effects was offered by Nart (2010). She obtained information concerning 21 EU countries and 14 non-EU countries which had the highest trade value with Turkey. Her study benefited from Neyapti's (2007) econometric analysis to estimate import demand and export supply of Turkey. GDP, real exchange rate, dummy variables to denote CU and EU membership were among the independent variables in the model. In her study, it was reported that the CU made trade creation impacts and increased the trade volume of Turkey with the EU countries.

Ata (2012) he studied the export potential of Turkey using a gravity model. He analyzed on the bilateral trade of 68 countries between 1980 and 2009, and found that Turkey's level of exports with 48 countries was lower than its potential. According to Ata (2012), Italy, USA, China, Greece and Japan have the highest export potential for Turkey. Turkey also has some trade potential with Romania, Lebanon, Serbia, Egypt and Croatia. He stated that Turkey had an promising export potential with neighbouring countries and also certain developing countries.

However, Turkey's potential trade has been reached or outperformed with 19 countries; the most significant countries with which its trade has outperformed expectations are with the United Arab Emirates, the United Kingdom, Switzerland, Malta, and Algeria.

The World Bank prepared an evaluation report for EU-Turkey Customs Union in 2014. The study used a gravity model to explain the impact of this CU agreement on the trade of industrial goods (World Bank, 2014). This study covered the period from 1990-2010 and used a panel of 150 countries' with pooled time series cross-section regression to estimate total export value. Findings indicated that the CU effect on Turkey's exports was insignificant. The World Bank (2014) study offered several possible explanations into this result. Among them, is that last financial crisis caused some negative effects on bilateral trade. The other reason could be China's accession to World Trade Organization in 2001. It meant that since China had a potential to change the trade behaviors of nations, this accession may have created some changes on Turkish imports and exports. This argument is supported by China replacing Germany as the largest importer of Turkey's since 2013 (Turkish Statistical Institute, 2017d).

In a similar study, Yucel (2014) focused on intra-industry trade of manufactured products between Turkey and the EU over the period between 1990 and 2009 to examine the impact of the CU agreement. After the CU, she indicated that there was an enlargement on the trade of paper and paper products, motor vehicles, electrical machinery, medical and optical instruments, and rubber and plastic products. Her analysis, however, noted reductions in the trade of food products and beverages, tobacco products, chemicals and chemical products, wood products except furniture, publishing and printing products.

She also noted that the existence of trade creation effects for the plastic sector is different from Karaman et al. (2006) analysis. It is understood that relationships between Turkish and the EU traders on the plastic sector has been developing year by year.

Aytug et al. (2015) used a synthetic control method to investigate the EU-Turkey trade relationship covering the period of 1989-2013. Their aim was to answer the question about what Turkey's per-capita GDP and total exports would have been if the CU with the EU had not existed. In this analysis, exports and GDP per capita data of 18 countries with a similar economic size as Turkey, and who were both members and non-members of the EU was obtained. The authors estimate that Turkey's exports to the EU would have been 38% less, and Turkey's per-capita GDP would have been 13% lower in the absence of the CU. The authors conclude that Turkey has benefited from participating in the customs union with the EU.

Magee (2015) conducted an industry-level analysis of the EU's exports to Turkey to analyze the effect of the CU. A gravity model using the data of 125 countries and the period from 1993-2010 was developed. He focused on measuring the trade creation and diversion effects of the CU on Turkey's imports. His study showed that the year of 1999 had the largest percentage of trade creation (16.6%). Furthermore, his analysis deduced that the trade creation effect of the CU was more than two times larger than the trade diversion effect between 1996 and 2010. Therefore, he concluded that Turkey citizens have benefited from the CU.

3. Methodology

The study examines the impact of the Turkey – EU customs union on Turkey’s international trade. In the chapter, the empirical model employed in the study is introduced. The data and empirical approach used in this analysis are then presented.

3.1. Empirical Model

A cross-country regression analysis covering the period 1990-2015 estimates the supply of Turkish exports and the demand for Turkish imports. The equations used in the analysis are derived from Brada et al. (1997), Neyapti et al. (2007) and Nart (2010) and are presented below. In each equation, the relative price and income level to estimate the export supply and import demand functions:

$$\ln XT_{it} = \beta_1 + \beta_2 (\ln GDP)_{it} + \beta_3 (\ln RER)_{it} + e_{it} \dots \dots \dots 1.1$$

$$\ln XT_{it} = \beta_1 + \beta_2 (\ln GDP)_{it} + \beta_3 (\ln RER)_{it} + \beta_4 (CU)_{it} + e_{it} \dots \dots \dots 1.2$$

$$\ln XT_{it} = \beta_1 + \beta_2 (\ln GDP)_{it} + \beta_3 (\ln RER)_{it} + \beta_4 (CU)_{it} + \beta_5 (CU * \ln GDP)_{it} + \beta_6 (CU * \ln RER)_{it} + e_{it} \dots \dots \dots 1.3$$

$$\ln MT_{it} = \beta_1 + \beta_2 (\ln GDPT)_t + \beta_3 (\ln RER)_{it} + e_{it} \dots \dots \dots 2.1$$

$$\ln MT_{it} = \beta_1 + \beta_2 (\ln GDPT)_t + \beta_3 (\ln RER)_{it} + \beta_4 (CU)_{it} + e_{it} \dots \dots \dots 2.2$$

$$\ln MT_{it} = \beta_1 + \beta_2 (\ln GDPT)_t + \beta_3 (\ln RER)_{it} + \beta_4 (CU)_{it} + \beta_5 (CU * \ln GDPT)_{it} + \beta_6 (CU * \ln RER)_{it} + e_{it} \dots \dots \dots 2.3$$

where XT_{it} expresses Turkish exports and MT_{it} describes Turkish imports to (from) country i in year t . T is used to denote Turkey, and GDP is denotes gross domestic income of Turkey's trading partner i , and $GDPT$ denotes Turkey's gross domestic product. RER , the real exchange rate, shows the relative price of a Turkish basket of consumer goods against foreign country i 's basket of consumer goods in year t . CU is the dummy variable in the models.

Equations 1.1 and 2.1 are our basic models to examine the big picture of export and import estimations. In equation 1.1, Turkey's income and price elasticity for exports are estimated. A comparable estimation is conducted in equation 2.1, where the elasticity estimation of income and price is presented for Turkish imports. It is expected that when a country's income (GDP) goes up, bilateral trade of the country is positively affected (Feenstra and Taylor, 2011). While the price of a foreign goods basket in terms of Turkish goods' basket increases, the RER value decreases because of the real depreciation in Turkey (Feenstra and Taylor, 2011). It is expected that while export supply of cheaper Turkish goods goes up, import demand of relatively expensive foreign goods falls due to the real depreciation effect.

This basic model is enhanced in equations 1.2 and 2.2, which account for the potential of structural shifts in foreign trade towards the EU due to the customs union agreement. A significant positive value of the CU variable would indicate that the Customs Union had a significant, positive, impact on Turkey's imports or exports. Lastly, the change in the relative importance of the CU and other factors which impact Turkey's foreign trade is examined in models 1.3 and 2.3. Statistically significant positive (negative) values of

$CU*LnRER$, $CU*LnGDP$ and $CU*LnGDPT$ variables would show the positive (negative) behavioral change in imports or exports due to the customs union agreement.

3.2. Data

The data used in the analysis includes the imports and exports to and from Turkey, GDP , and bilateral real exchange rate (RER) of 72 countries with Turkey over the 1990-2015 period. In the analysis, the 72 countries which are included reflect the majority (95%) of Turkey's exports and imports in 2014 and 2015. The dataset is an unbalanced panel data since some imports, exports and GDP data are not available for some years particularly during the 1990-1993 period. Combined, 1872 country-pair year observations are covered in the dataset. Of the total 7488 data points, 55 import, 52 export, 51 GDP and 214 RER observations are missing, which constitute 4.96% of the total dataset.

Exports from and imports to Turkey were obtained from the United Nations' Commodity Trade Statistics Database (UN Comtrade, 2017). While extracting data, goods are chosen as type of product and Harmonized System Code 2012 version with two digit level of aggregation are used (UN Trade Statistics, 2017). GDP data denoted in current was obtained from the World Bank (World Bank, 2017a).

Bilateral RER between each of the 72 countries included in this analysis and Turkey were calculated by the author employing data from the World Bank online database. Annual average official nominal exchange rates and annual average Consumer Price Index (CPI) data for all countries are obtained from the World Bank (World Bank, 2017a). The RER is calculated as below (Feenstra and Taylor, 2011) for each of Turkey's trading partners for each year between 1990-2015.

$$RER = \left(\frac{E_{TL}}{E_{FCU}} \right) * \left(\frac{CPI_{foreign}}{CPI_{Turkey}} \right)$$

Where:

$\frac{E_{TL}}{USD}$ is Turkey's official exchange rate (annual average) denoted in USD;

$\frac{E_{FCU}}{USD}$ is the foreign country's official exchange rate (annual average) denoted in USD;

$CPI_{Foreign}$ is the annual average consumer price index of the foreign country;

CPI_{Turkey} is the annual average consumer price index of Turkey.

A dummy variable is employed to capture the effect of the Turkey-EU customs union. The Turkey-EU customs union started in 1996; this dummy variable takes value one in years that agreement is in effect for a given pair of countries, and zero otherwise. If the estimated coefficient on the dummy variable takes positive value, it indicates that customs union agreement increased the export or import level of Turkey.

3.3. Analytical Approach

Ordinary Least Squares (OLS) estimation is used for this analysis. The fixed effects model specification is decided on since this specification captures parametric shifts sourced from specific entity or time (Wooldridge, 2013)

In the analysis, country fixed-effects are used in model version "a", and country and year fixed effects are used in model version "b". Both model versions are included in the estimation of models 1.1 and 1.2 to show the impact of including year fixed effects. Model version b is preferred since this specification captures unobserved heterogeneity sourced from

specific country or specific year (Wooldridge, 2013), and is used in estimating results of the remaining equations.

Stata 13 software is used for this analysis. For heteroscedasticity problem, robust standard errors are employed to obtain consistent estimations.

4. Results and Discussion

In the chapter, after the general assessment of Turkey's exports for the period of 1990-2015 are presented, the effects of the customs union agreement are discussed through examining the results of the econometric analysis. The same approach is employed for Turkey's imports discussion.

Summary statistics of each independent and dependent variables which are mean, standard deviation, number of observations, maximum and minimum value are seen in Table 5. The variation on Turkish imports is larger than the variation on Turkish export since the magnitude of standard deviation for the import is bigger than the export. Furthermore, the number of observations for RER are less than the other variables' observations since the data on CPI is missing for some countries in several years.

4.1. Turkey's Exports

In Figure 6, Turkey's exports are illustrated for the period 1990-2015. Turkey's exports increased 11.1-fold over this period (Turkish Statistical Institute, 2017a; Turkish Statistical Institute, 2017d). The recent financial crisis affected the increase in Turkey's exports only temporarily, and the exports of the country continued to increase after 2009. Similarly, exports to the EU in the same period followed a similar trend. The increase of exports to the EU after the last financial crisis, however, were less than the total increase; total exports increased by 41.2% while exports to the EU increased by 36.2% in the period 2009-2015 (Turkish Statistical Institute, 2017a; Turkish Statistical Institute, 2017d).

In examining the period 2002-2015, it is observed that Turkey's export trend was larger than the before this period. It is possible that China's accession to World Trade Organization in 2001 was an important influence in explaining the different trend in the period of 2002-2015. As seen in Figure 7, Turkey's imports from China were 1.4 billion USD in 2002 and increased to 24.9 billion USD in 2015 (Turkish Statistical Institute, 2017d). It means that Turkish import from China in the period of 2002-2015 increased 17.8 times while Turkish total imports increased only four times in the same period. It is understood that Turkish traders have had the opportunity to increase their export volume by the help of purchasing cheaper goods from China and due to the improved ease in selling into this market. This situation may have helped to increase Turkish total exports and also imports. Additionally, the increase of the annual average labor productivity of Turkey may be another reason for the improvement in exports in the period of 2002-2015 since the annual average labor productivity was 87.6% in 2005 and rose to 100.9% in 2014 (Balkan and Suicmez, 2015).

The regression results of export supply equations 1.1 to 1.3 are reported in Table 6. Two versions of 1.1 equation are presented. The first version of each equation (1.1a) include country fixed-effects, and the second version of each equation (1.1b) includes both country and year fixed-effects. In the discussions, country and year fixed effect results are preferred so that import and export regressions as they also capture time trends. Results using the country and year fixed effect specification are compatible with theory since export values may be sensitive for income and price variations over time, and country-specific factors which may affect trade but are not captured elsewhere in the model.

Results of equation 1.1 indicates that both the *GDP* and *RER* have a positive relationship to, and are statistically significant (1% level) in explaining the export supply. As the exported countries' income level as measured by *GDP* goes up, they buy more goods from Turkey; the exports of Turkey increase as a result. These results are consistent in both the country fixed effects (only) specification (Model 1.1a), and the country and time fixed effects specification (Model 1.1b).

As the price of a basket of foreign goods rises relative to a basket of Turkish goods, represented by the *RER*, cheaper Turkish goods are preferred and sales from Turkey to foreign countries (exports) increase as expected from the theory (Feenstra and Taylor, 2011). Finally, when the magnitude of the coefficients are taken into account, in the model 1.1b, the natural log of exported countries' *GDP* is 0.638. Since it is less than one, it may be stated that Turkey's exports in terms of income are relatively inelastic. In the model 1.1b, the natural log of real exchange rate is 0.075. As the value is less than one Turkish export supply is relatively inelastic in terms of price. These results are compatible with the studies of Neyapti et al. (2007) and Nart (2010) which also found statistically significant results in their export supply models for national income and the relative price.

In Table 6, model 1.2 exhibits how the customs union agreement affects Turkish exports by including a dummy variable *CU*. It is observed that the dummy variable's coefficient is positive and statistically significant at 1% and that the magnitude of this variable is 0.289. This result suggests that after controlling for, *GDP* and *RER*, Turkish exports have increased at least 33.5% ($= e^{0.289} - 1$) more than the average change in exports due to the customs union.

In other words, if the customs union agreement had not been signed, between 1996-2015 Turkey would have exported 536 billion USD instead of 806 billion USD as the total export value to the EU (Turkish Statistical Institute, 2017a). This trade creation effect is consistent with findings by Aytug et al. (2015) who reported that the customs union agreement had a statistically significant and positive effect in the increase of exports to the EU. Their estimation covering the period of 1989-2013 stated that customs union contributed to Turkish exports to the EU at least 38% after controlling other variables.

In order to understand whether Turkish foreign trade has undergone structural change, model 1.3b reported in Table 6 includes *GDP* and *RER*, the *CU* dummy variable, and interaction terms between these variables. In this model there is statistically insignificant price responsiveness of exports to EU after the implementation of the customs union. It means that the price responsiveness of exports has not significantly changed due to the customs union.

In the model 1.3b the interaction term between the *CU* and the importer's economic size is represented by $CU * \ln GDP$. The coefficient estimate for this variable is -0.140 and is statistically significant. It means that the increase in income responsiveness of exports to the EU after customs union is significantly less than average increase of income responsiveness of total exports.

4.2. Turkey's Imports

Turkey's imports between 1990 and 2015 are illustrated in Figure 8. During this period, Turkish import trend mostly increased although the recent financial crisis affected the increase temporarily.

The imports of the nation increased 9.4 times in the same period (Turkish Statistical Institute, 2017a; Turkish Statistical Institute, 2017d). Imports from the EU also increased over this period, however, the increase of imports from the EU after the last financial crisis increased at a slower rate than total imports. From 2009-2015 total imports increased by 46.8% while imports from the EU increased by 38.6% (Turkish Statistical Institute, 2017a; Turkish Statistical Institute, 2017d).

In Table 7, regressions from 2.1a to 2.3b, including import demand functions of Turkey have been reported. With the exception of model 2.1a, these models use country and year fixed effects. The *lnGDPT* coefficient estimate is positive, statistically significant at the 1% level, and robust across specifications. Conversely, price changes were found to not significantly affect the Turkish imports in any of the model specifications. The result is different from the studies of Neyapti et al. (2007) and Nart (2010), which found statistically significant results in their baseline import demand models for relative price variable.

In Table 7, results for model 2.2b shows how the customs union agreement affects Turkish imports. Here the CU dummy variable's coefficient is 0.306 and statistically significant 10% level. This result offers weak evidence that indicates Turkish imports from the EU increase more than the average imports after customs union agreement.

It is clear that there is a strong evidence for the impact of the customs union on exports to the EU, while the import impact of the customs union has a weak evidence. As seen in Table 4 over the period 1996-2015, the share of EU in total exports of Turkey decreased by 6.7%, while for imports the share decreased by 9.2% (Turkish Statistical Institute, 2017a).

As overall trade between Turkey and the EU has continued to increase during this period, this result is likely driven by the diversification of Turkey's trading partners. Included in this, is the impact of China's increased access to world markets after its accession to the WTO in 2001. As of 2013 became the leading source of products imported into Turkey (Turkish Statistical Institute, 2017d); China's import share within Turkish total imports increased from 7.8% to 12.8% between 2007 and 2016 (Turkish Statistical Institute, 2017d).

In order to understand whether Turkish imports have experienced a behavioral change, model 2.3b includes interaction terms between *GDPT* and *RER* with the *CU* dummy variable. This model offers weak evidence for negative income responsiveness of imports from the EU due to the CU since the coefficient of $CU*LnGDPT$ is statistically significant at the 10% level and -0.257. This result implies that the demand for imports from the EU decreased after the customs union was established.

4.3. Sub-Sample Analysis

To examine the robustness of estimations in model 1.3b (presented in Table 6) and model 2.3b (presented in Table 7), a sub-sample analysis is conducted. Model specifications 1.1 and 2.1 are reestimated using OLS regressions which include country and year fixed effects assess Turkey's exports to (imports from) both the EU and non-EU countries are documented for periods before and after implementation of the customs union.

The coefficient of $LnRER$ in the model 1.1 for non-EU countries before customs union reported in Table 8 is statistically significant at 5% level. However, after the implementation of the customs union, the same variable is statistically insignificant.

This result can be interpreted that due to customs union, Turkish export supply among non-EU became less price sensitive. When the EU countries are examined, the coefficient of the $LnRER$ variable in the pre-customs union period for the exports to the EU is statistically significant and negative. However, the price responsiveness changed after the customs union and the price responsiveness of exports to the EU became positive and statistically significant at the 10% level. So there is a weak evidence that there is an increase in Turkish export supply to the EU due to changes in price after the customs union implementation. This result is compatible with Table 6 result showing that the price responsiveness of exports ($CU*LnRER$) to the EU after customs union has not significantly changed more than average increase. Statistically significant changes in the price responsiveness of imports from the EU is not observed either before or after the CU implementation. Similar results were found for non-EU countries.

5. Conclusion

The EU is Turkey's the most significant trading partner and in 2015, accounted for around 40% of Turkey's total trade value. Through econometric analysis, this study examines the impacts of a customs union agreement between Turkey and the EU which came into force in 1996. In particular, this study examines the question of whether the customs union agreement caused a change in Turkish imports and exports. The study is unique in including 26 years of data for 72 countries trading the majority (95%) of Turkey's trade. This approach allows for a contemporary picture of the behavior and trends of basic variables that affect Turkish foreign trade and includes the impact of the recent financial crisis.

The analysis estimates that Turkish exports to the EU have increased more than the average increase in exports after the implementation of the Turkey-EU customs union agreement. More specifically, it was found that the customs union contributed to an increase in Turkish exports to the EU at least 33.5% after controlling GDP and the real exchange rate. In other words, Turkey would have exported 270 billion USD less between 1996 and 2015 if customs union agreement had not been signed. This result is compatible with Aytug et al. (2015) study who estimated that the customs union agreement facilitated an increase of 38% of Turkish exports to the EU. In other words, the agreement has been beneficial for increasing Turkish exports.

Moreover, there is no strong evidence that the price responsiveness of exports to the EU has significantly increased after the customs union implementation. Additionally, price sensitivity of Turkish imports from the EU countries after customs union has not significantly changed.

Furthermore, the results also show that the supply of exports to the EU in terms of income has showed downward trend after customs union. These findings indicate that after the customs union agreement, Turkey's trade with the EU countries has experienced some behavioral changes in terms of income and price.

Regardless of political considerations, it can be stated that the deeper economic integration with the EU offered by the customs union agreement has been beneficial for Turkey's trade. The deeper economic integration with the EU in the future may provide additional benefits for the Turkish economy such as a reduction in youth unemployment, an increase in negotiating power due to a larger economy, and higher consumption demand. Moreover, Turkey may increase its benefits from the customs union by negotiating the reorganization of the scope and conditions of the customs union agreement to include agricultural products and services like road transportation. On the other hand, it would be beneficial to conduct a deeper economic integration with other (non-EU) neighboring countries, as investigated by the study of Ata (2012), to mobilize the existing trade potential with them.

5.1. Limitations and Recommendations for Future Research

This study focuses only on Turkey's trade with its key trading partners. Beyond its direct trading relationship with Turkey, the impact of the customs union on the European Union has not been examined. In addition, constraining this study to examining a period of 26 years and 72 countries may be another limitation. Since these 72 countries currently have accounted for more than 95% of the trade volume of Turkey, this limitation is not expected to significantly change the results of the analysis.

In future studies, it would be beneficial to find out how the Turkey-EU customs union agreement impacted the European Union; doing so would allow one to examine the impact of this agreement more holistically in terms of both parties. This information would be helpful for more comprehensive negotiations and long-term policies for both sides.

In this study, the analysis examined total imports and exports. Although macroeconomic analysis is valuable in terms of learning trends, and structural changes, the impact of the customs union on particular industries may give different results. Micro studies specific to one sector such as plastic, electrical machinery, motor vehicles or tobacco products would allow deeper and more specific results to be examined.

Finally, future work should also consider potential FDI impacts of the this CU. According to Central Bank of the Republic of Turkey (2016), Turkish FDI exports, which averaged 11.8 billion USD annually between 2005 and 2015, have shown significant increases. This figure was less than one billion USD before 2005. While capital flows are not included in the Turkey-EU CU agreement, due to increased business linkages between the two areas, it is possible that Turkey's FDI imports and exports have also, indirectly, benefitted from this agreement. Examining this issue would be a useful extension of this analysis.

Table 1. Leading Exporters and Importers of Merchandise Trade in 2015

Rank	Exporter	Share (%)	Rank	Importer	Share (%)
1	China	13.8	1	United States	13.8
2	United States	9.1	2	China	10.1
3	Germany	8.1	3	Germany	6.3
4	Japan	3.8	4	Japan	3.9
5	Netherland	3.4	5	United Kingdom	3.7
6	Korea, Republic of	3.2	6	France	3.4
7	Hong Kong, China	3.1	7	Hong Kong, China	3.3
8	France	3.1	8	Netherland	3.0
9	United Kingdom	2.8	9	Korea, Republic of	2.6
10	Italy	2.8	10	Canada	2.6
11	Canada	2.5	11	Italy	2.4
12	Belgium	2.4	12	Mexico	2.4
13	Mexico	2.3	13	India	2.3
14	Singapore	2.1	14	Belgium	2.2
15	Russian Federation	2.1	15	Spain	1.8
31	Turkey	0.9	21	Turkey	1.2

Source: World Trade Organization (2016).

Table 2. Number of Turkey's Major Trading Partners Across Time, 1990-2015

Year	Trade Type	Number of Countries	Trade Value (billion USD)
1990	Export	39	12.4
1990	Import	38	21.2
2000	Export	53	26.1
2000	Import	43	51.3
2015	Export	71	136.8
2015	Import	48	196.7

Notes: Both number of countries and traded value reflect the majority (at least 95%) of Turkey's trade.

Source: Author's calculations based on data from UN Comtrade (2017).

Table 3. Leading Exporters and Importers of Turkey's Trade in 2016

Rank	Exporter	Share (%)	Rank	Importer	Share (%)
1	Germany	9.8	1	China	12.8
2	United Kingdom	8.2	2	Germany	10.8
3	Iraq	5.4	3	Russian Federation	7.6
4	Italy	5.3	4	United States	5.5
5	United States	4.6	5	Italy	5.1
6	France	4.2	6	France	3.7
7	United Arab Emirates	3.8	7	Korea, Republic of	3.2
8	Spain	3.5	8	India	2.9
9	Iran	3.5	9	Spain	2.9
10	Netherland	2.5	10	United Kingdom	2.7

Source: Turkish Statistical Institute (2017d).

Table 4. Turkey Imports and Exports with the EU and the Rest of World

	Export Share (%)					Import Share (%)				
	1995	2000	2005	2010	2015	1995	2000	2005	2010	2015
EU	51.2	56.4	56.5	46.5	44.5	47.2	52.3	45.2	39	38
Rest of World	48.8	43.6	43.5	53.5	55.5	52.8	47.7	54.8	61	62
Total	100	100	100	100	100	100	100	100	100	100
Total Exports (billion USD)					Total Imports (billion USD)					
	1995	2000	2005	2010	2015	1995	2000	2005	2010	2015
Value	21.6	27.8	73.5	113.9	143.8	35.7	54.5	116.8	185.5	207.2
Leading Export Destinations Except the EU Countries (%)										
Country		2010			2015					
Iraq		5.3			5.9					
United States		3.3			4.4					
United Arab Emirates		2.9			3.3					
Iran		2.5			2.7					
Saudi Arabia		1.9			2.4					
China		2.0			1.7					
Leading Sources of Imports Except the EU Countries (%)										
Country		2010			2015					
China		9.3			12.0					
Russian Federation		11.6			9.8					
United States		6.6			5.4					
Korea, Republic of		2.6			3.4					
India		1.8			2.7					

Source: Turkish Statistical Institute (2017a, 2017b, 2017d).

Table 5. Summary Statistics of Variables

Variable	Number of Observations	Mean	Standard Deviation	Minimum Value	Maximum Value
<i>Ln EXPORT</i>	1821	19.44	1.61	13.62	23.44
<i>Ln IMPORT</i>	1818	19.34	2.31	6.88	24.17
<i>Ln GDP</i>	1822	25.43	1.91	20.38	30.52
<i>Ln GDPT</i>	1872	26.56	.65	25.60	27.44
<i>Ln RER</i>	1657	-1.36	2.28	-9.11	2.38
<i>CU</i>	1872	0.20	0.40	0	1
<i>CU*Ln RER</i>	1657	-0.03	0.82	-6.48	1.79
<i>CU*Ln GDP</i>	1822	5.56	10.81	0	28.99
<i>CU*Ln GDPT</i>	1872	5.49	10.85	0	27.44

Source: Author's calculations based on data from UN Comtrade (2017).

Table 6. Regression Results for Exports

Variables	Model	Model	Model	Model
	1.1a	1.1b	1.2b	1.3b
<i>LnGDP</i>	1.543*** (0.069)	0.638*** (0.105)	0.654*** (0.104)	0.613*** (0.109)
<i>LnRER</i>	0.121*** (0.026)	0.075*** (0.027)	0.047** (0.023)	0.054** (0.026)
<i>CU</i>	-	-	0.289*** (0.102)	3.921*** (0.999)
<i>CU*LnGDP</i>	-	-	-	-0.140*** (0.040)
<i>CU*LnRER</i>	-	-	-	0.012 (0.024)
R ²	0.775	0.847	0.851	0.854
Total observations of unbalanced panel	1618	1618	1618	1618
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes

Note: Robust standard errors are shown in parentheses.
Statistical significance is indicated by: ***(1%), **(5%), *(10%).

Table 7. Regression Results for Imports

Variables	Model	Model	Model	Model
	2.1a	2.1b	2.2b	2.3b
<i>LnGDPT</i>	1.399*** (0.089)	1.427*** (0.114)	1.366*** (0.130)	1.401*** (0.143)
<i>LnRER</i>	0.005 (0.045)	-0.011 (0.047)	-0.039 (0.043)	-0.009 (0.066)
<i>CU</i>	-	-	0.306* (0.161)	7.144* (3.983)
<i>CU*LnGDPT</i>	-	-	-	-0.257* (0.153)
<i>CU*LnRER</i>	-	-	-	-0.034 (0.050)
R ²	0.571	0.597	0.601	0.603
Total observations of unbalanced panel	1642	1642	1642	1642
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	Yes

Note: Robust standard errors are shown in parentheses.

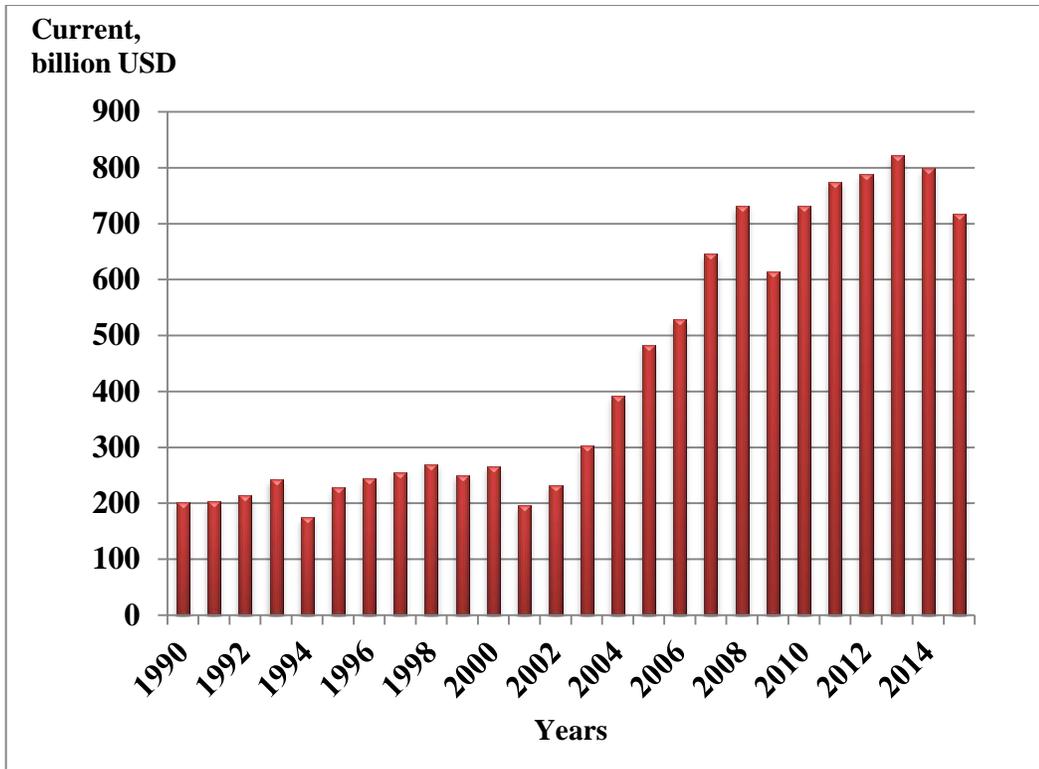
Statistical significance is indicated by: ***(1%), **(5%), *(10%)

Table 8. Comparison of Turkish Exports and Imports Before (1990-1995) and After (1996-2015) Customs Union Period

Variables	Exports				Imports			
	Before	After	Before	After	Before	After	Before	After
	The EU	The EU	non-EU	non-EU	The EU	The EU	non-EU	non-EU
	1.1	1.1	1.1	1.1	2.1	2.1	2.1	2.1
<i>LnGDP</i>	1.826*** (0.518)	1.232*** (0.244)	0.332 (0.354)	0.782*** (0.141)	-	-	-	-
<i>LnGDPT</i>	-	-	-	-	Omitted (because of collinearity)	0.912*** (0.079)	Omitted (because of collinearity)	1.262*** (0.152)
<i>LnRER</i>	-1.622*** (0.459)	0.028* (0.018)	0.336** (0.127)	-0.131 (0.139)	0.098 (607)	0.033 (0.026)	-1.187 (0.738)	-0.058 (0.079)
R ²	0.835	0.915	0.320	0.836	0.737	0.790	0.223	0.522
Total observations of unbalanced panel	68	381	257	912	68	381	269	924
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

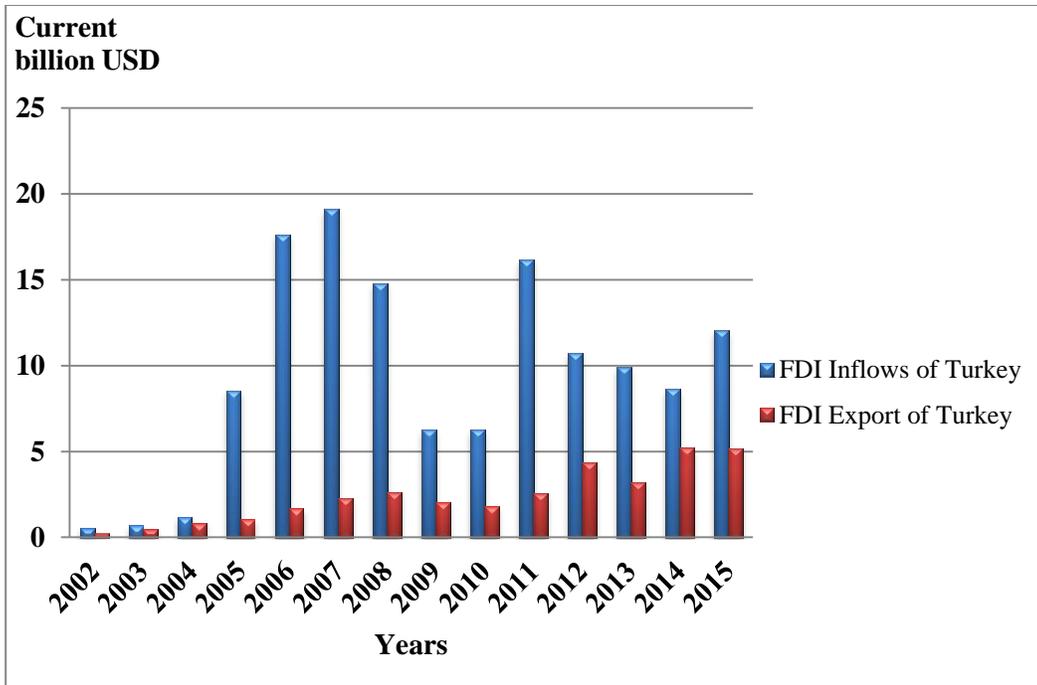
Note: Robust standard errors are shown in parentheses.

Statistical significance is indicated by: ***(1%), **(5%), *(10%).



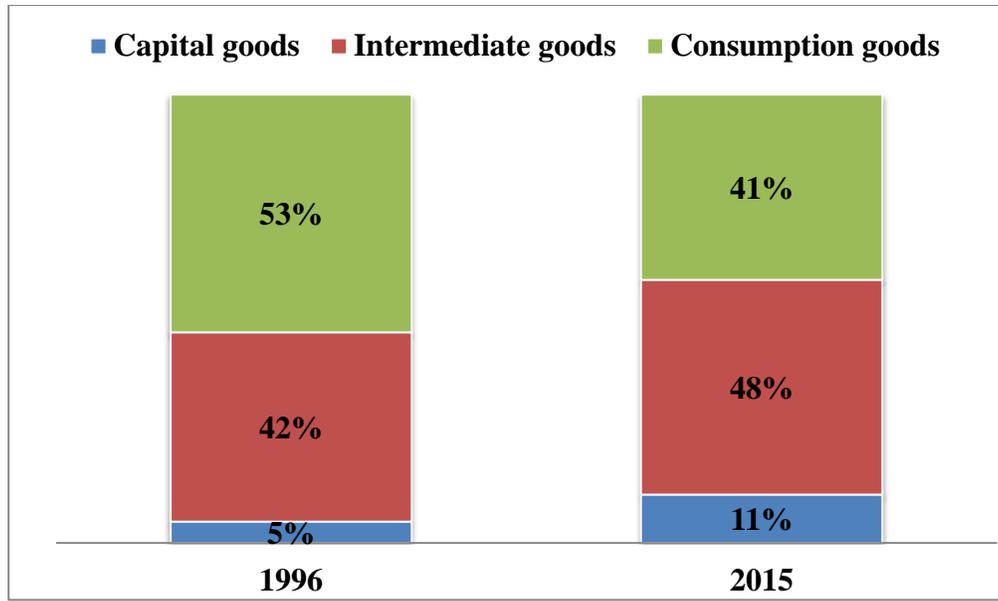
Data Source: World Bank (2017a).

Figure 1. Gross Domestic Product of Turkey (1990-2015)



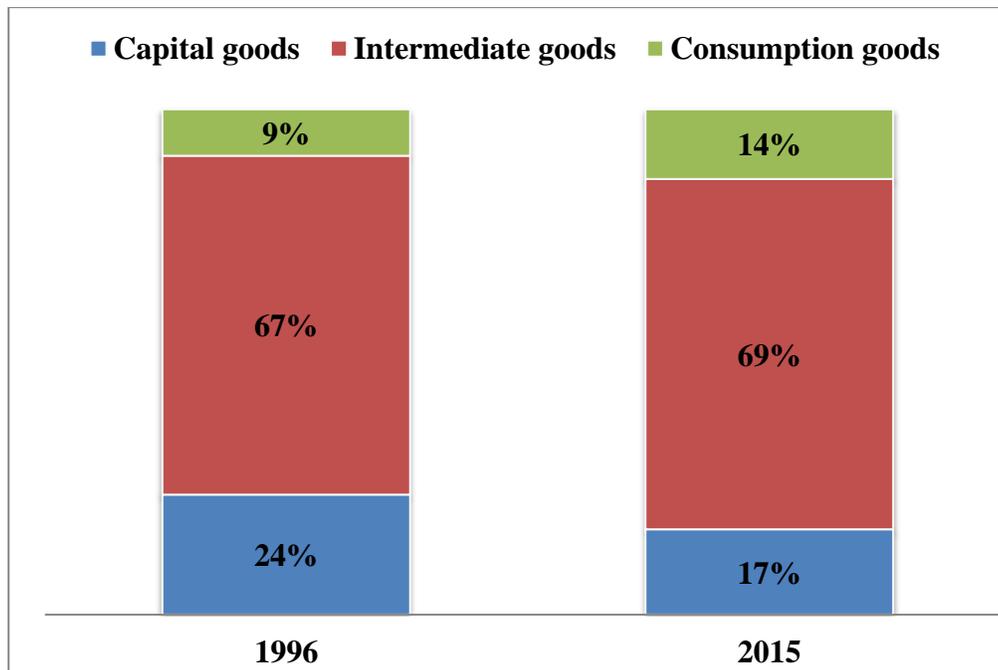
Data Source: The Central Bank of the Republic of Turkey (2016).

Figure 2. Turkey's FDI Inflows and Export (2002-2015)



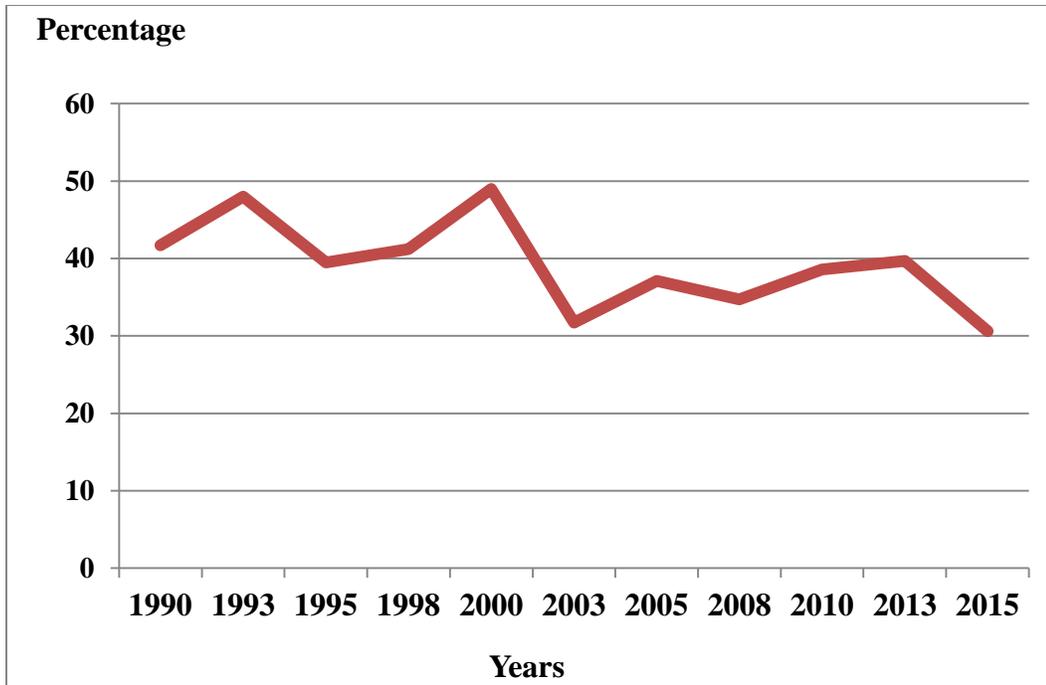
Source: Author's calculations based on data from Turkish Statistical Institute (2017e).

Figure 3. The Composition of Turkish Exports between 1996 and 2015



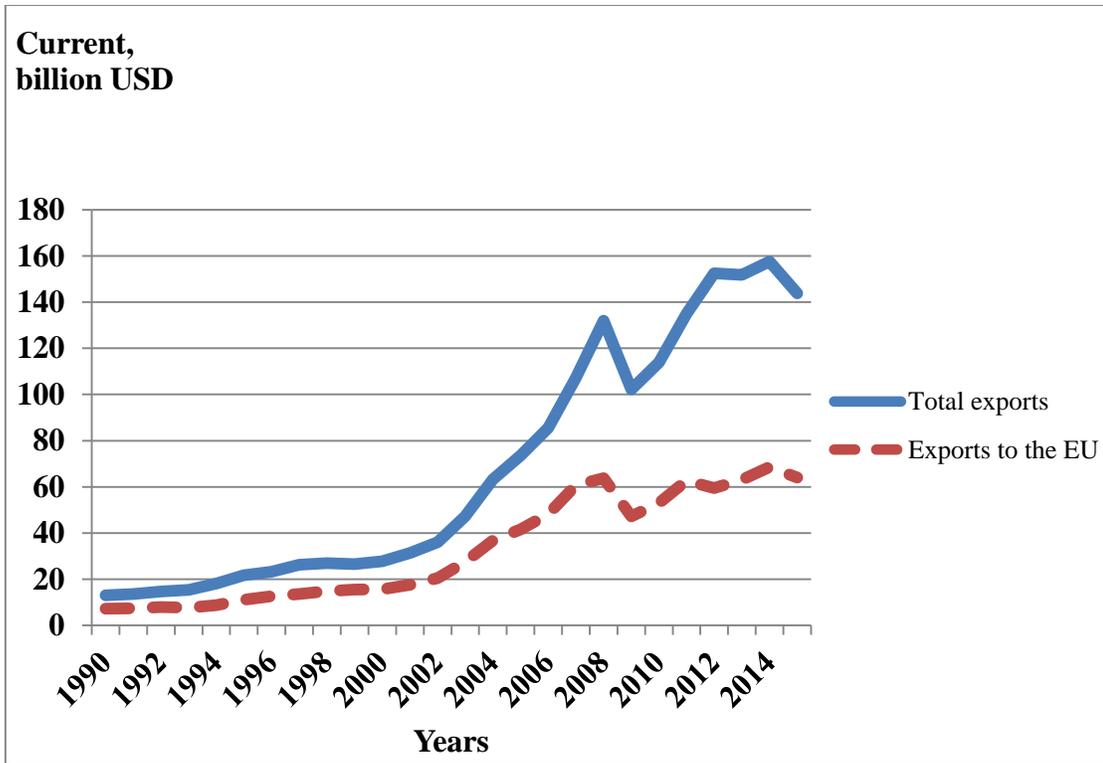
Source: Author's calculations based on data from Turkish Statistical Institute (2017e).

Figure 4. The Composition of Turkish Imports between 1996 and 2015



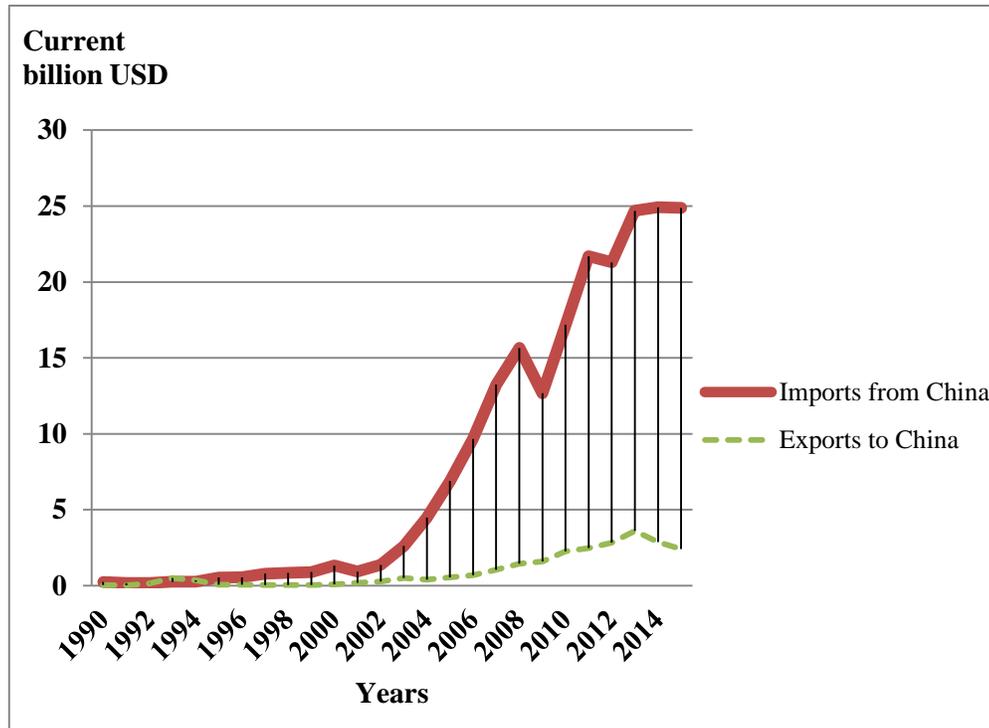
Source: Author's calculations based on data from Turkish Statistical Institute (2017a).

Figure 5. The Percentage of Foreign Trade Deficit of Turkey (1990-2015)



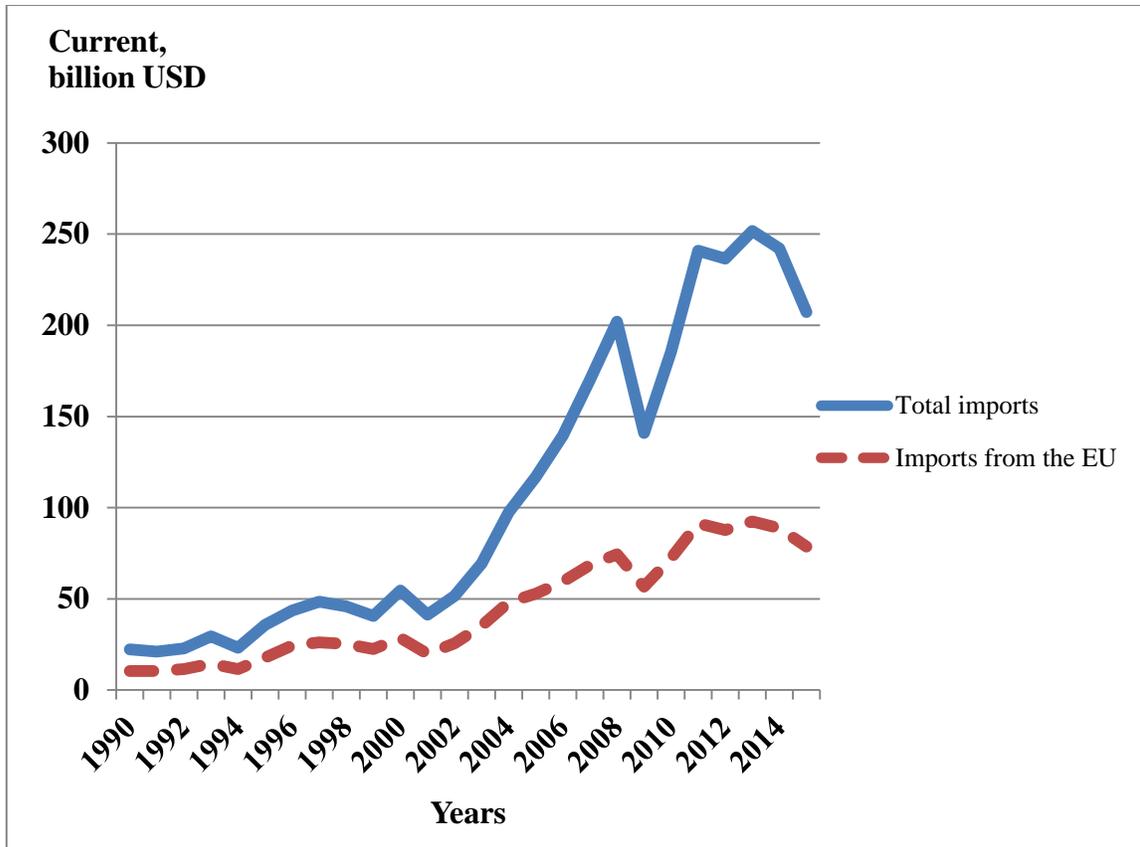
Data Source: Turkish Statistical Institute (2017a, 2017d).

Figure 6. Total and the EU Exports of Turkey (1990-2015)



Data Source: Turkish Statistical Institute (2017d).

Figure 7. Turkey's Export to and Import from China



Data Source: Turkish Statistical Institute (2017a, 2017d).

Figure 8. Total and the EU Imports of Turkey (1990-2015)

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APPENDIX

Appendix A. List of Countries in the Analysis

1. Albania
2. United Arab Emirates
3. Australia
4. Austria
5. Azerbaijan
6. Belgium
7. Bangladesh
8. Bulgaria
9. Bosnia Herzegovina
10. Brazil
11. Switzerland
12. Colombia
13. Czechia
14. Germany
15. Algeria
16. Egypt
17. Spain
18. Ethiopia
19. Finland
20. France
21. United Kingdom
22. Georgia
23. Greece
24. China, Hong Kong SAR
25. Hungary
26. Indonesia
27. India
28. Ireland
29. Iran
30. Iraq
31. Israel
32. Italy
33. Japan
34. Kazakhstan
35. Kyrgyzstan
36. Rep. of Korea
37. Kuwait
38. Lebanon
39. Libya
40. Lithuania
41. Morocco
42. Mexico
43. TFYR of Macedonia
44. Malta
45. Malaysia
46. Nigeria
47. Netherlands
48. Norway
49. Oman
50. Pakistan
51. Poland
52. Portugal
53. Qatar
54. Romania
55. Russian Federation
56. Saudi Arabia
57. Sudan
58. Singapore
59. Serbia
60. Slovakia
61. Slovenia
62. Sweden
63. Syria
64. Thailand
65. Turkmenistan
66. Tunisia
67. Ukraine
68. United States of America
69. Uzbekistan
70. Viet Nam
71. Yemen
72. South Africa