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Turkey and Its Preferential Trade Agreements (PTAs)

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Since the adoption of the liberalization measures of 1980s, the establishment of Customs Union (CU) with the European Union (EU) has been the most important development in foreign trade relations of Turkey. In addition to the imposition of the Common Customs Tariff (CET), Turkey has to align her preferential trade regime applied towards third countries in accordance to the rules and regulations of Turkey – EU Council Decision of 1995. According to that, Turkey will take the necessary measures and negotiate agreements on a mutually advantageous basis with the third countries in order to harmonise her commercial policy further with the EU's.

This paper reports the results from a comparative static global CGE -Globe- model that quantifies the impact on Turkey of the EU – Turkey Customs Union, EFTA – Turkey and Euro-Med countries – Turkey preferential trade agreements (PTAs). The macroeconomic implications of Turkey's preferential trade agreements and therefore, the elimination of bilateral trade tariffs on trade in food and industrial products are analyzed by comparing the results with the baseline scenario of no trade liberalisation between Turkey and the PTA partners with the baseline year of 2001.

The analyses are carried out using a 17-region, 23-sector and 5-factor global computable general equilibrium model that is implemented in GAMS (McDonald et al, 2005).

Keywords: Preferential Trade Agreements, European Union, Turkey

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1. Introduction

Following the multilateral trade negotiations of the GATT, the trend toward global trade liberalisation accelerated leading to the proliferation of the preferential trade agreements.

Since 1980s Turkey has started to adapt itself to globalisation by changing its economic development strategy from an 'import substituting industrialisation' to an 'export led growth' with the initiation of the export-promoting incentives such as tax exemptions and favourable credit terms (Turkish Undersecreteriat of Foreign Trade*a*, 2007). Just about at the same time, regionalism revived with the 'second wave of regionalism', accelerating particularly in Europe (Bhagwati *et* al. 1999). Turkey had to follow the trend if wanted to participate in the world trade as an effective player.

Since the adoption of the liberalization measures of 1980s, the establishment of Customs Union with the European Union has been the most important development in foreign trade relations of Turkey. In addition to the imposition of the Common Customs Tariff (CET), Turkey has to align her preferential trade regime applied towards third countries in accordance to the rules and regulations of Turkey – EU Council Decision of 1995. According to that, Turkey will take the necessary measures and negotiate agreements on a mutually advantageous basis with the third countries in order to harmonise her commercial policy further with the EU's.

This paper reports the results from a comparative static global CGE -Globe- model that quantifies the impact on Turkey of the EU – Turkey Customs Union, EFTA – Turkey and Euro-Med countries – Turkey preferential trade agreements. Therefore, the analyses are concerned with the impact of the PTAs upon a small country. The aim of the experiments is to analyse the economy wide effects of the changes in bilateral tariff rates between Turkey and the countries with which Turkey has signed preferential trade agreements (PTA) with. All of the PTAs were signed as part of Turkey's adaptation to the EU's Commercial Policy. The macroeconomic implications of Turkey's preferential trade agreements and therefore, the elimination of bilateral trade tariffs on trade in food and industrial products are analysed by comparing the results with the baseline scenario of no trade liberalisation between Turkey and the PTA partners with the baseline year of 2001.

The rest of this paper is organized as follows. The next section briefly reviews the history and current state of the preferential trade agreements of Turkey. The data and model used for the analyses are described in section 3. The simulations and model closure rules are detailed in section 4 and this is followed by the results in section 5. The final section offers some concluding comments.

2. Turkey and the PTAs

The first PTA agreement of Turkey was signed with the EFTA countries in 1991 with the aim of improving trade relations and thus, economic cooperation between the two parties (DTMa, 2007). Following that, as a result of the commercial priorities of the 1995's Customs Union agreement between Turkey and the European Union, Turkey has concluded 21 preferential trade agreements by the end of 2006, which are with the 10 Central and Eastern European countries [1](CEECs) as well as the Balkans and some of the Mediterranean Basin countries. When the 10 CEECs became EU members on the 1st of May 2004, the previous PTAs between these countries and Turkey were cancelled and new ones conforming to EU – Turkey CU were signed. The same procedure was applied in case of Bulgaria and Romania, when they became EU members on the 1st of January 2007.Thus, as a result of the Eastern enlargement of EU15, Turkey started to implement the same tariff rates for the imports from the CEECs.

Table 1: Turkey and its Free Trade Agreements

No:	Country	Date Signed	Date in Force	Elimination of duties in industrial products
1	EFTA countries	10.12.1991	01.04.1992	01.01.1996
2	Israel	14.03.1996	01.05.1997	01.01.2000
3	Macedonia	07.09.1999	01.09.2000	01.01.2008
4	Croatia	13.03.2002	01.07.2003	01.01.2007
5	Bosnia and Herzegovina	03.07.2002	01.07.2003	01.01.2007
6	Palestine	20.07.2004	01.06.2005	01.06.2005
7	Tunisia	25.11.2004	01.07.2005	01.07.2014
8	Morocco	07.04.2004	01.01.2006	01.01.2015
9	Syria	22.12.2004	01.01.2007	01.01.2019
10	Egypt	27.12.2005	01.03.2007	01.01.2020
11	Albania	22.12.2006	-	-

Source: Turkish Undersecretariat of Foreign Trade, 2007

Among the PTAs, the ones with EFTA, Israel, Bulgaria, Romania, Macedonia, Croatia, Bosnia-Herzegovina, Palestine, Tunisia, Egypt and Syria are currently in force. Turkey has eliminated all duties on trade in industrial products between the PTA partners. In addition, EFTA countries, Israel, Palestine, Croatia and Bosnia and Herzegovina have eliminated all duties on trade in industrial products with Turkey.

2. 1. Turkey: The Customs Union with EU and the FTA with EFTA

In 1991, the Free Trade Agreement between Turkey and the EFTA states was signed in Geneva. This agreement, covering the elimination of bilateral trade tariffs on trade

[1] Lithuania, Hungary, Estonia, Czech Republic, Slovakia, Poland, Slovenia, Latvia, Romania and Bulgaria

in fish and marine products, processed agricultural products and the industrial products, was the first step on the way to the new trade liberalisation measures of the Turkish government.

Turkey became a part of the common EU Customs Territory since the entering into force of the EU-Turkey Customs Union in 1996. Tariffs and quantitative restrictions on trade between Turkey and the EU were started to be gradually removed. This agreement covered industrial products and processed agricultural goods. The traditional agricultural products will be included in the Customs Union only after Turkey's adaptation to the Community's Common Agricultural Policy (CAP).

Turkey has adopted the Common External Tariff of the European Union resulting in lower tariffs for imports from third countries. According to the estimates by the Turkish government, the average tariff rate for industrial imports from the EU and EFTA countries has dropped from about 10% to zero in 1996. In the same year, for products imported from third countries the tariff rates have declined from about 16% to 5.6%. An average protection rate for industrial products was 4.2 % in 2005 whereas some agricultural goods still remain protected by steep tariffs. The tariff rate for products imported from the poorest countries of the world is zero whereas it is around 2.86% for the developing countries (Baygun, 2005).

The average tariff rate for the agricultural products from the EFTA and the EU countries is around 54.66% while it is around 55.60% for third countries. Although the tariffs for the processed agricultural products from the EFTA and EU countries have been eliminated, it is around 8% for the third countries. For fisheries, the tariffs have been eliminated for the EFTA countries but remains for the EU countries with 37.4% and for third countries with 47.6% (Baygun, 2005).

2.2. Turkey and the FTA with the Euro-Med Countries

Turkey is also a member of the Euro-Mediterranean Partnership. As a result of the Barcelona Process, the Mediterranean Basin gained importance for the external trade of Turkey. It has already started signing FTAs with the Mediterranean countries.

The main objective of the Euro-Med Agreement is to turn the Mediterranean basin 'into an area of dialogue, exchange and cooperation guaranteeing peace, stability and prosperity' (Undersecretariat of Turkey, 2007*a*[2]). Increasing cooperation in trade of goods and services and investment and deepening integration of these economies through the liberalisation of trade are among the major economic pillars of the agreement. In order to support these regional integration initiatives, Association Agreements were signed between EU and its Mediterranean Partners.

[2] http://212.174.119.134/ab/ingilizce/euromed.doc

In 2004, an FTA was signed with Palestine and entered into force in 2005. In the same year, an FTA with Morocco was also signed which entered into force in 2006. The Association Agreements establishing Free Trade Areas with Tunisia and Syria were concluded in 2004. The FTA between Turkey and Tunisia came into force in July 2005 and with Syria in January 2007. In December 2005, Turkey has also signed an FTA with Egypt which came into force in March 2007. In addition, negotiations with Lebanon and Jordan are ongoing. Turkey is expected to initiate negotiations with Algeria in the near future.

In line with the Association Agreements signed between the EU and the Mediterranean partners, customs duties will be gradually abolished.

With the eastern enlargement of the EU, the number of Euro-Med members increased to 37, with 27 EU members and 10 Mediterranean Partners of Algeria, Egypt, Israel, Jordan, Lebanon, Palestinian Authority, Syria, Tunisia and Turkey. Meanwhile, Libya has observer status since 1999.

3. Data

One of the important trade partners of Turkey is the EU so the first two regions covered in this analysis are Turkey and the EU27. Bulgaria and Romania are also included in the second group. In order to analyse the impact of the PTA between Turkey and EFTA countries, EFTA countries are also grouped into a separate region as EFTA. To analyse the impact of the Euro-Med Agreement on the Turkish economy, data on 9 Mediterranean Partners of Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian Authority, Syria and Tunisia are required. Israel, Jordan, Lebanon, Palestine and Syria are not separate regions in the GTAP database instead they are grouped under the region 'Rest of Middle East'. Morocco and Tunisia are separate regions while Algeria, Egypt and Libyan Arab Jamahiriya[3] are grouped under the region 'North Africa'. Therefore, in order to analyse the effect of an PTA between Turkey and the Euro-Med countries, the North Africa countries of Morocco, Tunisia, Algeria, Egypt and Libyan Arab Jamahiriya, are grouped under the region 'North Africa'.

Regarding the PTAs of Turkey with the Balkans, Macedonia and Bosnia-Herzegovina are not separate regions in the GTAP database so there is only Croatia that can be modelled. However, Turkey's trade with Croatia is negligible and therefore it is not included into this analysis. As a result of the data limitations, the Balkan countries of Macedonia and Bosnia-Herzegovina can also not be included.

[3] Libyan Arab Jamahiriya has observer status since 1999

Hence, the GTAP database is aggregated into 17 regions as (Turkey, the UK, Germany, France, Italy, rest of EU15, EU12, EFTA, North Africa countries, Rest of Middle East ROW, Globe).

3.1. GTAP Data: Aggregation and Descriptive Statistics

The data for this study are derived from the GTAP database version 6.0, which is benchmarked to the year 2001 (McDougall and Dimanaran, 2005). The form of the database used for this study is a Social Accounting Matrix (SAM) representation of the GTAP database (McDonald and Thierfelder, 2004). The GTA project produces the most complete and widely available database for use in global computable general equilibrium (CGE) modelling. The GTAP database has become generally accepted as the preferred database for global trade policy analysis and is used by nearly all the major international institutions and many national governments. Hertel (1997) provides an introduction to both the GTAP database and its companion CGE model. The precise version of the database used as the starting point for this study is a reduced form global SAM representation of the GTAP data.

Table 3: SAM and Model Accounts

Sectors		**Regions**	
gran	Grains	tur	Turkey
ocrp	Other crops	gbr	United kingdom
ctl	Cattle sheep goats horses	fra	France
oanm	Other animals	deu	Germany
ener	Energy products	ita	Italy
afd	Animal food products	reu	Rest of the EU15
ofd	Other food products	neu	New EU countries
tex	Textiles	chn	China
wapp	Wearing apparel and leather	jpn	Japan
min	Minerals	asia	Asia
p_c	Petroleum coal products	nafta	NAFTA
chem	Chemicals rubber plastic products	efta	EFTA countries
wpap	Wood and paper products	rus	Russian federation
met	Metals	nafr	North Africa
emach	Electronic equipment and machinery	rme	Rest of middle east
veh	Vehicles and transport equipment	row	Rest of the world
oman	Other manufacture	glo	Globe
cns	Construction	**Factors**	
util	Utilities	land	Land
tran	Air water other transport, communication	unsklab	Unskilled labour
trd	Trade	sklab	Skilled labour
obs	Business services necessities	capital	Capital
othserv	Other services	natlres	Natural resources

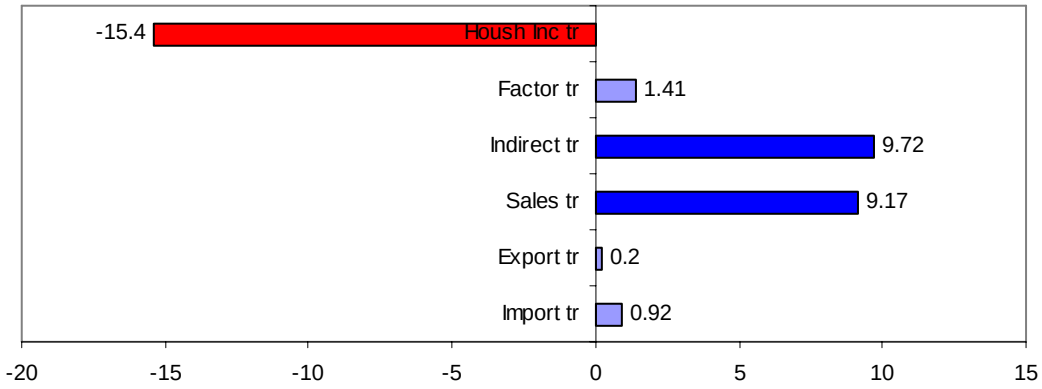
Source: GTAP Database

The analyses are carried out using a 17-region, 23-sector and 5-factor global computable general equilibrium model that is implemented in GAMS (McDonald et al, 2005) and is detailed above.

3.1.1. Turkey: Descriptive Statistics

The Turkish GDP from value added is $136bns and the GDP from expenditure is about $147bns. The total domestic production in the economy is around $255bns whereas the depreciation is $16bns.The absorption of the Turkish economy is about $145bns; private consumption is $100bns, whereas government and investment consumption are $21bns and $25bns respectively.

Figure 1: Tax Revenue Sources for the Turkish Economy (billion $s)



Source: GTAP Database

Household savings constitute %43 of total savings of the Turkish economy which is about $25bn. Turkey has a foreign deficit of $2.5bns. More than half of factor income ($126bns) goes to labour ($64.6bns). Household income is $95bns while the government income is only $21bns.

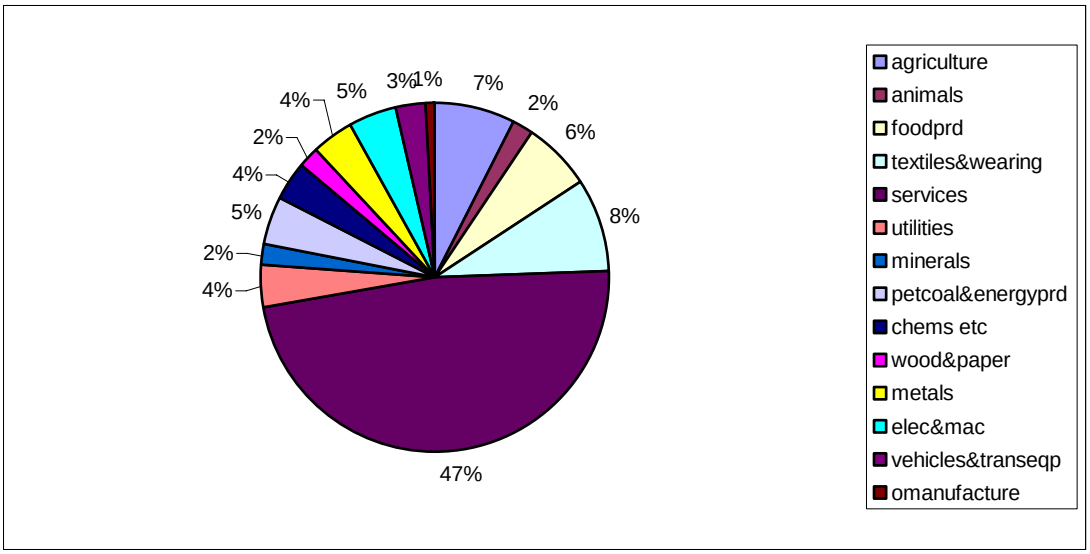
According to figure 1 above, the major source of government is indirect taxes with an indirect tax revenue of $9.7bns. Indirect taxes are followed closely by sales taxes generating a tax revenue of $9.2bns. The transfers to the households, on the other hand, is about -$15bns. Import tariff revenue of the Turkish economy is higher than the export tax revenue with $0.92 and $0.20bn, together they account for 5% of total tax revenue.

The value of import demand is about 45$bn, accounting for about 31% of GDP from expenditure and absorption and the value of export supply is about 47$bn, accounting for about 32% of GDP from expenditure and absorption.

Service sector accounts for almost half of the Turkish economy while the second sector with largest domestic production is the electronic equipment and machinery.

Textiles together with wearing apparel and leather are another important sector with a contribution of 8% to total domestic production. Agriculture is still among the important sectors with a share of 7%, followed closely by the food products.

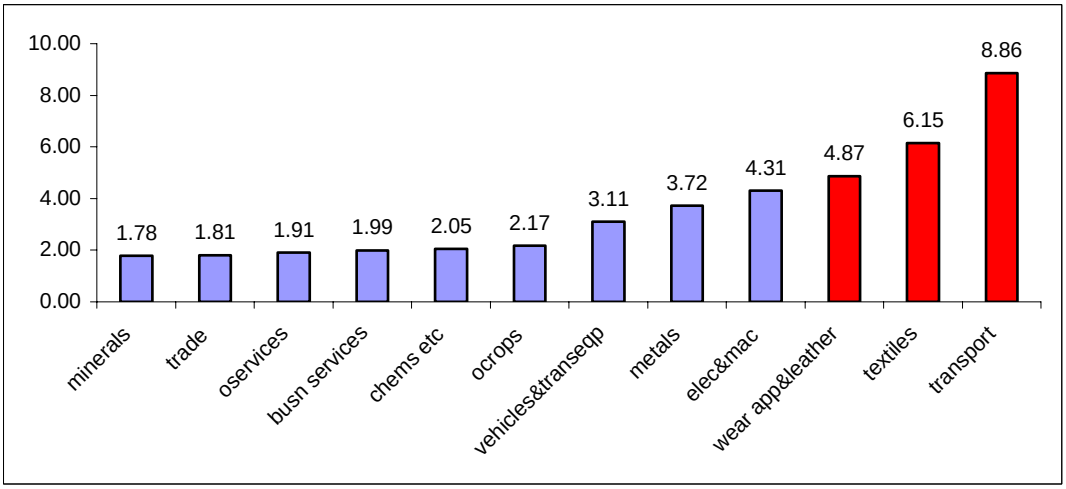
Figure 2: Domestic Production by Commodity in Turkey (%s)



Source: GTAP Database

According to figure 3, the transport sector is the leading sector of exports. Apart from the transport sector, the two most important exports are textiles and wearing apparel and leather.

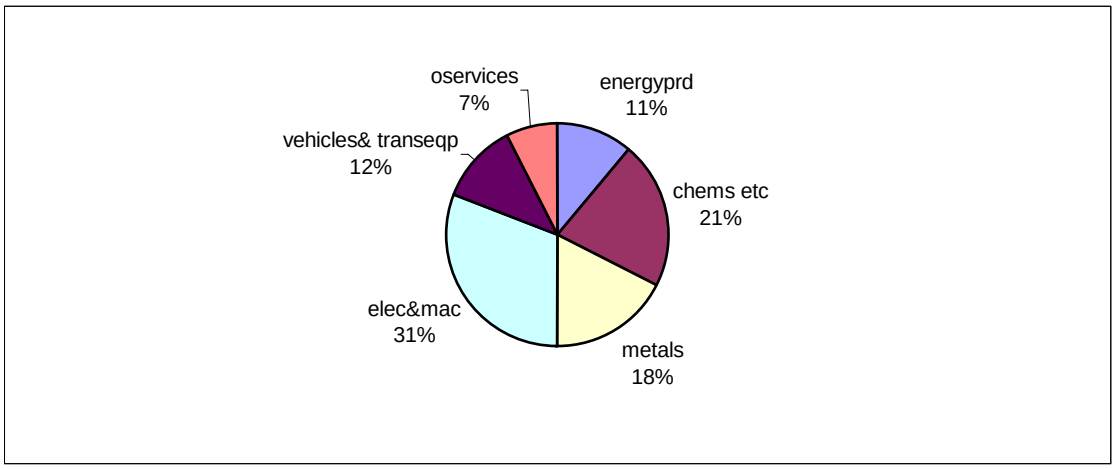
Figure 3: Total Exports by Commodity (billions $s)



Source: GTAP Database

The major imports supplied to the Turkish economy are comprised of electronic equipment and machinery, accounting for 31% of aggregate import supply. Other important import sectors are chemicals and rubber and plastic products, together with metals, vehicles and transport equipment and the energy products with shares of 21%, 18%, 12% and 11% respectively (figure 4).

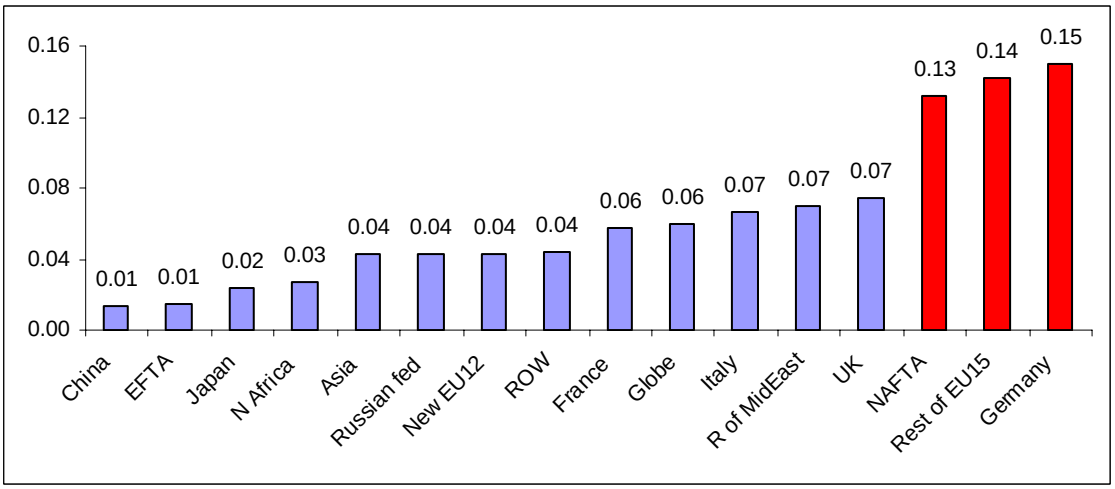
Figure 4: Aggregate Import Supply by Commodity Share (%s)



Source: GTAP Database

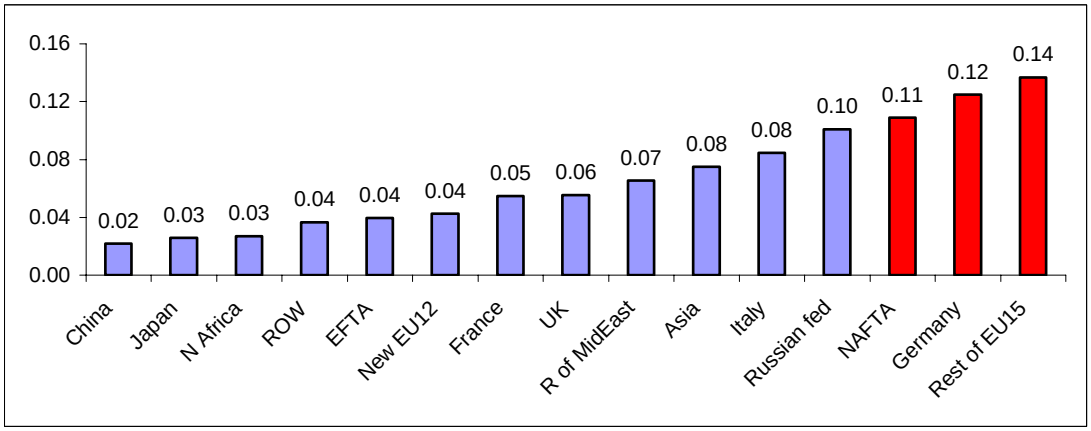
The value of electronic equipment and machinery imported to the Turkish economy is around $9.5bns whereas the values of chemicals and metals are $6.6 and $ 5.4bns respectively.

Figure 5: Export Shares of Total Exports from Turkey (%s)



Source: GTAP Database

Figure 6: Import Shares of Total Imports to Turkey (billions $s)



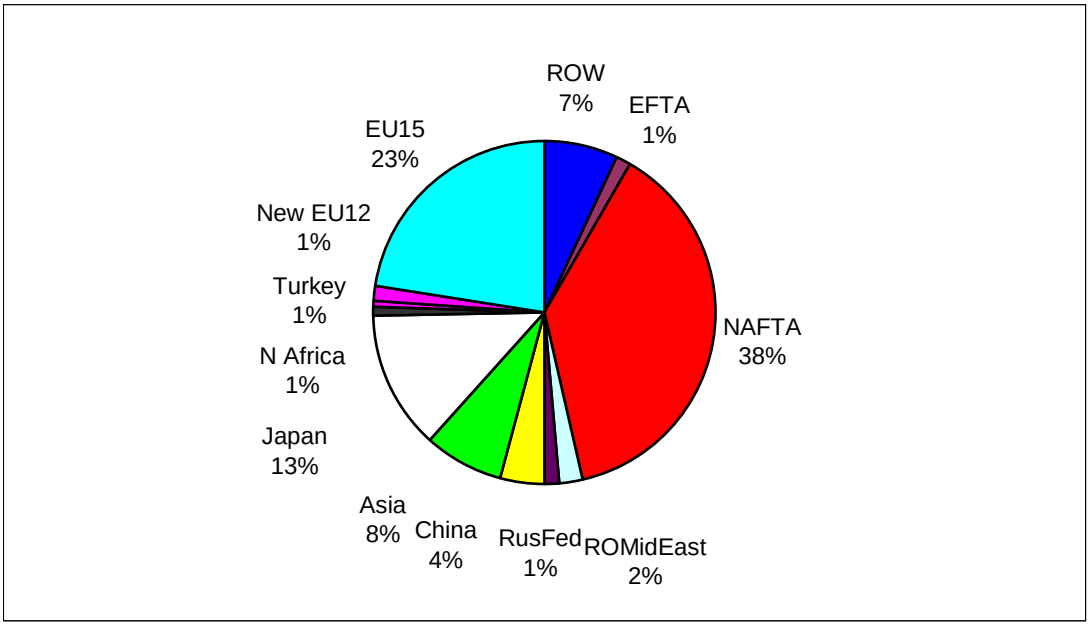
Source: GTAP Database

Among all countries of the world, the EU15 members are the main trade partners of Turkey. The volume of Turkish exports of commodities is the highest to Germany, followed by the rest of EU15 and NAFTA (figure 5). Among EU15, Germany is the leading trade partner which accounts for 15% of total exports from Turkey followed by the UK and Italy with 7% each (figure 5).

The highest volume of imports to Turkey comes from the rest of EU15 countries. The imports from Germany, on the other hand, are almost as high as the total imports from the rest of EU15. They are closely followed by the imports from NAFTA. Among the other EU15 countries, Italy accounts for 8% and the UK 6%, of total imports to Turkey (figure 6).

The regions in the model are very different in economic size. As the figure below shows, the EU15, NAFTA and Japan regions account for 23%, 38% and 13% of global GDP respectively while Asia accounts for 8%. The share of the rest of the world is only 7%. The two big economies, China and rest of Middle East constitute 4% and 2% of the global GDP (figure 7).

Figure 7: Base Period GDP from Value Added by Region (%s)



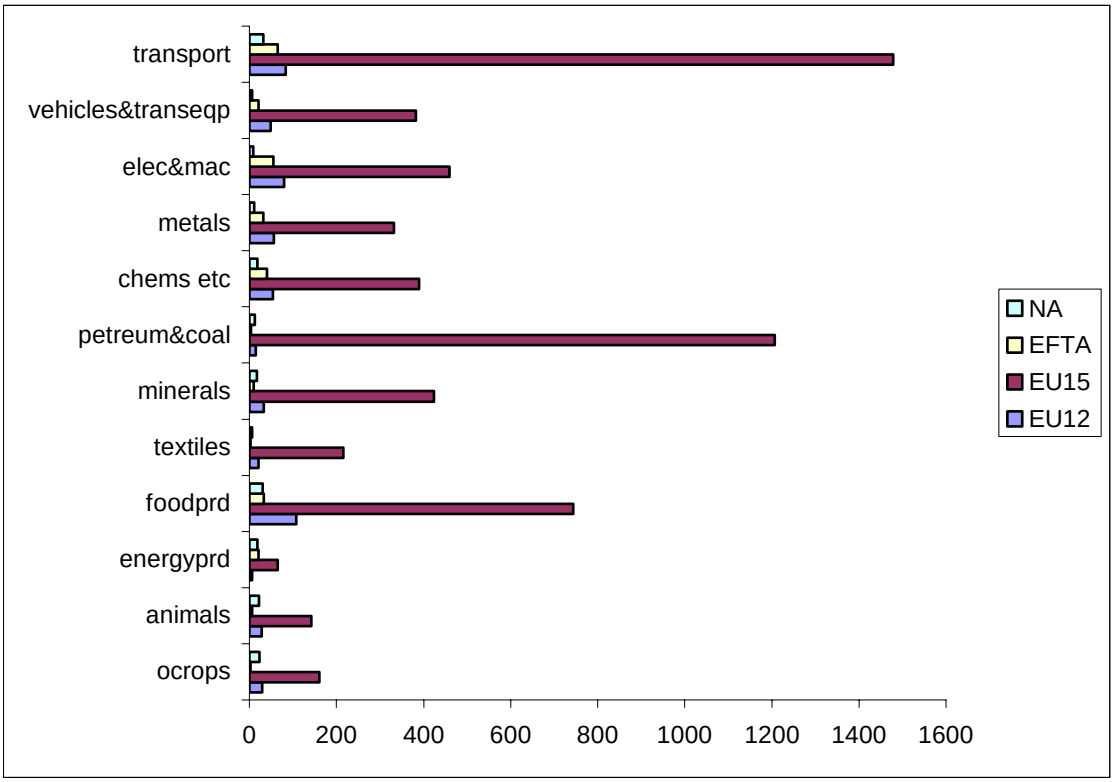
Source: GTAP Database

The rest of the regions, EFTA, the new 12 EU members of the Central and Eastern Europe together with Cyprus and Malta, the countries of North Africa and the Russian Federation each account for only 1% of the global GDP from value added (figure 7).

The service sector is the one which accounts for the highest share of total production in each region, the highest value of services being in the EU15. On the other hand, the common feature of all sectors is that the EU15 has the highest volume of production in each of them (figure 8). EU15's highest domestic production is in transport,

petroleum and coal and food products while EU12's is in food products, transport and electronic equipment and machinery sectors. The highest domestic production of the EFTA countries is in the sectors of transport, electronic equipment and machinery together with the chemicals and rubber and plastic products. On the other hand, in addition to the transport sector, food products, agriculture and animal sectors have a more significant role in total domestic production of the North African countries.

Figure 8: Total Domestic Production of Commodities by Regions (billions $s)



Source: GTAP Database

3.1.2. Turkey and the EU

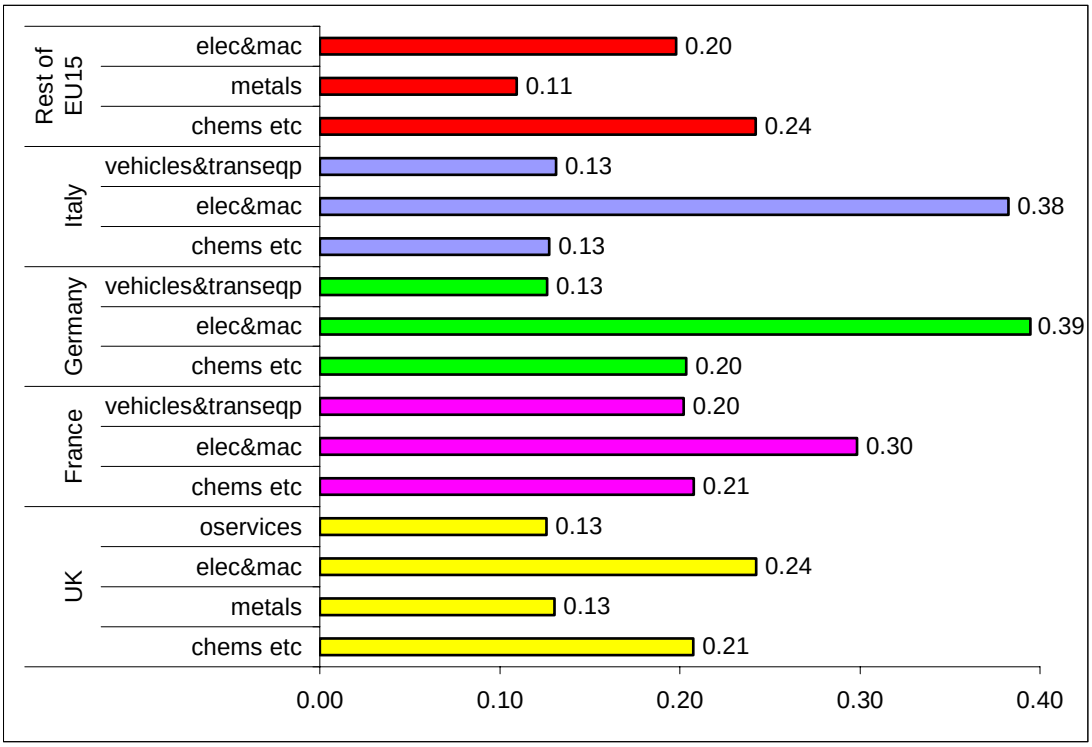
Chemicals and rubber and plastic products together with electronic equipment and machinery and metals are the major imports of the rest of the EU15 to Turkey accounting for 24%, 20% and 11% of the total imports to Turkey (figure 9).

Among the four strong economies of the EU15, Germany (39%), Italy (38%), France (30%) and the UK (24%), electronic equipment and machinery sector is the one which accounts for the highest share of their total imports to Turkey.

In addition to electronic equipment and machinery sector, chemicals and rubber and plastic products as well as vehicles and transport equipment are also important imports of Germany, Italy and France to Turkey. In the UK, on the other hand, in addition to the leading imports of electronic equipment and machinery, chemicals and rubber and plastic products, metals and other services are among the other important imports of the UK to Turkey.

The import basket of the new 12 EU accession countries to Turkey are not much different than EU15's. Electronic equipment and machinery and metals are the important imports to Turkey with shares of 21% and 20% of the total imports to Turkey, while the chemicals and rubber and plastic products and utilities are the other major import sectors with 17% and 12% of total imports respectively.

Figure 9: Imports of Rest of EU15, Italy, Germany, France and the UK to Turkey (billions $s)



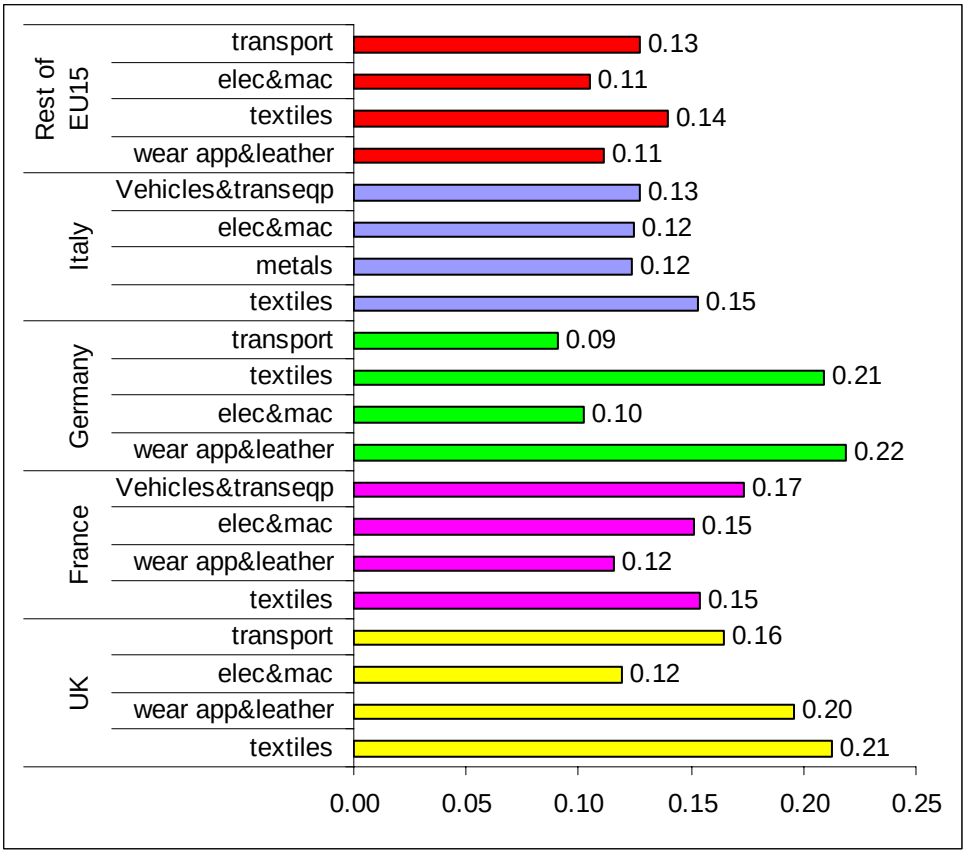
Source: GTAP Database

The major exports of Turkey to the EU15 countries, excluding Germany, Italy, France and the UK, are textiles and transport with 14% and 13% of total Turkish exports, followed closely by wearing apparel and electronic equipment and machinery with 11% (figure 10). Textiles together with wearing apparel and leather are the two important export sectors of Turkey and their share in total exports to the UK and Germany are the highest with 21% and 20% to the UK and 21% and 22% to Germany. For Italy, in addition to textiles, the exports of vehicles and transport equipment are also important accounting for 15% and 13% of total exports from Turkey. They are closely followed by the exports of electronic equipment and machinery and metals by 12%.

In France, 17% of total exports from Turkey are vehicles and transport equipment, while textiles and electronic equipment and machinery each accounts for 15% of total Turkish exports to the region.

Textiles are the leading exports of Turkey also to the new 12 EU accession countries accounting for 17% of total exports to EU12. Electronic equipment and machinery as well as vehicles and transport equipments are among the other major exports to the EU12 with export shares of 15% each. Chemicals and rubber and plastic products account for 10% of total Turkish exports to the region while metals accounts for 6%.

Figure 10: Exports of Turkey to the Rest of EU15, Italy, Germany, France and UK



Source: GTAP Database

Turkey imposes an average import tariff of %62 on animal food products and 10% on other food products. Therefore, on food products the average import tariff imposed is on average 36%.

Table 2: Import taxes imposed by Turkey on imports from EU15 (%s)

	Germany	France	UK	Italy	RoEU15
Animalfood	0.54	0.9	0.15	0.71	0.82
Cattle,sheep,etc	0.02	0.07	0.02		0.07
Grains	0.28	0.43		0.14	0.34
Oanimals	0.1	0.02	0.02	0	0.01
Ocrops	0.24	0.13	0.4	0.16	0.04
Ofood	0.07	0.13	0.05	0.13	0.1

Source: GTAP Database

On the other hand, for agricultural products, it is 19% on other crops and 30% on grains. Thus, on agricultural products the average import tariff is 25%. The import tariff on cattle, sheep, etc., is around 5% whereas it is around 4% on other animals. Thus, the average import tariff is 4.5% on the imports of animals (table 2).

For the EU15 countries Turkey imposes average export taxes of 1% on energy products to Germany and to the rest of EU15 excluding the UK, France and Italy. 1% on minerals, 1% on textiles and wearing apparel and another 1% on wood and paper products are also imposed together with a 28% on the exports of petroleum and coal products. At the same time, export subsidies of 1% are imposed on animal food products exported to France and 2% on other food products exported to EU15.

EU15 does not impose any export taxes on products exported to Turkey but they do impose average export subsidies of 25% on animal food products and 4% on other food products. Thus, on average the export subsidy imposed on food products is 15%. In addition, export subsidies of 19% on grains and 1% on other animals are also imposed on the EU15 exports to Turkey. Moreover, the UK imposes an export subsidy of 1% on other crops exported to Turkey.

EU15 imposes import taxes of 30% on animal food products, 15% on other food products and therefore, on average 23% on all food products. For agricultural imports from Turkey, the EU15 imposes import tariffs of 4% on grains, 2% on other crops and therefore, on average 3% on all agricultural products. For metal imports, the import tariff rate is 4.5% (table 3).

Table 3: Import tariff rates of EU15 on Turkish Imports (%s)

	Germany	France	UK	Italy	RoEU15
Animalfood	0.5	0.33	0.22	0.18	0.27
Grains	0.06	0.03	0.05	0.04	0.04
Metals	0.01	0	0.05	0.06	0.06
Ocrops	0.02	0.02	0.01	0.02	0.02
Ofood	0.07	0.03	0.03	0.46	0.15

Source: GTAP Database

Trade between Turkey and the new twelve accession countries of the EU is not as liberalised as the trade between Turkey and the EU15; the food products and agriculture are protected with import tariffs of 77% on animal food products and 1% on other food products. For grains, it is 37% and for other crops, it is 14%, with an average import tariff of 25% on agriculture. Import tariffs on other manufactures are 11%, whereas they are about 10% for the animals sector. In addition, the import tariffs imposed by the new EU12 are on average higher than the ones imposed by Turkey on EU12 imports.

The import tariff on animal food products is as high as 112%, while it is 40% for other food products; thus, on average it is as high as 76%.On the other hand, only 39% is imposed by Turkey on food products from new EU12. The import tariff imposed on agricultural products is higher in Turkey with an average of 25%, while it is about 20% in new EU12. For the rest of the commodities, the import tariffs imposed by new EU12 are all higher only with the exception of other manufactures sector where the import tariff imposed by Turkey is 11% while it is only 5% by new EU12.

Although they are not very high, both Turkey and new EU12 countries impose export subsidies on other crops, other animals and on animal and other food products. In addition, new EU12 impose export subsidies on grains. Turkey also imposes export taxes in some sectors; the highest export tax charged is for the exports of petroleum and coal products with 28%.

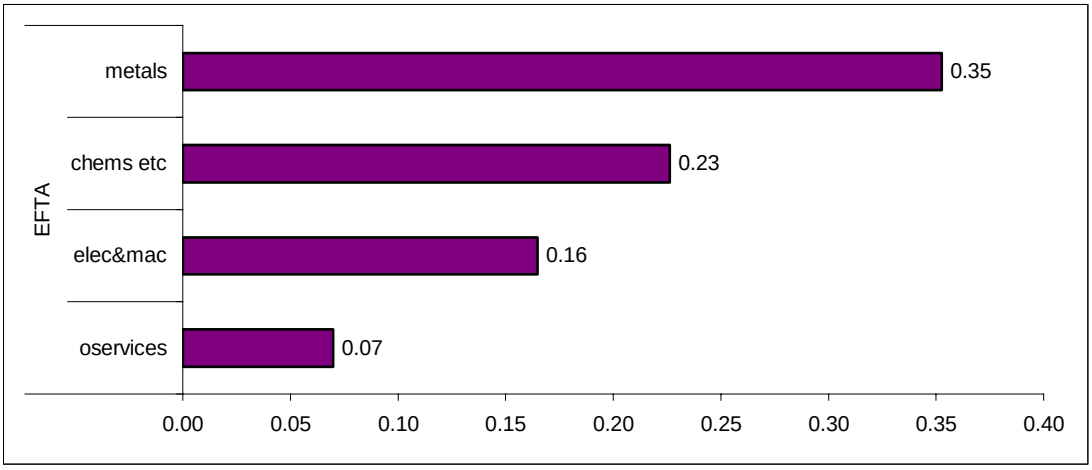
Import tariffs imposed by Turkey on imports from Asia are higher than what EU15 impose with the exceptions of vehicles and transport equipment and grains. The biggest difference is seen in grains sector, where the EU15 imposes an import tariff of 47% while Turkey imposes an import tariff of 1%. In case of imports from China, import tariffs imposed by Turkey are higher once again with the exception of the agricultural products. The biggest difference is in food products sectors in which Turkish import tariffs are higher with 58% while they are around 14% in rest of EU15. Import tariffs imposed by Turkey on imports from Japan also follows a similar pattern. EU15 has reduced tariffs on most of the imports from North African countries following the Euro-Med agreement with the exception of food products. On the other hand, Turkey still imposes higher import tariffs particularly on the imports of food products. On imports from NAFTA, Turkey imposes more or less the same import tariff rates as EU15 with the exception of grains in which Turkey imposes an import tariff of 54% while EU15 imposes only 9%. For the rest of the Middle East and the rest of the world, the import tariff rates are more or less the same with slightly higher rates imposed by Turkey. The highest import tariff imposed by Turkey is on food product imports from Russia which is much higher than the rate that EU15 imposes with 106% and 28% respectively.

3.1.3. Turkey and the EFTA Countries: Descriptive Statistics

35% of the EFTA imports to Turkey are metals. Chemicals and rubber and plastic products and electronic equipment and machinery, with import shares of 23% and 16%, are the other leading imports of the EFTA countries to Turkey respectively. On the other hand, other services, comprising of financial services necessities, insurance,

recreation and other services, public administration, defence, health, education and dwellings, account for 7% of total EFTA imports to Turkey.

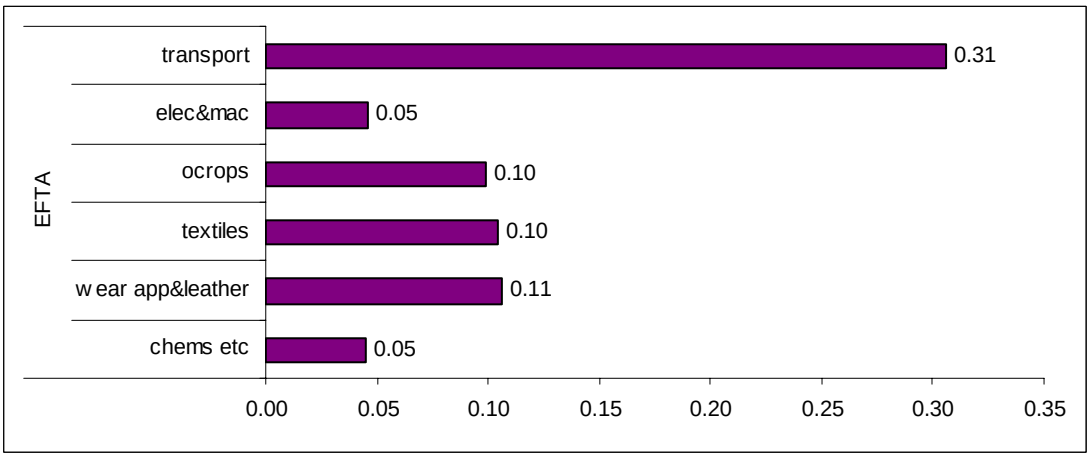
Figure 11: Imports of EFTA to Turkey



Source: GTAP Database

The major export of Turkey to the EFTA countries is transport with a share of 31% of total Turkish exports to EFTA (figure 17). Wearing apparel and leather as well as textiles are among the important exports of Turkey to EFTA with a share of 11% and 10% of total EFTA exports respectively. Other crops sector constituting of 'vegetables, fruits, nuts', 'oil seeds', 'sugar cane, sugar beet', 'plant-based fibres' and 'crops necessities' accounts for 10% of the exports.

Figure 12: Exports of Turkey to EFTA



Source: GTAP Database

The major differences between the tariff rates imposed by Turkey and the EFTA countries are in food and agricultural products and in other manufactures. On average, the import tariff imposed by Turkey on the imports from EFTA is lower than what EFTA countries impose on Turkish imports.

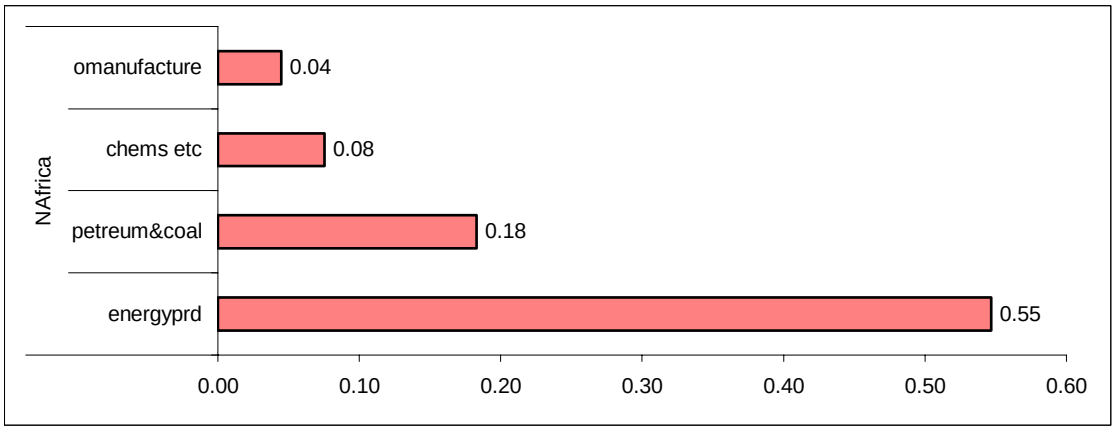
The highest import tariff imposed by Turkey is on the imports of animal food products with 100% and other crops with 22%, whereas the highest import tariff

imposed by EFTA is on the imports of other manufactures which is as high as 561%. EFTA countries subsidise most of the commodities exported to the Turkish market, whereas Turkey only subsidise the agriculture and food products. In addition, Turkey imposes an export tax of 28% on the exports of petroleum and coal products.

3.2.4. Turkey and the North African Countries: Descriptive Statistics

The most important exports of the North Africa countries to Turkey are the energy products (oil and coal) (figure 18). There is a wide gap between the shares of the rest of the North African imports to Turkey and the imports of energy products which constitute more than half of the North African imports to Turkey by 55%. Petroleum and coal products are also among the important North African imports to Turkey with a share of 18%.

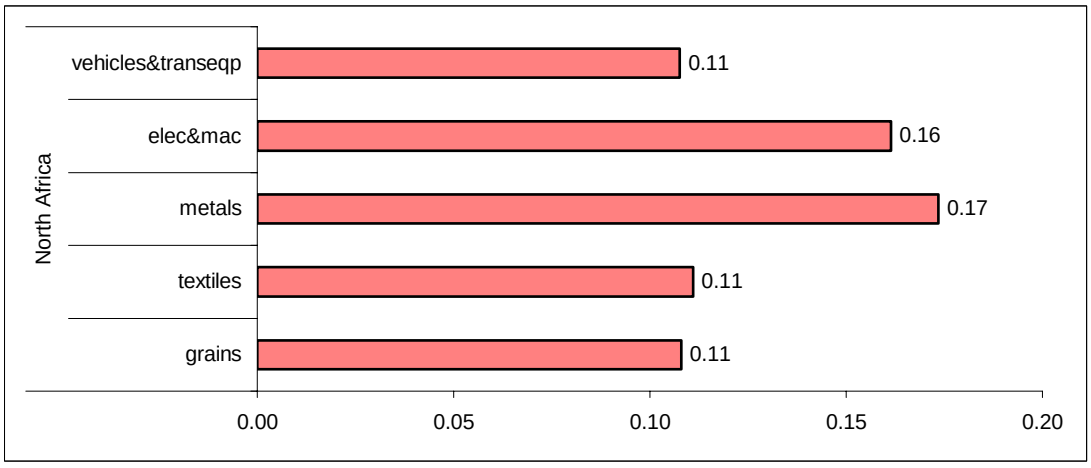
Figure 13: Imports of North Africa Countries to Turkey



Source: GTAP Database

Metals and electronic equipment and machinery account for 17% and 16% of total Turkish exports to North Africa countries respectively (figure 14).

Figure 14: Exports of Turkey to North Africa Countries



Source: GTAP Database

Among the other leading exports are the textiles, vehicles and transport equipment and the grains.

Import tariffs imposed by the countries of North Africa are higher than the ones imposed by Turkey only with the exception of food products. North African countries protect the animals and wearing apparel and leather sectors heavily by import tariffs of 158% and 267%whereas Turkey protects the food products sector with import tariffs of 56% on animal food and 32% on other food products. North African countries do not subsidise any of their exports but do impose export taxes, whereas Turkey subsidise the sectors of agriculture, food and animals. The highest export tax imposed is by Turkey on petroleum and coal products by 28%.

3.3. Globe CGE Model

This model is a member of the class of computable general equilibrium (CGE) models that are descendants of the approach to CGE modelling described by Dervis et al., (1982). The implementation of this model, using the GAMS (General Algebraic Modeling System) software, is a direct descendant and development of the single country models devised in the late 1980s and early 1990s, particularly the model reported by Robinson et al., (1990), and the multi-country model developed to analyse NAFTA (see Lewis et al., 1995, for a later application).

The model is a SAM based CGE model, wherein the SAM serves to identify the agents in the economy and provides the database with which the model is calibrated. Since the model is SAM based it contains the important assumption of the law of one price, i.e., prices are common across the rows of the SAM. The SAM also serves an important organisational role since the groups of agents identified by the SAM structure are also used to define sub-matrices of the SAM for which behavioural relationships need to be defined. As such the modelling approach has been influenced by Pyatt's 'SAM Approach to Modeling' (Pyatt, 1987).

3.3.1. Trade

Trade is modelled using a treatment derived from the Armington 'insight'; namely domestically produced and consumed commodities are assumed to be imperfect substitutes for both imports and exports. Import demand is modelled via a series of nested constant elasticity of substitution (CES) functions; imported commodities from different source regions are assumed to be imperfect substitutes for each other and are aggregated to form composite import commodities that are assumed to be imperfect substitutes for their counterpart domestic commodities The composite imported commodities and their counterpart domestic commodities are then combined to

produce composite consumption commodities. These are the commodities demanded by domestic agents as intermediate inputs and for final demand by households, the government, and for investment.

Export supply is modelled via a series of nested constant elasticity of transformation (CET) functions; the composite export commodities are assumed to be imperfect 'substitutes' for domestically consumed commodities, while the exported commodities from a source region to different destination regions are assumed to be imperfect 'substitutes' for each other. The composite exported commodities and their counterpart domestic commodities are then combined to produce composite production commodities. The properties of models using the Armington 'insight' are well known (de Melo and Robinson, 1989; Deverajan *et al*., 1990), but it is worth noting here that this model differs from the GTAP model through the use of CET functions for export supply; this ensures that domestic producers adjust their export supply decision in response to changes in the relative prices of exports and domestic commodities, which help to moderate the magnitude of the terms of trade effects in this class of model. Homogeneity can be imposed for all or any subset of commodities and regions.

3.3.2. Production

The production structure is a two stage nest. Intermediate inputs are used in fixed proportions per unit of output – Leontief technology. Primary inputs are combined as imperfect substitutes, according to a CES function, to produce value added.

3.3.3. Final Consumption

Final demand by the government and for investment is modelled under the assumption that the relative quantities of each commodity demanded by these two institutions are fixed – this reflects the absence of a clear theory that defines an appropriate behavioural response by these agents to changes in relative prices. The model contains the assumption that households are utility maximisers who respond to changes in relative prices and their incomes. In this version of the model the utility functions for the private households are assumed to be Stone-Geary, which yields linear expenditure systems that allow for subsistence consumption, and reduce to Cobb-Douglas utility functions where minimum levels of consumption are not specified.

4. Policy Experiments and Model Closures

4.1. Policy Experiments

The simulations were run for two subsets of commodities – food and industrial commodities and between Turkey and EU27, the EFTA countries and the North African countries.

- Import tariffs - elimination of all import tariffs
- Export taxes and subsidies - elimination of all export taxes and subsidies where export subsidies are defined as negative export tax rates.
- Market access – this part involves eliminating export taxes/subsidies together with import tariffs.
    - Export taxes/subsidies – elimination of all export taxes/subsidies
    - Import duties – elimination of all import tariffs
- Common External Tariff – Turkey applies the CET of EU's on imports from third countries

These simulations were run firstly for food products and for industrial products separately and in order to see the combined effect another set of experiments of partial liberalisation including both food and industrial products are also run. Finally, since Turkey applies the CET of EU, another set of experiments with the CET is run.

4.2. Model Closure

The model closures adopted for this study are simple. The basic closure is a full employment balanced macroeconomic closure with unemployed unskilled labour in some regions wherein:

- the exchanges rates are flexible;
- the shares of (the value of domestic) absorption by government and investment are fixed;
- the government deficits are fixed and the government budgets are cleared by varying the household income tax rates;
- all factors are fully employed and mobile except for unskilled labour in Turkey, the new 12 EU accession countries, North Africa countries, Russian Federation, Asia and the rest of the world[4] where surplus unskilled labour is assumed;

[4] The average unemployment rates higher than 9% are in the regions of Turkey (9%), new EU12 (10%), Russian Federation (9%) and the North African countries (16%) of Algeria, Egypt, Morocco and Tunisia

- the region specific consumer price indices and the regions in the global numéraire are separately identified OECD countries[5].

One variant on the closure rules was run:

- to assess the effect of assuming unemployed unskilled labour in Turkey, new EU12 countries, North African countries, Russian Federation, Asia and the rest of the world.
- For the rest of the countries, flexible exchange rates, investment driven economy, fixed shares of government expenditure in final demand and fixed internal balance is assumed. Unemployed unskilled labour in Turkey, new EU12 countries, North African countries, Russian Federation, Asia and the rest of the world are assumed while for the rest of the regions a balanced macroeconomic closure has been assumed with full employment.

The results from these explorations indicate that the results from these analyses are sensitive to the choice of closure rules particularly to the assumption of excess unskilled labour supply. The effects of varying these assumptions are identified in the text.

5. Results

The results with the unemployment closure are more profound than the ones with the balanced macro closure, thus only the results with unemployment closure are expressed.

The estimated welfare changes, equivalent variations expressed in money metric welfare form shows that the Turkish welfare increases by 1.96% when bilateral trade taxes are eliminated between Turkey and its PTA partners on trade in food and industrial products and it declines by 0.04% when the CET is imposed.

Table 4: Percentage Changes in Real Macro Totals

	M both all	**X both all**	**both both all**	**CET both all**
absorption	1.3	0.0	1.4	1.3
import demand	4.2	0.1	4.3	4.9
export supply	2.1	0.3	2.4	3.2
GDP from value added	0.7	0.0	0.7	0.8
GDP from expenditure	0.7	0.1	0.7	0.8
total domestic production	1.2	0.1	1.3	1.5

Source: Own Simulations

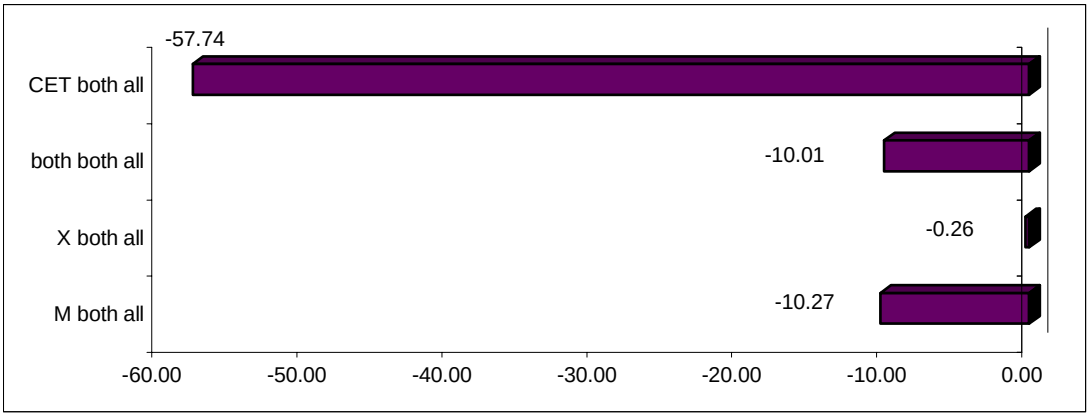
When all the PTAs between Turkey and its PTA partners are implemented, Turkish GDP increases by 0.7%, while total domestic production is up by 1.3%. Imposition of the CET is more favourable, as it increases Turkish GDP by 0.8% and total domestic

[5] Japan, NAFTA, France, Germany, the UK, Italy

production by 1.5%. Meanwhile, the highest changes in real macro totals are in import demand and supply as expected; import demand increases by 4.3% whereas export supply increases by 2.4%. Once again, with CET they increase further by 4.9% and 3.2%. Absorption increases by 1.4% but when the CET is imposed the change is 1.3%.

Since trade taxes are eliminated in two sectors, Turkish tariff revenue declines by 10% and with the imposition of the CET the decline is even sharper with 57.47%. Because Turkey does not impose high export taxes, the reduction is lower when export taxes are eliminated but much higher by 10.27% in case of import tariff elimination.

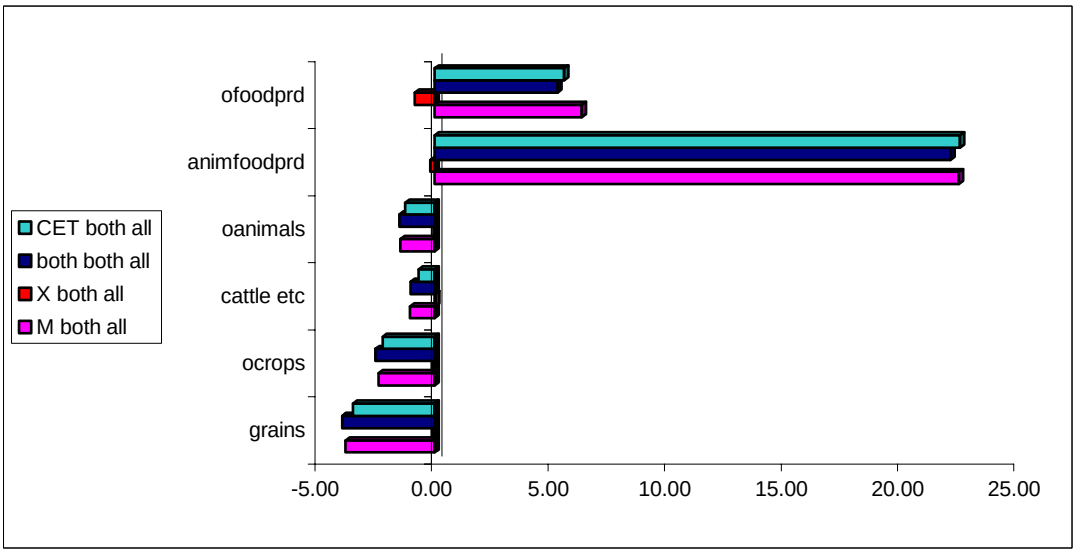
Figure 15: Turkish Tariff Revenue



Source: Own Simulations

Due to higher trade taxes in food products, the change in Turkish exports of food products is positive when trade taxes are eliminated.

Figure 16: Total Turkish Exports of Animals, Agriculture and Food Products

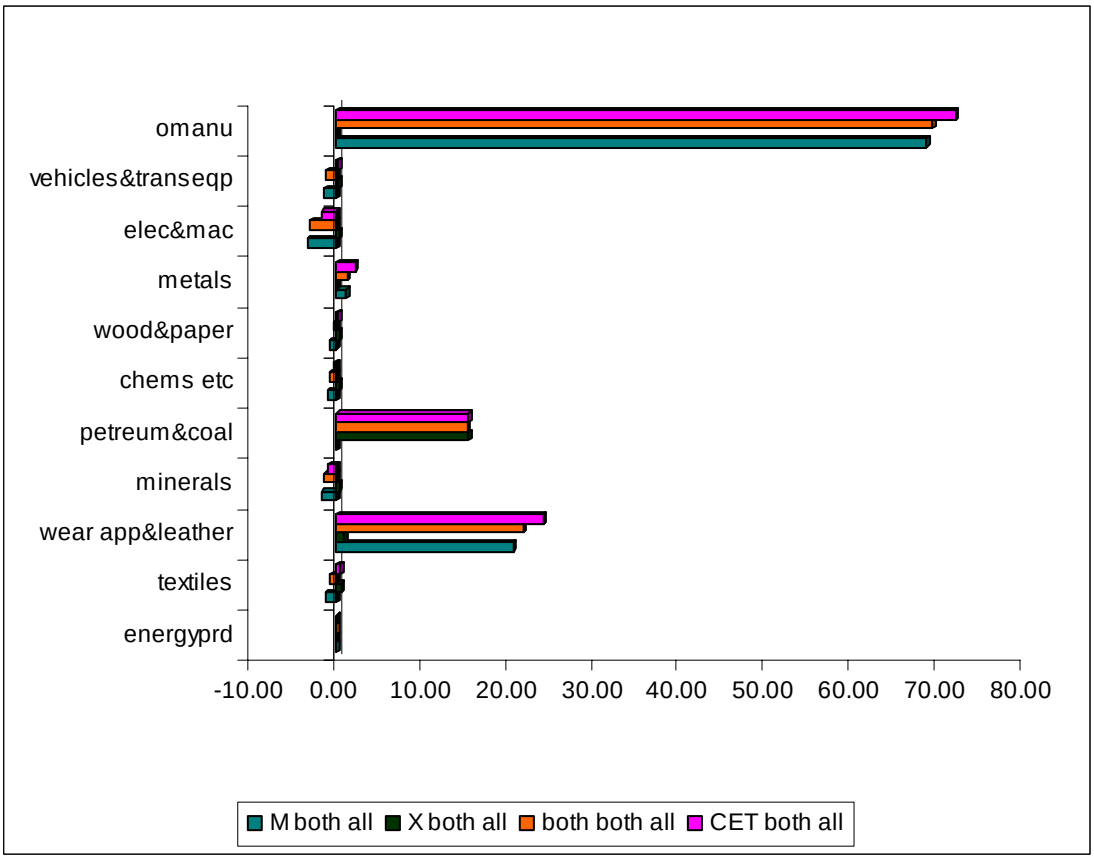


S

Source: Own Simulations

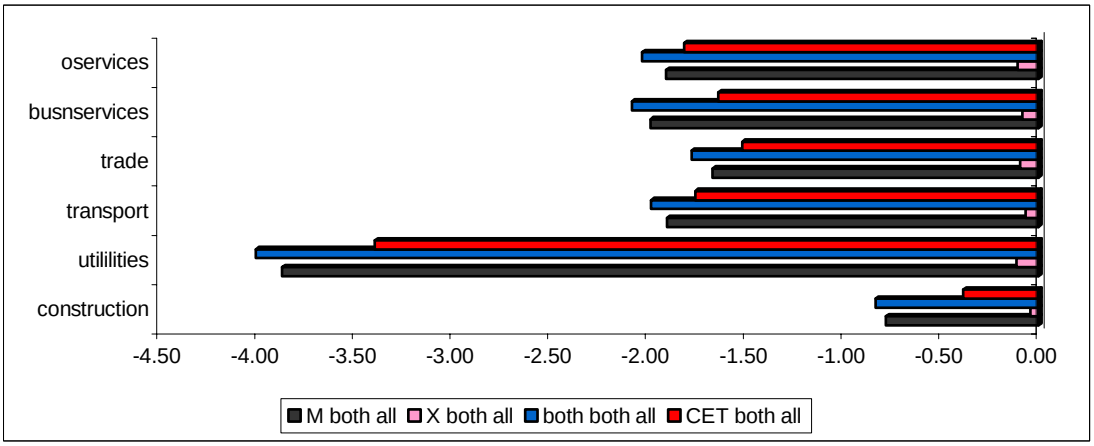
The highest increase in Turkish exports is in other manufactures followed by wearing apparel & leather and petroleum & coal products and when bilateral trade taxes are eliminated and CET is imposed. Metals are also affected positively whereas electronic equipment and machinery, minerals, chemicals, vehicles and transport equipment are negative. Textiles turn positive when CET is imposed.

Figure 17: Total Exports of Industrial Products



Source: Own Simulations

Figure 18: Total Exports of Services

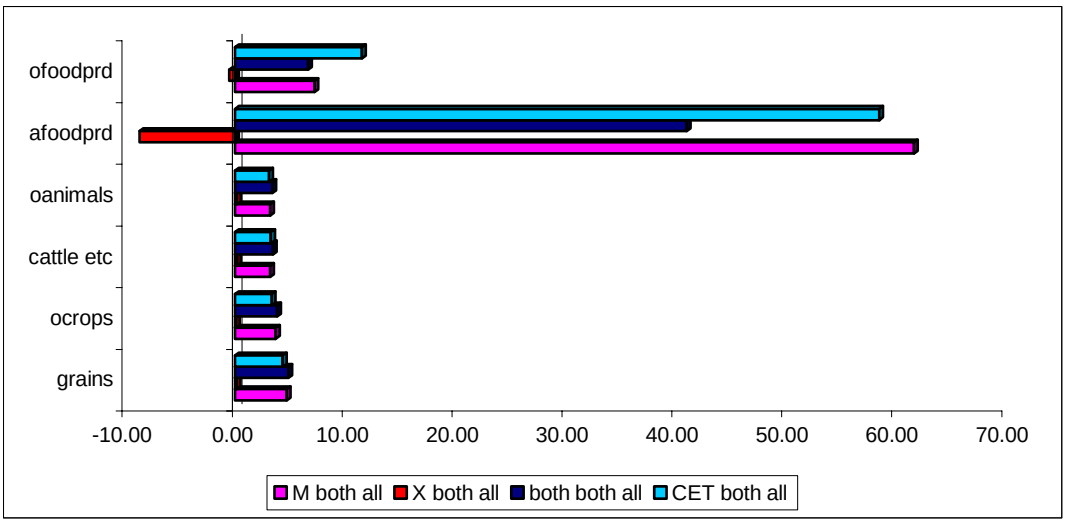


Source: Own Simulations

All service sector exports turn negative; more negative when bilateral trade taxes are partially eliminated on trade in food and industrial products and less negative when the CET is imposed.

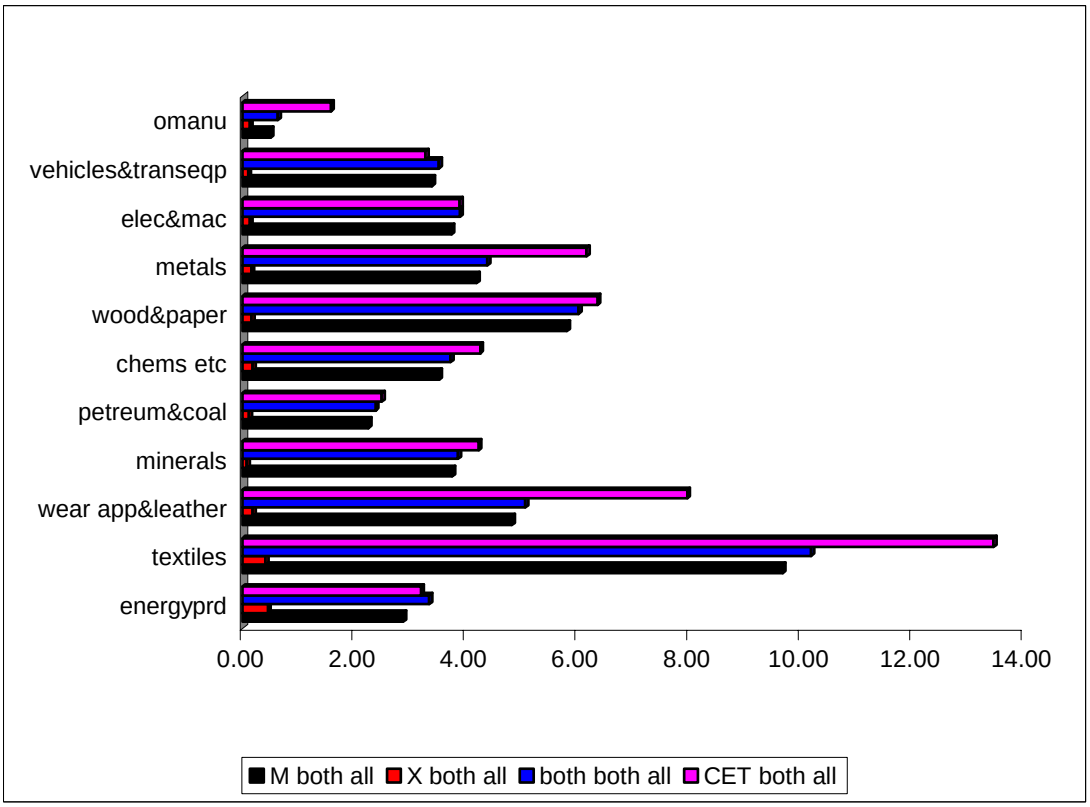
Highest increase in imports is in animal food products. In food products, when CET is imposed in addition to the elimination of bilateral trade taxes, the results are more favourable whereas in animals and agricultural sectors, the imposition of CET does not make much difference rather than decreasing total Turkish imports slightly.

Figure 19: Total Turkish Imports of Animals, Agriculture and Food Products



Source: Own Simulations

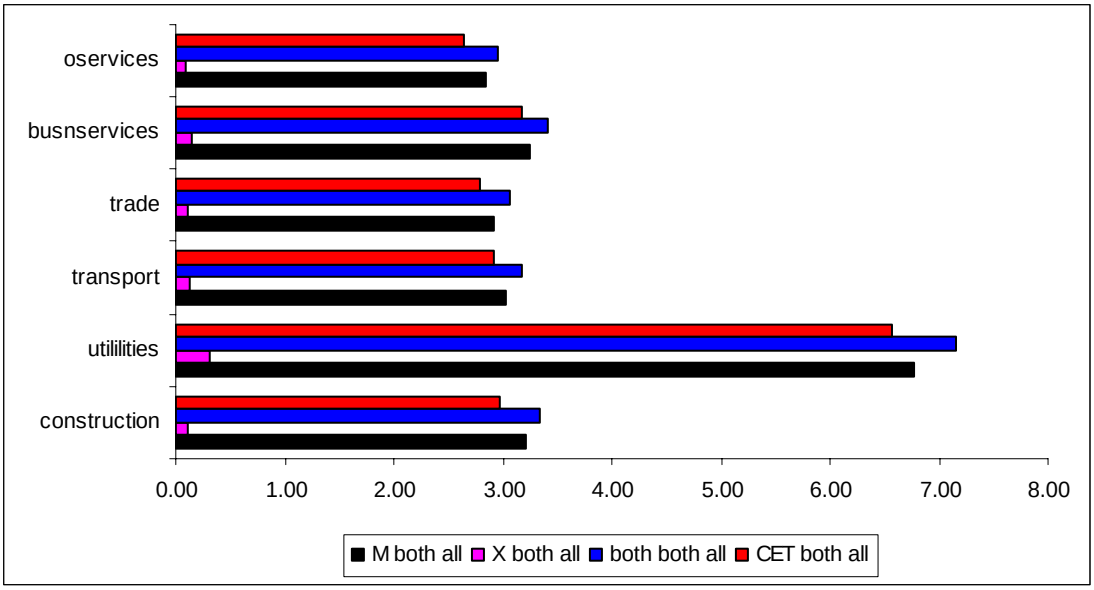
Figure 20: Total Turkish Imports of Industrial Products



Source: Own Simulations

All service sector exports turn negative; more negative when bilateral trade taxes are partially eliminated on trade in food and industrial products and less negative when the CET is imposed. The highest increase in imports is in textiles and wearing apparel & leather sector. Imports of all products with the exception of the energy products increase further with the imposition of CET. Textiles, together with wearing apparel and leather benefit more from the CET rates, followed by the metals sector.

Figure 21: Total Imports of Services



Source: Own Simulations

Imports of all services are positive, utilities is the sector with the highest increase.

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7. Technical Appendix

Aggregation 1:

Mapping	**Description**	**Name**	**Descr**
gran	Grains	pdr	Paddy rice
gran	Grains	wht	Wheat
gran	Grains	gro	Cereal grains nec
ocrp	Other crops	v_f	Vegetables fruit nuts
ocrp	Other crops	osd	Oil seeds
ocrp	Other crops	c_b	Sugar cane sugar beet
ocrp	Other crops	pfb	Plant-based fibers
ocrp	Other crops	ocr	Crops nec
ctl	Cattle sheep goats horses	ctl	Cattle sheep goats horses
oanm	Other animals	oap	Animal products nec
oanm	Other animals	rmk	Raw milk
oanm	Other animals	wol	Wool silk-worm cocoons
ocrp	Other crops	frs	Forestry
oanm	Other animals	fsh	Fishing
ener	energy products	coa	Coal

ener	energy products	oil	Oil
util	utilities	gas	Gas
min	minerals	omn	Minerals nec
afd	Animal food products	cmt	Meat: cattle sheep goats horse
afd	Animal food products	omt	Meat products nec
ofd	Other food products	vol	Vegetable oils and fats
afd	Animal food products	mil	Dairy products
ofd	Other food products	pcr	Processed rice
ofd	Other food products	sgr	Sugar
ofd	Other food products	ofd	Food products nec
ofd	Other food products	b_t	Beverages and tobacco products
tex	textiles	tex	Textiles
wapp	wearing apparel and leather	wap	Wearing apparel
wapp	wearing apparel and leather	lea	Leather products
wpap	wood and paper products	lum	Wood products
wpap	wood and paper products	ppp	Paper products publishing
p_c	petroleum coal prodt	p_c	Petroleum coal products
chem	Chemicals rubber plastic products	crp	Chemical rubber plastic prods
min	minerals	nmm	Mineral products nec
met	metals	i_s	Ferrous metals
met	metals	nfm	Metals nec
met	metals	fmp	Metal products
veh	Vehicles and transport eqt	mvh	Motor vehicles and parts
veh	Vehicles and transport eqt	otn	Transport equipment nec
emach	electronic equiptment and machinary	ele	Electronic equipment
emach	electronic equiptment and machinary	ome	Machinery and equipment nec
oman	other manufacture	omf	Manufactures nec
util	utilities	ely	Electricity
oman	other manufacture	gdt	Gas manufacture distribution
util	utilities	wtr	Water
cns	construction	cns	Construction
trd	trade	trd	Trade
tran	air water other transport and communication	otp	Transport nec
tran	air water other transport and communication	wtp	Sea transport
tran	air water other transport and communication	atp	Air transport
tran	air water other transport and communication	cmn	Communication
othserv	other services	ofi	Financial services nec

othserv	other services	isr	Insurance
obs	business services nec	obs	Business services nec
othserv	other services	ros	Recreation and other services
othserv	other services	osg	PubAdmin Defence Health Educat
othserv	other services	dwe	Dwellings

Graph: Total Domestic Production of Commodities by Regions

	Turkey	EU15	EU12	EFTA	North Africa
Grains	3	22	14	1	14
Other crops	16	122	29	3	23
animals	1	24	4	1	6
Other animals	3	118	24	5	16
energy products	1	26	6	20	18
Animal food products	4	270	31	12	6
Other food products	13	474	76	21	24
textiles	14	125	21	3	6
wearing app & leather	7	149	23	2	18
minerals	4	235	34	9	17
petroleum coal prod	11	134	15	4	12
Chemicals etc	9	758	54	41	19
wood and paper products	5	470	45	22	13
metals	10	593	56	32	11
elec eqp & mach	12	1075	80	55	9
Vehicles & transport eqp	7	607	49	21	6
other manufacture	2	228	14	12	5
construction	11	1032	66	50	32
utilities	10	275	44	20	21
transport	32	982	83	64	32
trade	35	1574	89	79	44
business services nec	8	1425	87	35	14
other services	35	3883	122	221	97