The Level and Structure of Turkey's Intra-Industry Trade with Countries of Organization of The Black Sea Economic Cooperation[1]

Prof. Hamza ÇEŞTEPE
Bülent Ecevit University Faculty of Economics and Administrative Sciences
cestepe@gmail.com

Res. Assist. Havanur ERGÜN
Bartın UniversityFaculty of Economics and Administrative Sciences
havanurergun@gmail.com

Lecturer Selcen ZORLU
Bülent Ecevit University Maritime Faculty
selcenzorlu@gmail.com

Abstract: *In this study, intra-industry trade (IIT) level and structure between Turkey and Organization of the Black Sea Economic Cooperation (BSEC), which is a regional development movement which Turkey led its establishment and has recently tried to revive, have been analyzed. In the study, Grubel-Lloyd (GL) index, most widely used in the measurement of IIT, is used. According to the calculations made by using SITC classification foreign trade data for 2007-2014, it is observed that Turkey's intra-industry trade with this region is low according to GL index. In the specified period, intra-industry trade-intense industries are beverages and tobacco, machinery and transport equipment and chemicals industries. Besides, manufactured goods classified chiefly by material and miscellaneous manufactured articles industry have relatively higher intra-industry trade. As in other countries of the region, Turkey`s increasing intra-industry level with this region which is low will be one of the important factors in inversion to a more advanced level of regional integration.*

Keywords: *Intra-industry Trade, Black Sea Economic Cooperation, Grubel-Lloyd (GL) Index, Regional Integration*

Türkiye'nin Karadeniz Ekonomik İşbirliği Bölgesi Ülkeleriyle Endüstri-İçi Ticaretinin Düzeyi ve Yapısı

Özet: *Bu çalışmada, Türkiye ile kuruluşunda öncülük ettiği ve son dönemlerde tekrar canlandırmak için çaba sarf ettiği bir bölgesel entegrasyon hareketi olan*

[1] This study was presented as a conference paper at the International Conference on Social Sciences and Humanities 2016, International Balkan University, 13-15 May 2016, Skopje, Macedonia.

Karadeniz Ekonomik İşbirliği Bölgesi (KEİB) arasında endüstri-içi ticaretin (EİT) düzeyi ve yapısı analiz edilmiştir. Çalışmada EİT'in ölçümünde en çok kullanılan endeks olan Grubel-Lloyd (GL) endeksi kullanılmıştır. SITC sınıflandırmalı 2007-2014 dönemi dış ticaret verileri kullanılarak yapılan hesaplamalar sonucunda, genel anlamda GL endeksine göre Türkiye'nin bu bölgeyle EİT'nin düşük olduğu görülmektedir. Belirtilen dönemde, yoğun EİT'in gerçekleştiği ana sektörler olarak içki ve tütün, makine ve ulaşım araçları ve kimyasal ürünler sektörlerinin olduğu tespit edilmiştir. Bunun yanında, başlıca sınıflara ayrılan işlenmiş mallar ve çeşitli mamul eşya sektörleri de nispeten yüksek EİT'e sahip sektörlerdir. Diğer bölge ülkelerinde olduğu gibi, Türkiye'nin bölgeyle düşük düzeyde olan EİT düzeyini artırması, bu oluşumun daha ileri düzeyde bir bölgesel entegrasyona evrilmesinde önemli unsurlardan biri olacaktır.

Anahtar Kelimeler: *Endüstri-içi Ticaret, Karadeniz Ekonomik İşbirliği, Grubel-Lloyd Endeks, Bölgesel Entegrasyon*

Introduction

Economic integrations are also one of the factors that influence intra-industry trade which means that a country both exports and imports goods of the same industry group. First of all, economic integrations eliminate the trade barriers between member countries and pave the way for an increase in trade within the region and, in particular, in intra-industry trade. Besides, the fact that countries have similar preferences, the facility to make use of economies of scale and to increase their production on the basis of foreign capital flows are other factors that help expansion of intra-industry trade (Küçükahmetoğlu, 2013:44). Therefore, while regional integrations make an impact on intra-industry trade, they also influence the entire foreign trade in general and intra-industry trade in particular.

This study aims to reveal the level and structure of intra-industry trade between Turkey and the Organization of the Black Sea Economic Cooperation which was established in 1992 under the leadership of Turkey by countries having a coast to Black Sea or located within Black Sea basin and primary economic purpose of which is to transform into a regional economic integration like a free trade zone in the long term. Since Turkey is one of the several pioneering counties in the region, it is important to analyze the level and structure of foreign trade with the region as an indication of foreign trade potential to arise from the transformation into a regional integration, which is the primary goal of such integration.

When looked into similar studies done on the same subject in Turkey, it is seen that they rather measure and analyze intra-industry trade level between Turkey and European Union on a general and sectoral basis. There is scarcely

any study analyzing intra-industry trade (IIT) of Turkey with the Organization of the Black Sea Economic Cooperation (BSEC).

The method used in this study is Grubel-Llyod (GL) index, which is the primary one among the most used indexes in the calculation of IIT. Standard International Trade Classification (SITC) 3-digit foreign trade data of 2007-2014 which were obtained from Turkish Statistics Institute (TSI) were used and index values were calculated and analyzed both by countries and by goods.

The study consists of three sections. The first section mentions the concept and importance of intra-industry trade. Then, general information concerning foreign trade between Turkey and BSEC is given. In the empirical analysis part of the study, firstly the empirical literature on the subject is put forward; information concerning method and data are given and then the calculated index values are analyzed. The conclusion section reveals general conclusions from the study.

1. Concept and Measurement of Intra-Industry Trade

Intra-industry trade may be briefly summarized as simultaneous export and import of goods and services of the same sector. Having emerged in 1960s, this form of trade is not grounded on comparative advantages as alleged by classical foreign trade theories. IIT arises from economies of scale together with diversification of goods. In this extent, economies of scale pave the way for production of different products within a single industry and enhance specialization and foreign trade (Krugman, 1981:960). Economies of scale can lead to, among other things, the innovation of new products including an increase in the variety of existing products (Murshed, 2001:99). Since economies of scale will not allow production of each kind of a product in the country, demands for such products will be met through import from other countries by means of IIT.

IIT, which is at a higher level between countries with similar factor endowments, provides parties better profits than those which would be gained in case of comparative advantages. The reason is that IIT gives countries the chance to utilize from broader markets (Krugman and Obstfeld, 2009:140). This also reveals itself in high levels of IIT in regional integrations like European Union.

Literature of economics offers many alternatives for measurement of intra-industry trade (Balassa, 1996:471). However, according to applied researches on measurement of intra-industry trade, generally Grubel-Lloyd approach has been used. Grubel and Llyod (1971) developed the following index to calculate intra-industry trade values of 9 OECD-member industrialized countries and Australia by using the trade data of 1968-1969:

$$GL_{cd,i} = 1 - \frac{|X_{cd,i} - M_{cd,i}|}{(X_{cd,i} + M_{cd,i})}$$

Here, $X_{cd,i}$ and $M_{cd,i}$ reflectively shows, for i industry, import from c country to d country and import from d country in a particular year (Lloyd and Herbet, 1975; 20). Grubel-Lloyd Index shows the share of intra-industry trade within the entire foreign trade. With GL Index, IIT for n industries may be calculated as follows by adding up as weighted average rather than simple arithmetic average:

$$GL_{cd} = \sum_{i=1}^{N} w_{cd,i} GL_{cd,i} = \sum_{i=1}^{N} \left(\frac{X_{cd,i} + M_{cd,i}}{\sum_{i=1}^{N} (X_{cd,i} + M_{cd,i})} \right) GL_{cd,i} = 1 - \frac{\sum_{i=1}^{N} |X_{cd,i} - M_{cd,i}|}{\sum_{i=1}^{N} (X_{cd,i} + M_{cd,i})}$$

Corresponding to this definition, the following formula may be used:

$$GL_{cd} = \frac{\sum_{i=1}^{N} 2 * \min (X_{cd,i}, M_{cd,i})}{\sum_{i=1}^{N} (X_{cd,i} + M_{cd,i})}$$

With this formula, the country may be totalized on the basis of all trading partners and binary total IIT index may be calculated:

$$GL_{c} = \sum_{d=1}^{D_c} \left(\frac{\sum_{i=1}^{N} 2 * \min (X_{cd,i}, M_{cd,i})}{\sum_{i=1}^{N} (X_{cd,i} + M_{cd,i})} \right)$$

Here D_c, is the number of trading partners of c country.

Grubel-Lloyd Index $GL_{cd,i}$, has values between 0 and 1 ($0 \leq GL_{cd,i} \leq 1$). The index value being 1 or close to 1 shows that foreign trade of i product serves as intra-industry trade; such value being zero or close to zero shows that the entire trade between countries is intra-industry trade. In this case, either import or export value is zero. If it is close to 1, export and import levels in a certain product group are close (Küçükahmetoğlu, 2002:36).

In calculations of intra-industry trade, some significant problems arise depending on the aggregation[2] choice. Aggregation choice is of great

[2] Categorical aggregation occurs when goods with different production functions are within the same group of industrial goods in foreign trade statistics of a country and these statistics reflect simultaneous import and export values (Gray, 1979:88).

importance for calculation of a more realistic IIT value. Aggregation level appears in forms varying from one to five depending on the number of digits which are taken as a basis in product classification. Therefore, the main point to be identified for calculation of intra-industry trade index for a country is on which digit the study will be done[3] (Başkol, 2009: 5-6). Where highly aggregated product groups are taken as basis for measurements, IIT index value may be found higher than it is (Mardas, 1992:6-7). In case of a low-level (highly detailed) aggregation, IIT figures are found low.

2. Foreign Trade between Turkey and BSEC Zone

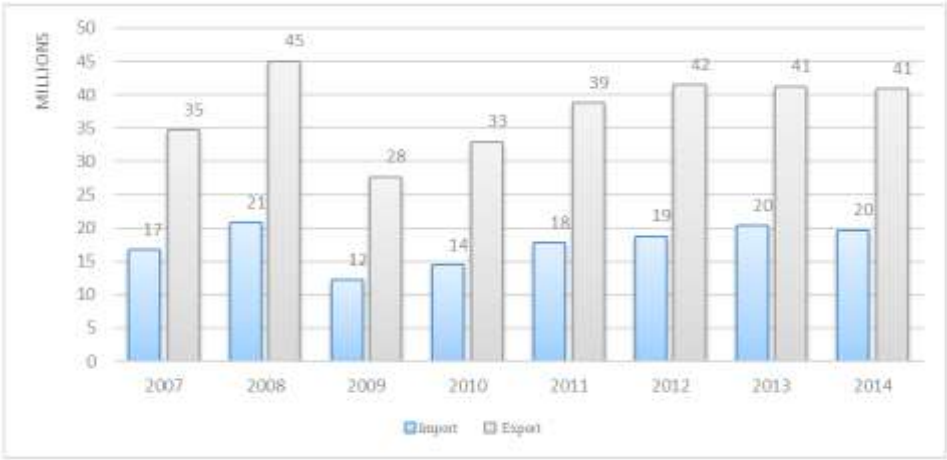
The Organization of the Black Sea Economic Cooperation (BSEC) is a product of political and economic restructuring conducted during dissolution of the Soviet Union for globalization in the world or international integration at the regional level or, briefly, for regionalism. Having found its position and timing in an environment of transition to a free market economy on economic terms and to pluralist democracy on political terms in Eastern Europe in the late 1980s, the idea of BSEC emerged as an attempt for a regional economic cooperation under the leadership of Turkey in the early 1990s.

The first members of BSEC were 11 countries which have a coast to the Black Sea or are located within the Black Sea Basin. These countries are Albania, Azerbaijan, Bulgaria, Armenia, Georgia, Moldova, Romania, Russia Federation, Turkey, Ukraine and Greece. Upon participation of Serbia in 2004, number of KEI members reached to 12.

Although share of EU within Turkey's foreign trade has declined when compared to the past, the current data show that EU is still the natural trade partner of Turkey (Kar, 2011:3). For BSEC region, the expected development has not been achieved in this period. As of 2015, share of BSEC in our total export is 10.1% and its share in total import is 15.2%. These rates were respectively 13.5% and 19.3% in 2006 (TÜİK, 2016). As seen in Figure 1, Turkey-BSEC foreign trade, which peaked up in 2008, started to slow down starting from the year when global crisis broke out. It should also be noted that we have a low level of foreign trade with some other countries in the region other than Russia.

Figure 1: Development of Foreign Trade between Turkey and BSEC (billion $)

[3] There are two main types of classification in classification of foreign trade statistics, which are Standard International Trade Statistics (SITC) and International Standard Industrial Classification (ISIC): SITC makes a classification according to particulars of goods, while ISIC puts activities into a classification depending on how they are processed (Başkol, 2009:6).

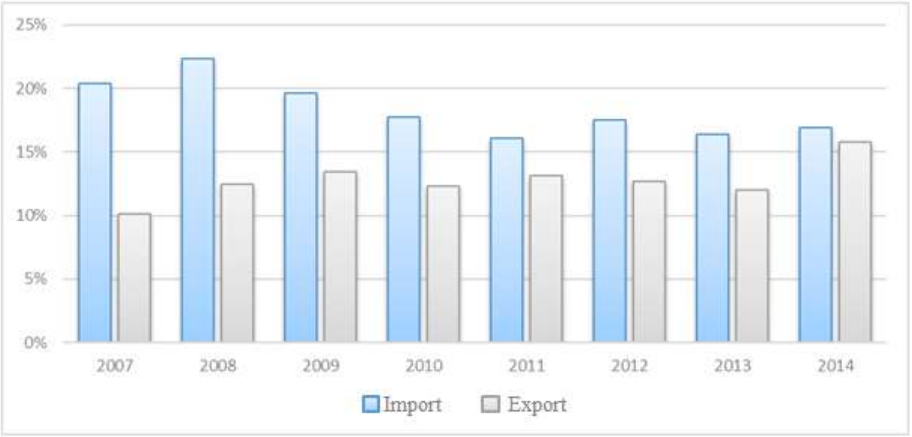


Source: TÜİK (2016), Basic Statistics, http://www.tuik.gov.tr/UstMenu.do?metod=temelist, 26.03.2016

The foreign trade balance between BSEC and Turkey shows that Turkey always has a foreign trade deficit. The most important reason behind this deficit is the high level of energy import from the region, particularly from Russia, since the region is one of the leading energy basins of the world. Despite the problems in our relationship due to the recent political tension between us, Russia, a country of the region, is one of the most important trade partners of Turkey and has a particular importance in Turkey's import. Indeed, it had the largest share, 10.4%, in our import in 2014 (TİM, 2015:87). Goods Turkey imports from the region are mainly crude materials and intermediate goods and goods it exports are products of manufacturing industry. The first five products in our import (according to 2-digit classification of STIC) are oil, oil products and related substances, special processes and products not classified into a type, iron-steel, metals not containing iron and metal ores and scraps. The first five products in our export are textile yarn fabric and ready-to-wear products, vegetables and fruit, clothes and their accessories, land vehicles and electrical machines and their parts.

Between 2007 and 2014, BSEC's share in Turkey's annual export and import shows that the difference between export and import in favor of import gradually declined and import and export shares highly closed up in 2014. In other words, BSEC's share in our export had a steady increase over time.

Figure 2: BSEC's Share in Turkey's Foreign Trade (%)



Source: TÜİK (2016), Basic Statistics, http://www.tuik.gov.tr/UstMenu.do?metod=temelist, 26.03.2016

Behind the low level of foreign trade between Turkey and BSEC, there are both economic and political reasons. Economically, these reasons include differences between development levels of Turkey and BSEC countries, except for a few; high tariffs adopted by certain countries; and most of the countries subsisting economic and commercial relationships mainly with non-BSEC countries. Political reasons may include disputes between certain countries, impact of Russia on certain countries of the region and political instability and security problems in the region.

3. Empirical Analysis of Intra-Industry Trade of Turkey with BSEC Region

In this section, similar studies conducted in Turkey on the same subject and conclusions of these studies will be mentioned before empirical analysis.

3.1. Empirical Literature

There have been many studies conducted on intra-industry trade since early 1980s in the foreign literature. It is seen that, in Turkey, studies on this subject started in 2000s and those studies mostly aimed to identify and analyze IIT between Turkey and European Union. The literature contains no study on IIT between Turkey and BSEC. Table 1 includes a summary of studies on Turkey's IIT.

Table 1: Empirical Studies on Intra-Industry Trade of Turkey

Study	Scope	Period	Conclusion
Erk and Tekgül (2001)	Turkey-EU	1993-1998	It is stated that trade between Turkey and EU countries are based on comparative advantages and a significant part of this trade occurs as vertical diversification of goods.
Erlat and Erlat (2003)	Turkey-EU	1969-1999	The study establishes that trade is generally in the form of inter-industry trade, but this form has turned, even if slightly, into intra-industry trade in the period following 1980.
Yenilmez and Bayraç (2005)	Turkey-Germany	1985-2001	It is found out that IIT between Turkey and Germany gradually increases and all variables in the model, except for European have an influence on IIT between Turkey and Germany.
Kaya and Gacener (2005)	Turkey-11 Neighboring Countries	1996-2004	For many countries, IIT's share points to a trend of a simple crude material change in IIT.
Aydın (2008)	Turkey-EU and non-EU Countries	1989-2005	In the respective period, average IIT rate of Turkey is 40% and developments in foreign trade occur on the basis of comparative advantages.
Başkol (2010)	Turkey-Central Asian Turkish Republics	1992-2009	Foreign trade between Turkey and these countries stand out as inter-industry trade. Even though share of IIT was on the rise during the analyzed period, it is not possible to see IIT in a significant part of industries.
Çeştepe (2012)	Turkey-Chosen Middle East Countries	1999-2009	Turkey's IIT with this region is generally low. The most significant reason behind this low level of IIT is that economies of the region's countries are mostly complementary economies. IIT between these countries and Turkey is more related to intermediate goods like textiles, chemical substances, glass etc.
Yurttançıkmaz (2013)	Turkey-EU	1995-2009	In those days, IIT levels were on the rise in many products and Turkey's comparative advantage in sectors of industrial goods and

			machinery and transport equipment was generally increasing and this advantage was weakening for the sector of miscellaneous manufactured articles, including the textile sector.
Şentürk (2014)	Turkey-Chosen Countries	1990-2013	It is concluded that values of Turkey's IIT with countries chosen on the basis of all industries and manufacturing sector had a rising trend for 23 years, which was a consequence of the adopted foreign trade policies.
Şahin (2015)	Turkey-China	2000-2013	While trade in textile sector between Turkey and China is IIT, trade in ready-made clothing sector is in the form of inter-industry trade. However, level of IIT in textile sector in China is going down.

3.2. General IIT Values in the Trade between Turkey-BSEC

In the calculation of intra-industry trade values by industries, 2-digit and 3-digit foreign trade data of the period 2007-2014 were used which were compiled according to the United Nations Standard International Trade Classification (SITC) STIC Revision 4.

Developed to be used in foreign trade statistics, STIC is a goods classification and a system consisting of 1, 2, 3, 4 and 5 digits. International organizations publish their foreign trade statistics generally on the basis of this classification.

General IIT measurements in Turkey-BSEC trade were done for each year at aggregation levels 2 and 3 for the 2007 - 2014 period. As explained before, which goods will be grouped in the same industry is an important and controversial issue in IIT measurement. If a highly detailed classification is taken as basis, low IIT figures are found; if the aggregation level is increased, high IIT results are obtained. Accordingly, in the analysis, Turkey's IIT with BSEC at STIC aggregation level 3 is found through calculation of Grubel Lloyd index and results are given in the Table 2. Furthermore, a general measurement is done at STIC 2-digit level in order to determine both comparison and aggregation deviation; and individual calculations are made to see whether there is any differentiation between general index values (industries no. 0-9) and manufacturing industry (industries no. 5-9).

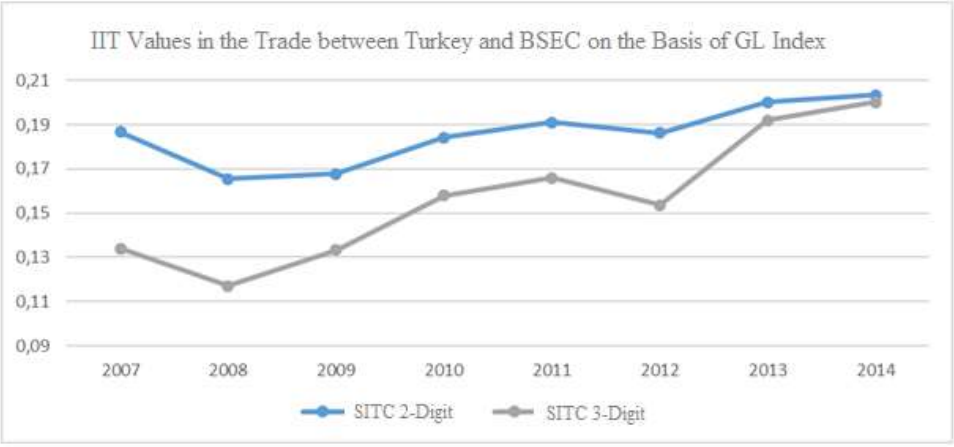
Table 2: IIT Values in the Trade between Turkey-BSEC on the Basis of GL Index

	GL Index (Trade weighted average)	2007	2008	2009	2010	2011	2012	2013	2014
SITC 2-digit level	GL Index	0,187	0,165	0,168	0,184	0,191	0,186	0,200	0,203
	GL Index (0-4)	0,123	0,125	0,091	0,092	0,132	0,114	0,100	0,097
	GL Index (5-9)	0,222	0,186	0,218	0,243	0,214	0,217	0,248	0,258
SITC 3-digit level	GL Index	0,134	0,117	0,133	0,158	0,166	0,154	0,192	0,200
	GL Index (0-4)	0,090	0,086	0,066	0,072	0,110	0,093	0,085	0,097
	GL Index (5-9)	0,158	0,133	0,177	0,213	0,188	0,179	0,216	0,226

Source: UN Comtrade data are used in the calculation.

The table shows that Turkey's IIT level increased over time during the period, but it was generally at a low level. In other words, Turkey's trade with that region was in the form of inter-industry trade in that period.

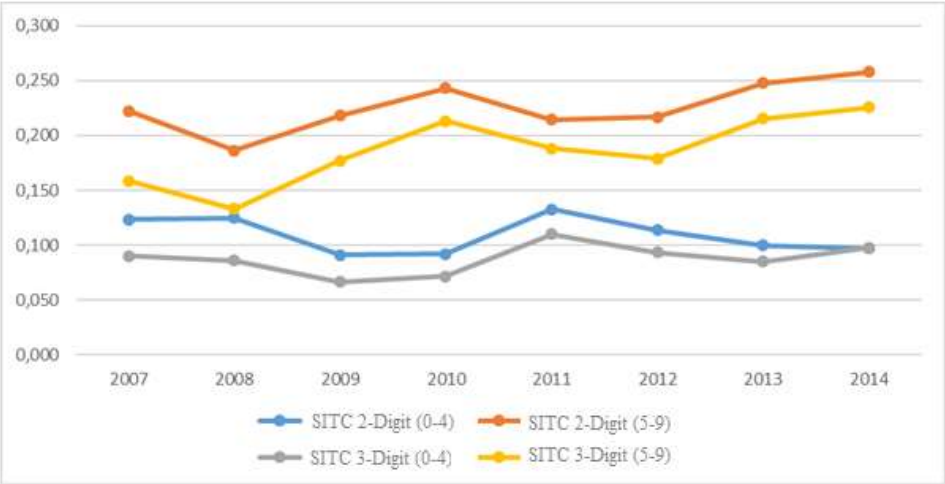
Figure 3: IIT Values in the Trade between Turkey-BSEC on the Basis of GL Index



Source: UN Comtrade data are used in the calculation.

Besides, as seen in the Figure 4, goods groups mainly covering the industrial goods (5-9) have a higher IIT value when compared to primary goods groups (0-4). This result is consistent with the theory. IIT values for industrial goods can be found higher on grounds such as the market structure, that labor force can be differentiated in terms of quality and skills, that economies of scales can be realized, and that production can be divided into stages (Küçükahmetoğlu, 2002: 44).

Figure 4: IIT Values in the Trade between Turkey-BSEC on the Basis of GL Index in Primary and Industrial Goods



Source: UN Comtrade data are used in the calculation.

3.2.1. IIT between Turkey and BSEC by Key Industries

In this section, intra-industry trade index values of sectors are calculated in weighted average by years. By this practice, it is aimed to determine which main industries have higher IIT rates in Turkey and, in the most general sense, monitor the sector-based development over years.

Table 3 shows rates of Turkey's IIT with BSEC countries by years and sectors calculated through GL index at STIC 3-digit aggregation level. Values in the table indicate trade weighted average of sub-industries at 3-digit level of each key STIC industry. In the industry grouping based on STIC classification, sectors of chemicals and related products no. 5, processed goods divided into main classes no. 6, machinery and transport equipment no. 7 in STIC generally have high values in terms of IIT levels. In the group of manufactured goods no. 5-8, there is an uptrend starting from 2007 until 2014. The highest increase is in the industry of machinery and transport equipment no. 7. While the index value was 0.19% in 2007, it increased to 0.49% in 2014. According to the table, IIT in product groups no. (0-4) generally do not have any considerable change. From 2007 to 2014, beverages and tobacco had the highest increase in product groups no. 0-4. IIT in beverages and tobacco (1) sector, which was 0.10% in 2007, reached to 0.51% in 2014. While index values in food and live animals (0) were steady from 2007 to 2014, index values in mineral fuels, lubricants and related materials (3) and animal and vegetable oils, fats and waxes (4) had a decrease from 2007 to 2014. Index value for crude materials (except fuels, inedible) (2) was 0.06% in 2007 and it reached to 0.20 % in 2014.

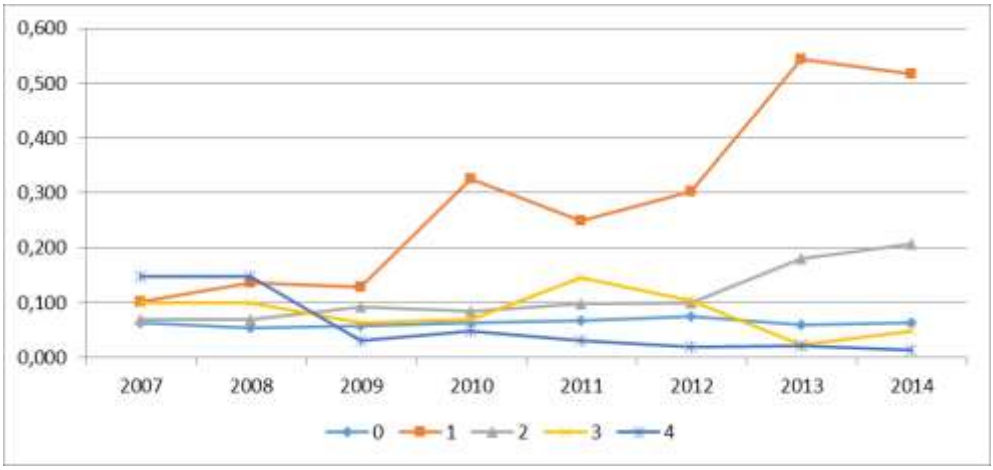
Table 3: Trade Weighted Average of STIC 3-Digit GL Index

Code	Description	2007	2008	2009	2010	2011	2012	2013	2014
0	Food and live animals	0. 064	0. 054	0. 058	0. 064	0. 068	0. 075	0.060	0.064
1	Beverages and tobacco	0. 103	0. 136	0. 128	0. 326	0. 250	0. 303	0.543	0.517
2	Crude materials inedible, except fuels	0. 069	0. 069	0. 092	0. 084	0. 097	0. 099	0.180	0.206
3	Mineral fuels, lubricants and related materials	0. 100	0. 100	0. 063	0. 068	0. 146	0. 103	0.024	0.048
4	Animal and vegetable oils, fats and waxes	0. 147	0. 147	0. 031	0. 048	0. 032	0. 020	0.021	0.013
5	Chemicals and related products	0. 209	0. 209	0. 231	0. 318	0. 333	0. 326	0.281	0.288
6	Manufactured goods classified chiefly by materials	0. 203	0. 203	0. 209	0. 218	0. 221	0. 204	0.248	0.277
7	Machinery and transport equipment	0. 195	0. 195	0. 339	0. 409	0. 373	0. 382	0.488	0.493
8	Miscellaneous manufactured articles	0. 118	0. 118	0. 150	0. 151	0. 165	0. 159	0.152	0.157
9	Commodities and transactions not classified elsewhere	0. 020	0. 020	0. 040	0. 050	0. 037	0. 044	0.060	0.065

Source: UN Comtrade data are used in the calculation.

Figure 5 and Figure 6 clearly show the change in IIT rates of key industries at STIC 3-digit level by years.

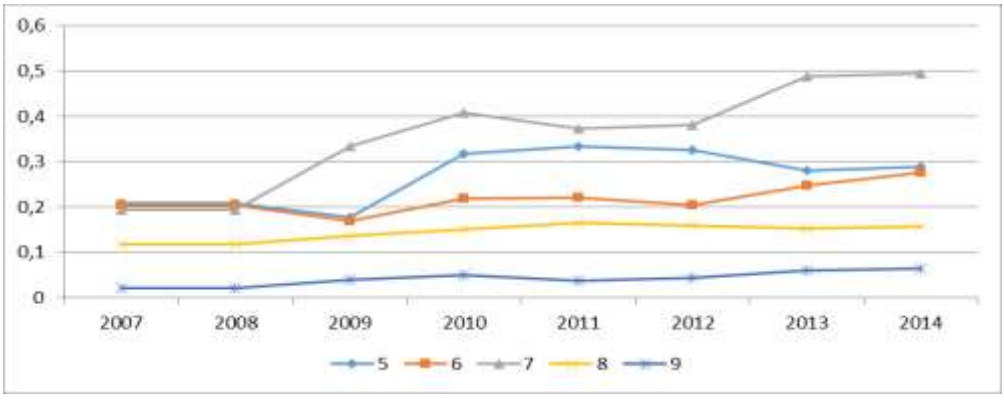
Figure 5: Sectoral IIT Index Measurements at STIC 3-Digit Level (0-4)



Source: UN Comtrade data are used in the calculation.

As seen in the figures, sector of beverages and tobacco no. 1 had the highest increase in group (0-4), and sector of machinery and transport equipment no. 7 had the highest increase in group (5-9).

Figure 6: Sectoral IIT Index Measurements at STIC 3-Digit Level (5-9)



Source: UN Comtrade data are used in the calculation.

3.2.2. IIT in Turkey-BSEC Trade by Countries

SITC 3-digit IIT index values (trade weighted) between Turkey and other BSEC countries are given in the Table 3. Data in the Table 4 show that the highest IIT rate in 2007 and 2008 was with Greece and the highest IIT rate in 2009-2014 was with Romania.

It is found out that IIT level, which is calculated according to Grubel-Lloyd index, is highly low as seen in Table 4; in other words, it is determined that Turkey's trade with these countries is in the nature of inter-industry trade. Figure 7 clearly shows the change in IIT rates of countries at STIC 3-digit level by years.

In Table 4, intra-industry trade index values of sectors in BSEC countries are given in weighted average by years. According to 3-digit index values, the index value in primary goods (0-4) is higher than the index value in manufactured goods (5-8) in all country groups, except for Russia, in 2007. In 2014, the index value in manufactured goods (5-8) is higher than the index value in primary goods (0-4) except for Georgia and Ukraine. Accordingly, intra-industry trade is more intense in manufactured goods. Among BSEC countries, only with Armenia there is no trade.

Table 4: IIT Index Values (Trade Weighted) of BSEC Countries at STIC 3-Digit Level

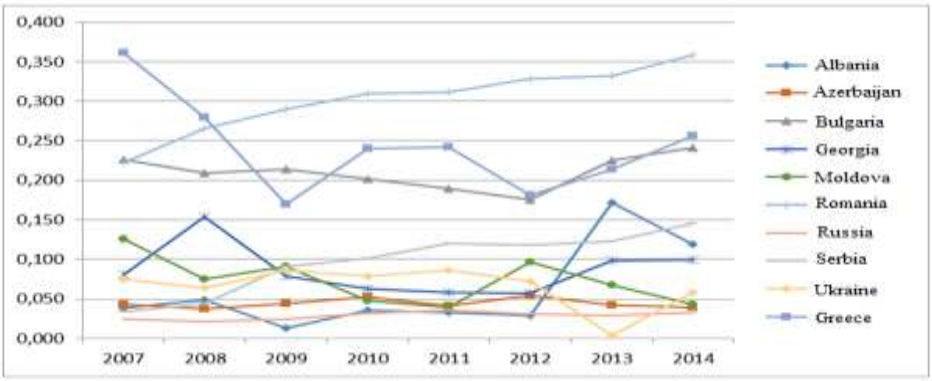
Countries		2007	2008	2009	2010	2011	2012	2013	2014
Albania	**(0-9)**	0.038	0.049	0.013	0.036	0.033	0.029	0.172	0.119
	(0-4)	0.157	0.161	0.003	0.001	0.009	0.003	0.003	0.004
	(5-9)	0.008	0.014	0.015	0.041	0.037	0.035	0.205	0.137
Azerbaijan	**(0-9)**	0.043	0.037	0.044	0.052	0.041	0.054	0.042	0.039
	(0-4)	0.116	0.069	0.128	0.140	0.120	0.135	0.006	0.010
	(5-9)	0.030	0.030	0.033	0.039	0.027	0.043	0.046	0.042
Bulgaria	**(0-9)**	0.226	0.209	0.214	0.202	0.189	0.175	0.225	0.241
	(0-4)	0.273	0.105	0.167	0.120	0.064	0.038	0.098	0.118
	(5-9)	0.215	0.247	0.234	0.240	0.261	0.263	0.264	0.278
Armenia	**(0-9)**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0-4)	0.000	0.000	0.000	0.000	0.000	0.000	0 000	0.000
	(5-9)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Georgia	**(0-9)**	0.081	0.154	0.079	0.063	0.058	0.057	0.099	0.099
	(0-4)	0.143	0.339	0.203	0.106	0.061	0.081	0.108	0.159
	(5-9)	0.047	0.028	0.037	0.047	0.058	0.054	0.097	0.092
Moldova	**(0-9)**	0.126	0.075	0.091	0.048	0.039	0.097	0.068	0.043
	(0-4)	0.147	0.114	0.110	0.014	0.011	0.075	0.034	0.034

	(5-9)	0.115	0.062	0.079	0.072	0.076	0.111	0.093	0.050
Romania	**(0-9)**	0.222	0.265	0.290	0.310	0.311	0.328	0.332	0.358
	(0-4)	0.095	0.142	0.093	0.105	0.047	0.100	0.067	0.108
	(5-9)	0.089	0.305	0.353	0.375	0.398	0.394	0.358	0.389
Russia	**(0-9)**	0.024	0.021	0.024	0.032	0.036	0.031	0.029	0.032
	(0-4)	0.013	0.019	0.018	0.025	0.065	0.050	0.029	0.029
	(5-9)	0.033	0.022	0.031	0.039	0.027	0.024	0.029	0.033
Serbia	**(0-9)**	0.034	0.044	0.091	0.101	0.120	0.118	0.123	0.145
	(0-4)	0.054	0.059	0.233	0.170	0.112	0.106	0.055	0.058
	(5-9)	0.031	0.042	0.065	0.087	0.122	0.122	0.131	0.158
Ukraine	**(0-9)**	0.075	0.064	0.086	0.079	0.086	0.072	0.004	0.058
	(0-4)	0.141	0.149	0.137	0.120	0.119	0.118	0.051	0.153
	(5-9)	0.054	0.039	0.055	0.055	0.062	0.051	0.063	0.060
Greece	**(0-9)**	0.361	0.280	0.170	0.240	0.242	0.181	0.214	0.256
	(0-4)	0.653	0.388	0.092	0.164	0.177	0.111	0.107	0.256
	(5-9)	0.227	0.234	0.216	0.292	0.317	0.307	0.256	0.256

Source: UN Comtrade data are used in the calculation.

With a general overview to IIT of Turkey with the region by countries, it is seen that IIT with 7 out of 10 countries is below 0.15 and IIT with the remaining countries varies between 0.20 and 0.35. In other words, IIT with Greece, Bulgaria and Romania, three Balkan countries, is relatively higher than IIT with others. However, theoretically, it is accepted that IIT is intense in the sector where IIT index value is above 0.50 and inter-industry trade is intense where it is below 0.25. Here, even IIT of Turkey with an EU country is below 0.50. Therefore, Turkey's trade with the region is mainly in the form of inter-industry trade.

Figure 7: Turkey's IIT with BSEC Countries (Trade Weighted)



Source: UN Comtrade data are used in the calculation.

The sector which made the biggest progress in terms of IIT increase from 2007 to 2014 is the sector of chemicals and related products no. 5. In that sector, number of sectors with an index value above 0.50 was 6 in 2007 and it reached to 11 in 2014 (Table 5). Following this sector, sectors having a high index value are sectors of processed goods divided into main classes no. 6, machinery and transport equipment no. 7 and inedible crude materials except fuels no. 2.

Table 5: Sectors with an Index Value > 0.50

Code	Description	2007	2008	2009	2010	2011	2012	2013	2014
0	Food and live animals	023, 059, 061, 071	059	022, 061	022, 059, 061	043, 061, 071	011, 043, 075	001, 061, 071, 075,	001, 071, 075,
1	Beverages and tobacco	122	111	111	111, 122	111	111, 122	111, 122,	122
2	Crude materials (except fuels), inedible	223 231, 278, 291, 292	223, 231, 266, 278, 291, 292	266, 277, 278, 288, 291, 292	265, 266, 278, 288, 291, 292	264, 274, 278, 288, 291	272, 278, , 287, 288, 291, 292	278, 287, 288, 291, 292,	212, 266, 272, 278, 287, 288, 291, 292,

3	Crude materials inedible, except fuels	322, 335	322	322					
4	Animal and vegetable oils, fats and waxes	431	411	422		411	411	422	422
5	Chemicals and related products	524, 533 551, 574, 592, 598	514, 515, 516, 524, 525, 542, 551, 574, 575, 592, 598	514, 515, 516, 524, 532, 542, 551, 573, 574, 575, 592	511, 514, 516, 523, 524, 532, 542, 551, 573, 574, 575, 592, 598	511, 514, 515, 516, 523, 524, 531, 532, 542, 551, 553, 571, 573, 574, 575, 592, 593, 598	514, 515, 516, 523, 524, 531, 532, 541, 551, 553, 571, 572, 573, 574, 575, 592	514, 515, 516, 523, 525, 532, 541, 553, 571, 572, 575, 579,	515, 516, 523, 525, 531, 532, 541, 553, 572, 575, 579,
6	Manufactured goods classified chiefly by materials	625, 634, 641, 654, 664, 665, 674, 679, 689, 696	625, 634, 641, 654, 665, 677, 679	611, 625, 634, 641, 654, 665, 674, 676, 677, 679	611, 625, 641, 664, 665, 674, 676, 679, 689, 696	611, 621, 625, 634, 641, 665, 674, 676, 679	625, 641, 665, 676, 677, 689, 696	611, 621, 625, 629, 641, 665, 675, 676, 677, 689, 696	621, 625, 629, 634, 641, 665, 675, 676, 677, 689, 692

7	Machinery and transport equipment	712, 716, 718, 731, 746, 792, 793	714, 718, 726, 731, 746, 759, 762, 764	714, 716, 718, 726, 741, 751, 773, 784, 792,	711, 714, 716, 718, 723, 726, 741, 744, 751, 759, 762, 773, 776, 784, 793	712, 714, 718, 751, 763, 773, 774, 784, 792, 793	714, 718, 746, 751, 764, 773, 781, 793	713, 718, 764, 773, 781, 791, 793,	712, 713, 718, 759, 773, 778, 781, 793,
8	Miscellaneous manufactured articles	882, 896	871, 896	871, 874, 896	874, 882, 896	874, 884, 896	874	874, 896	871, 874, 896

Conclusion

In this study, which examines the level and structure of Turkey's IIT with BSEC region, detailed analyses are done in terms of countries and goods. With regards to intra-industry trade, Turkey's IIT with this region generally appears to be low. It is seen that trade with BSEC countries is mainly in an inter-industry nature. Even with Greece, Bulgaria and Romania, the three European countries with a relatively higher IIT, IIT index is below 0.50. IIT with these three countries as well as some other countries shows an uptrend for the last couple of years.

When analyzed in terms of goods groups, it is found that IIT level is higher for goods of manufacturing industry in Turkey's IIT with the region. While the number of sectors with intense IIT was 38 in 2007, it had a slight increase and reached to 44 in 2014. In this period, sectors with an IIT value above 0.50 are Food and live animals (1), Beverages and tobacco (2), Crude materials (except fuels, inedible) (3), Chemicals and related products (5), Manufactured goods (6), Machinery and transport equipment (7) and miscellaneous manufactured articles (8).

In the industry grouping based on STIC classification, industries of chemicals and related products no. 5, manufactured goods classified chiefly by material no. 6, machinery and transportation vehicles no. 7 in STIC generally have high values in terms of IIT levels.

These results are actually the expected results considering the level of trade between Turkey and the region. An increase in IIT level is possible if trade between Turkey and the region makes a progress in the forthcoming periods - which is highly expected - and level of integration can be improved.

REFERENCES

AYDIN, A. (2008), Endüstri içi Ticaret ve Türkiye: Ülkeye Özgü Belirleyicilerin Tespitine Yönelik Bir Araştırma, Marmara Üniversitesi İ.İ.B.F Dergisi, Cilt:25, Sayı:2, 881-921

BALASSA, B. (1966), Tariff Reduction and Trade in Manufactures among the Industrial Countries, American Economics Review, Vol. 61 No:3, June 1966.

BAŞKOL, M.O. (2009), Türkiye'nin Endüstriiçi Ticaretinin Analizi, Uludağ Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, Cilt XXVIII, Sayı 2, 1-24.

BAŞKOL, M.O. (2010), Türkiye ile Orta Asya Türk Cumhuriyetleri Arasındaki Endüstri-içi Ticaretin Analizi, International Conference on Euroasian Economies, 4-5 Kasım 2010, İstanbul.

ÇEŞTEPE, H. (2012), Türkiye'nin Seçilmiş Ortadoğu Ülkeleriyle Ticaretinin Analizi, Ekonomik ve Sosyal Araştırmalar Dergisi, Cilt:8, Yıl:8, Sayı:2, 23-43

ERK, N. & Tekgül, Y. B. (2000), Ekonomik Entegrasyon ve Endüstri-içi Ticaret: Türkiye-AB Ülkeleri Arasındaki Endüstri-içi Ticaretin Ölçülmesi ve Ticaret Tipinin Belirlenmesi, ODTÜ Uluslararası Ekonomi Konferansı V, Ankara.

ERLAT, G. & Erlat, H. (2003), Measuring Intra-industry Trade and Marginal Intra-Industry Trade, Russian and East European Finance and Trade, Vol:39, No:6, 5-38

GRAY, P. (1979), Intra-Industry Trade: The Effects of Different Levels of Data Aggregation, Herbert Giersh (Ed.), On the Economics of Intra-Industry Trade, Tübingen: Mohr.

GRUBEL, H. G. & Lloyd, P.J. (1975), Intra-ındustry Trade, London: Macmillan.

KAR, M. (2011), İslam Dünyası Türkiye'nin Doğal Ticaret Ortağı Olabilir mi?, Ortadoğu Analiz, Nisan 2011, Cilt: 3, Sayı: 28, 68-75

KAYA, A. A. & Gacener, A. (2005), Intra-industry Trade of Turkey with the Neighboring Countries, First International Conference on Business, Management and Economics, 16-19 June 2005, Çeşme-İzmir, Turkey, 41-53

KRUGMAN, P. (1981), Intraindustry Specialization and the Gains from Trade, Journal of Political Economy, Vol. 89, No.5 (October 1981), 959-973.

KRUGMAN, P. & Obstfeld, M. (1997), International Economics Theory and Policy, Fourth Edition, New York: Addison Wesley.

KÜÇÜKAHMETOĞLU, O. (2002), Endüstri içi Ticaret ve Türkiye, İktisat İşletme ve Finans, Cilt:17, Sayı:190, 34-50.

KÜÇÜKAHMETOĞLU, O. (2013), Reel Entegrasyon Teorisi, Ekonomik Entegrasyon Küresel ve Bölgesel Yaklaşım, O. Küçükahmetoğlu, H. Çeştepe, Ş. Tüylüoğlu (Ed.), Bursa: Ekin, 53-91

MARDAS, D. (1992), Intra-Industry Trade in Manufactured Products between the European Economic And Eastern European Countries, Journal of World Trade, Vol. 26, No: 5, October 1992.

MURSHED, S. M. (2001), Patterns of East Asian Trade and Intra-industry Trade in Manufactures, Journal of the Asia Pacific Economy, 6(1), 99-123

ŞENTÜRK, C. (2014), Türkiye'nin Seçilmiş Ülkeler ile Endüstri Içi Ticaretinin Endeks Yöntemine Dayalı Analizi (1990-2013), Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, Yıl: 2014/2, Sayı:20, 207-230

ŞAHİN, D. (2015), Tekstil ve Hazır Giyim Sektöründe Endüstri-içi Ticaretin Analizi: Türkiye ve Çin örneği, İşletme ve İktisat Çalışmaları Dergisi, Cilt 3, Sayı 1, 2015, 1-9

TİM (Türkiye İhracatçılar Meclisi), (2015), Ekonomi ve Dış Ticaret Raporu 2015, İstanbul.

TÜİK (Türkiye İstatistik Kurumu), (2016), Temel istatistikler, http://www.tuik.gov.tr/UstMenu.do?metod=temelist, 26.03.2016

UN Comtrade Database (2016), Trade Statistics, http://comtrade.un.org/data/, 10.04.2016

YENİLMEZ, F. & Bayraç, H. N. (2005), Türkiye-Almanya Arasındaki Endüstri içi Ticaretin Gelişimi ve Endüstri-içi Ticareti Etkileyen Ülke Değişkenleri, E-akademi, 44, Ekim 2005.

YURTTANÇIKMAZ, Ç. (2014), Türkiye'nin AB Pazarında Endüstri-içi Ticaret Açısından Avantajlı Olduğu Ürünlerin Belirlenmesi, C.Ü İktisadi ve İdari Bilimler Fakültesi, Cilt:14, Sayı:1, 1-22