

STATIC EFFECTS OF THE EU-TURKEY CUSTOMS UNION

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ABSTRACT

Studies on the economic effects of Turkey- EU Customs Union increased considerably in the last years, as a result of the deepening of the relations between the two parties. This is mainly due to the opening of the accession negotiations between Turkey and the European Union in October 1995. The first part of this study focuses on the evaluation of Turkey's trade figures. This study aims to investigate Turkey's import demand function using an econometric panel data application. First the analysis was made for Turkey's general import demand function. A good reason for that is the removal of European Community's tariffs on its imports from Turkey in 1971 while Turkey waited the entering into force of the Customs Union in 1996 for abolishing the trade barriers to the EU. Our findings show that Turkey's import demand is income elastic and price inelastic. The analysis was repeated for the main import sectors and empirical findings indicate that Customs Union Agreement has trade creation effects among some sectors and trade diversion effects among some others, while no effects at all could be calculated for the remaining.

Key Words: Customs Union, Static Effects, Panel Data Modelling
JEL Codes: F14, F15

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I. Introduction

After World War II, Turkey began to pursue an outward-oriented development scheme and joined international associations like IMF, IBRD, OECC and NATO, consequently. A fundamental step in this process was Turkey's application for full membership to the EEC in 1959. The Ankara Association Agreement, between Turkey and the EEC, came into force in December 1, 1964, constituting the legal basis of the relations after this date. With this agreement began the long, hard process towards the establishment of a CU between Turkey and the EEC.

According to the CU, established in January 1, 1996, customs duties, quantitative restrictions and measures of equivalent effect on trade of industrial goods, including processed agricultural products were eliminated and Turkey adopted EEC's Common External Tariff in its trade with third countries. The Community had already abolished all tariff restrictions (other than the exceptions stated in the protocol) when the Interim Agreement which allowed the commercial provisions of the Additional Protocol to be implemented in advance entered into force on September 1st 1971. This is the reason to study the effects of integration only on imports.

We first estimate the aggregated import demand function and then compare the results with the disaggregated level findings. Investigation of import performance on sectoral basis is essential to monitor the structure of the import. We model import demand function as suggested in Neyapti *et al* (2003), investigate the differences, with regards to both volume and behavioural aspects, separately for the EU group of countries as well as for the CU period. Our analysis involves 19 EU countries and 16 non-EU countries which represent the %81 of the total non-EU import for the year 2000. The chosen period is 1982-2004. Our methodology utilizes random effects model for the estimation.

The organization of the rest of the paper is as follows. In section 2, a brief review of the literature is presented. Section 3 summarizes Turkish foreign trade developments for the period 1980-2006. Section 4 presents the empirical results and finally section 5 concludes.

II. Literature Survey

Customs Union is the major method to achieve a regional economic integration. The most important characteristic of a customs union is a complete elimination of tariffs between the member countries. Although this provides a movement towards a free trade, it does not provide a global free trade. In the customs union, there is the implementation of a common external tariff and common trade policies against the third countries (Harrop, 2000).

Economic integration has effects on trade, welfare, balance of payments and growth. Effects other than trade effects are mainly dynamic effects which can be summarized as competitiveness, technological development, scale economies, resource allocation and investment. Trade effects involve static effects, namely trade creation and trade diversion effects. Trade creation effect can be defined as the replacement of expensive domestic production by cheaper imports from a partner and trade diversion is the replacement of cheaper initial imports from the outside world by more expensive imports from a partner (El Agra, 2004).

There is substantial empirical literature on the estimation of CU effects, much of it using econometric methods including gravity and analytical models, together with general equilibrium models.

Harrison *et al* (1996) estimate %1-1.5 annual GDP gain from the CU and about 1.4% of GDP lost from tariff revenues. For Turkey to avoid worsening its fiscal deficit, they conclude that the VAT rates should increase by 16.2% in each sector.

In a computable dynamic general equilibrium model, Mercenier and Yeldan (1996) estimated welfare effects by taking into account factors like increasing returns to scale, product differentiation and oligopolistic market structure. They suggest that in order to have positive welfare effects, non-trade barriers should be removed and more trade reforms should be implemented.

Halicioğlu (1997) investigates static effects of CU on Turkey's economy by using a partial equilibrium model. The author estimates trade creation and trade diversion effects that stem from tariff cuts and recomputes these in cases of different trade blocks. According to the results, CU is the second best after free trade.

Using gravity modelling, Kandogan (2005) measures trade creation and diversion effects of major European agreements for the period 1962-2002. For each agreement and partner country,

welfare implications are discussed in sectors. For Turkey, it is found that trade creation is coupled with increases in imports from non-partners in all sectors.

This study uses import demand function to analyze static effects of the CU. There are numerous studies in literature that use various methods for analyzing Turkey's import demand.

Kotan and Saygili (1999) use two different approaches to model import demand, the first one being Engle-Granger approach, and the second Bernanke-Sims structural VAR method. As a result, they find that in the short run, exchange rate is the most effective policy tool, while domestic demand and stock of international reserves are the main determinants in the long run.

Thomakos and Ulubasoglu (2002) analyze the effect of trade reforms on import demand using disaggregated import demand elasticities for the period 1970–1995. They find that the effects of the trade reforms of the 1980s were significant for a number of industries that form the backbone of the economy and industries such as cotton, crude oil, passenger cars, pig iron, rubber and textile thread exhibited a structural break.

Aydin *et al* (2004) estimate the import supply and export demand for the Turkish economy using both single equation and vector auto regression frameworks. Their findings indicate that exports are determined by unit labour costs, export prices and the national income, while imports are mostly affected by the real exchange rate and national income.

Kadilar and Simsek (2004) investigate the long-run relationship between import demand, income and relative prices by the “bounds test method” of Paseran *et al* (2001). They find that the import volume, income and relative prices are cointegrated. They also conclude that Marshall-Lerner is satisfied and thus, monetary, fiscal and exchange rate policies may be used as substitutive policies to arrange unfavourable trade balance.

Seymen and Utkulu (2004) use cointegration method with error correction and causality mechanisms to clarify the level of price competitiveness of the Turkish firms towards the EU single market in aggregate level for the period 1963-2002. They conclude that both the long-run price and income elasticities of Turkish exports to the EU are significantly reduced after the Single Market. Regarding the import function, the inclusion of dummies for structural break and a measure of import capacity (i.e. external debt stock) lowers the price elasticity although the income elasticity remains high and significant.

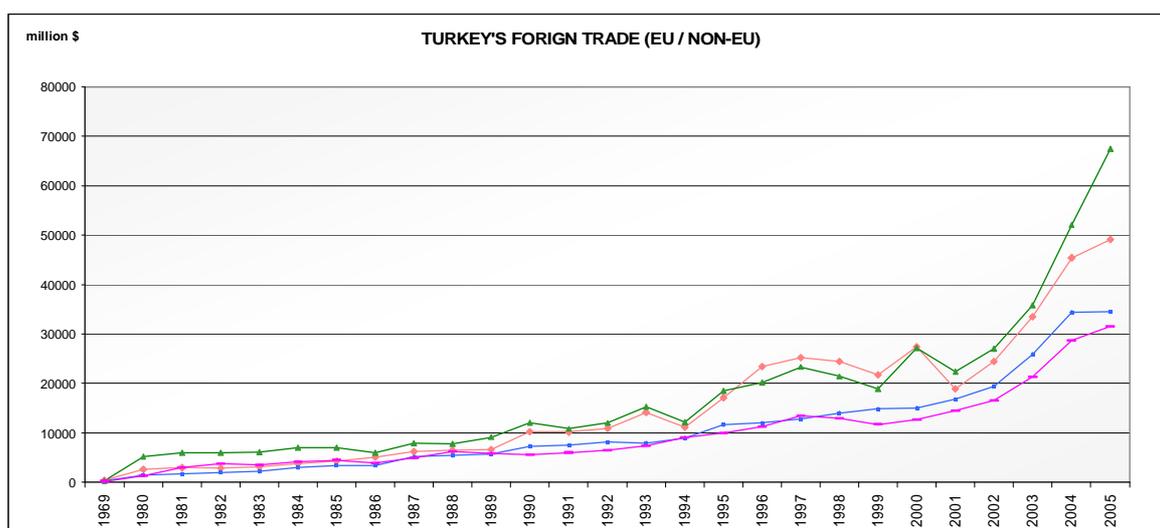
In a recent study, Akgunduz (2005) analyzes Turkey's import demand from 9 EU countries and these countries' demands from Turkey for the period 1987-2004. The author constructs double log regression to estimate income and price elasticities of import demand. The main finding of the study indicates that CU has not deteriorated Turkey's foreign trade balance in favour of EU countries. This paper finds unexpected negative sign for the price variable in the long-run import demand function of Turkey from Germany, Belgium and Denmark and that the real exchange rate

does not affect import demand in the long-run from UK, Italy, Portugal and Denmark. Total export demand estimating results give unexpected positive sign for the price variable (TL appreciates if rer increases). Price elasticity of general export demand is found positive contrary to expectations (TL appreciates when rer increases). It is explained by the nature of the goods exported to Germany being high value added industrial products and the high quality expectation as prices increase.

Neyapti *et al.* (2003) estimate import and export functions of Turkey with the EU and non-EU countries using panel data set. They observe that the income elasticity of both imports and exports are lower for the EU countries, especially for the CU period. While the effect of the RER on exports is found to be stronger for the CU period (still less than one), it gives an unexpected sign. This situation is explained by the increased imports for during the periods of largely overvalued TL, especially for the period 1993-2000. Following a similar view, we model Turkey's import demand function separately for EU and non-EU countries for the period 1982-2004 using a panel data set.

III. Turkey's Foreign Trade: EU/ Non-EU

As CU is considered to be a turning point in Turkey's foreign trade, the analysis of the effects of the integration process can be done by comparing Turkey's trade with EU and non-EU countries separately for the periods before and after 1996. Turkey's foreign trade experience should also be taken into account. If not, our findings may lead us to unrealistic conclusions.



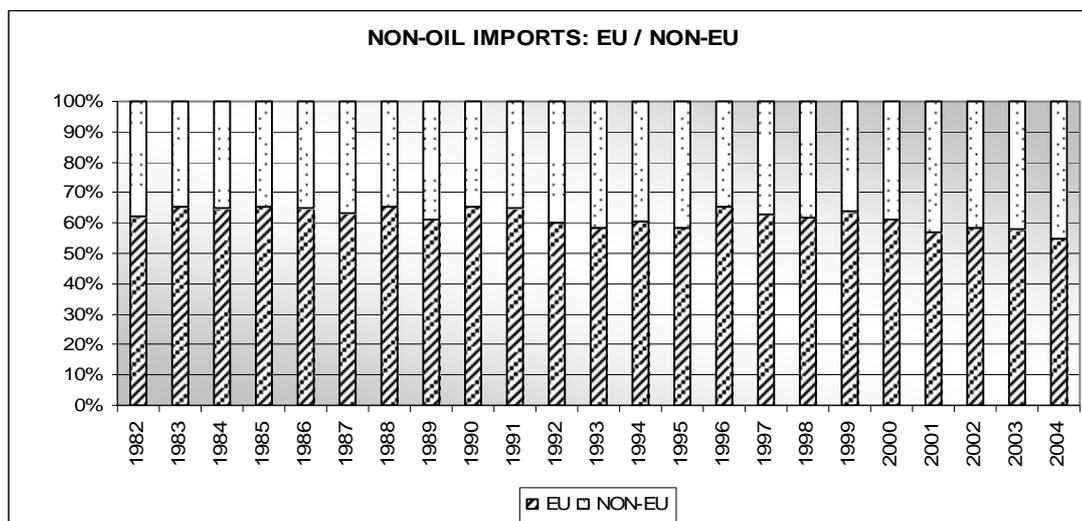
Graph 3.1. Turkey's Foreign Trade (TUIK)

With January 24, 1980 Decisions, Turkey dropped import substitution strategies and started to implement export led growth strategies. In the subsequent years, exchange rate policy became the

main policy variable and with totally liberalized capital accounts in 1989, more emphasis being given to capital inflows promotion. However this process increased both the volume and volatility of capital flows and by helping huge imports financing, it influenced the deterioration of the trade balance. In addition, while the effects of 1991 Gulf Crisis, 1997–98 Asian Crisis rippled throughout the globe and caused a global financial crisis, 1994 and 2001 Crises in Turkey plunged the economy into recession.

The policies followed made Turkey’s structure of export change from mainly agricultural products and raw materials to high-value added industrial products. After 1990s, exports to the EU have grown more than exports to non-EU countries. We have already explained why 1996 can not be a turning point for Turkey’s export performance, EU having abolished its external tariffs on the Turkish industrial goods already in 1971. As a matter of fact, this expectation is also backed up by the graph (Graph 3.1.).

As before 1996, imports from EU countries were less than that from non-EU countries, it seems that CU has led to an increase in trade figures. But, the old tendency has returned especially in the last couple of years.



Graph 3.2 Non-Oil Imports (EU / Non-EU) (TUIK)

In this study, effects of the CU have been investigated by using import demand function of Turkey for the period 1982-2004. Turkey’s export structure is heavily dependent on automotive and electric electronic goods which rely on intermediate manufactured inputs and raw materials. Oil imports have the highest figure in total import volume of Turkey. Due to the fact that oil imports depend strongly on world oil prices and that changes are exogenous shocks, oil imports are

excluded from total imports. It would also be misleading for our analysis as high import figures from certain countries like Russian Federation are explained by oil imports.

IV. Regression Results

IV. 1. Data and Methodology

In this study static effects of the CU are analyzed first by comparing Turkey's aggregate import demand from EU countries with that from non-EU countries. Our data set is an unbalanced panel data set that comprises 19 EU and 16 non-EU countries and more than 2000 country-year observations that range over the years 1982-2004 (Appendix A). In the selection of non-EU countries, we took the year 2000 as the base year and selected those which make up %81 of Turkey's non-oil imports from non-EU countries. As the remaining would have a marginal effect on the demand, we think our data set reflects well the population.

Real import demand is considered as a function of domestic income and real exchange rate (RER). Turkey's import figures are obtained from the database of the Central Bank of Turkey. Turkey's GDP, nominal exchange rate and CPI figures are obtained from the World Bank. RER is calculated as:

$$RER_i = \frac{e * CPI_{TR}}{CPI_{FR}}$$

RER_i= Real exchange rate

e_i= Nominal exchange rate (foreign currency units per YTL)

CPI_{TR}= Turkey's CPI index

CPI_{FR}= CPI index of foreign country

In addition we form a dummy for the customs union period (d96) that takes the value of one for 1996 till 2004. A significant positive value means the CU has contributed to trade by increasing Turkey's import demand. In addition, we use price and income variables interactively with the CU dummy to demonstrate whether our import demand from the EU and non-EU countries responds differently after the CU took effect.

Secondly, we take 2004 as the base year and select first 10 importing chapters. Of these, 27th chapter is mineral fuels and oils and is excluded as it comprises oil derivatives. 71st chapter, pearls, precious stones, coin, are ornament products and its demand is affected by factors other than

chosen, therefore excluded. Lastly, 52nd sector, cotton, cotton yarn and cotton fabric, contains an unknown share of agricultural goods and therefore excluded. The remaining 7 are chosen for the analysis, which are;

1. 84 machineries, mechanical appliances, boilers and; parts thereof
2. 72 iron and steel
3. 39 plastic, plastic articles
4. 29 organic chemicals
5. 87 vehicles other than railway
6. 85 electrical machinery and equipment
7. 30 pharmaceutical products

Real exchange rate is calculated as:

$$RER_{jit} = \frac{e_{it} * WPI_{jt}}{PPI_{it}}$$

RER_{jit} = imports of chapter j from country i in year t

e_{it} = nominal exchange rate (currency of country i / YTL)

WPI_{jt} = wholesale price index of Turkey for chapter j

PPI_{it} = producer price index of country i

For WPI data, we use the database of the Central Bank of Turkey. Metals and machinery index for chapters 84 and 85; Manufacturing Sector Price Index (all items) for chapter 87; Chemicals and petroleum products (manufacturing) for chapters 29, 30, and 39 and Metals (manufacturing) index is used for chapter 72. In the calculation of the exchange rate it is a better approach to use sectoral price indexes of every country relevant, but as we could not obtain them, we use producer price indexes. The low inflation rates especially in the EU will make for our approach to use the general index as proxy variable.

$$\ln m_{EU} = b_0 + b_1 d96 + b_2 \ln gdp + b_3 \ln rer + v_{it} \quad (4.1)$$

$$\ln m_{NEU} = a_0 + a_1 d96 + a_2 \ln gdp + a_3 \ln rer + n_{it} \quad (4.2)$$

$$\ln m_{EU} = b_0 + b_1 d96 + b_2 \ln gdp + b_3 \ln rer + b_4 \ln gdp * d96 + b_5 \ln rer * d96 + n_{it} \quad (4.3)$$

$i=1, \dots, 19; \quad t=1, \dots, 23$

$$\ln m_{NEU} = a_0 + a_1 d96 + a_2 \ln gdp + a_3 \ln rer + a_4 \ln gdp * d96 + a_5 \ln rer * d96 + n_{it} \quad (4.4)$$

m_{EU} = Turkey's import demand from EU group (\$)

m_{NEU} = Turkey's import demand from Non-EU group (\$)

$d96$ = Dummy variable that takes the value 1 after 1996

gdp = GDP of Turkey (\$)

rer = Real exchange rate

In order to reduce deviations in the regression findings rising from very high and very low figures in the data, import, price and income variables are defined in logarithmic terms. Besides, it gives us the opportunity to compare our findings with previous studies' as we derive income and price elasticities of the import demand.

First of all we use all the equations above to drive conclusions about the static effects of the CU. To do so, we compare the coefficients of the dummy "d96" for the EU and non-EU group. Accordingly, if the coefficient in the EU equation is found positive and significant, while it is negative and significant in the non-EU equation, our finding will denote a trade diversion. But if the non-EU coefficient is found insignificant while it is still positive and significant in the EU equation, we will conclude that imports from the EU have increased and CU is trade creative.

Equations (4.3) and (4.4) are used for interpreting variables $\ln gdp$, $\ln rer$, $\ln gdp * d96$ and $\ln rer * d96$.

IV. 2. Regression Results: Aggregated Data

Table 4.1.: Regression Results: Aggregated data

Variable/ Model	4.3	4.4
lnrer	0,019 (0,04)	-0,003 (0,07)
lngdp	3,62*** (0,24)	4,48*** (0,38)
lngdpd96	-0,45 (0,45)	0,70 (0,67)
lnrerd96	-0,08*** (0,03)	0,07*** (0,02)
d96	11,69 (11,58)	-18,66 (17,31)
_cons	-73,69*** (6,24)	-96,35*** (9,81)

*** %1, standard errors are given in parentheses.

To determine whether random or fixed effects models are more appropriate, we performed Breusch-Pagan Lagrange Multiplier Test² and Hausman Test³. Test results supported random effects model for all equations.

According to the estimation results of equations (4.1) and (4.2), after the CU imports from the non-EU countries decreased. We then repeated the analysis using equations (4.3) and (4.4) and found that the CU has no trade creation or trade diversion effect. Additionally, Turkey's import demand is found to be income elastic and price inelastic.

The estimation results reported in Table 4.1 indicate that responsiveness of import demand to income changes decreased for the EU group, whereas it increased for non-EU group. This shows that in case of a decrease in Turkey's GDP, she will first give up imports from non-EU countries. We see a similar picture for the price variable. Following the agreement, imports from the EU countries became less responsive to price changes, while imports from non-EU countries became more responsive.

² Breusch-Pagan (1979) tests pooled regression against the random effects model. If the null hypothesis which suggests the variances of groups are zero is rejected, random effects model is appropriate. (Baltagi, 2001).

³ The Hausman Test (1978) tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are (insignificant P-value, Prob>chi2 larger than. 05) then it is safe to use random effects. If you get a significant P-value, however, you should use fixed effects. (Baltagi [2001], Hsiao [1999]).

IV.3. Regression Findings: Sectors

$$\ln m_{j,EU} = b_0 + b_1 d96 + b_2 \ln gdp + b_3 \ln rer_i + n_{it} \quad (4.5)$$

$$\ln m_{j,NEU} = a_0 + a_1 d96 + a_2 \ln gdp + a_3 \ln rer_i + n_{it} \quad (4.6)$$

$$\ln m_{j,EU} = b_0 + b_1 d96 + b_2 \ln gdp + b_3 \ln rer_i + b_4 \ln gdp * d96 + b_5 \ln rer_i * d96 + n_{it} \quad (4.7)$$

$$\ln m_{j,NEU} = a_0 + a_1 d96 + a_2 \ln gdp + a_3 \ln rer_i + a_4 \ln gdp * d96 + a_5 \ln rer_i * d96 + n_{it} \quad (4.8)$$

For EU $j=1, \dots, 7$ (sectors) $i=1, \dots, 18$; $t=1, \dots, 23$

For Non-EU $j=1, \dots, 7$ (sectors) $i=1, \dots, 15$; $t=1, \dots, 23$

$m_{j,EU}$ = Imports from the EU group in sector j (\$)

$m_{j,NEU}$ = Imports from the Non-EU group in sector j (\$)

$d96$ = Dummy variable that takes the value 1 after 1996

gdp = GDP of Turkey (\$)

rer_i = RER calculated for the import demand from country i

Malta and Taiwan were excluded from the analysis, since PPI of these countries could not be obtained.

Apart from iron and steel import demand from EU countries, income elasticity is found greater than one in all chapters. A notable point is that coefficient of this variable is greater in non-EU equations which reveals that imports from this group are more sensitive to income changes. After the CU, this sensitivity has increased in most chapters for non-EU countries, while it decreased for EU group (Table 4.2).

Price elasticity results backed up aggregate demand findings and indicated that import demand is also price inelastic in chapter basis. Again, the responsiveness of import to price changes decreased for the EU group and increased for the non-EU group.

For dummy $d96$ which is used to show CU's static effects on trade, significant positive sign is estimated in chapters 84, 85 and 87 and therefore evidence of a trade creation effect. When the analysis is repeated with equations (4.5) and (4.6), we find external trade creation effect in chapter 84 and trade creation effect in chapters 85, 87 and 39. For chapter 30, there is evidence

that imports from the EU decreased while imports from non-EU increased (not reported here due to the inefficiency caused by the common coefficient).

Estimation results indicate that both aggregate and disaggregated import demand is unaffected by price changes and is inelastic (YTL appreciates if rer increases). As the selected chapters consist of income elastic and price inelastic goods, this finding is not unexpected. We also see unexpected negative sign for some sectors.

Table 4.2. Regression Results: Sectors

Dependent var.: lnimp sectors / independent var.	EU						Non-EU					
	c	d96	lngdp	lnrer	lngdp*d96	lnrer*d96	c	d96	lngdp	lnrer	lngdp*d96	lnrer*d96
84	-86,14*** (9,91)	27,68* (16,57)	4,03*** (0,37)	0,12* (0,07)	-1,06* (0,64)	-0,22*** (0,05)	-93,25*** (14,41)	-29,27 (32,66)	4,26*** (0,55)	-0,12** (0,05)	1,14 (1,26)	0,06 (0,04)
72	-9,48 (16,51)	83,99 (55,58)	1,02 (0,63)	-0,99** (0,45)	-3,25 (2,14)	1,44*** (0,31)	-29,59 (19,05)	-129,75** (63,25)	1,76** (0,74)	-0,006 (0,07)	4,97** (2,44)	0,12** (0,06)
39	-84,95*** (8,5)	6,51 (14,77)	3,95*** (0,32)	-0,34*** (0,13)	0,25 (0,57)	0,42*** (0,09)	-143,66*** (23,16)	-2,55 (33,66)	6,18*** (0,90)	-0,17*** (0,66)	0,098 (1,3)	0,11* (0,06)
29	-56,28*** (8,55)	5,52 (17,13)	2,82*** (0,33)	0,2* (0,10)	-0,21 (0,66)	-0,31*** (0,077)	-105,89*** (12,47)	34,24 (30,48)	4,71*** (0,48)	-0,07 (0,05)	-1,35 (1,17)	0,12*** (0,03)
87	-60,52*** (16,63)	-59,18* (35,63)	2,94*** (0,64)	0,41 (0,26)	2,33* (1,37)	-0,36** (0,17)	-106,55*** (21,74)	-3,27 (46,68)	4,73*** (0,84)	-0,31*** (0,08)	0,13 (1,80)	0,13* (0,07)
85	-103,84*** (12,66)	65,09*** (22,03)	4,69*** (0,48)	0,35** (0,16)	-2,49*** (0,85)	-0,32*** (0,10)	-151,05*** (14,25)	-30,65 (33,17)	6,49*** (0,55)	-0,18*** (0,06)	1,16 (1,28)	0,09** (0,04)
30	-223,43*** (21,11)	80,96 (51,17)	9,23*** (0,82)	0,009 (0,21)	-3,15 (1,97)	-0,29* (0,15)	-153,37*** (17,01)	35,91 (57,30)	6,43*** (0,66)	-0,43*** (0,09)	-1,35 (2,20)	0,03 (0,08)

Note: Figures in parentheses are standard errors.

***% 1

**% 5

*% 10

V. Conclusion

Effects of CU on Turkey's foreign trade were investigated in this study. We can not think of CU's effects on the economy apart from the general conjuncture. Our primary intention is to ascertain static effects of the Customs Union. Thus, we first evaluated foreign trade data in the light of economic experiences and then analyzed aggregate and disaggregated import demand by using panel data modelling.

Our first finding from the general import demand analysis is that there is no change in import shares with respect to EU and non-EU country groups. Regression results have indicated like many other previous studies that import demand is income elastic. Additionally, we find that responsiveness to income changes decreased in the EU group and increased in the non-EU group. Exchange rate variable, used with the intention of capturing changes in relative prices, gives evidence of price inelastic import demand in both groups. Both aggregate import and import chapters selected for this study include imported intermediate goods and by nature, these goods are income elastic and price inelastic. In addition, our estimations reveal that import demand's responsiveness to price changes differ between the two groups. Whereas the responsiveness increased in the non-EU group, it decreased in the EU group. At this point, whether this finding is backed up in sectoral basis becomes important.

In all equations we find significant positive (greater than one) coefficient for the income variable. Dummy that shows the price elasticity of import demand (rer) is found insignificant for iron and steel import demand from EU group of countries. All other regression results found that import demand is price inelastic.

Customs Union has been trade creative in machineries and mechanical appliances (84). Responsiveness of import demand to both income and price changes decreased in the EU group and increased in the non-EU group.

In the automotive sector, CU has been trade creative. While responsiveness to trade increased in both groups, price responsiveness decreased in the EU group and increased in the non-EU group.

Import demand of electrical goods and machinery from the EU has increased after the CU, so we can say that the agreement has been trade creative. Responsiveness to income and price changes increased in the EU group and decreased in the non-EU group.

There is evidence of a marginal trade diversion effect in iron and steel imports. Complete effect may be seen in the following years. Responsiveness to income and price changes increased in the

non-EU group. Imports from the EU have been less responsive to income changes and more responsive to price changes.

We could not find evidence of any trade effect in the plastic and plastic articles. The numbers also demonstrate no significant change in trade shares. Responsiveness to income changes has increased in the EU group. Price responsiveness is found positive in both.

Like plastic, CU has no trade effect on organic chemicals imports. The numbers also point out no change in trade shares since 1990s. Price responsiveness of imports has decreased in EU group and increased in non-EU group. Also, imports from non-EU countries respond more to income changes.

In the non-EU equation of chapter 30, pharmaceutical products imports, we find insignificant coefficients for income and price variables. But there is also evidence of CU's external trade creation effect. Findings reveal that imports from the EU have become more responsive to income and price changes.

We found unexpected sign for the variable rer in some equations. We think those equations have captured the increased imports during the periods of largely overvalued TL, especially in 1993 and 2000. Furthermore, unexpected sign in EU equations may be the effect of imports from Germany as Turkey's imports from this country has been moving towards high value added industrial products.

In conclusion, we find no overall trade creation or trade diversion effect of the Customs Union. For net effect on aggregate import demand is the sum of trade creation and trade diversion effects; it is obvious that regression results will differ among import chapters. Every one of the chapters has been affected by developments in the economy, but the effects differ among them. So, each one should be analysed in its own dynamics. In addition, we should keep the disadvantages of using panel data in mind as models evaluate the aggregate data of the countries. Hence, when using these findings, imports from each country should be analyzed separately.

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Appendix A

1. EU COUNTRIES: Germany, Austria, Belgium-Luxembourg, Check Republic, Denmark, Finland, France, Holland, UK, Ireland, Spain, Swiss, Italy, Hungary, Malta, Poland, Portugal, Slovakia, Greece

2. NON-EU COUNTRIES: USA, Brazil, Bulgaria, China, Indonesia, Korean Republic, India, Israel, Switzerland, Japan, Malaysia, Romania, Russian Federation, Thailand, Taiwan, Ukraine