IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 2, Issue: 2, Year: 2012, pp. 117- 129

Effects of the Customs Union on Comparative Advantage of Turkish Manufacturing Industry

Hacer Simay KARAALP[1]

Received: March 2012, Accepted: May 2012

Abstract

The aim of this study is to analyze the effects of the customs union (CU) on the comparative advantage of the Turkish manufacturing industry for the period 1988 to 2008. The revealed comparative advantage is analyzed with respect to twelve old European Union countries (EU) and the enlarged EU with the inclusion of new member states. In this study, both the effects of the CU and the enlargement process of the EU are analyzed using the panel data estimation method covering 45 cross-section units by taking into account that domestic factors of Turkey's comparative advantage, real effective exchange rates, and a manufacturing sector wage index. The results show that the CU and wages has created a positive effect on Turkey's comparative advantage. However, real exchange rates created negative effects for the comparative advantage of Turkish industry due to the appreciation of the Turkish Lira throughout the time period.

Keywords: *Comparative advantage, Customs Union, Turkey, European Union, Panel data estimation*

JEL Codes: *F14, F15, C23*

1. Introduction

Turkey's relations with the European Union (EU) started in 1959, soon after the establishment of the European Economic Community (EEC). Since the 1980 trade liberalization and the signing of the customs union, Turkey has liberalized its foreign trade regime. Reducing restrictive trade barriers such as tariffs and various customs duties are an essential part of this agreement. Turkey is unique in that it has a CU with the EU even though it is not a full member of this organization. CU with the EU is also a fundamental instrument for Turkey to

[1]Asst.Prof.Dr., Faculty of Economics and Administrative Sciences, Department of Labor Economics and Industrial Relations, Pamukkale University, Denizli, Turkey, skaraalp@pau.edu.tr

IJCEAS
International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume :2, Issue:2, Year:2012, pp.117-129

the integration of global economy. Within this scope, the main purpose of this study is to examine the pros and cons of the CU for the Turkish manufacturing sector for the period of 1988 through 2008. To that end, the comparative advantage of Turkey with respect to EU is calculated using Balassa's revealed comparative advantage index (RCA). The study comprises 45 manufacturing industry sectors; with two-digit level of SITC (Standard International Trade Classification) Revision 3 (Rev. 3) and moreover covers the enlargement process of the EU. In this context, Turkey's comparative advantage is analyzed using two frameworks. The first one comprises the twelve old EU member countries (EU12)[1]. Other framework considers the enlargement process throughout the time period and includes the fourth, fifth and sixth enlargements in 1995, 2004 and 2007 respectively and focuses on 27 countries in 2008. Within this framework, an empirical approach is applied testing the effects of the domestic factors which may influence the development of RCA.

Most of the studies in the literature used RCA for analyzing the relative strengths of Turkey in various sectors of economic activity; they have mainly relied on the calculation and comparisons of indices. This study's further contribution to the literature is that an empirical approach is applied testing the effects of the domestic factors which may influence the development of Turkey's comparative advantage through evaluating the effects of the CU with regard to the EU market. For this purpose, panel data estimation techniques employed in this study. Moreover, the effects of the EU enlargement process on Turkish foreign trade are analyzed.

2. Revealed Comparative Advantage

RCA was introduced by Liesner (1958), but it was developed and popularized by Balassa (and thus is known as the Balassa Index) in 1965. Broadly speaking, RCA is based on export performance, observed trade patterns and their change over time (Fertö, 2003). It identifies structural trade-related patterns across countries and provides useful information about potential trade prospects with new partners. RCA indicates the revealed comparative advantage of a country *i* in a product (industry *j*). The Balassa (1965) RCA can be presented a

$$RCAij = (Xij / Xit) / (Xnj / Xnt) \qquad (1)$$

where, X represents exports, i is a country, j is a commodity (industry/product), t is a set of commodities and n is a set of countries (EU). An RCA >1 indicates that the country has a revealed comparative advantage in a particular product/industry and that the industry's share in the country's total exports is greater than its share in world (or a set of countries) trade. By contrast, an RCA <1 indicates that the country has a revealed comparative disadvantage in that product/industry. The change of RCA over time indicates the changes of the structure of international trade changes over time (Brakman et al., 2011, p.4).

The strengths and weaknesses of the concept of RCA have been called into question (Bojnec, 2001). Despite its shortcomings such as asymmetric value, problems with logarithmic transformation and the problems in the measurement of this notion the RCA index is widely used in many studies (Fertö and Soos, 2008). The concept of comparative advantage is defined in terms of autarkic relative price differences that are not observable in the stage of post-trade equilibrium. It reflects an ex-post view. The empirical literature of the field offers several solutions for this problem which can be interpreted in a simple theoretical framework offered by Ballance et al. (1987)[2]. Although many studies attempt to refine revealed comparative advantage (see Ballance et al., 1987 and Vollrath 1991) the main advantage of the RCA index against alternative measures is its theoretical foundation and remains a popular tool in empirical trade analysis (Fertö and Soos, 2008).

Using equation (1), RAC is calculated for Turkey's bilateral trade compared to EU12 and enlarged EU over the period 1988–2008. The index is computed for 45 manufacturing industry sectors separately. The EU data are supplied by UN Commodity Trade Statistics Database (UNcomtrade) and the World Trade Organization (WTO). Turkey's data are supplied by the Turkish Statistical Institute (TurkStat). The time period is well suited to assess the comparative advantage of the Turkish manufacturing economy after the 1980 trade liberalization and to examine the pros and cons of the CU.

The period average of the RCA index is reported in Table 1. The product classification was obtained from Mauro and Forster (2008), however I slightly modified this classification by including the raw material intensive goods. Results indicate that, Turkey has the comparative advantage in some low-technology industries, especially in labor-intensive products and some medium-low technology industries that produce capital-intensive products. As expected, the findings largely correspond to those results reported in previous studies

Güran (1990), Küçükahmetoğlu (2000), Lohrmann (2000) Karakaya and Özgen (2002), Yılmaz (2003), Yılmaz and Ergun (2003), Ferman et al. (2004), Utkulu and Seymen (2004), Yılmaz (2005), Vergil and Yıldırım (2006), Şimşek et al. (2007), and Kösekahyaoğlu and Özdamar (2009), Karaalp (2011).

Table 1. Revealed comparative advantage of Turkey (1988-2008)

	vis-à-vis EU12	vis-à-vis enlarged EU
High-technology industries		
Medicinal and pharmaceutical prod.	0.091	0.089
Office machines	0.035	0.034
Telecomm. sound equip etc.	1.528	1.293
Scientific equipment n.e.s.	0.068	0.065
Photo. apparatus n.e.s.; clocks	0.026	0.027
Medium-high-technology industries		
Organic chemicals	0.230	0.232
Inorganic chemicals	1.091	1.117
Dyeing, tanning and coloring mat.	0.075	0.087
Essential oils	0.105	0.126
Chemical materials and products	0.045	0.049
Power-generating machinery and eq.	0.530	0.492
Special. industrial machinery	0.172	0.169
Metalworking machinery	0.262	0.282
General industrial machinery	0.213	0.210
Electrical machinery, apparatus app.	0.649	0.626
Road vehicles	0.704	0.685
Other transport equipment	0.408	0.450
Medium-low-technology industries		
Metalliferous ores and metal scrap	0.906	0.959
Plastics in primary forms	0.214	0.218
Plastics in non-primary forms	0.257	0.281
Rubber manufactures	1.600	1.561
Non-metallic mineral manufactures	1.075	1.091
Iron and steel	1.249	1.153
Non-ferrous metals	0.813	0.730
Manufactures of metals	0.661	0.658
Prefabricated buildings	1.768	1.613
Misc. manufactured goods n.e.s.	0.339	0.354
Low-technology industries		
Pulp and waste paper	0.009	0.007
Textile fibers and wastes	3.929	3.905
Metalliferous ores and metal scrap	0.906	0.959
Coal, coke and briquettes	0.044	0.044
Petroleum, petroleum products	0.709	0.703

Gas, natural and manufactured	0.040	0.044
Leather, leather manufactures	0.396	0.438
Cork and wood manufactures	0.232	0.201
Paper, paperboard and articles of paper pulp	0.146	0.118
Textile yarn, fabrics,	4.687	4.771
Furniture, Bedding, etc.	0.481	0.437
Travel goods, handbags etc.	1.131	1.161
Clothing and Accessories	13.966	13.939
Footwear	0.256	0.270
Raw material intensive goods		
Hides, skins and fur skins, raw	0.059	0.054
Crude rubber	0.101	0.108
Cork and wood	0.184	0.161
Fertilizers	0.498	0.472

Sources: Author's own calculations are based on UN Trade Statistics.

According to the results, Turkey has a strong tendency toward comparative advantage in low-technology industries, both in the EU12 market and in the enlarged EU market over the 1988-2008 periods. It is obvious that Turkey has the highest comparative advantage in the clothing sector which is more labor intensive than followings, the textile sector and textile fibers and wastes respectively. However, despite the high comparative advantage of Turkey in the EU market, I perceive a tendency toward decline in labor-intensive sectors, such as clothing, also found in (Yılmaz, et. al. 2011). Among low-technology industries, Turkey has the comparative advantage in travel goods and handbags. Its comparative advantage is slightly higher in the enlarged EU. The results indicate that from the end of the 1980s to 2008, Turkey's export structure began to shift. In addition to comparative advantage in low-technology industries, Turkey has an advantage in medium-low-technology industries such as prefabricated building and rubber manufactures as well as iron, steel and non-metallic mineral manufactures, especially in the EU12 market. The comparative advantage in these sectors, except for prefabricated buildings, increased after the CU in 1996. Among medium-high-technology industries, Turkey has comparative advantage in inorganic chemicals on average but has lacked since 2004. However, Turkey's comparative advantage has increased in two medium-high-technology industries: road vehicles and electrical machinery, apparatus and appliances since 2003 and 2007, respectively. The results for these industries were slightly better in the EU12 market. Turkey's disadvantage has been declining throughout this time period in power-generating machinery, metal-working machinery, special industrial machinery, and general industrial

IJCEAS
International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume :2, Issue:2, Year:2012, pp.117-129

machinery. In fact, the increasing comparative advantage in road vehicles and electrical machinery and the decreasing disadvantage in power-generating and metal-working machineries indicate the future potential sectors for Turkey in the EU market. Moreover, another medium-low technology industry sector, which will have potential for Turkey, is other transport equipment. Turkey has had the comparative advantage in this sector only in the enlarged EU market for the last two years. These trends emphasize the changing pattern of future Turkish trade from low- and medium-low-technology industries to medium-high-technology industries. Throughout the period, Turkey has comparative advantage only in the telecommunications sound equipment sector among the high-technology industries, which is also better in the EU12 market. However, the decrease in comparative advantage of this sector in 2004-2008 was felt more intensively in the enlarged EU market compared to that of the EU12.

3. Empirical Model and Estimation Results

RCA becomes the most commonly-used indicator for the empirical analysis of comparative advantage (Crafts and Thomas, 1986; Hugnes, 1993; Hanif and Jafri, 2008; Lundmark, 2010; Nyahoho, 2010). The RCA results, which rely on trade data as the basis of assessment, are predicated on the assumption that international trade patterns for a particular product/industry are capable of reflecting the country's comparative advantage in the product/industry (Peterson, 1988). Only Vergil and Yıldırım (2006) used the panel data model to analyze the effects of the CU on Turkish competitiveness in the EU market and they found that the CU positively affects the comparative advantage of Turkey, both in high-tech goods and in difficult-to-imitate, research-oriented goods whereas it has a negative effect on capital intensive goods and intermediate technological goods.

In this context, the RCA equation below attempts to explain the effects of the CU on the comparative advantage of the Turkish manufacturing sector with respect to the EU by 3 variables.

$$LogRCA_{it} = \beta_1 + \beta_2 LogREER_{it} + \beta_3 LogWAGE_{it} + \beta_4 CU + \varepsilon_{it} \quad (2)$$

In the equation, *(RCA)* is chosen to represent the measure of comparative advantage of the manufacturing sector of Turkey in bilateral trade vis-à-vis the EU as a dependent variable. To gauge the pros and cons of the CU with regard to the comparative advantage of the Turkish manufacturing sector, a dummy

variable *(CU)* was included in the model as an explanatory variable that takes the value of one after the introduction of the CU in 1996 to 2008. A significant positive value indicates that the CU makes a positive contribution to Turkey's overall manufacturing industry advantage in the EU market. To assess the impact of the CU on comparative advantage, I had to control for the other determinants. The other explanatory variables were chosen to represent fundamental domestic determinants of Turkey's comparative advantage: the real effective exchange rate *(REER),* and the real private sector wage index *(WAGE)* are included in the model as control variables.

With a view toward capturing the interaction between the effect of the CU and the enlargement process of the EU, the study comprises Turkey's comparative advantage with respect to the old EU member countries (EU12) and the enlarged EU as (EU27).

$$LogRCA_{EU12it} = \beta_1 + \beta_2 LogREER_{it} + \beta_3 LogWAGE_{it} + \beta_4 CU + \varepsilon_{it} \quad (3)$$

$$LogRCA_{EU27it} = \beta_1 + \beta_2 LogREER_{it} + \beta_3 LogWAGE_{it} + \beta_4 CU + \varepsilon_{it} \quad (4)$$

Thereby, the comparative advantage of the Turkish manufacturing sector in its relation to domestic factor intensities was estimated with two separate equations above. The relative strength of a country's domestic currency with respect to that of its competitors in international markets may be one of the significant sources of comparative advantage of a country. In this context, Turkey's domestic price level vis-à-vis its competitors can be account by inclusion of the Turkey's real effective exchange rate *(REER)* in the model. Annual real effective exchange rates of Turkey (1995=100) are provided by the CBRT (Central Bank of the Republic of Turkey), and the CPI (consumer price indices) are based on a trade-weighted index calculated by the CBRT. In both of the equations above, I would expect the sign of *(REER)* to be negative. A real effective exchange rate appreciation (depreciation) indicates that the export prices of a given country have become costly (cheaper) for the international market. Therefore, the country loses (gains) export advantages and the *(RCA)* will decline (rise), subsequently. In brief, an increase in the index implies a loss of advantage

At the same time, the assessment of comparative advantage correlated with the other significant domestic indicator: labor costs. Conventional theories of international trade focus on comparative advantage based on factor endowments concepts, such as the Heckscher–Ohlin theory. According to the Heckscher–Ohlin theory, comparative advantage is determined by the interaction of the

IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume :2, Issue:2, Year:2012, pp.117-129

factor-abundance of countries and the factor-intensities of products. Therefore, Turkey, which is regarded as a labor-intensive developing country, has a large endowment of labor relative to its rivals. Thus, I utilized labor costs as a domestic indicator. In the equations, the private sector real manufacturing industry wage index *(WAGE)* was used as a proxy for the labor costs of the Turkish manufacturing sector. Data used in the model for manufacturing industry wage is private sector wage index per hours worked in production in manufacturing industry (1997=100) and obtained from the TurkStat[3]. Then the real manufacturing industry wage index was converted to base year 1995. In both of the equations, I would expect the sign of *(WAGE)* to be negative. An increase in wages and thereby labor costs leads to comparative disadvantage and the loss of international trade.

In the estimation process, one way fixed-effect panel data are used for both equations. Fixed-effect estimation is preferred because the analysis covers the overall manufacturing sector groups and accounts for time-invariant, unobservable heterogeneity among industries. In a sense, the panel procedure permits the impact of comparative advantage to vary across industrial sectors. This choice also corresponded to the results of the F test, which is employed to determine whether to use the fixed-effect estimator or pooled ordinary least squares (OLS). The Hausman (1978) specification test also confirms the presence of fixed-effect model estimation (within estimator). Forty-five cross-section units of estimation data were determined. During the estimation process, an autocorrelation problem was detected in both of the equations. Therefore, to eliminate the autocorrelation problem, the AR(1) term was included in the equation estimation. Table 2 summarizes the fixed-effects estimation outcomes of the Turkey comparative advantage with respect to EU-12 countries.

Table 2. Results of Turkey's RCA compared to EU12*

Dependent variable: *LogRCA*				
	Coefficient	Standard Error	t-Statistic	Prob.
LogREER	0.154	0.068	2.244	0.025**
LogWAGE	-0.360	0.084	-4.262	0.001***
CU	0.143	0.035	4.093	0.000***
AR(1)	0.662	0.020	31.654	0.000***
R-squared	0.974	Mean dependent var.		-2.703
Adjusted R-squared	0.972	S.D. dependent var.		5.526
S.E. of regression	0.959	Sum squared resid.		783.0
F-statistic	673.8	Durbin-Watson stat.		1.978
Prob(F-statistic)	0.000			

Notes: *Estimation method is GLS (cross section weights).** significant at 0.05. *** significant at 0.01

The *(CU)* variable which is used as a dummy variable to gauge its effect on the comparative advantage of the Turkish manufacturing sector was found to be statistically significant and a positive sign, indicating its positive contribution to Turkey's comparative advantage with respect to the EU12.

All domestic variables that affect the *(RCA)* of the Turkish manufacturing sector, *(REER)* and *(WAGE)* were found to be statistically significant. However the *(REER)* has a positive sign, indicating an inverse relationship between it and the *(RCA)*. A positive *(REER)* value indicates the appreciation of the Turkish *(REER)*, which causes the *(RCA)* of Turkey to fall. Upward movements of real effective exchange rates render the prices of Turkish products more costly, therefore indicating a loss of comparative advantage. *(WAGE)* is the sole explanatory variable that is in line with the theoretical expectation. The *(WAGE)* variable is found to be statistically significant and a negative sign. This result implies that the effect of a rise in manufacturing sector wages as the proxy for the labor costs is negative with respect to comparative advantage of manufacturing sector vis-à-vis EU12. The negative relationship between *(WAGE)* and *(RCA)* is meaningful. In terms of international cost differences, the results suggest that low manufacturing wages indicate potential advantages in the manufacturing sector. Accordingly, low costs/wages maintain their significance in the foreign trade of Turkey. This finding also corresponds to the results of the *(RCA)*. In spite of the changing trade pattern of Turkey, its comparative advantage is still highest in the clothing and textile sectors, which are labor-intensive. Consequently, the comparative advantage of the Turkish

IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume :2, Issue:2, Year:2012, pp.117-129

manufacturing sector compared to EU12 is positively affected by low manufacturing costs and the *(CU)*.

To consider the enlargement process of the EU together with the comparative advantage of Turkey in the EU, the second equation was estimated. Table 3 gives the estimation results of the Turkish manufacturing sector's comparative advantage with respect to the enlarged EU.

Table 3. Results of Turkey's RCA compared to the enlarged EU*

Dependent variable: *LogRCA*				
	Coefficient	Standard Error	t-Statistic	Prob.
LogREER	0.174	0.069	2.516	0.012**
LogWAGE	-0.325	0.084	-3.836	0.000***
CU	0.144	0.035	4.068	0.000***
AR(1)	0.673	0.021	31.679	0.000***
R-squared	0.973	Mean dependent var.		-2.581
Adjusted R-squared	0.971	S.D. dependent var.		5.327
S.E. of regression	0.961	Sum squared resid.		786.3
F-statistic	644.0	Durbin-Watson stat.		1.980
Prob(F-statistic)	0.000			

Note: *Estimation method is GLS (cross section weights).
** significant at 0.05. *** significant at 0.01

Statistical significance and the positive sign of the *(CU)* shows an increase in the comparative advantage of the Turkish manufacturing sector. Findings also reveal that the *(CU)*'s contribution to Turkey's comparative advantage is slightly more in the enlarged EU market. With the explanatory variables all being statistically significant, the *(REER)* parameter has a positive sign and is not in line with theoretical expectations. One can conclude that the *(REER)* of Turkey does not make a positive contribution to its comparative advantage for the consideration period. Results confirm the appreciation of Turkish currency and suggest that the Turkish manufacturing sector loses its export advantage in this respect in the enlarged EU market. *(WAGE)* is a proxy for labor costs, and its decline implies a rising *(RCA)*, which is a proxy for comparative advantage. The negative relationship between *(WAGE)* and the *(RCA)* is meaningful. It can be conclude that low wages for low-to-medium skilled labor are a likely source of comparative advantage for manufacturing in Turkey. Labor costs or wages make a positive contribution to the comparative advantage of the Turkish manufacturing sector. As expected, however, their importance is slightly lower for the enlarged EU.

4. Conclusion

Estimation outcomes indicate that after the CU signed in 1996 between Turkey and the EU, it created positive effects on the comparative advantage of the Turkish manufacturing sector with respect to the EU during the twenty-one years. The positive contribution of the CU to Turkey's comparative advantage did not change during the enlargement process. Results suggest that Turkey has comparative advantage with regard to labor-intensive goods such as clothing and textiles, despite the trends of Turkish trade from low- and medium-low-technology industries to medium-high-technology industries. Low wages for low-to-medium-skilled labor are a likely source of comparative advantage in the manufacturing sector and even more so in the EU12 market. Turkey still benefits from its factor endowments. However, the results of *(REER)* are not in line with theoretical expectations. Appreciation of real effective exchange rates created negative effects on the comparative advantage of Turkish industry throughout the time period both in the old EU member states (EU12) and the enlarged EU.

REFERENCES

Ballance, R.H., Forstner, H., & Murray, T. (1987). Consistency tests of alternative measures of comparative advantage. The Review of Economics and Statistics. 69, 157-161.

Balassa, B. (1965). Trade liberalization and revealed comparative advantage. The Manchester School, 33, 99-123.

Bojnec, S. (2001). Trade and revealed comparative advantage measures regional and central and east european agricultural trade". Eastern European Economics,39,72–98.

Brakman, S., Inklaar, R. & Marrewijk C. van (2011). Structural change in the OECD comparative advantage. The Journal of International Trade & Economic Development, 1-22.

Crafts, N.F.R. & Thomas, M. (1986). Comparative advantage in UK manufacturing trade. 1910-1935. Economic Journal, 96, 629-645.

Ferman, M., Akgüngör, S. & Yüksel A.H. (2004). Türkiye'nin ihracat rekabet gücü ve sürdürülebilirliği: Avrupa birliği pazarında rakip ülkeler ve Türkiye açısından bir karşılaştırma. Paper presented at 2004 Türkiye İktisat Kongresi,İzmir.

Fertö, I. (2003). The dynamics of Hungarian agri-food trade patterns in the EU. Acta Oeconomica, 53, 385-399.

Fertö I., & Soos K.A. (2008). Trade specialization in the European Union and in postcommunist European countries. Eastern European Economics, 46, 5–28.

Güran, N. (1990). Dışa açılma sürecinde Türkiye ekonomisinin rekabet gücü. Devlet Planlama Teşkilatı, no.2231. Ankara.

Hanif, M.N., & Jafri, S.K. (2008). Financial development and textile sector competitiveness: A case study of Pakistan. South Asia Economic Journal, 9, 141-158.

Hausman, J. A. (1978). Specification tests in econometrics. Econometrica, 46, 1251–1271.

Hugnes, K.S. (1993). The role of technology, competition and skill in European competitiveness. In K.S. Hugnes (Ed.), European competitivenes, (pp.133-158). Cambridge: Cambridge University Press.

Karaalp H.S., (2011). Competitiveness of Turkey in Eurasia: A comparison with CIS countries. China-USA Business Review,10, 727-744.

Karakaya, E., & Özgen, F.B. (2002). Economic feasibility of Turkey's economic integration with the EU: Perspectives from trade creation and trade diversion". Paper presented at METU Sixth International Conference in Economics, Ankara.

Kösekahyaoğlu, L., & Özdamar, G. (2009). Avrupa Birliği'ne üyelik sürecinde Türk imalat sanayinin rekabet gücündeki değişmeler. Süleyman Demirel University The Journal of Faculty of Economics and Administrative Sciences,14, 17-30.

Küçükahmetoğlu, O. (2000). Türkiye-AB gümrük birliğinin iktisadi etkileri. İktisat Dergisi, 48, 34-47.

Liesner, H.H. (1958). The European common market and British industry. Economic Journal, 68, 302–316.

Lohrmann, A.M. (2000). Development effects of the customs union between Turkey and the European Union. Russian and East European Finance and Trade, 36, 26-44.

Lundmark, R. (2010). European trade in forest products and fuels. Journal of Forest Economics,16, 235-251.

Mauro, F., & Forster, K. (2008). Globalization and the competitiveness of the Euro area. Occasional Paper Series, No.97. Germany: European Central Bank.

Nyahoho, E. (2010). Determinants of comparative advantage in the international trade of services: An empirical study of the Hecksher-Ohlin approach. Global Economy Journal,10, 1-22.

Peterson, J. (1988). Export shares and revealed comparative advantage. A study of international travel. Applied Economics, 20, 351–365.

Şimşek, N., Seymen, D., & Utkulu U. (2007). Turkey's competitiveness in the EU markets: A comparison of different trade measures. Paper presented at Ninth Annual International Conference, Athens.

Utkulu, U., & Seymen, D. (2004). Revealed comparative advantage and competitiveness: Evidence for Turkey vis-a`-vis the EU 15. Paper presented at the European Study Group Sixth Annual Conference, Nottingham.

Vergil, H., & Yıldırım, E. (2006). AB-Türkiye gümrük birliğinin Türkiye'nin rekabet gücü üzerindeki etkileri. Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 26,1-21.

Vollrath, T.L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. Weltwirtschaftliches Archiv, 130, 265–279.

Yılmaz, B. (2003). Turkey's competitiveness in the European Union: A comparison with five candidate countries-Bulgaria, the Czech Republic, Hungary, Poland, Romania-and the EU15. Ezoneplus Working Paper no. 12, Free University, Berlin.

Yılmaz, B., & Ergun, S.J. (2003). The foreign trade pattern and foreign trade specialization of candidates of the European Union. Ezoneplus Working Paper no.19, Free University, Berlin.

Yilmaz, B. (2005). The foreign trade pattern and foreign trade specialization in the European Union. Eastern European Economics, 43, 74–100.

Yılmaz N.D., Karaalp, H.S. & Akgül S. (2011). Trends in global textile and clothing market: Comparative advantage of nations, Paper presented at XI International Scientific Conference, Lodz.