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THE POSSIBLE TRADE EFFECTS OF THE THIRD ENLARGEMENT: THE CASE OF TURKISH EXPORTS TO EU

Cagacan Deger*

Abstract

This paper aims to comment on the trade impact of the new wave of European enlargement with the membership of Central and Eastern European Countries (CEEC) by focusing on the case of Turkish exports to EU members, new member countries and candidate countries. It is calculated that once the membership process of new members are completed by 2006, growth rate of Turkish exports to EU between 2001 and 2006 may slow down whereas the growth rate of Turkish exports to new member countries between 2001 and 2006 may increase.

JEL Codes: F02, F15, F47.

Keywords: European Union, Central and Eastern European Countries, international trade, gravity equation

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I. INTRODUCTION

It has been 40 years since Ankara Agreement, the first step in Turkey's attempt to join the process that has resulted by the formation of the European Union (EU). The attempts for membership had the effect of trade being oriented towards Europe. Especially after 1980s, during which Turkish economy became more liberated in terms of international economic flows and after the dismantling of the Soviet Block, this tendency increased and reached a peak with the formation of the Customs Union between Turkey and EU in 1996. A brief examination of Turkey's exports to European countries reveals these countries' importance to Turkey as export markets. Table 1 presents shares of sample countries in Turkish exports for years 1993 to 2001. The exports to EU constitute about 50% of total Turkish exports in this time period. The share of Central and Eastern European countries (CEEC), on the other hand, falls from 18% to 12 %. But total Turkish exports have displayed an increase of nearly 100% from 1993 to 2001. The exports to these countries account for more than 60% of Turkish exports.

Since these countries represent such a large ratio of Turkish exports, it is of importance to focus on the behavior of exports to these countries in the future to form expectations about Turkey's exports. This study focuses on trade flows between EU member states (Belgium-Luxembourg, Germany, France, Italy, Netherlands, Denmark, Ireland, UK, Greece, Spain, Portugal and after 1995 Austria, Finland and Sweden), the new member countries (Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia), applicant countries (Bulgaria and Romania) and Turkey. During the course of this study, for ease of reference, EU member countries are referred to as EU countries whereas new member countries and applicant countries are referred to as Central and East European Countries (CEEC). The aim of this paper is to examine how EU membership of new member countries may affect Turkish exports.

Similar studies have been conducted by Brühlhart and Kelly (1998), and Martin and Turrion (2001). Brühlhart and Kelly (1998) focus on impact of new members on Irish exports. Their conclusion is that there will be increased trade between Ireland and new member states, caused mostly by income increases of the new members. Martin and Turrion (2001), on the other hand, also take into account the effect of foreign direct investment in CEECs as instruments that create trade. Their main result is that increased openness of new member

states will increase trade between EU and CEECs. Their results also imply that exports from rest of the world to CEECs may increase due to membership process. Following these leads, this study aims to discover whether Turkish exports to EU and CEECs will increase after new member states of EU complete their membership process.

II. METHODOLOGY

To reach the stated aim, the paper attempts to create a picture of Turkish exports in the year 2006. It is assumed that two years is an adequate period of time for new member countries of EU to adjust to membership. The empirical tool employed is the gravity equation of bilateral trade flows. The paper proceeds with a brief presentation of the gravity equation. Then, gravity estimates for years 1993 to 2001 are obtained. Using the coefficients of these cross section estimates, a function is constructed to reflect natural trade flows between sample countries in the future. To construct this function, weighted averages of coefficients of annual cross sections are taken. The weighting procedure assumes that more current years have more effect in determining the function that is valid for 2006. Then the trends for the annual cross section estimates are obtained and the values of coefficients in 2006 are calculated. Weighted averages and calculations from trend estimate are then averaged to obtain a weighted function capable of presenting trade flows in 2006.

Also using these cross section estimates, the deviation of actual Turkish exports from “natural” levels is calculated, with the “natural” levels presented by the gravity equation. These deviations are calculated as shares of actual trade flows and then averaged. Using the deviations from “natural” levels and expected incomes of the sample countries in the year 2006, the weighted function is used to calculate a possibility for actual Turkish exports in 2006. The figures calculated for year 2006 are then used to get a picture of how Turkish exports increase in the next few years. The calculated increases are then compared to past performance. As a conclusion, the effect of EU membership of CEECs on Turkish exports to these countries is discussed.

II. THE MODEL

Gravity model of bilateral trade flows is a tool used most frequently to examine the impact of qualitative variables on international trade. First used in international trade by Tinbergen (1962) then developed theoretically by Anderson (1979) and Bergstrand (1985, 1989), the model has been used to examine effects of national boundaries (McCallum, 1995) and trade blocks (Frankel, 1997) on international trade.

In its most simple form, the gravity model of international trade states that trade flows between two countries are determined by their incomes and the distance between them. The income levels are generally taken as indicators of export supply of exporting country and import demand of importing country whereas distance is generally thought of as a proxy for transaction costs (Brühlhart and Kelly, 1998; Frankel, Stein and Wei, 1996; Eichengreen and Irwin, 1996). Higher income levels are expected to increase trade between countries. Thus the coefficients of income variables are expected to have positive signs. Since distance is a proxy for transport costs, it is expected to have a negative coefficient.

A significant property of the gravity equation is that it provides a “natural” flow of trade between countries (Tinbergen, 1962; Brühlhart and Kelly, 1998). The idea that economic flows are functions of economic sizes at departure and target points is so natural in itself that it has been claimed that the true founder of the gravity equation of international trade should be named as Newton himself (Frankel, 1997). This is a most useful property for this study’s purpose, since it enables one to identify deviations from “natural” flows and examine the effects of qualitative variables, like membership in various trading arrangements. Such an approach may also be claimed to have formed the basis of many gravity studies.

Given this brief explanation about the underlying essence of the model, the gravity equation for trade flows between sample countries is estimated in the following log-linear form:

$$\text{LN}X_{ij} = A * \text{LN}Y_i + B * \text{LN}Y_j + C * \text{LND}_{ij} + D * X_{TEU}$$

where X_{ij} is exports from country i to country j , Y_i is the income level of country i (the exporter country), Y_j is the income level of country j (the importer country), D_{ij} is the distance between countries i and j . X_{TEU} is a dummy variable that takes the value of 1 if importer country is a member of EU and 0 otherwise. A , B , C and D are coefficients.

As for the data used in the application, the aggregate bilateral trade data are obtained from IMF Direction of Trade Statistics database. Income data are from World Bank's WDI Online database. All of this data are in current US Dollar. The distances are calculated as great circle distances in kilometers between capital cities. Distance calculations have been performed by a software named "Great Circle Distances Calculated Between Points on Earth Given Latitudes and Longitudes". The program is by John A. Byers of Western Cotton Research Laboratory.

III. REGRESSION RESULTS FOR YEARS 1993-2001

As the first step, the identified model has been estimated to obtain cross section gravity equation coefficients for years 1993 to 2001. The obtained results are presented in Table 2. All the coefficients have the expected signs and they all are significant at %1 significance level. The explanatory power of the model is high, as displayed by adjusted- R^2 values. The problem of heteroscedasticity has been evaded by using White's methodology to obtain heteroscedasticity consistent standard errors. The number of observations varies for various years. The reason is that, some trade statistics are reported missing by IMF and some are reported as zero. Since natural logarithm of zero is not defined, the observations with the value of zero have been omitted with the missing observations. Thus, rather than 702 (that is, 27*26) observations, the number of observations vary between 668 and 701.

The coefficients for incomes and distance represent elasticity figures, for the function is estimated in log-linear form. A brief examination of Table 2 reveals that exporter income, elasticity appears to be stable over time. However, slight decreases in importer income and distance elasticities are observed. The explanation for XTEU dummy coefficient requires a little mathematical manipulation, namely taking the exponential of this coefficient as done in McCalum (1995). This simple calculation reveals that trade increases by a factor of more than 3 if the importer country is a member of EU, as compared to the case when the importer country is not a member of EU. Only in 1999 this factor is lower; it is about 1,7.

On the rightmost column of Table 2 are the coefficients for a function to be used in predictions for 2006. As stated, estimates for years 1993 to 2001 provide a natural flow of trade in these years. Using these coefficients, a function capable of presenting natural trade flows in the near future can be constructed. The procedure used for this purpose is to take the

arithmetic mean of a weighting process, with higher weights assigned to more recent years, and a trend determination process by OLS as advised by Yamane (1967). Underlying assumption of the first procedure, the weighting procedure, is that the year 1993 has one unit of impact on trade flows of close future, the year 1994 has 2 units of impact, year 1995 has 3 units of impact and so on. Thus, the coefficients for year 1993 are multiplied by a factor of 2/90, a factor of 4/90 for year 1994 and so on. Coefficients of the year 2001 are multiplied by a factor of 18/90. The weights have a total of 1. Summing these weighted coefficients gives the column, Sum of Weighted Averages.

The second procedure is basically using OLS method to identify the trend in the cross section coefficients. For this purpose the functional form of

$$\text{COEFFICIENT} = \text{CONSTANT} + A * \text{TREND}$$

is used, where COEFFICIENT stands for the coefficient estimates obtained from cross section gravity estimates for years 1993 to 2001, CONSTANT stands for the intercept term of the classical OLS model, and TREND is a trend variable that takes values starting from 1 for year 1993 to 9 for year 2001. Once the estimation is done, the value of 14 is used to represent year 2006 to obtain the estimates presented under the heading Trend Estimates in Table 2. Averaging the Trend Estimates and Sum of Weighted Averages columns of Table 2 gives the final column; a function that can be used to estimate trade flows between sample countries. This function is named as Weighted Gravity Function (WGF) for ease of reference.

The strength of WGF is that it takes into account the fact that as more time passes after the dissolution of the Soviet block, the CEECs become more integrated in to the world economy. This evolution is expected to continue, if not complete by now. The weighting procedure, by assigning more weights to more recent years, reflects the evolution of this liberalization era and the increased interaction between west and east Europe.

Using the estimated coefficients for years 1993 to 2001, the deviations of actual trade figures from gravity levels can be examined. Such an exercise would reveal potential markets for Turkish exports by displaying the countries to which Turkey is under-exporting. Table 3 presents such comparisons for Turkish exports to other countries in the sample by using actual exports of Turkey in years 1993 to 2001 as percentage of export levels predicted by gravity

estimates. Obviously, a value greater than 100 would be the case of over-exporting and values less than 100 would indicate potentials for Turkish exports.

A brief examination of this table states that Turkey over-exports to Belgium-Luxembourg, Bulgaria, France, Germany, Italy, Malta, Poland, Netherlands, Spain and UK. As for exports to all other countries, especially to CEECs, there seems to be room for development. One striking point is that after Austria, Finland and Sweden become EU members in 1995, the ratio of actual exports to predicted exports to these countries did not display a significant increase. Actually, there seems to be a fall for Austria and Sweden rates. As seen in Table 1, Turkey's exports to Austria, Sweden and Finland actually increased in the considered time period. The falls in shares simply display the fact that even though trade has increased, Turkish exporters were not able to exploit trade potentials, efficiently. This is another way of stating that room for more trade exists between Turkey and these countries. Similar situation exists, more strikingly, between Turkey and a number of other countries, especially Greece, Latvia, Lithuania and Slovak Republic.

The last column of Table 3 presents weighted shares. These shares are also actual exports of Turkey to sample countries, weighted in the method briefly explained above. The reason for weighting these shares is that since actual exports are not equal to "natural" exports as stated by the gravity equation but a rate of them, it is necessary to have an idea what this rate may be in 2006. The weighting procedure, applied on the shares of Table 3, gives an idea about this rate in 2006.

At this point there are two important tools that can be employed to predict actual trade flows in the near future. These are WGF and weighted shares. Now it remains to put these two tools together and add in the effects of XTEU dummy variable.

IV. USING WGF AND WEIGHTED SHARES TO PREDICT TURKISH EXPORTS

For the purpose of presentation, the WGF can be written as follows.

$$\text{LN}X_{ij} = (0,82)*\text{LN}Y_i + (0,41)*\text{LN}Y_j + (-1,7)*\text{LN}D_{ij} + (0,96)*\text{XTEU}$$

Taking Turkey as the exporter country (i) and other sample countries as importer countries (j), one can calculate approximations for the future of Turkish exports to sample countries. This

simply necessitates predictions for income changes of all the countries in the sample and using these incomes in WGF to reach natural exports of Turkey. Then, since actual trade figures are percentages of “natural” levels of gravity equation, an idea on the actual value of Turkish exports in year 2006 can be formed by using weighted shares of actual exports as percentage of natural flows.

The problem at this point is to form an idea on national income levels of sample countries in year 2006. One logical method would be to assume that different country groups in the sample will display different growth rates. New member states of the EU may display faster growth rates compared to older members whereas applicant countries, one of which is Turkey, may display different patterns. In order to take into account this variation, the annual percentage changes of the GDP volume of EU countries, new member countries and candidate countries, as reported by IMF International Financial Statistics Database, between 1977 and 2002, were calculated. Then these average growth rates were averaged again for every country group. It has been observed that the EU countries grow at an average rate of 2,6% annually. Applying the same procedure on new member states for years 1993 to 2002 shows that these countries grow at a rate of 4,4% annually. For the new member states a shorter time period was used to calculate income growth rates for time series data for these countries has proven hard to obtain. Between years 1980 and 2002 Romania has displayed an average growth rate of 0,13%. Bulgaria is assumed to display a similar growth rate. As for Turkey, a growth rate of 3,5% has been calculated for the period between 1977 and 2002. Under the assumption of the stated growth rates and using income data of World Bank’ WDI Online database, the incomes of sample countries in year 2006 are displayed in Table 4 by taking year 2001 as the starting point for income change calculations. It must be noted here that the starting point for Turkey was taken as year 2000, since a crisis was experienced in Turkey in 2001. Thus it was thought that year 2001 for Turkey would not be a normal year to project income changes.

Using the income data of Table 4, natural flows of trade in year 2006 can be calculated by using WGF. This simply necessitates taking the new income data, using it in WGF with the value of XTEU dummy equal to 1 for new member states. The results are presented in Table 5. This table also presents the percentage changes of Turkey’s exports to sample countries. The general picture is one of increases, by a factor of more than 2 for some countries.

V. CONCLUSIONS

A general idea on Turkey's exports to sample countries has now been formed. Given assumptions on income growth, the expected situation in 2006 is presented in Table 5 with two different scenarios. In the first scenario the new member countries are assumed to have become full members by 2006. In the second scenario, these countries are assumed not to be full members in 2006. The differences between calculated export values under these two scenarios are due to the XTEU dummy variable. The dummy variable's coefficient has been calculated to be 0,96 in WGF on Table 2. This indicates that if importer country is a EU member, exports to this country increase by a factor of 2,6 compared to the case it is not a member. In Martin and Turrion (2001) this rate is about 3,85. According to the calculations made here, it is expected that in the next few years, exports to new member countries should increase more than exports to EU member states as these states proceed to become full members. This situation can easily be observed by calculating percentage change of Turkish exports to sample countries between 2001 and 2006. The results of such calculations are also presented in Table 5. In this table, it is observed that Turkey's exports to EU member countries are expected to increase at rates between 11% and 93 %. On the same table, it can be seen that exports to new member countries are expected to increase at rates between 153% and 544%. Clearly, exports to new members are expected to increase faster than exports to old EU members in the period between 2001 and 2006.

It may be claimed that the calculated increases in Turkish exports are too high for such a short period of time. To emphasize that the obtained increases do not present an anomaly for Turkey, percentage increase of Turkish exports to sample countries have been calculated for years 1993 to 2001 and 1995 to 2001. These rates are also presented in Table 5. For the case of EU member countries, the calculated export growth for the coming few years is low relative to past performance. On the other hand, export growth to new member countries may reach levels that are higher than the levels previously observed. These two points may be taken together to indicate the possibility that Turkey will be orienting exports more towards new member countries compared to old member countries.

To emphasize the EU membership effect on Turkish exports, the increase of exports between 2001 and 2006 under the two different membership assumptions has been presented in Table

6. It is seen in this table that membership in EU causes higher percentage increases in Turkish exports to new members as expected. It appears that the membership process, of which Turkey is not a part, will cause trade to increase between Turkey and new member countries.

This result, however, must be approached with caution. First of all, it must be noted that the regression estimates are also capturing the deepening of trade relations between EU and new member states. This process has been going on since early 1990s and has been identified by Brülhart and Kelly (1998) and Martin and Turrion (2001) as well. Since most of the sample countries are part of this process, coefficient of XTEU dummy may be overestimated. But, even if such an overestimation possibility is taken into account, the general picture drawn in this paper may not change much. In order to reach such a conclusion, one needs to compare the conclusions of this paper with the conclusions of Brülhart and Kelly (1998). They reach the conclusion that increased trade between Eastern European countries and Ireland is due to income convergence. In this paper, however, increased trade is mostly due to membership in EU. It is possible, thus, that the truth lies somewhere in between and that the general picture of this paper may not change much.

Martin and Turrion (2001) also foresee an increase in exports from third countries to CEECs. However, they state that increase from third countries to CEECs is less than the increase from third countries to EU. The difference between this paper and Martin and Turrion (2001) is possibly due to the fact that they take many OECD countries to represent the rest of the world. In this study, only Turkey represents the case of third countries. If one assumes that Turkey has a historical tendency to have stronger trade relations with EU as compared to other OECD countries, then it is possible that Turkey may be able to exploit export market potentials provided by new member states more efficiently than other OECD countries.

To sum it up, Turkey is expected to increase its trade with EU in the coming few years. It has also been stated as the most important result of this paper that Turkey will increase exports more to new members of EU compared to older members. Hence, it is expected that membership of CEECs in EU will cause trade to increase.

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TABLE 1: Turkey's Exports, Millions of US Dollars

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Share of EU in Turkish Exports (%) | 50 | 48 | 51 | 50 | 47 | 50 | 51 | 52 | 52 |
| Share of CEEC in Turkish Exports (%) | 18 | 16 | 15 | 13 | 12 | 13 | 11 | 11 | 12 |
| Share of Sample Total in Turkish Exports (%) | 68 | 64 | 67 | 63 | 59 | 64 | 62 | 64 | 63 |
| Total Exports | 15,346 | 18,155 | 21,650 | 23,100 | 26,246 | 27,184 | 27,481 | 27,768 | 31,197 |
| Exports to Sample Countries | | | | | | | | | |
| AUSTRIA | 227 | 249 | 275 | 287 | 300 | 304 | 312 | 293 | 341 |
| BELGIUM-LUXEMBOURG | 293 | 371 | 451 | 487 | 564 | 670 | 327 | 647 | 688 |
| BULGARIA | 86 | 134 | 183 | 153 | 175 | 213 | 234 | 253 | 299 |
| CYPRUS | 154 | 102 | 198 | 0 | 0 | 243 | 0 | 0 | 201 |
| CZECH REPUBLIC | 58 | 62 | 76 | 92 | 83 | 69 | 67 | 102 | 109 |
| DENMARK | 84 | 92 | 133 | 147 | 172 | 200 | 199 | 219 | 272 |
| ESTONIA | 0 | 1 | 3 | 5 | 6 | 6 | 9 | 9 | 13 |
| FINLAND | 16 | 31 | 42 | 45 | 49 | 58 | 67 | 76 | 71 |
| FRANCE | 771 | 908 | 1033 | 1042 | 1164 | 1307 | 1573 | 1657 | 1895 |
| GERMANY | 3654 | 3934 | 5036 | 5178 | 5253 | 5460 | 5475 | 5180 | 5367 |
| GREECE | 118 | 169 | 210 | 236 | 298 | 370 | 407 | 438 | 476 |
| HUNGARY | 38 | 58 | 160 | 103 | 134 | 114 | 122 | 110 | 170 |
| IRELAND | 23 | 33 | 48 | 59 | 87 | 89 | 135 | 203 | 147 |
| ITALY | 750 | 1034 | 1457 | 1444 | 1388 | 1557 | 1683 | 1789 | 2342 |
| LATVIA | 3 | 2 | 6 | 2 | 3 | 12 | 10 | 16 | 16 |
| LITHUANIA | 3 | 8 | 28 | 15 | 56 | 35 | 26 | 24 | 33 |
| MALTA | 53 | 31 | 49 | 25 | 56 | 44 | 62 | 72 | 63 |
| NETHERLANDS | 517 | 621 | 737 | 765 | 779 | 889 | 932 | 874 | 892 |
| POLAND | 235 | 249 | 272 | 253 | 255 | 291 | 220 | 175 | 241 |
| PORTUGAL | 45 | 44 | 60 | 75 | 98 | 155 | 170 | 185 | 286 |
| ROMANIA | 152 | 175 | 302 | 311 | 359 | 468 | 268 | 326 | 392 |
| SLOVAK REPUBLIC | 17 | 13 | 16 | 20 | 25 | 18 | 17 | 20 | 28 |
| SLOVENIA | 30 | 20 | 33 | 25 | 34 | 39 | 39 | 48 | 63 |
| SPAIN | 199 | 234 | 360 | 366 | 446 | 517 | 763 | 714 | 950 |
| SWEDEN | 67 | 86 | 106 | 121 | 146 | 188 | 183 | 200 | 214 |
| UNITED KINGDOM | 835 | 889 | 1136 | 1248 | 1505 | 1953 | 1829 | 2037 | 2175 |

Source: IMF Direction of Trade Statistics.

TABLE 2: Gravity Estimation Results for Years 1993 to 2001 and Weighted Gravity Function (WGF)

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Sum of Weighted Averages | Trend Estimates | Weighted Gravity Function (WGF) |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------------|-----------------|---------------------------------|
| Exporter Income | 0.82 | 0.85 | 0.85 | 0.84 | 0.85 | 0.85 | 0.73 | 0.85 | 0.84 | 0.83 | 0.81 | 0.82 |
| t-statistic | 37.50 | 39.15 | 40.61 | 41.65 | 42.26 | 43.63 | 38.19 | 40.20 | 41.17 | | | |
| Importer Income | 0.46 | 0.42 | 0.40 | 0.39 | 0.39 | 0.39 | 0.52 | 0.39 | 0.39 | 0.42 | 0.40 | 0.41 |
| t-statistic | 18.44 | 18.30 | 16.15 | 16.96 | 16.78 | 17.58 | 29.59 | 17.32 | 17.61 | | | |
| Distance | -1.98 | -1.93 | -1.86 | -1.82 | -1.82 | -1.83 | -1.76 | -1.79 | -1.74 | -1.80 | -1.60 | -1.70 |
| t-statistic | -23.37 | -26.11 | -23.77 | -24.97 | -24.91 | -24.42 | -25.45 | -25.35 | -26.34 | | | |
| XTEU | 1.19 | 1.22 | 1.24 | 1.18 | 1.14 | 1.16 | 0.53 | 1.22 | 1.12 | 1.07 | 0.85 | 0.96 |
| t-statistic | 10.98 | 10.92 | 11.07 | 10.43 | 10.28 | 10.67 | 6.12 | 11.04 | 10.53 | | | |
| Adjusted R² | 0.81 | 0.82 | 0.83 | 0.83 | 0.84 | 0.83 | 0.82 | 0.83 | 0.84 | | | |
| Number of Observations | 668 | 696 | 697 | 701 | 678 | 685 | 699 | 701 | 701 | | | |

Notes. White Heteroscedasticity Consistent Standart Errors

TABLE 3: Actual Exports of Turkey as Percentage of Estimated Exports

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Weighted Shares |
|---------------------------|------|------|------|------|------|------|------|------|------|-----------------|
| AUSTRIA | 194 | 245 | 59 | 63 | 60 | 54 | 64 | 46 | 69 | 71 |
| BELGIUM-LUXEMBOURG | 167 | 230 | 199 | 221 | 230 | 243 | 128 | 202 | 272 | 215 |
| BULGARIA | 78 | 139 | 133 | 122 | 112 | 115 | 115 | 126 | 174 | 130 |
| CYPRUS | 68 | 47 | 69 | 0 | 0 | 62 | 0 | 0 | 59 | 28 |
| CZECH REPUBLIC | 141 | 152 | 129 | 145 | 112 | 84 | 60 | 114 | 137 | 112 |
| DENMARK | 51 | 60 | 61 | 69 | 72 | 74 | 85 | 70 | 110 | 80 |
| ESTONIA | 3 | 8 | 22 | 29 | 29 | 28 | 40 | 38 | 59 | 36 |
| FINLAND | 42 | 85 | 22 | 25 | 24 | 25 | 34 | 27 | 33 | 31 |
| FRANCE | 215 | 299 | 252 | 260 | 265 | 261 | 272 | 287 | 415 | 299 |
| GERMANY | 515 | 675 | 651 | 703 | 658 | 602 | 511 | 507 | 674 | 605 |
| GREECE | 11 | 18 | 17 | 19 | 21 | 24 | 34 | 25 | 36 | 26 |
| HUNGARY | 50 | 85 | 176 | 109 | 116 | 90 | 72 | 79 | 137 | 104 |
| IRELAND | 46 | 67 | 66 | 78 | 96 | 87 | 159 | 158 | 141 | 119 |
| ITALY | 104 | 172 | 189 | 186 | 160 | 158 | 157 | 160 | 268 | 184 |
| LATVIA | 19 | 11 | 30 | 9 | 11 | 39 | 30 | 44 | 51 | 33 |
| LITHUANIA | 14 | 42 | 100 | 47 | 132 | 73 | 49 | 44 | 68 | 66 |
| MALTA | 352 | 194 | 212 | 101 | 184 | 134 | 190 | 196 | 196 | 181 |
| NETHERLANDS | 257 | 343 | 289 | 307 | 282 | 286 | 304 | 237 | 304 | 287 |
| POLAND | 301 | 344 | 283 | 238 | 189 | 192 | 94 | 103 | 160 | 174 |
| PORTUGAL | 82 | 84 | 77 | 94 | 110 | 153 | 198 | 153 | 293 | 168 |
| ROMANIA | 69 | 90 | 119 | 120 | 112 | 134 | 62 | 83 | 119 | 103 |
| SLOVAK REPUBLIC | 45 | 35 | 31 | 35 | 36 | 23 | 19 | 24 | 39 | 30 |
| SLOVENIA | 92 | 61 | 68 | 49 | 57 | 58 | 48 | 65 | 99 | 67 |
| SPAIN | 120 | 163 | 179 | 181 | 199 | 202 | 285 | 235 | 389 | 251 |
| SWEDEN | 127 | 182 | 47 | 53 | 58 | 66 | 70 | 59 | 84 | 72 |
| UNITED KINGDOM | 315 | 386 | 370 | 406 | 411 | 460 | 369 | 398 | 536 | 427 |

Notes: The shares represent actual exports of Turkey to sample countries as percentage of “natural” exports, the natural structure being identified by annual cross-section gravity estimates.

TABLE 4: Income Levels of Sample Countries in Year 2006

| | Country | Income Value in 2006 |
|-------------------------------------|--------------------|-----------------------------|
| EU MEMBER COUNTRIES | Austria | 212 |
| | Belgium-Luxembourg | 287 |
| | Denmark | 180 |
| | Finland | 135 |
| | France | 1,494 |
| | Germany | 2,090 |
| | Greece | 134 |
| | Ireland | 98 |
| | Italy | 1,230 |
| | Netherlands | 435 |
| | Portugal | 122 |
| | Spain | 652 |
| Sweden | 235 | |
| United Kingdom | 1,631 | |
| NEW MEMBER COUNTRIES | Cyprus | 11 |
| | Czech Republic | 68 |
| | Estonia | 6 |
| | Hungary | 62 |
| | Latvia | 9 |
| | Lithuania | 15 |
| | Malta | 4 |
| | Poland | 217 |
| | Slovak Republic | 25 |
| | Slovenia | 23 |
| CANDIDATE COUNTRIES | Bulgaria | 13 |
| | Romania | 39 |
| | Turkey | 255 |

Notes: The values are in billions of US\$. It is assumed that EU Member countries will grow at a rate of 2,6%, new member countries will grow at a rate of 4,4% and applicant countries will grow at a rate of 0,13% per year. Turkey is assumed to grow at a rate of 3,5%.

**TABLE 5: Turkey's Exports to Sample Countries in 2006,
Millions of US Dollars**

| | Country | Exports With EU Membership | Exports Without EU Membership | Percentage Change of Turkish Exports With EU Membership | | |
|-------------------------------------|--------------------|----------------------------------|-------------------------------------|--|--------------|--------------|
| | | | | 2001 to 2006 | 1993 to 2001 | 1995 to 2001 |
| EU MEMBER COUNTRIES | Austria | 656 | 656 | 93 | 50 | 24 |
| | Belgium-Luxembourg | 1,049 | 1,049 | 53 | 135 | 53 |
| | Denmark | 371 | 371 | 37 | 224 | 105 |
| | Finland | 127 | 127 | 80 | 344 | 69 |
| | France | 2,714 | 2,714 | 43 | 146 | 83 |
| | Germany | 9,532 | 9,532 | 78 | 47 | 7 |
| | Greece | 622 | 622 | 31 | 303 | 127 |
| | Ireland | 238 | 238 | 62 | 539 | 206 |
| | Italy | 3,133 | 3,133 | 34 | 212 | 61 |
| | Netherlands | 1,639 | 1,639 | 84 | 73 | 21 |
| | Portugal | 316 | 316 | 11 | 536 | 377 |
| | Spain | 1,212 | 1,212 | 28 | 377 | 164 |
| | Sweden | 351 | 351 | 64 | 219 | 102 |
| | United Kingdom | 3,464 | 3,464 | 59 | 160 | 91 |
| NEW MEMBER COUNTRIES | Cyprus | 509 | 195 | 153 | 31 | 2 |
| | Czech Republic | 522 | 200 | 379 | 88 | 43 |
| | Estonia | 45 | 17 | 248 | 1200 | 333 |
| | Hungary | 746 | 285 | 339 | 347 | 6 |
| | Latvia | 59 | 22 | 272 | 433 | 167 |
| | Lithuania | 181 | 69 | 451 | 1000 | 18 |
| | Malta | 323 | 123 | 413 | 19 | 29 |
| | Poland | 1,553 | 594 | 544 | 3 | -11 |
| | Slovak Republic | 122 | 46 | 338 | 65 | 75 |
| Slovenia | 238 | 91 | 279 | 110 | 91 | |
| CANDIDATE COUNTRIES | Bulgaria | 434 | 434 | 45 | 248 | 63 |
| | Romania | 663 | 663 | 69 | 158 | 30 |

**TABLE 6: Turkish Exports to New Member Countries,
Millions of US Dollars**

| Country | Percentage Change of Turkish Exports | | | | |
|-----------------|--------------------------------------|-------------------------------------|------------------------------------|---------------------------------------|--------------|
| | Exports With EU Membership | Exports Without EU Membership | 2001 to 2006 with EU Membership | 2001 to 2006 Without EU Membership | 1995 to 2001 |
| Cyprus | 509 | 195 | 153 | -3 | 2 |
| Czech Republic | 522 | 200 | 379 | 83 | 43 |
| Estonia | 45 | 17 | 248 | 32 | 333 |
| Hungary | 746 | 285 | 339 | 68 | 6 |
| Latvia | 59 | 22 | 272 | 41 | 167 |
| Lithuania | 181 | 69 | 451 | 114 | 18 |
| Malta | 323 | 123 | 413 | 97 | 29 |
| Poland | 1,553 | 594 | 544 | 147 | -11 |
| Slovak Republic | 122 | 46 | 338 | 70 | 75 |
| Slovenia | 238 | 91 | 279 | 46 | 91 |