T.C.

ISTANBUL COMMERCE UNIVERSITY

GRADUATE SCHOOL OF FOREIGN TRADE

DEPARTMENT OF COMMERCIAL DIPLOMACY

COMMERCIAL DIPLOMACY PROGRAMME

TURKEY'S FREE TRADE AGREEMENTS' EFFECTS ON TURKISH ELECTRICAL AND ELECTRONICS SECTOR

MA Thesis

SEVAL MALA

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T.C. İSTANBUL TİCARET ÜNİVERSİTESİ

T.C.
İSTANBUL TİCARET ÜNİVERSİTESİ
DIŞ TİCARET ENSTİTÜSÜ

YÜKSEK LİSANS TEZİ ONAY FORMU

Ticari Diplomasi Yüksek Lisans programı öğrencisi Seval Mala'nın "Turkey's Free Trade Agreements' Effects of Turkish Electrical and Electronics Sector" başlıklı tez çalışması, Enstitümüz Yönetim Kurulu 22/02/2021 tarih ve 173/3 sayılı kararıyla oluşturulan jüri tarafından oybirliği/oyçokluğu ile Yüksek Lisans Tezi olarak kabul edilmiştir.

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ABSTRACT

Economic integration is a trade policy tool that ensures countries to expand their market reach beyond their national borders in order to enhance their welfare. Although the expected outcome for being a part of an economic integration whether it's a free trade agreement or a customs union etc. is to benefit from increasing trade volume, it may not be the case, especially for different sectors.

In parallel with global developments, Turkey liberalized its trade policy in the 1980s and signed free trade agreements, and pursue an export-oriented trade policy instead of import substitution model. Turkey's liabilities in terms of Customs Union with the EU and its challenges posed on Turkey has been important motivation factors for Turkey to sign free trade agreements. Today Turkey has 21 free trade agreements in force with countries from different locations and economic sizes.

The study aims to determine the static effects of Turkey's free trade agreements on the Turkish electrical and electronics sector which is the 5th largest exporting sector with a share of 6.5% in Turkey's total exports in terms of trade creation and trade diversion. In order to assess the trade performance of the sector, bilateral sectoral trade data of each country is retrieved from the ITC Trademap database by using 6-digit HS codes of the sector and export import coverage ratios for Turkey are calculated for selected years beginning from the year before the free trade agreement entered into force. Then, export import coverage ratio index values are calculated as the year before the agreement entered into force is accepted as the base year with an index value of 100 points. However, for EFTA, Israel and Macedonia with whom Turkey signed free trade deals in the 1990s, 2001 is selected as base year because the oldest trade data available in the ITC Trademap database belongs to 2001. On the other hand Kosovo is excluded from the analysis due to lack of trade data. Additionally Montenegro, Palestine and Faroe Islands are not included in the analysis because of very low trade volumes while Venezuela is not included since the FTA with Venezuela entered into force in August 2020.

Keywords: *Economic integration, Free trade agreement, sectoral foreign trade*

ÖZET

Ekonomik entegrasyon, ülkelere refahlarını arttırma gayesiyle ulusal sınırlarının ötesindeki uluslararası piyasalara erişme imkanı sağlayan bir ticaret politikası aracıdır. Serbest ticaret anlaşması veya gümrük birliği gibi bir ekonomik entegrasyona dahil olmanın ardında yatan beklenti artan ticaret hacminin getirilerinden faydalanmak olmakla birlikte özellikle farklı sektörlerde bu beklentinin karşılanamadığı durumlar söz konusu olabilmektedir.

Türkiye, küresel gelişmelere paralel olarak ticaret politikasını 1980'lerden itibaren serbestleştirmiş ve ithal ikameci politikalar yerine ihracat odaklı bir ticaret politikası benimsemiş ve pek çok ülke ile serbest ticaret anlaşmaları imzalamıştır. Türkiye'yi serbest ticaret anlaşmalarına yönelten temel faktörler Türkiye'nin Avrupa Birliği ile yaptığı gümrük birliği kapsamındaki yükümlülükleri ve gümrük birliğinin yarattığı güçlüklerdir. Hâlihazırda Türkiye'nin farklı bölgelerde yer alan ve farklı ekonomik büyüklüklere sahip 21 ülke ile serbest ticaret anlaşması mevcuttur.

Bu çalışmanın amacı; Türkiye'nin serbest ticaret anlaşmalarının, ülkenin toplam ihracatının %6,5'ini gerçekleştirerek en büyük 5. ihracatçı sektör olan elektrik elektronik sektörü üzerindeki ticaret yaratma ve ticaret saptırma etkilerinin tespit edilmesidir. Bu amaçla, ITC Trademap veri tabanından ikili ticaret verileri, sektörün 6'lı GTİP kodları kullanılarak alınmıştır ve ilgili serbest ticaret anlaşmasının yürürlüğe girdiği yıldan başlayarak seçilmiş yıllar için ihracatın ithalatı karşılama oranları hesaplanmıştır. Ardından bir endeks oluşturulmuş ve yürürlüğe giriş yılı baz olarak alınmış ve endeks değeri 100 puan olarak kabul edilerek ihracatın ithalatı karşılama oranı endeks değerleri hesaplanmıştır. Ancak Türkiye EFTA, İsrail ve Makedonya ile 1990'lı yıllarda serbest ticaret anlaşmaları imzalamış olup ITC Trademap veri tabanında 2001 öncesi için veri bulunmamaktadır. Dolayısıyla bu ülkeler için yapılan analizde 2001 yılı baz yıl olarak kabul edilmiştir. Diğer yandan Kosova'ya ait herhangi bir veri mevcut olmadığı için bu serbest ticaret anlaşması analize dahil edilmemiştir. İlaveten Karadağ, Filistin ve Faroe Adaları ile ikili ticaret hacminin oldukça düşük seviyede olması nedeniyle ve Venezuela ile yapılan anlaşmanın 2020 yılı Ağustos ayı itibariyle yürürlüğe girmesinden dolayı bu ülkelerle yapılan serbest ticaret anlaşmaları da analiz kapsamına alınmamıştır.

Anahtar kelimeler: *Ekonomik entegrasyon, Serbest Ticaret Anlaşması, Sektörel Dış Ticaret*

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LIST OF ABBREVIATIONS

EE : Electrical and Electronics

EFTA : European Free Trade Area

EU : European Union

FTA : Free Trade Agreement

GATT : General Agreement on Tariffs and Trade

USA : United States of America

WTO : World Trade Organization

1. INTRODUCTION

1.1. General Overview

International trade is considered a key element for the wealth and prosperity of nations over the last century. As the world becomes more globalized and gains from international trade become more crucial for the prosperity of nations, commercial diplomacy which refers to the pursuit of national interests regarding the movement of goods, capital, services, know-how, trade-related regulations, etc., is considered to be a key component of the grand strategy of nation states. Starting with the mercantilist era, the growth of international trade is stimulated by the decline of trade barriers after the Great Depression in the 1930s which paved the way for the establishment of a multilateral trade system through GATT. Signed in 1947, GATT achieved its goals as tariffs and other barriers to trade are eliminated steadily in a multilateral manner. However, trade liberalization becomes more profound through regional and bilateral arrangements especially with the integration efforts in Europe in the 1960s, and the number of bilateral and regional trade agreements increased immensely. In this context, economic integration which lays at the heart of commercial diplomacy emerged as a substantial policy tool for nations to expand their market reach and increase their share in world trade.

In line with the global atmosphere, Turkey has adopted liberal policies and eliminated quotas, and lowered custom tariffs since the 1980s. The main reason behind Turkey's economic liberalization was the aim of becoming a European Union member. To that aim, Ankara Agreement which was essentially an association regime is signed in 1963 and Customs Union is established between Turkey and the EU in 1996 as an interim process that will facilitate the full membership process. Although Turkey has not become a full member yet, Turkey is liable at aligning with the EU's trade policy according to the Customs Union arrangement. However, Turkey's aim of the EU membership motivated Turkey to be more liberal and integrated with the world economy in terms of trade policy.

As a part of the alignment with the EU's trade policy and liberalization efforts, Turkey negotiated several trade agreements with various countries from different regions. As of 2020, Turkey is a part of 21 Free Trade Agreements in force while national approval processes for 4 other FTAs still continue. The trade agreements in force are with: EFTA,

Israel, Macedonia, Bosnia & Herzegovina, Palestine, Tunisia, Morocco, Egypt, Albania, Georgia, Montenegro, Serbia, Chile, Mauritius, Republic of Korea, Malaysia, Moldova, Faroe Islands, Singapore, Kosovo and Venezuela (Turkish Ministry of Trade, 2020a). Turkey is also seeking to start negotiations with countries that the EU signed free trade agreements such as Japan, Canada, and Vietnam, etc. since these FTAs create an asymmetric market reach to the detriment of Turkey.

Turkey's economic liberalization resulted in a significant increase in exports and imports. Simultaneously the Turkish economy experienced a transformation as the share of agriculture in GDP decreased and the share of industrial production and services increased. As of 2019, Turkey's leading exporter sectors are automotive, chemicals, textiles, steel and, electrical and electronics, respectively. However, in the 2000s the rise in imports is substantially higher that the foreign trade deficit has become a soft spot for the Turkish economy. In this study, the effect of Turkey's FTAs on the Turkish electrical and electronics sector which is the 5th largest exporting sector with a share of 6.5% in Turkey's total exports will be examined through the export import coverage ratio index.

1.2. Aim of the Study

The main aim of the study is to determine the static effects of Turkey's FTAs on the Turkish electrical and electronics sector in order to understand if these agreements cause trade creation or trade diversion for the sector.

Since the electrical and electronics sector is at the heart of technological development with the power and the ability to make other sectors more effective and competitive, it is a key sector with great importance for Turkey's aim of increasing high technology exports. In this context, it is considered that the evaluation of the electrical and electronics sector in terms of Turkey's economic integration policies will contribute to studies on sectoral impact analysis.

1.3. Methodology

Despite the transformation of the Turkish economy since the 1980s, import dependency on intermediate goods and investment goods as well as energy is the main reason of the foreign trade deficit. In this regard, it can be argued that export import

coverage ratio is one of the important trade indicators that measure the foreign trade performance of a country in different time periods.

In order to make an assessment of trade performance of the sector, bilateral sectoral trade data of each country is retrieved from the ITC Trademap database by using 6-digit HS codes of the sector[1] and the export import coverage ratios for Turkey are calculated for selected years beginning from the one year before the agreement entered into force. Then, export import coverage ratio index values for FTA countries are calculated while one year before the free trade agreements entered into force is accepted as base year. However, for EFTA, Israel and Macedonia with whom Turkey signed free trade agreements in the 1990s, 2001 is selected as base year because the oldest trade data available in the ITC Trademap database belongs to 2001. In this context, the index value of the base year accepted as 100 points and the index values of selected years are calculated accordingly in order to make comparison between the sector's general performance and sector's bilateral trade with the FTA country.

On the other hand Kosovo is excluded from the analysis due to lack of trade data. Additionally Montenegro, Palestine and Faroe Islands are not included in the analysis because of very low trade volumes while Venezuela is not included since the FTA with Venezuela entered into force in August 2020.

[1] See Appendix 1: List of HS Codes of Electrical and Electronics Sector

2. LITERATURE REVIEW

2.1. Concept of Free Trade

In a theoretical framework, idea of free trade was firstly developed by two British economists; Adam Smith and David Ricardo. In his famous book *Wealth of Nations*, Adam Smith (1776), argues that it is not beneficial for traders and society as a whole to restrict imports since it creates monopolies and causes increases in prices. Instead of mercantilist policies, he advocates for a liberal trade order which will allow division of labor, specialization and productivity in international level and hence it will ensure the lowest possible costs and prices and, increases the wealth. According to Smith (1776), trade balance does not necessarily mean equal amounts of exports and imports, rather it implies that each country benefits equally from free trade. In this regard, foreign trade deficit should not be considered as a critical problem.

David Ricardo (1817), expands his work on Smith's ideas and he claims that as a result of free trade, countries will allocate their labor and capital for the sectors they have relative strength in productivity. Through resource allocation, countries will be specialized in products that they have comparative advantage and free trade will enhance the welfare of the parties.

While acknowledging Ricardo's comparative advantages theory that based on supply and production costs, J.S. Mill (1893) focuses on demand in order to determine who gains more from free trade and claims that the party with the inelastic demand would be less profitable from free trade.

Similarly Marshall (1922) stresses that elasticity of demand is an important factor that determines who will gain from free trade and it depends heavily on the size of the country. In this context, he argues that poor countries are more dependent on international trade while rich countries have the capacity to pursue a self-sufficient trade policy and have means to meet the demands from other countries in a more sophisticated way which will ensure rich states to gain more from free trade.

Although there seem to be consensus that free trade is a tool for wealth, protectionism has been a strong camp over the centuries. One of the most significant

criticism to free trade and a solid argument for protectionism is made by Friedrich List (1841/1885), who claims that the ideal economic condition for every country is a balance between agricultural and industrial production so one must build its manufacturing power in order to compete with other countries. In his point of view, free trade does not allow underdeveloped countries to establish their industries and for this reason infant industries must be protected until they become self-reliance.

Lewis (1954), Singer (1971) and Myrdal (1955), evaluate free trade in terms of economic development of underdeveloped countries and conclude that protectionism will be a better trade policy for poor countries due to their structural challenges preventing specialization and productivity growth.

2.2. Economic Integration Theories

2.2.1. Conceptual Framework

According to World Trade Organization (2020) there are 306 trade agreements in force as of September, 2020 while there was only 22 in 1990. It can be argued that as the world has become more globalized, the competition between countries in trade has escalated and economic integration has emerged as a useful tool in widening market reach. WTO (2020) database shows that 6% of notified trade agreements in force are customs unions, 33% are economic integrations, 55% are free trade agreements and 6% are partial scope agreements. Trade arrangements that cover policy areas other than border arrangements and requires formation of new institutions or regulations are referred as deep integrations. It is argued that there is a strong relation between deep integration and expansion of international production networks and the growing number of international production networks mandates common practices in trade policy areas and hence supports the smooth operation of deep integrations such as North American Free Trade Agreement (WTO, 2011).

Machlup (1977) defines economic integration as creation of an extended economic sphere by bonding separate economies which is mainly associated with maximizing the possibilities division of labor.

Tinbergen (1954) states that economic integration which lies at the heart of optimum economic policy problem, represents the final and coveted stage of international economic order by eliminating artificial obstacles before international cooperation and lead the way to unified and coordinated policies.

Adıgüzel (2011a) argues that economic integrations constitute the most prominent feature of today's global economy and competition environment while indicating that every single country in the world is involved in at least one economic integration.

According to Robson (1998), economic integration is a process that will induce efficient allocation of resources by allowing free movement of factors of production and goods and eliminating discrepancies between member countries.

The term "economic integration" is simply defined as elimination of barriers before trade among nations Balassa (1961). While the level of trade barrier elimination varies according to the type of integration, he identifies 5 different economic integration forms which are free trade area, customs union, common market, economic union, and complete economic integration.

However, today classification of economic integrations has changed slightly and evaluated under following 5 forms (Seyidoğlu, 2003).

Preferential Trade Agreements: Being the narrowest economic integration form, preferential trade agreements refers that countries lower their customs tariffs for certain goods unilaterally or bilaterally. Tariff reductions of developed countries applied for developing countries, namely General System of Preferences is considered as a form of preferential trade agreements.

Free Trade Area: Free trade area requires elimination of customs tariffs and quantity restrictions for certain goods or sector between the parties who are free to pursue separate customs policies against other countries and there is no obligation to harmonize trade policies or institutions. While the economic domain is created for goods and services, there is no freedom of movement for factors of production. Well-known examples are European Free Trade Area and Latin American Free Trade Area and

European Coal and Steel Community which is a free trade area that creates a common market for only selected goods.

Customs Union: Customs Union is an economic integration form that mandates parties to pursue a common policy against third parties while eliminating custom duties and quantity restrictions. In this regard it represents a more comprehensive and advanced integration model than free trade area. A well-known example of customs union is European Economic Community established in 1957.

Common Market: Common Market includes free movement of factors of production in addition to requirements of customs union. In a common market, workers are free to move within the member countries in order to work and capital and entrepreneurs also have freedom to invest and start a business within the market. The most notable example of common market is European Union.

Economic and Monetary Union: Economic integration refers the integration of monetary and financial policies and related institutions of the parties in addition to common market liabilities. Single currency, a common central bank and other financial institutions as well as common foreign trade policy constitutes the main characteristics of an economic integration. European Union is considered as an economic integration after Maastricht Treaty entered into force in 1993.

2.2.2. Customs Union Theory

In his book *The Customs Union Issue*, Jakob Viner (1950) evaluates static effects of economic integrations and identifies *trade creation* and *trade diversion* effects.

According to his study trade creation refers to trade shift from high cost producer to low cost producer between the parties of the trade agreement which in return increases the welfare of the country simply because resources will be re-allocated for products with comparative advantage (Viner, 1950).

On the other hand, trade diversion means trade shift from a third country with low cost that is not a part of the trade agreement to one of the parties with higher cost which will lead a decrease in welfare as it increases the import of goods with higher costs. The net welfare effect is defined as the difference between trade creation and trade diversion

effects. Therefore it is not viable to reach a general conclusion whether customs unions have a positive or negative overall welfare effect (Viner, 1950).

In addition to Viner's static effects of trade creation and trade diversion, there are dynamic effects of trade agreements defined by Balassa (1961) as economies of scale, foreign direct investment, competitiveness, externalities and technological advancements which are more pervasive in medium and long term on the welfare of countries.

Economies of scale is a factor that largely determines effectiveness of other dynamic effects of economic integration. It means a higher growth rate in production than costs as production capacity increases as a result of an expanding market reach. It is assumed that economies of scale will result in factor productivity. According to Balassa (1961), economies of scale is the most significant driving force behind growth in trade.

Corden (1972) argues that free trade agreements will ensure firms to have a broader market reach and growth in production and as a result a decrease in average costs. Thus the firms will be more competitive both in international markets and domestic markets due to economies of scale.

Seyidoglu (2003) also states that dynamic effects may lead to structural changes such as transformation of unproductive companies into more competitive ones due to expansion of market reach.

2.2.3. Second Best Theory

After Viner, following studies by several scholars focused on analyzing assumptions and overcoming limitations of Viner's model since the assumptions of the model are not explicitly stated in his work. The main assumptions of Viner's model includes perfect competition, homogeny goods, infinite supply elasticity, price inelasticity of demand and given production costs (Lipsey, 1957) (Corden, 1972) (Meade, 1955).

The second best theory formalized by Lipsey and Lancaster (1956-1957) amounts to the next best solution in case that optimal conditions are nonexistent in an economic model. In the context of economic integrations, it is considered that free trade and perfect competition is the first best condition which will maximize the total welfare of the world

while second best theory refers to the lack of *pareto optimum* in consumption and production in free trade environment when perfect competition conditions are not established. Establishment of customs union is the second best policy through which market barriers are balanced. The starting point of the second best theory is to overcome the limitations of Viner's model.

Lipsey (1957) emphasizes that Viner's model is concentrated solely on production and ignores consumption effects as elimination of customs tariffs will lead to changes in prices which will affect both production and consumption. Therefore, Viner's assumption of inelastic demand is inaccurate. In this context, especially a decrease in prices will result in increased consumption and therefore it will have positive effect on total welfare despite the existence of a trade diversion. And, he argues that effects of customs union should be classified as *inter-country substitution* and *inter-commodity substitution*. Viner's trade creation and trade diversion effects are included in the inter-country substitution which implies the transition of production between the parties while inter-commodity substitution comprises the effect of price changes on substituted goods as a result of the elimination of trade barriers.

Similarly, another study by Dam (1963) includes consumption effects of customs union by using ratio of goods price of member countries and he argues that the price ratio will change and create *favorable* and *unfavorable* consumption effects after the establishment of customs union since imported goods may become cheaper than locally produced goods or imported goods from non-member countries after the tariff cuts. Dam (1963) defines favorable effects as substitution of imported goods from non-member countries with goods from member countries while unfavorable effects means shift from consumption of goods imported from member countries to non-member countries.

Johnson (1962) argues that trade creation effect should be considered two fold. Firstly if importing a good becomes less expensive than producing it domestically with the economic integration, it allows saving in real costs. Secondly it will increase consumer surplus since it will ensure lower prices. He also identifies two types of trade diversion effect which are increase in costs as a result of shifting imports from a low cost producer to a high cost producer and substitution of low cost products with high cost products.

On the other hand, Balassa (1961) takes a different stance on the matter and indicates that trade diversion effects are inclined to be higher than trade creation effects of Viner's model and, regionalization has the potential to result in protectionist policies and increase in costs.

In this regard, customs union is defined as a special case of second best theory (Lipsey & Lancaster, 1956-1957) which allows to make following generalizations on the effects of customs unions on net welfare.

Firstly, production structures of countries in terms of complementarity or competitiveness determines the welfare effect of the customs union. As Viner (1950) suggested a customs union between rival economies will generate more welfare than protectionist circumstances in opposed to the general view that a customs union between completing economies will yield further (Viner, 1950). Lipsey (1957) also claims that in a customs union between rival economies, efficiency of resource allocation will be ensured as the more productive country will dominate the market and produce for the whole market

Secondly trade creation and trade diversion effects are strongly related to the customs tariffs applied before the integration and elasticities of supply and demand. The trade creation effect will be higher if previously applied tariff rates are high or vice a versa. In a similar manner, the trade diversion effect will be limited, if the tariffs applied to other parties who are not part of the economic integration are low (Meade, 1955).

Thirdly the size of the customs union is another factor that affects the welfare of the parties. As an economic integration comprises more countries, the trade diversion will decrease and there will be no trade diversion effect if all countries in the world are a part of a customs union (Meade, 1955).

Fourthly, the volume of trade between the member countries before the establishment of customs union is another factor affecting the welfare effect of the customs union. If the volume of trade with the member countries before the customs union is higher than other countries the welfare effect will be higher.

2.2.4. Vanek-Kemp Analysis

Vanek (1965) and Kemp (1969) evaluated welfare effects of customs union through a general equilibrium model by using production possibility curves and indifference curves. His model consists of three countries and two goods instead of two country models of partial equilibrium analysis of previous studies. Vanek (1965) and Kemp (1969) evaluate welfare effects of customs unions for both member countries and non-member countries and try to determine whether there is a common tariff policy that will result in an increase in welfare level of both member and non-member countries before the establishment of customs union. Additionally they concluded that optimal tariff policy for increasing welfare if a policy that will not affect non-member countries positively or negatively while increasing welfare of member countries (Vanek, 1965) (Kemp, 1969).

2.2.5. Criticism of Customs Union Theory

The literature on customs union is not limited with defining the optimal conditions for welfare gains. Cooper and Massel (1965) and Johnson (1962) claim that establishing customs union is not a viable tool for increasing welfare since trade diversion is inevitable. Instead they suggested that unilateral tariff reduction policy is a superior alternative than customs union since it will lead to trade creation effects only without any trade diversion. According to Johnson (1962), governments do not necessarily employ custom tariffs for economic reasons. They may use it as a policy tool for political ends as well.

Furthermore Cooper and Massel (1965) argues that it is more rational for developing countries to pursue protectionist policies as welfare gains cannot be limited to consumption and industrial production should be considered as a public good that enhances welfare of the society.

2.3. Regionalism

Regionalism refers to the development of economic, political or social institutions based on common objectives and values of a given region. Classical or old regionalism is

a state-led and intergovernmental concept that is founded on a bipolar world order while new regionalism is a more complex phenomenon that combines states, markets and society as a result of globalization (Söderbaum & Granit, 2014).

The literature on regionalism in terms of economic integrations mostly focuses on determining whether regional trade agreements (a term used for free trade agreements and customs unions together) are impediments before global free trade or not and the rationale behind countries' willingness to participate in regional trade agreements.

Bagwell, Bown and Steiger (2016) employs prisoner's dilemma theory and indicates that bilateral increase in tariffs will harm both countries and it will result in self-enforcing cooperation behavior and create the rationale for engaging in a trade agreement where both countries will benefit from lower tariffs.

Bhagwati (1993) defines regional integrations which are boosted in mid-1980 as second generation economic integrations which has "small-think" and "big-think" dangers on welfare. Preferential arrangements will create inefficiencies that will lead to trade diversion and as a result a decrease in welfare (small-think dangers) while it will allow bigger countries to impose "trade-unrelated" rules on smaller partners and eventually it will jeopardize any prospect for multilateral free trade system (big-think dangers).

Growing complexity of tariff elimination and liberalization and increasing competition among developing countries for broader market access and the deadlock of Doha Round encouraged countries to pursue bilateral or regional economic integration policies. Baldwin (1994) and (2016) explains this momentum as "juggernaut effect" which reflects a repeating cycle that one-time tariff cut will motivate for further tariff cutting and he argues that the cost of staying outside of regional integrations, pressures from exporters and importers are the determining factors of participation in regional integrations. In another study, Baldwin (1993) emphasizes that weakening of USSR, European Single Market, NAFTA, US-Mexico Free Trade Agreement, MERCOSUR are shocks that triggered unaffiliated countries to any regional trade agreements to become members like dominos.

Wei and Frankel (1998), emphasize that regionalism and consequently increasing trade blocs have the potential to generate welfare but it will be limited when compared to multilateral trade liberalization.

Bergsten (1996) argues that reciprocity is a key component for trade liberalization in a global scale and, regional trade agreements which are easier to negotiate than WTO rounds, should not be considered as detrimental for global trade liberalization. Instead it should be considered more favorable as it requires parties to liberalize their trade policies reciprocally which may lead to a global free trade order in parallel.

Similarly, Ethier's multi-country model shows that multilateralism and regionalism are not conflicting concepts, rather regionalism should be considered as a successful result of global trade liberalization efforts (Ethier, 1998).

On the other hand, Krugman (1991) claims that countries have a tendency to trade with their neighboring countries since transportation and communication costs are low and it makes them natural trading partners. Concordantly trade creating effects of regional trade agreements among natural trade partners will be significantly higher than trade diversion. (1993)

Gurlesel and Alkin (2010), define regional trade agreements as the most significant international trade policy tool due to increasing importance of regionalism. The main motivation for countries to prefer regional trade agreements is to increase competitiveness and trade volume.

2.4. Economic Integration and Developing Countries

Several scholar evaluate economic integration theories from a developing country perspective in order to understand whether welfare effects of economic integrations differ according to industrial development levels of countries. As Adıgüzel (2011b) argues that although economic activities are carried out mainly for domestic markets, the main determinant of welfare of a country is its export capacity and therefore its competitiveness in global markets. From this point of view, economic integrations that includes developing countries with different levels of export capacities may have altering outcomes in terms of welfare.

While Meier (1960) and Abdel Jaber (1971) claims that traditional customs union theory of Viner has limited validity for developing countries, Balassa (1961) emphasized that literature on economic integration theories are focused on developed countries only and the success of economic integration between developing countries heavily depends on their economic size and growth rates. In this regard, Balassa and Stoutjesdijk (1975) argues that economic integration should be evaluated from a development point of view instead of a trade policy tool only.

Several studies argues that trade diversion can be beneficial to developing countries due to economies of scale and import substitution and consumer surplus. As Kreinin (1964) argues outcome of an economic integration between a small and medium size country is more visible as smaller country will gain access to a larger market and therefore the demand for its exports will be higher because of economies of scale. Linder (1966) and Sakamoto (1969) emphasize that import substitution policies of developing countries within the economic integration will motivate these countries to spend their revenues from exports to import capital goods and as a result their investment and production levels will increase which represents a structural change in the economy.

According to Inotai's The Training Ground Theory, the initial stage of economic integration among developing countries will enhance their international competitiveness through import substitution by serving as a training ground and ensure them a sufficient time to advance their industries to compete with the world economies (Inotai, 1991).

2.5. Empirical Studies on Turkey's Trade Agreements

There are several studies focusing on static and dynamic effects of Turkey's free trade agreements and Turkey-EU customs union agreement.

Halıcıoglu (1997), evaluates economic effects of customs union between the EU and Turkey on the economy through a partial equilibrium model using import demand function and compares it with alternative integration models. According to his calculations total trade creation of customs union is 1.5 billion $, while trade diversion is 703 million $ in 1996 and he concludes that customs union between the EU and Turkey is the second best alternative and it has the largest contribution to welfare of Turkey when compared to its alternatives.

Morgil (2000), in his essay *The Impact of Trade Liberalization: Turkey's Experience with the Customs Union*, analyzes static and dynamic effects of Turkey-EU Customs Union and concludes that static effects are in favor of the EU side while customs union has a limited trade creation effect for Turkey.

Kandogan (2009) evaluates static effects of major European trade agreements through a gravity model and finds out that Turkey-EU customs union has positive net welfare effects for Turkey.

Dogan and Uzun (2014) examine the effects of Turkey's free trade agreements for 2000-2012 period based on trade volumes and indicate that increase level of Turkey's exports to its free trade agreement partners is higher than the level of Turkey's total exports although the deviation is not massive.

3. TURKISH ELECTRICAL AND ELECTRONICS SECTOR

Advancements in technology reveals that electrical and electronics industry as well as machinery and software is at the core of production with its positive effects on productivity and cost reduction as well as consumption through worldwide increasing demand for innovative products. In this context, electrical and electronics industry has an outmost importance for Turkey as a developing country with an export driven foreign trade policy in sustainability terms.

According to Turkish Exporters Assembly, electrical and electronics is the 5th largest exporting sector of Turkey as of 2019 and it is classified under 4 product groups: white goods, consumer electronics, cables and electricity production and distribution equipment. According to Harmonized System, the sector is comprised of 454 six-digit HS codes which is used by this study for data collection.[2]

Table 1. Turkey's Electrical and Electronics Sector Foreign Trade Data (2019)

(USD)

Product Group	**Exports**	**Imports**	**Balance**	**Share in Total Exports (%)**	**Share in Total Imports (%)**
White Goods	3.869.150.251	431.726.036	3.437.424.215	32%	2%
Cables	2.009.617.986	448.601.587	1.561.016.399	16%	3%
Electricity Production and Distribution Equipment	3.136.269.985	4.703.973.944	-1.567.703.959	26%	26%
Consumer Electronics	3.212.524.280	12.199.806.833	-8.987.282.553	26%	69%
TOTAL	**12.227.562.502**	**17.784.108.400**	**-5.556.545.898**	**100%**	**100%**

Source: (Turkish Ministry of Trade, 2020b)

As shown in Table 1, as well as having a positive trade balance, white goods group constitutes the 32 % of total exports of sector while its share is only 2% in total imports. Similarly cables group has a positive trade balance with a share of 16% in exports and 3% in imports. On the other hand electricity production and distribution equipment group

[2] A list of HS codes of electrical and electronics sector is attached. See Appendix 1: List of HS Codes of Electrical and Electronics Sector.

has a negative trade balance while its share is 26% both in exports and imports. The largest trade deficit of the sector stems from consumer electronics group which constitutes the 69% of imports while its share in exports is 26%. On aggregate, the sector has a negative trade balance of 5.6 billion dollars.

Table 2. Top Electrical and Electronics Exporters, 2019

(billion USD)

No	Country	Exports	Share (%)
1	China	1.018	25,5
2	Hong Kong	377	9,5
3	USA	311	7,8
4	Germany	259	6,5
5	South Korea	191	4,8
6	Taiwan	183	4,6
7	Japan	167	4,2
8	Singapore	164	4,1
9	Netherlands	125	3,1
10	Mexico	124	3,1
34	*Turkey*	*13*	*0,3*
	World Total	**3.987**	**100**

Source: (ITC Trademap, 2020)

Table 3. Top Electrical and Electronics Importers, 2019

(billion USD)

No	Country	Exports	Share (%)
1	China	665	15,8
2	USA	590	14,0
3	Hong Kong	377	9,0
4	Germany	225	5,3
5	Japan	152	3,6
6	Singapore	131	3,1
7	South Korea	129	3,1
8	Mexico	127	3,0
9	Netherlands	122	2,9
10	Taiwan	118	2,8
34	*Turkey*	*21*	*0,5*
	World Total[3]	**4.199**	**100**

Source: (ITC Trademap, 2020)

[3] World export and import values are not equal mostly because of different measurement and recording methods as well as differences in exchange rates and processing errors. Exports are usually recorded with FOB values while imports are recorded with CIF values.

According to ITC Trademap, Turkey is the 34th largest exporting country of electrical and electronics products in the world with a 0.3% share in worlds exports in 2019. Similarly Turkey ranks 34th among electrical and electronics importers of the world with a share of 0.5% in 2019 (ITC Trademap, 2020).

As shown in Table 4 and Table 5 Turkey is the 5th largest white goods exporters of the world with a share of 6.8% as of 2019 and the industry is also very strong in the domestic market that import values drop drastically to 0.4% of world total white goods imports (ITC Trademap, 2020).

Table 4. Top White Goods Exporters, 2019

(million USD)

No	Country	Exports	Share (%)
1	China	18.678	33,5
2	Germany	4.284	7,7
3	Poland	4.172	7,5
4	Mexico	4.134	7,4
5	Turkey	3.781	6,8
6	Thailand	3.438	6,2
7	South Korea	2.253	4,0
8	Italy	2.137	3,8
9	USA	1.371	2,5
10	Sweden	848	1,5
	World Total	**55.705**	**100**

Source: (ITC Trademap, 2020)

Table 5. Top White Goods Importers, 2019

(million USD)

No	Country	Imports	Share (%)
1	USA	10.841	19,3
2	Germany	3.338	5,9
3	United Kingdom	2.920	5,2
4	France	2.898	5,2
5	Japan	2.359	4,2
6	Canada	1.693	3,0
7	Russian Federation	1.574	2,8
8	Italy	1.490	2,7
9	Spain	1.356	2,4
10	Australia	1.304	2,3
53	*Turkey*	221	0,4
	World Total	**56.118**	**100**

Source: (ITC Trademap, 2020)

Table 6 and Table 7 shows the export and import performances of top 10 countries as well as Turkey. In consumer electronics group Turkey ranks 38th in exports with a share of 0.1% while Turkey is 35th largest importer of consumer electronics with a share of 0.4% in 2019.

Table 6. Top Consumer Electronics Exporters, 2019

(million USD)

No	Country	Exports	Share (%)
1	China	847.238	25,9
2	Hong Kong	347.687	10,6
3	USA	260.361	7,9
4	Germany	178.250	5,4
5	Taiwan	175.450	5,4
6	South Korea	168.571	5,1
7	Singapore	153.252	4,7
8	Japan	138.081	4,2
9	Netherlands	112.569	3,4
10	Viet Nam	100.718	3,1
38	*Turkey*	4.316	0,1
	World Total	**3.276.916**	**100**

Source: (ITC Trademap, 2020)

Table 7. Top Consumer Electronics Importers, 2019

(million USD)

No	Country	Imports	Share (%)
1	China	612.385	17,5
2	USA	489.757	14,0
3	Hong Kong	349.381	10,0
4	Germany	171.394	4,9
5	Japan	132.689	3,8
6	Singapore	120.590	3,4
7	South Korea	114.638	3,3
8	Taiwan	110.055	3,1
9	Netherlands	106.215	3,0
10	Mexico	97.831	2,8
35	*Turkey*	14.683	0,4
	World Total	**3.498.769**	**100**

Source: (ITC Trademap, 2020)

Table 8 and Table 9 shows the export and import performances of top 10 countries and Turkey in cables group. It is seen that while Turkey is the 11th largest exporter of cables while ranks 42nd in imports in 2019.

Table 8. Top Cable Exports, 2019

(million USD)

No	Country	Exports	Share (%)
1	China	19.689	22,4
2	USA	7.899	9,0
3	Germany	6.895	7,8
4	Mexico	4.559	5,2
5	Hong Kong	3.269	3,7
6	Italy	3.235	3,7
7	South Korea	2.358	2,7
8	France	2.138	2,4
9	Poland	2.100	2,4
10	Czech Republic	2.064	2,3
11	*Turkey*	1.926	2,2
	World	**87.944**	**100**

Source: (ITC Trademap, 2020)

Table 9. Top Cable Importers, 2019

(million USD)

No	Country	Imports	Share (%)
1	USA	10.073	12,0
2	Germany	5.851	7,0
3	China	4.951	5,9
4	Mexico	4.479	5,3
5	Hong Kong	3.645	4,3
6	France	3.079	3,7
7	United Kingdom	2.815	3,4
8	Japan	2.693	3,2
9	Canada	1.954	2,3
10	Netherlands	1.818	2,2
42	*Turkey*	428	0,5
	World	**83.805**	**100**

Source: (ITC Trademap, 2020)

Table 10 and Table 11 shows the export and import performances of top 10 countries and Turkey in electricity production and distribution group. It is seen that Turkey is the 30th largest exporter and importer of electricity production and distribution group in 2019.

Table 10. Top Electricity Production and Distribution Equipment Exporters, 2019

(million USD)

No	Country	Exports	Share (%)
1	China	132.829	23,5
2	Germany	69.487	12,3
3	USA	41.043	7,2
4	Japan	26.707	4,7
5	Hong Kong	26.321	4,6
6	Mexico	21.231	3,8
7	South Korea	17.906	3,2
8	France	17.215	3,0
9	Italy	13.912	2,5
10	Czech Republic	10.841	1,9
30	*Turkey*	3.186	0,6
	World	**566.140**	**100**

Source: (ITC Trademap, 2020)

Table 11. Top Electricity Production and Distribution Equipment Importers, 2019

(million USD)

No	Country	Imports	Share (%)
1	USA	79.249	14,1
2	China	47.123	8,4
3	Germany	43.939	7,8
4	Mexico	24.356	4,3
5	Hong Kong	23.676	4,2
6	France	16.834	3,0
7	United Kingdom	16.269	2,9
8	Japan	14.096	2,5
9	Italy	13.459	2,4
10	Canada	12.617	2,3
30	*Turkey*	5.258	0,9
	World	**560.408**	**100**

Source: (ITC Trademap, 2020)

As shown in Table 12 Turkey's electrical and electronics sector's main export destinations are mainly European Union countries with highest purchasing power such as UK, Germany and France etc. It can be argued that this is mainly because of Customs Union between the EU and Turkey and geographic proximity. In this context Israel is a geographically close country as well as having a free trade agreement with Turkey. When the list examined further, it is striking that Iraq which is a neighbor country and USA as being the world's largest importer are the only two countries that Turkey is not involved in with any economic integration form.

Table 12. Turkey EE Sector's, Top 10 Export Destinations, 2019

(million USD)

No	Country	Exports	Share (%)
1	United Kingdom	1.797	13,6
2	Germany	1.166	8,8
3	France	926	7,0
4	Italy	532	4,0
5	Spain	529	4,0
6	Iraq	514	3,9
7	Poland	327	2,5
8	USA	296	2,2
9	Netherlands	288	2,2
10	Israel	287	2,2
	Total	**13.209**	**100**

Source: (ITC Trademap, 2020)

However, Turkey's electrical and electronics imports are mainly from Asian countries such as China, Japan, Vietnam and India as well as the EU countries and USA. It is notable that apart from the EU countries, South Korea is the only country that Turkey has an FTA.

Table 13. Turkey EE Sector's, Top 10 Import Destinations, 2019

(million USD)

No	Country	Imports	Share (%)
1	China	7.214	35,0
2	Germany	2.090	10,2
3	USA	1.372	6,7
4	Japan	937	4,5
5	Vietnam	871	4,2
6	France	711	3,5
7	Italy	539	2,6
8	Czech Republic	509	2,5
9	South Korea	453	2,2
10	India	439	2,1
	Total	**20.590**	**100**

Source: (ITC Trademap, 2020)

4. TURKEY'S FREE TRADE AGREEMENTS EFFECTS ON TURKISH ELECTRICAL AND ELECTRONICS SECTOR

Since 1992, Turkey has signed free trade agreements with EFTA, Israel, Macedonia, Bosnia-Herzegovina, Palestine, Tunisia, Morocco, Egypt, Albania, Georgia, Montenegro, Serbia, Chile, Mauritius, South Korea, Malaysia, Moldova, Faroe Islands, Singapore and Kosovo chronologically (Turkish Ministry of Trade, 2020b).

Especially, the 2000s has witnessed record export and import volume increases at the expense of growing foreign trade deficit and export import coverage ratio has fallen correspondingly. Export import coverage ratio is a significant indicator that displays a country's foreign trade performance in separate time periods. In this context, export import coverage ratio will be used to evaluate the Turkish electrical and electronics sector performance with regards to Turkey's free trade agreement partners. The aim of the study is to determine whether Turkey's free trade agreements have a trade creation or trade diversion effect on the Turkish electrical and electronics sector.

In order to make an assessment of trade performance of the sector, bilateral sectoral trade data of each country is retrieved from the ITC Trademap database by using 6-digit HS codes of the sector[4] and export import coverage ratios for Turkey are calculated for selected years beginning from one year before the free trade agreement entered into force. Then, export import coverage ratio index values are calculated as one year before the free trade agreement entered into force is accepted as base year with an index value of 100 points. However, for EFTA, Israel and Macedonia with whom Turkey signed free trade deals in the 1990s, 2001 is selected as base year because the oldest trade data available in the ITC Trademap database belongs to 2011. On the other hand, Kosovo excluded from the analysis due to lack of trade data while Montenegro, Palestine and Faroe Islands are not included in the analysis because of very low trade volume.

[4] See Appendix 1: List of HS Codes of Electrical and Electronics Sector

4.1. European Free Trade Association (EFTA)

European Free Trade Association (EFTA) is an intergovernmental organization founded in 1960 by United Kingdom, Norway, Switzerland, Denmark, Portugal and Austria. Later on Iceland, Finland, Liechtenstein joined the organization. However majority of the members prefer to join the EU and withdrew from the organization. Today, Liechtenstein, Switzerland, Norway and Iceland are members of EFTA which establishes a free trade area among members without any common trade or tariff policy against third parties and also manages the single market with the EU established by Agreement on European Economic Area for three of its members except Switzerland (European Free Trade Association, 2020).

Free trade agreement between EFTA and Turkey is signed in 1991 and entered into force in September 1992. The agreement is revised in 2018 but the ratification process still continues. The agreement includes elimination of tariffs and other barriers before trade in industrial and agricultural products. EFTA countries liberalized nearly all tariffs in industrial products as the agreement entered into force while a transitional period is envisaged for Turkey until 1999 for tariff liberalization (Turkish Ministry of Trade, 2020a). The free trade agreement signed with EFTA is a part of Turkey's liability to align its trade policy with EU.

Table 14 shows the Turkish electrical and electronics sector's trade data with EFTA countries as well as general trade performance of the sector with whole world for selected years. As evident in the table, exports of the Turkish electrical and electronics sector was 1,4 billion USD in 2001 and it increased until 2014 steadily and reach 13,8 billion USD. After 2014 total exports of the sector diminished and fluctuated between 12 to 13 billion USD and reached up to 13,2 billion USD in 2019. From 2001 to 2019, total exports of the sector increased nearly 9,5 fold. On the other hand, total imports of the sector was 3,8 billion USD in 2001 and increased until 2017 steadily while 2018 witnessed a sharp decline of 20% year over year. And, in 2019 it declined further and it fell back to 20,6 billion USD. However total imports of the sector increased 5,4 fold from 2001 to 2019.

When the sector's exports to EFTA is examined, it can be seen that the volume of exports increased from 9,2 million USD in 2001 to 147 million USD in 2014 and then it started to decline and went down to 101,3 million USD in 2019 which amounts to an 11 fold increase from 2001 to 2019. In this sense, it is clear that the trajectory of the sector's exports to EFTA is very similar to the sector's general performance. On the other hand Turkey's electrical and electronics imports from EFTA also increased from 2001 to 2014 and started to decline afterwards and went down to 322 million USD in 2019.

Table 14. Turkey - EFTA Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2001	**2005**	**2008**	**2011**	**2014**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	1.403	3.764	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	3.795	10.391	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO EFTA	9,2	23,7	84,7	91,2	147,2	80,1	94,6	101,3
TURKEY'S EE IMPORTS FROM EFTA	63,3	149,9	275,7	327,5	345,9	321,8	309,0	322,1
EFTA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,7	0,6	0,8	0,7	1,1	0,7	0,7	0,8
EFTA'S SHARE IN TURKEY'S EE IMPORTS (%)	1,7	1,4	1,4	1,4	1,3	1,1	1,4	1,6

Source: (ITC Trademap, 2020)

However, when the share of EFTA in the Turkish electrical and electronics sector's foreign trade is examined it can be found that while EFTA's share in sector's total exports increased 0.7% in 2001 to only 0,8% in 2019. Nevertheless EFTA's share in sector's total imports was at its highest in 2001 with 1,7% and declined over the years and reached to 1,6% in 2019. Consequently, it can be argued that despite the rise in volumes, the share of EFTA in the sector's foreign trade does not increased as far as it is intended.

Table 15 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with EFTA countries and sector's total trade with world. It is evident in the table that the export import coverage ratio of the sector has an upward performance over the years. Sector's total export import coverage ratio was 37% in 2001 and went up to 64% in 2019 which indicates a 74% increase.

Table 15. Turkey - EFTA EE Sector Export Import Coverage Ratio

(%)

	2001	2005	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	37	36	56	51	52	43	58	64
TURKEY'S BİLATERAL EE TRADE WITH EFTA EXPORT IMPORT COVERAGE RATIO	14	16	31	28	43	25	31	31

Source: (ITC Trademap, 2020)

On the other hand, export import coverage ratio of sector's bilateral trade with EFTA performed better within the same period. While export import coverage ratio is 14% in 2001, it increased to 31% in 2019 while it was it is peak in 2014 with 43%. In this context, export import coverage ratio of the sector's trade with EFTA increased 117% from 2001 to 2019.

In order to make a better comparison between the sector's overall performance and its bilateral trade with EFTA, an index is constructed for selected years by using export import coverage ratios while 2001 is accepted as base year and given 100 points. Figure 1 shows the calculated index values of each year for both sector's total and its trade with EFTA countries.

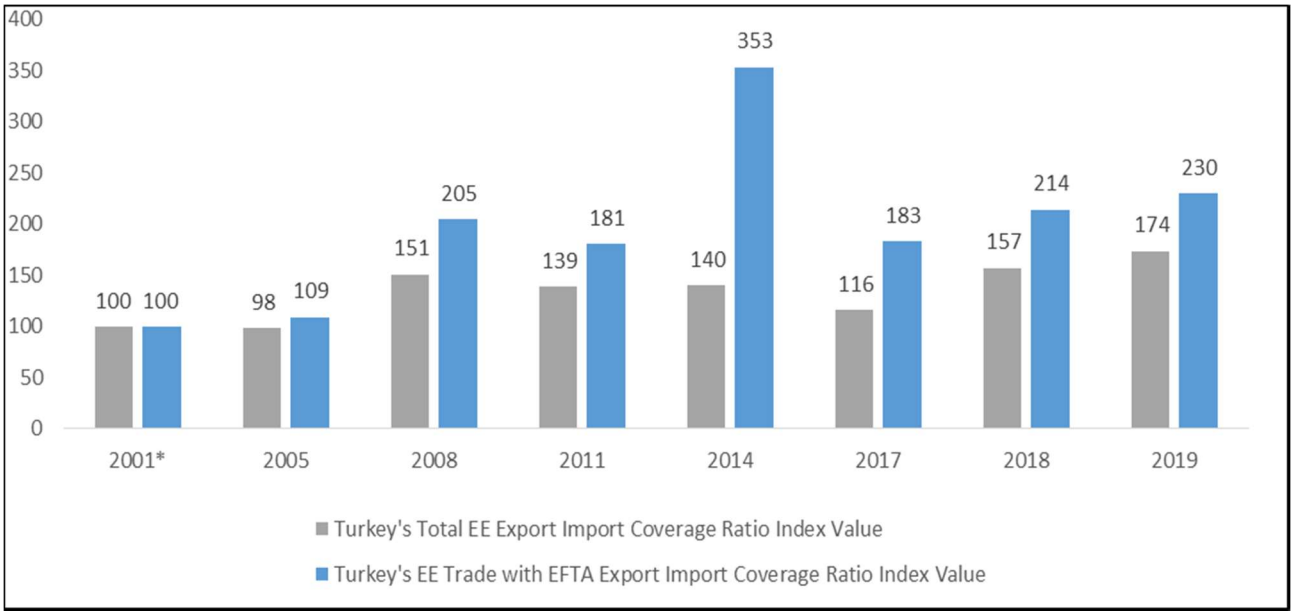

Figure 1. Turkey-EFTA EE Sector Export Import Coverage Ratio Index Values

* 2001 is accepted as base year with a value of 100 points and index values are calculated accordingly.

As illustrated in Figure 1, export import coverage ratio of sector's total followed an upward trend since 2001 and reached up to 174 points in 2019. When the sector's bilateral trade with EFTA countries is examined, it can be clearly seen that the index value increased from 100 in 2001 to 230 in 2019 which reflects a better trajectory than sector's overall performance. 130 points increase in index value for EFTA in return for 74 points increase in sector's general performance explicitly indicates that Turkey-EFTA free trade agreement generated a trade creation effect for the Turkish electrical and electronics sector.

4.2. Israel

Free trade agreement between Turkey and Israel was signed in 1996 and entered into force in May 1997. According to the agreement custom tariffs on industrial products eliminated as of January 1st, 2000 (Turkish Ministry of Trade, 2020a). As well as increasing trade between two countries before the agreement, one of the most important reasons behind signing a free trade agreement with Israel was a part of Turkey's liability to align its trade policy with the EU as Israel has a free trade agreement with the EU signed in 1995. Israel's free trade agreement with USA is also another factor that shapes Turkey's decision for a free trade agreement with Israel as the expectation is that it will give an alternative path for Turkey to access US market.

Table 16 shows the Turkish electrical and electronics sector's trade data with Israel as well as general trade performance of the sector for selected years. As indicated in the table exports of the Turkish electrical and electronics sector was increased nearly eight-fold from 2001 to 2019 and total imports of the sector increased 9,4 fold within the same period.

While, sector's exports to Israel was only 35 million USD in 2001 and increased eight-fold in parallel with sector's general performance and reached up to nearly 287 million USD in 2019. However imports was 20,5 million USD and increased over the years up to 176 million USD in 2014 but afterwards it started to diminish and fell 90,7 million in 2019. In short sectoral imports from Israel increased 4,4 fold from 2001 to 2019.

Table 16. Turkey - Israel Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2001	2005	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	1.403	3.764	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	3.795	10.391	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO ISRAEL	35,17	65,00	205,42	262,22	278,35	289,54	277,06	286,71
TURKEY'S EE IMPORTS FROM ISRAEL	20,45	68,21	120,71	114,93	176,25	148,96	159,37	90,67
ISRAEL'S SHARE IN TURKEY'S EE EXPORTS (%)	2,51	1,73	1,92	2,14	2,01	2,39	2,11	2,17
ISRAEL'S SHARE IN TURKEY'S EE IMPORTS (%)	0,54	0,66	0,63	0,48	0,66	0,53	0,71	0,44

Source: (ITC Trademap, 2020)

When Israel's share on the sector's exports is examined, it can be clearly seen that it followed a volatile course and it was decreased from 2,51 % in 2001 to 2,17% in 2019. However, share of Israeli goods in sector's imports fall by 18% from 0,54% in 2001 to 0,44% in 2019.

Table 17. Turkey - Israel EE Sector Export Import Coverage Ratio

(%)

	2001	2005	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	37	36	56	51	52	43	58	64
TURKEY'S BİLATERAL EE TRADE WITH ISRAEL EXPORT IMPORT COVERAGE RATIO	172	95	170	228	158	194	174	316

Source: (ITC Trademap, 2020)

Table 17 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Israel and sector's total trade with world. As indicated in the table sector's total export import coverage ratio was 37% in 2001 and went up to 64% in 2019 which indicates a 74% increase. It is clear in the table that export import coverage ratio of the sector's bilateral trade with Israel outperformed sector's total trade.

While export import coverage ratio of the sector's bilateral trade with Israel was 172% in 2001 it increased over the years despite a volatile trajectory and reached up to 316% in 2019. When compared with sector's general performance, export import coverage ratio of the sector's bilateral trade with Israel was increased 84% from 2001 to 2019 while sector's general export import coverage ratio increased 7,4% within the same period.

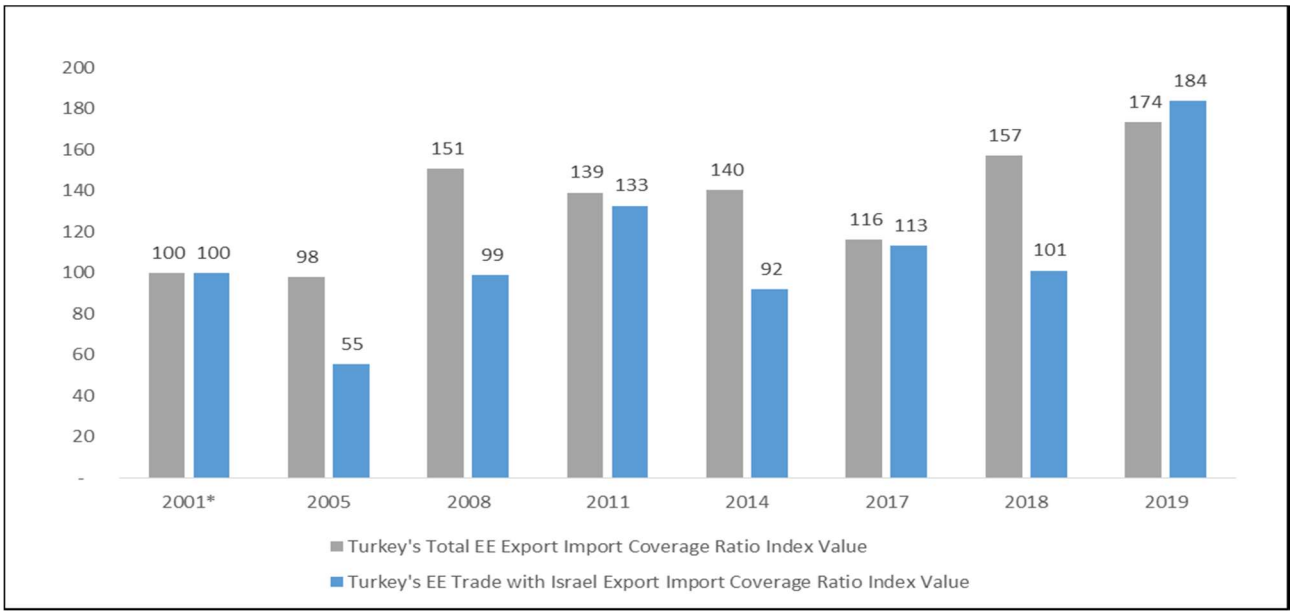

Figure 2. Turkey-Israel EE Sector Export Import Coverage Ratio Index Value

* 2001 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 2 shows the calculated index values of export import coverage ratios of both the sector's general and sector's trade with Israel from 2001 to 2019. As indicated in Figure 2, export import coverage ratio of sector's total followed an upward trend since 2001 and reached up to 174 points in 2019.

When the sector's bilateral trade with Israel is examined, it can be clearly seen that the index value of the sector's trade with Israel followed an uneven course yet it increased to 184 points in 2019. In this context 84 points increase in index value for Israel as opposed to 74 points increase in sector's general performance indicates that Turkey-Israel free trade agreement generated a trade creation effect for the Turkish electrical and electronics sector although it is not at intended levels.

4.3. Macedonia

Free trade agreement between Turkey and Macedonia was signed in 1999 and entered into force in September 2000. According to the agreement Turkey abolished custom tariffs on industrial products imported from Macedonia as of 2003 and in return Macedonia abolished custom tariffs on industrial products imported from Turkey as of 2008 (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Macedonia is a part of Turkey's liability to align its trade policy with EU.

Table 18 shows the Turkish electrical and electronics sector's trade data with Macedonia as well as general trade performance of the sector. As indicated in the table exports of the Turkish electrical and electronics sector was increased 9,4 fold from 2001 to 2019 and total imports of the sector increased 5,4 fold within the same period.

Table 18. Turkey – Macedonia Electrical and Electronics Sector Foreign Trade Data
(million USD)

	2001	**2005**	**2008**	**2011**	**2014**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	1.403	3.764	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	3.795	10.391	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO MACEDONIA	3,82	7,86	30,12	34,61	43,57	41,96	44,54	38,47
TURKEY'S EE IMPORTS FROM MACEDONIA	0,43	0,59	0,55	1,17	4,90	11,98	9,90	11,05
MACEDONIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,27	0,21	0,28	0,28	0,32	0,35	0,34	0,29
MACEDONIA'S SHARE IN TURKEY'S EE IMPORTS (%)	0,01	0,01	0,00	0,00	0,02	0,04	0,04	0,05

Source: (ITC Trademap, 2020)

While, sector's exports to Macedonia was nearly 3,8 million USD in 2001 and increased steadily over the years and reached up to 38 million USD in 2019 which indicates a ten-fold increase in sector's exports. Within the same period, sector's imports from Macedonia was spiked although small in value from 0,43 million USD in 2001 to 11 million USD in 2019 which indicates a 25,5 fold increase.

When the share of Macedonia in sector's exports is examined, it can be seen that there is a slight increase from 0,27% in 2001 to 0,29% in 2019. On the other hand Macedonia's share in sector's imports raised from 0,01% in 2001 to 0,05% in 2019.

Table 19 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Macedonia and sector's total trade with world. As indicated in the table the sector's total export import coverage ratio was 37% in 2001 and went up to 64% in 2019 which indicates a 74% increase. It is clear in the table that export import coverage ratio of the sector's bilateral trade with Macedonia followed an opposite direction than sector's total trade.

Table 19. Turkey - Macedonia EE Sector Export Import Coverage Ratio

(%)

	2001	2005	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	37	36	56	51	52	43	58	64
TURKEY'S BİLATERAL EE TRADE WITH MACEDONIA EXPORT IMPORT COVERAGE RATIO	880	1.326	5.496	2.966	890	350	450	348

Source: (ITC Trademap, 2020)

While export import coverage ratio of the sector's bilateral trade with Macedonia was 880% in 2001, at first it increased over the years and reached up to 2.966% in 2011 and then started to decrease and fell down to 348% in 2019 which indicates a 60% decrease from 2001 to 2019.

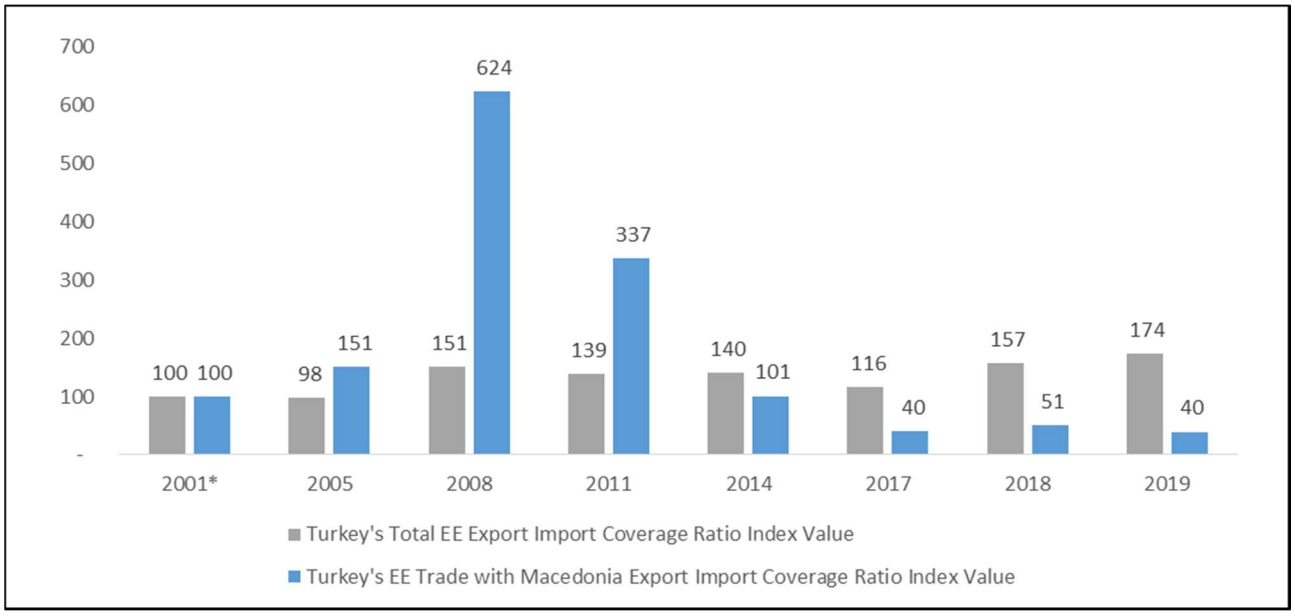

Figure 3. Turkey-Macedonia EE Sector Export Import Coverage Ratio Index Value

* 2001 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 3 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Macedonia from 2001 to 2019 for selected years. As indicated in Figure 3, export import coverage ratio of sector's total followed an upward trend since 2001 and reached up to 174 points in 2019.

When the sector's bilateral trade with Macedonia is examined, it can be clearly seen that the index values followed a volatile trajectory but decreased especially after 2011 and went down to 40 points in 2019. In this context it can be argued that 60 points decrease in index value for Macedonia as opposed to 74 points increase in sector's general performance refers to a trade diversion effect of Turkey-Macedonia free trade agreement for the Turkish electrical and electronics sector.

4.4. Bosnia-Herzegovina

Free trade agreement between Turkey and Bosnia-Herzegovina was signed in 2002 and entered into force in July 2003. After 16 years, parties revised the agreement in order to include tariff elimination for agricultural products that are not included in the original agreement and signed the revised agreement on 2019 while ratification process has been still continuing. Turkey abolished custom tariffs for imports from Bosnia as the agreement entered into force. On the other hand Bosnia eliminated all custom tariffs as of January 2007 at the end of the transition period (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Bosnia-Herzegovina is a part of Turkey's liability to align its trade policy with EU.

Table 20. Turkey-Bosnia Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2002	**2005**	**2008**	**2011**	**2014**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	1.699	3.764	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	4.876	10.391	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO BOSNIA	3,53	16,04	48,78	36,43	39,91	35,92	43,7	39,77
TURKEY'S EE IMPORTS FROM BOSNIA	1,26	0,15	0,05	2,65	0,92	1,45	3,39	4,29
BOSNIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,21	0,43	0,46	0,3	0,29	0,3	0,33	0,3
BOSNIA'S SHARE IN TURKEY'S EE IMPORTS (%)	0,03	0	0	0,01	0	0,01	0,02	0,02

Source: (ITC Trademap, 2020)

Table 20 shows the Turkish electrical and electronics sector's trade data with Bosnia-Herzegovina as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2002) until 2019. As indicated in the table exports of the Turkish electrical and electronics sector was increased nearly eight-fold from 2002 to 2019 and total imports of the sector increased nearly four-fold within the same period.

While, sector's exports to Bosnia-Herzegovina was nearly 6 million USD in 2002 and increased significantly after signing the free trade agreement and kept a fluctuating course after 2008 between 35 million USD to 45 million USD. As of 2019 sector's exports to Bosnia reached up to 39,77 million USD which is eleven times higher than 2002 values. However, it can be argued that sector's imports from Bosnia followed a volatile course as value of imports was 1,26 million USD in 2002 and surprisingly decreased just after signing the agreement. It continued to fluctuate over the years and reached up to 4,3 million USD in 2019 which amounts to a 241% increase from 2002 to 2019.

As shown in Table 20, share of Bosnia in the Turkish electrical and electronics sector's exports was 0,21% in 2002 and it increased just after signing the agreement and then started to fall and reached up to 0,3% in 2019. However Bosnia's share in sector's imports was 0,03% and decreased after signing the agreement in a similar way with exports and went down to 0,02% in 2019.

Table 21. Turkey – Bosnia EE Sector Export Import Coverage Ratio

(%)

	2002	2005	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	35	36	56	51	52	43	58	64
TURKEY'S BİLATERAL EE TRADE WITH BOSNIA EXPORT IMPORT COVERAGE RATIO	281	10.837	106.046	1.372	4.319	2.481	1.289	927

Source: (ITC Trademap, 2020)

Table 21 shows export import coverage ratio of the Turkish electrical and electronics sector's trade with Bosnia and sector's total trade with world. As indicated in the table sector's total export import coverage ratio was 35% in 2002 and went up to 64% in 2019 which indicates a nearly two-fold increase. It is evident in the table that export

import coverage ratio of sector's trade with Bosnia outperformed sector's total trade. While sector's overall export import coverage ratio nearly doubled from 2002 to 2019, export import coverage ratio of sector's trade with Bosnia increased from 281% in 2002 to 10.837% in 2005 and 106.046% in 2008 and fell down to 927% in 2019 which amounts to a 3,3 fold increase from 2002 to 2019.

Figure 4 shows the calculated index values of export import coverage ratios of both the sector's general and sector's trade with Bosnia-Herzegovina from 2002 to 2019 for selected years. As indicated in Figure 4, export import coverage ratio of sector's total followed an upward trend since 2002 and showed an 84 point increase in 2019.

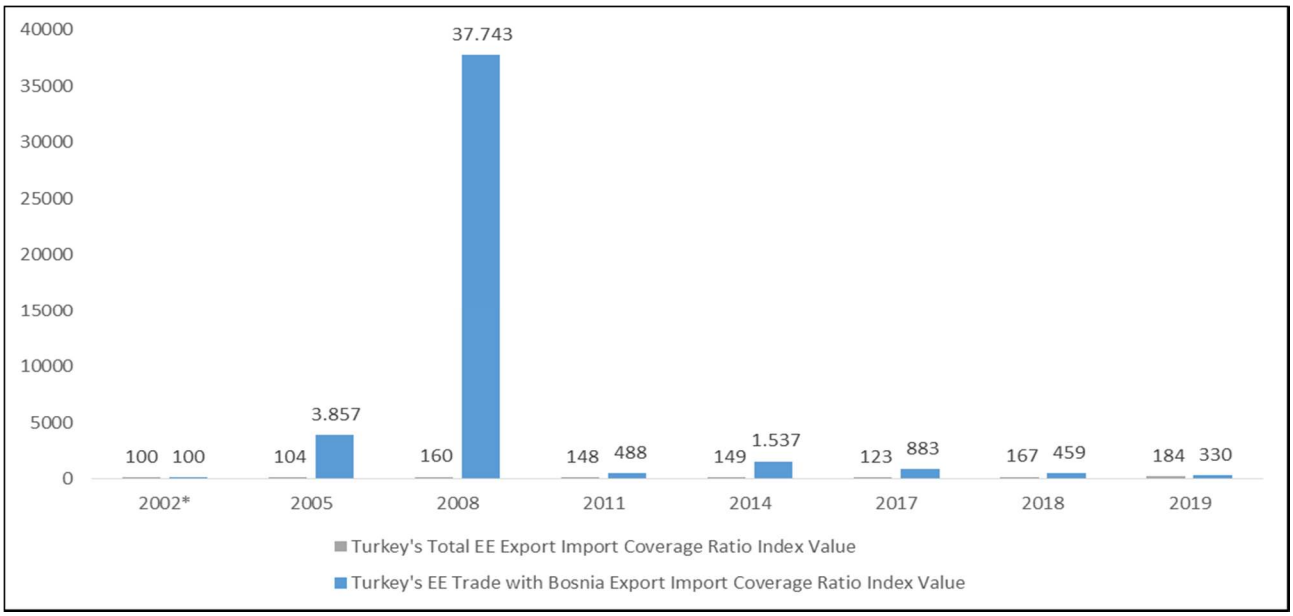

Figure 4. Turkey-Bosnia Sector Export Import Coverage Ratio Index Value

* 2002 is accepted as base year with a value of 100 points and index values are calculated accordingly.

As indicated in Figure 4, export import coverage ratio of sector's total followed a considerably volatile course since 2002 and increased tremendously in 2005 and skyrocketed in 2008. Despite reaching exorbitant values over the course the increase in index value is 230 points from 2002 to 2019. However it still reflects a better trajectory than sector's overall performance. In this regard it can be argued that 230 points increase in sector's trade with Bosnia as opposed to 84 points increase in sector's general performance refers that Turkey-Bosnia-Herzegovina FTA created trade for the Turkish electrical and electronics sector.

4.5. Tunisia

Turkey and Tunisia had an Economic and Technique Cooperation Agreement signed in 1992. However in 2004 the two countries signed The Association Agreement which establishes a free trade area between them and replaced the previous agreement. Entered into force in July 2005, the free trade agreement eliminated custom tariffs for industrial products applied by Turkey to products imported from Tunisia upon entry into force of the agreement while a transition period is stipulated for Tunisia until July 2014 for tariff elimination. The free trade agreement signed with Tunisia is a part of Turkey's liability to align its trade policy with EU.

Table 22. Turkey – Tunisia Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2004	**2005**	**2008**	**2011**	**2014**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	3.100	3.764	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	8.509	10.391	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO TUNISIA	17,05	27,43	35,14	50,27	58,93	59,14	60,22	45,43
TURKEY'S EE IMPORTS FROM TUNISIA	0,35	0,66	10,10	11,04	31,76	28,26	30,68	23,04
TUNISIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,55	0,73	0,33	0,41	0,43	0,49	0,46	0,34
TUNISIA'S SHARE IN TURKEY'S EE IMPORTS (%)	0,004	0,01	0,05	0,05	0,12	0,10	0,14	0,11

Source: (ITC Trademap, 2020)

Table 22 shows the Turkish electrical and electronics sector's trade data with Tunisia as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2004) until 2019. As indicated in the table, exports of the Turkish electrical and electronics sector was increased more than four-fold from 2004 to 2019 and total imports of the sector increased nearly 2,5 fold within the same period.

As evident in the Table 22 sector's exports to Tunisia was 17,05 million USD in 2004 and increased significantly upon entry into force of the free trade agreement in 2005 until 2018. However it fell considerably in 2019 and went down to 45,4 million USD which amounts to a 166% fold increase from 2004 to 2019. Nevertheless sector's imports

from Tunisia followed a better trajectory and reached up to 30,7 million USD in 2018 from 0,35 million USD in 2004. In this regard, the increase after entry into force of the free trade agreement in 2005 is striking despite the fall in 2019 to 23 million USD which still amounts to a 65 fold increase from 2004 to 2019.

When the share of Tunisia in the Turkish electrical and electronics sector's exports is examined, down trend is notably obvious. While share of Tunisia in sector's exports is 0,55% in 2004, it increased in 2005 but then it started to fall steadily and went down to 0,34% as of 2019. Nevertheless share of Tunisian products in sector's imports had an upward trend as it was 0,004% in 2004 and reached up to 0,11% in 2019 which amounts to 27 fold increase.

Table 23. Turkey – Tunisia EE Sector Export Import Coverage Ratio

(%)

	2004	**2005**	**2008**	**2011**	**2014**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	36	36	56	51	52	43	58	64
TURKEY'S BILATERAL EE TRADE WITH TUNISIA EXPORT IMPORT COVERAGE RATIO	4.830	4.138	348	455	186	209	196	197

Source: (ITC Trademap, 2020)

Table 23 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Tunisia and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 36% in 2004 and went up to 64% in 2019 which indicates a 76% increase.

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with Tunisia followed an opposite direction than sector's total trade. While sector's overall export import coverage ratio nearly doubled from 2004 to 2019, export import coverage ratio of sector's bilateral trade with Tunisia decreased from 4.830% in 2004 to 197% in 2019 which amounts to a 96% decrease.

Figure 5 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Tunisia from 2004 to 2019

for selected years. As indicated in Figure 5, export import coverage ratio of sector's total followed an upward trend since 2005 and showed a 76 point increase from 2004 to 2019.

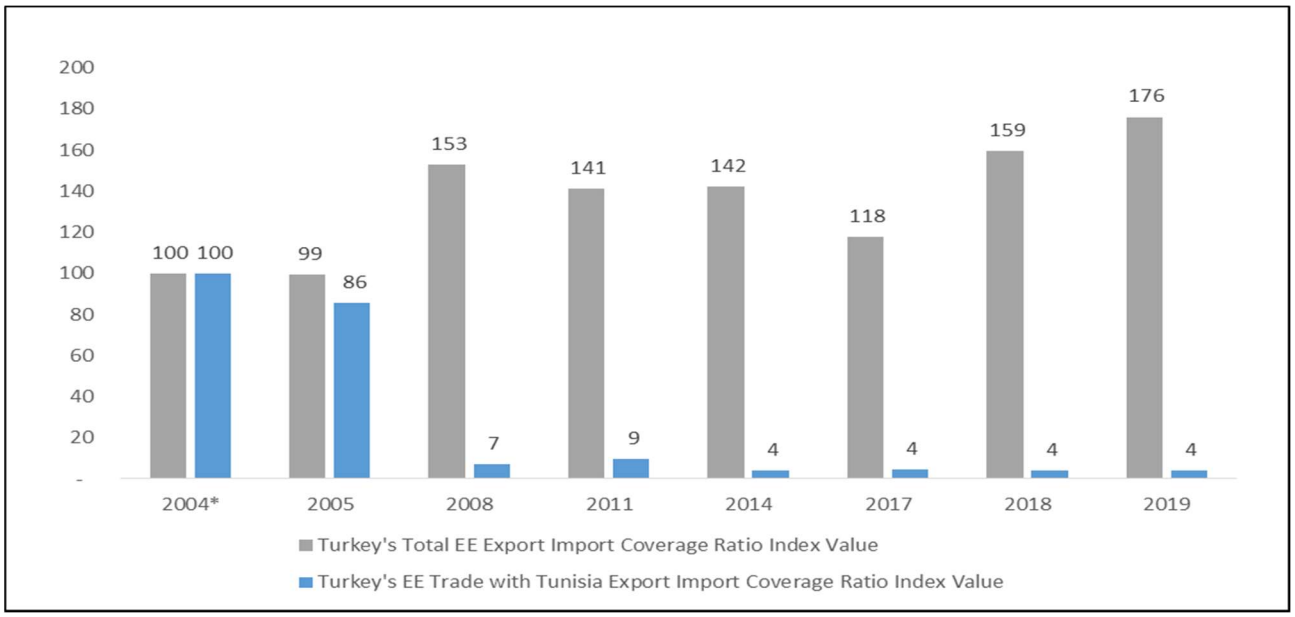

Figure 5. Turkey - Tunisia EE Sector Export Import Coverage Ratio Index Value

* 2004 is accepted as base year with a value of 100 points and index values are calculated accordingly.

When the index values of the sector's bilateral trade with Tunisia is examined, it can be clearly seen that at first the index value decreased 14 points in 2005, the year that the free trade agreement entered into force. However it fell down sharply in the following years and it hit the bottom with only 4 points in 2014 and remained at that level so far. In this context it can be argued that 96 points decrease in index value for Tunisia as opposed to 76 points increase in sector's general performance refers to a trade diversion effect of Turkey-Tunisia free trade agreement for the Turkish electrical and electronics sector.

4.6. Morocco

Turkey and Morocco signed a Free Trade Agreement in 2004 which entered into force in January 2006. According to the agreement Turkey abolished custom tariffs for industrial products as the agreement entered into force while a transition period of Morocco is stipulated until January 2015 (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Morocco is a part of Turkey's liability to align its trade policy with EU.

Table 24. Turkey – Morocco Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2005	2006	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	3.764	4.903	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	10.391	11.675	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO MOROCCO	15,06	18,60	52,71	68,06	104,05	121,70	148,80	154,72
TURKEY'S EE IMPORTS FROM MOROCCO	5,22	5,45	4,66	2,93	3,05	3,18	3,73	2,71
MOROCCO'S SHARE IN TURKEY'S EE EXPORTS (%)	0,40	0,38	0,49	0,56	0,75	1,00	1,13	1,17
MOROCCO'S SHARE IN TURKEY'S EE IMPORTS (%)	0,05	0,05	0,02	0,01	0,01	0,01	0,02	0,01

Source: (ITC Trademap, 2020)

Table 24 shows the Turkish electrical and electronics sector's trade data with Morocco as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2005) until 2019. As indicated in the table exports of the Turkish electrical and sector was increased 251% from 2005 to 2019 and total imports of the sector increased 98% within the same period.

As shown in Table 24 sector's exports to Morocco was 15 million USD in 2005 and increased significantly after the free trade agreement and reached up to 154,7 million USD in 2019. On the other hand, sector's imports from Morocco followed an opposite direction and fell down from 5,2 million USD in 2005 to 2,7 million USD in 2019.

It is evident in the table that the share of Morocco in the Turkish electrical and electronics sector's exports increased steadily and reached up to 1,17% in 2019 while it was 0,4% in 2005. Nevertheless share of Morocco in the sector's imports followed a down trend as it was 0,05% in 2005 and went down to 0,01% in 2019 which amounts to an 74% decrease.

Table 25 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Morocco and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 36% in 2005 and went up to 64% in 2019 which indicates a nearly two-fold increase.

Table 25. Turkey – Morocco EE Sector Export Import Coverage Ratio

(%)

	2005	2006	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	36	42	56	51	52	43	58	64
TURKEY'S BILATERAL EE TRADE WITH MOROCCO EXPORT IMPORT COVERAGE RATIO	289	341	1.130	2.321	3.414	3.828	3.993	5.703

Source: (ITC Trademap, 2020)

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with Morocco outperformed sector's total trade. While sector's overall export import coverage ratio nearly doubled from 2005 to 2019, export import coverage ratio of the sector's bilateral trade with Morocco increased from 289% in 2005 and skyrocketed after the agreement and reached up to 5.703% in 2019 which amounts to a nearly 20 fold increase from 2005 to 2019.

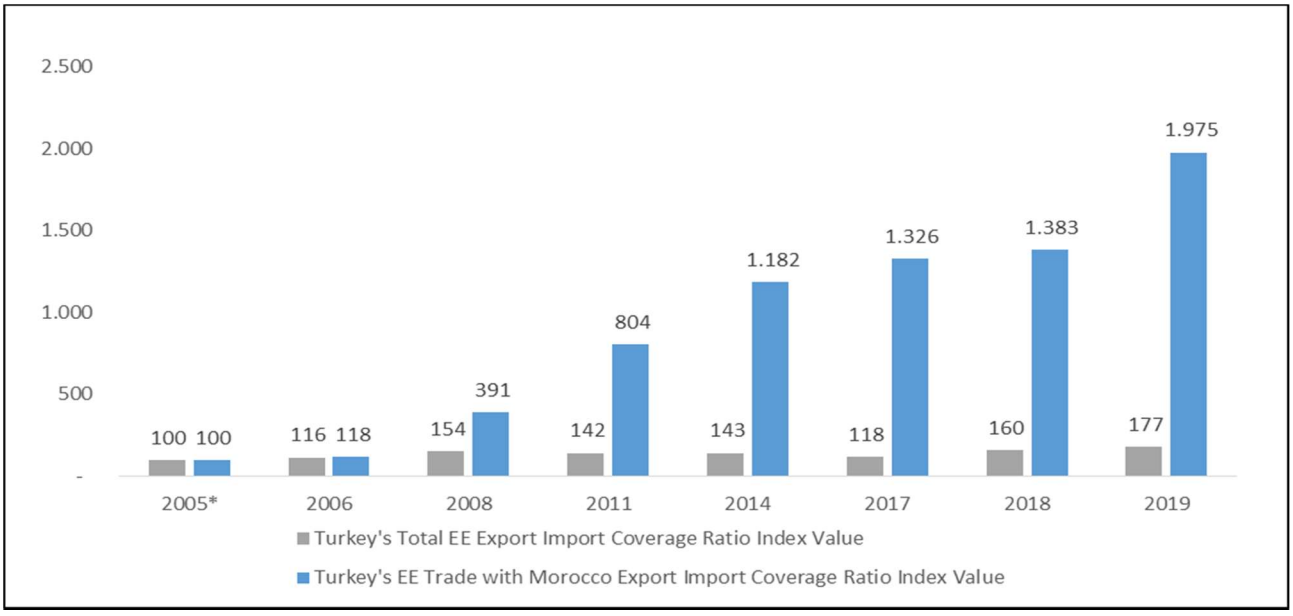

Figure 6. Turkey - Morocco EE Sector Export Import Coverage Ratio Index Value

*2005 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 6 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Morocco from 2005 to 2019 for selected years. As indicated in Figure 6, export import coverage ratio of sector's total followed an upward trend since 2005 and showed a 77 point increase in 2019.

When the index values of the sector's bilateral trade with Morocco is examined, it can be clearly seen that the index value increased tremendously especially after entry into force of the agreement and reached a record high in 2019 with 1.975 points. In this context 1875 points increase in index value of Morocco as opposed to 77 points increase in the sector's general performance refers to a trade creation effect of Turkey-Morocco free trade agreement for Turkish electrical and electronics sector.

4.7. Egypt

Turkey and Egypt signed a free trade agreement in 2005 which entered into force in March 2007. According to the agreement Turkey abolished all custom tariffs upon entry into force for industrial products while a transition period was stipulated for Egypt to eliminate all tariffs until January 2020 (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Egypt is a part of Turkey's liability to align its trade policy with EU.

Table 26. Turkey – Egypt Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2006	2007	2008	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	4.903	10.104	10.712	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	11.675	18.333	19.213	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO EGYPT	32,92	61,90	73,35	112,37	173,99	202,63	223,66	209,65
TURKEY'S EE IMPORTS FROM EGYPT	3,85	4,74	4,66	10,28	2,53	22,43	52,68	60,83
EGYPT'S SHARE IN TURKEY'S EE EXPORTS (%)	0,67	0,61	0,68	0,92	1,26	1,67	1,70	1,59
EGYPT'S SHARE IN TURKEY'S EE IMPORTS (%)	0,03	0,03	0,02	0,04	0,01	0,08	0,23	0,30

Source: (ITC Trademap, 2020)

Table 26 shows Turkish electrical and electronics sector's trade data with Egypt as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2006) until 2019. As indicated in the table exports of Turkish EE sector was increased 2,7 fold from 2006 to 2019 and total imports of the sector increased 1,8 fold within the same period.

As shown in Table 26 sector's exports to Egypt was 32,9 million USD in 2006 and increased to 73 million USD in 2008 after the free trade agreement. Afterwards it followed an uptrend and reached up to 210 million USD which amounts to a 6,4 fold increase from 2006 to 2019. On the other hand sector's imports from Egypt followed an uneven course from 2006 to 2014 while it started to increase after 2017 and reached up to 61 million USD in 2019 which amounts to a nearly 16 fold increase from 2006 to 2019.

When the share of Egypt in Turkish electrical and electronics sector's exports is examined it can be clearly seen that it increased after the agreement and reached up to 1,59% in 2019 while it was 0,67% in 2006. On the other hand share of Egypt in the sector's imports also increased from 0,03% in 2006 to 0,3% in 2019.

Table 27 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Egypt and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 42% in 2006 and went up to 64% in 2019.

Table 27. Turkey – Egypt EE Sector Export Import Coverage Ratio

(%)

	2006	**2007**	**2008**	**2011**	**2014**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	42	55	56	51	52	43	58	64
TURKEY'S BILATERAL EE TRADE WITH EGYPT EXPORT IMPORT COVERAGE RATIO	855	1.306	1.575	1.093	6.874	904	425	345

Source: (ITC Trademap, 2020)

However export import coverage ratio of the sector's bilateral trade with Egypt followed and uneven course while sector's overall export import coverage ratio increased 53% from 2006 to 2019, as it can be clearly seen from the table. First it was 855% in 2006 and skyrocketed in 2014 with 6.874% and then decreased to 345% in 2019 which amounts to a 60% decrease from 2006 to 2019.

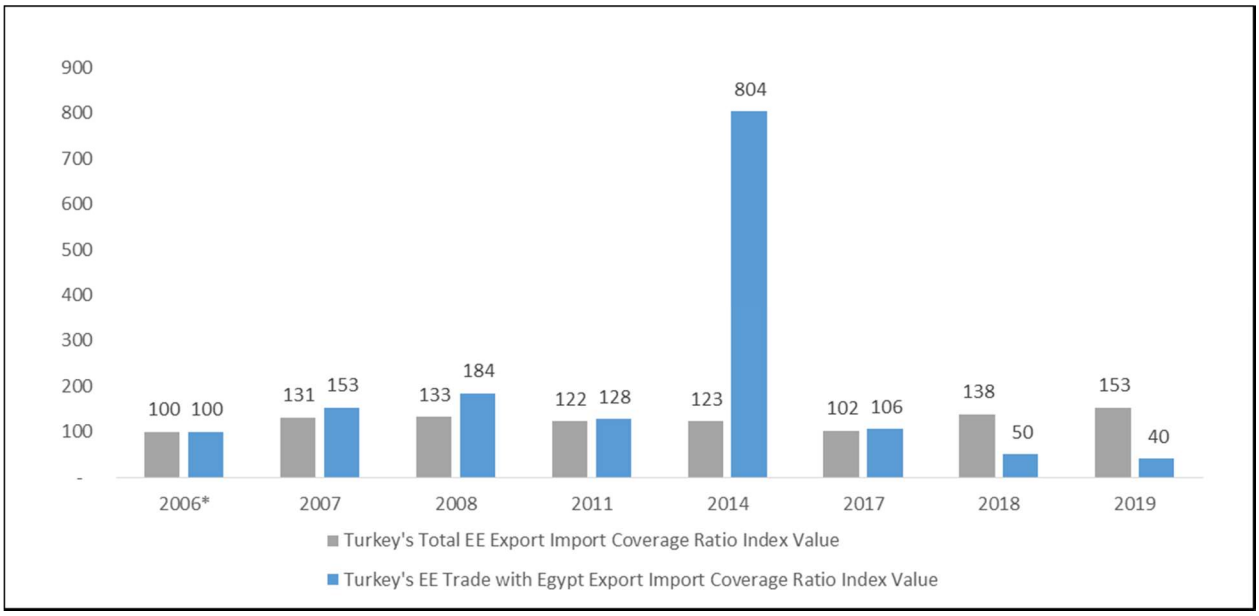

Figure 7. Turkey - Egypt EE Sector Export Import Coverage Ratio Index Value

*2006 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 7 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Egypt from 2006 to 2019 for selected years. As indicated in Figure 7, export import coverage ratio of sector's total followed an uneven trend since 2006 and increased 53 point from 2006 to 2019.

When the index values of the sector's bilateral trade with Egypt is examined, it can be clearly seen that the index values followed a volatile course and reached a record high in 2014 with 804 points then it fell down sharply and went down to 40 points in 2019. As illustrated in Figure 7 the agreement ensured a trade creation effect for the sector after the agreement entered into force in 2007. However the trade creation effect of the agreement disappeared for the last two years. Therefore, it can be argued that 60 points decrease in index value of Egypt as opposed to 53 points increase in the sector's general performance from 2006 to 2019 refers to a trade diversion effect of Turkey-Egypt free trade agreement for Turkish electrical and electronics sector.

4.8. Albania

Turkey and Albania signed a free trade agreement in 2006 which entered into force in May 2008. According to the agreement Turkey abolished custom tariffs on industrial goods as agreement entered into force while Albania abolished custom tariffs gradually

until January 2013 (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Albania is a part of Turkey's liability to align its trade policy with EU.

Table 28. Turkey – Albania Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2007	2008	2010	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	10.104	9.433	10.638	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	18.333	19.213	20.636	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO ALBANIA	25,98	26,76	25,13	29,79	27,51	37,85	33,86	32,62
TURKEY'S EE IMPORTS FROM ALBANIA	0,05	0,11	0,50	0,11	2,41	2,42	2,12	2,71
ALBANIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,26	0,28	0,24	0,24	0,20	0,31	0,26	0,25
ALBANIA'S SHARE IN TURKEY'S EE IMPORTS (%)	0,00	0,00	0,00	0,00	0,01	0,01	0,01	0,01

Source: (ITC Trademap, 2020)

Table 28 shows Turkish electrical and electronics sector's trade data with Albania as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2007) until 2019. As indicated in the table exports of Turkish EE sector was increased 31% from 2007 to 2019 and total imports of the sector increased only 12% within the same period.

As shown in Table 28 sector's exports to Albania was 26 million USD in 2007 and it followed an uneven course with the entry into force of agreement and reached up to 32,6 million USD in 2019 which amounts to a 26% increase from 2007 to 2019. On the other hand sector's imports from Albania increase steadily from 50 thousand USD in 2007 to 2,7 million USD in 2019.

When the share of Albania in Turkish electrical and electronics sector's exports is examined it can be clearly seen that it followed a steady course from 2007 to 2019 and remained almost unchanged as 0,25%. Moreover share of Albania in the sector's imports also remained insignificant with 0,001% in 2019.

Table 29 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Albania and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 55% in 2007 and went up to 64% in 2019.

Table 29. Turkey – Albania EE Sector Export Import Coverage Ratio

(%)

	2007	2008	2010	2011	2014	2017	2018	2019
TURKEY TOTAL EE SECTOR EXPORT IMPORT COVERAGE RATIO	55	49	52	51	52	43	58	64
TURKEY'S BILATERAL EE TRADE WITH EGYPT EXPORT IMPORT COVERAGE RATIO	57.731	23.474	4.995	26.841	1.143	1.564	1.595	1.204

Source: (ITC Trademap, 2020)

However it can be clearly seen from the table that export import coverage ratio of sector's trade with Albania followed a down trend. While sector's overall export import coverage ratio increases 16% from 2007 to 2019, export import coverage ratio of sector's trade with Albania went down from 57.731% in 2007 to 23.474% in 2008 when the agreement entered into force. The down trend continued despite the agreement and export import coverage ratio of sector's trade with Albania went down to 1.204% in 2019.

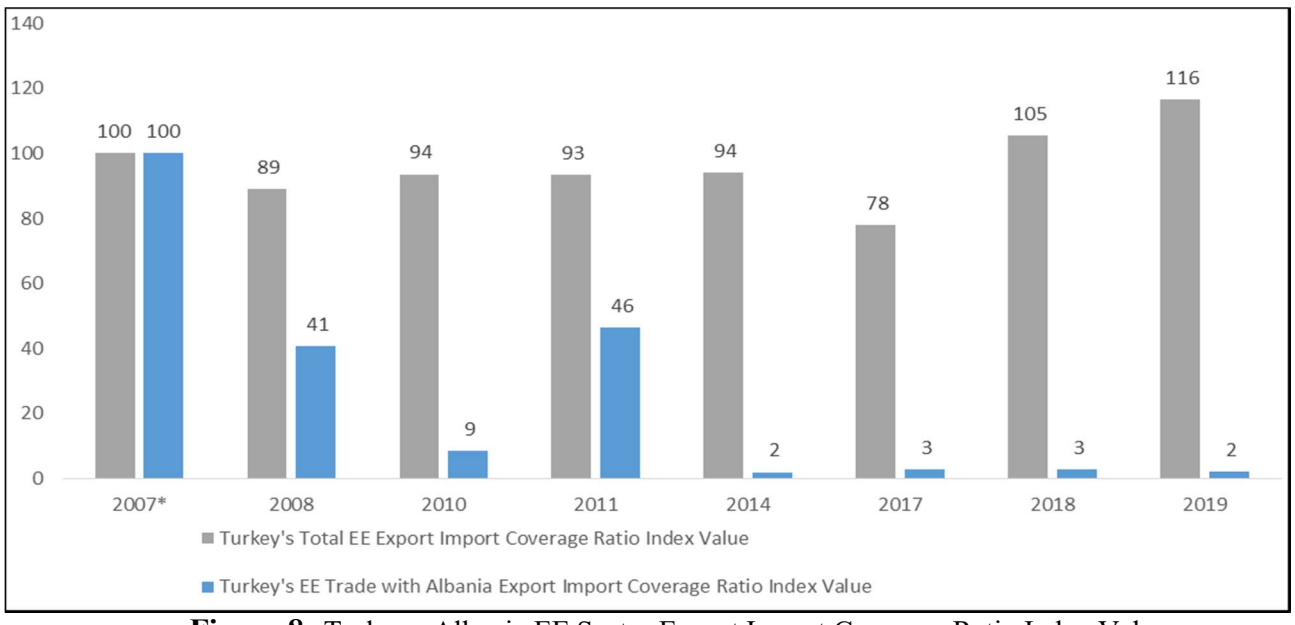

Figure 8. Turkey - Albania EE Sector Export Import Coverage Ratio Index Value

*2007 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 8 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Albania from 2007 to 2019 for selected years. As indicated in Figure 8, export import coverage ratio of sector's total followed a volatile trend since 2007 and showed 16 points increase in 2019.

When the index values of the sector's bilateral trade with Albania is examined, it can be clearly seen that the index value fell down sharply after 2007 despite the free trade agreement and went down to 2 points in 2019. In this context the sharp decrease in index value of Albania as opposed to 16 points increase in the sector's general performance refers to a trade diversion effect of Turkey-Albania free trade agreement for Turkish electrical and electronics sector.

4.9. Georgia

Turkey and Georgia signed a Free Trade Agreement in 2007 which entered into force in November 2008. According to the agreement both parties abolished custom tariffs for industrial products as the agreement entered into force (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Georgia is a part of Turkey's liability to align its trade policy with EU.

Table 30 shows Turkish electrical and electronics sector's trade data with Georgia as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2007) until 2019. As indicated in the table exports of Turkish EE sector was increased 31% from 2007 to 2019 and total imports of the sector increased only 12% within the same period.

As shown in Table 30 sector's exports to Georgia was nearly 69 million USD in 2007 and increased significantly after the free trade agreement entered into force in 2008 and reached up to 168 million USD in 2014. Then it started to decrease and went down to 143 million USD in 2019. On the other hand, sector's imports from Georgia increased within the same period. While imports from Georgia was only 0,06 million USD in 2007, it increased to 17,5 million USD in 2014. However it started to fall afterwards and went down to 6,56 million USD in 2019.

Table 30. Turkey – Georgia Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2007	2008	2010	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	10.104	9.433	10.638	12.234	13.824	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	18.333	19.213	20.636	23.802	26.675	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO GEORGIA	69,16	82,48	79,33	121,83	168,27	118,33	129,14	143,28
TURKEY'S EE IMPORTS FROM GEORGIA	0,06	1,20	2,81	15,95	17,49	9,97	8,83	6,56
GEORGIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,68	0,87	0,75	1,00	1,22	0,98	0,98	1,08
GEORGIA'S SHARE IN TURKEY'S EE IMPORTS (%)	0,00	0,01	0,01	0,07	0,07	0,04	0,04	0,03

Source: (ITC Trademap, 2020)

It is evident in the table that the share of Georgia in Turkish electrical and electronics sector's exports fluctuated over the years and reached up to 1,08% in 2019 while it was 0,68% in 2007. On the other hand share of Georgia in the sector's imports remained insignificant with 0,03% in 2019 despite the increase in import values.

Table 31 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Georgia and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 55% in 2007 and went up to 64% in 2019 which indicates a 31% increase.

Table 31. Turkey – Georgia EE Sector Export Import Coverage Ratio

(%)

	2007	2008	2010	2011	2014	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	55	49	52	51	52	43	58	64
TURKEY'S BILATERAL EE TRADE WITH GEORGIA EXPORT IMPORT COVERAGE RATIO	121.330	6.868	2.822	764	962	1.187	1.463	2.183

Source: (ITC Trademap, 2020)

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with Georgia followed and opposite direction then sector's total trade. While sector's overall export import coverage ratio increased from 2007 to 2019, export import coverage ratio of the sector's bilateral trade with Georgia decreased sharply after

the agreement and decreased from 121.330% in 2007 to 2.183% in 2019 which amounts to a 98% decrease from 2007 to 2019 despite the agreement.

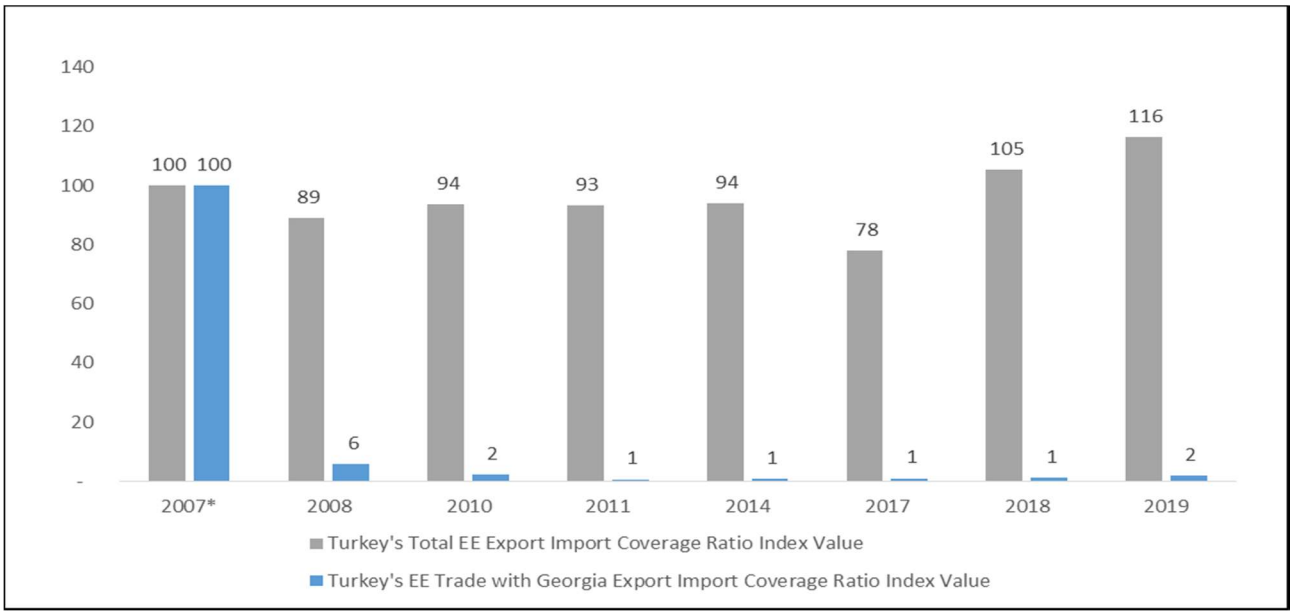

Figure 9. Turkey - Georgia EE Sector Export Import Coverage Ratio Index Value

*2007 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 9 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Georgia from 2007 to 2019 for selected years. As indicated in Figure 9, export import coverage ratio of sector's total followed a volatile trend since 2007 and showed 16 points increase in 2019.

When the index values of the sector's bilateral trade with Georgia is examined, it can be clearly seen that the index value decreased sharply especially after the agreement entered into force in 2008 and went down to 2 points in 2019. In this context 98 points decrease in index value of Georgia as opposed to 16 points increase in the sector's general performance refers to a trade diversion effect of Turkey-Georgia free trade agreement for Turkish electrical and electronics sector.

4.10. Serbia

Turkey and Serbia signed a Free Trade Agreement in 2009 which entered into force in September 2010. According to the agreement Turkey abolished custom tariffs for industrial products as the agreement entered into force while a transition period for Serbia is stipulated until January 2015 for tariff elimination (Turkish Ministry of Trade,

2020a). The free trade agreement revised in 2019 to cover services sectors and expanding agricultural concessions.

Table 32 shows the Turkish electrical and electronics sector's trade data with Serbia as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2009) until 2019. As indicated in the table exports of the sector was increased 23% from 2009 to 2019 and total imports also increased 21% within the same period.

As shown in Table 32 sector's exports to Serbia was 37,2 million USD in 2009 and followed an upward trend afterwards. While it was 39,7 million USD when the agreement entered into force in 2010 and it reached up to 140 million USD in 2019. On the other hand, sector's imports from Serbia also increased from 1,1 million USD in 2009 to 36,9 million USD in 2019 which amounts to a 33,2 fold increase.

Table 32. Turkey – Serbia Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2009	**2010**	**2012**	**2014**	**2016**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	10.712	10.638	13.101	13.824	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	17.000	20.636	23.622	26.675	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO SERBIA	37,2	39,7	72,4	89,1	92,9	112,6	145,4	140,0
TURKEY'S EE IMPORTS FROM SERBIA	1,1	2,3	4,9	2,7	5,8	13,5	27,9	36,9
SERBIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,35	0,37	0,55	0,64	0,81	0,93	1,11	1,06
SERBIA'S SHARE IN TURKEY'S EE IMPORTS (%)	0,01	0,01	0,02	0,01	0,02	0,05	0,12	0,18

Source: (ITC Trademap, 2020)

As it can be seen from the table the share of Serbia in the Turkish electrical and electronics sector's exports increased from 1,1% in 2009 to 36,9% in 2019. On the other hand, the share of Serbia in sector's increased from 0,01% in 2009 to 0,18% in 2019.

Table 33 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Serbia and sector's total trade with world for

selected years. As indicated in the table sector's total export import coverage ratio was 63% in 2009 and went up to 64% in 2019.

Table 33. Turkey – Serbia EE Sector Export Import Coverage Ratio

(%)

	2009	2010	2012	2014	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	63	52	55	52	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH SERBIA EXPORT IMPORT COVERAGE RATIO	3.349	1.762	1.490	3.267	1.608	833	522	379

Source: (ITC Trademap, 2020)

It can be clearly seen from the table that export import coverage ratio of the sector's bilateral trade with Serbia underperformed than sector's total trade. While sector's overall export import coverage ratio increased only 1,8% from 209 to 2019, export import coverage ratio of the sector's bilateral trade with Serbia increased from 3.349% in 2009 to 379% in 2019 which amounts to a 89% decrease from 2009 to 2019.

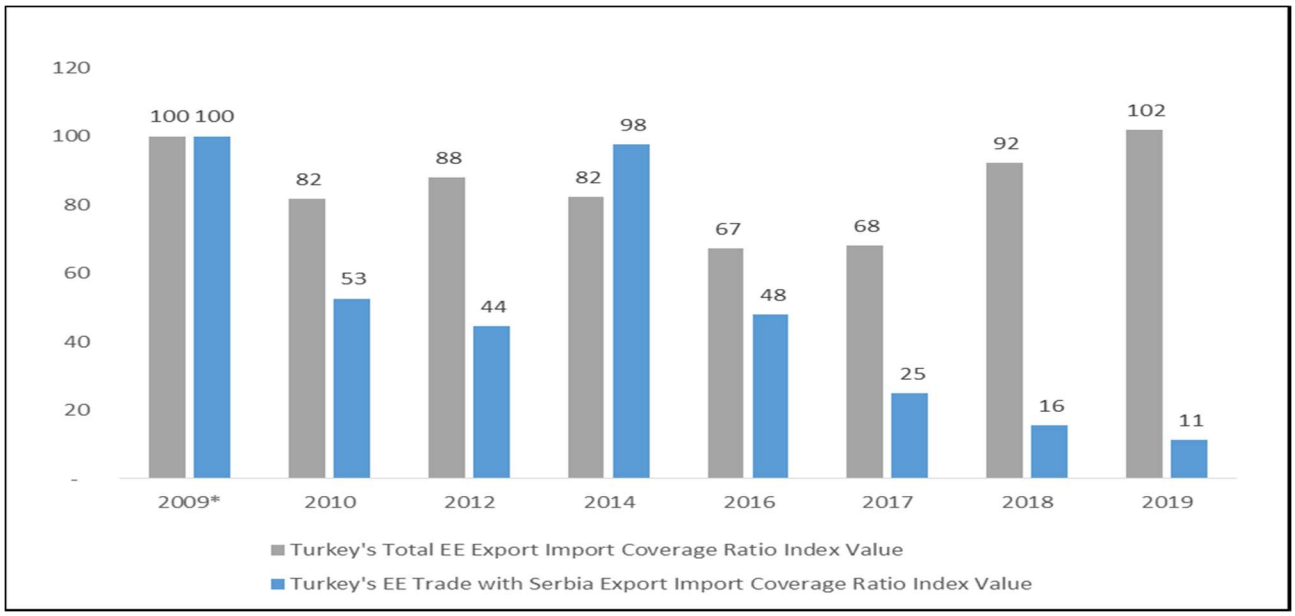

Figure 10. Turkey - Chile EE Sector Export Import Coverage Ratio Index Value

* 2010 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 10 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Serbia from 2009 to 2019 for selected years. As indicated in Figure 10, export import coverage ratio of sector's total followed an uneven course and increased only 2 points from 2009 to 2019.

When the index values of the sector's bilateral trade with Serbia is examined, it can be clearly seen that the index value followed a volatile trajectory over the years. When the agreement entered into force in 2010, it started to fall but it increased in 2014 up to 98 points. However it fell down afterwards and decreased to 11 points in 2019. In this context 89 points decrease in the index value of Serbia as opposed to 2 points increase in the sector's general performance refers to a trade diversion effect of Turkey-Serbia free trade agreement for Turkish electrical and electronics sector.

4.11. Chile

Turkey and Chile signed a Free Trade Agreement in 2009 which entered into force in March 2011. According to the agreement Turkey abolished custom tariffs for industrial products as the agreement entered into force while a transition period for Chile is stipulated until January 2015 for tariff elimination (Turkish Ministry of Trade, 2020a). The free trade agreement signed with Chile is a part of Turkey's liability to align its trade policy with EU.

Table 34 shows Turkish electrical and electronics sector's trade data with Chile as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2010) until 2019. As indicated in the table exports of Turkish EE sector was increased 24% from 2010 to 2019 and total imports remained stable within the same period.

As shown in Table 34 sector's exports to Chile was 4 million USD in 2010 and followed an uneven course while it was nearly 6,7 million USD when the agreement entered into force in 2011 and reached up to 15,3 million USD in 2019. On the other hand, sector's imports from Chile decreased from 20 thousand USD in 2010 to 6 thousand USD in 2019 despite the free trade agreement.

Table 34. Turkey – Chile Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2010	2011	2012	2014	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	10.638	12.234	13.101	13.824	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	20.636	23.802	23.622	26.675	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO CHILE	4,01	12,03	5,23	6,66	9,89	11,94	10,30	15,30
TURKEY'S EE IMPORTS FROM CHILE	0,02	0,01	0,04	0,05	-	0,049	0,008	0,006
CHILE'S SHARE IN TURKEY'S EE EXPORTS (%)	0,04	0,10	0,04	0,05	0,09	0,10	0,08	0,12
CHILE'S SHARE IN TURKEY'S EE IMPORTS (%)	0,00	0,00	0,00	0,00	-	0,00	0,00	0,00

Source: (ITC Trademap, 2020)

As it can be seen from the table the share of Chile in Turkish electrical and electronics sector's exports increased from 0,04% in 2010 to 0,12% in 2019. Nevertheless, the share of Chile in sector's imports remained insignificant.

Table 35 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Chile and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 51% in 2010 and went up to 64% in 2019.

Table 35. Turkey – Chile EE Sector Export Import Coverage Ratio

(%)

	2010	**2011**	**2012**	**2014**	**2016**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	52	51	55	52	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH CHILE EXPORT IMPORT COVERAGE RATIO	26.733	240.660	11.877	13.871	#SAYI/0!	24.369	128.775	254.983

Source: (ITC Trademap, 2020)

It can be clearly seen from the table that export import coverage ratio of the sector's bilateral trade with Chile outperformed sector's total trade. While sector's overall export import coverage ratio increased 24% from 2010 to 2019, export import coverage

ratio of sector's trade with Chile increased from 26.733% in 2010 and to 254.983% in 2019 which amounts to a 9,5 fold increase from 2010 to 2019.

Figure 11 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Chile from 2010 to 2019 for selected years. As indicated in Figure 11, export import coverage ratio of sector's total followed an uneven course and increased 24 points from 2010 to 2019.

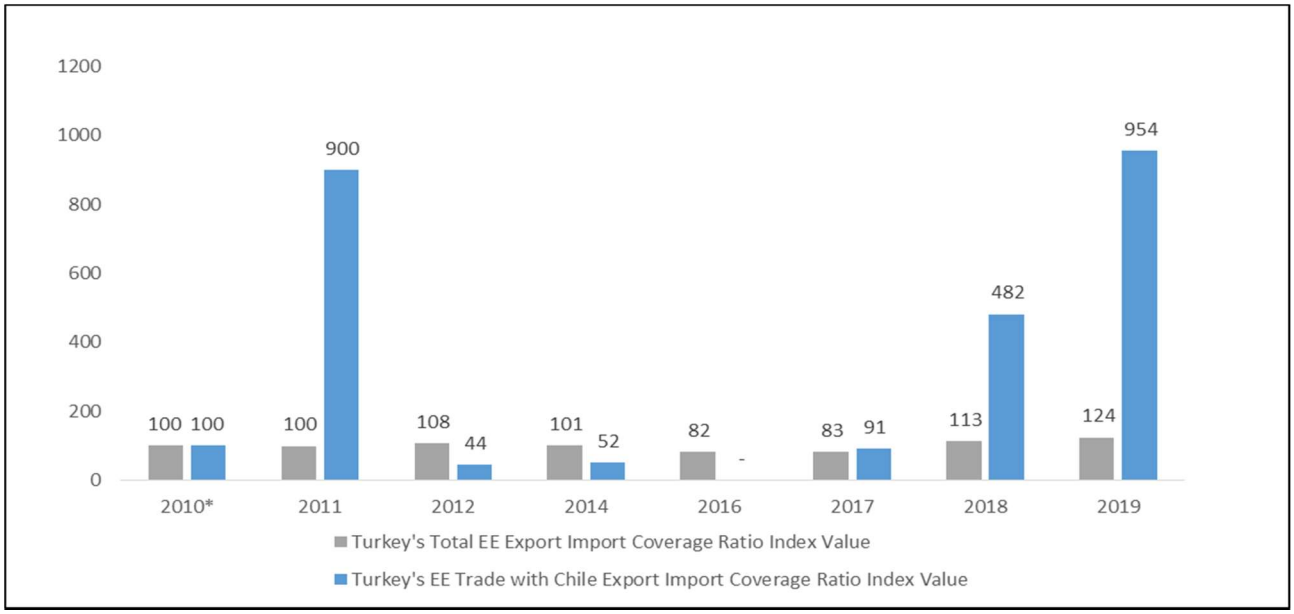

Figure 11. Turkey - Chile EE Sector Export Import Coverage Ratio Index Value

*2010 is accepted as base year with a value of 100 points and index values are calculated accordingly.

When the index values of the sector's bilateral trade with Chile is examined, it can be clearly seen that the index value followed a volatile course over the years. When the agreement entered into force in 2011, it skyrocketed and reached up to 900 points. Afterwards, it fell down until 2018 and started to increase again and reached up to 954 points in 2019. In this context 854 points increase in index value of Chile as opposed to 24 points increase in the sector's general performance refers to a trade creation effect of Turkey-Chile free trade agreement for Turkish electrical and electronics sector.

4.12. Mauritius

Turkey and Mauritius signed a Free Trade Agreement in 2011 which entered into force in January 2013. According to the agreement Turkey abolished custom tariffs for industrial products except some apparel and shoe products as the agreement entered into

force while a transition period for Mauritius is stipulated until January 2022 (Turkish Ministry of Trade, 2020a).

Table 36 shows Turkish electrical and electronics sector's trade data with Mauritius as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2012) until 2019. As indicated in the table exports of the Turkish EE sector was increased only 1% from 2012 to 2019 and total imports of the sector decreased 13% within the same period.

Table 36. Turkey – Mauritius Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	13.101	13.286	13.824	11.953	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	23.622	26.146	26.675	25.225	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO MAURITIUS	7,24	5,75	7,79	6,56	6,68	18,74	9,89	10,44
TURKEY'S EE IMPORTS FROM MAURITIUS	0,13	0,11	0,08	0,10	0,09	0,11	0,29	0,07
MAURITIUS'S SHARE IN TURKEY'S EE EXPORTS (%)	0,06	0,04	0,06	0,05	0,06	0,15	0,08	0,08
MAURITIUS'S SHARE IN TURKEY'S EE IMPORTS (%)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Source: (ITC Trademap, 2020)

As shown in Table 36 sector's exports to Mauritius was around 7,24 million USD in 2012 and followed an uneven course after the agreement. Nevertheless it reached up to 10,4 million USD in 2019. Similarly, sector's imports from Mauritius also followed an uneven course but it decreased from 130 thousand USD in 2012 to 70 thousand USD in 2019.

It is evident in the table that the share of Mauritius in Turkish electrical and electronics sector's exports increased slightly and reached up to 0,08% in 2019. However the share of Mauritius in sector's imports remained insignificant despite the free trade agreement.

Table 37 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Mauritius and sector's total trade with world for

selected years. As indicated in the table sector's total export import coverage ratio was 55% in 212 and went up to 64% in 2019.

Table 37. Turkey – Mauritius EE Sector Export Import Coverage Ratio

(%)

	2012	2013	2014	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	55	51	52	47	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH MAURITIUS EXPORT IMPORT COVERAGE RATIO	5.788	5.274	9.738	6.629	7.594	16.882	3.459	14.105

Source: (ITC Trademap, 2020)

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with Mauritius outperformed sector's total trade although the trade values are considerably small. While sector's overall export import coverage ratio increased 16% from 2012 to 2019, export import coverage ratio of the sector's bilateral trade with Mauritius increased 5.788% in 2012 to 14.105% in 2019 which amounts to a 2,4 fold increase from 2012 to 2019.

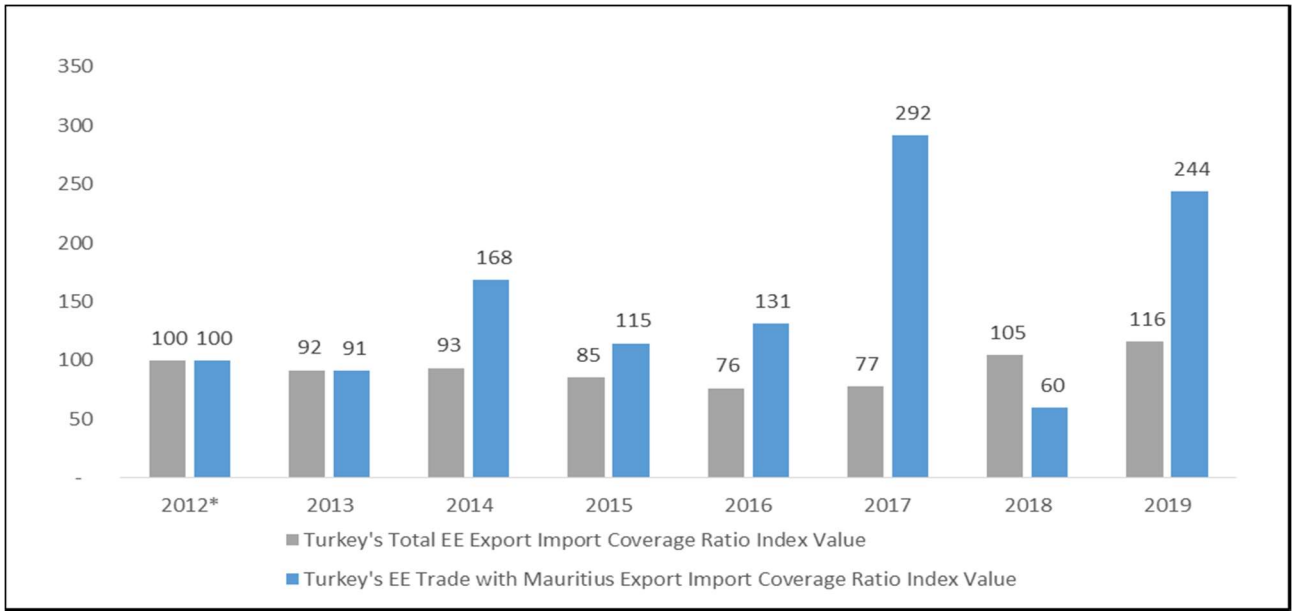

Figure 12. Turkey - Mauritius EE Sector Export Import Coverage Ratio Index Value

*2012 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Figure 12 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Mauritius from 2012 to 2019

for selected years. As indicated in Figure 12, export import coverage ratio of sector's total followed a volatile course since 2012 and showed a 16 points increase in 2019.

When the index values of the sector's bilateral trade with Mauritius is examined, it can be clearly seen that the index value increased especially after entry into force of the agreement and reached a record high with 292 points in 2017 and then fell down to 244 points in 2019. In this context 144 points increase in index value of Mauritius as opposed to 16 points increase in the sector's general performance refers to a trade creation effect of Turkey-Mauritius free trade agreement for Turkish electrical and electronics sector.

4.13. South Korea

Turkey and South Korea signed a free trade deal in 2012 which entered into force May 2013. According to the agreement South Korea abolished 85% of custom tariffs while Turkey abolished 65% of custom tariffs as the agreement entered into force. Parties agreed to eliminate 90% of all tariffs until January 2023. The FTA with South Korea is the first FTA that Turkey signed in Asia-Pacific region (Turkish Ministry of Trade, 2020a).

Table 38 shows Turkish electrical and electronics sector's trade data with South Korea as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2012) until 2019. As indicated in the table exports of the Turkish EE sector was increased only 1% from 2012 to 2019 and total imports of the sector decreased 13% within the same period.

As shown in Table 38 sector's exports to South Korea was 19,9 million USD in 2012 and followed an uneven course and increased up to 43,9 million USD in 2016 yet it decreased afterwards and went down to 18,17 million USD in 2019 which amounts to a 27% decrease from 2012 to 2019. On the other hand, sector's imports from South Korea increased until 2015 but then decreased steadily and went down to 2.1 billion USD in 2014. Then it started to decrease and went down to 453 million USD in 2019 while it was 1.416 million USD in 2012.

Table 38. Turkey – South Korea Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2012	2013	2014	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	13.101	13.286	13.824	11.953	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	23.622	26.146	26.675	25.225	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO S.KOREA	19,93	22,54	18,40	23,41	43,91	28,81	21,15	18,17
TURKEY'S EE IMPORTS FROM S.KOREA	1.416	1.567	2.145	1.861	1.271	916	707	453
S.KOREA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,15	0,17	0,13	0,20	0,38	0,24	0,16	0,14
S.KOREA'S SHARE IN TURKEY'S EE IMPORTS (%)	5,99	5,99	8,04	7,38	4,70	3,24	3,13	2,20

Source: (ITC Trademap, 2020)

It is evident in the table that the share of South Korea in Turkish electrical and electronics sector's exports also followed an uneven course and fell from 0,15% in 2012 to 0,14% in 2019. However share of South Korea in sector's imports followed a more volatile course while it was 6% in 2012 and increased to 8% in 2014. Nevertheless the increase was not persistent and South Korea's share in the sector's imports fell down to 2,2% in 2019.

Table 39 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with South Korea and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 55% in 2012 and went up to 64% in 2019 which indicates a 16% increase.

Table 39. Turkey – South Korea EE Sector Export Import Coverage Ratio

(%)

	2012	2013	2014	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	55	51	52	47	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH S.KOREA EXPORT IMPORT COVERAGE RATIO	1,4	1,4	0,9	1,3	3,5	3,1	3,0	4,0

Source: (ITC Trademap, 2020)

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with South Korea is substantially lower than sector's total trade. However export import coverage ratio of the sector's bilateral trade with South Korea increased from 1,4% in 2012 to 4% in 2019 which amounts to a 185% increase from 2012 to 2019 opposed to 16% increase of sector's overall export import coverage ratio from 2012 to 2019.

Figure 13 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with South Korea from 2012 to 2019 for selected years. As indicated in Figure 13, export import coverage ratio of sector's total followed a volatile course since 2012 and showed a 16 points increase in 2019.

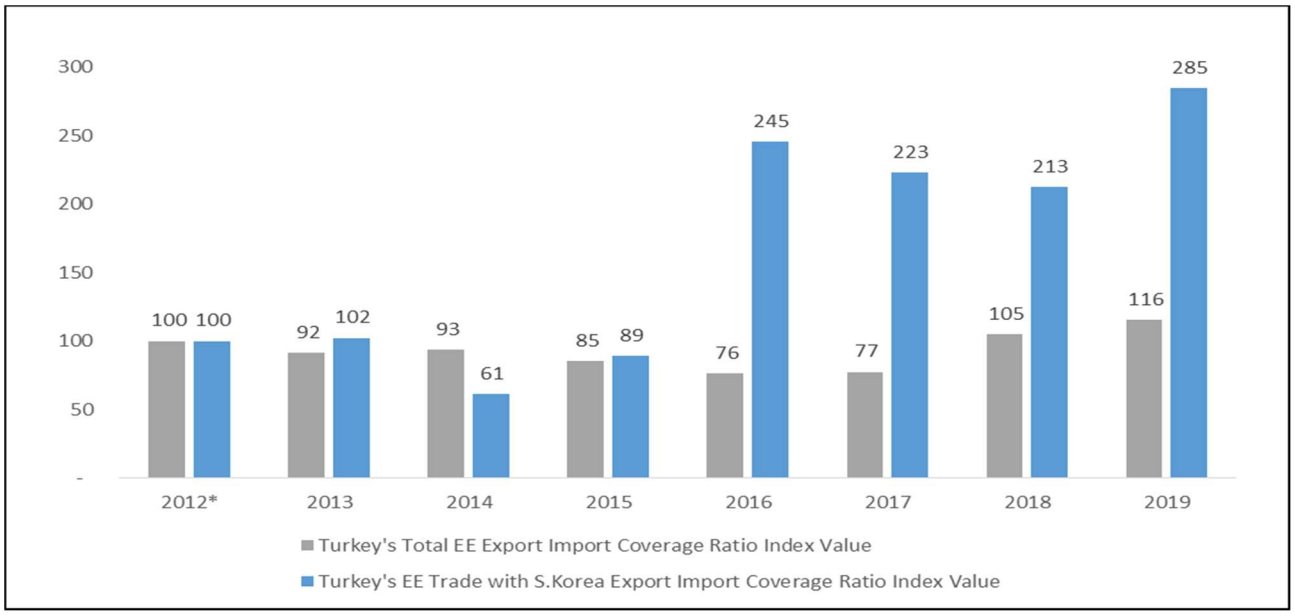

Figure 13. Turkey – South Korea EE Sector Export Import Coverage Ratio Index Value

*2012 is accepted as base year with a value of 100 points and index values are calculated accordingly.

Similarly, when the index values of the sector's bilateral trade with South Korea is examined, it can be seen that the index values followed a volatile course although it showed a better performance after 2015 and reached up to 285 points in 2019. However 185 points increase in index value of South Korea as opposed to 16 points increase in the sector's general performance from 2012 to 2019 refers to a trade creation effect of Turkey-South Korea free trade agreement for Turkish electrical and electronics sector.

4.14. Malaysia

Turkey and Malaysia signed a Free Trade Agreement in 2014 which entered into force in August 2015. According to the agreement parties agreed to abolish 70% of custom tariffs bilaterally as the agreement entered into force and after 8 years of transition period is stipulated for the remaining tariffs. The free trade agreement signed with Malaysia is the first free trade agreement that Turkey signed with an ASEAN member (Turkish Ministry of Trade, 2020a).

Table 40 shows Turkish electrical and electronics sector's trade data with Malaysia as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2014) until 2019. As indicated in the table exports of the Turkish EE sector was decreased 4% from 2014 to 2019 and total imports of the sector was decreased 23% within the same period.

Table 40. Turkey – Malaysia Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2014	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	13.824	11.953	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	26.675	25.225	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO MALAYSIA	11,95	11,96	10,39	13,57	12,91	12,77
TURKEY'S EE IMPORTS FROM MALAYSIA	270,61	227,07	484,74	957,90	336,03	329,36
MALAYSIA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,09	0,10	0,09	0,11	0,10	0,10
MALAYSIA'S SHARE IN TURKEY'S EE IMPORTS (%)	1,01	0,90	1,79	3,39	1,49	1,60

Source: (ITC Trademap, 2020)

As shown in Table 40 the sector's exports to Malaysia was 11,95 million USD in 2014 and followed a volatile course over the years. While it reached up to 13,57 million USD in 2017, afterwards it decreased slightly and went down to 12,77 million USD in 2019. On the other hand, sector's imports from Malaysia outperformed exports although it followed a more volatile course. In 2014 sector's imports from Malaysia was only 270,61 million USD and skyrocketed after the agreement and reached up to 957,9 million USD in 2017 although it decreased sharply and went down to 329,36 million USD in 2019.

When the share of Malaysia in the Turkish electrical and electronics sector's exports examined it is clear that it followed a stable course and remained 0,1% in 2019. Nevertheless share of Malaysia in the sector's in sector's imports followed an uptrend as it was 1,01 % in 2014 and reached up to 3,39% in 2017. However it decreased afterwards and went down to 1,6% in 2019 which amounts to a 58% increase from 2014 to 2019.

Table 41. Turkey – Malaysia EE Sector Export Import Coverage Ratio

(%)

	2014	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	52	47	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH MALAYSIA EXPORT IMPORT COVERAGE RATIO	4,4	5,3	2,1	1,4	3,8	3,9

Source: (ITC Trademap, 2020)

Table 41 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Malaysia and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 52% in 2014 and went up to 64% in 2019 which indicates a 24% increase.

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with Malaysia followed an uneven course but remained at the same level. While sector's overall export import coverage ratio increase 24% from 2014 to 2019, export import coverage ratio of the sector's bilateral trade with Malaysia decreased from 4,4% in 2014 down to 3,9% in 2019 which amounts to a 12% decrease from 2014 to 2019.

Figure 14 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Malaysia from 2014 to 2019 for selected years. As indicated in Figure 14, export import coverage ratio of sector's total followed a volatile course since 2014 and showed a 24 points increase in 2019.

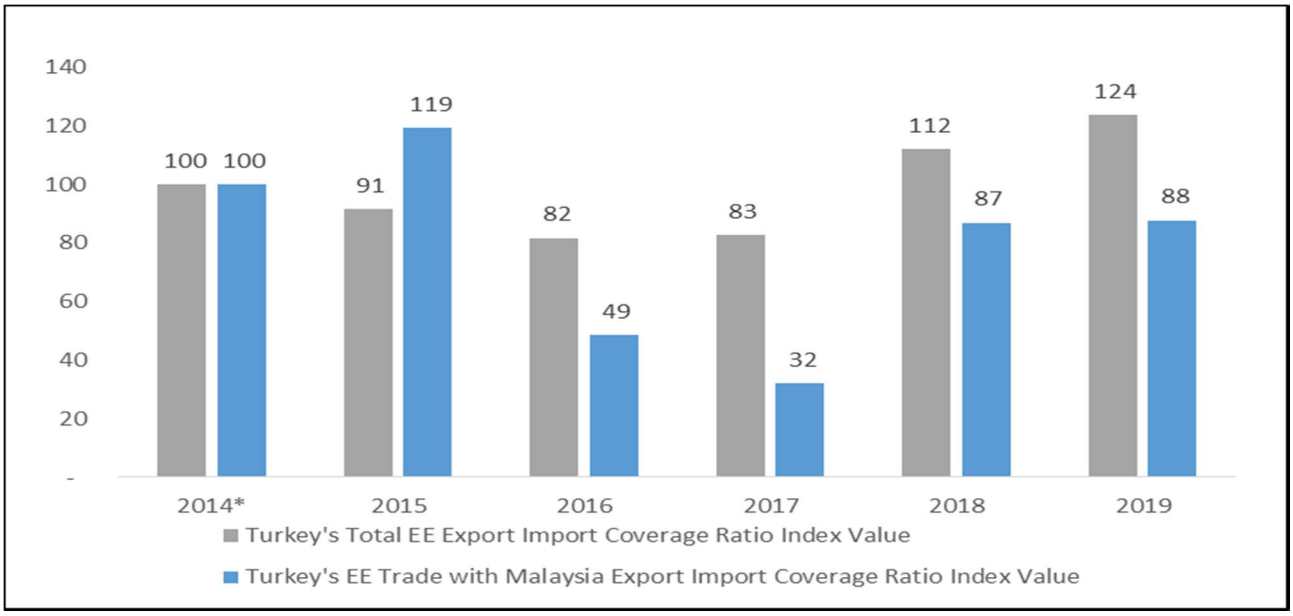

Figure 14. Turkey - Malaysia EE Sector Export Import Coverage Ratio Index Value

*2014 is accepted as base year with a value of 100 points and index values are calculated accordingly.

When the index values of the sector's bilateral trade with Malaysia is examined, it can be clearly seen that the index value increased sharply after the agreement although it started to decrease afterwards and went down to 88 points in 2019. In this context 12 points decrease in index value of Malaysia as opposed to 24 points increase in the sector's general performance refers to a trade diversion effect of Turkey-Malaysia free trade agreement for Turkish electrical and electronics sector.

4.15. Moldova

Turkey and Moldova signed a Free Trade Agreement in 2014 which entered into force in September 2016. According to the agreement Turkey abolished custom tariffs for industrial goods as the agreement entered into force while a transition period of Moldova is stipulated until November 2020 (Turkish Ministry of Trade, 2020a).

Table 42 shows Turkish electrical and electronics sector's trade data with Moldova as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2015) until 2019. As indicated in

the table exports of the Turkish EE sector was decreased 11% from 2015 to 2019 while total imports of the sector was decreased 18% within the same period.

Table 42. Turkey – Moldova Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT	11.953	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	25.225	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO MOLDOVA	11,63	10,45	11,91	14,6	17,24
TURKEY'S EE IMPORTS FROM MOLDOVA	0,03	0,03	0,03	0,09	0,07
MOLDOVA'S SHARE IN TURKEY'S EE EXPORTS (%)	0,1	0,09	0,1	0,11	0,13
MOLDOVA'S SHARE IN TURKEY'S EE IMPORTS (%)	0	0	0	0	0

Source: (ITC Trademap, 2020)

As shown in Table 42 sector's exports to Moldova was 11,63 million USD in 2015 and reached up to 17,24 million USD in 2019. On the other hand, sector's imports from Moldova was around 30 thousand USD in 2015 and reached up to nearly 70 thousand USD in 2019.

It is evident in the table that the share of Moldova in Turkish electrical and electronics sector's exports increased slightly and reached up to 0,13% in 2019 while it was only 0,10% in 2015. Nevertheless share of Moldova in the sector's imports remained insignificant despite the free trade agreement.

Table 43 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Moldova and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 47% in 2015 and went up to 64% in 2019.

However it can be clearly seen that export import coverage ratio of the sector's bilateral trade with Moldova followed an opposite direction than sector's total trade. While sector's overall export import coverage ratio increased 35% from 2015 to 2019, export import coverage ratio of the sector's bilateral trade with Morocco decreased from

37.780% in 2015 to 25.357% in 2019 which amounts to a 35% decrease from 2015 to 2019.

Table 43. Turkey – Moldova EE Sector Export Import Coverage Ratio

(%)

	2015	2016	2017	2018	2019
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	47	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH MOLDOVA EXPORT IMPORT COVERAGE RATIO	38.780	41.804	47.632	16.779	25.357

Source: (ITC Trademap, 2020)

Figure 15 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Moldova from 2015 to 2019 for selected years. As indicated in Figure 14, export import coverage ratio of sector's total followed an uneven course but showed a 35 points increase in 2019

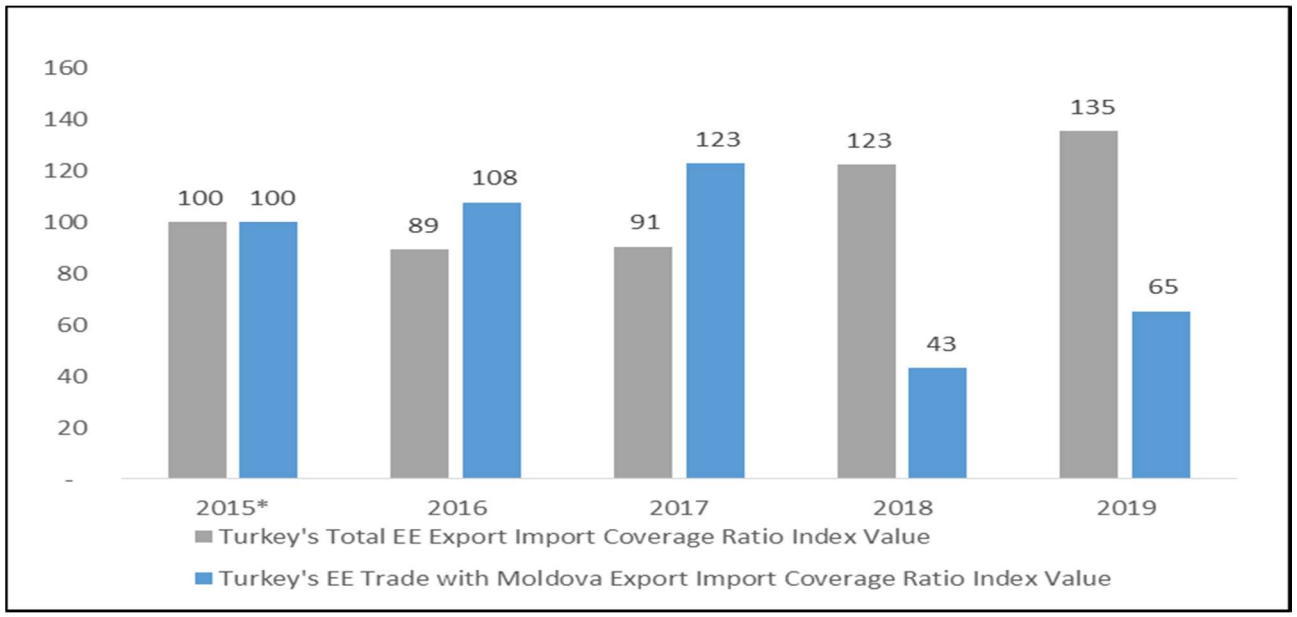

Figure 15. Turkey - Moldova EE Sector Export Import Coverage Ratio Index Value

*2015 is accepted as base year with a value of 100 points and index values are calculated accordingly.

When the index values of the sector's bilateral trade with Moldova is examined, it can be clearly seen that the index value increased tremendously and reached 123 points in 2017. However it fell sharply in 2018 and 2019 and went down to 65 points in 2019.

In this context 35 points decrease in the index value of the sector's bilateral trade with Moldova as opposed to a 35 points increase in the index value of the sector's general within the same period refers to a trade diversion effect of Turkey-Moldova free trade agreement for Turkish electrical and electronics sector.

4.16. Singapore

Turkey and Singapore signed a Free Trade Agreement in 2015 which entered into force in August 2017. According to the agreement Turkey abolished 80% of custom tariffs as the agreement entered into force and in 10 years it will go up to 95% while Singapore abolished all custom tariffs upon entry into force. FTA with Singapore is the third agreement of Turkey signed in Asia-Pacific region. Moreover it is the most comprehensive FTA signed by Turkey which includes services, investment, e-commerce, procurement etc. (Turkish Ministry of Trade, 2020a).

Table 44 shows Turkish electrical and electronics sector's trade data with Singapore as well as general trade performance of the sector for selected years beginning from one year before the agreement entered into force (2016) until 2019. As indicated in the table, exports of the Turkish EE sector was increased 15% from 2016 to 2019 while total imports of the sector was decreased 24% within the same period.

Table 44. Turkey – Singapore Electrical and Electronics Sector Foreign Trade Data

(million USD)

	2016	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT	11.449	12.124	13.125	13.209
TURKEY'S TOTAL EE IMPORT	27.019	28.251	22.592	20.590
TURKEY'S EE EXPORTS TO SINGAPORE	25,59	21,56	24,60	24,77
TURKEY'S EE IMPORTS FROM SINGAPORE	124,53	122,29	94,11	69,01
SINGAPORE'S SHARE IN TURKEY'S EE EXPORTS (%)	0,22	0,18	0,19	0,19
SINGAPORE'S SHARE IN TURKEY'S EE IMPORTS (%)	0,46	0,43	0,42	0,34

Source: (ITC Trademap, 2020)

As shown in Table 44, the sector's exports to Singapore was 25,6 million USD in 2016 and decreased over the years and went down to 24,77 million USD in 2019. On the other hand, sector's imports from Singapore also decreased after the agreement and went down to 69 million USD in 2019.

It is evident in the table that the share of Singapore in Turkish electrical and electronics sector's exports also decreased over the years went down to 0,19% in 2019 while it was 0,22% in 2016. Similarly share of Singapore in the sector's imports also followed a down trend as it was 0,46% in 2016 and went down to 0,34% in 2019.

Table 45. Turkey – Singapore EE Sector Export Import Coverage Ratio

(%)

	2016	**2017**	**2018**	**2019**
TURKEY'S TOTAL EE EXPORT IMPORT COVERAGE RATIO	42	43	58	64
TURKEY'S BILATERAL EE TRADE WITH SINGAPORE EXPORT IMPORT COVERAGE RATIO	21	18	26	36

Source: (ITC Trademap, 2020)

Table 45 shows export import coverage ratio of the Turkish electrical and electronics sector's bilateral trade with Singapore and sector's total trade with world for selected years. As indicated in the table sector's total export import coverage ratio was 42% in 2016 and went up to 64% in 2019 which indicates a 51% increase.

As shown in the table export import coverage ratio of the sector's bilateral trade with Singapore followed an uneven course. While sector's overall export import coverage ratio increased 51% from 2016 to 2019, export import coverage ratio of the sector's bilateral trade with Singapore increased from 21% in 2016 and reached up to 36% in 2019 which amounts to a 75% increase from 2016 to 2019.

Figure 16 shows the calculated index values of export import coverage ratios of both the sector's general and the sector's bilateral trade with Singapore from 2016 to 2019. As indicated in Figure 16, export import coverage ratio of sector's total followed an upward trend since 2016 and showed a 51 points increase in 2019.

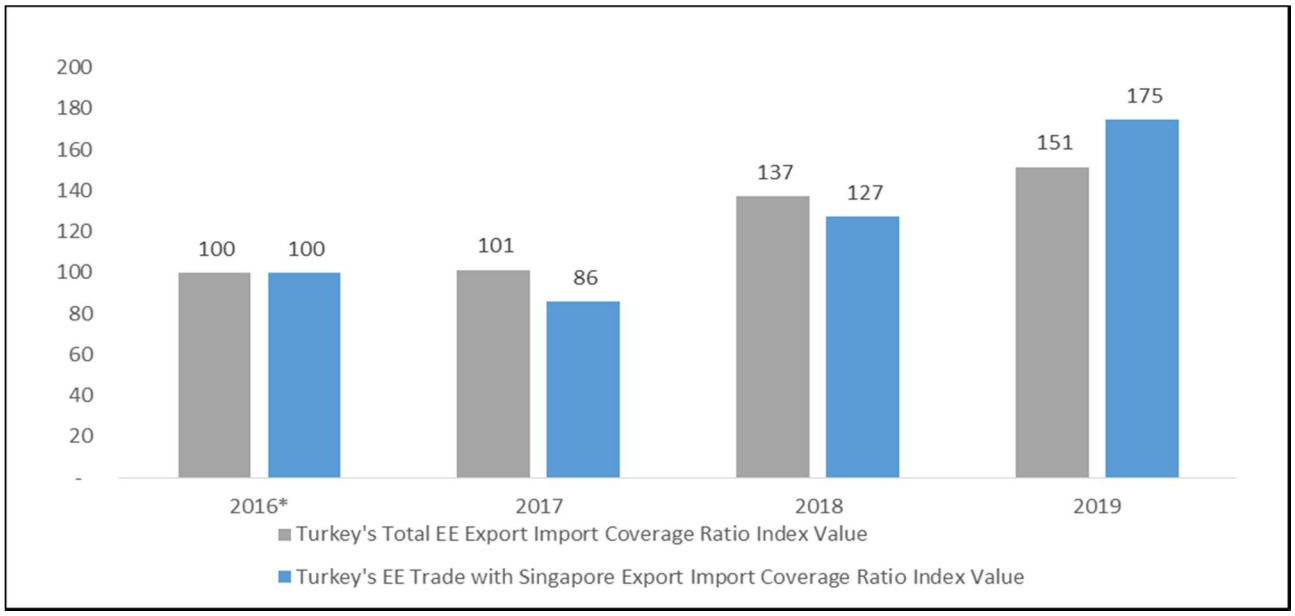

Figure 16. Turkey – Singapore EE Sector Export Import Coverage Ratio Index Value

*2016 is accepted as base year with a value of 100 points and index values are calculated accordingly.

When the index values of the sector's bilateral trade with Singapore is examined, it can be clearly seen that it outperformed sector's total. While it was 86 points in 2017 when the agreement entered into force, it increased afterwards and reached up to 175 points in 2019. In this context 75 points increase in the index value of the sector's bilateral trade with Singapore as opposed to 51 points increase in the sector's general performance refers to a trade creation effect of Turkey-Singapore free trade agreement for Turkish electrical and electronics sector.

5. CONCLUSION

Establishment of customs union between Turkey and European Union marks a transformation of Turkish trade policy which strengthens its export-oriented perspective. Turkey's liabilities stemming from customs union to align its trade policy with the EU as well as the challenges and asymmetric market reach that the customs union created pushed Turkey to expand its network of free trade agreements. In this regard Turkey signed free trade agreements with countries that already have a free trade agreement with the EU over the last 20 years.

In this study the effect of Turkey's free trade agreements on Turkish electrical and electronics sector is examined in terms of trade creation and trade diversion effects of economic integrations through export import coverage ratios. In order to assess the performance of the sector, an index of export import coverage ratio is constructed while one year before the free trade agreements entered into force is accepted as base year. However, for EFTA, Israel and Macedonia with whom Turkey signed free trade deals in the 1990s, 2001 is selected as base year because the oldest trade data available in the ITC Trademap database belongs to 2011. In this context while the index value of the base year accepted as 100 points and the index values of selected years are calculated accordingly. Index values for 16 FTAs are also calculated but Kosovo excluded from the analysis due to lack of trade data while Montenegro, Palestine and Faroe Islands are excluded because of extremely low trade volumes.

According to the calculated index value of export import coverage ratio of the sector's total followed an upward trend from 2001 to 2019. When the index values calculated for the sector's bilateral trade with FTA countries are compared with the sector's general, it is found that 8 of Turkey's FTAs have trade creation effect for the sector while 8 of the FTAs have trade diversion effect for the sector. The year of entry into force of the FTA, base year and index values of 2019 for both the sector's general and bilateral trade with FTA countries are showed in Table 46 as well as static effects of the FTA on the sector.

Table 46. Turkey's FTAs Effects on the Turkish Electrical and Electronics Sector, Calculated Index Values

Country	Year of Entry Into Force	Base Year	2019 Index Value Sector's Total	2019 Index Value Bilateral Trade	The Effect of The FTA
EFTA	1992	2001	174	230	Trade creation
Israel	1997	2001	174	184	Trade creation
Macedonia	2000	2001	174	40	Trade diversion
Bosnia-Herzegovina	2003	2002	184	300	Trade creation
Tunisia	2005	2004	176	4	Trade diversion
Morocco	2006	2005	177	1975	Trade creation
Egypt	2007	2006	153	40	Trade diversion
Albania	2008	2007	116	2	Trade diversion
Georgia	2008	2007	116	2	Trade diversion
Serbia	2010	2009	102	11	Trade diversion
Chile	2011	2010	124	954	Trade creation
Mauritius	2013	2012	116	244	Trade creation
South Korea	2013	2012	116	285	Trade creation
Malaysia	2015	2014	124	88	Trade diversion
Moldova	2016	2015	135	65	Trade diversion
Singapore	2017	2016	151	175	Trade creation

As illustrated in Table 46, FTAs with EFTA, Israel, Bosnia-Herzegovina, Morocco, Chile, Mauritius, South Korea and Singapore have trade creation effect on the Turkish electronical and electronics sector although their index values are diverse in a wide scale.

On the other hand, when Table 46 is examined, it is not possible to make any generalizations based on geographic proximity, population, regional and cultural ties or economic indicators such as GDP, per capita income or exchange rate regime etc. There may be several reasons that may explain the differences in performances such as disparities in their economic or political structures, production environment, involvement in other economic integrations, economic, political and cultural ties with other countries etc. However the exploring the reasons behind the performance differences are beyond the subject of this study which aims to determine the state of Turkish electrical and electronics sector in terms of Turkey's free trade agreements. Nonetheless it is suggested

that further studies should be encouraged to explore the reasons behind the performance differences since it will be beneficial for future free trade agreements of Turkey. Additionally, it is considered that the assessment of the electrical and electronics sector in terms of Turkey's economic integration policies will contribute to studies on sectoral impact analysis.

6. APPENDICES

Appendix 1. List of HS Codes of Electrical and Electronics Sector

Product Group	Sub-Group	HS Code
White Goods	Refrigerators	841810, 841821, 841829
	Freezers	841830, 841840
	Washing Machines	845011, 845012, 845019, 845020
	Clothes Dryers	842112
	Ovens and Cookers	851650, 851660
	Dishwashers	842211
Cables	Telecommunication Cables	854449
	Medium and High Voltage Energy Cables	854460
	Enameled Winding Wire	854411, 854419
	Coaxial Cables	854420
	Conductors Fitted with Connectors	854442
	Fiber Optic Cables	854470
Electricity Production and Distribution Equipment	Electricity Energy	271600
	Transformers and Inductors	850410, 850421, 850422, 850423, 850431, 850432, 850433, 850434, 850440, 850450, 850490
	Generators and Converters	850211, 850212, 850213, 850220, 850231, 850239, 850240
	Electric Motors and Alternators	850110, 850120, 850131, 850132, 850133, 850134, 850140, 850151, 850152, 850153, 850161, 850162, 850163, 850164
	Accumulators, Cells and Batteries	850610, 850630, 850640, 850650, 850660, 850680, 850690, 850710, 850720, 850730, 850740, 850750, 850760, 850780, 850790
	Circuit Breakers, Relays and Fuses	853510, 853521, 853529, 853530, 853540, 853590, 853610, 853620, 853630, 853641, 853649, 853650, 853661, 853669, 853670, 853690
	Panels	853710, 853720, 853810, 853890
	Lighting Equipment	851310, 851390, 853910, 853921, 853922, 853929, 853931, 853932, 853939, 853941, 853949, 853990, 940510, 940520, 940530, 940540, 940550, 940560, 940591, 940592, 940599
Consumer Electronics	TV Receivers	852872
	LCD Panel	853120
	Electric heaters	851631, 851633, 851680, 851690
	Small Household Appliances	850811, 850819, 850860, 850870, 850940, 850980, 850990, 851010, 851020, 851030, 851090, 851610, 851632, 851640, 851671, 851672, 851679

	Measuring Devices and Instruments	901410, 901420, 901480, 901490, 901510, 901520, 901530, 901540, 901580, 901590, 901600, 901720, 901730, 901780, 901790, 902480, 902490, 902511, 902519, 902580, 902590, 902610, 902620, 902680, 902710, 902720, 902730, 902750, 902780, 902790, 902810, 902820, 902830, 902890, 902910, 902990, 903010, 903020, 903031, 903032, 903033, 903039, 903040, 903082, 903084, 903089, 903090, 903110, 903120, 903141, 903149, 903180, 903190, 903210, 903220, 903281, 903289, 903290
	Data Processing Machines and Units	844332, 847130, 847141, 847149, 847150, 847160, 847170, 847180, 847190, 847330, 852842, 852852, 852862
	Medical Equipment and Devices	901811, 901812, 901813, 901814, 901819, 901820, 901832, 901839, 901841, 901849, 901850, 901890, 901910, 901920, 902140, 902150, 902190, 902212, 902213, 902214, 902219, 902221, 902229, 902230, 902290
	Telephone Apparatus and Stations	844331, 851711, 851712, 851718, 851761, 851762, 851769
	Sound and Video Apparatus and Stripes	851810, 851821, 851822, 851829, 851830, 851840, 851850, 851890, 851920, 851930, 851950, 851981, 851989, 852110, 852190, 852321, 852329, 852341, 852349, 852351, 852359, 852380, 852712, 852713, 852719, 852721, 852729, 852791, 852792, 852799
	Typewriters, Calculating Machines and Office Machines	846900, 847010, 847021, 847029, 847030, 847050, 847290, 847321, 847329, 847340, 847350
	Other Durable Goods	852550, 852560, 852580, 852610, 852691, 852692, 854370, 910211, 910212, 910219, 910221, 910229, 910291, 910299, 910310, 910390, 910511, 910519, 910521, 910529, 910591, 910599, 910610, 910690, 910700, 910811, 910812, 910819, 910820, 910890, 910910, 910990, 911011, 911012, 911019, 911090, 911110, 911120, 911180, 911190, 911220, 911290, 911390, 911410, 911430, 911440, 911490
	Other Electrical and Electronics Equipment	844339, 844399, 845090, 848620, 848630, 848640, 848690, 850300, 851230, 851770, 852210, 852290, 852352, 852849, 852859, 852869, 852871, 852873, 852910, 852990, 853080, 853090, 853110, 853180, 853190, 853210, 853221, 853222, 853223, 853224, 853225, 853229, 853230, 853290, 853310, 853321, 853329, 853331, 853339, 853340, 853390, 853400, 853950, 854011, 854012, 854020, 854040, 854060, 854071, 854079, 854081, 854089, 854091, 854099, 854110, 854121, 854129, 854130, 854140, 854150, 854160, 854190, 854231, 854232, 854233, 854239, 854290, 854310, 854320, 854330, 854390, 854511, 854519, 854520, 854590, 854610, 854620, 854690, 854710, 854720, 854790, 854810, 854890, 900110, 900211, 900219, 900220, 900290, 900510, 900580, 900590, 900630, 900640, 900651, 900652, 900653, 900659, 900661, 900669, 900691, 900699, 900710, 900720, 900791, 900792, 900850, 900890, 901010, 901050, 901060, 901090, 901110, 901120, 901180, 901190, 901210, 901290, 901310, 901320, 901380, 901390, 903300, 920710, 920790, 920994, 950300, 950430, 950450, 950490, 960390, 962000

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