

Has European Customs Union Agreement Really Affected Turkey's Trade?

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Abstract

There have been numerous discussions regarding both the advantages and disadvantages of becoming a member of the Customs Union for Turkey. While these discussions mostly focus on the changes in the volume of trade without much regard to the conjectural changes, empirical analysis of the issue has been insufficient. This study attempts to shed light on this issue by empirically investigating Turkey's international trade before and after the Customs Union Agreement. In doing so, we explicitly account for the concurrent changes in the macroeconomic environment that may have affected Turkey's trade with the rest of the world. Our empirical findings indicate that customs union agreement has positively impacted on Turkey's exports to and imports from the EU.

1. Introduction

The relationship between Turkey and initially with the European Economic Cooperation (EEC) and later with the European Union (EU) has started with the association agreement signed in Ankara, in September 1963. An additional protocol, signed in November 1970 and put into effect in January 1973, specified the time schedule for the steps Turkey will take in the next 22 years to join the Customs Union (see, Berument et al., 2001). In December 1995, the European Parliament took the decision to finalize the Customs Agreement with Turkey, while the final stage of Customs Union was arrived in January 1996. Turkey's joining the Customs Union has been considered as a step towards full membership to the EU, which is envisioned to not only increase the level of wealth in Turkey but also reduce the risk premium and encourage the volume of capital inflows.

Customs union theory has been defined as a branch of the tariff theory that deals with the effects of geographically discrimination (see, for example, Lipsey, 1960, and Chacholiades, 1978). Suggested by this definition, customs union involves preferential trading agreements that imply zero duty among members on imports of goods and services and a common external tariff.

Turkey started to implement trade liberalization policies in the 1980s, after an extended period of an inward-looking development strategy. During the 1980s, like many other countries, Turkish economy also underwent series of trade reforms and abandoned the fixed exchange rate regime.¹ With the Customs Union agreement, Turkey's tariffs and levies on imports of manufactured products from the European Union were eliminated. Trade in agricultural products, with the exception of agro-

industrial products, however, was excluded from this. According to the agreement, Turkey would also apply EU's common external tariff on imports from the third parties.

Harrison et al. (1996), suggest that improved access to third country markets would be the biggest gain from the customs union arrangement. Using a comparative static computable general equilibrium model for Turkey, they estimate that Turkey stands to gain between 1 and 1.5 per cent of GDP annually from customs union. By contrast, Mercenier and Yeldan (1997), in a general equilibrium exercise, characterize the net impact of the customs union agreement as undesirable for Turkey. Also in a general equilibrium framework, Bekmez (2002) suggest that customs union would lead to revenue losses for the government sector and in GDP, though it would benefit the private sector.

While the foregoing works are based on projections under various economic scenarios, this paper takes the factual evidence since the implementation of the customs union as the basis of the analysis of its impact on Turkish trade. We model imports and exports for the Turkish economy as suggested in the literature, but with the addition that we investigate their differences, with regards to both the volume and behavioural aspects, separately for the EU group of countries as well as for the customs union period. Our analysis involves more than 150 countries between 1980 and 2001, yielding an unbalanced panel data set comprised of more than 2000 observations. By analyzing Turkey's trade with the EU countries and the CU period in the general context of Turkey's trade with all the countries, we refrain from biases that could possibly arise due to the global trends with regards to increasing trade volumes, which may result form incomes or decreasing exchange rate misalignments.

¹ The quota list was removed in 1981 and was replaced by an import program in 1984, which increased

Our methodology utilizes fixed effects model for the estimation of the export function and random effects model for the estimation of the import function. The results reveal that, after controlling for the (significant) effects of real exchange rate and income, both exports and imports of Turkey have been positively affected by the customs union. Moreover, we observe that while income elasticity of both exports and imports are lower for the EU countries, and especially in the CU period, the effect of RER on Turkey's exports to EU is stronger for the CU period, though not earlier. For imports, we observe just the opposite: real appreciation of TL has had a positive impact on imports especially from the EU countries, though not in the CU period. In addition, we observe that political instability and good governance have been factors that contribute to trade.

The organization of the rest of the paper is as follows. In section 2, we provide a closer look at the data and methodology. Section 3 presents the empirical results and finally Section 4 concludes.

2. Data and Methodology

Our data set is an unbalanced panel that comprises more than 150 countries and more than 2000 country-year observations that range over the years 1980 to 2001. The data set mainly includes Turkey's imports from and exports to other countries, real bilateral exchange rates (RER)² and GDP levels in Dollars (source: World Bank). In addition, we form a dummy for the customs union period (CU) that takes the value of 1 for 1996 till 2001 and another dummy for the 15 EU countries: DEU.

Table 1 below provides data on Turkey's total export flows to and imports

tariffs for consumption goods but reduced them for intermediate and capital goods (Baysan and Blitzer, 1991).

from both the EU and non-EU country groups since the 1980s. In addition, the column $(X/M)*100$ shows the ratio of imports that can be financed through export revenues. The table clearly shows that Turkey's exports to and imports from both EU and non-EU countries have increased steadily since 1980, conforming with the global trends towards growing economic integration. Moreover, as of 2001, there are no major differences in terms of the volume of Turkey's trade with the EU as opposed to that with the rest of the world. The financing ratio for imports also does not appear to diverge much between the EU trade and the non-EU trade.

Table 1 : Selected Trade Indicators of Turkey (current US\$, In Billions)

Year	EU COUNTRIES			NON EU COUNTRIES		
	X	M	$(X/M)*100$	X	M	$(X/M)*100$
1980	1,38	2,59	53	1,53	5,32	29
1981	1,69	2,81	60	3,02	6,12	49
1982	1,92	2,78	69	3,82	6,06	63
1983	2,19	2,98	73	3,54	6,25	57
1984	2,95	3,54	83	4,19	7,22	58
1985	3,40	4,18	81	4,56	7,16	64
1986	3,42	4,86	70	4,03	6,25	65
1987	5,13	6,07	84	5,06	8,08	63
1988	5,36	6,30	85	6,30	8,03	78
1989	5,68	6,49	88	5,94	9,31	64
1990	7,20	9,93	73	5,76	12,38	47
1991	7,38	9,90	75	6,22	11,15	56
1992	7,91	10,66	74	6,80	12,21	56
1993	7,60	13,87	55	7,74	15,56	50
1994	8,69	10,92	80	9,41	12,35	76
1995	11,08	16,86	66	10,55	18,85	56
1996	11,50	22,34	51	11,72	21,29	55
1997	12,25	24,84	49	14,01	23,72	59
1998	13,72	24,46	56	13,26	21,47	62
1999	14,35	21,42	67	12,24	19,26	64
2000	14,51	26,61	55	13,26	27,89	48
2001	16,12	18,28	88	15,22	23,12	66

The export and import data in percentages of GDP also show a steadily growing trend over time for both groups of countries, while Turkey's trade imbalances with both groups also grow wider in the 1990s as compared to the 1980s.

² Calculated as: nominal exchange rate (foreign currency units per TL) x [Turkish CPI /Foreign CPI],

Appendix 1 shows Turkey's GDP and real exchange rate in terms of Dollars. It is observed that, if 1995 is selected as the base year for the real exchange rate, then Turkish Lira appears overvalued in the early 1990s; undervalued in 1994 since crises led to the overshooting of TL; was in long run equilibrium between 1996 and 2000 and; became undervalued again in 2001. In addition, there are notable fluctuations in the GDP, be it in Dollar terms or in TL, which coincide with the years of financial crises (1994) and the earthquake (1999) in Turkey. Both of these observations should explicitly be taken into account for an accurate behavioral analysis of exports and imports, which is what we do next.

In the spirit of Goldstein and Khan (1976), Murray and Ginman (1976), Bond (1987) and Brada et al. (1997), who all use the level of income besides some relative price concept to estimate the export or import demand functions³, we estimate the following models, where XT_{it} (MT_{it}) stands for exports (imports) of Turkey to (from) country i at time t ; T stands for Turkey, rer is the real exchange rate of TL with respect to other currencies⁴; \ln is natural logarithm and; $deucu$ is the interactive dummy between CU and DEU.

$$\ln XT_{it} = \mathbf{a}_{0i} + \mathbf{a}_1 (\ln gdp)_{it} + \mathbf{a}_2 (rer)_{it} \dots\dots\dots (1.1)$$

$$\ln XT_{it} = \mathbf{a}_{0i} + \mathbf{a}_1 (\ln gdp)_{it} + \mathbf{a}_2 (rer)_{it} + \mathbf{a}_3 (deu * cu)_{it} \dots\dots\dots (1.2)$$

$$\begin{aligned} \ln XT_{it} = \mathbf{a}_{0i} + \mathbf{a}_1 (\ln gdp)_{it} + \mathbf{a}_2 (rer)_{it} + \mathbf{a}_3 (deu * cu)_{it} + \mathbf{a}_4 (deu * \ln gdp)_{it} \\ + \mathbf{a}_5 (deu * rer)_{it} + \mathbf{a}_6 (deucu * \ln gdp)_{it} + \mathbf{a}_7 (deucu * rer)_{it} \dots\dots\dots \end{aligned} (1.3)$$

$$\ln MT_{it} = \mathbf{b}_{0i} + \mathbf{b}_1 (\ln gdpT)_{it} + \mathbf{b}_2 (rer)_{it} \dots\dots\dots (2.1)$$

where all figures are indices based in 1995.
³ Both Goldstein and Khan (1976) and Murray and Ginman (1976) use the ratio of import prices to domestic prices to estimate the import demand function; likewise, Bond (1987) and Brada et al. (1997) use the ratio of export prices to world prices to estimate the export function.
⁴ An increase in rer indicates real appreciation of the TL.

$$\ln MT_{it} = \mathbf{b}_{0i} + \mathbf{b}_1 (\ln gdpT)_{it} + \mathbf{b}_2 (rer)_{it} + \mathbf{b}_3 (deu * cu)_{it} \dots\dots\dots (2.2)$$

$$\ln MT_{it} = \mathbf{b}_{0i} + \mathbf{b}_1 (\ln gdpT)_{it} + \mathbf{b}_2 (rer)_{it} + \mathbf{b}_3 (deu * cu)_{it} + \mathbf{b}_4 (deu * \ln gdpT)_{it} + \mathbf{b}_5 (deu * rer)_{it} + \mathbf{b}_6 (deucu * \ln gdpT)_{it} + \mathbf{b}_7 (deucu * rer)_{it} \dots\dots\dots (2.3)$$

Equations (1.3) and (2.3) are not estimated with the DEU term but, instead, its interaction with the CU dummy since DEU is perfectly correlated with some of the fixed effects.⁵ Since our data set is panel, we perform Hausman test⁶ to determine whether random or fixed effects models are more appropriate. Table 2 reports the test results that indicate that for all the models of export, fixed effects is the appropriate model, whereas it is appropriate (at 10% level of significance) for the import function only in case of model (2.2). Based on these results we estimate all the export equations and equation (2.3) with fixed effects model and Equation (2.1) with the random effects model.

Table 2: Hausman test (χ^2) results for Fixed versus Random effects

Dependent Variable:	$\ln XT_{it}$		$\ln MT_{it}$
<u>Models:</u>		<u>Models:</u>	
1.1	117.47*** (0.00)	2.1	1.30 (0.52)
1.2	111.98*** (0.00)	2.2	6.48* (0.09)
1.3	127.98*** (0.00)	2.3	

Note: Numbers in parentheses are the p-values.
 *** indicates significance at 1 % level.
 ** indicates significance at 5 % level.
 * indicates significance at 10 % level.

⁵ For the same reason, we cannot add the political stability and governance terms (source: World Bank) to the fixed effect or random effect formulations. However, the OLS regressions reveal that all these terms are also significant in the positive direction for both exports and imports.

⁶ The null hypothesis of the Hausman (1978) test is that, assuming that both OLS and GLS are consistent, OLS is inefficient, the alternative being OLS is consistent but GLS is not. In other words, the Hausman statistic tests for the correlation between the individual effects and explanatory variables. Rejection of the null hypothesis thus leads to the adoption of fixed effects model against the random effects model (see, for example, Hsiao [1986], Greene [1993] or Baltagi [1995]).

3. Regression Results

Regressions (1.1) to (2.3) all use cross-country and time-series data on bilateral trade of Turkey with every country in the sample. The estimation results reported in Table 3 indicate that Turkey's exports and imports behave according to predictions of the theory; both exports and imports are sensitive to income and price changes. In the estimation of the export equation using fixed effects model (equation 1.1 reported in Table 3), the income elasticity and elasticity of exports with respect to real exchange rates, which is taken a measure of relative price changes, are both statistically significant at 1 % significance level. The positive income elasticity is above 2.00 and negative price elasticity (real exchange rate appreciates if $\ln r_{er}$ increases) is approximately -0.66 . Overall, this shows that Turkish bilateral exports are income elastic but price inelastic. Similar results are obtained in the estimation of the import function using random effects model (equation 2.1 reported in Table 3). The domestic income elasticity is above unity and relative price elasticity is less than one, both of which are significant at 1 % level.

Custom union agreement had significant impact on the Turkish exports and import values. In both export and import estimations, the variable $deucu$ represents the dummy variable for the EU countries for the period when Custom Union is in effect. The coefficients of this variable in both export and the import equation are positive and statistically significant at 1% as can be seen in equations 1.2 and 2.2 in Table 3, indicating that both exports to and imports from the EU countries increased following the agreement. These results demonstrate that custom union agreement and the resulting change in the tariff structure caused a significant change in the direction of trade towards EU and away from the Non-EU countries.

Table 3: Regression Results:

Variables / Model	(1.1)	(1.2)	(1.3)	(2.1)	(2.2)	(2.3)
C				-32,42*** (1,80)		
LNGDP	2,10*** (0,04)	2,05*** (0,04)	2,32*** (0,05)			
LNGDPT				1,90*** (0,07)	1,62*** (0,03)	1,75*** (0,05)
RER	-0,67*** (0,06)	-0,65*** (0,06)	-0,66*** (0,07)	0,23** (0,09)	0,29*** (0,06)	0,30*** (0,07)
DEUCU		0,16*** (0,05)	4,32*** (1,11)		0,40*** (0,04)	7,12 (7,51)
DEULNGDP			-0,96*** (0,08)			
DEURER			1,17*** (0,22)			0,44*** (0,15)
DEULNGDPT						-0,36*** (0,07)
DEUCULNGDP			-0,09** (0,04)			
DEUCULNGDPT						-0,22 (0,29)
DEUCURER			-1,52*** (0,35)			-0,90*** (0,26)
(unweighted statistics) R-bar squared	0,86	0,86	0,86	0,87	0,87	0,86
# of cross-sections used	155	155	155	156	156	156
total panel (unbalanced) observations	2193	2193	2193	2065	2065	2065

*** reject null at 1 per cent significance level.
** reject null at 5 per cent significance level but not 1 per cent.
* reject null at 10 per cent significance level but not 5 per cent and 1 per cent.
Note: figures in parenthesis are standard errors

Even though there is an increase in trade with the EU during the Custom Union agreement, the question still remains whether this change in trade policy brought about an additional structural change in the export supply and import demand. To test this possible change in the behavior, income and price elasticities before and after the Custom Union needs to be examined.

However, the responsiveness of trade to income and price changes might have already differed between the EU and non-EU group of countries. To disentangle this, the first step is to consider the estimate of income and price elasticities of Turkish

trade with the EU countries. The income and price variables are used interactively with the EU dummy in regressions 1.3 and 2.3, to measure the difference in elasticities for the EU countries. The statistically significant coefficients, estimated for these interactive variables demonstrate that the responsiveness of Turkish exports to and from the EU countries is different than the rest of the countries. The income elasticity of demand for the Turkish exports from the EU countries is smaller as compared to the income elasticity of demand from other countries (the difference in elasticity is estimated to be -0.96). In the import demand equation there is also an EU differential in the domestic income elasticity for imported goods (the difference in the elasticity is -0.36 according to these estimations). Price elasticities for exports and imports also differ for the EU countries. The differences in these elasticities are estimated to be 1.17 for exports and 0.44 for imports. Even though this makes the Turkish imports from EU more price elastic, it reverses the responsiveness of Turkish exports to the real exchange changes and causes some doubts about the responsiveness of the Turkish exports to the EU countries.⁷

Did the Custom Union agreement result in a change in the behavior of the EU demand for Turkish exports and Turkish demand for EU imports? The estimation results indicate that the responsiveness of the exports to the change in income in EU countries decreased. The statistically significant coefficient of the interactive term amongst the EU and Custom Union dummies and income variable shows that there is a -0.09 change in income elasticity following the Custom Union agreement. There is no significant change in the income elasticity of Turkish imports to domestic income level. However, we see that the price elasticity of both exports from and imports to

⁷ In fact, in a regression analysis that only includes the interactive EU dummy with the income and price variables, the export price elasticity is estimated to be -0.96 and the EU differential for the price elasticity is estimated to be 0.96 , with statistically significant coefficients at 1 % level. Both coefficients combined indicate that Turkish exports to EU are not price sensitive.

EU changed after the Custom Union agreement. While exports became more price elastic (the combined effect adds up to an elasticity value of -1.01), import elasticity with respect to price changes declined considerably (the combined effect gives an elasticity value of -0.16).

It is possible to conclude that there was a significant effect of the Custom Union on Turkish trade; both the exports to EU countries and the imports from the EU countries increased following this new trade. Furthermore, the elasticities, which underline the behavioral patterns, have changed after the Custom Union. Even before the Custom Union, EU countries were Turkey's main trading partners but the trade union expanded the significant role of the EU countries in Turkish trade. In estimations conducted using OLS methodology (not reported here due to the inefficiency caused by the common coefficient), it is possible to include the EU and Custom Union effects separately. Empirical results there show that, both exports and imports of Turkey are significantly larger for the EU countries and the Custom Union Agreement created further increase in the trade with these countries. In these regressions, it is also possible to see the positive effects of institutional factors such as political stability and indicators of good governance such as rule of law, government efficiency and voice and accountability of the trading partners on Turkish exports and imports.

4. Conclusions

Turkey's trade share with the European Union countries has been about 50% of its overall trade volume since the 1980s . Empirical evidence in this paper shows that controlling for the effects of variables that are standard for the estimation of export and import demand functions, namely the real exchange rate and income levels, Customs Union period has augmented Turkey's trade volume. Our estimations

reveal that, as predicted by the theory, while the value of currency (measured by the real exchange rate) is negatively related with exports and positively related with imports, Turkish GDP is positively related with imports and GDP of trading partners are also positively related with Turkey's exports at statistically significant levels.

Interestingly, however, we observe that the income elasticity of both exports and imports are lower for the EU countries, and especially in the CU period. The effect of the RER on Turkey's exports is stronger for the CU period, though not earlier. For imports, we observe just the reverse: real appreciation of TL has had a positive impact on imports especially for the EU countries, though not in the CU period. The amplified effect on imports of the *rer* for the EU country group probably captures the increased imports during the periods of largely overvalued TL, especially in 1993 and 2000. In addition, we observe that countries with higher political instability and better governance have had more trade with Turkey than others.

We conclude that customs union agreement has contributed to the increasing volume of trade between Turkey and the EU. In addition, income effect on trade has decreased over the CU period. However, our exports to the EU have become more responsive to the real exchange rate misalignments during the CU period, though not imports. This implies that periods of overvalued TL have come to carry a greater destabilizing risk for Turkish trade with the EU for it leads to a larger fall in exports than before.

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Appendix 1: Real Exchange Rate (RER) and GDP of Turkey in terms of US Dollars:

<u>Year</u>	<u>RER (1995=1)</u>	<u>GDP(current US\$, in Billions)</u>
1980	0,70	70,9
1981	0,83	66,5
1982	0,98	64,4
1983	1,07	61,5
1984	1,22	59,9
1985	1,24	67,2
1986	1,21	75,6
1987	1,15	86,9
1988	1,15	90,1
1989	1,10	107,0
1990	0,89	150,6
1991	0,89	150,8
1992	0,89	158,9
1993	0,88	179,4
1994	1,18	129,7
1995	1,00	169,3
1996	1,01	181,1
1997	1,04	189,2
1998	0,98	199,6
1999	0,98	183,8
2000	0,98	199,3
2001	1,27	147,6

Note: RER has been calculated as: Nominal exchange rate (in terms of Dollars per TL) times the ratio of 1995 based CPI index of Turkey, divided by the 1995 based CPI index of the USA.