http://dergipark.ulakbim.gov.tr/trkjnat/index
Trakya University Journal of Natural Sciences, 15(2): 65-74, 2014
ISSN 2147–0294

Original Article/Orijinal Makale

STRUCTURAL CONDITION AND PRODUCTIVITY OF AGRICULTURE IN TURKEY ON THE WAY TOWARDS EU MEMBERSHIP

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Received (Alınış) :16 October 2014, Accepted (Kabul Ediliş) :09 March 2015, Published (Basım): August 2015

Abstract: European Union (EU) stipulates the compliance of Turkish Agricultural Sector with Common Agricultural Policy for full membership. Common Agricultural Policy (CAP), the oldest and the most comprehensive policy of the EU, was formed to integrate economies of the member countries in agriculture. Although the share of CAP is only 1.2% in Gross National Product (GNP) of the EU-27, the fact that 40% of the Union Budget belongs to CAP clearly sets out the importance of the policy. The present agricultural structure of Turkey constitutes an important problem for full membership in negotiations to be held with the EU countries. Having a simulation is of great importance in the structural conditions to be able to provide harmony in the application between Turkey and the EU. In this study, the analysis of agricultural structure in Turkey and the EU was done by the dimensions of management structure, production, yield and self-sufficiency. Existing agricultural mechanization levels of Turkey and the EU were also investigated. Some structural indicators about agriculture were compiled by benefiting from European Commission Agriculture and Rural Development Statistics and Indicators and TUIK/Turkish Statistical Institute. The level of mechanization in the EU and Turkey was computed by using FAOSTAT data. The most important results of the study highlight that although the Turkish agricultural sector has a high potential, it has a poor competitive qualification. Thus, the large potential of management and the large increase level of agricultural mechanization of the EU will be the most expected compelling change for Turkey in the process of adaptation.

Key words: Turkish and the EU agriculture, Common Agricultural Policy, agricultural machinery, agriculture in Turkey

Avrupa Birliği Üyeliği Sürecinde Türkiye'de Tarımın Yapısal Durumu ve Verimliliği

Özet: Avrupa Birliği (AB) tam üyelik için Türk tarımının Ortak Tarım Politikasına uyumunu şart koşmaktadır. Ortak Tarım Politikası (OTP), AB'nin en eski ve kapsamlı politikası olup, tarım alanında üye ülkelerin ekonomilerini bütünleştirmek amacıyla oluşturulmuştur. 27 üyeli AB'nde OTP'nin Gayri Safi Milli Hasıladaki (GSMH) payı %1.2 olmasına karşın, Birlik bütçesinin halen %40'ının OTP'ye ayrılması söz konusu politikanın önemini açıkça ortaya koymaktadır. Türkiye'nin mevcut tarımsal yapısı, AB ile yapılacak olan tam üyelik müzakereleri için önemli bir sorun teşkil etmektedir. Türkiye ile AB arasında uygulamada uyumun sağlanabilmesi için yapısal koşullarda benzeşme önem taşımaktadır. Bu çalışmada Türkiye'de ve AB ülkelerinde tarımsal yapının analizi (işletme yapısı, üretim, verim ve kendine yeterlilik) boyutlarından yapılmıştır. Türkiye'nin ve AB ülkelerinin mevcut tarımsal mekanizasyon düzeyleri incelenmiştir. Tarıma ilişkin bazı yapısal göstergeler, Avrupa Komisyonu Tarım ve Kırsal Kalkınma İstatistik ve Göstergeleri, Türkiye İstatistik Kurumu kaynaklarından yararlanılarak derlenmiştir. AB'de ve Türkiye'de mekanizasyon düzeyi FAOSTAT verilerinden yararlanılarak hesaplanmıştır. Çalışmanın en önemli sonuçları Türk tarımının yüksek potansiyele sahip, ancak rekabetçi niteliği zayıf bir sektör olduğudur. Bu nedenle AB tarım sektöründe işletme boyutlarının büyük olması ve tarımda mekanizasyon düzeyinin artması uyum sürecinde Türkiye için beklenen en zorlayıcı değişim olacaktır.

Anahtar kelimeler: Türk ve AB tarımı, Ortak Tarım Politikası, tarım makinaları, Türkiye'de tarım

Introduction

The Agriculture sector maintains to be an important sector of economy in Turkey and in many countries within the EU, because of meeting the food material needs of the population, forming the source of raw material production of industry based on agriculture, providing the opportunity of employment for a certain section, preventing external dependence and having the effects on balance of payments.

Main components of agricultural structure, which are education, research, publication, organization, transport, communication, use of input, physical structures, social security and the structure of agricultural enterprises particularly, are the most basic components in determining agricultural production and productivity. Without making required improvements in the structure of agricultural enterprises, increasing agricultural production, productivity and producer's income, balancing income distribution and even developing other components, determining agricultural structure such as education, research, publication, organization, communication, use of input, physical

structures and implementing an efficient agricultural policy are out of question (Ertuğrul 2006).

The fact that social issues in agricultural sector are resolved to a great extent in developed countries puts forward technical and economical purposes rather than social purposes in policies towards agricultural sector. Improving agricultural structure, efficiency and competitive power stand out as economic policy tools (Ertuğrul 2006).

European Union's Common Agricultural Policy (CAP), which is an important part of world agricultural agenda also has an important role in achieving the EU integration. Although changed over the years through reforms, CAP in general ensures the development of production standards and agricultural technology, effective usage of agricultural production inputs, increase in the productivity of agriculture in Europe, stability of the markets, security of supply of products, optimum utilization of labour force which is one of the most important factors of agriculture, food security, sustainable agricultural production, environment-friendly production model. The policy aims at increasing income of the groups living on agricultural products, offering affordable prices to consumers, equalizing prices of agricultural products and preventing prices from causing unfair competition in all member countries (Kilit 2012).

In this study, agricultural sector, put against Turkey who will begin negotiations with EU for full membership, at each platform as an issue, was handled and to this end, agricultural structure of the EU and Turkey was analyzed separately in order to put forward current level of agricultural mechanization.

Materials and Methods

In order to evaluate the possibility of harmonization between Turkey and the EU, some structural indicators about agriculture were examined comprehensively and data was compiled taking into account effects on agriculture. Most of the data used were obtained from European Commission Agriculture and Rural Development Statistics and Indicators and from Turkish Statistical Institute (TSI). Level of mechanization in the EU and Turkey was computed by using FAOSTAT data. Time series were also used.

Results

In Table 1, agricultural production value in the EU countries and value added, created were given as of 2012. Agricultural production value occurred as 342.1 billion Euro in the EU-15 and 406.1 billion Euro in the EU-27. The value of agricultural production has a percentage of approximately 65.1% in the EU-15. When the distribution of agricultural production value among countries is analyzed France, Germany, Italy and Spain appeared to rank within the first places.

Countries, where the share of agriculture in Gross Domestic Product (GDP) is the highest are Romania with 2.7%, Greece with 2.3%, Spain and Bulgaria with 1.9% and Cyprus and Holland with 1.7%. While the share of agriculture in GDP is approximately 1.16% for the EU-15, the EU-25 and the EU-27, it is 7.7% in Turkey according to 2012 data.

It is observed that the ratio of gross value added / agricultural production value, which can be taken as an indicator of level of efficiency in agricultural sector, differ among countries to a great extent. This ratio is 52.6% in Italy and 24.1% in Latvia and Slovakia. The reason of the difference in these ratios is the difference of product patterns of countries. From data in Table 1, it is clear that this ratio in Mediterranean countries is higher.

When an assessment is carried out for foreign trade of agricultural products of the EU countries and Turkey, it is observed that the countries with the highest share of agricultural products in total import are Cyprus (16.7%), Latvia and Ireland (14.3%), Portugal (13.4%), Denmark (12.8%), Lithuania (12.3%), Greece (11.9%), Holland (11%), Slovenia (10.1%), Spain (9.8%) and Italy (9.6%) (Table 2).

The countries with high share of agricultural products in the EU's export are Denmark, Latvia, Lithuania, Greece, Cyprus, Bulgaria, Ireland, Holland, Spain, France, Poland and Hungary. The share of agriculture in total export of Turkey is behind these countries.

When countries which became a EU member were taken into account, employment in agriculture, which was 6.6 million in the EU-15 in 2002, decreased to 4.9 million at the end of 2012. The share of agriculture in the total employment decreased to 3.9% in the EU-15. Italy, France, Spain and Germany are the countries in the EU-15, where employment in agriculture is the highest as of 2012 . Romania, one of the new members with 2.7 million people and 25.6% share and Poland, another new member with 1.960 million people with 18.7% are the countries with the highest agricultural employment in the EU-27. As of 2012, there exist 6 million people in Turkey employed in agriculture. The share of agriculture in total employment is 23.6% (Table 3).

In 2012, agricultural area is 125 million 895 thousand ha in the EU-15, 157 million 460 thousand ha the EU-25 and 176 million 316 thousand ha in the EU-27. Poland is in the first place with 14 million 529 thousand ha agricultural land among the 10 member countries who joined the union in 2004. As a candidate country, agricultural land that Turkey owns is 23.8 million ha. If Turkey becomes a full member, it will be the second EU country after France which have the widest agricultural area.

Table 1. The contribution of agriculture to GDP in the EU Countries and Turkey based on 2012 data.

Country	Output of the agricultural industry (1) (Million Euro)	Gross value-added (GVA) (2) (Million Euro)	2/1 (%)	Share of agriculture in the GDP (GVA/GDP) (%)
Belgium	8.545	2.407	28,2	0,9
Bulgaria	4.424	1.662	37,6	1,9
Czech Republic	4.866	1.358	27,9	0,5
Denmark	11.873	3.604	30,4	1,4
Germany	54.578	17.030	31,2	0,6
Estonia	898	360	40,1	1,2
Ireland	7.049	1.755	24,9	1,1
Greece	10.752	5.500	51,2	2,3
Spain	42.191	21.526	51,0	1,9
France	77.353	31.870	41,2	1,6
Italy	48.632	25.566	52,6	1,5
Cyprus	720	333	46,3	1,7
Latvia	1.323	319	24,1	1,0
Lithuania	2.973	1.169	39,3	1,5
Luxembourg	397	115	29,0	0,3
Hungary	7.514	2.593	34,5	1,4
Malta	128	57	44,5	0,7
Netherlands	26.268	8.426	32,1	1,7
Austria	7.245	3.000	41,4	1,1
Poland	23.198	9.013	38,9	1,3
Portugal	6.466	2.201	34,0	1,0
Romania	14.410	6.201	43,0	2,7
Slovenia	1.149	387	33,7	0,9
Slovakia	2.397	578	24,1	0,8
Finland	5.032	1.660	33,0	0,9
Sweden	6.429	1.865	29,0	0,5
United Kingdom	29.257	10.362	35,4	0,4
EU-15	342.067	136.887	40,0	1,2
EU-25	387.233	153.054	39,5	1,1
EU-27	406.066	160.916	39,6	1,2
Turkey	69.794			7,7
Hrvatska	2.780	1.172	42,2	2,7

Source: The data in the table was compiled based on Agriculture in the European Union, Statistical and Economic Information Reports 2011 & 2013 and Turkey's Statistical Yearbook 2013.

As far as number of enterprises is concerned, it is noticeable that along with new members there is a considerable increase in the number of enterprises. While total number of enterprises was 5.2 million for the EU-15, the number increased to approximately 7.7 million together with accession of 10 countries in 2004, then approximately 11.8 million together with the accession of Bulgaria and Romania in 2007. In excess of 3 million enterprises, Turkey has the highest number of enterprises among the EU member countries and candidates after Romania.

Average size of enterprise is 22 ha for the EU-15 and 6.1 ha for Turkey. With this scale, it is not possible to compete with producers of the EU especially for cereals, industrial crops, tuber crops and oil seeds (Özoğul, 2013). However, due to the EU enlargement, this scale decreased to 12.6 ha in the EU-27. This means that agricultural structure of the countries recently added to the EU is different from the EU-15. Indeed, average size of enterprise of the last EU-12 is 6.4 ha. On the other hand, there seems no problem about competition between the enterprises which have tendency to enlarge in Turkey and those in the EU countries.

As well as Small and Medium Enterprises (SMEs) have a density in agriculture in Turkey, the employment per enterprise is higher than the EU. Indeed, while 0.9 person per enterprise is employed in the EU-27, this number is 2 persons for Turkey. This situation causes decrease in per capita production value, in other words decrease in labour productivity. While per capita production value in agriculture of Turkey is 11.447 Euro, it is 69.611 Euro for the EU-15, 50.932 Euro for the EU-25.

While the enterprises in the EU-15 with sizes ranging from 1 to 10 ha and those with 50 ha are using 7.7% and 70.1% of the land, respectively, the holdings in Turkey which are found in the former groups are using 42% and those in the latter group are using only 11.3% of the total land. This shows that the EU agriculture is dominated by large farms (Table 4).

Table 2. The place of agriculture in foreign trade of the EU and Turkey with the EU based on 2012 data.

Country	Share of imports of food and agricultural products in total import (%)	Share of exports of food and agricultural products in total export (%)	External trade balance in food and agricultural products (Mio EUR)
Belgium	8,8	9,7	3.625
Bulgaria	9,4	16,6	1.009
Czech Republic	6,3	4,8	-1.117
Denmark	12,8	19,2	6.585
Germany	8,3	6	-9.804
Estonia	9,3	8,1	-245
Ireland	14,3	16,5	8.002
Greece	11,9	17	-1.222
Spain	9,8	15	8.742
France	8,4	13,5	15.585
Italy	9,6	8,2	-4.367
Cyprus	16,7	16,9	-721
Latvia	14,3	18,9	164
Lithuania	12,3	17,4	940
Luxembourg	9	6,7	-932
Hungary	6,3	10,3	3.539
Malta	9,4	3,7	-361
Netherlands	11	15,1	25.878
Austria	7,9	7,8	-932
Poland	8,3	11,6	3.818
Portugal	13,4	9,9	-2.999
Romania	8,9	9,3	-729
Slovenia	10,1	6,8	-839
Slovakia	7,1	6,1	-501
Finland	7,9	4,2	-2.356
Sweden	7,8	3,7	-5.007
United Kingdom	8,8	6,2	-24.734
EU-15	10,0	10,6	
EU-25	10,0	10,5	
EU-27	9,9	10,7	12.220
Turkey	5,4	9,9	1.825

Source: Agriculture in the European Union, Statistical and Economic Information Report 2013.

In Turkey, 2/3 of the agricultural enterprises approximately is smaller than 5 ha. Agricultural enterprises with a size of less than 10 ha in the EU process have reached to 20 ha in the EU-15 in recent years; however this value in the EU-25 and the EU-27 showed a specific decrease due to new participants (Table 5). In the improvement of the structure of agricultural enterprises, structural policy implementations have been effective. Since structural policies have gained importance and tendencies towards diverging from valorization policies have come up in recent years, it is expected that the process of improvement of agricultural structure and structure of agricultural enterprises to continue with acceleration.

While the number of enterprises with one parcel in Turkey reached 20%, the number of enterprises with ≥10 parcels decreased to 7% approximately (Table 6). The number of parcels in Turkey is 4.1 on average and average area of parcels is 1.5 ha.

In European Union countries, in addition to climatic conditions, as a result of high rate supports very important increases occurred in the number of animals and animal products. Issues, experienced due to the actualization of aforementioned increases far above expectations, have also constituted one of the main reasons of reforms in the CAP. In Table 7, the number of animals in the EU countries and in Turkey is given.

The level of efficiency in some selected plant products is given in Table 8. Turkey has a level of efficiency in wheat and barley, which is lower than the EU average. This situation arises due to climate and soil conditions rather than seed since cereal production in Turkey is carried out depending on natural conditions to an important extent and with extensive procedures. The high amount of precipitation, the adequacy of irrigation facilities and the use of intensive farming methods in the EU countries leads that the level of efficiency is higher compared with Turkey. With regard to efficiency in plant products, there are very important differences among the EU members. This situation affects the level that the countries benefit from supports, implemented on product basis, to an important extent.

In Turkey, amount of product obtained per animal for animal products like milk and meat is far below the EU average (Table 9). The main reasons of the difference in the level of efficiency can be listed as the quality of animals, owned, the difference in nutrition-care conditions together with climate and nature, and the insufficiency of specialization in the industry.

Table 3. Agricultural areas and the scale of enterprises in the EU and Turkey.

Country	Utilized agricultural area (UAA) (1 000 ha) in 2012	Number of holdings (1000 holdings) in 2010	UAA per holding (ha) in 2007	'Persons Employed' in agriculture (1000 persons) in 2012	Employment per holding (1000) in 2012	Agriculture (% of total civilian employment) in 2012
Belgium	1.358	42	28,6	53	1,3	1,2
Bulgaria	5.123	357	6,2	189	0,5	6,4
Czech Republic	3.526	23	89,3	149	6,5	3,1
Denmark	2.664	41	59,7	70	1,7	2,6
Germany	16.667	298	45,7	620	2,1	1,5
Estonia	956	19	38,9	29	1,5	4,7
Ireland	4.533	140	32,3	86	0,6	4,7
Greece	4.151	717	4,7	490	0,7	13
Spain	23.463	967	23,8	753	0,8	4,4
France	29.001	507	52,1	754	1,5	2,9
Italy	13.134	1.616	7,6	849	0,5	3,7
Cyprus	115	38	3,6	11	0,3	2,9
Latvia	1.841	83	16,5	73	0,9	8,4
Lithuania	2.842	200	11,5	112	0,6	8,8
Luxembourg	131	2	56,8	3	1,5	1,3
Hungary	5.338	534	6,8	201	0,4	5,2
Malta	11	12	0,9	2	0,2	1
Netherlands	1.842	71	24,9	226	3,2	
Austria	2.864	149	19,3	205	1,4	4,9
Poland	14.529	1.499	6,5	1.960	1,3	12,6
Portugal	3.598	304	12,6	486	1,6	10,5
Romania	13.733	3.724	3,5	2.682	0,7	29
Slovenia	480	74	6,5	77	1	8,3
Slovakia	1.927	24	28,1	75	3,1	3,2
Finland	2.285	63	33,6	103	1,6	4,1
Sweden	3.032	70	42,9	95	1,4	2
United Kingdom	17.172	183	53,8	347	1,9	1,2
EU-15	125.895	5.170	22	4.914	1	3,9
EU-25	157.460	7.676	16,8	7.603	1	4,7
EU-27	176.316	11.757	12,6	10.476	0,9	4,9
Turkey	23.782	3.021	6,1	6.097	2	23,6

Source: The data in the table was compiled and calculated based on the Agriculture in the European Union, Statistical and Economic Information Reports 2011 & 2013 and Turkey's Statistical Yearbook 2013.

Table 4. Land assets of agricultural enterprises in Turkey and EU.

Farm size class (ha UAA)	Turkey 2001 Census of Agriculture		the EU-15 in 2010		the EU-25 in 2010		the EU-27 in 2010	
	UAA		UAA		UAA		UAA	
	1.000 ha	%	1.000 ha	%	1.000 ha	%	1.000 ha	%
0-5	3.934	21,3	4.780	3,9	7.651	5,0	11.834	6,9
5-10	3.813	20,7	4.653	3,8	7.878	5,1	9.160	5,3
10-20	4.208	22,8	7.925	6,4	12.201	7,9	12.663	7,4
20-50	4.388	23,8	19.487	15,8	23.784	15,4	24.518	14,3
50+	2.092	11,3	86.374	70,1	102.513	66,6	113.430	66,1
Total	18.435	100	123. 219	100,0	154.027	100,0	171.604	100,0

Source: (Agriculture in the European Union, Statistical and Economic Information Report 2013), (http://www.turkstat.gov.tr/Start.do)

Table 5. The distribution of agricultural enterprises according to their sizes in Turkey and the EU.

Farm size class (ha UAA)	Turkey 2001 Census of Agriculture Number of Holdings		the EU-15 in 2010 Number of Holdings		the EU-25 in 2010 Number of Holdings		the EU-27 in 2010 Number of Holdings	
	Number	%	Number	%	Number	%	Number	%
0 - 5	2.013.646	65,4	2.784.800	53,3	4.381.900	61,6	8.314.200	69,2
5-10	560.049	18,2	659.600	12,6	1.114.300	15,7	1.307.400	10,9
10-20	327.363	10,6	556.900	10,7	852.200	12,0	902.700	7,5
20-50	153.685	5	605.100	11,6	75.000	1,1	773.900	6,4
050+	21.907	0,7	619.100	11,8	686.900	9,7	716.500	6
Total	3.076.650	100	5.225.500	100,0	7.110.300	100,0	12.014.700	100

Source: (Agriculture in the European Union, Statistical and Economic Information Report 2013), (http://www.turkstat.gov.tr/Start.do)

Table 6. The status of parcels in enterprises in Turkey (2001 year).

Number of parcels	Number of holdings	Number of parcels	%
1	588.766	588.766	19,5
2	634.141	1.268.285	21,0
3	485.352	1.456.054	16,1
4-5	615.313	2.722.080	20,4
6-9	484.520	3.449.708	16,0
10+	214.035	2.838.512	7,1
Total number of holdings	3.022.127	12.323.405	100

Source: (http://www.turkstat.gov.tr/Start.do)

Table 7. The number of animals in the EU and Turkey based on 2012 (1 000 head)

	Cattle	Sheep	Goats	Total
the EU-15	74.140	72.538	10.096	156.774
the EU-25	84.106	74.756	10.599	169.461
the EU-27	86.650	84.949	12.158	183.757
Turkey	13.915	27.425	8.357	49.697

Source: The data in the table was compiled based on (the Agriculture in the European Union, Statistical and Economic Information Report 2013), (http://www.turkstat.gov.tr/Start.do)

Table 8. The level of efficiency in some plant products (100 kg/ha) in the EU and Turkey based on 2012.

	Wheat	Barley	Maize	Sunflower
the EU-15	56,5	47,8	77,1	16,1
the EU-25	48,4	40,8	61,4	16,8
the EU-27	54,1	44,0	61,0	16,4
Turkey	26,5	25,5	73,9	23,8

Source: The data was compiled based on (the Agriculture in the European Union, Statistical and Economic Information Report 2013), (http://www.turkstat.gov.tr/Start.do)

With its CAP, first implemented in 1962, the EU became an exporter in many products and began to experience surplus supply issues in many products. As one can see in Table 10, the ratio of self-sufficiency in all grains, including barley, potato and sugar, excluding rice, in the EU risen over 100%. Countries in the EU, excluding some do not have sufficient production amounts in corn and the same is true when fresh fruit production is considered for nearly all EU countries. The table is important as it reveals for which products Turkey may become an important market.

Data with regard to the sufficiency level of the EU countries in animal products was given in Table 11. Table shows that many of the EU countries have surplus supply in these products. While there are no surplus supplies in any animal product in Greece and Portugal, there is surplus supply in all animal products, excluding sheep meat and goat meat, only in France. This situation is important as it presents an important reason regarding the fact that two countries often face off against each other in the EU budget talks.

In addition to these structural differences, a big difference in agricultural supports takes attention. When the expenditures in the EU budget are considered, it can be seen that the largest share is allocated for agriculture section. This ratio, which increased to 94%, when it was first established, has still occurred as 40% although it has decreased today (Table 12).

Table 9. Efficiency of some animal products in the EU and Turkey

	Dairy cows yield kg/head (2011)	Adult bovine animals average carcass weight in kg (2012)	Calves and young cattle average carcass weight in kg (2012)	Sheep and goats average carcass weight in kg (2012)
the EU-15	7.099	323,4	157,3	17,3
the EU-25	6.433	305,2	129,1	17,0
the EU-27	6.218	336,8	157,7	15,0
Turkey (2013)	2.970	286,4		20,1

Source: The data in the table was compiled based on (the Agriculture in the European Union, Statistical and Economic Information Report 2013), (http://www.turkstat.gov.tr/Start.do)

Table 10. Self-sufficiency in some vegetable products in the EU and Turkey (%)

Country	Total cereals (excl. rice) 2011/12	Barley 2011/12	Maize 2011/12	Potatoes 2011/12	Sugar 2011/12	Fresh vegeta-bles 2004	Fresh fruit (excl. citrus fruit) 2004
Belgium						129	68
Bulgaria	0	258	159	68,4			
Czech Republic	138,2	128,3	164	84,9			
Germany	116,9	117,2	72,3	131,3	107,7	40	17
Estonia	119,9	134,6	0	86,5		63	37
Ireland	63,9	79,4	35,2	57,6		63	8
Greece						105	134
France	202,7	254,8	211,9	115,7	171,9		
Italy				55,8			
Latvia	169,2	125,3	0	96,8			
Lithuania	181,7	124,4	35,7	98,5	115,6	90	72
Luxembourg	106	120,9	29,2	37,8	0		
Hungary	173,7	132,4	207,5	79,3	42,6	143	141
Malta	0	0	0	34,4		97	20*
Netherlands	16,5	14,8	8	187,1			
Austria	93,2	87,7	89,3	91,2		68	68
Poland	108,4	100,4	80,7	101	98,9	103	91
Portugal	21,7	15,2	31,7	49	131	152	75,7**
Romania	114	155,7	112,7	97,4	19,1		
Slovakia		120,3	233,5	67,2	340,5	87	38
Finland				93,5		72	8
Sweden				76,4	92,4	47	7
United Kingdom	102,3	130,7	0				
Turkey (2012/13)	93,1	91,8	77,5	105,6	100	106,6	

*belongs to 2008/09, ** belongs to 2010/11
Source: (Agriculture in the European Union, Statistical and Economic Information Reports 2009 & 2013), (http://www.turkstat.gov.tr/Start.do)

The ratio of supports, given for agriculture to GDP in Turkey has not shown an important development in the period of 2005-2013 and fluctuated between 0.48% and 0.67% (Table 13). It is difficult to state that this level is sufficient. When the distribution of the EU agriculture budget and Turkey's agricultural product pattern are taken into account, it would be stated that in case of full membership, assuming that current supports are protected, important amount of resources would be required for Turkey. Thus, the burden that Turkey's full membership would bring in terms of agriculture concerns the EU countries.

In Table 14, the development of organic farming areas and the number of enterprises in the period of 2001-2011 are given. During this period, as a total of the EU-15, organic farming areas in the increased 1.7 times, from 4.4 million hectares to 7.4 million hectares.

Organic farming areas in Turkey constitute 1.8% of the EU-27 total in 2011. In 2011, average area of organic farming enterprises in Turkey is 11 ha on average. In Turkey, where traditional farming is carried out, it is seen that small-scale enterprises are intensive in organic farming (Table 15).

Table 11. Self-sufficiency in some animal products in the EU (%)

Country	Total meat in 2010	Total beef/veal in 2010	Poultry meat in 2010	Sheep meat and goat meat in 2010
Bulgaria	55	66	73	114
Germany	113	119	101	55
Estonia	86	94	54	100
Ireland		673	107	377
Greece	53	24	79	87
France	105	105	114	46
Italy	76	59	109	45
Cyprus		47	78	78
Luxembourg	70	122	1	6
Hungary	187	180	3.698	693
Austria	111	145	73	73
Portugal	72	44	91	77
Romania	77	111	89	143
Slovakia	65	118	91	178

Source: Agriculture in the European Union, Statistical and Economic Information Report 2013.

Table 12. The EU budget and development of agricultural expenditure.

Years	the EU budget (Mio EUR)	Agriculture and rural development (Mio EUR)	%
1965	766	287	37,47
1970	3.385	3.167	93,56
1980	15.857	11.607	73,2
1990	44.063	28.919	65,63
2000	93.792	41.738	44,5
2010	139.833	58.880	42,11
2011	138.460	57.292	41,38
2012	147.443	59.514	40,36
2013	147.085	58.852	40,01
2014	138.635	57.994	41,83

Source: The data in the table was compiled based on the Agriculture in the European Union Statistical and Economic Information Reports 2011 & 2013 and Olgun (2005).

Table 13. Share of Gross Domestic Product at Agricultural support payments in Turkey.

Years	GDP (Million TL)	Agricultural Support Payments (Million TL)	Ratio of GDP (%)
2005	648.932	3.681	0,57
2006	758.391	4.789	0,63
2007	843.178	5.628	0,67
2008	950.534	5.826	0,61
2009	952.559	4.938	0,52
2010	1.098.799	5.605	0,51
2011	1.297.713	6.962	0,54
2012	1.416.798	7.180	0,51
2013	1.561.510	7.557	0,48

Source: The data in the table was compiled based on http://www.turkstat.gov.tr/Start.do and http://www.bumko.gov.tr/.

Table 14. Areas of organic farming and the number of enterprises in the EU and Turkey.

	Area (ha)			Number of Enterprises (number)		
	2001	2011	Changes in 2001-11 (%)	2001	2011	Changes in 2001-11 (%)
EU-15	4.438.864	7.486.308	68,7	142.608	183.611	28,8
EU-25	4.908.361	9.352.856	90,5	148.088	220.033	48,6
EU-27	4.927.540	9.607.824	95,0	149.466	231.038	54,6
Turkey	57.001	172.037	201,8	18.385	15.642	-14,9

Source: The values were calculated based on the Agriculture in the European Union, Statistical and Economic Information Reports 2010, 2011 & 2013 and (http://www.tarim.gov.tr/Konular/Bitkisel-Uretim/Organik-Tarim/Istatistikler).

Table 15. Organic farming enterprises in the EU and Turkey, in terms ofthe average area (ha/ farm) and change within 10 years.

	2001	2011	Changes in 2001-11 (%)
the EU-15	31	41	32
the EU-25	33	43	30
the EU-27	33	42	27
Turkey	3	11	267

Agricultural Mechanization Level

The state of the mechanization of agriculture in Turkey is shaped in line with global factors, and also in parallel with the agricultural population, income, business structure and the developments in product design occurred in recent years (Evcim et al. 2015). Mechanization level in the EU and Turkey is given in Table 16.

In the period of 1996-2009, average number of tractors per 1000 ha cultivated area in the EU-15 increased from 81 to 83. When we compare the level of mechanization, it is seen that Turkey is far behind European countries. In 2012, the use of tractors per 1000 ha cultivated area is 50 in Turkey. In 2009, the use of tractors per 1000 ha cultivated area is 522 in Slovenia, 233 in Austria, 184 in Italy, 149 in Ireland, 139 in Poland, 138 in Netherlands, 115 in Belgium, 101 in Luxembourg, 98 in Portugal and 81 in United Kingdom. The reason of this is intensive agricultural practices and animal production mechanization at high level in the European countries.

Table 16. Mechanization levels in Turkey and the EU

	tractor/1000 ha		ha/tractor		Tractor/1000 holdings	
Country	1996	2009	1996	2009	1997	2009
Belgium		115		9		2.262
Bulgaria	9	15	113	65		149
Czech Republic	25	26	39	39	22	3.644
Denmark	60	47	17	21	2.243	2.766
Germany	99	57	10	18	2.090	2.286
Estonia	56	54	18	19	92	1.776
Ireland	168	149	6	7	1.213	1.249
Greece	62	70	16	14	295	362
Spain	43	61	23	16	697	1.074
France	66	61	15	16	1.881	2.320
Italy	140	184	7	5	674	1.086
Cyprus	117	97	9	10		308
Latvia	59	50	17	20		718
Lithuania	31	51	32	19		588
Luxembourg		101		10		3.223
Hungary	18	26	55	38	25	226
Malta	45	106	22	9		91
Netherlands	180	138	6	7	1.491	2.037
Austria	239	233	4	4	1.678	2.225
Poland	91	139	11	7	107	1.052
Portugal	56	98	18	10	370	580
Romania	17	19	60	52	21	47
Slovenia	399	522	3	2	151	1.402
Slovakia	17	15	60	66	16	891
Finland	89	78	11	13	2.033	2.781
Sweden	61	61	16	16	1.916	2.280
United Kingdom	81	81	12	12	2.146	2.786
EU-15	81	83	12	12	985	1.315
EU-25		84		12		1.163
EU-27		76		13		774
Turkey	30	50*	33	20*	215	390*

* Belongs to 2012
Source: FAO, 2014. Calculated based on data on http://faostat.fao.org.

In the EU-15, the average cultivated area per tractor remained constant at 12 ha. With reference to Slovakia, Bulgaria, Romania, Czech Republic and in Hungary, which are the new members of the EU, the value of cultivated area per tractor is much higher than other countries in the EU. In the period of 1996-2012, a huge development was experienced in mechanization level of Turkey's agriculture and the value of cultivated land per tractor has fallen to 20 ha from 33 ha.

In the period of 1997-2009, the number of tractors per enterprise increased from 985 to 1315 (Tractor/1000 Enterprises) in the EU-15 and in 1997-2012 period this figure increased from 215 to 390 in Turkey. In the aforementioned period, the increase in the number of tractors per enterprise in the EU-15 as a whole and Turkey was 33.5% and 81.4%, respectively.

Countries, with the highest number of tractors per enterprise as of 2009 are Czech Republic (3644), Luxembourg (3223), United Kingdom (2786), Finland (2781), Denmark (2766), France (2320), Germany (2286) and Sweden (2280) (Tractor/1000 Enterprises). In all countries except Belgium, Austria, Netherlands, Estonia, Slovenia and Ireland which are following the above stated countries, the average the number of tractors per enterprise is found below the average of the EU-25 (Tractor/1000 Enterprises).

When mechanization levels of Turkey and the EU are compared, improvements cannot be underestimated, but the current level is not sufficient for sustainability of global competition. Majority of the problems derives from common issues like unsuitability of the agricultural structure. For this reason, resolution of mechanization problems firstly depends on the solution of structural problems of agriculture.

Discussion

From the data in the above tables and implications, it could be seen that Turkish agriculture had high potential but its competitive quality proved to be relatively weak. When this structure is evaluated together with relatively small, quite inadequate rural infrastructure investments and low educational level of farmers, Turkish agriculture will face hard times both in the process of harmonization with the EU regulations and global competition.

Under these circumstances, for harmonization of Turkey's agriculture with the EU, structural harmonization gains importance as well as legislative and corporate harmonization. Turkey's agriculture is required to be restructured in three dimensions; production system, production structure and production processes. This is a process, requiring a long period of time, great resources and intensive efforts.

At the level of subsidy of today, compliance of Turkish agriculture with CAP can provide some financial opportunities. However, since it is expected that there will be a reduction of support provided to agriculture in the near future within the framework of CAP reform, CAP might not be adequately supportive and protective for Turkish agriculture. On the other hand, a considerable part of agricultural enterprises and rural and agricultural non-governmental organizations (cooperatives, unions, professional organizations etc.) in Turkey are insufficient in terms of meeting CAP obligations and benefiting from CAP opportunities, particularly project and price mechanism opportunities. The dominance of small agricultural enterprises over Turkish agriculture has an important role in the occurrence of this situation (Özoğul 2009).

In the improvement of the structure of agricultural enterprises in the EU, structural policy implementations have been effective. Since structural policies have gained importance and tendencies towards diverging from valorisation policies have come up in recent years, it is expected that the process of improvement of agricultural structure and structure of agricultural enterprises to continue with acceleration.

As experienced in the countries who joined the EU in past, with regard to the newly joined countries, the size of enterprises is expected to grow in the upcoming years. It is predicted that a similar process (towards an increase in the size of enterprises and an increase in mechanization) may come up in Turkey's accession to the EU.

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