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Turkey as a Member of the European Union

- A cross-country analysis of the potential impact on the Turkish
agricultural sector and its trade with the EU

Supervisors:
Yves Bourdet
Joakim Gullstrand

Authors:
Marie Burhagen
Ercan Temurkan

Abstract

This study examines Turkey's agricultural sector and how it will be affected by a EU membership. Since Turkey has a great rural population and is relatively dependent on its agriculture, the implementation of the CAP will most probably affect not only the rural community, but also the specialization patterns in agriculture and the trade. The aim of this study is to estimate these changes and draw conclusions about what the major consequences for the Turkish agricultural sector will be. The study will estimate the plausible outcomes in two different ways. First of all, four EU countries with similar agricultural characteristics with Turkey will be analyzed. In this way, we compare Turkey with current EU members and hence draw general conclusion about what the membership might bring. Secondly, we will use the revealed comparative advantage method in order to estimate in what agricultural commodities Turkey has a comparative advantage or disadvantage. We can conclude that a EU membership will most probably make the Turkish agriculture sector less volatile, both when it comes to prices and trade volumes. With a common agricultural policy and an increased integration, competition will increase and the prices harmonize with the ones of the EU. The sector will become more specialized and as a consequence, many farmers might be forced to migrate from the rural areas and find work elsewhere. In the long-term, however, the EU funding and assistance will stimulate the rural areas, making it more attractive for people to live there without necessarily being involved in agricultural activities.

Keywords: *Turkey, the CAP, Agricultural sector, Trade, Revealed comparative advantage*

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Abbreviations

ARIP	Agricultural Reform Implementation Program
CAP	Common Agricultural Policy
DIS	Direct Income Support
EU	European Union
EU15	The fifteen first members of the EU
FAO	Food and Agriculture Organisation of the United Nations
FDI	Foreign Direct Investment
FISKOBIRLIK	The Agricultural Sales Cooperative for Hazelnut
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
MARA	The Ministry of Agriculture and Rural Affairs
OECD	Organisation for Economic Co-operation and Development
RCA	Revealed Comparative Advantage
SITC	Standard International Trade Classification System
SPO	State Planning Organisation
TARIS	Fig, raisins and oil seeds Agricultural Sales Cooperatives Union
TRAKYA BIRLIK	Union of Thrace
TUSIAD	Turkish Industrialists and Businessmen's Association

1. Introduction

In our first chapter, we will make a short introduction about the topic, illuminate the main research question of the study and explain in detail how we have collected and treated the data that will be used in order to answer it in an adequate way. In addition, we will also here describe the aim and outline of the thesis.

Agriculture has always played a fundamental role in the developing process of both the human civilization and the economic activity. It is not just a sector of cultural and sociological importance, but also one of the decisive factors behind a country's overall economic performance and the welfare of its rural community. The agricultural sector is the main provider of crucial and basic human needs and it is thus of greatest importance that the sector is well functioning. However, since agricultural activities induce considerable market failures and externalities, the sector has traditionally been characterized by significant and extensive state intervention. The European Union's keystone – the Treaty of Rome that was signed by the founding states in 1957 – emphasizes the importance of agriculture by dedicating several articles in favor of governmental intervention and cooperation between the member states in the agriculture sector. These articles are the underpinning of the Common Agricultural Policy (CAP) that today is one of the most important, but probably also one of the most criticized, policies of the European Union.

In 1999, Turkey was granted the status of candidate country and the accession negotiations opened in the end of 2005. With a population of 73 million (World Bank, 2006), Turkey would not only be the second most influential country after Germany in the European parliament, but also be a great new market for European businesses and industries. Even though Turkey and the EU formed a customs union in 1995, which has increased the bilateral trade substantially and reached 85 billion euro in 2006, agricultural products are excluded from this agreement (European Commission, 2007a). A Turkish membership and the complete implementation of the CAP would undoubtedly have a significant impact on Turkey's agricultural specialization and trade patterns.

1.1 Research question

As one of the candidate countries for the European Union, Turkey has many goals to meet and criteria to fulfill. Different sectors will be affected in different ways, but profound structural adjustments will be necessary for the majority of Turkey's industries, sectors and institutions. This study will focus solely on the agricultural sector of Turkey and how it might be affected with a EU membership. In order to narrow the topic, we have defined a research question that the study is built upon and that will be dealt with throughout the text:

How will a membership of the European Union affect the agricultural sector in Turkey and its trade potential?

Hence, the research question consists of two parts. First of all, we will focus on how a EU membership might affect the most important characteristics of the agricultural sector and secondly, we will examine the trade in agriculture and in what direction it may take if Turkey becomes a EU member.

1.2 Aim of the study

The aim of the study is to examine the Turkish agricultural sector and how it will be affected by the agricultural system of the EU and its most important policy; the Common Agricultural Policy. If Turkey becomes a EU members, this policy will be fully implemented and thus affect the sector and its activities substantially. The focus of the study will lie on the Turkish agricultural trade and in order to make consistent predictions about the future, we will not only scrutinize some of the most important characteristics of the Turkish agricultural sector, but also compare these with the agricultural situation in four EU countries. The findings from our studies will make us able to draw meaningful conclusions about how a EU membership will affect Turkey's agricultural sector in general and its agricultural trade in particular.

1.3 Methodology

Since the actual effects of a Turkish membership are still unknown, we need to do estimations. However, estimations and predictions about the future always imply a certain degree of uncertainties, and in order to reduce these risks, we have chosen to make the

estimations by two, complementary methods. First of all, we will examine the agricultural sectors of four EU member countries that have similar agricultural characteristics with Turkey. We will then compare the countries and examine whether we can find pattern differences among Turkey and the EU members. Secondly, we will use the *revealed comparative advantage* method and its two well-known formulas, RCA_1 and RCA_2 , to estimate in what specific agricultural commodities Turkey has a comparative advantage in. In addition, neoclassical economic theory will be used to predict the outcome of integration and increased trade liberalizations.

The raw trade data that we have been using throughout the entire study is exclusively coming from the OECD database.¹ To reduce the potential risk of biased and misleading results, we preferred to use data from one source only. However, when estimating other indicators than trade, data from the World Bank and the FAO has also been used.

1.4 Disposition

After a brief introduction to our study, the second chapter will discuss the characteristics of the agricultural sector in Turkey, where the Turkish agricultural policies, main institutions, agricultural trade, production, and prices will be examined. In the third chapter, we will introduce the CAP and its main ideas and implications, whereas chapter 4 is dedicated to compare Turkey with the other four selected countries; Greece, Italy, Portugal and Spain. Concepts like the importance of agriculture in the economy, differences in trade and product range will here be taken into consideration. Chapter 5 is focused on the agricultural trade performances of the countries with the EU15. We will apply the revealed comparative advantage method for each selected country and examine the countries comparative advantages in the agricultural sector. Our final chapter will conclude the findings of our study.

¹ Source OECD ITCS International Trade by Commodity Database, SITC Revision 3

2. The Agricultural Characteristics of Turkey

This chapter will give a brief outline of the current agricultural situation in Turkey. The background information that is given in this chapter is crucial for a deeper understanding of Turkish agriculture and is meant to give the essential information before moving on to our empirical analysis.

2.1 Contemporary agricultural framework of Turkey

2.1.1 Agricultural policies of Turkey

Turkey has to convert its policies and agriculture market structure towards the CAP in order to integrate with the EU and to avoid longer negotiating periods. When analyzing the Turkish agricultural sector, we are focusing on the time period after the 1980s, since it was the time when Turkey started to have an open economy by increasing its interactions with the world. In addition, after the 1980s, new regulations were implemented and several institutions were established in order to modernize the agricultural sector.

The share of agriculture in the economy has decreased in Turkey since the 1960s. Until the end of 1960s, the share of agriculture in GNP was 45 percent and it declined to 26 percent in 1980. This downward trend continued in the following years and the rate of share was 12.8 percent in 2001 and 11.9 percent in 2005 (Kesbic, 2005). Between 1980 and 2000, the average growth rate in the GNP was 3.9 percent per year. Particularly, the growth rate of the industrial sector was 5.5 percent and 4.6 percent in the service sector. Reversely, average growth rate was just 1.3 percent in the agricultural sector. In 2000, the average income per capita for the whole economy was 3,060 US dollars, while the amount was 1,400 US dollars in the agricultural sector (Erdal, 2001). According to the latest census, 40 percent of the population is living in the rural districts of Turkey and 80 percent of the population in rural areas is working in the agricultural sector. Furthermore, 32 percent of the total Turkish labor force is involved in agricultural activities. When comparing with the EU, where the corresponding number is 4.2 percent, the Turkish share is relatively high (TUSIAD, 2003).

The characteristics of the Turkish agricultural sector has differed significantly from the EU countries, and in order to reduce these differences, the national government has implemented several development plans between 1980 and 2000. According to Kiyamaz (2000), the most important policy reforms have concentrated on ensuring price stability, meeting consumer needs, providing sufficient incomes to farmers and increasing the export volumes of agricultural products.

The policy changes are reasonable, but the implementation process has been unexpectedly unstable and the results from the policy changes were not as good as expected. For instance, in order to win political support, the cabinet made several regulation changes and increased the number of products that would be granted price supports. In 1990, ten different agriculture products were granted support, while before the elections in 1991, the number was increased to 26. This involves not just additional governmental expenditures, but also a slowdown of the reform process (Ağaoğlu & Inan, 2005).

The rapidly changes of policies and implementation problems made the International Monetary Fund (IMF) to intervene. In 1994, the Fund made a commitment with Turkey in order to modernize its agricultural sector. The commitment was mainly aimed to decrease the government expenditures and to ensure a long-term stability of policies. In addition, Karakayalı (2003) points out two major issues that the commitment is meant to deal with. First of all, in order to prevent oversupply and additional inventory costs, both domestic and world prices need to be considered when deciding the value of the price support. Secondly, the budget of agricultural support has to be limited and cereal, sugar beet and tobacco will be excluded completely from support.

Turkey had difficulties with implementing the IMF proposals, and in 1999 the IMF gave Turkey a letter of intend and a restructuring program. These aimed to apply direct income support (DIS) in order to protect small farmers and to keep farmers production decisions more flexible and market-oriented. As in the commitment of 1994, the IMF proposed to abolish support purchases in order to prevent excess supply of particular products (cereal, sugar beet and tobacco) and decrease government expenditure. Furthermore, the IMF proposed to abolish credit subsidies to improve the state budget. In another words, instead of populist policies, the IMF wanted to implement rational and well-structured policies in Turkey to integrate their agriculture and economy to the world standards (Çağlayan, 2004).

In 2001, with the establishment of the Agricultural Reform Implementation Program (ARIP), several significant changes had to be made in the Turkish agricultural sector. After the implementation of the ARIP, product price supports were changed into direct income supports. This program is laying the groundwork for the Turkish agricultural sector to accord the CAP of the European Union and plays thus an important role in the integration process of Turkey's agriculture with the union. According to Lundell et.al. (2004), the direct income supports have been important for the Turkish farmers. In a survey that was conducted in 2001, it was indicated that the share of the DIS in rural household's income is between 7 to 8 percent.

In 2006, the Turkish parliament legislated an important agriculture law, which regulated direct income support, marginal payment, compensatory payment, livestock support, agricultural insurance payment, rural development support and environmental care supports (The Official Gazette, 2006). This law was intended to increase farmer productivity, improve agricultural markets and increase the wealth of farmers. Briefly, its target is to create a better-structured agricultural sector and to ensure sustainable growth in the agricultural economy.

In case of a Turkish membership in the EU, Turkey has to implement the CAP gradually, which also includes many tools related with trade (e.g. import tariff, quotas and export subsidies). Undoubtedly, these new regulations will have an impact on Turkey's current trade volume. According to Ertugrul's (1992) simulation study, Turkey's total export and import volumes will increase with a EU membership. Specifically, low price of meat in the EU will result in an increase of Turkey's livestock import from the EU and reversely, the low cereal prices in Turkey will increase this sector's export to the EU. In another study, Cakmak and Kasnakoglu (2001) estimate that most of the agricultural product prices will decrease in Turkey and this will lead to a decrease in the total agricultural output. Furthermore, Turkey's total import will increase while total exports are decreasing, thus worsen the country's trade balance. In addition, they believe that Turkey will be able to compete with EU only with specific products where Turkey has a comparative advantage (e.g. fig, fruit, nuts and tobacco).

The Turkish Prime Ministry of State Planning Organisation (SPO) is in charge of planning Turkey's main economic policies. Regarding the agricultural sector, the SPO implemented a strategic plan for the period between 2006 and 2010 (SPO, 2004). This plan had several

objectives, of which the most important are to accelerate the DIS, stimulate the creation of agricultural unions and give more importance to the rural community and its development.

2.1.2 Turkey's main agricultural institutions

Turkey has several institutions to regulate its agricultural sector. The Ministry of Agriculture and Rural Affairs (MARA) is the main institution of agriculture in Turkey. The ministry has several departments for different divisions of agriculture (e.g. Soil Products Office and the Agricultural Economy Research Institute)². In addition, Turkey has several agricultural unions and cooperatives that are organizing the agricultural sector and supporting the producers. These unions and cooperatives are responsible for specific product purchases and marketing activities and the most important ones are: Fiskobirlik (The Agricultural Sales Cooperative for Hazelnut), Taxis (Fig, raisins, cotton and oil seeds Agricultural Sales Cooperatives Union), and Trakya Birlik (Union of Thrace) that is in charge of sunflower seed.

The unions are buying the products after the harvest period in order to stabilize prices and incomes of farmers. Even though private enterprises also are purchasing the agricultural products, the unions play an important role by competing with the private enterprises and giving the consumer alternative suppliers. Furthermore, public and private banks are increasing the possibilities for small and poor farmers by giving them credits. These credits improve the sector's productivity since many small farmers are lacking adequate capital and cannot farm in equal conditions as more rich farmers.

2.2 Trade in Turkey's agricultural sector

2.2.1 Agricultural production and trade

In 2000, the value of the total output of Turkey's agricultural sector was estimated to 44 billion euro. The composition of the production is shown in *Table 2.1*, where we can see that the crop's (e.g. wheat, barley and maize) share of total production is the most significant.

² For the whole list of departments: <http://www.tarim.gov.tr/arayuz/10/icerik.asp?fl=mevzuat/mevzuat.htm>

Table 2.1: Total value of agricultural production in Turkey

	€ (billion)	%
Crop	24.8	55.8
Livestock	11.1	24.9
Animal products	8.5	19.3
Total	44.4	100

Source: European Commission (2003)

Of Turkey's total trade in 2001, the agriculture products represented 13.2 percent of the total export and 5.8 percent of the total import. Since 1992, the importance of agricultural trade has increased significantly and Turkey is more dependent on its agricultural trade than the average of the EU member countries (European Commission, 2003). *Table 2.2* illustrates the changes in trade volumes in the agricultural sector between 1995 and 2005. Except from 2001, when Turkey was damaged by an economic crisis, the trade has experienced a stable and upward trend.

Table 2.2: Import and export in Turkey's agricultural sector, 1995-2005 (US \$, billion, in current prices)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Import	2.99	3.35	3.71	3.33	2.62	2.68	1.90	2.32	3.39	3.73	4.34
Export	4.08	3.99	4.01	3.93	3.77	2.87	3.27	2.92	3.91	4.85	6.47
Total	7.07	7.34	7.72	7.26	6.39	5.55	5.17	5.24	7.30	8.58	10.81

Source: Data is gathered from www.faostat.fao.org

Turkey's most important export agriculture products, in terms of dollar value, are hazelnuts, tobacco, prepared nuts, raisins and pastry. In terms of quantity, the main export products are flour of wheat, tomatoes, citrus fruits, raisins and vegetables. The product range of import looks somewhat different. The main imported products are, in terms of dollar value, cotton lint, soybeans, wheat and maize³ (FAO, 2008).

According to the European Commission (2003), 48.3 percent of Turkey's total import between 1999 and 2001 came from the countries of EU15 (especially Germany, Italy and France) and an additionally 3.4 percent was imported from the former candidate countries. At this time, Turkey exported 52.5 percent of its total export to EU15 (especially Germany, United Kingdom and Italy) and 5 percent to the former candidate countries. This makes the EU Turkey's most important trade partner. In addition, Turkey has important trade relations

³ All export and import data is 2004 estimates from FAO.

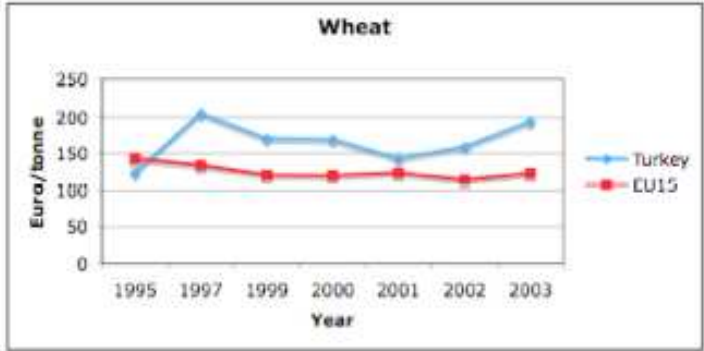
with countries in the Gulf region (e.g Kuwait, Saudi Arabia and Qatar), former Soviet republics (e.g Ukraine and Azerbaijan) and countries of the Mediterranean basin (e.g Algeria, Morocco, Israel and Egypt).

In agriculture, the EU and the USA are the most important trade partners of Turkey. Also, the countries of the Mediterranean basin and the Gulf region are important. Since Turkey is one of the EU’s main providers of fruit, nuts, vegetables and tobacco, its trade balance is robustly positive in agricultural trade with the EU. Reversely, Turkey imports great amounts of tobacco from the US, which results in a large trade deficit with the US (European Commission, 2003).

2.2.2 Agriculture prices

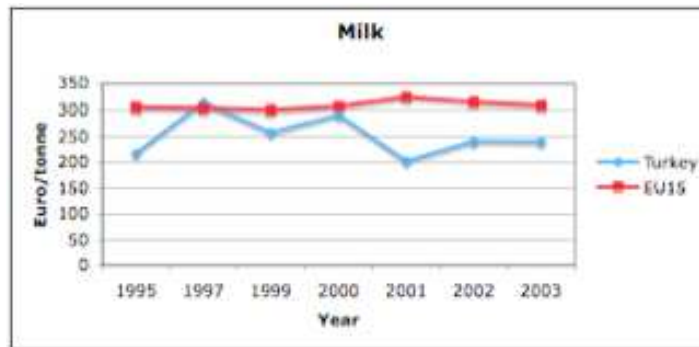
Figure 2.1 - 2.4 illustrates the prices of four important Turkish agricultural products and compares the price change over time with EU15. The prices of the chosen commodities are, as we can see, going in different directions and there exists no specific pattern. We chose wheat, milk, tobacco and olive oil with no specific reason, and they cannot give a picture of the general price trend of the entire agricultural sector. However, the tables illustrate the movements of price differences between the EU15 and Turkey, and that in comparison, the EU15 has experienced a remarkable stable price trend, while Turkey’s prices have been fluctuating significantly. According to Oskam et al (2004), prices of some products are converging with the EU15, whereas others are diverging. They point out that the price differences are mainly a result of different support policies between the EU and Turkey, but also of differences in transport costs and quality.

Figure 2.1: Price comparison of *wheat* over time between Turkey and EU15



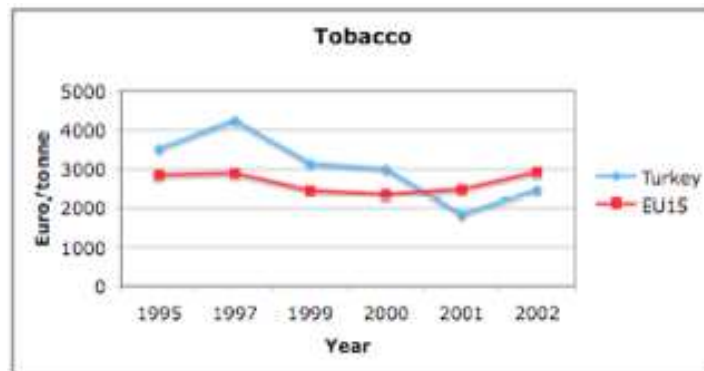
Source: Data is gathered from Oskam et al. (2004); p. 68-69

Figure 2.2: Price comparison of *milk* over time between Turkey and EU15



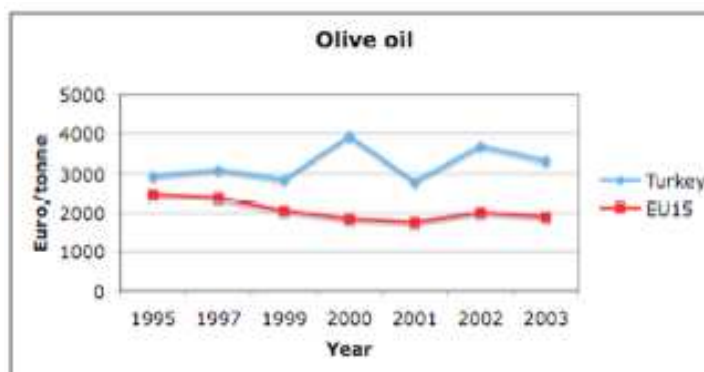
Source: Data is gathered from Oskam et al. (2004); p. 68-69

Figure 2.3: Price comparison of *tobacco* over time between Turkey and EU15



Source: Data is gathered from Oskam et al. (2004); p. 68-69

Figure 2.4: Price comparison of *olive oil* over time between Turkey and EU15



Source: Data is gathered from Oskam et al. (2004); p. 68-69

3. The Common Agricultural Policy

We will in this chapter examine first the reasons behind government interventions in the agricultural sector and why there is a need for the Common Agricultural Policy in the European Union. We will then explain and analyze the most important features of the policy and its most likely consequences for Turkey.

3.1 Introduction

Initially, when the CAP was first mentioned and negotiated, the European countries had just left a time period characterized by war, protectionism and conflicting forces. The Second World War left the European countries with a damaged agricultural sector and the continent was suffering of substantial food shortage. In order to increase the productivity and modernize the sector, the European governments had to stimulate high-scale farming and the implementation of adequate technology. The initial motive with the CAP was thus to make the necessary structural adjustments to facilitate the European agricultural cooperation, introduce a common agricultural policy for all members and to ensure food supply (Hofreither, 2007).

There exist several justifications for a government to intervene in its agricultural sector. First of all, since the outcome of the agriculture activities is heavily dependent on nature and natural phenomena such as climate, epidemics and natural cycles, it is of greatest importance that the farming incomes and prices are stable in order not just to ensure food supply, but also to encourage the farmers to make adequate investments and production decisions. Even though the demand of food is fairly stable in the EU, the supply can vary significantly depending on external and non-controllable factors. This implies that, in a market without protection, the farmers do not know neither how big their production will be, nor what prices they will face. There will thus be a great uncertainty about their incomes, and if farmers have to bear all the risks by themselves, it is probable that investments and production will be sub-optimal for the society. In order to overcome this potential short-term variability in incomes and induce farmers to make more sustainable decisions, government intervention may be justified. Secondly, to guarantee consumers safe and high-quality food, there is a great need of relevant information and that it will be spread in the society. Different kinds of labeling,

trademarks, certification and testing results need public intervention in order to be conducted and distributed adequately. In addition, agriculture activities imply both negative (e.g. pollution) and positive (e.g. the protection and preservation of the rural community, landscape and animals) externalities that are not internalized in the farmers' costs and incomes, and there is thus a need for government intervention in order to stimulate the production of positive externalities and to hamper the negative ones (Senior Nello, 2005; Ackrill, 2000).

3.2 General idea of the CAP

The CAP has gone through major adjustments and reforms and the CAP of today is thus a result of all these reforms. The CAP is not just a way for the EU to overcome the problems that were explained in detail in section 3.1, but also sets out different objectives that should be taken into account when making decisions that affect the agriculture sector. According to the first paragraph of Article 39 in the Treaty, the objectives of the CAP are; to increase agricultural productivity, ensure a fair standard of living for the agricultural community, stabilize markets, ensure availability of supplies and ensure that supplies reach consumers at reasonable prices (Treaty of Rome, Article 39).

The cornerstone of the CAP is made of three principles that were agreed upon in 1962. These principles are *market unity* (agricultural products can move freely between the EU countries and common prices will be established), *community preference* (priority is given to the communities' producers and common import levies for producers outside the union are introduced) and *financial solidarity* (a common fund is responsible for the expenditures, so instead of letting each member paying for themselves, the costs will be borne by the whole community).

The increasing knowledge and discontent about the CAP within the non-agricultural European society have forced the policymakers of the union to revise the budget and reform the policies in order to cut the enormous costs. Food mountains and huge oversupply of agriculture products were an inevitable result from the too generous support system that was conducted until the 90s. The MacSharry reform of 1992 tried to overcome this problem by compelling farmers to, in a higher degree, follow the market forces and the demand of the consumers instead of the artificial incentives created by the CAP. In addition, at this time, the detrimental effects the CAP have had on the environment became non-negligible, and more

strict environmental protection regulations were implemented in the policy and put in to practice (European Commission, 2007b).

In the end of the 1990s, the union introduced the Agenda 2000 – a sweeping reform that was mainly meant to prepare the EU for coming enlargement to the East, but also included the CAP by giving considerable suggestions about how to restructure the policy. Agenda 2000 made the CAP more focused on increasing the European farmers' competitiveness and cutting the CAP costs by putting a cost ceiling. Also, and maybe more important, the Agenda 2000 introduces a second pillar of the CAP. Instead of solely focusing on price and market policies (that is, “the first pillar”) as before, the Agenda 2000 lays the groundwork for an additional direction of the CAP. This second pillar is giving more weight to the rural communities and emphasizes the importance of their development. In order to assist and maintain the rural communities of the union, the second pillar of the CAP gives support to increase the employment opportunities in these regions, protect rural environment and heritage and make agriculture activities more multifunctional and diverse. Even the importance of animal welfare and protection was pointed out more explicitly in the reform of 2000 (Senior Nello, 2005; European Commission, 2007b; c).

In 2003, one of the most important reforms of the CAP until today was made. The CAP still encouraged oversupply and overproduction, but with the 2003 reform, a decoupling of production and subsidizes was introduced. Before the reform, the support of farmers were set into relation with how much they produced, therefore stimulating overproduction. With the reform, the farmers were instead granted a fixed income that they received whether they produced nothing or in high scale. However, in order not to have cuts in the granted income, the CAP sets out standards of food safety, animal welfare and the environment that have to be met by each individual farmer (usually known as the “cross-compliance condition”) (Kelch & Normile, 2004).

3.2.1 The costs of the CAP

Although the cost of the CAP has decreased over the last decade, it is still exceptionally high. No other sector has been given so much weight of the total EU budget (today 40 percent), and the European taxpayers are today paying 55 billion euro per year, which corresponds to 0.5

percent of the total GDP in the union, in order to keep the CAP going (European Commission, 2007b).

3.2.2 *Economic tools of the CAP*

The CAP is monitored by a set of administrative prices. In order to control export and import volumes, decrease competition from non-member countries and support the home producers, several artificial prices are set out by the union. According to Senior Nello (2005), about three quarters of the products are included in this price support mechanism. First of all, the Council of Ministers decides, once per year and for each product, a *target price*, which serves as the benchmark for all other common prices. The import tariffs are then put to raise and make the world market price equal to this target price. The *threshold price* is the decided minimum price an imported product has to take before being let in to the union. The *intervention price*, which is lower than both the target price and the threshold price, is a minimum price that the farmers are guaranteed to get for their products. In case of a decreasing demand, special agencies are obliged to buy the products to prevent a price decrease. The internal union price can then vary between the target price and the intervention price (Senior Nello, 2005).

In addition to these administrative prices, several support policies are applied to farmers and producers of the union. If, for example, price cuts have to be done, as with the Agenda 2000 reform, the union compensates the farmers in other ways. In 2000, they were compensated by direct payments and direct import support (European Parliament, 2001; Swinbank, 1999). The price support policy induces a fall in net imports of the EU and a decrease in world market price. Besides, even though the price support might increase the EU producer's surplus, the consumers face a considerable loss in terms of higher prices. To avoid this consumer loss, *producer subsidies* can be implemented, and prices for consumers will thus be unchanged. Furthermore, as mentioned earlier, *decoupling* can be seen as an economic tool of the EU since decoupling creates a more market oriented system and farmers who meet the required standards of farming (known as the *cross-compliance condition*) are able to make decision more freely and independently. If farmers cannot meet the required standards of farming, the *single payments* to farmers are either lowered or abolished. Since stable income for farmers is one of the aims with the CAP, these payments guarantee farmers an income regardless of their production volume. In addition, the EU implies *import levies* on agricultural products that are from non-EU countries. Community producers are protected, while non-member countries –

and especially developing countries – are facing obstacles to export their products to the EU. The EU also implements *direct aids* for specific products (e.g. durum wheat, crop, potatoes and rice) to support producers and these payments are the highest burden of the EU budget. For instance, 60 percent of CAP expenditure was made by direct aids in 2001 (European Commission, 2007). Moreover, the *modulation policy* is used to promote and support rural regions and their development. In order to finance this policy, direct payments to bigger farmers have been declined (Senior Nello 2005; European Commission, 2007b).

3.2.3 Enlargement and the CAP

Before entering the EU, candidate countries need to meet the political, economical and legal criteria that were set out in Copenhagen in 1993. In addition, there are several adjustments that need to be done in the candidate countries' agricultural sector and in order to make the membership as smoothly as possible, the EU has adopted individual agricultural programs and plans for each candidate country. In 2004, ten candidate countries were accepted as new members of the EU. Three years later, two more candidate countries (Romania and Bulgaria) became members of the EU. The CAP has been implemented immediately to the new members of the EU in order to integrate them fully into the union. In EU15, the total number of farmers was 6 million, and when the new countries joined, this number increased by additionally 7 million farmers (European Commission 2007). With a Turkish membership, an agricultural labor force containing 7.1 million persons will be added to the union (Radikal, 2005). All these new farmers will benefit from the generous support system and difficulties with finance the CAP might arise.

For Turkey, two priority areas have been mentioned as especially important before a membership can be realized. First of all, Turkey needs to develop functioning land register and animal identification systems, and secondly, Turkey has to improve its administrative structures (European Commission, 2002).

3.2.4 The major consequences for Turkish agriculture of the implementation of the CAP

As we have mentioned, a Turkish membership of the EU implies a complete implementation of the CAP and major structural adjustments need to be done in order to meet the EU criteria. An important characteristic of the Turkish agricultural sector is that it consists of many small-

size and family driven farmers. Especially in the eastern parts of Turkey, small farmers who consider agriculture as a kind of life style and their only source of surviving are widespread. This kind of farmers is usually not able to use high technological machineries that are crucial in order to increase their productivity and competitiveness. The information and knowledge about new technical innovations typically do not reach these farmers, making them dependent on traditional farming methods. With the help from EU subsidies, this issue can be rectified by increased technical support and assistance for the rural areas. According to Krugman (1991), regional differences in Turkey will decrease as a result of the EU funding to the rural areas. Increasing wealth and decreasing inequalities will most probably improve the diffusion of efficient technology, giving a fairer chance to small-scale farmers. The actual results from the EU funding will depend on how well-targeted and efficient they are.

However, Reardon and Berdegue (2002) give another side of the coin, arguing that small and low productive farmers wont be able to survive when competition from the EU farmers increases. If this scenario becomes a reality, rural unemployment will instead aggravate and as Oskam et al. (2004) point out, the Turkish government has a great challenge in finding and applying job creation policies in order to compensate these people.

Kalshoven and Küçükakin (2004) are more optimistic about a Turkish membership of the union. They believe that the pre-accession funding to Turkey will stimulate not only the Turkish economic growth, but also improve the investment facilities, making the country more attractive for FDI. Besides, Grethe (2004a) argues that the increased integration will lead to a reduction of income inequalities between farmers.

A Turkish membership of the EU will most likely affect the agricultural product prices, making the Turkish prices harmonize with the ones of the union. Hence, productive farmers with more competitive commodities might meet increased prices, while prices of less attractive products will decrease, putting these farmers in a difficult position. According to Oskam et al. (2004), the abolished tariffs with the EU will especially affect the prices on livestock, meat and tobacco. The increased competition from the other EU farmers will hurt the relatively weak Turkish production of these commodities, replacing the domestic products with imports. As they point out, making consistent estimations about the probable price changes are difficult. Not only have the prices of Turkish agricultural products during the last

decades experienced substantial volatility, but also will the level of price changes depend on the exchange rate between the Turkish Lira and the Euro at the time of accession.

4. Comparing the Turkish Agricultural Structure and Trade with Greece, Italy, Spain and Portugal

After the previous chapters' carefully examination of Turkey's agricultural sector and the CAP, this chapter will instead be focused on a cross-country analysis, comparing the situation in Turkey with four EU member countries. The aim with this chapter is to illustrate the differences and similarities between the countries in order to make more consistent estimations about how a Turkish membership of the EU could affect the Turkish agricultural sector. The empirical results from this chapter will then be complemented by a trade competitiveness analysis in the next chapter.

4.1 Introduction

When making our analysis and trade estimations of Turkey in case of a EU membership, we will compare with other, similar countries' trade performances. In order to make these estimations as robust as possible, we will consider the trade of already existing EU members that have rather similar structure of its agricultural sector. By scrutinizing these countries' agricultural sectors, our aim is to find a relation or a pattern that might tell us something about how the Turkish agricultural sector will be affected.

In our study we will compare Turkey with Spain, Portugal, Greece and Italy. All five countries are placed in the southern parts of Europe and they have all similar climate. Since climate is one of the main influential factors of agriculture, the main agricultural products of these countries are also akin to each other (such as grain, sugar beets, olives and wheat as shown in *Table 4.1*). Even though the countries differ substantially when it comes to, for example, size of the population and the agricultural area, comparing Turkey's agricultural sector with other countries than Greece, Italy, Portugal and Spain seems illogical. As indicated by *Table 4.1*, the countries have very similar agricultural product range, and as we will see later, they also exhibit similar agricultural structure and trade patterns. *Table 4.1* gives a useful overview of some important characteristics of the agricultural sector in the different countries.

Table 4.1: Agricultural characteristics of Turkey, Greece, Italy, Portugal and Spain

	Turkey	Greece	Italy	Portugal	Spain
Year of EU membership	?	1981	1957	1986	1986
Population (million)	73	11.1	58.8	10.6	44.1
Agr. Population (million)	7.1	0.71	1.1	0.57	1.11
Total area (ha)	77 482 000	12 890 000	29 411 000	9 207 200	49 921 000
Agricultural area (ha)	26 013 000	3 831 000	10 700 000	2 311 000	18 715 000
GNI/capita (\$ US)*	8 410	30 870	28 970	19 960	28 200
Agricultural % of GDP	12.9	6.6	2.6	3.7	3.5
Main Agricultural Products	Wheat, grain, olives, sugar beets, tobacco	Wheat, corn, barley, sugar beets, olives	Fruits, grapes, potatoes, sugar beets, vegetables	Grain, potatoes, tomatoes, olives, grapes	Grain, olives, grapes, sugar beets, vegetables

Source: World Bank (2008); FAO (2008), * US PPP Index 2006

These numbers and indicators serve solely as a background, and in this chapter we will provide with more statistical trade data in order to make the estimations more consistent. The collected data will then be applied to estimate how a membership of the union and the implementation of the CAP will affect the Turkish agricultural sector and the trade with agricultural products.

4.2 Agricultural trade flows with the EU15

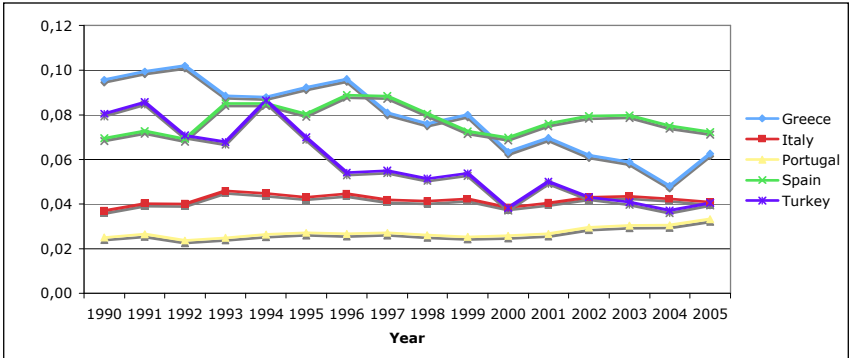
In this section we will compare the trade balance, export and import values with the EU15 and Greece, Italy, Portugal, Spain and Turkey during the period 1990 to 2005. Our aim is to examine whether there exist some similarities or differences of the trade patterns between the countries and scrutinize the reasons behind them. We chose this time period in order to show not just the most current trade performance of the countries, but also to observe how the trade has been changing over a longer time period. At the beginning of this time period, all of the countries, except of Turkey, were EU members and thus have had the CAP implemented already for at least a couple of years.⁴ Since trade is affected by various factors, not only by the CAP, we preferred not to consider the whole period of EU membership of each country, but to solely focus on the last fifteen years. This gives us a stable and relevant time period for our coming analysis.

When analyzing the trade with the EU15, we are putting the export, import and trade balance in relation with the countries' total trade. In this way, small countries as Greece and Portugal get a more correct assessment. In addition, the ratios can be used as a measure of the

⁴ For the exact year of EU membership for the selected countries, see *Table 4.1*.

comparative advantages of the countries' agricultural sector. *Figure 4.1* presents the countries' agricultural export to the EU15 as a share of the total trade with the EU15 over the last fifteen years. A relative high value indicates a larger importance of the agricultural sector in the country's total trade. Furthermore, it is important to look how the share has been changing over time. A fluctuating ratio is a sign of unstable market shares, whereas a stable ratio is an indication for a well-established sector with long-standing market shares. However, the stableness of the sector could be affected by the other sectors in the economy as well. As *Figure 4.1* shows, Italy and Portugal have the lowest but at the same time the most stable export ratios over the given time period. Greece and Spain have had both high and somewhat fluctuating shares, while Turkey's share has experienced both volatility and a remarkable decrease. Turkey's agricultural export, which represented around 8 percent of the total trade with the union in 1990, has successively decreased to Italy's level and corresponded to only 4 percent in 2005. Buy analyzing the figure, it can be seen that the importance of the agricultural export of Greece has also decreased and that Greece and Turkey have experienced very similar export structure during the entire period.

Figure 4.1: Agricultural export with the EU15 in % of total trade with the EU15, 1990-2005

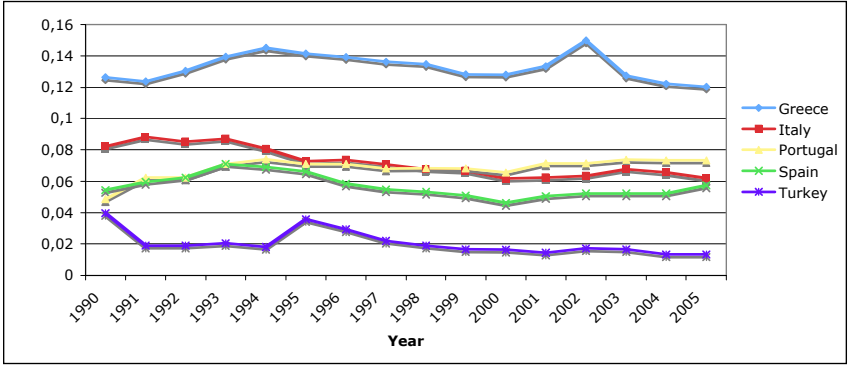


Source: Data gathered from SourceOECD

Figure 4.2 illustrates the share of the countries' agricultural import in the total trade with the EU15 and how it has changed since 1990. Comparing with the share of exports, the import values are more stable both for all the countries and over the entire time period. Greece's share of agricultural import is considerably larger than the other countries. During the last fifteen years, the shares' of Italy, Portugal and Spain have experienced very similar trends, and during the last five years, the values have steadily been between 5 and 7 percent. Turkey, however, has a very low import share from the EU15 and with the exception from the years 1990 and 1995, the share has also been very constant. As shown in *Figure 4.2*, the Turkish

agricultural import from the EU15 has lied between 1 and 2 percent over the entire period. From a mercantilist perspective, the Turkish numbers are remarkable positive in comparison with the other countries and when moving on scrutinizing the trade balance that are shown in *Figure 4.3*, the picture of the Turkish agricultural trade gets even better.

Figure 4.2: Agricultural import with EU15 in % of total trade with the EU15, 1990-2005

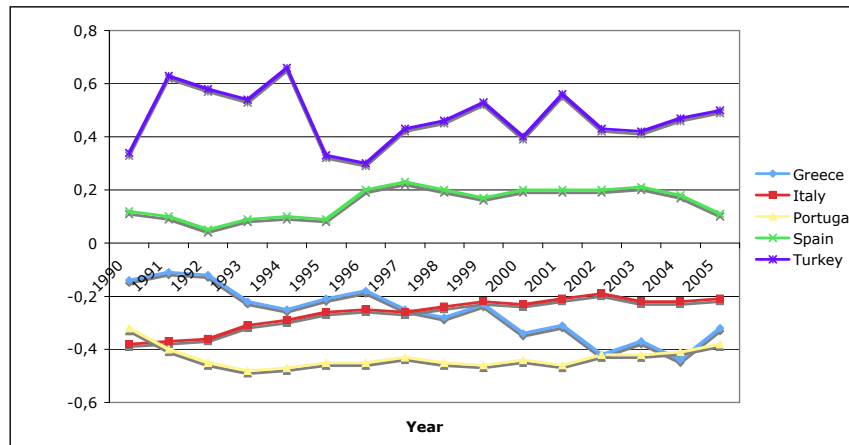


Source: Data gathered from SourceOECD

Figure 4.3 presents the so-called normalized trade balance for the five countries between 1990 and 2005. The diagram shows the agricultural trade balance (export minus import) as a share of the total agricultural trade (export plus import) with the EU15. The country’s trade balance will thus be normalized on its total agricultural trade, again making it possible to compare countries of different sizes with each other. The quotient creates an index that can take any values between -1 and +1, where negative values indicate a larger share of import comparing with export in total trade, positive values the reverse and zero indicates trade balance. In other words, a positive number in *Figure 4.3* means that the country has an agricultural trade surplus with the EU15. Imports are expected to be financed by exports, hence making the trade balance equal zero in the long run. However, as also indicated from the diagram, the trade balance can take many different values when considering shorter time periods and just a specific set of countries.

As shown in *Figure 4.3*, only Turkey and Spain have experienced a constant agricultural trade surplus with the EU15, while Italy, Greece and Portugal have had a constant agricultural trade deficit. Unfortunately, the diagram does not give a clarification of what reasons that might lie behind the different trade results and it is important to remember that a trade deficit is not necessarily bad for a country and vice versa. Deficits and surpluses can arise from many different reasons but the index does not tell us which ones.

Figure 4.3: Agricultural trade balance with EU15 in % of total agricultural trade with the EU15, 1990 – 2005



Source: Data gathered from SourceOECD

The normalized trade balance is equal to the so-called Balassa index that will be presented more deeply in the subsequent chapter. However, the agricultural sector will then not be treated as one single group, but by its composition of different commodities.

4.2.1 The importance of EU15 as an agricultural trade partner

Table 4.2 illustrates how important the EU15 is as an agricultural trade partner for the five countries. The table shows the average values of the agricultural trade with both EU15 and the world between three time periods. We have also calculated how large share of the total trade that is going to and from a country within the EU15. As indicated by Table 4.2, Turkey has relatively low trade transactions with the EU15 and it has increased only slightly since 1990. In the most recent period, between 2001 and 2005, the average share of EU trade in total trade was 36.2 percent. The corresponding numbers for the other countries, that are all EU members, lie around 70 percent. Comparing the most recent time period with the oldest, we can see that the importance of agricultural trade has fluctuated considerably but has recently become more stable. For Italy, the agricultural trade with the EU15 countries has been both important and stable throughout the entire period, whereas for Portugal, the importance has increased gradually and is today the largest among the countries.

Table 4.2: The agricultural trade with the EU15 as a share of agricultural trade with the world (average values in US \$ 1000)

	1990 – 1995			1996 – 2000			2001 – 2005		
	EU15	Total	%	EU15	Total	%	EU15	Total	%
Greece	4 572 000	6 386 000	71.6	4 905 000	6 996 000	70.1	5 471 000	8 179 000	66.9
Italy	25 621 000	37 507 000	68.3	27 995 000	40 893 000	68.5	34 658 000	50 562 000	68.5
Portugal	3 060 000	5 138 000	59.6	4 443 000	6 587 000	67.5	6 231 000	8 455 000	73.7
Spain	14 623 000	23 276 000	62.8	21 496 000	32 449 000	66.2	30 295 000	45 113 000	67.1
Turkey	1 973 000	5 560 000	35.4	2 505 000	7 370 000	34.0	3 045 000	8 404 000	36.2

Source: Data gathered from sourceOECD

As a customs union with the single market principle, priority in trade is given to other member countries, hindering non-member countries as Turkey to fully interact with the EU countries. The bilateral agreement of 1996 between the EU and Turkey does not include agricultural products, making it difficult for Turkish farmers to compete with the farmers within the union. This is one explanation behind the relatively low Turkish numbers of *Table 4.2*. However, the union is still an important agricultural trade partner for Turkey and as we showed in the previous section, the Turkish trade balance with the EU15 is solidly positive. The implementation of the CAP will most probably stimulate the trade between the EU and Turkey.

If approximately 35 percent of the Turkish agricultural trade is going either to or from the EU15, what countries or regions can be found in the other 65 percent? According to the statistic database of OECD, the main Turkish trade partners in agriculture are the United States, the Middle East countries, the countries of the Gulf region and the former Sovjet republics.

4.3 Changes in product range since the EU membership

In this section we will examine if a EU membership and the implementation of the CAP affect the composition of export products. In order to see whether, and to what extent, the export product range has changed after the countries' entrance in the union, we will compare 2004 (as it is the most current year) with the year before each country entered the EU. We are using the seven most exported products in both years as an indicator in our analysis and we consider the quantity of export instead of the value of export. In this way, we avoid misleading results that might arise from currency fluctuations and the analysis will be more focused on the

producers' decision and existing trade policies. Our results are put together and demonstrated in *Table 4.3*.

Even though Turkey is not yet a member of the EU, we made equal investigations for Turkey to observe its export composition for the same time period. By doing this, our aim is to see if we can make any predictions about whether a EU membership could be an influential factor of the countries' agricultural export product range. In the case of Turkey, we have chosen to compare year 2004 with 1985, since this is the year we have used for other two countries (Spain and Portugal), but also because it gives us a fairly long and relevant time period.

Table 4.3: Main export products in the year before EU membership and 2004
(in order with the largest export quantity first)

Greece	1980	1. Flour of wheat 2. Wheat 3. Oranges 4. Prepared fruits 5. Tomato paste 6. Food waste 7. Raisins	2*
	2004	1. Cotton lint 2. Prepared fruits 3. Oranges 4. Cottonseed 5. Peaches and nectarines 6. Olives 7. Tobacco leaves	
Italy	1961	1. Apples 2. Lemons and limes 3. Peaches and nectarines 4. Potatoes 5. Grapes 6. Peeled tomatoes 7. Wine	3*
	2004	1. Wine 2. Macaroni 3. Peeled tomatoes 4. Tomato paste 5. Prepared food 6. Milled paddy rice 7. Apples	
Portugal	1985	1. Cake of soya beans 2. Wine 3. Oil of soya beans 4. Tomato paste 5. Carobs 6. Beer of barley 7. Chestnuts	5*
	2004	1. Wine 2. Beer of barley 3. Cow milk 4. Tomato paste 5. Cake of soya beans 6. Refined sugar 7. Oil of soya beans	
Spain	1985	1. Barley 2. Mandarins 3. Wine 4. Oranges 5. Tomatoes 6. Oil of soya beans 7. Cake of soya beans	4*
	2004	1. Oranges 2. Mandarins 3. Wine 4. Tomatoes 5. Olive oil 6. Lettuce 7. Lemons and limes	
Turkey	1985	1. Refined sugar 2. Wheat 3. Flour of wheat 4. Tomatoes 5. Lentils 6. Cotton lint 7. Raisins	4*
	2004	1. Flour of wheat 2. Tomatoes 3. Lemons and limes 4. Mandarins 5. Raisins 6. Tomato paste 7. Lentils	

Source: Data gathered from <http://faostat.fao.org>, * number of products that can be found in both years.

As indicated by *Table 4.3*, none of the countries has kept their original composition of export. However, some countries have changed more radically while some have just changed slightly. For example, the composition of Greece's export in 2004 has changed completely in exception of two products – only oranges and prepared fruits can be found in both years. In Portugal on the other hand, five of seven products in 2004 could be found also in 1985.

In addition, there is a relation between how long time a country has been a EU member and the number of products in its export sector that has changed since a membership. Greece and Italy have been EU members the longest and their export composition has changed the most.

Portugal and Spain have been members since 1985 and their export composition has not experienced any drastically changes. Turkey, as a non-member country, has four commodities in both years, which equals the result of Spain. Since we compare the situation of 2004 with different time periods, the results we have found are quite obvious. Naturally, countries change more during a longer period of time. Especially in the case with Italy, that has been a member since 1957, it is hard to draw any consistent conclusions. The earliest data we could find was from 1961, so it is not just a year when Italy has been a member for already a couple of years, but it is also a very long period to compare statically as we have done. For Italy, only three of the most important products in 1961 can be found in 2004 (that is, wine, peeled tomatoes and apples). Since this is a very long time period, it is very hard to draw any consistent conclusions about how the EU membership has affected Italy's agricultural export composition.

In Greece, the most important products of 1980 (wheat and flour of wheat) had disappeared while more typical Mediterranean agricultural products as olives and tobacco have entered the list. For both Spain and Portugal, the most important export products in 2004 were also found in 1985, the year before they entered the union. As *Table 4.3* indicates, Spain has experienced a change in the composition of its export products, but not as much as Greece and Italy. Mandarins, wine, oranges and tomatoes were all important agricultural export product in both 1985 and 2004. Turkey's export product range has not changed significantly between 1985 and 2004. Four products can be found in both years, and it could be said that the Turkish composition has changed as little as in Spain.

According to these findings, we cannot find any particular relation between a EU membership and changes in the composition of the agricultural export. Neither Portugal nor Spain has experienced any remarkable change, even though much time has passed. Obviously, a comparison between more countries would be desirable, but since this is not any decisive factor, we will conclude that the results that we have conducted from this section made us *not* to go any deeper into how a potential membership might affect the export product composition.

4.4 Changes in importance of the agricultural sector

Since agriculture plays an important role in the overall development process of a country's economy, we would like to investigate how the importance of the agricultural sector has changed over time in the different countries. In this way, our aim is to see if we can find a different pattern among the EU countries and the patterns of Turkey.

Table 4.4: Changes in importance of the agricultural sector

	Greece		Italy		Portugal		Spain		Turkey	
	1980	2004	1980	2004	1980	2004	1980	2004	1980	2004
Agriculture labor force (1000 pers)	1 179	707	2 864	1 099	1 182	570	2 609	1 113	11 540	14 854
Agr. labor force/total labor force	31%	15%	13%	4%	26%	11%	19%	6%	61%	42%
Agr. activities/tot ec. activities	10%	3%*	6%	2%*	18%	3%*	7%	3%*	26%	9%*
Rural pop./total pop.	42%	39%	33%	32%	70%	45%	27%	23%	56%	33%

Source: Data gathered from <http://www.worldbank.org/data> and <http://faostat.fao.org>, * data for year 2006

Obviously, many other factors than an EU membership and the CAP influence the development of the agricultural sector, but it is still interesting to see how the composition of the sector in the countries have changed over a longer time period. In order to assess the most important characteristics of an agricultural sector in transition, but also considering the lack of time and data, we have chosen to select the following four indicators: Total agricultural labor force, share of agricultural labor force of the total labor force, agriculture's share of the total economic activities and the size of the rural population. Our hope is that these indicators can help us draw conclusions about the transformation pattern of the agricultural sector and give us some indication about in what direction Turkey might go in case of a EU membership. We are statically comparing year 1980 with 2004 (for agriculture's share of total economic activity are we using 2006 instead of 2004) and our results are presented in *Table 4.4*. By choosing 1980, we will be able to compare today's data with data from a time period where neither the EU membership nor the CAP was fully implemented in our selected countries. Obviously, Italy was one of the EU founder states and became a member already in 1957, but in order to avoid the risk of inconsistency that can result from such a long time interval, we choose 1980 as our year of reference.

4.4.1 Changes in total agriculture labor force

Our first indicator is presented in the first row of *Table 4.4* and shows that the number of persons in the agricultural sector has decreased significantly in all countries except of Turkey. In 25 years, Greece, Italy, Portugal and Spain have experienced an enormous reduction of their agricultural labor force – from a reduction of 61 percent in Italy to 40 percent in Greece. However, Turkey has gone in the opposite direction and in fact increased its agricultural labor force with around 3 million persons since 1980. This implies that the Turkish agricultural sector had increased its labor force with almost 30 percent during the past 25 years.

Since the agricultural labor force is getting smaller for the EU member states, the persons that before were employed in the agricultural sector, have now turned to other sectors. However, in Turkey, the total population increased with 26 million persons or almost 60 percent during this time period, which is the main explanation for the significant increase even in the agricultural labor force. In addition, it is a well-known fact that fertility rates are usually higher in rural areas, thereby increasing the agricultural population even further. None of the other countries have experienced a population growth comparable with the one of Turkey. The second strongest population growth was observed in Greece, whose population grew almost 14 percent between 1980 and 2004 (FAO, 2006).

4.4.2 Changes in agricultural labor force as a share of the total labor force

As just mentioned, the countries have experienced different rates of population growth and in order to include this important aspect in our analysis, the second indicator represents the share of agricultural labor force of the countries' total labor forces and is presented in the second row of *Table 4.4*. As already indicated by the previous section, the agricultural importance regarding the countries' labor forces is substantially lower in 2004 comparing with 1980, but it is now shown more clearly that *all* of the countries have experienced a reduction of its agricultural labor force in relation to their total labor forces. Even though Turkey's total agricultural labor force has increased, the total labor force has increased even more, making the share lower.

The share of agricultural labor force has decreased from 61 percent in 1980 to 42 percent in 2004. It is still a very high number – especially in comparison with the four EU member

states. In Italy, only 4 percent of the total labor force is active in the agricultural sector, while the corresponding number in Greece is 15 percent.

4.4.3 Changes in agriculture's share of total economic activity

With the help from our third indicator, we will now turn to the economic contribution of the agricultural sector. Before moving on, it could be useful to remember that the average agricultural share of GDP in the EU members is 1.3 percent (European Commission, 2007b), whereas the corresponding number in the least developed countries of the world is 14 percent (Todaro & Smith, 2006). The share of agriculture in total economic activity is thus a fairly robust indicator for how far a country has proceeded in its developing process. In other words, a low agriculture's share of total economic activity is an indication of a more industrialized and economically developed economy.

The third row of *Table 4.4* shows that the economic importance of agriculture has decreased substantially in all five countries. Greece, Italy, Portugal and Spain are all having a share of around 3 percent, whereas Turkey's share is considerably higher – 9 percent. However, Turkey has experienced the strongest reduction since 1980. In that year, 26 percent of the total economic activity was contributed by the agricultural sector.

4.4.4 Changes in total rural population

The last row of *Table 4.4* shows that there is no significant difference between the countries when it comes to their relative size in rural population. In 2004, Turkish rural population corresponded to 33 percent of the total population, whereas in Portugal 37 percent and in Spain 23 percent of the population lived in rural communities. All countries have experienced a decrease of their rural population, where Portugal showed the sharpest decline. However, the rural population of Italy, Greece and Spain has just decreased slightly.

Even though other demographic factors affect the outcome of this indicator, there are some reflections that we would like to make. As we mentioned in the background, the second pillar of the CAP emphasizes the importance of the development of the rural regions of the member countries. The rural population of the EU obtains larger support than the people living in rural Turkey, and even though this support was implemented quite late, it could have a substantial

effect on the number of people choosing to stay in the rural areas. According to our previous results – that Turkey has both the largest total agricultural population and the biggest share of agricultural laborers – could make one to predict that Turkey’s rural population should be relatively large. However, *Table 4.4* shows that there are countries (that is, Spain and Portugal) that actually have a higher share of rural population. This can partly be explained by that the CAP and the consistent EU support make people to stay in the rural communities. In other words, people living in rural areas of the European countries might live in rural areas without being involved with agricultural activities. In Turkey, however, our results indicate that the persons who live in rural areas are, to a larger extent, also involved in agricultural activities.

5. Empirical Analysis of Revealed Comparative Advantage

This chapter will give a brief explanation of the two formulas that we have chosen to use in order to estimate the comparative advantages of the Turkish agricultural sector. We will then apply the formulas to all five countries and compare the results with one another. The empirical results from this section will, together with the results from chapter 4, constitute the ground for reaching our final conclusions.

5.1 The Concepts of Revealed Comparative Advantage

In order to answer this study's main question, we need to examine how the Turkish agricultural sector can handle the increased competition that a EU membership will imply. To retain the positive Turkish trade balance in agriculture, the sector must show a certain amount of competitiveness. One way to assess the level of competitiveness is to examine whether any comparative advantage can be found in the sector and to observe how these advantages have been changing over time. The estimation of the comparative advantage of a country or a sector can be made in different ways and with the help from several distinctive methods. In our analysis we have chosen the so-called revealed comparative advantage (RCA) method and in order to estimate the advantages we will apply two of its formulas; RCA_1 and RCA_2 .

The answers from the formulas will give us an index that can be used to observe and compare the agricultural competitiveness and the level of specialization in the countries, making it easier to estimate over time and different commodities. In the subsequent chapter, we will use these formulas and indexes in order to see how strong the Turkish agricultural competitiveness is in comparison with Greece, Italy, Portugal and Spain. By comparing the situation in Turkey with countries that are already EU members, we will be able not just to show and understand the agricultural climate that Turkey in case of a EU membership will enter, but also get an indication of what the direction of the Turkish trade might take. This will give us a broader perspective and help us to make estimations about the future of trade in the Turkish agricultural sector and how well it will integrate with the union.

The two formulas, which are also known as the Balassa indexes, make it possible for us to scrutinize different commodities within the agricultural sector. That is, we will no longer treat

the sector as one big group, but analyze the competitiveness of different agricultural commodities. Since the sector is highly diverse and the agricultural activities can take many different forms, this is an important advantage.

5.1.1 RCA_1

Béla Balassa made his famous calculation of the revealed comparative advantage index, RCA_1 , in 1965 to measure the competitiveness of different countries and sectors and how they specialize in particular products. The main idea of Balassa's formula is that when a country's share in global exports of a certain commodity is larger than its overall share in total global exports, the country has a revealed comparative advantage in this particular commodity (Balassa, 1965). Formula 1 and 2 illustrate this relationship:

$$RCA_1 = \left(\frac{\sum_{j=1}^n X_{ij}}{\sum_{j=1}^n X_{ij}} \right) / \left(\frac{X_{wj}}{\sum_{j=1}^n X_{wj}} \right) \quad (1)$$

$$RCA_1^{EU} = \left(\frac{\sum_{j=1}^n X_{ij}^{EU}}{\sum_{j=1}^n X_{ij}^{EU}} \right) / \left(\frac{X_{EUj}}{\sum_{j=1}^n X_{EUj}} \right) \quad (2)$$

where X = exports, i = country, j = commodity, w = world, X_{ij} = country i 's export of commodity j to the world, X_{wj} = world's export of j , X_{ij}^{EU} = country i 's export of commodity j to the EU and X_{EUj} = the EU's export of commodity j to the world.

Both formulas have the same concept. The first one, the general Balassa formula, gives an index for how competitive a country is on the world market and the second formula gives instead a bilateral index between the EU and a given country. Since we are examining the competitive power of the Turkish agricultural sector in the EU market, we will use the second formula. The aim is further to compare the situation with EU member countries so the formula will also be applied on Greece, Italy, Portugal and Spain as well. In other words, it is only the countries' agricultural trade with the EU15 that will be taken into account when employing the RCA_1 in our study.

The formula of RCA_1 gives us an index that can take any positive and infinite value. If $RCA_1 > 1$, the country is said to have a revealed comparative advantage in the specific commodity or sector comparing to the reference group (that is, EU15 in our study). If $RCA_1 < 1$ but larger than zero, the country has instead a comparative disadvantage. For example, if Turkey's $RCA_1^{EU} > 1$ for commodity j , Turkey has a revealed comparative advantage in relation to the EU in commodity j .

Since imports face more policy distortions (such as tariffs, quotas and non-tariff barriers to trade), Balassa excluded imports from RCA_1 formula and considered only the export component. However, the exclusion of imports makes the index somewhat misleading. As Greenaway and Milner (1993) point out, the omission of the imports will make the result of the formula biased and less reliable. In addition, this bias will most probably depend on the size of the country, making the results from larger countries even more biased.

5.1.2 RCA_2

The second formula of Balassa, RCA_2 , is, in contrast with the previous formula of RCA_1 , including also the imports. That is, now we take also the bilateral trade in consideration. In addition, it makes it possible to compare the two indexes with each other and we will be able to get stronger evidence for the countries' comparative advantages. As we can see by formula 3 and 4, the RCA_2 illustrates what we have already mentioned in chapter 3:

$$RCA_2 = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij}) \quad (3)$$

$$RCA_2^{EU} = (X_{ij}^{EU} - M_{ij}^{EU}) / (X_{ij}^{EU} + M_{ij}^{EU}) \quad (4)$$

where X = exports, M = imports, i = country, j = commodity, X_{ij} = country i 's export of commodity j , M_{ij} = country i 's import of commodity j , X_{ij}^{EU} = country i 's export of commodity j to the EU and M_{ij}^{EU} = country i 's import of commodity j from the EU.

RCA_2 can take any values between -1 and + 1. If $RCA_2 < 0$, the chosen country has a comparative disadvantage in a certain commodity or industry in relation to the reference

country or group. In another words, when there exist a trade deficit of the country, it leads to a negative nominator in the formula and reflects a comparative disadvantage. Reversely, there is a comparative advantage if the $RCA_2 > 0$. As Greenaway and Milner (1993) argue, it is hard to draw any conclusions if the RCA_2 lies around zero.

Hence, the formula measures the share of the trade balance in a specific commodity in the total trade of the commodity. As with RCA_1 , we will analyze the trade with the EU15, making us to choose formula 4 when analyzing the trade flows in the next chapter.

5.2 Empirical findings

A EU membership will influence most sectors in Turkey. In this chapter, we will mainly focus on the agricultural trade and analyze how the Turkish agricultural trade may be affected in case of a EU membership. While making the analysis, we are using the revealed comparative advantage methods, RCA_1 and RCA_2 , which we explained in the previous chapter. By doing this, we can observe the comparative advantages of the Turkish agricultural sector in the EU market and compare it with Greece, Italy, Portugal and Spain.

We have examined the countries' trade flows with the EU15 for each agricultural commodity between 1995 and 2005. In this way, we will find the commodities that the Turkish agricultural sector specializes in and the commodities that experience a comparative advantage or disadvantage. By analyzing these comparative advantages, we can supplement our previous discussion about how the membership affects product prices, employment and the standards of living for the agricultural and rural community.

To examine the agricultural comparative advantages among the countries, we have used the statistic database of the OECD, which is classifying the commodities according to the Standard International Trade Classification System (SITC). This makes it possible for us to select and examine specific agricultural products, instead of analyzing the whole sector as one entity. There exist no unanimous definition of agriculture and what commodities that should be included. We have thus chosen to define the agricultural sector as a composition of the

following six groups⁵; Group 0: *food and live animals*, Group 1: *beverage and tobacco*, Group 21: *hides, skins and fur skins*, Group 22: *oilseeds and oleaginous fruits*, Group 29: *crude animal and vegetable materials* and Group 4: *animal and vegetable oils, fats and waxes*.

5.2.1 Group 0: Food and live animals

According to the RCA_1 ratios that are shown in *Table 5.1*, Greece has the strongest comparative advantage in this commodity group, while Portugal displays the lowest ratios. Turkey has had experienced both stable and high ratios comparing to Italy and Portugal, which means that Turkey has an advantage over these countries. However, according to the RCA_2 ratios, Turkey has the highest positive values for all the years comparing with the other countries. Greece's negative values of RCA_2 are probably are result of its relatively high import values from the EU15. Italy has a comparative advantage according to the RCA_1 whereas it has a disadvantage according to the RCA_2 .

Table 5.1: RCA_1 and RCA_2 values for *food and live animals* (Group 0)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RCA_1	Greece	4.14	4.31	4.66	5.64	5.61	5.56	6.44	6.57	5.48	5.47	6.40
	Italy	1.19	1.30	1.34	6.11	1.54	1.52	1.66	1.76	1.84	1.80	1.89
	Portugal	0.77	0.80	0.88	0.96	0.96	1.11	1.17	1.30	1.31	1.39	1.61
	Spain	2.83	3.07	3.26	3.34	3.41	3.48	3.81	3.90	4.07	3.92	4.28
	Turkey	2.92	2.88	3.19	2.95	2.67	2.44	2.48	2.31	2.16	2.15	2.44
RCA_2	Greece	-0.34	-0.36	-0.35	-0.32	-0.35	-0.39	-0.35	-0.43	-0.43	-0.44	-0.38
	Italy	-0.29	-0.26	-0.27	-0.26	-0.22	-0.25	-0.22	-0.19	-0.23	-0.23	-0.20
	Portugal	-0.54	-0.56	-0.53	-0.54	-0.57	-0.54	-0.56	-0.52	-0.53	-0.51	-0.50
	Spain	0.16	0.22	0.25	0.23	0.21	0.25	0.26	0.25	0.27	0.24	0.19
	Turkey	0.44	0.43	0.66	0.69	0.64	0.57	0.73	0.65	0.62	0.67	0.67

When we consider both indexes, just Turkey and Spain keep their comparative advantage over time. They are the only countries that have a positive trade balance with the EU15, indicating their competitive strength.

⁵ See Appendix A for the sub-groups and complete list of the commodities from Source OECD SITC Revision 3.

5.2.2 Group 1: Beverage and tobacco

The ratios of Group 1, *beverage and tobacco*, are shown in *Table 5.2*. In this commodity group, Greece and Portugal have remarkably comparative advantage whereas the ratios of Spain and Italy are just slightly over one, indicating a comparative advantage for all four countries against the EU15. The RCA_1 index is lower than one for Turkey, which means that Turkey has a comparative disadvantage in beverage and tobacco group in relation to the EU. Results from the RCA_2 calculation differ from the one's of RCA_1 . According to RCA_2 , Greece has a comparative disadvantageous position while Turkey has comparative advantage. Besides, Portugal has a comparative advantage according to both calculations and Italy is in an ambiguous situation since its RCA_2 ratios vary around zero during the last decade.

Table 5.2: RCA_1 and RCA_2 values for *beverage and tobacco* (Group 1)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RCA_1	Greece	2.33	2.69	2.76	2.28	2.52	2.22	1.84	1.82	2.20	1.93	2.01
	Italy	0.91	0.91	0.36	3.95	0.99	0.98	1.01	1.07	1.01	1.05	0.90
	Portugal	1.27	1.29	1.28	1.26	1.41	1.43	1.47	1.48	1.54	1.52	1.82
	Spain	0.97	1.03	1.09	1.06	1.06	0.96	1.10	1.04	1.03	1.02	0.98
	Turkey	0.68	0.98	0.81	0.59	0.85	0.80	0.48	0.56	0.45	0.38	0.50
RCA_2	Greece	-0.34	-0.29	-0.27	-0.41	-0.36	-0.46	-0.58	-0.66	-0.47	-0.54	-0.46
	Italy	0.01	-0.003	-0.03	-0.008	0.14	-0.01	-0.04	-0.02	-0.04	-0.05	-0.09
	Portugal	0.08	0.11	0.16	0.07	0.04	0.06	0.09	0.09	0.17	0.14	0.28
	Spain	-0.20	-0.003	0.03	-0.004	-0.04	-0.13	-0.17	-0.16	-0.20	-0.26	-0.30
	Turkey	0.72	0.74	0.63	0.52	0.80	0.74	0.64	0.63	0.50	0.32	0.34

5.2.3 Group 21: Hides, skins and fur skins

For the Group 21, *hides, skins and fur skins*, all countries except of Greece have revealed comparative disadvantage in relation to the EU for RCA_1 calculations. Although Spain has comparative advantage for several years, it becomes to be in a disadvantageous position in the last years of the period. Besides, Turkey has the lowest ratios comparing to other countries and ranks in the last place in the group. In RCA_2 calculations all country's ratios are lower than zero, which means that all of them has comparative disadvantage in relation the EU. Furthermore, again Turkey has the lowest ratios in the group and has comparative disadvantage in both calculations.

Table 5.3: RCA₁ and RCA₂ values for *hides, skins and fur skins* (Group 21)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RCA₁	Greece	2.86	3.70	3.31	2.88	2.05	2.37	4.38	2.59	1.45	0.59	0.04
	Italy	0.21	0.18	0.27	1.13	0.42	0.38	0.36	0.38	0.38	0.36	0.38
	Portugal	0.29	0.27	0.28	0.15	0.14	0.25	0.30	0.79	0.76	0.38	0.49
	Spain	1.03	0.83	1.02	1.08	1.16	1.19	1.09	1.00	0.89	0.77	0.73
	Turkey	0.20	0.13	0.08	0.10	0.02	0.02	0.02	0.01	0.01	0.02	0.01
RCA₂	Greece	-0.29	-0.20	-0.35	-0.53	-0.51	-0.27	-0.26	-0.33	-0.63	-0.82	-0.88
	Italy	-0.91	-0.91	-0.77	-0.89	-0.84	-0.84	-0.85	-0.80	-0.79	-0.74	-0.82
	Portugal	-0.67	-0.67	-0.70	-0.87	-0.86	-0.70	-0.60	-0.08	-0.04	-0.25	-0.18
	Spain	-0.25	-0.32	-0.24	-0.19	-0.05	0.02	-0.16	-0.08	-0.06	0.10	0.06
	Turkey	-0.97	-0.98	-0.99	-0.99	-0.96	-0.98	-0.99	-0.99	-0.99	-0.99	-0.99

5.2.4 Group 22: Oil seeds and oleaginous fruits

Greece has extremely high RCA₁ ratio in Group 22, *oil seeds and oleaginous fruits*, comparing to other countries and has remarkably high comparative advantage in relation to the EU. We may say that Greece has strong competitiveness and specializes in oil seeds and oleaginous fruits. Turkey also has high competitive power in this commodity group according to RCA₁ calculations. In RCA₂ ratios, except of Greece and Turkey all countries has comparative disadvantage in that group. In addition, these two countries have comparative advantage according to both calculations. The year 1997 for RCA₂ is an exceptional year that all countries has comparative disadvantage in relation to the EU.

Table 5.4: RCA₁ and RCA₂ values for *oil seeds and oleaginous fruits* (Group 22)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RCA₁	Greece	14.60	7.61	3.85	4.27	6.08	9.90	31.82	25.93	33.17	35.12	39.82
	Italy	0.15	0.17	0.38	0.76	0.10	0.26	0.54	0.25	0.69	1.03	1.05
	Portugal	0.44	0.21	0.94	0.48	0.39	1.17	2.76	0.74	1.73	2.69	2.73
	Spain	0.80	2.26	0.88	0.81	0.36	1.04	1.24	0.58	1.72	0.99	2.09
	Turkey	4.49	4.65	3.99	3.09	2.04	3.05	5.54	1.94	3.40	3.05	4.09
RCA₂	Greece	0.57	0.60	-0.08	0.29	0.62	0.62	0.70	0.68	0.69	0.90	0.82
	Italy	-0.74	-0.51	-0.21	-0.46	-0.57	-0.46	-0.42	-0.48	-0.39	-0.38	-0.34
	Portugal	-0.89	-0.88	-0.78	-0.82	-0.38	-0.43	0.01	-0.57	-0.56	-0.51	-0.39
	Spain	-0.69	0.14	-0.61	-0.53	-0.66	-0.43	-0.68	-0.72	-0.54	-0.76	-0.59
	Turkey	0.32	0.43	-0.11	0.54	0.30	-0.23	0.65	0.40	0.70	0.28	0.06

5.2.5 Group 29: Crude animal and vegetable materials

As indicated in the *Table 5.5* below, Italy, Spain and Turkey has comparative advantage in the Group 29, *crude animal and vegetable materials*, according to the RCA₁ calculations. However, Turkey's comparative advantage changes into disadvantage in the last years of the time period which means that Turkey is losing its specialization and competitiveness in that

certain commodity group in the recent years in relation to the EU. In RCA₂ ratios, all countries has comparative disadvantage except of Turkey. However, Turkey again loses its leading place in the group and its competitiveness in the last three years of the period. This also means that Turkey's imports of crude animal and vegetable materials are increasing faster than the increase in its exports.

Table 5.5: RCA₁ and RCA₂ values for *crude animal and vegetable materials* (Group 29)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RCA₁	Greece	0.37	0.35	0.49	0.48	0.48	0.53	0.50	0.45	0.36	0.35	0.41
	Italy	1.15	1.29	1.37	5.48	1.32	1.27	1.30	1.29	1.30	1.31	1.39
	Portugal	0.63	0.69	0.64	0.55	0.54	0.57	0.55	0.56	0.62	0.65	1.04
	Spain	1.31	1.28	1.49	1.39	1.27	1.16	1.34	1.19	1.15	1.08	1.39
	Turkey	2.41	2.01	2.08	1.78	1.53	1.27	0.99	1.04	1.02	0.78	0.90
RCA₂	Greece	-0.80	-0.84	-0.80	-0.79	-0.78	-0.78	-0.78	-0.82	-0.84	-0.86	-0.80
	Italy	-0.04	-0.01	-0.04	-0.05	-0.07	-0.08	-0.07	-0.05	-0.05	-0.09	-0.07
	Portugal	-0.33	-0.33	-0.39	-0.43	-0.44	-0.44	-0.49	-0.47	-0.46	-0.40	-0.27
	Spain	-0.15	-0.15	-0.05	-0.05	-0.003	0.02	0.06	-0.009	-0.01	-0.06	-0.07
	Turkey	0.46	0.26	0.23	0.08	0.10	0.01	0.02	0.02	-0.03	-0.07	-0.08

5.2.6 Group 4: *Animal and vegetable oils, fats and waxes*

In Group 4, *animal and vegetable oils, fats and waxes*, Greece has a very significant comparative advantage in RCA₁ calculations. Except of Portugal all countries have comparative advantage but Turkey's performance is fluctuating and became disadvantage in last two years. In RCA₂ calculations except of Greece of Spain, all countries has comparative disadvantage and Turkey has a fluctuating performance again.

Table 5.6: RCA₁ and RCA₂ values for *animal and vegetable oils, fats and waxes* (Group 4)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RCA₁	Greece	23.86	38.68	17.87	13.25	27.19	15.24	19.15	14.47	16.50	6.55	20.07
	Italy	1.13	1.38	0.95	3.20	1.08	1.09	1.23	1.15	1.29	1.34	1.53
	Portugal	0.44	0.84	0.64	0.46	0.45	0.52	0.68	0.59	0.53	0.62	0.72
	Spain	2.27	4.11	4.43	3.06	2.43	3.14	3.96	2.84	4.29	5.29	2.89
	Turkey	2.47	1.37	1.21	0.91	2.98	0.41	2.58	0.65	1.65	0.77	0.95
RCA₂	Greece	0.82	0.82	0.72	0.62	0.81	0.72	0.72	0.55	0.63	0.16	0.68
	Italy	-0.21	-0.38	-0.51	-0.46	-0.34	-0.34	-0.40	-0.50	-0.46	-0.38	-0.37
	Portugal	-0.74	-0.62	-0.63	-0.67	-0.67	-0.60	-0.60	-0.61	-0.71	-0.67	-0.69
	Spain	0.11	0.37	0.69	0.65	0.42	0.64	0.63	0.70	0.64	0.69	0.48
	Turkey	-0.09	-0.18	-0.40	-0.42	0.16	-0.69	0.34	-0.35	0.14	-0.02	0.02

5.3 Some concluding remarks from the empirical analysis

As indicated in the tables above, Turkey has revealed comparative advantages in most of the commodity groups of its agriculture sector. According to both RCA_1 and RCA_2 calculations, Turkey has comparative advantages in two groups; *food and live animals* and *oil seeds and oleaginous fruits*. According to our RCA_2 calculation, Turkey has a comparative advantage in *beverage and tobacco* and *crude animals and vegetable materials*. According to both formulas, *animal and vegetable oil, fats and waxes* has experienced an unstable performance. When it comes to *hides, skins and fur skins*, Turkey has a comparative disadvantage according to both indexes.

As a member of the EU, Turkey will experience free trade with all EU member countries. If Turkey can keep its comparative advantages in the commodity groups where they have a comparative advantage, the increasing integration may lead to a rise in Turkish agricultural exports to the EU. According to Grethe (2004) and Cakmak and Kasnakoglu (2003), a Turkish membership will make Turkey to a net exporter of fruits and vegetables and net importer of cereals and animal products. Furthermore, they add that Turkey will become a net importer of agricultural products from the EU even though it is a net exporter of agricultural products now. However, they do not conclude whether there will be a trade creation or trade diversion between Turkey and the EU in total, making the result of the change in total trade ambiguous.

6. Conclusions

Turkey is a large country with both a great rural population and an important agricultural sector. With the constant desire to one day enter the EU, Turkey has needed to make several structural adjustments in its agricultural sector and after the 1980s, major liberalisation and modernisation reforms were implemented and several new institutions were established. Until the beginning of this century, Turkey's agricultural sector has decreased somewhat in its importance of the overall economy, but the number of people that are dependent on agricultural activities remains high and their income is, in relation with other sectors, very low. Also the Turkish agricultural trade has changed significantly during the last decades. The Turkish economy is still dependent on its agricultural trade, but it as has increased substantially and gotten more dependent on the EU.

We have observed that Turkey's lack of adequate institutions and agricultural policies leads to disparities between Turkey and the EU. Turkey experiences much greater regional differences, fluctuating agricultural commodity prices and plenty of unproductive small and family driven farmers. After implementing the CAP and with EU assistance, Turkey will have a better-structured agricultural sector with more solid agricultural institutions and in the long term less regional differences. In addition, the fluctuations in the agricultural economy will tend to stabilize, as also have been seen in our comparisons with the selected EU member countries. Besides, the structural changes might cause a decrease in the agricultural population, which will induce unemployment especially in rural areas. In order to prevent high numbers of unemployed people, job creation and rural development policies must be applied for these regions. In the long-term, however, the EU funding and assistance will stimulate the rural areas and make it more attractive for people to live there. In contrast with today, it is likely that the people in the rural communities will be employed in other works than just agricultural activities.

Increasing integration with a EU membership will affect Turkey's agricultural trade with the EU. If Turkey can keep its comparative advantages in the commodity groups where they have a comparative advantage, the increasing integration may lead to a rise in Turkish agricultural exports to the EU. We believe that a membership might lead to a trade creation between Turkey and the EU. However, the EU has also comparative advantages in some commodity groups and this may promote imports of these goods to Turkey from the EU. This view is also

supported by Akder (1990) and Ertugrul (1992), who argue that a trade creation will take place and that the exports of vegetables to the EU and imports of animal products from the EU will rise.

Even though Turkey has a larger agricultural population and more arable land comparing to Greece, Italy, Portugal and Spain the agricultural sector plays a key role in all of these countries' economies. Turkey's large population and low GNI per capita might seem as an obstacle to integrate the Turkish economy with the union. However, a Turkish membership can also be interpreted as an advantage for the EU, since total labor force, size of the market and total production volumes will increase in the EU.

We can conclude that a EU membership will most probably make the Turkish agriculture sector less volatile, both when it comes to prices and trade volumes. With a common agricultural policy and an increased integration, competition will increase and the prices harmonize with the ones of the EU. The sector will become more specialized and as a consequence, many farmers might be forced to migrate from the rural areas and find work elsewhere. In the long-term, however, the EU funding and assistance will stimulate the rural areas, making it more attractive for people to live there without necessarily being involved in agricultural activities.

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Appendix A - the sub-groups and list of the commodities that are used in the study

Source OECD SITC Revision 3

0: Food and live animals

01: Meat and meat preparations

02: Dairy products and birds' eggs

03: Fish, crustaceans, molluscs and preparations thereof

04: Cereals and cereal preparations

05: Vegetables and fruits

06: Sugar, sugar preparations and honey

07: Coffee, tea, cocoa, spices, and manufactures thereof

08: Feedstuff for animals (excluding unmilled cereals)

09: Miscellaneous edible products and preparations

1: Beverages and tobacco

11: Beverages

12: Tobacco and tobacco manufactures

2: Crude materials, inedible, except fuels

21: Hides, skins and furskins, raw

22: Oil seeds and oleaginous fruits

29: Crude animal and vegetable materials, n.e.s.

4: Animal and vegetable oils, fats and waxes

41: Animal oils and fats

42: Fixed vegetable oils and fats, crude, refined or fractionated

43: Processed Animal and vegetable oils and fats