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AGRICULTURAL SUPPORT POLICIES FOR OLIVE OIL, WHEAT, MILK, SUGAR IN TURKEY WITH REFERENCE TO CAP

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ABSTRACT

This PhD thesis is an analysis of agricultural support policies in Turkey. These support policies are evaluated in four ways: First way is measuring of support level through Producer Support Estimate. Second way is the welfare analysis of past and present support policies. Third and the fourth ways are evaluation of European Union membership and Doha Round impact.

It was found that the high support level arises from the gap between reference price and producer price. In the welfare analysis of past and present policies in wheat and olive oil, deficiency payment policy has advantage over the intervention buying. In sugar, consumer welfare is better in the deficiency payment system but total welfare is better in the quota system. It was found that the consumers will benefit from EU accession due to the declining prices. The consumer surplus increases in the IN-EU case. The effect of EU accession on producer will depend on the payments from the EU. Consumers shall benefit from the lower prices in the Doha Round scenario. Export subsidy elimination is not expected to have a great impact in olive oil. Turkey shall benefit from tariff reductions in milk after Doha Round. The main impact of Doha Round will be seen in wheat and sugar. Turkey may design wheat and sugar as special products in the Doha Round. It is suggested that Turkey is better to consider its own interests in the Doha Round when we think that the EU accession process will last some years more.

ÖZET

Bu tez çalışması, Türkiye'de dört tarım ürününde uygulanan tarımsal destek politikalarının analizidir. Destek politikaları, dört şekilde incelenmiştir. Birinci yöntem destek seviyesini ölçen Üretici Destek Eşdeğeridir. Ikinci yöntem refah analizi yöntemiyle geçmişteki ve şimdiki destek politikalarının karşılaştırılmasıdır. Üçüncü ve dördüncü yöntemler de Avrupa Birliği üyeliğinin etkisiyle, Doha Turu'nun olası etkisidir.

Türkiye'de ürünlerin fiyatları referans fiyatların üzerinde olduğu için üretici destek eşdeğerleri yüksek çıkmaktadır. Refah analizinde kıyaslanan destekleme politikalarından fark ödemesi tüketici refahı açısından diğer politikalara kıyasla daha üstün çıkmıştır. Şekerde ise, toplam refah kota uygulamasında daha yüksek çıkmıştır. AB üyeliği sürecinde, tüketiciler düşük fiyatlardan olumlu etkilenecektir. Üretici refahında, AB'den gelecek yardımlar ve destekler etkili olacaktır. Doha Turu analizinde ise, tüketiciler tarife indirimi senaryosunda, düşen fiyatlardan faydalanacaktır. İhracat sübvansiyonlarının kaldırılmasının ciddi bir etkisi gözlenmemiştir. Türkiye süttozunda net ithalatçı konumunda olup tarife indiriminden olumlu etkilenecektir. Doha Turunun etkisi buğday ve şekerde görülmektedir. Türkiye açısından Doha Turu'nda buğday ve şekerin özel ürün kapsamına alınması üretimin devamı ve çiftçi geçimi açısından önemlidir. AB üyelik sürecinin daha yıllar süreceğini düşündüğümüzde, Türkiye için Doha Turu'nda kendi çıkarlarını göz önüne alması daha uygun olacaktır.

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ABBREVIATIONS

ABGS	Avrupa Birliği Genel Sekreterliği
AMS	Aggregate Measurement of Support
Appr.	Approximately
ARIP	Agricultural Reform Implementation Project
Ave	Average
CAP	Common Agricultural Policy
CN	Combined Nomenclature
CPI	Consumer Price Index
CSE	Consumer Support Estimate
D	Demand
Da	Decare
DIS	Direct Income Support
$\mathcal{E}_D$	Demand-price Elasticity
$\mathcal{E}_s$	Supply-price Elasticity
EAFRD	European Agricultural Fund for Rural Development
EAGF	European Agricultural Guarantee Fund
EAGGF	European Agricultural Guidance and Guarantee Fund
EC	European Commission
ECU	European Currency Unit
EU	European Union
EUR, €	Euro
FAO	Food and Agriculture Organisation of the United Nations
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
Ha	Hectare
HFSC	High Fructose Corn Syrup
IMF	International Monetary Fund
ISO	International Sugar Organisation
Kg	Kilogram
Kr	Kuruş

LDCs	Least Developed Countries
MFN	Most Favored Nation
NFRS	National Farmer Registration System
OECD	Organisation of Economic Cooperation and Development
OTDS	Overall Trade-Distorting Domestic Support
P	Price
Pankobirlik	Pancar Ekicileri Kooperatifleri Birliği
Prov.	Provisional
PSE	Producer Support Estimate
Q	Quantity
S	Supply
SCT	Single Commodity Transfer
SMP	Skim Milk Powder
SP	Special Product
SPS	Single Payment Scheme
SSM	Special Safeguard Measures
t	Tonne
TEAE	Tarımsal Ekonomi Araştırma Enstitüsü
TL	Turkish Lira
TMO	Toprak Mahsulleri Ofisi
TRQ	Tariff Rate Quota
TŞFAŞ	Türkiye Şeker Fabrikaları Anonim Şirketi
TZOB	Türkiye Ziraat Odaları Birliği
TUIK	Türkiye İstatistik Kurumu
URA	Uruguay Round Agreement
URAA	Uruguay Round Agreement on Agriculture
US, USA	United States, United States of America
USDA	United States Department of Agriculture
UZZK	Ulusal Zeytin ve Zeytinyağı Konseyi
WTO	World Trade Organisation
base e	2,71828182845904 (in logarithm functions)

1 INTRODUCTION

Agricultural support policies date back to 1930s in Turkey. One of the main policy instruments was intervention buying (market price support). Intervention buying was first used for wheat in 1932. In time, the number of supported commodities increased. Sugar beet and olive oil were added to market price support policy in 1956 and 1966, respectively. Milk is supported by premium payments (milk incentive premium) since 1987.

The agricultural support policies changed for wheat, olive oil and sugar. For wheat and olive oil, deficiency payment system was introduced; and for sugar, sales quota has been used. Only the support policy in the milk (among these four commodities) did not change.

Each agricultural support policy has different effects on producers and consumers. Some policies result in an increase in the producer's gain while reducing the consumer's welfare, or decreasing producer welfare while not reducing consumer welfare.

The objective of this thesis is to examine agricultural support policies in four agricultural products; wheat, sugar, olive oil and milk in Turkey and to analyse the effects of support policy changes. These support policies are evaluated in four ways: Firstly, the transfers to the producers due to the support policies are measured by the OECD method (producer support estimate) to determine support level in the related commodities. Secondly, the effects of the policy changes on producers' and consumers' welfare are examined by comparing past and present support policies (in wheat and olive oil); and in sugar, present policy and an alternative policy (deficiency payment) with the help of the welfare analysis. Thirdly, the policy change in the situation of European Union membership (application of Common Agricultural Policy in Turkey) is analysed. Finally, the Doha Round (if completed in 2012) impact on the markets of the selected commodities is examined.

Accession process to the European Union is important for shaping the agricultural support policies in Turkey. Turkey achieved candidacy status at the 1999 Helsinki Summit and

accession negotiations started on 3 October 2005. As a candidate country, harmonization of Turkish agricultural policy to the Common Agricultural Policy (CAP) of the European Union is expected to become top priority in Turkey. Turkey took steps for legislative alignment with the CAP. So, the European Union's Common Agricultural Policy and Turkey's compatibility to Acquis Communitaire in four products are taken into account during the analysis. The differences and similarities of the support policies between Turkey and the Union are also examined.

The World Trade Organization (WTO) membership of Turkey in 1995 added also a new dimension to the Turkish agricultural policy. As a signatory of the Uruguay Round Agreement on Agriculture, Turkey made specific commitments in the areas of market access, export competition and domestic support. The Doha Round when completed will also affect the Turkish agricultural policy. The current Doha Round negotiations and the possible impact of its completion on four sectors are discussed in the thesis.

This study has seven chapters.
The first chapter explains the purpose, hypothesis and research questions of the study. The reasons behind the selection of four products are given in this chapter. Then, examples of studies in the literature about measuring the agricultural support levels in Turkey, research studies about European Union accession impact and trade liberalisation impact in Turkey are briefly explained.

Second chapter gives theoretical information about the "agricultural support policies". In this chapter, reasons and objectives of agricultural support policies are discussed. The types of agricultural support policies are explained and their distortionary effects are summarised. Constraints of implementing support policies are given. Next, the World Trade Organisation's rounds about agriculture, and WTO's efforts in liberalising agricultural trade and in reducing support levels are explained. Also, the need for a new WTO Agreement is discussed at the end of the chapter.

In the third chapter, development of agricultural support policies in Turkey and the factors letting to policy changes are briefly explained. Common Agricultural Policy of the

European Union is also presented. The legal basis of Turkey-EU agricultural trade relations is summarised.

In the fourth chapter, information about the wheat, sugar, olive oil and milk in the world is given and then their support policies in European Union are explained. Next, Turkish support policies in these four commodities are examined and Turkey's compatibility to Common Agricultural Policy of European Union is described. Differences and similarities of agricultural support policies of the related commodities in the European Union and Turkey are summarised.

Fifth chapter looks at the method and theoretical framework of the study which will be useful for the calculations in the sixth chapter. Calculation of the producer support estimate is briefly explained. Next, information about the econometric method is given. Then, welfare effects of the agricultural support policies pursued in four commodities in Turkey are presented.

Sixth chapter focuses on the support levels and the effects of policy changes in four commodites. Calculations, results and evaluation of the results are given by using the methods explained in the fourth chapter.

Finally, in the last chapter, conclusion is presented. The agricultural support policies in the related four commodities and the findings of the research questions, which are analysed throughout the thesis are summarized and discussed.

1.1 PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

This thesis aims to analyse support policies in four products in order to examine the support level, and the supply and demand behaviour to support policy changes, and to assess the policy in which the producer and consumer welfare and also total welfare are better off. For this aim, this study has four analysis methods. First of all, the support (protection) levels in selected commodities (wheat, sugar, olive oil and milk) are examined

by Producer Support Estimate (PSE) of OECD. Secondly, the past and present support policies of the commodities are compared through welfare analysis to find out their effects on total welfare. In addition to this analysis, the third and the fourth analysis methods aim to develop an approach to comment on the welfare effect of European Union accession process and of draft modalities discussed in the Doha Round on the selected commodities in Turkey, respectivley.

Only partial equilibrium analysis is made in this thesis. Cross-price elasticities and competition for land between the selected commodities are not taken into account. Doha Round impact is analysed through export subsidy elimination and tariff reduction effects. Uruguay approach is used in the tariff reduction calculation. Other tariff reduction formulas are ignored.

Hypothesis and Research Questions

After 1990s, three factors started to shape Turkish agricultural policy. The first one was GATT Uruguay Round Agreement (1994). As a signatory of the Agreement, Turkey made specific commitments in the areas of market access, export competition and domestic support. Also completion of the Doha Round is expected to change agricultural support policy in Turkey.

In December 1999, Turkey signed a stand-by agreement with IMF (International Monetary Fund) which led to changes in agricultural support policy. Turkey committed to replace agricultural support coupled to production and input use with direct income support payments. Turkish Government has developed the Agricultural Reform Implementation Project (ARIP) to pursue the aim of this Agreement with the support of the World Bank.

Other factor which affects Turkey's agricultural policies is the accession process of Turkey to the European Union. Accession negotiations started on 3 October 2005, but the agriculture chapter is not opened yet. Nevertheless, Turkey's compatibility to Common Agricultural Policy of European Union will be off great importance in the negotiation period and studies for legislation harmonization will speed up. According to Avrupa Birliği Genel Sekreterliği (ABGS), the expected European Union accession of Turkey will be in

the year 2014. Also, the next financial framework of European Union will start in 2014. So, in this study, it is supposed that the possible EU accession of Turkey will be in 2014.

Support policies for olive oil, sugar, and wheat changed in 1998, 2002 and 2005, respectively. When comparing the past and present support policies in wheat, and olive oil, it is expected to find that policy changes have positive effects in total welfare and are better for consumer. Also it is expected to find that alternative policy (deficiency payment) is better than the quota policy for the consumer in the sugar sector. When analysing the producer support estimates, it is expected to observe that the support levels in the related commodities are high due to the high commodity prices in Turkey.

It is also expected that European Union Accession after 2014 and possible completion of WTO Doha Round in 2012 will affect Turkish consumers positively: the increase in total welfare will stem from the increase in the consumer surplus due to the low prices (after tariff reduction in Doha Round scenario and decrease in domestic prices in EU-membership scenario, respectively). EU accession and tariff reduction (after Doha Round completion) may have negative effect in production and so in producer surplus. It is expected that imports will increase in the EU membership situation and in the tariff reduction case after Doha Round. The elimination of export subsidy in olive oil is not expected to have great impact in the Turkish olive oil market.

To summarise, our hypothesis is that the factors (Doha Round and EU accession) leading to changes in Turkish agricultural support policies will have positive effects on total welfare. However Turkey will face challenges during Doha Round and EU accession process. While the EU accession and adaptation of Turkish agriculture to CAP seems to have a long time period, Turkey shall give more importance to Doha Round and take positions which will increase total welfare in the related products.

In this study, the research questions that will be searched for four commodities in Turkey are:

1. What is the support level (producer support estimate) in four commodities?

2. What are the welfare effects of the policy changes in the commodities when we compare the past and present support policies?
3. What shall be the impacts of policy changes (in four commodities) in the case of EU membership?
4. How will the WTO Doha Round affect the four commodities' markets if the revised draft modalities are accepted?

Selection of the Commodities:

In this thesis four agricultural commodities namely wheat, sugar, olive oil and milk are selected. The main reason for the selection of these commodities is to analyse the agricultural support in four agricultural product types: wheat is selected as a field crop, sugar as an industrial commodity, olive oil as an example of a vegetable oil (and also a product of a tree fruit (olive)) and milk as an animal product.

The other reasons for the selection of these commodities are briefly summarised as follows: sugar and wheat are strategically important products and are basic human needs in all countries. Sugar is one of the commodities which is protected by most of the countries. Prices of wheat, sugar and milk (skim milk powder) in Turkey are above the world reference prices and EU prices. In the case of olive oil, it is an important export commodity in Turkey.

1.2 LITERATURE REVIEW

In this study, by using two methods (producer support estimate calculation and welfare analysis[1]), the agricultural policies in the selected commodities are examined in four ways: Producer support estimate of OECD is the first way to evaluate support level in the related commodities. Second way is the evaluation of past and present agricultural support policies by using welfare analysis and assessment of policy changes. Third way is the impact of EU

[1] Econometrics is used to find supply and demand price elasticities which are used in the welfare analysis.

accession in Turkey and finally, fourth way is the Doha Round impact in Turkey by using welfare analysis.

In the literature review, the research studies about welfare analysis of agricultural support policies, producer support estimate, EU accession impact and trade liberalisation impact are chosen as reference material for this thesis. The previous research studies which are directly and indirectly linked to this thesis are reported according to the used methods below.

1.2.1 RESEARCH STUDIES ABOUT PRODUCER SUPPORT ESTIMATE

Producer Support Estimate (PSE) is calculated by OECD for some agricultural products. The PSE for wheat, sugar and milk are available in OECD Database. The olive oil is not included in the OECD PSE database. Sophie Drogué (2006) calculated PSE in olive oil between 1995-2003 for European Union in her article "The EU olive oil policy, recent evolutions and perspectives" and she found out that the PSE was 53% in 1995 and it decreased to 34% in 2003. The PSE calculation in olive oil for Turkey is made in this thesis between the years 1992-2009.

1.2.2 RESEARCH STUDIES ABOUT WELFARE ANLAYSIS OF AGRICULTURAL SUPPORT POLICIES

There are so many studies about welfare analysis of agricultural support policies implemented in Turkey. These studies and the approaches of the authors are summarised below in chronological order.

The first welfare analysis of deficiency payment system in Turkey was made by Çakmak et al. (1998) in the article "Fark Ödemesi Sisteminin Ekonomik Analizi". In the article, the effects of the transition to deficiency payment system in wheat, cotton and sunflower on producer and consumer welfare and budget deficits are examined. In the study, it is concluded that the deficiency payment is the best policy if the aim is to improve consumer welfare. However, if there is no increase in world prices, the budget cost of the deficiency

payment system may be higher than the cost of intervention buying and to reduce the costs, deficiency payment may be given to some part of the production.
Koç and Fuller (1998) analysed the sugar sector in the article "Sugar Policy Reform in the Republic of Turkey". Their analysis indicated that the quota application might reduce returns to sugar beet producers. If tariffs are removed, sugar production in Turkey can be expected to stabilise and imports might increase due to the growth in domestic consumption.

Demirci (1999) analysed sugar, tobacco and hazelnut in her article "Destekleme Alımı ve Fark Ödeme Sisteminin Refah ve Dağılım Etkilerinin İncelenmesi" and found out that deficiency payment is more preferable than intervention buying system. According to the author, the social welfare loss in deficiency payment is less and it has no burden on consumers. However, in terms of budget effect, intervention buying is preferable. Under the assumption that, deficiency payment is applied to total production, the budget cost will be high. However, if the deficiency payment is applied to limited production or limited area as in USA and European Union, then its costs will be lower.

Yavuz (2004) analysed the welfare effect of production quota in his article "An Analysis of the Impacts of Production Quotas and URA Provisions on Turkey's Sugar Sector". He found out that the production quota scenario reduced domestic production but did not change domestic consumption. This policy also reduces the support policy burden on the government. According to him, the URA (Uruguay Round Agreement) provisions do not affect Turkey's sugar sector in the short term. However, taking into consideration the declines in tariffs in the world because of the URA provisions, Turkey should reduce costs by structural enhancement in the sugar sector as well as in other sectors to compete with the world market in the long term.

Akça and Esengün (2006) analysed the welfare effect of support policies in the hazelnut sector in their article "Analysis of the Impacts of Two Different Policy Implications (Support Purchase and Deficiency Payment) on Turkey's Hazelnut Sector" According to their opinion: "support purchase can be prefered to deficiency payment if budget cost is considered. On the other hand, deficiency payment has more advantage than the support purchase in terms of net social welfare".

Şahinöz et al. (2007) analysed wheat, sugar beet, sunflower, cotton and hazelnut in their article "Türkiye'de Tarımsal Destekleme Politikası Aracı Olarak Fark Ödeme Sistemi'nin Uygulanabilirliğinin Tartışılması ve Sistemin İktisadi Analizi". The study concluded that in terms of the budget burden, deficiency payment system is more advantageous than the intervention buying system. As long as the difference between the target price and the reference price minimum, the burden of the deficiency payment system will be lower.

Teoman and Çağatay (2008) analysed wheat, sugar beet, sunflower and cotton in their article "Dünya Ticaret Örgütü Kısıtları Kapsamında Tarımda Fark Ödeme Desteği ve Türkiye için Transfer Etkinliği Uygulaması". They argued that, the deficiency payment system has comparative advantage over the intervention buying system, concerning that the consumer prices are closer to reference prices. Deficiency payment system is more effective in wheat and sugar beet when it is applied alongside with the production quota. Maintaining the current tariffs in wheat and sugar beet, the deficiency payment system may provide the producer to continue production, and will not lead to a loss of consumer welfare.

There is no published study about the welfare analysis of agricultural support policies in milk and olive oil.

1.2.3 RESEARCH STUDIES ABOUT EU ACCESSION IMPACT ON TURKISH AGRICULTURE

Çakmak and Kasnakoğlu (2001) analysed the interaction between Turkish agriculture and Common Agricultural Policy. They concluded that the EU membership affects the producers negatively. In the IN-EU case, the animal products would be imported from the European Union countries.

Çakmak (2004) examined the possible effects of EU membership on agriculture for the year 2005. Producers' surplus decreases by 16 percent, whereas the consumers' surplus increases by 12 percent if Turkey becomes a member in 2005. Membership of EU in 2005

will bring an additional 1 percent increase in total surplus. He found that no membership scenario causes 15 percent increase in the producers' surplus.

Çakmak (2007) analysed the effects of trade liberalisation with the EU on Turkish agriculture. In the Customs Union and membership scenarios overall price level declines by 10 percent. He found that the overall price level is expected to increase by about 2 percent when Turkey is out of EU. Cereals, oilseeds and livestock products are imported but industrial crops, pulses, tubers, vegetables and fruits are exported in the non membership scenarios. Total, crop and livestock consumption increases in all cases, but more significantly in customs union and membership scenarios.

Çakmak and Eruygur (2007) also analysed the impact of EU membership on Turkish agriculture. They found that welfare effects of including agro-food products in the customs union and membership are small. The consumers benefit from declining prices. They concluded that CAP (Common Agricultural Policy) supports are critical for the welfare of the producers.

In Çakmak's presentation "Food and Agriculture in Turkey: Developments in the Framework of EU Accession" in 15. East-West Agricultural Forum (2008, Berlin), the EU accession impact on almost all agricultural products was presented. He concluded that consumers will definitely benefit from EU integration due to the declining prices.

Leeuwen et al. (2011) analysed the potential impacts on agricultural commodity markets of an EU enlargement to Turkey. In the accession scenario, Turkish domestic prices are projected to converge towards their respective EU price levels over the period 2015-2020. The demand levels of most commodities are projected to increase due to lower prices, thus Turkish consumers are expected to gain from an accession to the EU. The main change occurs in the sugar. The price and production level of sugar falls by 55% and 27% in the IN-EU case, respectively. The olive oil production will decrease by only 2% and the consumption will increase by 2% in 2020.

1.2.4 RESEARCH STUDIES ABOUT DOHA ROUND IMPACT ON TURKISH AGRICULTURE

Kıymaz (2008) examined the trade liberalisation effect in Turkish milk, wheat and sugar sectors in his research study named "Dünya Tarım Piyasalarında Serbestleşmenin Türk Tarımına Fiyat ve Gelir Yönünden Yansıması". He analysed the possible effects of tariff reduction and total trade liberalisation in wheat, sugar and milk. He concluded that, liberalisation in agricultural trade let to a fall in the domestic prices and increase in social welfare to some extent. He found that demand for sugar and milk would increase but demand for wheat would decrease in the trade liberalisation scenario. He proposed that producers shall be granted compensatory payments due to the decrease in producer prices in trade liberalisation scenario. Lastly, the author proposed to take measures for lowering the production costs of all these products, and ensuring the supply of the products at reasonable prices (to compete in foreign markets) and providing the sustainability of production.

2 BASIC INFORMATION ABOUT AGRICULTURAL SUPPORT POLICIES AND THEIR IMPORTANCE IN THE WTO ROUNDS

2.1 AGRICULTURAL SUPPORT POLICIES

Agriculture is an important economic activity due to its contribution to production, consumption, trade, employment and rural development. All countries apply agricultural policy to ensure food security for their citizens' because food is a vital human need. Because of the reliance of agriculture on exogenous variables such as land and water resources, and climate conditions, it is not possible to produce every commodity in every country. The fact that some countries have more productive agricultural resources and factors than others, let countries trade between each other and also apply different support policies to protect their sector in international trade, to ensure food supply, to regulate prices of the commodities and to provide stability in incomes of farmers.

OECD uses the term "support" to describe the monetary value of transfers resulting from agricultural policies, which raise farmer's revenues or reduce their costs, whatever the intended objective or impact of those policies.[2]

Protectionist policies are referred as agricultural support policies.[3] These protectionist policies cause market distortions in the domestic market or world market or both. Generally, market distortion arises from price effect and production effect of the domestic policies:[4]

1. The price effect results when market prices are artificially raised or lowered relative to the free market.
2. The production effect results when production is artificially raised or lowered relative to the free market.

[2] OECD, 2009a, p. 1.
[3] Some protectionist measures may not be referred as support such as applying border measures to cut import expenditures. Export subsidies are protectionist measures. If export subsidies are given with the aim of disposal of excess stocks or the aim of increase in production, then these subsidies are also support policies (Okan Gaytancıoğlu, 2009, p. 18).
[4] Ronald Knutson et al., 2007, p. 104.

Agricultural protectionism is a burden on consumers who have to pay higher prices for food and/or on taxpayers who makes transfers to the agricultural sector in the domestic market.

There are three types of agricultural protection:[5]
Market access restrictions involve measures that protect domestic agriculture by restricting foreign imports. This usually involves high import tariffs or quotas, which restrict the quantity of imports for a particular product from a given country.

Export subsidies are financial benefits conferred on exporting firms by the government in order to encourage exports. As a consequence, global prices are suppressed and domestic consumers may pay a higher price than foreign consumers for the same product.

Domestic support includes price supports and direct subsidies paid by the government to farmers. The most trade-distorting payments are those tied to levels of production (called coupled direct payments), thereby encouraging overproduction and driving down world prices.

Governments intervene in agriculture through domestic and/or border measures. There are many reasons of government involvement in agriculture.

2.1.1 REASONS OF GOVERNMENT INVOLVEMENT

Reducing price instabilities

In August 2010, the Russian government imposed a ban on the grain exports until the end of the year, after a severe drought and wildfires destroyed crops. Russia is one of the world's biggest producers of wheat, barley and rye. Analysts said there is likely to be a small increase in bread prices in the short term, but they said wheat prices should soon fall back down again because the US - the world's biggest exporter - is predicting a bumper

[5]Trinity College Dublin, 25 August 2010.

harvest of its current crop.[6] From July to September 2010, wheat prices had surged by 60 to 80 percent in response to drought-fuelled crops losses in Russia and a subsequent export ban by the Russian Federation.[7]

As experienced in Russia, farming depends on exoneous variables such as weather (drought) and other natural conditions (soil, irrigation) which may affect the production volume and quality. Due to these uncontollable variables (drought, animal diseases, and natural disasters), risks and uncertainities are common in agriculture. In industry, entrenepeur may plan the output volume and so decides for the inputs. However, in agriculture, although farmer wants to obtain more products, if the weather conditions are not suitable for the production of the related commodity, the output may be low. Depending on the production volume, price and the farmer's income are uncertain. These factors cause cyclical price fluctuations. For this reason, adjustment to market equilibrium takes time.

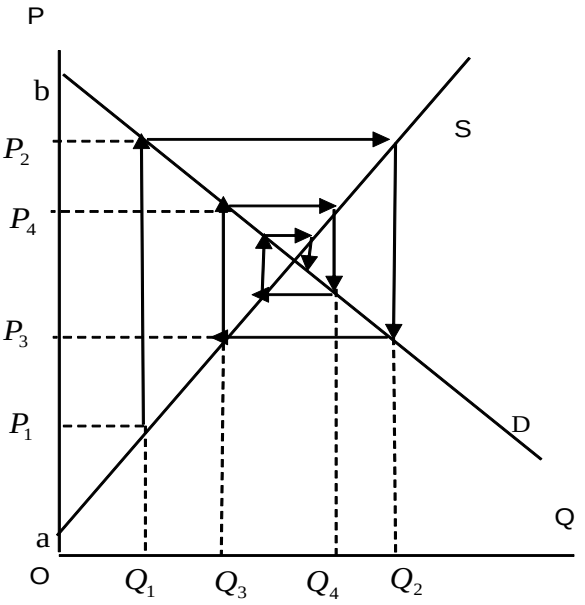
Achieving supply and demand equilibrium in agriculture is particularly different (Figure 2-1). If the price of a good is very unstable, it becomes hard to make a sensible judgement about how much of good to produce[8]. Farmers generally base their production plans for the relevant period on previous period's price (Cobweb Theorem). [9]

In Figure 2-1[10], supposed that, the price of the product is P_1, and the quantity produced is Q_1 in time period t_1. If the price increases to P_2 (due to the decrease in supply because of the weather conditions or due to the increase in demand), the farmer will take the price P_2 into consideration in the next period and decides to produce Q_2 in time period t_2. When the

[6] BBC News, 15 August 2010.
[7] FAO, January 2011.
[8] Wyn Grant, 1997, p. 29.
[9] Mordecai Ezekiel produced this Cobweb diagram in his paper "The Cobweb Theorem" in 1938. Ezekiel was attempting to explain apparently self perpetuating fluctuation in the prices of some agricultutal commodities observed by Hanau (1927), Schultz (1930), and Coase and Fowler (1935). Tinbergen (1930), Ricci (1930), Leontief (1934), Kaldor (1934), and Lange (1935) drew similar diagrams. Kaldor gave the name "Cobweb Theorem" to the phenomenon (Source: Marc Nerlove, 2010, p. 184).
[10] The figure shows "converging cobweb": *Converging Cobweb* occurs when the slope of the supply curve is steeper or more inelastic than the slope of the demand curve. Here, if the market price of the product is far away from the equlibrium, in time prices and quantities will eventually converge to a market equilibrium price. A *Diverging Cobweb* occurs when the slope of the demand curve is steeper or more inelastic than the slope of the supply curve. Here, there is inability of the system to converge towards equilibrium.

quantity is high Q_2, the price will decrease to P_3. While the price P_3 is lower, the farmer will decide to produce (or supply to the market[11]) Q_3 in the next period (t_3). The supply curve will be similar to cobweb as in the figure.

Figure 2-1: Supply and Demand in Agriculture



Source: Ezekiel's diagram (1938). In: Marc Nerlove, 2010, p. 184.

Control of agricultural production is limited

The control of agricultural production is limited. The length and the segmentation of the production cycle make the adjustment of production to high prices impossible in the short run.[12] The adjustment to prices depends on the planting and harvest period of the related product. It takes one production period for the crops but several years for the tree products to adjust to the increased prices.

[11] Production and the supply of the agricultural products may not be the same in quantity. When the price is lower than the farmer expected, the farmer may not supply all the quantity produced. If the products are perishable like fruit and vegetables, he may not harvest them and lay the products on the trees or destroy them (if the market price does not cover the harvesting costs of the farmer). But if the products are not perishable, he may store them and wait for the price increase.

[12] Gülten Kazgan, 2003, p. 5-6.

Low Farmer Income in Agriculture

The income is generally low in agriculture when compared with the incomes in other sectors. One reason is the income elasticity of demand[13] (the responsiveness of demand to the income) is less than unity. The percentage of income spent on food declines as income increases, ceteris paribus (Engel's law)[14]. So, one of the reasons of the agricultural policies is to protect farmer and to ensure their livelihood.

Political Reasons

Farmers and peasants are important for the political parties in election times. If farm lobbies are influential pressure groups, they may affect implementation of the agricultural policies and may not elect the political party which is against their interests.[15] Political parties try to influence the decisions of farmers and thus guarantee the votes for the next elections time by implementing policies which are the interests of farmers.

2.1.2 OBJECTIVES OF AGRICULTURAL SUPPORT POLICIES

The application of the agricultural support policy depends on the objective of the government. First of all, it is important to find out what the agricultural (farm) problem is; is the problem low farm incomes, low/high supply or high commodity prices…While each policy has different outcomes and effects, determination of the farm problem is important to set the policy to reach the objective.

[13] Income elasticity of demand is defined as the proportiante change in the quantity demanded resulting from a proportinate change in income (Anna Koutsoyiannis, 1979, p. 49).
[14] Anna Koutsoyiannis, 1979, p. 49.
[15] In 1965, the CAP was to have been funded by levies on agricultural imports into the EC, supplemented by duties on industrial imports. Together, they would make up the Community's 'own resources'. French president de Gaulle proposed the continuation of CAP funding by national contributions. General de Gaulle opposed the changeover, which would make the Community supranational approach over the intergovernmental approach and for seven months, French representatives refused to attend any meetings of the Council of Ministers. Farmers' organizations feared the consequences of Community crisis, and the Presidential elections gave the farmers the opportunity to express their point of view; in the first round of the French Presidential elections of December 1965, de Gaulle's majority was reduced (Desmond Dinan, 2005, p. 50).

1. Stabilisation of farmers' incomes

With the help of the agricultural support policies, it is possible to ensure income and livelihood for the farmers and to increase their standard of living.

2. Employment and regional development

In rural areas, agriculture is an important activity. Most of the workers in rural areas are employed in agriculture. It is possible to decrease unemployment in regions where labor intensive products are raised.[16] It is also possible to reduce migration from rural areas to cities through agricultural policies in rural areas.

3. Fair prices for consumers

Most of the agricultural products are basic human needs. While they are consumed as food, one of the main objectives of agricultural policies is to regulate reasonable prices for consumers.

4. Environmental protection

Agricultural support policies in developed countries providing high subsidies to the output volume led farmers to use herbicides, pesticides, artificial fertilisers in order to increase output. These applications caused environmental problems. In the last years there has been a trend towards awareness of environment protection (regarding prevention of water and soil pollution) and sustainable agriculture[17].

5. Safe, secure, stable and sufficient food supplies

Ensuring *food safety* and animal health is important. Food and waterborne diarrhoeal diseases are leading causes of illness and death in less developed countries, killing approximately 2,2 million people annually, 1,9 million of whom are children.[18]

[16] Okan Gaytancıoğlu, 2009, p. 28.
[17] The concept of sustainable agriculture refers to satisfying the needs of today's society without jeopardising the needs of future generations. One of the objectives is to protect environment for the future generations (Zeynel Dinler, 2008, p. 63).
[18] http://www.who.int/foodsafety/en/

Health and safety regulations affecting international trade are subject to Sanitary and Phytosanitary (SPS) Agreement of WTO[19]. The agreement covers: [20]

> Measures adopted by countries to protect human or animal life from food-borne risks; human health from animal- or plant-carried diseases; animals and plants from pests and diseases; and the territory of a country from the entry, establishment, or spread of pests. In sum, SPS measures are meant to ensure food safety and to prevent the spread of diseases among animals and plants. These measures are typically applied to both domestically produced and imported goods, may address the characteristics of final products.

Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.[21]

Stable and sufficient food supplies: Agricultural products are strategically important products that countries aim to be self-sufficient in most of them, so they implement agricultural policies to increase production.[22] After the Second World War, one of the objectives of the European countries was to maintain self-sufficiency in agricultural products.

2.1.3 TYPES OF AGRICULTURAL SUPPORT POLICIES IN TURKEY

Countries intervene in the agricultural sector through domestic policies or border measures or both. In Turkey, the most used domestic support policies and trade measures are explained below.

[19] It is important to distinguish measures that fall under the SPS Agreement from those falling under the Uruguay Round Agreement on Technical Barriers to Trade (TBT). If a measure is adopted to ensure the protection of human, animal, and plant life, and the health and protection of the territory of a country from damage caused by the entry, establishment, or spread of pests, it is a SPS measure. Measures adopted for purposes other than these are subject to the TBT Agreement (Merlina D. Ingco and John Nash, 2004, p. 217).
[20] Merlinda D. Ingco and John Nash, 2004, p. 217.
[21] http://www.fao.org
[22] Gülten Kazgan, 2003, p. 336.

Domestic Support Policies

Domestic support policies are applied to the domestically produced commodities. The objectives of these policies may be to support the price of the product (to prevent the decrease in the income of the farmer), or to increase the production, or both.

The main policy instrument was intervention buying. Intervention buying was started firstly in 1938 with wheat and implemented since 2002. From 2005 onwards, wheat has been supported by deficiency payment system. In the olive oil sector, market price support started in 1966. In 1994 market price support was phased out (after April 1994 decisions) and in 1998 olive oil was added to the deficiency payment policy. Sugar beet was added to market price support system in 1956. Before 2002, there was area restriction. In 2002, sales quota was started to be applied in sugar. Milk is supported by premium payments (milk incentive premium) since 1987. The table below shows the summary of the support policies implemented in the selected commodities.

Commodity	Past policy	Current policy
Wheat	Intervention buying (1938-2002)	Deficiency payment (2005-)
Sugar	Area restriction	Quota (2002-)
Olive oil	Intervention buying (1966-1994)	Deficiency payment (1998-)
Milk	Premium payment (1987-)	Premium payment (1987-)

Intervention Buying (Market Price Support)

Intervention buying was the most widely used instrument since 1930s in Turkey. Intervention buying started in 1932 with wheat and the number of the supported products increased in time. [23] In 1966 olive oil were started to be supported by intervention buying.

Purchase price (guaranteed price) is also the consumer price. This system prevents the market price from falling below the guaranteed price and also supports farm incomes.

[23] The quantity of intervention buying may change from product to product. If the government is the single buyer of the product, then government guarantees to buy 100 % of all the production (Source: Zeynel Dinler, 2008, p. 294).

Purchase prices were announced after planting, and payments were made one year or more after harvest and delivery; once announced, support prices could not be adjusted for changes in market conditions during the growing season or post harvest. [24]Agricultural Sales Cooperatives and related State Economic Enterprises were commissioned to buy the commodities at guaranteed prices announced by the government. This support was financed by the Agricultural Bank (Ziraat Bankası).

The number of products supported increased to 22 in 1970s, started to decline in 1980s and after 1994, only four products were purchased for support: cereals, tobacco, tea and sugar beet.[25] With the new agricultural program in 2001, intervention buying was phased out and replaced by direct income support.

Deficiency Payment (Production Subsidy)

Deficiency payment is regarded as a subsidy paid by the government to the farmers per unit of output to compensate for the deficiency between the market price and the target price. Government sets a target price in the deficiency payment system. The level of the target price is set to a level compatible with the government's objective of price or income stabilization.[26] In this system, the government does not guarantee to purchase the output, only gives a premium payment to the farmers. Farmer's income is raised through deficiency payments. Consumer buys the product from the market price which is below the target price, so the consumer is not affected by the policy.

In Turkey, deficiency payment is given as a production subsidy. Deficiency payment is also called as premium payment in Turkey. It was first used for cotton in 1993 in Turkey. In 1998 olive oil was included in the deficiency payment program, and in 2005 wheat was introduced into the program. Deficiency payments are linked to the production. Payments are given per kilogram depending upon presentation of sales documents and are made to farmers who are registered on National Farm Registration System (NFRS).

[24] Kym Anderson and Johann Swinnen, 2008, p. 101.
[25] Haluk Kasnakoğlu and Erol H. Çakmak, 2000, p. 92.
[26] Bernadette Andreosso-O'Callaghan, 2003, p. 68.

In intervention buying system, price support provides transfer from consumers to producers. However, in deficiency payment system transfer to producers comes from the treasure.[27]

Production and Sales Quotas

Production quotas limit the production level of a commodity. Sales quotas limit the sales of the commodity on the market. In Turkey, sales quota is applied in the sugar sector to control the quantity of supply since 2002. In European Union, production quotas are applied in the sugar sector.

Input Subsidies

These are the subsidies to the farmers with the aim of reducing production costs. Major input subsidies are fertiliser, credit and irrigation subsidies. Fertiliser subsidies were paid to the farmers or fertilizer manufacturers.[28] In Turkey, input subsidies are removed in 2002 but chemical fertiliser and diesel supports are given under the 'Area-based Payments' support scheme.

External Trade Measures

Trade measures in Turkey include prevention or reduction of import products to increase consumption of domestically produced goods, and export subsidies to encourage exports.

Tariffs

A tariff is a tax on the imported commodity. Tariffs can be ad valorem, specific or compound. Ad valorem tariff is calculated as a percentage of the value of the traded commodity (for example, 80% of the CIF[29] value of the auto[30]). Specific tariff is expressed as a monetary amount on physical unit of the traded commodity (such as per

[27] Erol Çakmak et al. 1998, p. 13.
[28] Erol Çakmak and Hasan Dudu, 2010, p. 8.
[29] CIF: Cost, Insurance, Freight.
[30] Halil Seyidoğlu, 2001, p. 132.

tonne or per auto). Compound tariff is the combination of both ad valorem and specific tariff. Turkey imposes advalorem tariff on agricultural commodity imports.

The effect of the tariff application is the decrease in imports and increase in domestic production. In this case, the consumer is worse off because he/she consumes less at higher prices. On the other hand, tariffs are extra revenues for the government budget.

Export Subsidies

Export subsidies are direct payments or the granting of tax relief and subsidised loans to the nation's exporters or potential exporters, and / or low-interest loans to foreign buyers so as to stimulate the nation's export. [31]

2.1.4 MARKET DISTORTION OF DOMESTIC POLICIES

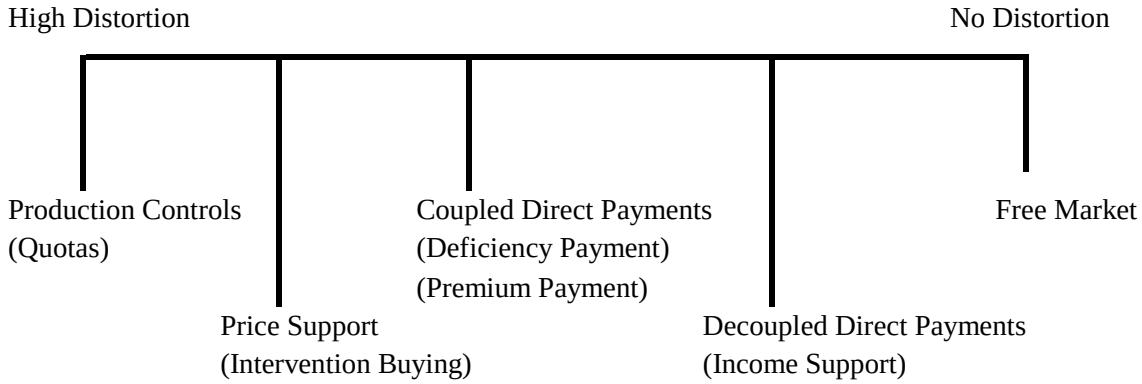
In World Trade Organisation (WTO) negotiations, reducing the market distorting domestic policies has been always discussed. WTO seperates the agricultural support policies according to the degree of distortion and classifies them in three boxes. The amber box includes the policies with high distortion, blue box policies are lower distortionary policies and the green box policies are minimally trade distorting. In figure 2-2, domestic policies are classified according to the degree of market distortion.

Free market is the situation that there is no price or production controls and no support policies are implemented (figure 2-2). Decoupled direct payments have lower degree of market distortion because they are not tied to production. They are green box programs. Coupled payments may affect the level of production. To get more deficiency (or premium) payment, farmer may increase the level of production, so the degree of market distortion in coupled payments is higher than the distortion in decoupled payments. Coupled payments are blue box policies. The price support has a high degree of distortion, because this policy affects both price and production. It is in the amber box. The high price

[31] Dominick Salvatore, 1998, p. 265.

set by government and the guarantee of the purchase of the products have both price and production effect. The most market distorting policy is the production control. Production quota affects the production level directly and thus affects the price. Although it is the most market distorting, it is protected by the WTO in the blue box.[32]

Figure 2-2: Domestic Agricultural Policies – ranked by Degree of Market Distortion



Source: The ranking of domestic agricultural support policies in Turkey are made by using the ranking of domestic agricultural suppot policies in USA in "Ronald Knutson, 2007, p. 105".

2.1.5 CONSTRAINTS OF IMPLEMENTING AGRICULTURAL SUPPORT POLICIES

Unlimited implementation of agricultural support policies is impossible and also a government can not always implement an agricultural policy what it wants. Budget cost of the support policies is an important constraint of government intervention in agriculture. To control spending and reducing the budget burden of agriculture, the support payments may be reduced, the number of supported products may be decreased or some policies may be abolished. For example, in April 1994, the Turkish government limited the number of agricultural commodities which are supported by intervention buying due to the fiscal reasons.

Another important constraint (for the member countries) is the World Trade Organisation (WTO). The WTO is the international organization dealing with the rules of trade between

[32] Ronald Knutson, 2007, p. 104.

nations. The member countries committed themselves to obey the trade rules. WTO handle trade disputes between member nations. After the EU lost the WTO panel which was the case brought by Australia, Brazil and Thailand against aspects of the EU sugar regime, the EU had to alter the regime.[33]

The objective of WTO negotiations in agriculture is further trade liberalisation and reduction of trade distorting policies. The member countries made commitments in reducing trade distorting domestic support, export subsidies and market access measures in the Uruguay Round and these commitments let to change in agricultural support policies in many member countries. For example, the MacSharry reform of 1992 in Common Agricultural Policy was prompted by the need to reach agreement in the Uruguay Round.[34] When the Doha Round negotiations complete, the new modalities agreed in agriculture will affect the support policies and trade regimes of the member countries.

Implementation of a policy also requires the assent and active participation of many decisison makers. The government has the responsibility of implementing a policy, but it needs to act in coordination with the farm lobbies.[35] One pressure group for a government in making a decision for agricultural support policies is the farm lobbies. Farm lobbies are important pressure groups when they are well organised. As their numbers decline, farmers become better organized and have greater incentive to demand support. On the other side, consumer and taxpayer groups are very large and not well organised, and thus have little incentive to take the time to do battle with the farm lobby.[36]

The other constraint for Turkey will be the EU accession process. On 3 October 2005, EU started accession negotiations with Turkey. The agriculture chapter is not opened yet. Turkey started to make studies for harmonization with the Common Agricultural Policy of EU.

[33] The ruling found that 'C sugar' exports benefit from export subsidies by being cross-subsidised with revenues from production under A and B quotas. Secondly, the WTO ruled that the EU exceeds its export subsidy commitments due to its subsidised export of quantities of sugar equivalent to imports from the Africa Caribbean and Pacific (ACP) countries and India. Measures had to be taken to comply with the ruling (Source: European Commission, September 2006, p. 2).
[34] Carsten Daugbjerg and Alan Swinbank, 2007, p. 9.
[35] Roger D. Norton, 2004, p. 30.
[36] E. Wesley Peterson, 2009, p. 148.

2.2 REDUCING AGRICULTURAL SUPPORT: GATT/WTO

GATT (General Agreement on Tariffs and Trade) aims to liberalise international trade through rounds. During the two world wars, agricultural products were in short supply. Agriculture was exempted from the GATT rules, (because this agreement was proposing liberalisation of trade) so the countries could pursue protectionist agricultural policies in order to increase agricultural production after the Second World War.[37]

In the first rounds of GATT, there was no achievement in agricultural trade liberalisation. **The Dillon Round (1960-61)** took place in the first years of European Community (EC). In fact, the USA did not accept that the CAP (Common Agricultural Policy) was compatible with the GATT agreement, but did not veto the CAP; it was difficult for the USA to argue against the CAP, because the USA itself had been the cause of exclusion of agriculture from the GATT when it had been set up.[38]

In the **Kennedy Round (1964-67),** USA proposed that the existing European Community (EC) protection of agricultural products should be halved with the aim of securing its agricultural exports to Europe, but EC defended the CAP and nothing came of the Round in relation to agriculture. [39] The Kennedy Round took place in the period when the CAP was newly established so EC did not want to make any commitments for its new common policy.[40]

Tokyo Round took place in 1973-1979. Again, USA and other exporting countries wanted an improved market access to the European Community, and EC continued to defend the CAP. [41]

As the European Communtiy became self-sufficient in agricultural products due to the CAP and the biggest agricultural exporter in the world, the share of USA in world

[37] Gülten Kazgan, 2003, p. 338.
[38] Soren Kjeldsen-Kragh, 2007, p. 231.
[39] Soren Kjeldsen-Kragh, 2007, p. 232.
[40] Cemil Ertuğrul, 2004, p. 11.
[41] Soren Kjeldsen-Kragh, 2007, p. 232.

agricultural export declined. This is the reason why USA proposed the inclusion of agricultural trade in GATT.[42]

2.2.1 GATT URUGUAY ROUND (1986-1994)

GATT Uruguay Round (1986-1994) took first steps for the agricultural trade liberalisation. The round started at the time, when protectionism in agriculture was high. The main incentives for dealing with agriculture in GATT were: the oil price increases in the 1970s leading to fiscal deficits, and thus the necessity of reduction of agriculture's share in government financing and the United States' pressure on the European Community for the reduction of export subsidies. The United States also emphasized the need to expand agricultural trade and to end the special status of agriculture in GATT.[43]

At the end of the round, Uruguay Round Agreement on Agriculture (URAA) was signed which established a new regime for agricultural trade. [44] Only developed and developing countries had reduction commitments in each of the category of the Agriculture Agreement. The least developed countries were not required to reduce tariffs or subsidies. The Uruguay Round Agreement on Agriculture (1.1.1995) established a new regime for agricultural trade under 3 aspects: domestic support, market access and export subsidies. The agreement set up a framework of rules and started reductions in protection and trade-distorting support.

The categories of the regime are:

Market Access

Market access provisions required the converting of non-tariff measures such as quotas, variable import levies, voluntary export restraints into tariffs through tariffication because tariffs are more transparent than other forms of protection and required the reductions in tariffs.[45] Developed countries were to lower their duties for all agricultural products by 36% in 6 stages over a six-year period in relation to their level in the 1986 reference year

[42] Cemil Ertuğrul, 2004, p. 10.
[43] Bernard M. Hoekman and Michael M. Kostecki, 2009, p. 277-278.
[44] Following the Uruguay Round, GATT transformed into the World Trade Organisation (WTO).
[45] C. Thomas Beierle, 2002, p. 18.

when the Uruguay Round began. The developing countries were to cut their duties for all agricultural products by 24% over a ten-year period. The minimum cut per product is 15% for developed countries and 10% for developing countries.

Export Subsidies

25 Member countries can subsidize export only for products on which they have commitments to reduce the subsidies. Developed countries were to cut outlays for exports subsidies by 36% and quantities of subsidised exports by 21% over a six-year period. Developing countries were to cut export subsidy outlays by 24% and quantities of subsidised exports by 14% over ten years. The least developed countries are not required to reduce export subsidies or quantities of subsidised goods. Export subsidy reduction commitments are based on use during the years 1986 to 1990.

Domestic Support

Governments provide internal support to their producers in many ways. Under the WTO, domestic policies that distorted trade were divided into three boxes: Amber box (red box), Blue Box, Green box.[46] *Green box* programmes are regarded as minimally trade distorting and are not disciplined under the URAA. Green box policies include direct payments (which don't affect production decisions) and general agricultural services (policies such as environmental programs, research, education and advisory services) food aid, and income safety net programs. *Blue box* policies, like green box policies, are exempt from disciplines.[47] It covers payments made under production-limiting programs, provided that such payments are based on fixed areas, crop yields, or livestock numbers, or, if the payments are available, on 85% of the base level of production. *Amber box (red box)* programmes are regarded as the most trade distorting and are the only form of domestic support subject to the reduction commitments. They are payments to farmers which are directly linked to prices or quantities, such as market price supports, input subsidies and

[46] There is an important link between domestic agricultural policies and trade policies (David Blandford, 2001, p. 40):
- Market price support will cause exports to rise as domestic supply increases and demand declines. An export subsidy will be needed, equal to the difference between the domestic price and the world price. A tariff of at least the same magnitude will be needed to keep out lower-cost imports. If the country is a large country world prices will decline.
- A production or input subsidy will cause exports to rise. If the country is a large country world prices will decline and domestic consumption will increase in response to the lower price.

[47] Only the European Union, Iceland, Norway, Japan used these subsidies (John B. Penson et al., 2006, p. 130).

direct per-unit payments. The reduction commitments, using the 1986-88 base period, were 20% in 5 years for developed countries and 13,3% in 10 years for developing countries. 34 WTO members had commitments to reduce their trade-distorting domestic supports in the Amber Box (to reduce the "total aggregate measurement of support" or AMS). Members without these commitments have to keep within 5% of the value of production ("de minimis" level) — 10% in the case of developing countries. Turkey had no reduction commitment in domestic support but has to keep within the value of production ("de minimis" level) — 10%.

From 1995 onwards, agricultural policies and trade have been subject to GATT Uruguay Round Agreement on Agriculture.

2.2.2 THE NEGOTIATIONS FROM 2000 TO PRESENT (DOHA ROUND)

Uruguay Round Agreement on Agriculture was the first phase of the reform towards agricultural liberalisation. Despite the achievements of the Uruguay Round, trade in agricultural goods remained highly distorted. The market access rules of the WTO Agreement on Agriculture (URAA) in 1995 did not improve market access conditions for developing countries. The reason for that was the conversion of non-tariff barriers into tariffs and tariff quotas established high maximum tariff levels ("dirty tariffication"). For example, the EU set bindings about 60 percent above the actual tariff equivalents of the CAP in the late 1980s, whereas the US set bindings about 45 percent higher.[48] Many developing countries chose to bind their tariffs on agricultural imports at more than 50%.[49] Besides this dirty tariffication, the differential between applied and bound rates also allowed countries to adjust their rates according to market conditions while staying within commitments.[50] Special safeguard clause created also significant protection in addition to tariffs which was one of the main discussion subjects in the Doha Round. Despite the reductions in market access, export subsidy and domestic support commitments, the support levels remained high even at the end of the implication period of the

[48] Merlinda Ingco, 1996, p. 425-447.
[49] Bernard M. Hoekman and Michael M. Kostecki, 2009, p. 281.
[50] C. Thomas Beierle, 2002, p. 1095.

commitments:[51] The PSE (Producer support Estimate) average of the OECD countries was 31% in 1995 and again 31% in 2002 (1986-88 average was 37%). A slight change was observed in European Union, where the PSE decreased from 35% in 1995 to 34% in 2002. The PSE level in the United States increased from 10% to 18% after 6 year implementation period.

Article 20 of the URAA committed members to start negotiations on continuing the reform at the end of 1999 (or beginning of 2000). Those negotiations began in 2000 using Article 20 as their basis, and are mandated under the Doha Declaration signed in November 2001.

There were two motivations behind the continuation of the negotiations:[52]
Firstly, developing countries were not enough satisfied with the results of the Uruguay Round. These countries argued that the gains resulting from trade liberalization (abolition of trade barriers) were usually on behalf of the industrialized countries, so they insisted on a fair-trade system in the negotiations. Secondly, developed countries, particularly European Union and the United States of America preferred the continuation of the negotiations, because they were aware of the export revenues they will gain in consequence of taking more responsibility in the trade system and making more liberalisation in their traditionally protected sectors.
So, objectives of the negotiations are further substantial reductions in tariffs, domestic support and export subsidies.

The first phase of the negotiations began in 2000 and ended on 26-27 March 2001. In this phase 126 member governments (89% of the 142 members) submitted proposals containing their starting positions for the negotiations. In the second phase (2001-02), the discussions were made by topic and included technical details to allow members to develop specific proposals. Next, member countries would agree on the modalities for the further commitments, including provisions for special and differential treatment. [53] Then, participants would submit their comprehensive draft Schedules based on these modalities in the Fifth Session of the Ministerial Conference in Cancun.

[51] OECD, 2011d, 2010a.
[52] Sait Akman, 2008, p. 20-21.
[53] Modalities: The way or method of doing something, for example, how to cut tariffs, and reduce agricultural subsidies and support, along with flexibilities to deal with various sensitivities.

The member countries formed coalitions (groups) according to their negotiating positions in the Doha Round[54]. Cairns group was the significant actor during the Uruguay Round advocating free trade. United States and European Union were also important actors in the reform process. However, in the Doha Round, the developing countries were more active than in the Uruguay Round. An important negotiation group emerged – the G-20 (including both developing and developed countries) demanding for reforms of agriculture in developed countries with some flexibility for developing countries. G-33 (developing countries) sought for expansion of Special and Differential Treatment[55] provisions and lobbying for flexibility for developing countries to undertake limited market opening in agriculture. G-10 was the coalition of countries lobbying for agriculture to be treated as diverse and special because of non-trade concerns. G-10 also comprised of countries using protectionist policies in agriculture. Because of their impressive economic growth in the years leading up to the Doha Round, India and China were able to play much more influential roles in the negotiations.[56] Also Turkey (member of G-33) was more active in the Doha Round than in the Uruguay Round.

The negotiations were more complex due to the different interests and positions of the member countries in the first and second phase.

The Different Positions of the Member Countries and Groups:

The member countries and groups presented their proposals in the areas of domestic support, market access and export subsidies.[57]

Domestic Support

The proposals about the domestic support contain the amber box, blue box and the green box.

[54] For the groups, see annex, p. 329.
[55] The criterias for special and differential treatment are rural development, food security and livelihood security. It is to be given to developing countries in "all elements of the negotiation".
[56] E. Wesley Peterson, 2009, p. 85.
[57] WTO, 01.12.2004 (Proposals).

Amber Box

The discussion regarding the amber box was about the elimination or reduction of related measures; Korea proposed that the framework of AMS should be kept, whereas some groups (12 developing countries, Cairns, Africa and Asean Group) proposed reductions in trade and production distorting domestic support, including AMS and blue box, leading to the elimination of such support. USA and EU proposed that AMS is to be reduced (and reduction shall start from the final bound commitment levels). Norway proposed that AMS should be divided into two categories: the first category would consist of domestic support to agricultural production destined for the domestic market. Such support should be subject to less reduction commitments. The second category would consist of AMS support to export-oriented production. This support should be subject to further reductions. India proposed that the total domestic support should be brought down below the *de minimis* level within a maximum period of three-years by developed countries and in five years by the developing countries. Turkey's proposal was that domestic support over "*de minimis*" level should be reduced substantially or be eliminated, while "*de minimis*" level for developing countries should be increased to a mutually agreed level.

Blue box

The proposals regarding the blue box were about its maintainance, reduction or elimination of the related measures. European Union, Norway, Japan and Korea proposed that the Blue Box should be maintained. Cairns and Asean group proposed that the Blue Box must be subjected to similarly substantial reduction commitments with the amber box leading to their elimination.

Green Box

Proposals about the green box include the maintainance of the box (as the European Union, Norway, Japan and Korea proposed) or review of the measures (Asean, African Group and Cairns). Some countries (advocating the review of the box) said that some of the domestic subsidies in the green box may influence production or price. Turkey supports the continuation of green box measures. In order to minimize any possible trade distorting effects of green box measures, Turkey proposed the introduction of clear definitions in the green box programmes.

Export Subsidies

Some countries proposed total elimination (developing countries group, India, Cairns, African Group) and some countries (European Union, Japan) proposed reductions in export subsidies. Norway and Asean group proposed that disciplines on export competition are needed. The US objective on agricultural export competition is to reduce to zero the levels of scheduled budgetary outlays and quantity commitments through progressive implementation of annual reduction commitments over a fixed period. Turkey proposed for the elimination or substantial reductions in the export subsidies of developed countries. Many countries proposed the other forms of export subsidies (food aid, export credit and insurance, trading by state enterprise) should be disciplined.

Food aid was another important discussion subject. The discussion was about how best to ensure that the aid goes to those really in need, does not harm domestic production in countries receiving aid and does not amount to the disposal of surpluses in subsidizing countries. The proposed criteria for determining the food aid is if there is a need for food aid (such as appeals from recognized international organizations) and if aid is given in grant form. Other aid would have to be included in export subsidy reduction commitments or be banned. Turkey also proposed that food aid shall be given in grant form in order to prevent food aid programmes being used as disguised protection for export subsidies.

Market Access

India complained that the opening of the markets, in the post Uruguay Round phase, has taken place mainly in the developing countries. The discussions focused on the issues: the high levels of tariffs, the reduction formulas in tariffs, converting the specific tariffs into ad valorem tariffs and the tariff rate quotas (maintain, expand or eliminate of the TRQs). Two formulas have emerged for tariff reductions in general: Swiss formula which would produce much steeper cuts on higher tariffs (advocater: Cairns); Uruguay Round approach, which is “linear”, i.e. the same percentage reductions no matter what the starting tariff rate is.

Turkey's proposal was "minimum reductions per each tariff line on the basis of average bound rates". Turkey proposed that the Uruguay Round approach should be adopted in the negotiations.

Another discussion point was about the type of the tariff. A number of countries criticize specific tariffs (while they increase protection when the prices fall). They (esp. India) proposed to convert the specific tariffs into ad valorem. Others say specific tariffs have advantages (for example, traders know what they are going to pay without having to refer to prices).

The member countries also have different views in tariff quota administration. Cairns and the USA's proposals were to increase the tariff rate quotas. Korea also proposed flexibility in TRQ administration. Some developing countries called for converting the TRQs into tariffs. India proposed Tariff Rate Quotas (TRQs) should be eventually abolished. Turkey does not apply tariff quotas but pointed out that more transparency and discipline in tariff quota administration should be introduced.

Turkey's proposal was that tariff peaks and escalations applied by developed countries should also be eliminated, and a discipline should be introduced to tariff-quota administration. Turkey proposed that all tariff commitments should be converted into ad valorem duties.

Special Safeguard Mechanism

Special safeguards are restrictions on imports adopted when the import volume exceeds a trigger level or the price falls below a trigger price for the product concerned (URAA, Part III, Article 5).[58]

[58] The special safeguard provisions for agriculture differ from normal safeguards. In agriculture, unlike with normal safeguards:

- higher safeguards duties can be triggered automatically when import volumes rise above a certain level, or if prices fall below a certain level; and

it is not necessary to demonstrate that serious injury is being caused to the domestic industry.
Source: WTO, Market access: special agricultural safeguards (SSGs). Available at: http://www.wto.org/english/tratop_e/agric_e/negs_bkgrnd11_ssg_e.htm.

In the Doha Round, there were different proposals like changing the Safeguard clause, keeping it and reviewing it. Japan and Republic of Korea proposed a new form of special safeguard that would apply to perishable and seasonal products. The US-EU draft proposed a special safeguard mechanism for developing countries for use with products that are sensitive to imports. India proposed that developed country members should not be allowed to use SPS measures for protectionist purposes. Many developing countries proposed to create a new Special Safeguard Mechanism (SSM) that would permit developing countries to raise tariffs temporarily to deal with agricultural import surges but the US and some other agricultural exporters argued that the SSM should not result in tariff-increases above pre-Doha Round levels, so the disagreement in SSM was the proximate cause for the breakdown of the Doha talks in July 2008.[59]

Turkey's proposal was Special Safeguard Mechanism should be eliminated. Otherwise, a Special Safeguard Mechanism similar to that which already exists should also be formulated for the countries which did not take this advantage in the Uruguay Round.

Special products (SP): countries will be given additional flexibility for products that are especially important for their food security, livelihood security and rural development. The proposal from G-33 called for the right to self-designate at least 20 percent of tariff lines in the Member's Schedule as "Special Products". European Union proposed the classification of a limited number of products as SP like only sensitive products. G-10 suggested that every country shall designate its own special products according to their needs.

For **sensitive products,** the market access improvement, lower tariff reduction and expansion of tariff rate quotas were proposed.

In the negotiation positions of EU and Turkey, there are diverging and also converging points:[60] Both apply high tariffs and defensive in the market access provisions. But Turkey insists on developing country status to be placed in a different band, so closer to G-33 in Special Products and Special Safeguard Mechanism. Turkey like other developing countries is demanding further trade liberalisation from developed countries, but also needs

[59] Bernard M. Hoekman and Michael M. Kostecki, 2009, p. 281.
[60] Sait Akman, 10-11 July 2008, p. 14.

to protect its agricultural sector. EU proposes further cuts in trade-distorting domestic support but on the other hand defends the blue box through which EU can support its agriculture while staying within URAA commitments. They both proposed a reduction in de minimis for developed countries. Besides, Turkey expects an increase in "de minimis" for developing countries.

July 2004 Package:

The negotiations were more complex due to the different interests and positions of the member countries. The deadline for the formulas and other "modalities" for countries' commitments was 31 March 2003. Negotiations chairperson, Stuart Harbinson prepared the "First Draft of Modalities for the Further Commitments" and circulated to the members on 18 March 2003, later called unofficially the "Harbinson text". The members insisted on their positions in the three pillars of agriculture instead of finding some common ground, so the member countries could not agree on the modalities on 31 March 2003. The text was not accepted. After the missed deadline, the members turned their attention to an outline or "framework" of the modalities, which was eventually agreed on 1 August 2004.

In the **Fifth Ministerial Conference in Cancún**, Mexico, in September 2003, members would agree on how to complete the rest of the negotiations. The text referred to as the "Derbez text", was distributed at the Cancún Ministerial Conference on 13 September 2003. Derbez text renewed the aim to conclude the negotiations launched at Doha successfully by the agreed date of 1 January 2005. European Union and United States negotiated a "joint text" which was the framework of the discussed issues not including the modalities. They offered a blended formula[61] in the market access. They also left open the question of special treatment for developing countries, saying that in any case it would be more appropriate for the developing countries to make their own proposals. Japan, a European-East Asian grouping including Switzerland and Republic of Korea; Norway; and Kenya were also unhappy with the EU-US draft. A framework proposal also came from a new coalition of about 20 developing countries - the G-20. The porposal suggested blended

[61] In the blended formula, tariffs were divided into three groups: one group would be made duty-free. In the second group, tariffs would be reduced by a simple average with a minimum reduction per product (Uruguay Round approach). The third group would be reduced by Swiss formula (reducing higher tariffs by gerater amounts).

formula for tariff reduction, maintainance of de minimis level, reduction in trade distorting support and in green box. The Cancún ministerial collapsed. Some countries showed no flexibility in their positions and only repeated their demands rather than talk about trade-offs. The difference between developing and developed countries across all topics was a major obstacle.

After the Cancún deadlock was broken, the WTO's member governments approved a package (July package) on 1 August 2004 that includes an outline (or "framework" to be used to complete the "modalities" on agriculture. July package includes shortly:[62]

All trade-distorting domestic support will be reduced according to a tiered formula. Members having higher Total AMS will make greater reductions. Blue Box support will not exceed 5% of a member's average total value of agricultural production during a historical period. The historical period will be established in the negotiations. Green Box will be reviewed and clarified with a view to ensuring that Green Box measures have no, or at most minimal, trade-distorting effects or effects on production. Export subsidies, export credits, export credit guarantees or insurance programmes with repayment periods beyond 180 days will be eliminated. Tariff reductions will be made from bound rates.

The **Hong Kong Conference in 2005** reconfirmed the domestic support measures in July 2004 package. There would be three bands for reductions in Final Bound Total AMS and in the overall cut in trade-distorting domestic support, with higher linear cuts in higher bands. The Conference members agreed on the elimination all forms of export subsidies by the end of 2013. On market acceess, four bands for structuring tariff cuts would be applicable. Other development of the Conference was the end of subsidies for cotton in 2006.

The Conference aimed to narrow the members' differences, but it was not possible because no progress was achieved until then. No agreement on modalities could be reached. So on 27 July 2006, the Director-General of WTO Pascal Lamy called for the negotations to be suspended.

[62] WTO, 1 August 2004.

In 2007, no conference was held. In 2008 July a mini-Ministerial Conference was made. Although progress in agriculture modalities and NAMA (Non-Agriculture Market Access) was achieved, the negotiations were not completed.[63] On 6 December 2008, revised draft modalities for agriculture was published by Ambassador Crawford Falconer, chairperson of the agriculture negotiations, which proposes the changes in market access, domestic support and export subsidies. Revised draft modalities for agriculture are as follows:

1. Market Access:

All final bound tariffs shall be reduced using the tiered Formula (Table 2-1). Developed countries shall reduce their final bound tariffs about 54% minimum averages in six equal annual instalments over five years. Developing countries shall reduce their final bound tariffs in eleven equal annual instalments over ten years.

Table 2-1: Draft Modalities in Tariff Reductions

Developed Countries		Developing Countries	
Bound Tariff (%)	Tariff Reduction	Bound Tariff (%)	Tariff Reduction
$0<x \leq 20$	50%	$0<x \leq 30$	33,33%
$20<x \leq 50$	57%	$30<x \leq 80$	38%
$50<x \leq 75$	64%	$80<x \leq 130$	42,67%
$\rangle 75$	70%	$\rangle 130$	46,67%

Source: WTO, 6 December 2008, p. 15-16.
Mustafa İmir, 2008, p. 147.

Special Safeguard Mechanism

A price-based and a volume-based SSM shall be available.

(a) where the volume of imports during any year exceeds 110 % but does not exceed 115 % of base imports, the maximum additional duty that may be imposed on applied tariffs shall not exceed 25 % of the current bound tariff or 25 percentage points, whichever is higher;

(b) where the volume of imports during any year exceeds 115 % but does not exceed 135 % of base imports, the maximum additional duty that may be imposed on applied tariffs shall not exceed 40 % of the current bound tariff or 40 percentage points, whichever is higher;

[63] Sait Akman, 2008, p. 18.

(c) where the volume of imports during any year exceeds 135 % of base imports, the maximum additional duty that may be imposed on applied tariffs shall not exceed 50 % of the current bound tariff or 50 percentage points, whichever is higher.

The price-based SSM remedy shall apply on a shipment-by-shipment basis. The additional duty shall not exceed 85 % of the difference between the import price of the shipment concerned and the trigger price.

Special Products

Developing country members shall be entitled to self-designate special products guided by indicators[64] based on the criteria of food security, livelihood security and rural development. There shall be 12 % of tariff lines available for self-designation as Special Products. Up to 5 % of lines may have no cut. The overall average cut shall, in any case, be 11 %.

Sensitive Products

Each developed country member shall have the right to designate up to 4 % of tariff lines as "Sensitive Products". Where such members have more than 30 % of their tariff lines in the top band, they may increase the number of sensitive products by 2 %. Developing country members shall have the right to designate up to one-third more of tariff lines as "Sensitive Products".

2. Domestic Support[65]

Countries shall make reductions from the AMS or OTDS. The base level for reductions in Overall Trade-Distorting Domestic Support (OTDS) shall be the sum of:

For developed countries, AMS shall be 10 % of the average total value of agricultural production in the 1995-2000 base period (this being composed of 5 % of the average total value of production for product-specific and non-product-specific AMS respectively). For developing countries, AMS shall be 20 % of the average total value of agricultural

[64] See Annex, p. 341.
[65] Mustafa İmir, 2008, p. 147.
WTO, 6 December 2008, p. 4, 9-10.

production in the 1995-2000 or 1995-2004 period as may be selected by the Member concerned.

The Base OTDS shall be reduced in accordance with the following tiered formula:

Band	AMS (billion $)	Reduction (%)
1	〉60	80
2	〉10〈60	70
3	〈10	55

Source: WTO, 6 December 2008, p. 4.

a) where the Base OTDS is greater than US$60 billion, or the equivalent in the monetary terms in which the binding is expressed, the reduction shall be 80 %.
b) where the Base OTDS is greater than US$10 billion and less than or equal to US$60 billion, or the equivalents in the monetary terms in which the binding is expressed, the reduction shall be 70 %;
c) where the Base OTDS is less than or equal to US$10 billion, or the equivalent in the monetary terms in which the binding is expressed, the rate of reduction shall be 55 % (For developing country Members with Final Bound Total AMS commitments, the applicable reduction in the Base OTDS shall be two-thirds of the relevant rate specified in paragraph (c) above. The reductions shall be implemented in nine steps over eight years. The Base OTDS shall be reduced by 20 per cent on the first day of implementation. The remaining reductions shall be implemented annually in eight equal steps).

The higher of average *Blue Box* payments shall not exceed 2,5% of the average total value of agricultural production, in the 1995-2000 base period. Countries that do not have AMS commitments, shall not undertake reduction commitments. These countries' domestic support level shall be at de minimis level.

3. Export Subsidies

Developed country members shall eliminate their remaining scheduled export subsidy entitlements by the end of 2013. This shall be effected on the basis of:

a. budgetary outlay commitments being reduced by 50 % by the end of 2010 in equal annual instalments from the date of entry into force, with the remaining budgetary

outlay commitments being reduced to zero in equal annual instalments so that all forms of export subsidies are eliminated by the end of 2013.

b. quantity commitment levels being applied until the end of the implementation period at the actual average of quantity levels in the 2003-05 base period. Throughout the implementation period, there shall be no export subsidies applied either to new markets or to new products.

Developing country members shall eliminate their export subsidy entitlements by reducing to zero their scheduled export subsidy budgetary outlay and quantity commitment levels in equal annual instalments by the end of 2016. Developing country members shall, furthermore, continue to benefit from the provisions of Article 9.4 of the Agreement on Agriculture until the end of 2021 (five years after the end-date for elimination of all forms of export subsidies).

The draft modalities prepared in December 2008 were regarded as an important step in the Doha Round. The issue that ended the talks concerned the rules that allow countries to raise import tariffs if they experience a sudden surge of agricultural imports;[66] India wanted to be able to implement safeguards after relatively low increases while the United States wanted the threshold for invoking the safeguards set much higher. China backed India on this issue and the United States was unwilling to compromise given its sense that it had already made substantial concessions in the agricultural negotiations.[67]

After the collapse of the talks in 2008, there was no effort to revise the 2008 draft "modalities" text. The Doha Round has not come to end yet.

European Union and the United States of America have been criticised for not taking sufficient steps to try and resolve the agricultural issues which are seen as one of the major obstacles to a successful conclusion of the Doha Round.[68] Because developed countries

[66] Wesley Peterson, 2009, p. 87.
[67] The Economist, 31 July 2008.
[68] Wyn Grant, 2006, p. 6.

have the most dollars to gain, as well as the most capacity and influence, they need to show leadership at the WTO.[69]

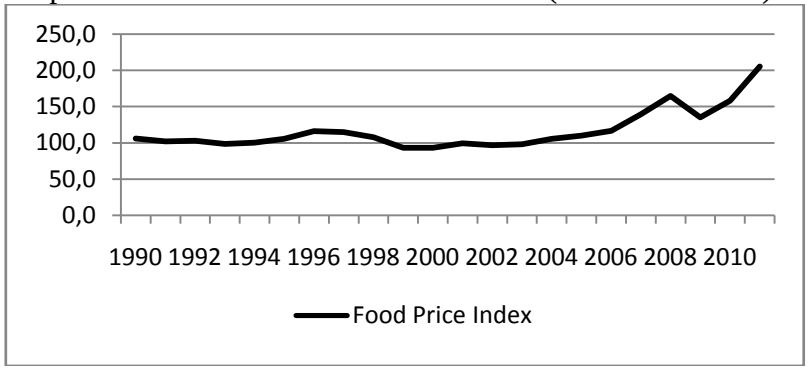
2.2.3 THE NEED FOR A NEW AGREEMENT IN AGRICULTURE

Doha Round is seen as the continuation of Uruguay Round regarding the aim of further trade liberalisation in agriculture. According to Anderson and Martin (2006), if agriculture were to be ignored in the Doha negotiations, there is the risk that agricultural protection would start rising again and this would harm developing countries.

The factors leading to the food crisis in the last years, the price distortions of major food commodities in the world and some protectionist measures like (export bans) against the food crisis showed that URAA is not efficient enough to regulate world agricultural trade. The need for the completion of the Doha Round became more important due to the world food crisis. The high prices, the reaction of the people against the high prices and the export bans of some countries showed that the Doha Round of the WTO negotiations shall be completed to make reform in agricultural trade and agricultural policies of the member countries.

The price increases in agriculture in 2007 and 2008 created a food crisis in the world, reducing the access to food for poor people.

Graph 2-1: Annual Real Food Price Index (2002-2004=100)



Source: FAO Food Price Index, 03.03.2011.

[69] Kym Anderson and Will Martin, 2006, p. 20.

During the first three months of 2008, international nominal prices of all major food commodities reached their highest levels in nearly 50 years while prices in real terms were the highest in nearly 20 years (Graph 2-1).[70]

The reasons of the high prices can be summarized as follows: [71]

- *Weather-related production shortfalls:* the decline in the production of cereals in major exporting countries in 2005-2006. Drought in Australia (one of the largest cereal producer) caused a decline in wheat harvest.
- *Stock levels:* The gradual reduction in the level of stocks (on average, by 3,4 percent per year), mainly of cereals, since the mid-1990s.
- *Increasing fuel costs:* The increases in fuel prices have also raised the costs of producing agricultural commodities, and thus raised the prices of the agricultural commodities.
- *Biofuels and agricultural commodities:* The increase in demand for these commodities has been one of the leading factors behind the increase in their prices in world markets which, in turn, has led to higher food prices. According to the International Food Policy Research Institute (IFPRI), the increased biofuel demand during the period, compared with previous historical rates of growth, is estimated to have accounted for 30 percent of the increase in weighted average grain prices.[72]
-*Changing structure of demand:* It is widely accepted that economic development and income growth in developing and emerging countries, as well as population growth and urbanization, have been gradually changing the structure of demand for food commodities (especially increasing demand of meat and dairy products from the growing India and China).

In response to the 2008 crisis, some countries from India and Egypt to Vietnam and Indonesia banned exports of rice, a staple for half the world.[73] Also in 2008, the Doha talks collapsed.

A new agricultural trade regime is needed to reduce the risk of another food crisis in the future. The new agreement shall make countries to revise their trade-distorting domestic

[70] FAO, 3-5 June 2008, p. 2.
[71] FAO, 3-5 June 2008, p. 5-12.
[72] Mark W. Rosegrant (IFPRI), 7 May 2008, p. 2.
[73] Rudy Ruitenberg (Bloomberg), 5 January 2011.

support and external trade policies in order to discipline world food prices. The new rules (after completion of the Doha Round) shall consider the following issues:

- All trade distorting domestic policies shall be reduced. The agricultural support policies for biofuel production which was the main reason of high prices shall be also taken into account.[74]
- On market access, the commitments in the present round are to reduce 'bound' rates of tariffs, not actual applied rates.[75] The bound rates are maximum tariffs that the members agree should not be exceeded. The bound tariffs were set at high levels in the Uruguay Round. The high tariffs are also the cause of high food prices. The new agreement is better to consider the reductions from the bound tariff rates which shall increase market access.
- Furthermore, another important issue for the new agreement is the export bans of countries during the food crisis. The export bans caused further increase in the food prices. Hence, Uruguay Round did not cover the export restrictions, it is better that the new agreement consider the export bans. So in the years of food shortages, the protectionist measures letting to food price increases would be reduced in the world.

In a related study, Mensbrugge and Beghin (2004) find that full liberalisation of all merchandise trade (including food and agriculture) would generate $385 billion in income gains for the world as a whole with about $196 billion going to developing countries, and most of these income gains, about $265 billion, stem from the liberalisation of agricultural markets because non-agricultural merchandise trade is already fairly free.[76]

For reducing agricultural protection, the Doha Round completion and a new agreement regarding agricultural trade are necessary. But different interests of countries make difficult to reach an agreement in agriculture.

[74] Halis Akder, 2009, p. 37.
[75] Ivan Roberts, 2003, p. 17.
[76] J. C. Beghin, and D. Van der Mensbrugghe, 2004. In: E. Wesley Peterson, 2009, p. 121.

3 AGRICULTURAL SUPPORT POLICIES IN TURKEY AND IN THE EUROPEAN UNION

3.1 TURKISH AGRICULTURAL SUPPORT POLICY

Agricultural support policies date back to 1930s in Turkey. The main policy instruments were market price support, input subsidies, and credit subsidies. Intervention buying of agricultural products started in 1930s with wheat, followed by cotton, tobacco in 1940s. The number of products supported increased to 22 in 1970s, started to decline in 1980s and after 1994, only four products were purchased for support: cereals, tobacco, tea and sugarbeet.[77] The main objectives of the past agricultural policies were maintaining self-sufficiency, market stabilization and rural development.[78]

In 2000, Turkish Government has developed the Agricultural Reform Implementation Project (ARIP) to pursue the aim of the IMF Agreement which was signed in 1999. The project aims a change in the support policies.

The Agricultural Reform Implementation Project was described as follows:

1. Reduction of price support and abolition of intervention buying

With the new Agricultural program, intervention buying was phased out and was replaced by Direct Income Support.

2. Removal of input subsidies

Input subsidies were the second most important type of agricultural support policy. They were removed in 2002.

3. Restructuring of agricultural sales cooperatives:

On 1 June 2000, the new Agricultural Sales Cooperative and Agricultural Sales Cooperative Union Law (4572) entered into force. Until then, cooperatives were channels

[77] Haluk Kasnakoğlu and Erol H. Çakmak, 2000, p. 92.
[78] ABGS, Agenda Item: 1, 23-26 January 2006.

for implementation of government programs. They were responsible for the purchase, storage and also sales on the world market on behalf of the government. With the law the cooperatives will be independent in terms of management and finance. They will consider their costs and profits in purchases.[79]

4. Direct income support

Direct income support (DIS) program was introduced in 2001. As a pilot program, the support system was implemented in Ankara, Antalya, Adıyaman and Trabzon in 2000 and then it was extended to other regions. According to the support form, the farmers, who are registered to National Farmer Registration System, are eligible to receive a fixed amount of payment up to 50 hectares of cultivated land. Farmers are ineligible for DIS payments for land under 0,01 hectares. Farmers must be associated with agricultural activity for minimum one production season (8-10 months) on the same land. Agricultural land either needs to be tilled (cultivated to produce crops) or otherwise sustained for agricultural use.

Basic DIS payments are made to the farmers cultivating or sustaining their lands for agricultural use. *Additional DIS payments* are granted to the farmers who undertake soil analysis, utilize organic farming or certified seed on their land. Basic and additional DIS payments are made on per hectare basis considering the land size of the applicant farmers.

Direct Income Support item of the ARIP was the main discussion point. Direct income support was supposed to compensate the loss of farmers because of the elimination of input subsidies and market price support. But the program was criticised as:[80]

- Area based direct payments caused inequality between farm holdings. Large holdings received more payments.
- Land owners receive the payment, but it was not controllable if they used the payment for their private consumes or for farming.
- In Turkey, the inequality of regions was not considered for the amount of direct payments. However, in European Union, less-favoured areas receive more direct payments than the others.

[79] Hakkı İnan et al., 2003, p. 21.
[80] Gülcan Eraktan et al., 2004, p. 92-97.

5. Farmer transition program (for tobacco and hazelnut)

Farmer Transition helps farmers make the transition to alternative activities. The objective of this component is to cover the cost of converting from previously highly supported crops like hazelnuts and tobacco to alternative products (like corn, sunflower, soybean, and lentil). This component provides grants to hazelnut and tobacco farmers to cover the average cost of buying inputs for alternative products and to cover the uprooting costs.

With the policy changes, objective of Turkish agriculture also changed. Objectives of the new support policies are achieving sustainable development, product quality, food security and safety.[81]

Agricultural Reform Implementation Project ended in 2009, and on 1 June 2009, a new agricultural policy was introduced "Türkiye Tarım Havzalarının Üretim ve Destekleme Modeli" (basin based support policy). According to this new policy, 30 basins were determined in Turkey, which are ecologically similar. In these basins, the production of 16 commodities (which are supported by deficiency payment) will be supported by premium payments: barley, safflower, sunflower, wheat, rye, tea, paddy rice, dry bean, canola, lentil, corn, chickpea, cotton, soybean, oat and olives (for oil).

Market access

Prior to 1980, imports of agricultural products were restricted. Under the import-substitution development strategy, only SEEs could import. [82] After 1980s Turkey began to open up its economy to world economy and imports were no more restricted. A system of product-specific customs duties was set up that had been introduced in 1980s with a revenue-raising objective. Additional special levies were added: [83] In 1990s, in addition to regular customs duties, agricultural imports were subject to a stamp duty (at 10% of the value, including cost, insurance and freight (cif), a wharf tax, (at 5% of the value, including customs duty and some other charges), the municipality share tax (a 15% on customs duty), the DFIF (Destekleme ve Fiyat İstikrar Fonu) levy – price stabilizaiton fund (at 10% of the value, including cif). This system was implemented up to 1995. After 1995, Turkey

[81] ABGS, Agenda Item: 1, 23-26 January 2006.
[82] Haluk Kasnakoğlu and Erol H. Çakmak, 2000, p. 92.
[83] Kym Anderson and Johann Swinnen, 2008, p. 99.

committed itself to comply with the rules of GATT Uruguay Round Agreement. The simple average of applied tariffs in agri-food products are given in Table 3-1. Cotton, raw hides and skins are duty free (Table 3-1). Turkey has high levels of protection in meat, dairy products, sugar and basic cereals. These commodities are considered vital for the survival of the small farmers.[84]

Table 3-1: Turkey, Applied Tariffs in Agri-food Products, 2010 (Simple Average)

HS	Products	%	HS	Products	%
1	Live animals	54	16	Preps of meat, fish, others	118
2	Meat and edible meat offal	138	17	Sugars and sugar confectionary	114
3	Fish, crustaceans, molluscs	29	18	Cocoa and cocoa preps	67
4	Dairy, eggs, honey and ed. products	119	19	Preps.of cereals, flour, starch or milk	49
5	Products of animal origin nes	3	20	Preps of vegs, frutis, nuts etc.	55
6	Live trees, cut flowers, etc	18	21	Miscelaneous edible preps	12
7	Ed. vegetables, roots and tubers	21	22	Beverages, spirits and vinegar	41
8	Ed.fruit and nuts, peel of citrus/melon	44	23	Misc.edib.preps.res.food ind., feed	9
9	Cofee, tea, mate, spices	39	24	Tobacco and manuf.tobacco	36
10	Cereals	52	41p	Raw hides, skins, leather, furskins	0
11	Milling industry products	40	50p	Raw silk, wool, flax	0
12	Oilseeds/misc grains/med plants	17	51p	Wool and hair	0
13	Lac, gums, resins, etc	4	52p	Cotton, not carded or combed	0
14	Veg. plaiting mat	0	53p	Raw flex and hemp	0
15	Animal or vegetable fat oils	22		Other WTO-Agricultural Products	6
				All WTO-Agricultural products	50

Source: Undersecretariat for Foreign Trade, 2010.
Erol Çakmak and Hasan Dudu, 2010, p. 10.
HS: Harmonized System

The government also uses "control certificates" issued by the TC Gıda, Tarım ve Hayvancılık Bakanlığı to control imported quantities for commodities with low tariffs.[85]

Export subsidies:

Export levies on high value products (angora wool, dried fruit, nuts) for which Turkey has a large world market share, had been introduced in 1960s with the aim of raising revenue.[86] In recent years, export subsidies are paid on only 16 products (cut flowers, vegetables frozen (excluding potatoes), vegetables (dehydrated), fruits (frozen), preserves - pastes, honey, homogenized fruit preparations, fruit juices (concentrated), olive oil, prepared or preserved fish, poultry meat, eggs, chocolate and other food preparations containing chocolate, biscuits and waffles, macaroni) with the aim of developing export potential.

[84] Erol Çakmak, 2007, p. 4.
[85] Erol Çakmak and Hasan Dudu, 2010, p. 10.
[86] Kym Anderson and Johann Swinnen, 2008, p. 99.

3.2 COMMON AGRICULTURAL POLICY OF EUROPEAN UNION

Common Agricultural Policy (CAP) of the European Union is one of the oldest and the most important policies of the European Union. In the 1950s, European Community[87] produced only some 85% of its own requirements.[88] European Community had to protect and support its agricultural sector in order to ensure production. Common Agricultural Policy led to increase in agricultural production from the 1960s onwards and the European Community became self-sufficient almost in all agricultural products.

From 1962 to 1992 CAP relied on market price support system that has been an important source of distortions and costs. The CAP supported the income of EU farmers through price support policy. A target price was set at high levels which stimulate production. Authorities had to buy the surplus supply of products (to keep the market price close to the target price) when market prices were to fall below intervention prices. Prices at high levels encouraged production and this led to costly storing of food surpluses. To get rid of stocks, export subsidies were required to bridge the gap between lower world prices and higher Community prices. This created a trade problem in the world that many food exporters were harmed because of the disposing of EC's food surplus on the world market at lower prices.[89] Consumers were also losers of this price system who had to pay more for their products than necessary. The consumption reduction and production increase (due to the high prices) moved the EU towards self-sufficiency in food.[90] With this price system, European Community became less dependent on imports. CAP applied high import tariffs so that imports of most price-supported commodities cannot be sold into the EU below the desired internal market price set by EU authorities. In this case consumers would prefer Community's production. Other problem of the CAP price system was that farmers with larger farms benefited more from the support payments (because support was coupled and larger farms produce more) and became richer.

[87] European Community turned into European Union after Maastricht Treaty (1992).
[88] European Commission, 1992, p. 26.
[89] EU's food dumping drove down world food prices. A drop in the world prices is a gain for net importers but a loss for net exporters (source: Richard Baldwin and Charles Wyplosz, 2009, p. 362).
[90] Richard Baldwin and Charles Wyplosz, 2009, p. 356.

This protectionist agricultural policy occurred problems inside and outside the Community. The need for reform in the CAP became important in the 1980s, because of the high budgetary cost of the EAGGF[91] and the imbalance between supply and demand in European markets. The share of CAP in the budget rose from 8% in 1965 to 80% in 1969.[92] In 1984 *dairy quotas* were introduced. Dairy quotas brought spending on dairy sector under control. In *1988, budgetary stabilisers* came into effect with the aim of reducing EAGGF guarantee spending.

1992 CAP reform (MacSharry Reform) brought changes in the support system. The reform included the price reduction of the crops (cereals, oilseeds, protein crops) by 29%. The reform changed the way in which subsidies were paid to farmers, and made radical price cuts. Price support was reduced, and income losses of farmers were compensated with direct payments. Direct payments were paid to big farmers for land set-aside of 15%. Small farmers were exempt from the set aside requirement.

The MacSharry reform of 1992 in Common Agricultural Policy was also prompted by the need to reach agreement in the Uruguay Round.[93] In 1990, the Agriculture Directorate realised that GATT Uruguay Round could not be completed until the CAP was reformed.[94] So the EC took steps to move agricultural policy in a more liberal direction.

Agenda 2000 lowered again price support. Reductions in prices were compensated with direct payments. The Agenda 2000 CAP reform was part of a broader package meant to prepare the European Union (EU) for enlargement, driven by the European Council.[95]

Council of Ministers decided in June 2003 on a new CAP reform. Centrepiece of 2003 reform was Single Farm Payment. This payment was independent from production. It was

[91] EAGGF (European Agricultural Guidance and Guarantee Fund) financed the common agricultural policy which was set up in 1962. The fund was replaced by *the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD) on 1 January 2007 (Council Regulation No 1290/2005 of 21 June 2005).* European Agricultural Guarantee Fund (EAGF) finances direct payments to farmers and take measures to regulate agricultural markets such as intervention and export refunds, while the European Agricultural Fund for Rural Development (EAFRD) finances the rural development programmes of the Member States.
[92] Richard Baldwin and Charles Wyplosz, 2009, p. 361.
[93] Carsten Daugbjerg and Alan Swinbank, 2007, p. 9.
[94] Carsten Daugbjerg, 1999, p. 418.
[95] Carsten Daugbjerg and Alan Swinbank, 2007, p. 17-18.

linked to the respect of environmental, food safety, animal and plant health and animal welfare standards (*cross compliance*). This enabled EU farmers to be more market-orientated and they are free to produce according to what is most profitable for them.[96] *Financial discipline mechanism* has been agreed in order to ensure that the farm budget is fixed until 2013.

On 20 November 2008 the EU agriculture ministers reached a political agreement on the Health Check of the Common Agricultural Policy:[97]
The agreement abolished arable set-aside, increased milk quotas gradually leading up to their abolition in 2015 and converted market intervention into a genuine safety net. For wheat, intervention purchases will be possible during the intervention period at the price of €101,31/tonne up to 3 million tonnes. Decoupled direct aid to farmers (payments) will be no longer linked to the production of a specific product. These remaining coupled payments will be decoupled and moved into the Single Payment Scheme (SPS), with the exception of suckler cow, goat and sheep premia. Currently, all farmers receiving more than €5.000 in direct aid have their payments reduced by 5 percent and the money is transferred into the Rural Development budget. This rate will be increased to 10 percent by 2012.

Current Support System:

Domestic Support

Common organisation of agricultural markets regulates the production and marketing of the agricultural products. This organisation governs 21 Common Market Organizations (CMOs). Before 1 July 2008, these CMOs were indivudual CMOs. They are now under a single CMO.

Member States receive *direct payments* which are decoupled in the form of Single Payment Scheme (old member states), Single Area Payment Scheme (new member states).

[96] European Commission, The Common Agricultural Policy Explained, p. 7. (http://ec.europa.eu/agriculture/capexplained/index_en.htm).
[97] European Commission, 02.02.2009.

In addition to the single payment, farmers receive coupled aid under other specific support schemes linked to the area under crops or to production (like production aid, premium). All payments shall be decoupled at the latest as of 2012, except for the suckler cows, sheep and goat and cotton schemes which may remain coupled.[98]

In the Common Agricultural Policy:[99] market intervention includes the definition of *reference prices* and methods for fixing *intervention prices* in relation to the reference price, opening periods for buying-in and maximum quantities. Prices are specified for cereals, paddy rice, white and raw sugar, beef and veal, milk, butter, skimmed milk powder and pigmeat.

Private storage aid is specified for certain products (cream and certain butters and cheeses). It is also possible for other products (white sugar, olive oil, fresh or chilled meat from adult bovine animals, skimmed milk powder, cheeses and pigmeat, sheepmeat and goatmeat).

National production quotas are fixed for sugar and milk. Member States then distribute these quotas between the producing undertakings.

Export Refunds

The export of certain products may be supported by export refunds which cover the difference between global and EU market prices. These may be differentiated according to the destination and are fixed periodically by the Commission, taking account of European Union's and global market developments.

Market Access

The Commission can require the presentation of import licences for products from certain sectors: cereals, rice, sugar, seed, olive oil and table olives, flax and hemp, bananas, live plants, beef and veal, pigmeat, sheepmeat and goatmeat, poultrymeat, milk and milk products, eggs and agricultural ethyl alcohol. The import duties (specific, advalorem, specific+advalorem), tariff rate quotas, agriculture component (EA) and additional duty

[98] Council Regulation No 73/2009 of 19 January 2009.
[99] Council Regulation No 1234/2007 of 22 October 2007.

(AD) in the Common Customs Tariff apply to the agricultural products. The Commission may also take safeguard measures with regard to imports.

3.3 THE LEGAL BASIS OF AGRICULTURAL TRADE RELATIONS BETWEEN TURKEY AND EUROPEAN UNION

Turkey first applied for associate membership in the European Economic Community in 1959. This application later resulted in Ankara Agreement in 1963. Ankara Agreement covers agriculture in article 11:

1. The Association shall likewise extend to agriculture and trade in agricultural products, in accordance with special rules which shall take into account the common agricultural policy of the Community.

2. "Agricultural produces" means the products listed in Annex II to the Treaty establishing the Community, as at present supplemented in accordance with Article 38 (3) of that Treaty. [100]

The aim of the Ankara Agreement is to promote the trade and economic relations between EU and Turkey (article 2). Ankara agreement constituted legal basis of the association between Turkey and European Union. The Association comprises a preparatory stage, a transitional stage and a final stage. The final stage is based on the customs union.

During the preparatory stage Turkey shall, with aid from the Community, strengthen its economy so as to enable it to fulfil the obligations which will devolve upon it during the transitional and final stages (Article 3). Upon the entry into force of the Additional Protocol on 13 November 1970, the preparatory stage ended and transitional stage began. European Union would abolish tariff and quantitative barriers to its imports from Turkey (with some exceptions including fabrics) upon the entry into force of the Protocol, whereas Turkey would do the same in accordance with a timetable containing two calendars set for 12 and 22 years.

[100] The List is presented in the Annex, p. 330.

According to the Article 35 of Additional Protocol, the Community shall grant each other preferential treatment in the trade in agricultural products. The preferential treatment of imports into the Community includes the tariff reductions in the commodities below (Additional Protocol, 1970, Annex no:6):

-50% tariff reduction in some fresh vegetables and fruits (also lemon and mandarin),
-100% tariff reduction in dried grapes and unmanufactured tobacco,
-60% tariff reduction in oranges.
-an ad valorem duty of 3 % applicable to the imports into the Community of figs (dried and fresh)
-Hazelnuts: an ad valorem duty of 2,5 % within an annual Community tariff quota of 18.700 tons.

According to the Decision No 1/80 of Association Council, for agricultural products on which the duties applicable (article 3):[101]
(a) are 2% or less, the said duties shall be eliminated on 1 January 1981;
(b) are greater than 2%, elimination shall be effected in four stages in accordance with the following timetable:

Timetable	Rate of reduction
as from 1 January 1981	30%
as from 1 January 1983	60%
as from 1 January 1985	80%
as from 1 January 1987	100%

For the products listed below, the reduction of customs duties shall be accompanied by conditions concerning quantities or seasonal timetables established with due regard to the interests of both Parties:
Some vegetables (fresh and chilled), hazelnuts, grapes (dried, fresh), fruits (prepared or preserved, vegetables (prepared or preserved).

[101] DPT, 2001, p. 156.

As from 1.1.1987 some Turkish agricultural products entered the Community market without duty or with tariff reductions.

In 1995, it was agreed at an Association Council meeting in Brussels that a customs union would be created between Turkey and EU. Customs Union between Turkey and the European Union entered into force in January 1996. Customs Union would cover industrial goods like in the Rome Treaty[102], and for agricultural products, a common agricultural policy would be pursued.[103] Customs Union covers industrial goods and processed agricultural goods.[104] Although basic agricultural products have been excluded from the initial package, a preferential trade regime for these products has been adopted on 1 January 1998. Arrangements applicable to the importation into the Community of Agricultural product originating in Turkey are (Date: 25.02.1998, Decision no 1/98 of Association Council, Protocol 1, Annex 1):[105]

Meat of sheep and goats, cheese made from sheep's and buffalo's milk (limited with quota), 100% tariff reductions in imports of vegetables (potatos, onion, beans, courgettes, aubergines, ribbed or stick celery, broad beans) and fruits (plums, strawberries (frozen), raspberries (frozen), watermelons, other melons, fresh grapes) in certain periods, 3% tariff in hazulnuts, tariff reductions in rye and malt. Also tariff reductions in olive oil are listed below:

1509 10 10	Lampant virgin olive oil	% 10 reduction
1509 10 90	Other virgin olive oil	% 10 reduction
1509 90 00	Other olive oil than virgin	% 5 reduction
1510 00 10	Crude olive oil	% 10 reduction
1510 00 90	Other olive oil	% 5 reduction

Arrangements applicable to the importation into Turkey of Agricultural product originating in the Community are (Date: 25.02.1998, Decision no 1/98 of Association Council,

[102] The operation and development of the common market for agricultural products must be accompanied by the establishment of a common agricultural policy among the Member States (Rome Treaty, 1957, Article 38). http://ec.europa.eu/economy_finance/emu_history/documents/treaties/rometreaty2.pdf.
[103] Rıdvan Karluk, 2005, p. 681.
[104] List of processed agricultural goods is presented in the Annex, p. 332.
[105] DPT, 2001, p. 383. (the list is in the Annex, p. 334)

Protocol 2, Annex):[106] Live bovines (unlimited, tariff reduction), bovine meat (limited with quota and tariff reductions), milk and cream, butter, processes cheese, some fruits (apple, peach and some other fresh fruits), live plants, cut flowers, wheat, rye, barley, corn, rice, cotton seeds, soya bean oil, sunflower seed oil, cane or beet sugar, tomatoe, vinegar, flours, meals and pellets, of meat or meat offal or fish or of crustaceans (100% tariff reduction, limited with quota), and tea (with a maximum duty of %45). In milk, sugar and wheat products, the preferential tariff rates and quotas granted by Turkey to the EU are summarised in table 3-2.

Table 3-2: Import Arrangements applicable to the importation into Turkey of Agricultural product originating in the Community

CN code	Description	Reduction of the MFN duty (%)	Tariff quota (tonnes)
0402 10	Milk and cream in powder, granules or other, solid forms of a fat content by weight, not exceeding 1,5 %	100	1.500 (*)
0402 21	Milk and cream in powder, granules or other solid forms, of a fat content by weight, exceeding 1,5% not containing added sugar or other sweetening matter	100	2.500 (*)
0405 10	Butter and other fats and oils derived from milk; dairy spreads	100	3.000
0406 30	Processed cheese, not grated or powdered	100	300
0406 90	Other cheese	100	2.000
ex 1001 10 00	Durum wheat, from 1 September to 31 May	100	100.000
ex 1001 90	Wheat, from 1 September to 31 May, other than durum wheat	100	200.000
1209 11 00	Sugar beet seed	100	300
1701 99	Cane or beet sugar and chemically pure sucrose, in solid form, other than raw sugar, not containing added flavouring or colouring matter	20 %, with a max. duty of 50%	80.000

Note: These quotas are foreseen for imports under the inward-processing scheme.

Source: DPT, 2001, p. 390.

[106] DPT, 2001, p. 390. (the list is in the Annex, p. 338).

Turkey does not seem to have a great advantage in agricultural trade with the European Union. Turkey applied for membership in the same period with Greece. However, Greece has an advantage over Turkey, in that Greece made an agreement with the EU which proposed free circulation of agricultural commodities at the beginning of the entry into force of the agreement. [107] But according to the agreement between Turkey and EU, the free circulation of Turkish agricultural goods in the Community would be realized at the end of 22 years. Another disadvantage for Turkey is the coverage of Customs Union. The Customs Union between Turkey and the European Union covers all industrial goods but does not address agriculture (except processed agricultural products). However, processed cereals, milk and sugar products were included in the Customs Union in which EU has comparative advantage while processed fruit and vegetables that Turkey has comparative advantage over EU were not included in the Customs Union.[108]

According to the Decision no 1/98 of Association Council, European Union grants special import arrangements to Turkey in agricultural products like tariff reductions and tariff rate quotas with duty-free access or reduced tariffs. Also, EU benefits from 100% tariff reduction in wheat, milk and sugar imports into Tukey. However, Turkey does not have any advantage in wheat, milk and sugar imports into the EU. Turkey has trade deficits with the European Union in the related commodities: in wheat 197 million $, in sugar 398 $ and in milk 28 million $ (table 4-16, p. 74; table 4-29, p. 101; table 4-52, p. 139). In olive oil, which is Turkey's important export commodity, Turkey benefits from 5-10% tariff reductions in the import into the EU and Turkey has a trade surplus (11,97 million $) with the EU in olive oil trade (table 4-43, p. 121). In fact, Turkey does not have a great advantage in the European Union olive oil market. EU applies 112,5€/100 kg to the imports from Turkey, while a customs duty of ECU 7,81/100 kg is levied on imports quantity 56.700 tonnes per year) into the EU from Tunisia. [109]

[107] Gülten Kazgan, 1975, p. 128-129.
[108] Gökhan Günaydın, 2010, p. 54.
[109] Official Journal L 097 , 30/03/1998 P. 0002 – 0183.

4 AGRICULTURAL SUPPORT POLICIES OF WHEAT, SUGAR, OLIVE OIL AND MILK IN THE EUROPEAN UNION AND IN TURKEY

4.1 WHEAT IN THE EUROPEAN UNION AND IN TURKEY

Wheat is one of the most cultivated grains in the world. It is classified into three groups as per the botanic structure:

1. Triticum aestivum (milling wheat-bread wheat)
2. Triticum durum (durum wheat - macaroni wheat)
3. Triticum compactum (topbaş or biscuit wheat)

Besides, wheat is classified according to its hardness, kernel, color, and the method of cultivation. For instance,

According to kernel hardness; hard wheat, semi-hard wheat, soft wheat.

According to kernel color; red wheat, white wheat.

According to the method of cultivation; summer wheat, winter wheat.

Bread wheat is the most cultivated species in the world.

Wheat is the basic food stuff in the nourishment of human being. It is the main material of bread. In addition to its use in the production of bread or other bakery products after obtaining flour, it is consumed as boulgur and also used as animal feed. When there is a decline in wheat production in the world or in Turkey, the prices of wheat and food made up from flour, increase which affect consumers directly. So, keeping enough stocks and being self-sufficient in wheat production is of great importance in every country.[110]

Wheat Production and Consumption

After harvest fail in 2006, 2007 due to the bad weather conditions, the wheat production fell in most of the countries. Total world wheat production reached 683 million tonnes in the marketing year 2008/09 which was the highest quantity in the last 6 years. In 2009/10, a slight increase in wheat production occurred (0,2%). Wheat production fell in many

[110] Okan Gaytancıoğlu, 18.11.2009, p. 4.

producer countries in 2009/10. As seen in the table 4-1, the biggest decline in production in 2009/10 marketing year was by 8% (12,3 million tonnes) in European Union. The decline is expected partly due to a 3 percent drop in plantings, with land being shifted back to oilseeds or voluntary set-aside after last year's exceptionally high area.[111] Wheat production also declined in other three major producers, namely USA, Russia, Canada and Ukraine. The biggest increase in world wheat production was observed in Kazakhistan, Pakistan and Turkey. Turkey's wheat production increased by 1,7 million tonnes in 2009/10.

Table 4-1 shows the major wheat producer countries with their 2009/10 world share. According to the table, the biggest producer is the European Union with a world share of 20,3% in 2009/10, followed by China (16,8%), India (11,8%) and Russia (9%). Turkey ranks eight in the world production (2,7%).

Table 4-1: World Wheat Production and Major Producer Countries (million tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2009/10 world share
EU	146,9	132,4	124,9	120,1	151,1	138,8	20,3
China	92,0	97,5	108,5	109,3	112,5	115,1	16,8
India	72,2	68,6	69,4	75,8	78,6	80,7	11,8
Russia	45,4	47,7	44,9	49,4	63,8	61,8	9,0
USA	58,7	57,3	49,2	55,8	68,0	60,4	8,8
Canada	25,9	26,8	25,3	20,1	28,6	26,8	3,9
Pakistan	19,5	21,7	21,3	23,3	21,0	24,0	3,5
Australia	21,9	25,4	10,8	13,6	21,4	21,9	3,2
Ukraine	16,5	18,7	13,8	13,9	25,9	20,9	3,0
Turkey	18,5	18,5	17,5	15,5	16,8	18,5	2,7
Kazakhstan	9,9	11,0	13,5	16,5	12,5	17,1	2,5
World	628,0	622,6	596,1	612,1	682,8	684,4	

Source: USDA FAS Grain, 12.10.2011.
TMO, 2010a, s. 33.
*Trade year: July/June Year

Wheat consumption has an increasing trend in the world. European Union wheat consumption amounts to 19,2% of world total wheat consumption. China (16,4%) and

[111] FAO, June 2009.

India (12%) are the biggest consumer countries after the European Union. These three biggest consumers make up 48% of total world consumption. Turkey ranks seven in the table 4-2 with a world share of 2,6% (17,1 million tonnes).

Table 4-2: World Wheat Consumption and Main Consumer Countries (million tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2009/10 world share
EU	115,2	119,5	116,0	116,5	127,0	125,0	19,2
China	102,0	101,0	101,0	106,0	105,5	107,0	16,4
India	72,8	70,0	73,4	76,4	70,9	78,2	12,0
Russia	37,4	38,4	36,4	37,7	38,9	39,6	6,1
USA	31,8	31,2	31,0	28,6	34,3	31,0	4,8
Pakistan	20,0	21,5	21,9	22,4	22,8	23,0	3,5
Turkey	16,8	16,1	16,7	16,8	16,9	17,1	2,6
World	606,9	624,4	615,8	617,7	642,7	650,7	

Source: USDA FAS Grain, 10.09.2010.
USDA FAS Grain, 12.10.2011.
*Trade year: July/June Year

World wheat trade

The wheat quantity that is available for wheat trade has been within the range of 110 - 140 million tonnes in recent years (Table 4-3). This represents the 17 or 18% of total world wheat production.

The leading wheat importing country in 2009/10 was Egypt with an import quantity of 10,2 million tonnes. The other major countries in the world wheat import are Brazil, Japan and Indonesia. Turkey's share in world import is estimated is as 2,6% in 2009/10.

The major countries in the world wheat export are the United States of America, European Union, Russia, Canada and Australia (Table 4-4). The United States is the world's leading wheat exporter with a share of 19 % of total world exports in 2009/10, followed by EU (16%), Russia (15%) and Canada (14%). Turkey's export share is estimated as 0,2% in 2009/10.

Table 4-3: World Wheat Import and Importers (million tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10*	2009/10 World Share (%)
Egypt	7,9	7,7	7,1	7,6	9,8	10,2	8,0
Brazil	5,5	6,2	7,9	7,1	6,3	6,7	5,2
Japan	5,4	5,4	5,6	5,7	4,9	5,5	4,3
Indonesia	4,8	5,1	5,8	5,2	5,5	5,4	4,2
EU	7,4	7,2	5,3	6,4	7,6	5,1	4,0
Algeria	5,3	5,5	4,9	5,8	6,3	5,1	4,0
S.Korea	3,6	3,8	3,2	3,0	3,3	4,4	3,4
Nigeria	3,1	3,7	3,2	3,0	3,3	4,4	3,4
Iraq	3,1	4,9	3,0	3,5	3,9	3,9	3,1
Turkey	0,4	0,1	1,8	2,2	3,6	3,3	2,6
World	110,2	110,0	110,8	110,3	136,2	127,8	

Source: International Grains Council, March/2011 report.
TMO, 2011b, p. 21.
(*) estimation

Table 4-4: World Wheat Export and Major Exporters (million tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10*	2009/10 World Share (%)
USA	28,2	27,2	25,0	34,3	26,8	23,9	18,7
EU	13,6	14	12,8	11,2	24,5	20,8	16,3
Russia	7,9	10,6	10,9	12,1	18,3	18,8	14,7
Canada	15,4	15,5	19,4	16,4	18,3	18,4	14,4
Australia	15,8	15,2	11,4	7,5	13,5	13,8	10,8
Ukraine	4,3	6,5	3,3	1,2	12,9	9,3	7,3
Kazakhstan	3,0	3,8	8,1	8,2	5,8	8,0	6,3
Argentina	13,2	8,1	11,9	10,0	8,5	5,1	4,0
Turkey	0,009	0,3	0,70	0,02	0,01	0,3	0,2
World	110,2	110,0	110,8	110,3	136,2	127,8	

Source: International Grains Council, March/2011 report.
TMO, 2011b, p. 8, 23.
*Estimation

World Wheat Prices

Drought in Southeast Europe, Australia, Ukraine, Russia, Canada and Turkey, production yields declined in 2006 and 2007. Wheat price index increased above general food price index. In especially 2008, the price index reached its highest levels (Table 4-5).

Table 4-5: Wheat Price Index (2002-2004=100)

Years	2007	2008	2009
Wheat Price Index	179	236	161*
Food Price Index	139	164	135

Source: FAO, June 2009.

Food Price Index: Consists of the average of 5 commodity group price indices mentioned above weighted with the average export shares of each of the groups for 2002-2004: in total 55 commodity quotations considered by FAO commodity specialists as representing the international prices of the food commodities noted are included in the overall index.
Wheat Price Index: Derived from International Grains Council (IGC) Wheat Index
*January-May 2009

Against the price increases due to the production shortfall, some exporting countries made policy changes designed to discourage exports so as to keep domestic production within the country in the fall of 2007: [112]

-Argentina restricted the export volume of wheat,

-China, Argentina, Russia and Kazakhistan raised export taxes on wheat.

-Ukraine, Serbia, and India banned wheat exports.

Early in 2008, importing countries also began to change their policies. They reduced import tariffs on wheat.

The International Organisation in the Wheat Sector

The International Grains Council (IGC) is an intergovernmental organisation concerned with grains trade. International Wheat Agreement was brought into effect in 1949. Price stability and assurance of supplies to importing countries were its major objectives, reflecting the post-war background of shortages and high prices in world wheat markets. Similar wheat agreements were implemented in 1953, 1956, 1959, 1962, 1971, 1986 and International Grains Agreement in 1967. The current Grains Trade Convention (GTC, 1995) is the latest in a long series of multilateral cooperation instruments, and is in

[112] Ronald Trostle, 2008, p. 21-24.

operation since 1949. A new International Grains Agreement came into force on 1 July 1995, with two linked Conventions concerning grains trade and food aid matters. Under the Grains Trade Convention, 1995 (GTC), the International Wheat Council (IWC) became the International Grains Council (IGC), giving recognition to the full coverage of coarse grains and their products in its activities.

The Member States are (as of April 2010): Algeria, Argentina, Australia, Canada, Cuba, Côte d'Ivoire, Egypt, European Union, India, Iran, Japan, Kazakhstan, Kenya, Korea (Rep.), Morocco, Norway, Pakistan, Panama, Russian Federation, South Africa, Switzerland, Tunisia, Turkey, Ukraine, United States, Vatican City.

4.1.1 WHEAT IN THE EUROPEAN UNION

In 2008, wheat accounted for 7,1% of total agricultural production in the European Union (EU)[113]. The share of the EU's wheat sector in total world production is approximately 20%. The biggest producers in the Union are France, Germany, United Kingdom and Poland. France and Germany, the two main wheat producers, account for almost 45 % of EU-27 production. Wheat covered approximately 13,5% (22 million hectares) of the total utilized agricultural area throughout the EU [114].

Table 4-6: Wheat Production and Yield in the European Union

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Production (1000 t)	146,9	132,4	124,8	119,7	151,2	138,8
Share in World Production (%)	23,4	21,3	21,0	19,7	22,0	20,3
EU Yield (t/ha)	5,9	5,4	5,09	4,83	5,62	5,4
World Yield (t/ha)	2,87	2,84	2,78	2,78	3,05	3,0

Source: USDA FAS, Grain, 12.10.2011.
Faostat, Agricultural statistics, December 2010.

[113] European Commission, 12.01.2010.
[114] European Commission, 12.01.2010.

The yield of wheat changes from country to country, but it is 5,4 t/ha on average for the whole European Union in 2009/10 (Table 4-6), which is also above the world level of wheat yield (3 t/ha).

European Union is a major trader in the world. The Union's shares in total world wheat exports and imports are 16% and 4% respectivley (Table 4-3, Table 4-4).

A. Reforms

The common organization of the market in cereals dated back to 1962 (Council Regulation No 19). The sector has been reformed in 1992, 2000 and lastly in 2003. The problem was that production has been increasing due to the high prices while consumption was stagnant.[115]

The MacSharry reform in 1992 aimed at reducing the reduction of the intervention price of the crops (cereals, oilseeds, protein crops) by 29%. To compensate farmers for the income loss due to the price cut, a direct payment system was introduced. [116] To receive direct income support, farmers were required to set aside land of 15%[117]. Small farmers were exempt from the set aside requirement. The compensatory payment was fixed per hectar, depending upon the region.

[115] Wyn Grant, 1997, p.117.

[116] Direct Income Support has two types: Decoupled payments and Compensatory payments. Decoupled payment means reforming the policies to reduce their interference with production desicions. A support policy is likely to be more decoupled if the support is not paid on the basis of output or variable factors of production and if farmers have maximum freedom to produce the commodities they wish to produce or to not produce at all, while remaining eligible for the payment. (OECD Policy Brief November 2006). Compensatory payments are related with production to some extent. The aim and the application of these payments are different in the European Union and in Turkey. In European Union, compensatory payments were first introduced in 1975. 1992 CAP reform also introduced compensatory direct income payments. The reform made a major change by shifting from price supports to direct income supplements through reduction of the crops (cereals, oilseeds, protein crops) by 29%. The compensory payment was fixed per hectar, depending upon the region (Bernadette Andreosso-O'Callaghan, 2003, p. 121). In Turkey, compensatory payments were given for the loss of income to potato growers (to compensate for the disease in potato) and tea growers (for the tea pruning). In Turkey, all the direct income support payments (decoupled and compensatory) are fixed per decare and independent from regional disparities.

[117] The set-aside mechanism constrains the annual production levels of any single crop and thus avoids accumulating larger surplus stocks, which depress farm prices. Set-aside mechanism calls for farmers to remove a percentage of farmland from production as a condition to receive a compensatory payment. This is a supply control mechanism (John B. Penson et al., 2006, p. 250.)

The main innovation of Agenda 2000 reform for the cereals was the reduction of the intervention price by 15% in two stages starting in the 2000/2001, bringing it down from € 119,19/t to € 101,31/t (Table 4-7). Direct payments fixed on per hectare basis were increased in two annual steps from € 54/t to € 63/t in the marketing year 2000/2001 (Table 4-7). The increase represents 50% compensation for the overall price cut (Council Regulation No 1251/99).

Table 4-7: Intervention Price and Direct Payments in Wheat (€/tonne)

	1999	2000	2000-2001	2003-2004	From 2005 on
Intervention price	119,90	110,25	101,31	101,31	101,31
Monthly increase	1,00	0,92	0,46	0,46	0,46
Set aside					
Direct payment	54,34	58,67	63,00	63,00	63,00

Source: European Commission, July 1999.

After drought in 2007, set aside policy and direct payments abolished in 2008.

2003 CAP Reform

Wheat intervention, and the existing support price (EUR 101,31/tonne) are retained but monthly increments are reduced by 50 % (Table 4-7). A central objective of the 2003 reform of the common agricultural policy was the decoupling of direct payments (*single farm payment)*. This payment is independent from production. It is linked to the respect of environmental, food safety, animal and plant health and animal welfare standards (*cross compliance*). The reform made revisions to the market policy of the CAP:[118] Farmers do not have to produce in order to receive Single Payment Scheme (SPS) and/or other direct payments, as long as they maintain their land in good agricultural and environmental condition.

2008 Health Check: For wheat, intervention purchases are possible during the intervention period at the price of €101,31/tonne up to 3 million tonnes. Beyond that, it shall be done by tender.

[118] European Commission, 26.06.2003.
European Commission, 2003b.

B. Agricultural Support Policy

Wheat is supported by market intervention measures. [119] The intervention agencies buy in wheat at the intervention price in certain circumstances. The intervention price is €101,31 per tonne and is subject to monthly increases (Council Regulation No 1784/2003). The intervention price shall refer to the wholesale stage for goods delivered to the warehouse, before unloading. It shall be valid for all EU intervention centres.

C. Trade with non-EU Countries

Wheat imports and exports are subject to presentation of import or export license issued by member state. Wheat exports may be supported by export refunds.

Table 4-8: Tariff Rate Quotas in Wheat, European Union

CN Code	Description	Quota quantity	Rate of Duty (%)	Other terms
1001 10 00	Durum wheat	50.000 t	0	
1001 10 00	Quality wheat	300.000 t	0	
1001 90 99	Common wheat of a quality other than high quality	2.982.453 t	12 €/t	(allocated to USA (572.000 t), Canada (38.853) and other countries (2.371.600 t))
1002 90 99	Common wheat of a quality other than high quality	6.787 t	12 €/t	

Source: Commission Regulation No 1031/2008 of 19 September 2008, p. 869.

Wheat imports are subject to rates of duty in the common customs tariff (Table 4-8). Tariff rate quotas are allocated to USA, Canada and other countries. Above quota quantity, tariff rate is 148 € per tonne for durum wheat and 95 €/t for common wheat.[120]

[119] When market prices for an agricultural product fall below a certain level, the public authorities of the member states intervene to stabilise the market by purchasing surplus supplies, which may then be stored until the market price increases, exported to a third country or disposed of in an alternative way (Source: The common agricultural policy - A glossary of terms,
available at: http://ec.europa.eu/agriculture/glossary/index_en.htm)

[120] Common Customs Tariff, Commission Regulation (EC) No 1031/2008 of 19 September 2008, p. 95.

4.1.2 WHEAT IN TURKEY

Wheat is produced in every part of our country and it holds the first rank among field crops in terms of sown area and production quantity. During the last 20 years, the sown area varied between 8 and 9 million hectares, while the output is between 16 and 20 million tonnes (Table 4-9). In 2007 and 2008 there was production shortfall. But in 2009, the wheat production increased to 19,4 million tonnes.

Table 4-9: Wheat Statistics in Turkey

Year	Sown area (1000 Ha)	Production (t)	Yield (t/ha)	Consumption (t)	Import (t)	Export (t)
2000	9.400	20.622.000	2,23	16.750.000	421.299	1.632.594
2001	9.350	18.658.000	2,03	16.500.000	964.379	599.252
2002	9.300	19.149.000	2,10	16.602.000	1.467.336	876.412
2003	9.100	18.658.000	2,09	16.500.000	1.471.271	886.379
2004	9.300	20.622.000	2,26	16.500.000	447.764	2.262.710
2005	9.250	20.317.500	2,32	17.236.836	63.600	3.259.400
2006	8.490	18.909.400	2,36	18.108.700	1.596.000	2.396.700
2007	8.098	16.286.130	2,13	16.979.069	2.511.652	1.818.712
2008	8.090	16.803.990	2,20	18.089.265	3.628.102	2.342.827
2009	8.100	19.467.000	2,54	17.926.723	2.951.007	4.491.284

Sources: TUIK, 2011a.
*****Consumption=human consumption+seed use+animal feed

In Turkey, wheat demand rises in line with the population growth. Wheat consumption for food use is at the level of 15 - 16 million tonnes and per capita consumption is appr. 200 kg.[121] Other than food use, wheat is utilized as seed in quantity of nearly 1,5 million tonnes and approximately 500.000 tonnes as feed in the last years.

The wheat production is approximately 20 million tonnes. Although production meets the demand, Turkey imported wheat in some years as a result of drought and quality problem. After 2006, imports rose as a result of production shortfall following the dryness in 2007. The imports rose due to the inward processing regime (in flour, pasta, boulgur and

[121] TUIK, 2011a.

biscuits).[122] In 2008, production shortfall in Turkey and lower tariff rate resulted in increasing imports. The import tariff decreased from 130% to 8% in November 2007 and then to 0% which stimulated the import. Turkey generally imports wheat from Russia, European Union, Kazakhstan and Ukraine.[123]

The major part of wheat exports was made by Toprak Mahsulleri Ofisi (TMO). In recent years, Turkey exports flour, pasta, boulgur, biscuit, and similar bakery products instead of wheat exports. Turkey's export of wheat in the last years is between 2 and 4,5 million tonnes.[124]

Wheat Prices

In Table 4-10, Turkish wheat prices are compared with USA hard red wheat (HRW) and French wheat prices. In terms of quality, the USA Hard red wheat can be considered equivalent to Anatolian Hard Red Wheat, French Wheat to Red Semi-Hard Wheat. As can be seen in the table, Turkish wheat prices are generally above world wheat prices.

Table 4-10: Wheat Prices in Turkey and in the World

Year	USA Wheat Price (TL/t)	French Wheat Price (TL/t)	TMO Purchase Price (TL/t)	Wheat Price received by Farmer (TL/T)
2000	79	66	102	102
2001	189	165	164	158
2002	247	182	230	253
2003	212	205	325	329
2004	217	219	371	365
2005	226	184	350	360
2006	286	232	375	360
2007	311	321	425	420
2008	530	460	500	550
2009	352	285	500	540

Sources: TMO, 2009a, p. 48.
TMO, 2010a, p. 48.
TUIK, 2009, p. 595.

[122] TMO, 2009a, p. 22. (The principle of Inward Processing Regime is the export of finished goods against importing the raw material or semi finished goods from abroad free of tax).
[123] TMO, 2011, p. 8.
[124] TUIK, 2011a.

Percentage increases in TMO wheat price are generally below the wheat farmer price except some years. In the last years, farmers earn more money when they sell their wheat to the private buyers than then gain from the purchase of TMO.

Wheat Yield

The wheat yield in Turkey is generally low. According to the Table 4-11, in 2009/10 the wheat yield per area was 2,5 t/ha in Turkey which is below the the EU level (5,4 t/ha).

Table 4-11: Wheat Yield in European Union and Turkey (t/ha)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
European Union	4,55	5,65	5,12	5,1	4,84	5,62	5,41
Turkey	2,02	2,15	2,09	2,09	1,80	2,20	2,54

Source: Faostat, 2010.

The size of medium farm is 6,1 ha in Turkey and 11,9 ha in European Union. 1 hectare land produces 2,5 tonnes of wheat in Turkey, and 1 hectare land produces 5,4 tonnes of wheat. In this case, on the basis of a medium sized farm, the producer income in the EU is more than the producer income in Turkey. This results from the low yield level in our country. Also medium sized farms in Turkey are smaller then the ones in the EU. European Union and Turkey also have different climate conditions which affect yield levels.

One of the most important factors in wheat yield is the use of high quality seeds. When the area of 8,5 million hectares reserved for wheat sowing is taken into account, we can see that the annual seed demand is almost 1,7 million tonnes on the basis of 200 kg seed use per hectare. Since wheat is a cleistogamic plant, the seed must be renewed in every three years. Considering the fact that certified seeds will be used in all of the sown areas, annual seed demand is approximately 600 thousand tonnes. However, the seed distribution quantity was 145.521 tonnes in 2008 and 205.484 tonnes in 2009.[125]

[125] TMO, 2008, p. 66 and
TMO, 2010a, p. 18-19.

A. Support Purchase Policies Implemented by Toprak Mahsulleri Ofisi

After the First World War many countries to give importance to agriculture and the wheat stocks increased. This increase in the wheat stocks has caused foreign competition and decrease in the prices. Especially after the year 1928, the wheat prices decreased in many countries including Turkey.

The crisis in 1929 put the producers in a difficult condition and the Government has found it necessary to buy wheat in some areas by a fixed lowest price; the Agriculture Bank has been assigned with this work. The Agriculture Bank opened buying centers in Central Anatolia in the years of 1932/1933. This time, a problem of not to find enough silos with sufficient capacity for the purchased wheat occurred. For solving this problem, the mission to establish grain protection institutions again given to Agriculture Bank by the Law dated 11.06.1933 and numbered 2303. Since both supporting the producer and building silo and warehouse create big financial burden, the Government had to put a small tax on bread, and for this purpose the "Law against Wheat Protection" dated 30.05.1935 and numbered 2466 was put into force.

Intervention buying in wheat started in 1932. Toprak Mahsulleri Ofisi (TMO) was the related enterprise of the Ministry of Agriculture and Rural Affairs for the intervention buying. Toprak Mahsulleri Ofisi was established in 1938 as state economic enterprise first of all to regulate the wheat sector; however the number of the supported products by the Board increased in time. During the period between 1938 and 1988, a basic purchase price was annually announced for each product and the payments were made in cash on the basis of these prices.

In the purchase season of 1988/89, instead of a basic purchase price, a support purchase price was announced and TMO was authorized to determine the minimum purchase price. Also there was a provision for 50% of the commodity prices to be paid in cash and remaining 50% to be paid within two months. Besides, TMO was authorized to carry out Public Warehousing activities in 1993. Purchases against warehouse receipts were made

from all of the producers and sector. TMO announced the purchase price and purchase prices were gradually determined by TMO.

Since 2002, TMO does not make support purchases. Public Warehousing activities were continued; TMO announced the purchase price and purchase prices were gradually determined by TMO.

B. Present Agricultural Support System

The present support system in the wheat sector comprised of deficiency payment, area-based payments and other support (certified seed support). Farmers who are registered in the National Registration Farm System can receive the support payments. Payments depend upon presentation of sales documents. The table 4-12 shows the support payments since 2005. Generally the level of support has increased in time.

Table 4-12: Types of Wheat Support Payments (2005-2010)

Type of Support	2005	2006	2007	2008	2009	2010
Diesel (TL/da)	2,4	2,88	2,88	2,92	3,25	3,25
Chemical Fertiliser (TL/da)	1,6	2,13	2,13	3,82	4,25	4,25
Direct Income Support (TL/da)	10	10	7	-	-	-
Soil Analysis (TL/da)	-	-	-	2,25	1,0	2,5
Deficiency Payment (TL/t)	30	35	45	45	50	50
Certified Seed (TL/da)	3	5	5	4,5	5	5

Sources: a) Toprak Mahsulleri Ofisi, 2010b.
b) 02.03.2010 dated Official Gazette, Number: 27509
c)18 Mart 2010 dated Official Gazette, Number: 27525.
d) 14 Kasım 2008 dated Official Gazette, Number: 27054.

Area Based Payments

Until 2008, direct income supports were given to the farmers up to 50 hectare of cultivated land. In 2008, it was phased out. Present direct income support payments are given in the

form of soil analysis, organic farming, area based diesel and chemical fertilizer support. For soil analysis, 2,5 TL/da and for organic farming 25 TL/da is provided.[126]

Area based diesel and chemical fertilizer support is a type of direct income support. This support payment is given to farmers to meet their needs in diesel and chemical fertilizers necessary for production. It is made on per hectare basis, in accordance with the land size categorized by crop groups. For the wheat produced in 2009, farmers receive a diesel support of 3,25 TL/da and 4,25 TL/da as chemical fertiliser support (The Official Gazette dated --November 2nd, 2009 with issue number 15537).

Deficiency Payments (Premium Payments)

Deficiency payments are linked to the production. Payments are given per kilogram depending upon presentation of sales documents and are made to farmers who are registered on National Farm Registration System (NFRS). The objective of the system is to assure the supply of the supported commodities by setting a target price for the commodity which is above the world price. [127]

Table 4-13: Premium Payments in Wheat

Marketing Year	Quantity of Wheat Eligible for Premium	Premium Payment	Total Premium Payment
	(1000 tonnes)	(TL/t)	(million TL)
2005/06	10.651	30	319,4
2006/07	13.472	35	471,5
2007/08	12.895	45	580,3
2008/09	10.404	45	468,2
2009/10	17.750	50	887,5

Source: TC Gıda, Tarım ve Hayvancılık Bakanlığı, 25.01.2010.

For the first time in 2005, premium payment application was initiated in wheat. In 2005, every wheat producer registered on NFRS received 3 kuruş per kilogram (Table 4-13). A

[126]TC Gıda, Tarım ve Hayvancılık Bakanlığı, 25.01.2010.
[127] Gülcan Eraktan, et al., 2004, p. 60-61.

deficiency payment of 5 kr is paid per kilogram in 2009. (The Official Gazette dated -- November 14, 2009).

The deficiency payment is given to a limited quantity of production. In 2009, 17.750.000 tonnes of wheat (out of 19.467.000 tonnes of production) were eligible for premium payment. 887,5 million TL were paid as premium payments to the wheat producers in 2009/10.

Certified Seed Support

Since 2005, certified seed support is given to the producers who are registered to the National Farmer Registration System. In the wheat sector certified seed support is 5 TL/da.

Basin-based Support

According to new policy "Türkiye Tarım Havzalarının Üretim ve Destekleme Modeli", wheat will be supported in all 30 basins. The premium payment is determined as 5 krş/kg for the marketing year 2010 and 2011. [128]

C. Trade Measures

Turkey is a Member State of World Trade Organization (WTO) and acts according to the rules of the Uruguay Round Agriculture Agreement (URAA).

Market Access

According to the URAA, Turkey had to cut the Customs Tariff Rates from 200% to 180% in ten years (1995 - 2004). The custom tax rate was 130% and decreased to 0% in 2008 (Table 4-14). The custom tax rate for the wheat was 130% in 2009 and 2010. In 2011, the custom tax rate again decreased to 0% on 25 February 2011 until 1 May 2011 due to the wheat price increases in the world. Other reasons are to eliminate any production risks and to ensure enough stocks.[129] After 1 May 2011, the custom tax is 130% again.

[128] Dünya Gazetesi, 7.2.2011, p. 12.
[129] TMO, 2011.

Table 4-14: Custom Tariff Rates for Wheat

Years	Wheat		Official Gazette	
	Milled	Durum	Date	Number
2000	55	50	31.12.1999	23923
2001	45	40	28.04.2001	24274
2002	10	5	31.12.2001	24386
2002	40	30	25.06.2002	24976
2003	40	30	31.12.2002	24980
2004	40	30	31.12.2003	25333
2005	85	60	31.12.2004	25687
2005	130	100	31.08.2005	25922
2006	130	100	31.12.2005	26040
2007	130	100	30.12.2006	26392
2007	8	5	28.11.2007	26714
2008	8	5	31.12.2007	26743
2008	0	0	23.02.2008	26796
2008	50	50	15.05.2008	26796
2009	130	130	31.12.2008	27097

Source: Official Gazettes

Turkey's preferential import tariffs for European Union are 0% for durum wheat (TRQ: 100.000 tonnes) and 0% for wheat other than durum wheat (TRQ: 200.000 tonnes). [130]

Export Subsidies

According to the URAA, Turkey committed to decrease the export subsidies from 640.424.252 $ given for 2.124.781 tonnes wheat equivalent products to 27.418.520 $ for 493 812 tonnes. (Table 4-15).

[130] DPT (2001): Decision no 1/98, Association Council, Annex 4.

Table 4-15: Export Subsidy Commitments for Wheat

	Basic Value of Subsidies ($)	Yearly Commitments of Subsidies ($)	Basic Quantities of Export Subsidies (Ton)	Commitments of Export Subsidies (Ton)
1995	36.077.000	640.424.252	574.200	2.124.781,2
1996		572.312.504		1.943.562,4
1997		504.200.756		1.762.343,6
1998		436.089.008		1.581.124,8
1999		367.977.260		1.399.906,0
2000		299.865.512		1.218.687,2
2001		231.753.764		1.037.468,4
2002		163.642.016		856.249,6
2003		95.530.268		675.030,8
2004		27.418.520		493.812,0

Source: Official Gazzette, Number: 22213, 23 February 1995.

Turkey's Wheat Trade with European Union

Table 4-16: Turkey's Wheat Trade with European Union

Years	**Export (t)**	**Import (t)**		**Export (mn $)**	**Import (mn $)**	**Trade Deficit (mn $)**
1990	6	1.086.564		0,0	184,9	**-184,9**
1991	34.527	111.644		2,8	12,5	**-9,7**
1992	56.062	18.756		6,2	3,5	**2,7**
1993	6.445	549.573		0,8	78,4	**-77,6**
1994	55.034	253.868		4,5	30,1	**-25,6**
1995	6.149	765.939		0,5	138,6	**-138,1**
1996	81	1.008.211		0,0	221,2	**-221,2**
1997	3.414	629.197		0,7	111,9	**-111,2**
1998	63.307	683.946		26,3	82,4	**-56,1**
1999	120.445	758.125		16,1	86,9	**-70,8**
2000	483.445	469.496		54,4	61,2	**-6,8**
2001	213.638	109.651		29,5	17,7	**11,8**
2002	40.561	353.715		7,3	53,7	**-46,4**
2003	305	516.025		0,2	84,3	**-84,1**
2004	319	132.538		0,2	31,1	**-30,9**
2005	94.527	4.384		15,4	1,0	**14,3**
2006	206.060	34.996		34,7	7,4	**27,3**
2007	14.742	362.937		7,0	92,6	**-85,6**
2008	0	768.944		0,0	359,2	**-359,2**
2009	73.947	718.141		21,7	218,4	**-196,6**

Source: TUIK, 2011b.

European Union is a major trade partner of Turkey in wheat. 15%-20% of all wheat imports were made from the European Union countries. In the last years, especially in 2008 the import level from the Union increased due to the production shortfall in Turkey. Generally the wheat trade balance of Turkey the the EU is negative. The trade deficit in wheat reached 360 million dolar in 2008.

D. Turkey's Adaptation to European Union's Wheat Support Policy

There are significant differences between Turkish wheat sector and European Union's wheat sector in terms of yield, support policies and prices. Before 1990s, CAP used the most trade-distorting instrument "market price support". But reforms after 1990s reform reduced the market price support for cereals and replaced the income loss through direct payments linked to historical production levels. No support payment is given to wheat producers. Only intervention price is applied for wheat.

The support policies in European Union and in Turkey are generally different. The table shows the comparison between EU and Turkish wheat policies:

Table 4-17: Comparison of Wheat Support Policies in European Union and in Turkey, 2009

	TURKEY	EUROPEAN UNION
Wheat Producer Price		
	540 TL/t	285 TL/t
Domestic Support		
	Diesel support: 3,25 TL/da Fertiliser support: 4,25 TL/da Deficiency payment: 50 TL/t Soil analysis support: 1 TL/da Certified seed: 5 TL/da TMO: P.Warehousing Activities	Intervention price: 101,31 €/t Intervention Agencies
External Trade		
Import Tariffs	130%	TRQ common w. appr. 3 mn t (12 €/t) Out of quota 148 €/t for durum w. 95 €/t for common w.
Use of Export Subsidies	No	Yes (as notified in the WTO committments)

Source: Information in table above is taken from Table 4-7, Table 4-8, Table 4-10, Table 4-12 and Table 4-14.

Turkey gives input subsidies and soil analysis support to producers but there are no such supports in European Union. In the Union wheat is supported by intervention buying. Turkey applies advalorem tariff to wheat (130%), but EU applies tariff rate quoats. Out of quota rate is 95 €/t for common wheat and 148 €/t for durum wheat. Turkey can not subsidise wheat export, but EU can subsidise wheat export (as notified in the WTO).

The screening meeting in the wheat sector was held on 23-26 January 2006 in Brussels. In the Screening Report Turkey, the degree of alignment and implementing capacity of Turkey in the wheat sector is assessed and it has been noted that some legislations are partially compatible with EU legislation 1784/2003.

TMO's Studies in Legislation Harmonization to European Union's Wheat Policy

The Intervention Agencies of the European Union have become Paying Agencies in time. TC Gıda, Tarım ve Hayvancılık Bakanlığı has notified its consent to transforming TMO into a paying agency to act similar with the paying agencies of the EU after having been restructured for the purpose of regulating the market of the entire agricultural products as being responsible of intervention purchases and export refunds in the form of "Agricultural Products Market Paying Agency" as regards the institutional structuring for CMO (Common Market Organization) the restructuring of TMO as an organization that regulates agricultural products market.[131]

'Turkish National Programme for the Adoption of the Acquis Communitaire' was published in the Official Gazette on 24.07.2003 with issue number 25178. In this National Programme, it has been proposed that TMO shall:
- prepare the regulations for cereals and paddy rice on the basis of the relevant EU legislation; and
- be transformed into an Intervention Agency for cereals and paddy rice or for all agricultural products.

[131] TMO, 2009a, p. 114.

In the framework of EU harmonization, TMO prepared "Implementing Regulation on the Purchase and Sales Principles for Cereals and Paddy Rice". The regulation was accepted on 24 January 2008 and entered into force as from 01.06.2009.

The regulation on the purchase and sales principles for cereals which entered into force as from 01.06.2009 determines the purchase and sales principles of cereals in parallel with the European Union legislation on the CAP: [132]

1. In the European Union buying-in take place in the following intervention periods:[133]

(a) from 1 August to 30 April in the case of Greece, Spain, Italy, and Portugal (Mediteranean countries);
(b) from 1 December to 30 June in the case of Sweden;
(c) from 1 November to 31 May in the case of the other Member States.

From 2009/10 onwards, in durum wheat and as from 2010/11 in common wheat, the intervention period will be from 1 November to 31 May in all the member states. In Turkey, the purchase periods in wheat are determined in parallel with the European Union's wheat intervention periods as shown in the table.

Wheat Purchase Periods in Turkey

Purchase Periods	Producer, cooperative and producer unions	Tradesmen and Companies
2009/10 – 2011/12	1 June – 31 May	1 November – 31 May
2012/13 – 2013/14	15 June – 31 May	1 November – 31 May
2014/15	1 July – 31 May	1 November – 31 May
2015/16	1 August – 31 May	1 November – 31 May
2016/17	1 September – 31 May	1 November – 31 May
As of 2017/18	1 November – 31 May	1 November – 31 May

Source: TMO, 2009c, Article 6.

[132] TMO, 2009b.
[133] Council Regulation No 1784/2003 of 29 September 2003, Article 5.

The advantages of the change of the purchase periods are: [134]

- The producers' products will be purchased earlier than the tradesmen and companies. This will be good for the producers.
- The producers' unions will improve themselves.
- The licensed storage system will develop.
- Furthermore, the financial burden of the purchase will be low because the government will buy in what is not purchased at the last resort.

2. In the European Union, the minimum purchase amount is 10 tonnes for durum wheat, 80 tonnes for common wheat and it is obligatory that the minimum tonnage be ensured during the purchase.

The minimum tonnage amounts that the producers, cooperatives and producer unions can bring to TMO are shown below for each product type and it is obligatory that these tonnages be ensured during the purchasing[135]

For common wheat;
Minimum for 2010/11 period: 3 tonnes
Minimum for 2011/12 period: 5 tonnes
Minimum for 2012/13 period: 10 tonnes
Minimum for 2013/14 period: 15 tonnes
Minimum for 2014/15 period: 25 tonnes
Minimum for 2015/16 period: 40 tonnes
Minimum for 2016/17 period: 60 tonnes
Minimum for 2017/18 period and onwards: 80 tonnes

For durum wheat;
Minimum for 2010/11 period: 3 tonnes
Minimum for 2011/12 period: 5 tonnes
Minimum for 2012/13 period and onwards: 10 tonnes

[134] TMO, 2009c, p. 19.
[135] TMO, 2009b, Article 7.

With this application, minimum purchase amount for wheat in Turkey will reach to the purchase amounts in the European Union.

3. The payment shall be made on the 30th – 35th day following the day taking over of the product like in the EU. Through this application, financing will be planned in a better way and the producer will receive his payment on time.
4. Not only producers' and cooperatives' wheat, but also tradesmen and companies' wheat can be purchased like in the European Union.

The regulation came into force on 1.6.2009 is defined as a development intended to the legislation harmonization for common market organizations in 2008 progress report:

> *Concerning the common market organisations, some progress on acquis alignment could be noted with the adoption of two regulations on purchases and sales of cereals.*[136]

Turkey 2009 progress report noted that progress limited to the adoption of implementing legislations on the purchase and sales of cereals and on the purchase of rice/paddy rice concerning the common market organisation.[137] The structural transformation studies of TMO continue under the process of adaptation to the European Union.

E. Evaluation of Wheat Support Policies in Turkey

Wheat is an important field crop in Turkey in terms of sown area and production quantity. Sown area has decreased by 14% in 10 years. The production and consumption also do not seem to increase. In the last years according to the table 4-9, wheat yield varies between 2 and 2,5 t/ha. In fact, there was not any important change in wheat production, wheat yield and consumption. Turkey is generally self-sufficient in wheat. Self-sufficiency ratio varies between 94%-114% in the last years.[138]

[136] European Commission, 05.11.2008, p. 51
[137] European Commission, 14.11.2009, p. 53.
[138] TUIK, 2011a.

When we look at the foreign trade statistics, it is observed that in some years Turkey is a net importer and in some years net exporter. In 2009, Turkey's total wheat export was 4.491.284 tonnes, and export to the EU was 73.947 tonnes. EU's share in Turkey's total wheat export was only 1,6%. Imports from the EU (718.141 tonnes) have a share of 24% in Turkey's total wheat imports (2.951.007 tonnes). With the European Union, Turkey has a trade deficit amounting 197 million $. This deficit may also be the result of wheat trade preferences of EU in Turkey. EU's wheat and durum wheat can enter the Turkish market without custums duty (within quota limits). However, Turkey does not have any import tariff advantage in European Union market.

The wheat support policies and trade regimes in Turkey and EU are totally different. In the first years of CAP, EC protected its wheat sector with high intervention prices and target prices. The objectives were to ensure enough food supplies and farmers' income stability. In time, EU became self-sufficient in agricultural products. EU reached its objectives. Later, with the reforms, EU started to decrease support level in agriculture. In Turkey, for several years, wheat was supported by intervention buying. After 2005, deficiency payment policy was introduced. The support policy change in Turkey in 2005 from intervention buying to the deficiency payment was an important shift from high-distorting policy to lower-distorting support policy. While premiums are given to the farmers who are registered to the NFRS, the production quantity is registered and the producers receive additional payment for the produced quantity. However, the producer in EU does not receive any premium payment; wheat is supported by intervention price.

4.2 SUGAR IN THE EUROPEAN UNION AND IN TURKEY

Sugar (the proper term is sucrose), is composed of glucose and fructose. Sucrose is an important source of energy. Sucrose can be found in many natural foods like fruits and vegetables. There are variety uses of sugar. Sugar can be consumed directly or put in drinks, biscuits, dairy products and some foodstuffs.

Sugar can be obtained economically from sugar beet and sugar cane. 99 % of the world's sugar is produced from the sugar cane and sugar beet. If we consider this ratio as 100%, about 26% comes from sugar beet and 74% from sugar cane of the current world production of white sugar.[139] Sugar cane is a semi-perennial crop (after cane plantation is established, it can be harvested for 10 years), while sugar beet is an annual root crop and it has to be cultivated every year.[140] Sugar cane is grown in tropical and subtropical zones. Sugar beet is grown predominantly in regions with temperate, Mediterranean climates.

The sugar sector comprises the main products like sugar, beet and sugar cane, processed products like molasses and natural and artificial sweeteners.

Molasses is brown syrup, obtained during the process of extracting sugar from beet and cane. It is the residue left after crystallisation of the sugar syrup. Molasses include 50% sugar, so sugar can be produced from molasses. Molasses is generally used as animal feed, and for alcohol production and as a substrate in the production of yeasts, amino acids and proteins.

There are also sweeteners which are included in the sugar regimes of the countries. Sweeteners fall into two categories: natural sweeteners containing calories that are extracted from plants, such as sugar itself, and 'artificial' sweeteners with zero calories. Natural sweeteners include isoglucose and inulin syrup: 'Isoglucose' means the product obtained from glucose or its polymers with content by weight in the dry state of at least

[139] Celal Er, 2007, p. 19.
[140] Celal Er, 2007, p. 20-21.

10% fructose. The raw material is wheat or maize, from which starch is extracted. Liquid in form, it is used as a sugar substitute mainly in production of drinks. 'Inulin syrup' means the immediate product obtained by hydrolysis of inulin or oligofructoses, containing in the dry state at least 10% fructose in free form or as sucrose, and expressed as sugar/isoglucose equivalents. It is used by the food industry in drinks in particular, either on its own or mixed with glucose.

Artificial sweeteners have a sweetening power of tens or even hundreds of times that of sugar, no calories. The best known of these sweeteners include saccharin, aspartame, cyclamates and the 'alcohol sugars' such as sorbitol.

World Sugar and Sugar Beet Production and Consumption

Major cane producers are Brazil, India, China, Thailand, Pakistan, Mexico, Colombia, Cuba, Australia, USA. Major beet producers are USA, Russia, European Union, Turkey and China. United States of America, Iran, Japan, Pakistan, Egypt and Morocco produce sugar from both beet and cane.[141]

Table 4-18: World Sugar Beet Production and Major Producers (million tonnes)

Countries	2005/06	2006/07	2007/08	2008/09	2009/10	2009/10 world share (%)
EU	135,5	110,8	114,5	101,8	113,9	50
USA	24,9	30,6	31,9	24,4	26,8	12
Russia	21,4	30,7	28,8	29,0	24,9	11
Turkey	15,2	14,5	12,4	15,5	17,3	8
China	7,9	7,5	8,9	10,0	9,5	4
Japan	4,2	3,9	4,3	4,2	3,6	2
World	254	254	247	222	229	

Source: Faostat, Agricultural Statisitics, 2010
Pankobirlik, 2011a.

European Union produces half of the total world sugar beet. The share of the second biggest producer United States is 12%. Turkey ranks four in the world sugar beet production (Table 4-18).

[141] TŞFAŞ, March 2009, p. 1.

Table 4-19: World Beet Sugar Production (1000 tonnes)

Countries	2005/06	2006/07	2007/08	2008/09	2009/10	2009/10 World Share (%)
EU	18.950	17.240	16.406	14.232	15.097	44,0
USA	4.032	4.542	4.284	3.822	4.110	12,0
Russia	2.718	3.549	3.397	3.859	3.500	10,2
Turkey	2.070	1.826	1.731	2.152	2.533	7,4
World	38.787	36.630	35.139	32.039	34.313	

Source: F.O Licht GmbH, 2011.
Pankobirlik, 2011b.

World beet sugar production is 26% of total sugar production. European Union is the biggest beet sugar producer in the world, followed by USA and Russia. (Table 4-19). Turkey ranks five in world beet sugar production.

Table 4-20: World Sugar Consumption (million tonnes)

Countries	2005/06	2006/07	2007/08	2008/09	2009/10	2009/10 World Share (%)
India	20,6	21,2	22,8	24,5	25,0	15,4
EU	17,0	18,0	18,0	18,2	18,3	11,3
China	11,8	13,7	15,3	15,3	15,3	9,4
Brazil	10,8	11,3	11,7	12,8	13,1	8,1
USA	9,5	9,2	9,5	9,6	9,4	5,8
Mexico	5,3	5,5	5,5	5,6	5,3	3,3
Pakistan	4,1	4,3	4,6	4,6	4,6	2,8
Japan	2,3	2,4	2,4	2,3	2,3	1,4
Turkey	2,0	2,1	2,1	2,1	2,3	1,4
World	146,5	151,4	156,9	160,1	162,7	

Source: F.O Licht GmbH, 2011.
Pankobirlik, 2011c.

World sugar consumption has an increasing trend. India is the biggest consumer country, followed by European Union and China (Table 4-20). While in beet sugar production Turkey ranks five, in sugar consumption Turkey is the ninth place.

World sugar trade

Brazil is the leading sugar exporter with 35 % of world exports (more than 19 million tonnes), followed by India, Australia and Thailand and make up the top five exporters, each exporting between three and four million tonnes of sugar yearly.

Table 4-21: World Sugar Exports and Main Exporters (million tonnes, White Sugar)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09*
Brazil	17,62	15,52	19,81	17,34	19,63
India	0,07	1,35	2,45	4,55	0,74
Australia	3,96	3,52	3,56	3,96	3,45
Thailand	3,12	1,96	1,98	3,31	4,60
European Union	5,56	7,43	1,47	0,97	0,14
United Arab Emirates	1,51	1,54	1,61	1,68	1,81
Guatemala	1,02	1,43	1,21	1,09	1,30
World	48,74	51,82	52,00	50,37	49,47

Source: F.O Licht GMBH, 2008.
(*)Forecast

Table 4-22: World Sugar Import and Main Importers (million tonnes, White Sugar)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09*
European Union	3,08	2,94	3,07	3,02	3,88
Russia	3,50	3,10	2,95	2,26	2,94
USA	1,68	2,91	1,78	2,23	2,48
United Arab Emirates	1,62	1,67	1,72	1,78	1,83
Indonesia	1,71	1,51	2,55	1,47	1,63
Malasia	1,35	1,27	1,62	1,33	1,39
South Korea	1,48	1,43	1,37	1,46	1,37
Japan	1,23	1,28	1,30	1,38	1,33
Nigeria	1,29	1,27	1,16	1,32	1,33
Canada	1,24	1,14	1,07	1,26	1,28
World Total	46,91	49,77	47,39	45,97	47,93

Source: F.O Licht GmbH, 2011.
(*)Forecast

The European Union is by far the biggest world importer of sugar, with 4 million tonnes (8 % of global sugar imports) in 2008. European Union is followed by Russia and the USA.

World Sugar Prices

International sugar prices had an upward trend in 2007 and moved from 126 points to 221 points in 2009. This price increases occured because of a reduction in global export availability, following a decline in India's sugar (sugar cane) output in 2008/09.

Sugar Price Index (2002-2004=100)

Years	2007	2008	2009
Sugar Price Index	126	150	221
Food Price Index	139	164	135

Source: FAO, 03.03.2011.
*Sugar Price Index: Index form of the International Sugar Agreement prices with 2002-2004 as base.

Organisation of the World Sugar Market

The International Sugar Organisation, established by the International Sugar Agreement in 1992, is the intergovernmental organisation devoted to improving world's sugar market.

The ISO exists to administer the internationally negotiated 1992 International Sugar Agreement (ISA), the objectives of which are:

- to ensure enhanced international cooperation in connection with world sugar matters and related issues.
- to provide a forum for intergovernmental consultations on sugar and on ways to improve the world sugar economy.
- to facilitate trade by collecting and providing information on the world sugar market and other sweeteners.
- to encourage increased demand for sugar, particularly for non-traditional uses.

The 84 member-countries of the ISO represent (based on data for 2007) 82% of world production, 66% of consumption, 38% of imports and 93% of exports.[142] Turkey became a member of ISO in 21 January 1998.

[142] ISO, Sugar Year Book 2008 (http://www.isosugar.org).

4.2.1 SUGAR IN THE EUROPEAN UNION

The common organisation of the sugar market applies to: sugar beet, sugar cane, cane sugar, beet sugar and sugar from other origins, molasses, syrup, including sugar syrup, maple syrup, inulin syrup (Inulin syrup was taken into the sugar regime in 1994. The quota is 0,3 million tonnes, shared between three Member States: Belgium, France, Netherlands) and isoglucose syrup (Isoglucose was added to the EU sugar regime in 1977).

In European Union, sugar is produced from sugar beet. The share of the sugar beet sector in total agricultural porduction is 1,1%.[143] European Union sugar beet production was 114 million tonnes in 2009. Beet is produced in France, Germany, Netherlands, Hungary, Belgium, and Poland. Beet covered 1.540.000 hectares throughout the EU 27 (2009/10). [144] The yield of sugar beet and sugar changes from country to country, but it is 70 t/ha for sugar beet and 10,8 t/ha for sugar on average for the whole European Union for the period 2009/10 (Table 4-23).

Table 4-23: Sugar and Sugar Beet Statistics in EU (1000 tonnes)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Sugar beet production (1000 t)	132.764	135.454	110.839	114.470	101.778	113.851
Sugar beet yield (t/ha)	59,54	60,39	59,15	63,39	66,47	70,3
Sugar yield (t/ha)	8,31	8,61	9,3	9,76	10,51	10,82
Sugar production (1000 t)	20.172	18.950	17.240	16.406	14.232	15.097
Sugar consumption (1000 t)	16.315	17.015	18.043	18.004	18.163	18.342
Sugar export (1000 t)	5.559	7.431	1.465	1.525	649	920
Sugar import (1000 t)	3.076	2.940	3.073	2.829	3.381	3.496

Sources: European Commission, 06.10. 2009.
ISO, 2008.
Faostat, Agricultural Statistics, 2010.

EU sugar production was 15 million tonnes in 2009/10. The biggest producer is France accounting 22,6% of total EU production, followed by Germany (21,5 %), Poland (10%), United Kingdom 7% and Italy (5,8%).[145] EU produces 11,1% of total world sugar.[146] The

[143] European Commission, 06.10.2009.
[144] European Commission, 06.10.2009.
[145] European Commission, September 2006, p. 10.
[146] European Commission, September 2010.

EU is both a leading exporter and importer. The Union became a net exporter at the end of the 1970s.

A. Reforms of the Sugar Sector in the EU

The Common Market Organization for Sugar was set up in 1968 aiming to ensure a fair income to European Union (EU) producers and self sufficiency. The first change was in 1975 following the United Kingdom's accession, when the CMO incorporated that country's previous commitments to certain ACP (Africa Caribbean and Pacific) countries to import raw cane sugar for refining and subsequent sale on the UK market.[147] The 'ACP Protocol' opened the Community market to cane sugar and guaranteed the Community price to the countries in question. The second change was made in 1995 with the limitation of export refunds following the Uruguay Round.

The Commission has proposed a radical sugar reform adopted formally on 20 February 2006. The main reasons of the sugar reform in 2006:[148]

- The sugar sector has maintained artificially high prices: EU price levels have been three times higher than world market prices recently
- The EU lost a World Trade Organisation (WTO) sugar: 'panel' a case brought by Australia, Brazil and Thailand against aspects of the EU sugar regime obliged the EU to alter the regime.[149]

The new reform started on 1 July 2006. There was a transition period between 2006/07 and 2009/10 for the application of policy changes.

B. Agricultural Support Policy

Support system in the sugar and sugar beet sector comprises of production quotas, single payment scheme and application of reference and minimum prices.

[147] European Commission, 2004b, p. 4
[148] European Commission, September 2006, p. 2.
[149] The ruling found that 'C sugar' exports benefit from export subsidies by being cross-subsidised with revenues from production under A and B quotas. Secondly, the WTO ruled that the EU exceeds its export subsidy commitments due to its subsidised export of quantities of sugar equivalent to imports from the Africa Caribbean and Pacific (ACP) countries and India. Measures had to be taken to comply with the ruling. (Source: European Commission, September 2006, p. 2.

Production Quotas in the Sugar Sector

Implementation of quota system in the sugar sector started in 1968 when the common organisation for sugar established. Production quotas limit the production of the sugar.[150] Member States distribute these quotas between the producing undertakings. There are two types of quota: A quota (initially determined in accordance with domestic consumption) and B quota (additional amount to fulfill export potential). Member States may produce more but that over-quota production ('C sugar') has to be sold outside the EU without subsidy.

The sugar, isoglucose or inulin syrup produced during a marketing year in excess of the quota may be:
(a) used for the processing of certain products such as bioethanol, alcohol, rum or specific pharmaceutical products;
(b) carried forward to the quota production of the next marketing year.

The quotas for the production of sugar, isoglucose and inulin syrup at national or regional level are fixed.

With the new reform adopted on July 2006, current quota system is simplified by merging A and B quotas into one quota; the quota system is extended until the end of the 2014/15 marketing year. The aims of the new reform in 2006 are to reduce European Union sugar production to sustainable levels; to make the sugar sector more competitive and to limit budget costs. The new reform offered producers, who would be uncompetitive at the new lower price, a financial incentive to leave the sector. A restructuring aid was determined for the producers who dismantle the production facilities of the factories concerned:[151]
In the case of fully dismantling of sugar production, the amount of restructuring aid per tonne of renounced quota is:
— EUR 730,00 for the marketing year 2006/2007,
— EUR 730,00 for the marketing year 2007/2008,
— EUR 625,00 for the marketing year 2008/2009,

[150] Production quotas are applied to milk, sugar, isoglucose, tobacco and potato starch in the European Union.
[151] Council Regulation No 320/2006 of 28.2.2006, Article 3.

— EUR 520,00 for the marketing year 2009/2010

In the case of partially dismantling of sugar production, the amount of restructuring aid per tonne of renounced quota is:
— EUR 547,50 for the marketing year 2006/2007,
— EUR 547,50 for the marketing year 2007/2008,
— EUR 468,75 for the marketing year 2008/2009,
— EUR 390,00 for the marketing year 2009/2010

When closing a plant (even partially) and providing a social plan to employees, the processor receives payments for cessation. The processor must consult with beet growers and national authorities, and a minimum 10 percent of the aid had to be allocated to beet growers.[152]

The past and present quota allocation after the sugar reform in 2006 is presented in the Table 4-24. After this new reform, Ireland, Latvia, Slovenia, Bulgaria and Portugal left the sugar sector, and Italy and Finland decreased their quota levels.[153]

After the reform, seven factories were closed in Germany. In Austria, Denmark and Belgium, the production concentrates only in two plants.[154] Some smaller producers merged with other companies.[155]

[152] Jean-Christophe Bureau, et al., 2007, p. 8.
[153] Erol Çakmak, May 2008, p. 116.
[154] Jean-Christophe Bureau et al., 2007, p. 12.
[155] Jürgen Bruhns, 2009, p. 15.

Table 4-24: Sugar Quota Allocation before and after the Reform in the EU (1000 tonnes)

	Beet Sugar quota		Quota after market withdrawals	Isoglucose	
	Quota before the reform	Quota allocation after 2007/08		Quota before the reform	Quota allocation after 2007/08
Germany	3.417	3.655	3.162	35	49
Austria	387	406	351		0
Belgium	820	862	746	72	100
United Kingdom	1.139	1.221	1.057	27	38
Bulgaria		5	4		78
Czech Republic	455	368	341		
Denmark	421	421	364		
Finland	146	90	87	12	17
France	3.769	4.121	3.564	20	
Netherlands	865	877	758	9	13
Ireland	199	0	0		
Spain	997	887	794	83	110
Sweden	368	326	292		
Italy	1.557	754	754	20	28
Latvia	67	0	0		
Lithuania	103	103	89		
Hungary	402	299	280	138	192
Poland	1.672	1.772	1.533	27	37
Portugal	80	25	24	10	14
Romania		109	94		14
Slovakia	207	140	134	43	59
Slovenia	53	0	0		
Greece	318	159	159	13	18
Total	17.441	16.599	14.587	508	767

Source: Council Regulation No: 318/2006, 28.2.2006.
Council Regulation No: 247/2007, 09.03.2007.
*Table shows the quota allocation before Bulgaria and Portugal left the sugar sector. Before leaving the sector, they decreased their quota levels.

In the marketing year 2006/07, the number of sugar factories was 155 in the European Union (table 4-25). After closures and mergers, the number of factories fell to 110 in 2008/09.

Table 4-25: Number of Sugar Factories with their Capacities in the EU

Daily capacity of sugar factories	EUROPEAN UNION (27)	
	2006/07	2008/09
<5.000 t	42	23
5.000 < 8.000 t	39	28
8.000 < 12.000 t	34	23
12.000 < 15.000 t	21	19
□15.000 t	19	17
Total	155	110

Sources: CEFS (Comite Europeen des Fabricants de Sucre), 2009, p. 19-24.

The number of beet growers fell from 251.431 in 2006/07 to 164.244 in 2008/09. But the white sugar yield increased from 7,84 tonne/ha in 2006/07 to 10,9 tonne/ha in 2008/09.[156]

Private Storage and Intervention[157]

If the average EU price recorded is below the reference price, during a representative period, and is likely to remain at that level, taking into account the market situation, aid for private storage of white sugar may be granted. Intervention agencies buy in at 80 % of the reference price. Intervention agencies may sell sugar only at a price which is higher than the reference price fixed for the marketing year in which the sale takes place.

The intervention agency buy in up to 600.000 tonnes of sugar per marketing year provided that the sugar has been produced under quota and manufactured from beet or cane harvested in the Community.

Withdrawal of Sugar

A percentage of sugar, isoglucose or inulin syrup under quota may be withdrawn from the market up to the start of the following marketing year in order to maintain the structural balance of the market at a price level that is close to the reference price.[158]

[156] CEFS, 2009, p. 7, 25.
[157] Council Regulation No 318/2006 of 20 February 2006, Article 18.
[158] Council Regulation No 318/2006 of 20 February 2006, Article 19.

Support Prices

Before 2006, intervention measures were applied in the sector. The intervention price is the price at which intervention agencies are required to buy in the eligible sugar delivered to them.[159] Since 1993 it had been frozen at 631,90 €/t for white sugar and 523,70 €/t for raw sugar.

During the four-year transition period (2006/07 and 2009/10), EU-funded buying into stores ('intervention') function as a safety net. From 2010/11 on intervention disappeared and replaced by reference price. The reference price for white and raw sugar was cut by 36 % in four steps between 2006/07 and 2009/10 and decreased from 631,90 €/t for white sugar and 523,70 €/t for raw sugar to 404,40 €/t for white and 335,20 €/t for raw sugar for the period 2009/10.

1. Reference prices are:[160]
For white sugar:
(a) EUR 631,9 per tonne for each of the marketing years 2006/2007 and 2007/2008;
(b) EUR 541,5 per tonne for the marketing year 2008/2009;
(c) EUR 404,4 per tonne as from the marketing year 2009/2010.

For raw sugar:
(a) EUR 496,8 per tonne for each of the marketing years 2006/2007 and 2007/2008;
(b) EUR 448,8 per tonne for the marketing year 2008/2009;
(c) EUR 335,2 per tonne as from marketing year 2009/2010.

The minimum price for sugar beet is the minimum price at which sugar manufacturers are required to buy beet from growers for the production of quota sugar.[161] It is currently 46,72 €/t for beet used to produce A-quota sugar and 32,42 €/t for beet used to produce B-quota sugar. The EU prices are guaranteed only for production within quota.

[159] European Commission, 2004b, p. 5.
[160] Council Regulation No 318/2006 of 20 February 2006, Article 3.
[161] European Commission, 2004b, p. 5.

The minimum price for quota beet is:[162]

(a) EUR 32,86 per tonne for the marketing year 2006/2007;

(b) EUR 29,78 per tonne for the marketing year 2007/2008;

(c) EUR 27,83 per tonne for the marketing year 2008/2009;

(d) EUR 26,29 per tonne as from the marketing year 2009/2010.

Single Payment Scheme

Direct payments for sugar beet growers were made (covering 64,2 % of the revenue loss from the price cuts).[163] Direct payments are decoupled and become part of the Single Payment Scheme payment is therefore conditional on the fulfillment of 'Cross Compliance'.

C. Trade Measures

Imports and exports of sugar products are subject to presentation of export or import license. The rates of import duty in the Common Customs Tariff apply to sugar products.

Border protection: A tariff rate quota of 106.925 tonnes is applied in the raw cane sugar (for refining) and the rate of duty is 98 €/1000 kg. Above the quota, tariff rate is €339 per tonne for raw sugar and €419 per tonne for other sugar.[164] Tariff rate quota is 0% for 1.304.700 t in cane or beet sugar. The customs tariff in sugar beet is 23 €/100kg.[165] Tariff rate quotas are managed according to the "first come-first served" or distributed in proportion to the quantities requested in applications.

Export refunds were given to cover the difference between the EU price and the world price for sugar, allowing it to be sold on the world market. The average export price for white EU sugar was 223 €/t for 2002/03. Refunds are paid for sugar obtained from beet or

[162] Council Regulation No 318/2006 of 20 February 2006, Article 5.
[163] European Commission, September 2006, p. 3.
[164] Common Customs Tariff, Commission Regulation No 1031/2008 of 19 September 2008, p. 131, 871.
[165] Common Customs Tariff, Commission Regulation No 1031/2008 of 19 September 2008, p. 107.

cane harvested in the EU and sugar imported under the ACP Protocol/Agreement with India. For the marketing year 2002/03 refunds were 485 €/t.[166]

4.2.2 SUGAR IN TURKEY

There are two types of sweeteners production in our country; those are sucrose based and starch based. These are beet sugar as well as glucose syrup and High Fructose Corn Syrup (HFCS) respectively. There are also starch-based dextrose monohydrate and fructose productions in small quantities. Installed capacity of beet sugar in Turkey is 3 million 148 thousand tonnes. Installed production capacity of starch-based sugar factories in Turkey is 990 thousand tonnes. Sugar beet covered 28-29% of total sown area.

Because of the drought in 2007, there was a decrease in the water resources and as experienced in other agricultural products, the production level in sugar beet fell about 14% from 14 million in 2006 to 12 million tonnes in 2007. In 2008, production level in sugar beet increased 25% to 15,5 million tonnes in 2008/09 to 17,3 million tonnes in 2009/10.[167]

Sugar beet production is an example of scheduled production and rotation in the agriculture. Sugar beet farming is made in all regions of Turkey except Southeastern Anatolian Region. Cultivation and production of sugar beet are controlled and supported by Pankobirlik and TŞFAŞ (Türkiye Şeker Fabrikaları Anonim Şirketi).

Benefits of Sugar Beet Cultivation are:[168]

- Sugar beet plant maintains an annual employment of 35.000 persons in factories and 450 thousand families, who are growing this plant. It establishes 13 and 8 times more employment compared with its competitive agricultural products, wheat and corn, respectively.

[166] European Commission, 14 July 2004, p. 3.
[167] Pankobirlik, 2011a.
[168] http://www.pankobirlik.com.tr

- It is a plant, which maintains 20 % efficiency increase for the cereals, sown afterwards.
- Side products of sugar beet, head-leaves, wet beet pulp and molasses are used as animal fodder. Provided that, these side products are cheaper and easily obtainable, sugar beet cultivation also supports development of animal husbandry in rural areas.
- Molasses include 50% sugar, so sugar can be reproduced from molasses. Molasses can be also used in drinks and ethil alcohol production.

In Turkey, sugar was only produced from sugar beet since 1990s. After mid-1990s the sugar has been produced from beet and corn. 90% of domestic sugar demand is met from sugar beet and 10% from the corn. Starch-based sugar is not directly consumed. It is generally used as input in sugar sector like sweeteners, ice cream, marmelades, jams, and drinks with alcohol and without alcohol…

The organisation of the sugar sector is:

Currently there are 33 beet sugar companies, 8 of which are private and 25 of them are state-owned. There are also 6 factories producing starch-based sugar (Cargill, Amylum Nişasta, Pendik Nişasta, Tat Nişasta, Sunar Mısır).

Türkşeker (TŞFAŞ) is the biggest company of the sector with 25 factories. It is in the privatization agenda since December 2000.

The factories to be privatised are listed in groups. The factories with their daily sugarbeet processing capacities are listed below:

Portfolio A: Kars (1.750 t), Erciş (2.100 t), Ağrı (3.400 t), Muş (3.600 t), Erzurum (3.300t),

Portfolio B: Elazığ (1.800 t), Malatya (3.600 t), Erzincan (1.850 t), Elbistan (3.800 t),

Portfolio C: Kastamonu (3.700 t), Kırşehir (3.600 t), Turhal (7.200 t), Yozgat (3.600 t), Çorum (6.800 t), Çarşamba (3.000 t)

Portfolio D: Bor (3.800 t), Ereğli (8.000 t), Ilgın (7.000),

Portfolio E: Uşak (1.800 t), Alpullu (3.700 t), Burdur (5.200 t), Afyon (7.000 t), Susurluk (7.000 t)

Portfolio F: Eskişehir (7.200 t), Ankara (3.700 t)

The factories in portfolio A, located in eastern Turkey, did not get any bids from the private sector in 2008. They have low capacities and inefficient operations. The bidding process was again canceled in 2009.

The daily capacities of the private factories are generally above 5.000 tonnes: Adapazarı (6.500 t), Kütahya (1.900 t), Amasya (5.500 t), Kayseri (two factories: Kayseri and Boğazlıyan with a capacity of 12.000 t), Konya Şeker Fabrikası (2 factories– Konya (10.000 t) and Çumra (16.500 t) and Aksaray (9.000 t).[169]

Sugar sector has been regulated by law since 1925. Between the years 1956-2001 the Sugar Law no 6747 had been in force and then the current Sugar Law no 4634 has been entered into force on 19/04/2001. The purpose of the law is to regulate; the sugar regime, procedures and principles in sugar production and conditions and methods of pricing and marketing.

Sugar beet Yield and Average Farm Size

The yield of sugar beet is around 40-50 tonnes per hectare which is below the EU levels:

Sugar beet Yield in Turkey and in European Union

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
European Union	53,1	59,54	60,39	59,15	63,39	66,47	70,3
Turkey	40,03	42,86	45,2	44,65	41,54	48,29	53,32

Source: Faostat, 2010.

In Turkey, average size of the sugar beet holding is very low. In 2003, 80% of the farmers cultivate sugar beet in land under 10 decares. The small-sized farms make difficult to use modern farming tecniques economically and let to a decrease in sugar beet yield and an increase in production costs. [170] In the European Union, holdings with sugar beet are larger than average in terms of both area and economic indicators. The overall agricultural area

[169] http://www.amasyaseker.com.tr, http://www.adaseker.com.tr, http://www.konyaseker.com.tr, http://www.kayseriseker.com.tr, http://www.kutahya.seker.com.tr, http://www.balkupu.com.tr/aksaray-fabrika.asp

[170] Ahmet Yücer et al., 2006, p. 10.

for holdings with sugar beet is 70 hectares. In general, holdings with sugar beet have above average incomes.[171]

Sugar Prices

Percentage increases in refined sugar price are generally below inflation rates between 2000-2009 except 2002 and 2008. Reel sugar price has a decreasing trend in the observed years. In 2009, the producer received 55 TL/kg, while he had received 82,8 TL/kg in 2000 (Table 4-26). Real sugar price decreased by 33% from 2000 to 2009. Sugar beet prices decreased in 2006 and 2007 during the food crisis, but then increased in 2008.

Table 4-26: Sugar Prices in Turkey

Year	Sugar beet price (TL/t)	Sugar Producer Price at the farm gate (TL/t)	Increase in Sugar Price (%)	CPI (%)	1994 based Reel Sugar Price (TL/kg)
2000	34	245,86	12,6	54,9	82,8
2001	50	360,08	46,5	54,4	78,5
2002	74	566,82	57,4	45,0	85,2
2003	88	665,19	17,4	25,3	79,9
2004	98	733,77	10,3	10,6	79,7
2005	99	729,46	-0,6	10,1	71,9
2006	92	684,01	-6,2	10,5	61,0
2007	96	681,33	-0,4	8,8	55,9
2008	110	769,23	12,9	10,4	57,1
2009	116	788,04	2,4	6,3	55,1

Sources: OECD, 2011a.
Pankobirlik, 2011d.
TUIK, 2009a, s. 595.
TUIK, 2010a.

*Sugar producer price is the refined sugar price (at the farm gate) taken from OECD.

A. Agricultural Support Policy

Purchase support in sugar beet started in 1956. The purchased quantity of the sugar factories was between 79-100% of the total production quantity (Table 4-27).

[171] European Commission, September 2006, p. 1-2.

Table 4-27: Intervention Buying of Sugar Beet

Years	Production quantity	Purchased quantity	Purchase/ Production	Purchase price
	(1000 tonnes)	(1000 tonnes)	%	(TL/kg)
1990	13.986	13.986	100	142
1991	15.474	14.975	96,78	218
1992	15.126	13.101	86,61	356
1993	15.621	12.814	82,03	556
1994	12.944	10.721	82,83	1.032
1995	11.171	8.820	78,95	2.750
1996	14.383	11.414	79,36	4.775
1997	18.553	14.908	80,35	12.128
1998	21.941	17.619	80,3	17.709

Source: Zafer Yükseler, 1999, p. 5-6.
* Purchase quantities are the quantities of the one year before.

In 1997, there was excess sugar production. To prohibit the illegal cultivation in sugar beet and to maintain supply stability, production control was introduced in the sugar beet sector. Türk Şeker makes contracts with the sugar beet farmers. [172]

The contracts include details about:[173]
-the area to be harvested by the farmer (decare)
-farming and delivering conditions
-advance payments
-responsibilities of the sugar factory and the farmer

Türk Şeker also supports the sugar beet growers by providing them advance payments, beet seed support, assistance on fertilizers, polarization premiums, certain percentage of beet returns as fresh pulp free of charge, incentive premiums and compensations for transporting beet to factories' central delivery points. [174]

Sugar Law No 4634 amended on 19 Nisan 2001 introduced quota system in sugar. From 2002/03 onwards, sales quota has been applied to sugar. The objective of the quota system is to maintain a production level which meets domestic demand.[175]

[172] Taylan Kıymaz, 2002, p. 13.
[173] Celal Er, 2007, p. 128-129.
[174] ABGS, 23-26 January 2006, Agenda item: 18, p. 21.
[175] Taylan Kıymaz, 2002, p. 66.

Sugar Quotas

For determination of the sugar quota in the country, the necessary data are the sugar demand and the sugar stocks. Production capacities, producer demand and production statistics of previous years are taken into account for distribution of quotas among the factories.[176]

There are 3 beet sugar quotas:[177]
A quota: corresponds to sugar produced for domestic demand and that can be placed on the market in the same marketing year
B quota: corresponds to compulsory reserves.
C sugar: Sugar, produced out of quotas which can not be marketed domestically. It must be exported in a definite time period without subsidy.

Sugar quotas are allocated by the Sugar Board annually as the basis of individual sugar undertakings. Companies distribute their quota among their sugar factories. For the 2009/10 period, the beet sugar quota is 2,56 million tonnes and starch-based sugar quota is determined as 271.000 tonnes (Table 4-28). In Turkey, starch-based sugar quota is determined as 10% of the total quota with the new Sugar Law. The raw product of the starch-based sugar is corn.

Table 4-28: Production Quotas in the Sugar Sector (1000 tonnes)

Period	Beet Sugar Quota (A+B)	Starch-based Sugar Quota	Total Quota
2002/2003	2.149	234	2.383
2003/2004	2.149	234	2.383
2004/2005	2.149	234	2.383
2005/2006	2.191	234	2.425
2006/2007	2.191	234	2.425
2007/ 2008	2.168	234	2.402
2008/2009	2.475	267	2.742
2009/2010	2.560	271	2.831

Source: TŞFAŞ, 2009, p. 27.

[176] Celal Er, 2007, p. 135.
[177] 01/04/2002 dated Offical Gazette, "Şeker Kotalarının Düzenlenmesine İlişkin Yönetmelik".

For the income loss, compensatory payments were given to the farmers in 2003 whose harvested beet area was constrained due to the quota application. 4,5 million TL was paid for the total area of 38.500 decares to 6.093 sugar beet farmers. [178]

Area Based Payments

For the sugar beet produced in 2010, farmers receive a diesel support of 5,5 TL/da and 5,5 TL/da as chemical fertiliser support.

Type of Support	2005	2006	2007	2008	2009	2010
Diesel (TL/da)	4,5	5,4	5,4	5,5	6,0	5,5
Fertiliser (TL/da)	3,0	3,0	3,0	5,5	6,0	5,5

Sources: a) 07.09.2005 Dated Official Gazette (Number: 25929):
c) 26.03.2008 Dated Official Gazette (Number: 26828)
b) 14.11.2008 Dated Official Gazette (Number: 27054).
c) 18.03.2010 Dated Official Gazette (Number: 27525).
d) İlkay Dellal et al., Eylül 2007, p. 14-15.

Farmers have to undertake soil analysis in the labarotories authorised by the Ministry of Agriculture and Rural Affairs to receive fertiliser support. Payment is given for the areas to 50 decares which are registered to the Farmers Registration System. There is not any soil analysis condition for the land under 50 decares.

B. External Trade Measures

Export subsidies were first applied in 1986 and paid for biscuits, sweet preperations without cocoa and sweet preperations containing cocoa and chocolate. Turkey did not notify export subsidies in sugar to the WTO, so can not subsidize sugar export. Export subsidies paid on processed products containing sugar are jam, honey, fruit juices (concentrated), chocolate and other food preparations containing chocolate, biscuits.

The basic tax rate was 150% for sugar in 1986-88 base years. Turkey's WTO commitment was a 10% cut in tax rate. Since 2005, the tax rate for sugar is 135% and for sugar beet is

[178] TC Gıda, Tarım ve Hayvancılık Bakanlığı, 01.04.2003.

19,30 %.[179] Turkey's preferential import tariff for European Union is 20% reduced with a maximum duty of 50% for beet or cane sugar (TRQ: 80.000 tonnes).[180]

Turkey's Sugar Trade with European Union

Turkey's sugar export and import quantities are at low levels. Sugar trade with European Union is also significantly low. The import quantity has a decreasing trend. Generally, Turkey has a negative trade balance with European Union in sugar trade (Table 4-29). In 2009, Turkey's trade deficit with EU in the sugar was 398 $.

Table 4-29: Turkey's Sugar Trade with European Union

Years	Export (kg)	Import (kg)		Export ($)	Import ($)	Net trade ($)
1990	0	605.000		0	288.397	-288.397
1991	0	6		0	1.238	-1.238
1993	50	0		40	0	40
1994	0	240		0	906	-906
1995	0	5.102.346		0	2.647.406	-2.647.406
1996	18.448	9.956.370		19740	4.676.462	-4.656.722
1997	17.780	54.151		52064	35.351	16.713
1998	0	44		0	31	-31
1999	40	210.000		83	121.654	-121.571
2000	0	106.078		0	68.457	-68.457
2001	0	589		0	2.550	-2.550
2002	0	600		0	2.605	-2.605
2003	60.000	2.300		14700	2.279	12.421
2005	0	36		0	775	-775
2006	0	24		0	490	-490
2007	0	54		0	1.206	-1.206
2009	0	13		0	398	-398

Source: TUIK, 2011b.

C. Turkey's Adaptation to European Union's Sugar Support Policy

There are differences in sugar policies between EU and Turkey (Table 4-30). In European Union, sugar is suppported by intervention price system. In Turkey only area based

[179] TŞFAŞ, 2009, p. 41.
[180] DPT, 2001, p. 390.

payments are given to sugar beet producers. Also, Turkey doesn't have a Management Committee in sugar and no intervention pricing in sugar and sugar beet like in the EU. Turkey has to realize the establishment of a minimum price system, for sugar beet and sugar similar to that in the EU.[181]

The quota systems in European Union and Turkey are different. In the EU, quota is applied to the production quantity, but in Turkey it is applied to the sales quantity. In the EU, there is seperate quota for beet, cane and starch based sugar. However, in Turkey, starch-based sugar quota depends on the sugar beet quota and is determined as 10% of the total quota. For adaptation, Turkey has to implement quota on the production not on the sales.

In Turkey, following subjects are implemented similarly as the EU: [182]

- Determining the quality of sugar
- Quota in sugar and sugar beet
- Standard quality of beet
- System of minimum stocks
- Offsetting of storage costs
- Production of beet according to the contract
- Price increases/reductions on beet
- Rules in respect of sugar production in excess of the quota.

The major difference between Turkey and EU is in C-quota:[183] C-quota sugar can not be sold in domestic markets like in EU and farmers receive a lower price for over quota production. However, in contrast to the EU, Turkey did not declare export subsidy commitments for sugar, and has not right to give subsidy for sugar.

[181] TC Gıda, Tarım ve Hayvancılık Bakanlığı, 2011.
[182] TC Gıda, Tarım ve Hayvancılık Bakanlığı, 2011.
[183] Erol Çakmak and Hasan Dudu, 2010, p. 11.

Table 4-30: Differences between European Union's Sugar Policy and Turkish Sugar Policy

	EUROPEAN UNION	**TURKEY**
Sugar Price*		
Wholesale sugar p.	2,19 TL/kg	2,44 TL/kg
Sugarbeet purchase p.	63,90 TL/t	127,97 TL/t
Domestic policies		
Sugar Intervention	Yes (but no intervention in starch-based sugar)	No
Sugar beet intervention price	Yes	No
Quota	Yes (glucose is not included in the quota)	Yes (Quota starch-based sugar+glucose)
Quota	Production	Sales
	Seperate quota to beet, cane and starch-based sugar	starch-based sugar quota depends on beet quota
Determination of Quota quantity	in the dry state	beet sugar in the dry state
Cuts in Production	Yes	No
Management Committee for Sugar	Yes	No
External Trade		
Custom duty	TRQ: 98 €/t	135%
Preferential import arrangements	duty free access for ACP countries (TRQ of 1.294.700 tons) and for India (TRQ =10.000 tons)	No
Safeguard Measures	Yes	No
Use of Export subsidies	Yes (as notified in the WTO committments)	No

Source: Erol Çakmak, May 2008, p. 118.

*Sugar and sugar beet prices are taken from Pankobirlik, 2011d.

In the Screening Report Turkey, the degree of alignment and implementing capacity of Turkey in the sugar sector is assessed and it has been noted that sugar remains a very sensitive sector for Turkey and is not aligned to the EU sugar market. The market is heavily dominated by high import tariffs and artificially high domestic sugar prices.[184]

[184]ABGS, Screening report Turkey Chapter 11 – Agriculture and Rural Development, 7 September 2006, p. 16.

D. Evaluation of Sugar Policies in Turkey

Turkey is the fourth biggest sugar beet and beet sugar producer country (after EU, USA and Russia) in the world. In sugar beet self-sufficiency ratio is 100%.[185]

Until the mid 1990s, sugar was only produced from sugar beet. Since mid 1990s, sugar has been also produced from starch-based products (like corn). Since 2002, sales quota has been applied to the sugar. Starch-based sugar is 10% of the total sugar quota. In the European Union, production quota has been applied in the sugar sector since 1960s.

The sugar quota is distributed among the factories in Turkey. There are 33 sugar companies (8 of which are private). More than half of the factories have a daily sugarbeet processing capacity of less than 5.000 tonnes. In European Union 23 of 110 factories have daily capacity under 5.000 tonnes (as of 2008/09). The European Union had protected its sugar sector since the foundation of CAP through high prices. EU also applied quota in sugar after 1968. In 2006 sugar reform, the number of sugar factories decreased (some were closed and some were merged with the bigger ones). With the reform, inefficient sugar enterprises left the sugar sector. EU has overcome the problem of inefficient factories with 2006 reform. In Turkey, there is the problem of inefficiency and low capacity of sugar factories. In the EU-accession process, Turkey may also make restructuring in the sugar sector.

Sugar beet farming is very important for family farming. It employs many people and its side products are necessary also for other industries (drinks, marmelades, animal feed). So Turkey's better to go over the sugar support policies and restructuring in the sugar factories to make them more efficient.

[185] TUIK, 2011a.

4.3 OLIVE OIL IN THE EUROPEAN UNION AND IN TURKEY

Olive is the most extensively cultivated fruit in the world. Olive oil is a vegetable oil obtained from the olive, so it is like a fruit juice. The types of olive oils according to quality and its acidity are:

- Extra virgin olive oil: virgin olive oil having a maximum free acidity, in terms of oleic acid, of not more than 1 gram per 100 grams.
- Virgin olive oil: virgin olive oil having a maximum free acidity, in terms of oleic acid, of not more than 2 grams per 100 grams
- Lampante olive oil: virgin olive oil having a maximum free acidity, in terms of oleic acid, of more than 3,3 grams per 100 grams,
- Refined olive oil: olive oil obtained from virgin olive oil by refining methods which do not lead to alterations in the initial glyceridic structure
- Olive pomace oil: Oil obtained by treating olive pomace with solvents, excluding oils obtained by reesterification processes and any mixture with other kinds of oils.

Production and Consumption of Olive Oil in the World

Olive and olive oil production is concentrated mainly in the Mediterranean countries (Spain, Portugal, Italy, Greece, Turkey, Tunisia, and Syria). European Union produces 75% of world olive oil. Turkey ranks four in olive oil production accounting 5% of the world total (Table 4-31).

Table 4-31: World Olive Oil Production and Main Producers (1000 tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2009/2010 world share (%)
European Union	2.448	1.928,5	2.031	2.118,5	1.939	2.225,5	74,84
Tunisia	130	220	160	170	160	150	5,04
Syria	175	100	154	100	130	150	5,04
Turkey	145	112	165	72	130	147	4,94
Morocco	50	75	75	85	85	140	4,71
Algeria	33,5	32	21,5	24	61,5	26,5	0,89
Jordan	29	22	37	21,5	18,5	17	0,57
World	3.013	2.572,5	2.767	2.713	2.669,5	2.973,8	

Source: International Olive Oil Council, November 2011.

Although cultivation of olives and production of olive oil are mainly concentrated in Mediterranean Area, consumption of the commodities is worldwide. Only European Union countries account for 64% of total world consumption.

Table 4-32: World Olive Oil Consumption and Main Consumers (1000 tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2009/2010 world share (%)
European Union	2.079	1.918	1.905	1.866	1.856,0	1.846	63,61
USA	215,5	223	248	246	256	258	8,89
Syria	135	79	110	80	110	120,5	4,15
Turkey	60	50	80	85	108	110	3,79
Morocco	38	55	65	65	70	90	3,10
Canada	32	30	32,5	29	30	50,5	1,74
Australia	32,5	34,5	47,5	35	37	44	1,52
Japan	32	30	30,5	29	30	40,5	1,40
Algeria	38	35	23	25	55	33,5	1,15
Tunisia	44	38	45	50	21	30	1,03
Jordan	25	19	21	23,5	23,5	29	1,00
World	2.923,5	2.690,5	2.798,5	2.754,5	2.831,5	2.902,0	

Source: International Olive Oil Council, November 2011.

Consumption of olive oil is very low in Turkey, accounting for 1,3 kg per head of the population, when compared with European Union countries. In Greece, consumption accounts for 21 kg per head, in Italy it is 11,5 kg and in Spain it is around 13 kg. [186] The main reasons of low level of consumption are people have little knowledge about its

[186] TC Sanayi ve Ticaret Bakanlığı, 2010, p. 6, 11.

healthiness and the high price of olive oil in Turkey. Olive oil is expensive, so people generally prefer to buy other cheap vegetable oils.

The main consumer counrty is European Union, accounting for 64% of total world consumption (Table 4-32). EU is followed by USA, Syria and Turkey.

World Olive Oil Trade

European Union is the main exporter of olive oil with a share of 68%, followed by Tunisia (15%). In olive oil export, Turkey ranks third.

Table 4-33: World Olive Oil Export and Main Exporters (1000 tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2009/2010 world share (%)
European Union	330,5	310,5	351	357	376	444	67,99
Tunisia	98	110,5	175	130	142	97	14,85
Turkey	93,5	73	45	15	31	29,5	4,52
Morocco	31	21	4,5	2	3	21	3,22
Argentina	12,5	16	15	18,5	14	19	2,91
Syria	36	35	40	20	15	18	2,76
Australia	1,5	3,5	2,5	4	6,5	8	1,23
World	633,5	603,5	662	562,5	608,5	653	

Source: International Olive Oil Council, November 2011.

Table 4-34: World Olive Oil Import and Main Importers (1000 tonnes)

Countries	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2009/2010 world share (%)
USA	221	232	250	245	255	258	39,57
European Union	186	189	224	162	96	78	11,96
Brazil	26,5	26	34,5	40	42	50,5	7,75
Japan	32	30	30,5	29	30	40,5	6,21
Canada	32	30	32,5	29	30	37	5,67
Australia	28,5	29	41,5	27	28,5	35	5,37
Russia	9	9,5	10,5	17	15	22	3,37
Israel	7,5	13,5	8	12	8	13	1,99
World	634	639	704,5	636	568	652	

Source: International Olive Oil Council, November 2011.

United States of America is the leading importer of olive oil with a world share of 39%, followed by European Union (12%) and Brazil (Table 4-34).

World Olive Oil Prices

In 1986, after Spain and Portugal joined, European Union became the market reference. When the prices of extra virgin olive oil in the European Union are compared with the prices in Turkey, we can see that the prices in Turkey are really high. However, extra virgin olive oil production aid is 1.322,5 €/t in the EU. In this case, producer in the EU receives more than the producer in Turkey.

Olive Oil Price in the European Union and in Turkey (€/t)

Years	EU Price	TR Price
2006	2.706	3.698
2007	2.495	3.687
2008	2.070	2.799
2009	2.107	3.144

Sources: European Commission, September 2010.
TC. Sanayi ve Ticaret Bakanlığı, 2010, p. 12.

International Olive Oil Council

The International Olive Oil Council regulates the worldwide olive and olive oil sector. The International Olive Oil Council (IOOC) was created in 1959 as a consequence of the entry into force of the 1956 International Olive Oil Agreement with the aim of encouraging international cooperation, modernising olive-growing, facilitating international trade in olive products and cooperating in standardising international trade in olive products. The 1956, 1963, 1979 and 1986 international olive oil agreements aimed to stabilize and expand trade. 1986 agreement covered also table olives.

The current agreement is known as the International Agreement on Olive Oil and Table Olives, 2005. It attaches even more importance to product quality, which is viewed as a key argument in promoting olive oil and table olives to consumers and in helping to balance supply and demand. Environmental protection and conservation are considered top

priorities to improve the environmental impact of olive growing and the olive/olive oil industry. The 2005 Agreement will remain in force until 31 December 2014.

The International Olive Oil Council, which has its headquarters in Madrid is an intergovernmental organisation with a membership of seventeen (as of December 2010): Albania, Algeria, Argentine, the European Union, Croatia, Egypt, Iran, Iraque, Israel, Jordan, Lebanon, Libya, Morocco, Serbia-Montenegro, Syria, Tunisia and Turkey. The current Council Members produce 98% of the world's olive oil and table olives. Turkey became a member of the Council in 1963, but in 1998 Turkey left the Council. Turkey again joined the Council in February 2010.

4.3.1 OLIVE OIL IN THE EUROPEAN UNION

The share of the olive oil sector in total agricultural product is 1,3%.[187] Spain is the main producer, followed by Italy, Greece and Portugal. There are 800 million olive trees in the European Union as a whole covering a total area of 5,5 million hectares.[188] 99 % of the area planted with olive trees is concentrated in these 4 countries, of which Spain accounts for half, followed by Italy 24%, Greece 17 % and Portugal 8% of the total.[189]

European Union is the main leader in production, consumption, export and import of olive and olive oil in the world. EU accounts for 75% of world production and 64% of world consumption. Thanks to the successful enlargements in the past, the Union became the dominant player in the world. In 1986, after Spain and Portugal joined, European Union became the market reference, averaging 75% of the world production; Spain alone accounts for more than 40 percent of world production. The province of Jaen, Spain in general claims to be the "World Capital of Olive Oil" as the largest producer of olive oil in the world.

[187] Eurostat, 2009, p. 59.
[188] European Commision, December 2005.
[189] Eurostat, 2009, p. 90.

A. Reforms

When it was set up in 1966, the main aim of the market organisation in the olive oil sector was to guarantee Community olive growers a fair income by supporting their production and encouraging the consumption of olive oil in the Community.

The olive oil scheme was based on a series of institutional prices (intervention price, target price), fixed annually by the Council, with a system of monthly increases. The accession of Greece in 1979 made the Community almost self-sufficient in olive oil, which required some changes in the sector. Thus, for a ten-year period (1978-87), the planting of olive trees was prohibited. 1987/88 reform was made when the Community became a net exporter as a result of the accession of Spain and Portugal. A mechanism to control production and stabilise the budget was established with the introduction of a maximum guaranteed quantity (MGQ) of 1.350.000 tonnes. Overshooting the MGQ triggered a mechanism of cumulative reductions (up to 3% per marketing year) in the intervention price. If the MGQ were not exceeded, the remaining part was carried over and added to that for the following marketing year. The production aid was €77/100 kg in 1987/88.

For the marketing year 1995/96, production aid was fixed at €12/100 kg, Community output eligible for aid rose to 1,9 million tonnes in 1996/97 and to 2,3 million tonnes in the following year.[190]

In the 1998/99 marketing year the production aid was fixed at €132,25/100 kg, and the MGQ was set at 1.777.261 tonnes. These quantities were divided into national guaranteed quantities (NGQ) so that the consequences of any overshooting would fall on the Member States responsible. If production in a marketing year is lower than the NGQ, 20% of the difference is distributed proportionally among the Member States which exceeded their NGQ, while the remaining 80% is carried over to the NGQ of the Member State in question for the following marketing year.

[190] European Commission, 2004a, p. 36-37.

In 2004 another reform was made in the olive oil sector. The reform of agricultural aid for cotton, tobacco , hops and olive oil and table olives was negotiated together and included in the same Regulation (Council Regulation No 864/2004**)** called as the "Mediterranean package":[191] In the reform package, the Commission proposed that 60 % of the production-linked payments in the olive oil sector, for the reference period, should be converted into entitlements to the single farm payment for holdings larger than 0,3 ha. Member States would retain 40 % of the payments in the olive oil sector, for the reference period, as national envelopes, for the granting to producers of an additional olive grove payment, calculated on a per hectare or per tree basis. This payment is not linked to production but is intended for maintaining the olive trees, preserving the soil and the environment while taking into consideration the local traditions and culture.

B. Agricultural Support Policy

Agricultural support policy in the olive oil sector comprises of production aid, private storage aid and single payment scheme.

Production Aid

The common market organization for olive oil was created in 1966. The principal support regime in the sector is the production aid. A percentage of this aid is retained for measures to improve the quality of olive oil production, and to secure the functioning of producer organizations.[192]

Production aid is granted to all producers on the basis of the quantity of olive oil (and also table olive) produced, subject to the National Guaranteed Quantity (NGQ), currently totaling 1,78 million tonnes (Table 4-35). In member states overshooting the NGQ, there is a proportional reduction of the aid granted to producers. Production aid is € 1.322,5/tonne.[193]

[191] European Commission, 23.09.2003, p. 17.
[192] European Commission, 2002, p. 5.
[193]European Commission, 23.09.2003, p. 9.

Table 4-35: Olive Oil National Guaranteed Quantities (tonnes) in the EU

Countries	National Guaranteed Quantities (Tons)	Production Aid (€/t)	Total Aid (€)
Spain	760.027	1.322,5	1.005.135.708
Italy	543.164	1.322,5	718.334.390
Greece	419.529	1.322,5	554.827.103
Portugal	51.244	1.322,5	67.770.190
France	3.297	1.322,5	4.360.283
Total	1.777.261	1.322,5	2.350.427.673

Source: European Commission, 2002, p. 5.

Of the total MGQ, 42,8 % is allocated to Spain, 30,6 % to Italy, and 23,6 % to Greece (Table 4-35). If production in one Member State undershoots the NGQ, 20 % of the amount of that undershoot may be used to compensate for an overshoot of another Member State's NGQ, while 80 % can be carried over to the NGQ of the following marketing campaign. This is to take into account large annual variations in olive oil production.

Olives are grown only in three of the 12 new member states. Maximum guaranteed quantities were allocated to them, of 6.000 tonnes, 400 tonnes and 150 tonnes for South Cyprus, Slovenia and Malta respectivley. They are smaller producers.

Private Storage Aid

In the first years of CAP, olive oil was supported by intervention buying. The mechanism of intervention buying was abolished in 1998 and replaced by a private storage mechanism. In the event of a serious disturbance of the market in the European Union or some of its regions, the Commission may authorise storage. The storage mechanism is used in particular when, for a long period of time, the average price recorded on the market is less than[194]

- 1.779 €/t for extra virgin olive oil;
- 1.710 €/t for virgin olive oil;

[194] European Commission, 2004a, p. 41.

- 1.524 €/t for lampante olive oil having 2 degrees of free acidity (this amount will be reduced by 36,70 €/t for each additional degree of acidity).

Single Payment System (SPS)

A minimum of 60% of the average production-linked payments (reference years are the 1999/2000, 2000/01, 2001/02 and 2002/03) are eligible for holdings larger than 0,3 hectares. Olive farms smaller than 0,3 hectares will receive 100% of their average production-linked payments. In order to receive SPS or the aid for olive groves, growers must maintain their land in good agricultural and environmental condition and respect other 'cross compliance' standards.

The aid for olive groves: via 'national envelopes'

To ensure olive tree maintenance, and thus avoid the degradation of land cover and landscape or negative social consequences, a part of the CAP support can be linked to the maintenance of olive groves of environmental or social value. These olive grove payments are made for amounts of at least EUR 50 per aid to avoid encouraging new plantings; access to the support regime (both decoupled aid and the aid for olive groves) will be limited. The limit applies to areas associated with olive trees existing prior to 1 May 1998 (31 December 2001 for Cyprus and Malta) or new trees replacing them, and to new plantings authorised under programmes approved by the Commission. Aid is granted for olive groves registered in an olive GIS.

From the 1998/99 marketing year onwards, the EU reimposed restrictions on new plantings, so that plantings as from May 1998 were not entitled to aid.

C. Trade Measures

Imports and exports of sugar products are subject to presentation of export or import license. The Common Customs Tariff applies to the table olives and olive oil.

The EU's market access measures in olive oil are based on specific tariffs; tariffs are in euros per 100 kilos. The customs duties on olive oil amount to: [195]

€122,6/100 kg for lampante oils,
€124,5/100 kg for virgin and extra virgin olive oils,
€134,6/100 kg for other olive oils,

In addition, under the WTO agreements, the quantities which can benefit from export refunds have gradually fallen from 140.500 tonnes in 1995/96 to 115.000 tonnes as from 2000/01, at a maximum cost of € 54,3 million.[196]

4.3.2 OLIVE OIL IN TURKEY

Turkey ranks for fourth in olive oil production accounting for 5% of world total. According to TURKSTAT 2009 data, existing surface cultivated with olive trees is 782.450 hectares in Turkey. The number of bearing olive trees is 109 million (28% of the total is non bearing.

Table 4-36: Olive Oil Statistics in Turkey

Years	Area (Ha)	Number of Bearing Trees (1000)	Production of Olives (for Oil) (t)	Olive Oil Production (t)	Olive Oil Consumption (t)	Export	
						Quantity (t)	Value (1000 $)
2004/05	644.000	94.950	1.200.000	145.000	60.000	50.961	135.387
2005/06	662.000	96.625	800.000	112.000	50.000	93.957	305.347
2006/07	711.842	97.773	1.211.000	165.000	80.000	47.094	185.939
2007/08	753.000	104.219	620.469	72.000	85.000	43.935	143.323
2008/09	774.370	106.139	952.145	130.000	108.000	19.402	77.287
2009/10	782.450	109.127	830.641	147.000	110.000	31.668	100.855

Sources: TUIK, 2011c.
International Olive Oil Council, November 2010.
TC. Sanayi ve Ticaret Bakanlığı, 2010, p. 10.

[195] Common Customs Tariff, Commission Regulation No 1031/2008 of 19 September 2008, p. 81, 117.
[196] European Commission, 2004a, p. 42.

Due to the periodicity[197], olive oil production fluctuates. In 2009/10, total olive oil production was 147.000 tonnes (Table 4-36). Turkey is a big exporter country. But export quantity has a decreasing trend. In 2009, total export quantity was 31.668 tonnes and lower than the levels before 2008.

Italy, United States and Canada account for almost all Turkey's olive oil exports. 70% of Turkey's olive oil exports are in bulk and 30% of them are in packages.

Organisation of the Olive Oil Sector in Turkey

In Turkey, "Ulusal Zeytin ve Zeytinyağı Konseyi (UZZK)" is important in the olive and olive oil sector which was set up in April 2007. The Council has its headquarters in Ankara. The aim of the Council is to inform the producers, to contribute research and development in the sector, to provide standardization and certification in the sector, marketing of the product, participation in exhibitions etc. The members of the Council are: Olive and Olive Oil Sales Cooperatives, Olive and Olive Oil Exporters Union, Agricultural Sales Cooperatives, Producer Unions, Ministry of Trade, Agricultural Ministry, Foreign Trade Ministry, Undersecretariat of Treasury and Foreign Trade, State Planning Organisation, Turkish Statistical Institute, Turkish Standardisation Institute, The Union of Chambers and Commodity Exchange of Turkey.

Olive Oil Cooperatives in Turkey

Most of the producers of olive and olive oil organise in Agricultural Sales Cooperatives. Agricultural Sales Cooperatives and Association of Cooperatives (Tariş Zeytin ve Zeytinyağı Birliği, Marmarabirlik and Güneydoğubirlik) purchase, process, stock and sell the olive and olive-oil of their members (table 4-37). Cooperatives and Association of Cooperatives provide the significant part of production inputs and then distribute them. They generally give the provided input to the producers by credit in kind. Also depending on their financial abilities they provide cash credit to their members. Furthermore, they

[197] Periodicity: Some fruit trees yield one year high/one year low amounts. In Turkey, in the years of which the last number ends with even number, the olive trees yield high amounts. In other years, there is low yield.

provide information on production techniques to their members. Association of cooperatives and number of members are given in the table 4-37.

Table 4-37: Association of Cooperatives in Olive Oil and Table Olives

Name of the Association of Cooperatives	Areas of Profession	Number of Cooperatives	Number of the Association of Cooperative Members
TARİŞ Zeytin ve Zeytinyağı Birliği	Olive oil- Table Olives	33	24.410
MARMARABİRLİK	Olive oil- Table Olives	8	28.515
GÜNEYDOĞUBİRLİK	Olive oil	3	4.945
Total		44	57.870

Source: TC Sanayi ve Ticaret Bakanlığı, 2010, p. 13.

Producer prices in Olive Oil

Olive oil is a generally expensive vegetable oil. There is no stability in the price increase in olive oil. One reason is that the increase in the price depends on the production level. Because of the periodicity in olive, in one year the production quantity of olive oil is well, but in the following year, it is lower. Reel olive oil price has been in a decreasing trend in the last years (Table 4-38). Reel olive oil price was high in 2001, amounting 745 TL/kg, but it fell to 473 TL/kg in 2009.

Table 4-38: Olive Oil Prices in Turkey

Year	Producer Price (TL/t)	Increase in Olive Oil Price (%)	CPI (%)	1994 based Reel Price (TL/kg)
2000	1.504	-6	54,9	506
2001	3.417	127	54,4	745
2002	4.556	33	45,0	685
2003	4.030	-12	25,3	484
2004	4.250	5	10,6	461
2005	5.790	36	10,1	571
2006	6.880	19	10,5	614
2007	6.320	-8	8,8	518
2008	6.000	-5	10,4	446
2009	6.770	13	6,3	473

Source: ABGS, Screening with Turkey Olive Oil and Table Olives *(*Non-exhaustive list of issues and questions to facilitate preparations for bilateral meetings), 2006, p. 7.
TC. Sanayi ve Ticaret Bakanlığı, 2010, p. 12.

Yield

There are not so large gaps between the olive yield in Turkey and in European Union. Due to the periodicity of the olive tree, production fluctuates in Turkey, so in some years olive yield is below the EU levels.

Olive Yield in Turkey and European Union (kg/ha)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
European Union	2816	2545	2202	2455	2471	2408	2572
Turkey	1383	2528	1863	2710	1548	2069	1774

Source: Faostat, 2010.

A. Agricultural Support Policy

Agricultural support policy in the olive oil sector comprises of area-based payments, deficiency payment and certified olive sapling support. Table 4-39 shows the types and values of support payments between 2005 and 2009.

Table 4-39: Types of Support Payments in Olive Oil

Type of Support	2005	2006	2007	2008	2009	2010
Diesel (TL/da)	1,5	1,8	1,8	3,25	3,25	3,25
Chemical Fertiliser (TL/da)	1,0	1,43	1,55	4,25	4,25	4,25
Direct Income Support (TL/da)	16	10	7	-	-	-
Soil Analysis (TL/da)	-	-	-	2,25	1,0	2,5
Deficiency payment (kr/kg)	10	11	20	21	25	30
Olive sappling (TL/da) for gemlik olives	30	250	45	40	50	100
Olive sappling (TL/da) for other olives	30	250	250	100	100	100

Kaynak: a) TBMM, Temmuz 2008, s. 152-154.
b) Dr. Renan Tunalıoğlu Pervin Karahocagil, Mart 2006, p. 37.
c) 02.03.2010 Dated Official Gazette (Number: 27509).
d) 07.01.2007 Dated Official Gazette (Number: 26396).
e) 26.03.2008 Dated Official Gazette (Number: 26828).
f) 14.11.2008 Dated Official Gazette (Number: 27054).
g)18.03.2010 Dated Official Gazette (Number: 27525).
h) 04.03.2010 Dated Official Gazette (Number: 27511).

Premium Payments

In 1966, intervention buying was started in olive oil. Between the years 1987 and 1990 there was no intervention buying. Between the years 1991-1994 intervention buying started again but it was phased out in 1994. Premium payments since 1998 are shown in the Table 4-40.

Table 4-40: Olive Oil Premium Payments in Turkey

Years	Quantity of Olive Oil eligible for Premium (Ton)	Premium Payment	Total Premium Payments (million TL)
1998-	-	40 CENT/KG	18
2000-2001	115.000	28 CENT/KG	48,5
2001-2002	11.826	150.000 TL/KG	1,8
2002-2003	97.157	175.000 TL/KG	17,4
2003 -2004	31.519	200.000 TL/KG	6,3
2004-2005	94.264	250.000 TL/KG	23,6
2005-2006	36.317	10Ykr/KG	3,6
2006-2007	60.960	11 Ykr/KG	6,7
2007-2008	13.845	20Ykr/KG	2,77
2008-2009	49.441	18,9 Kr/KG	9,34
2009-2010	47.000	25 Kr/KG	11,75
2010-2011		30 Kr/KG	

Sources: a) 25 Ekim 2008 dated Official Gazzette, Number: 27035.
b) TC Gıda, Tarım ve Hayvancılık Bakanlığı, 25.01.2010.
c) TC Gıda, Tarım ve Hayvancılık Bakanlığı, 2009.
d) TC Gıda, Tarım ve Hayvancılık Bakanlığı, 26.04.2010.

Starting from 1998, olive oil producers have been included for premium payments. Premium payments are provided once for every production period directly to the producers who are registered to the National Farmer Registration System (NFRS). It is given per kilogram. In 2009/10, a producer received 25 kr/kg premium payment and totally 11,75 million TL was paid to olive oil producers.

Certified Olive Sapling Support

Certified olive sapling support started first in 2005. After 2006 the support was given according to the type of table olive. In 2009 certified olive sapling support was 50 TL/da

for the gemlik olives and 100 TL/da for the other table olives (2/11/2009 – 15537 Official Gazette).

New Support Regime

According to new policy"Türkiye Tarım Havzalarının Üretim ve Destekleme Modeli", olive (for oil) will be supported in 14 basins. The premium payment is determined as 30 kr/kg for the marketing year 2010/11 and 50 kr/kg for the marketing year 2011/2012.[198]

B. Trade Measures

In Turkey, custom duty for all kinds of olive oil is 31,2 %. The tariff rate decreased from 35,6% in 1999 to 31,2% in 2009 (Table 4-41).

Table 4-41: Import Duties and Export Subsidies in Olive Oil

Years	Import Tariff (%)	Export Subsidy ($/Ton) and Quantity (%)	Period for Export Subsidy
1999	35.6	200 (%100)	1-1-1999 / 31-12-1999
2000	34.7	200 (%100)	1-1-2000 / 31-12-2000
2001	33.8	200 (%100)	1-1-2001 / 31-12-2001
2002	32.9	180 (%100)	1-1-2002 / 31-12-2002
2003	32.0	180 (%100)	1-1-2003 / 31-12-2003
2004	31,2	180 (%100)	1-1-2004 / 31-12-2004
2005	31,2	150 (%100)	1-1-2005 / 31-12-2005
2006	31,2	100 (%100)	1-1-2006 / 31-12-2006
2007	31,2	125 (%100)	1-1-2007 / 31-12-2007
2008	31,2	100 (%100)	1-1-2008 / 31-12-2008
2009	31,2	100 (%100)	1-1-2009 / 31-12-2009
2010	31,2	80 (%100)	1-1-2010 / 31-12.2010

Source: TC Sanayi ve Ticaret Bakanlığı, 2010, p. 20.

Subsidies for exports of olive oil are given in Turkey:[199]

Export refunds in olive oil are as follows:

[198] Dünya Gazetesi, 7.2.2011, p. 12.
[199] 15.04.2010 dated Official Gazette, Number: 27553.

- 550 $/tonne export subsidy provided for the olive oil exported in the packages less than 1 kg and if exported with a registered Turkish Trade Mark and labelled with "Made in Turkey" on the packages,
- 320 $/tonne export refund provided for the olive oil exported in the packages above 1 kg, but not exceeding 2 kg and if exported with a registered Turkish Trade Mark and labelled with "Made in Turkey" on the packages,
- 175 $/tonne export refund provided for the olive oil exported in the packages above 2 kg, but not exceeding 5 kg and if exported with a registered Turkish Trade Mark and labelled with "Made in Turkey" on the packages.

Share of the exported quantity eligible for the subsidy is 100 % for olive oil and the subsidy payment is 80 $ for 1 tonne. Exporters must present relevant documents to the Exporters Associations authorized by the Undersecretariat of Foreign Trade (UFT) for refund application (e.g. customs declaration, invoice). Products must leave the customs territory of Turkey within the implementation period of the Decree, which is published annually or for a specific time period. Products must be of Turkish origin.[200]

The EU's protection vis-a-vis olive oil is based on specific tariffs; tariffs are in euros per 100 or 1000 kilos. European Union's preferential tariffs for Turkey are 5-10% lower than MFN[201] Rates (Table 4-42).

Table 4-42: European Union's MFN Tariffs and Preferential Tariffs for Turkey

	MFN tariffs	Preferential Tariff for Turkey	% Reduction
Lampante virgin olive oil	122.6 €/100 kg	110.34 €/100 kg	10,0
Other virgin olive oil	124.5 €/100 kg	112.5 €/100 kg	10,0
Other olive oil than virgin	134.6 €/100 kg	127.87 €/100 kg	5,0
Crude olive oil	110.2 €/100 kg	99.18 €/100 kg	10,0
Other olive oil	160.3 €/100kg	152.28 €/100 kg	5,0

Source: TARIC (Database on taxation and custom unions of the European Communities). DPT, 2001, p. 383.

[200] 09.03.2009 dated Official Gazette, Number: 27164.
[201] MFN: Most Favoured Nation clause.

Turkey's Olive Oil Trade with European Union

The European Union is a major trade partner of Turkey accounting for about 30-40% of Turkey's annual olive oil exports. However, in olive and olive oil sector as a larger producer, Turkey does not have advantage in the European Union. European Union's preferential tariffs for Turkey are 5-10% lower than the MFN Rates.

Table 4-43: Turkey's Olive Oil Trade with European Union

Years	Export (t)	Import (t)		Export (1000 $)	Import (1000 $)	Net trade (1000 $)
1990	142	1.881		275	142	133
1991	1.231	0		1.951	1.231	720
1992	687	1		1.356	687	668
1993	350	0		718	350	368
1994	779	108		1.378	779	598
1995	40.029	17		85.065	40.029	45.036
1996	12.533	6		44.601	12.533	32.067
1997	23.606	6		43.856	23.606	20.250
1998	23.134	4		33.950	23.134	10.816
1999	71.403	51		121.347	71.403	49.944
2000	3.572	71		6.864	3.572	3.292
2001	64.133	0		87.432	64.133	23.299
2002	12.517	1.680		22.397	12.517	9.881
2003	47.089	994		99.861	47.089	52.772
2004	24.684	0		64.104	24.684	39.421
2005	61.928	0		200.183	61.928	138.255
2006	20.356	0		79.371	20.356	59.015
2007	12.140	2		37.288	12.140	25.147
2008	2.226	2		7.050	2.226	4.823
2009	6.947	6		18.914	6.947	11.967

Source: TUIK, 2011b.

The EU imports also olive oil from Tunisia. EU made a free trade agreement with Tunisia in 1995. The agreement came into force in 1998, covering the free trade in goods. Within the limits of a quantity of 56.700 tonnes per year, a customs duty of ECU 7,81/100 kg is levied on imports into the Union from Tunisia.[202]

[202] Official Journal L 097, 30/03/1998 P. 0002 – 0183.

C. Turkey's Adaptation to European Union's Olive Oil Support Policy

In Turkey, agricultural support is different from the support system in the European Union (Table 4-44). In Turkey, producer is supported by deficiency payment, in the EU, producer receives production aid. In the case of the storage system, there is no similarity with the EU practices. In the European Union, in case of serious disturbances in the particular regions and in case of average price of olive oil below a representative price level, private storage mechanism is util. But in Turkey, there is no public body or institutions for storage of olive oil.

Table 4-44: Comparison of Agricultural Support Policies in Turkey and in the EU

TURKEY	EUROPEAN UNION
Extra Virgin Olive Oil Producer Price	
6.770 TL/t	2.163,4 €/t*
Storage	
No similarity with the EU practices No public body or institutions for storage of olive oil.	Market price below the level: 1.779 €/t for extra virgin olive oil; 1.710 €/t for virgin olive oil; 1.524 €/t for lampante olive oil
Agricultural Supports, 2010	
Area based payments diesel (3,25 TL/da) chemical fertiliser (4,25 TL/da) Deficiency payment (300 TL/t) Olive sappling (100 TL/da)	Production aid (1.322,5 €/t)
External Trade, 2010	
Import Tariffs	
31,2%	€122,6/100 kg for lampante oils €124,5/100 kg for virgin, extra v. €134,6/100 kg for other olive oils
Use of export subsidies	
Yes	Yes

Source: Information is taken from Table 4-35, Table 4-38, Table 4-39 and Table 4-41.
*Extra virgin olive oil price of Spain (Source: European Commission, September 2010. It is worth 4.658 TL/t (TCMB €/TL exchange rate 2009 = 2,153).

Turkey applies advalorem tariff to olive oil (31,2%), but EU applies specific tariffs. Turkey and EU can subsidise olive oil export (as notified in the WTO).

The screening meeting in the olive oil sector was held 23-26 January 2006 in Brussels. In the Screening Report Turkey, the degree of alignment and implementing capacity of Turkey in the olive oil sector is assessed and it has been noted that the olive oil sector of Turkey has no specific legal framework and is therefore not aligned with the acquis. Intervention systems, producer organizations, application of appropriate marketing standards and production limits are missing.[203]

D. Evaluation of Olive Oil Policies in Turkey

Turkey is the fourth biggest producer and third biggest exporter (after European Union and Tunisia) of olive oil in the world. Olive oil has been supported highly in the European Union. After the accession of olive oil producing countries (Greece, Spain and Portugal), changes were brought into the support system. The Community became the world leader in olive oil production. The production was begun to be controlled by maximum guaranteed quantities (MGQ) and production aid was given on the basis of the MGQ. Since 1998/99, production aid was fixed at €1.322,5/t. In Turkey, olive oil producer receives deficiency payment. This payment was 250 TL/t in 2009/10 and 300 TL/t in 2010/2011.

The olive oil prices are higher in Turkey than the prices in the European Union. However, the producer in EU reveives production aid more than the Turkish producer. When we compare the support levels, Turkish producer receive only 9% of the aid granted to the EU producers. [204]

Turkey does not have a great advantage in the European Union market. EU applies 112,5€/100 kg to the virgin olive oil imports from Turkey (which is 10% lower than the MFN rates), while a customs duty of ECU 7,81/100 kg is levied on imports (quantity limit is 56.700 tonnes per year) into the EU from Tunisia. In this case, Tunisia has an advantage in the EU market over Turkey.

[203] ABGS, Screening report Turkey Chapter 11 – Agriculture and Rural Development, 7 September 2006, p. 17.
[204] Chemical fertiliser, diesel and olive sappling supports are not included in this calculation.

4.4 MILK IN EUROPEAN UNION AND IN TURKEY

Milk is used as a drink and can be consumed as raw or converted into a variety of dairy products and food ingredients like butter, cheese, cream and yogurt. Milk is generally obtained from cow (goat, sheep, and buffalo are other milked animals).

World cow's milk production in 2009 stood at over 580 million tonnes, with the top ten producing countries accounting for 73% of production (Table 4-45). The European Union is the largest cow's milk producer in the world accounting for 25,5% of world production, producing over 148 million tonnes in 2009. USA is the second largest cow's milk producer, accounting for 15% of world production and producing over 85 million tonnes in 2009. Turkey is in the top 10 list of Cow's Milk Producing Countries.

Table 4-45: World Top 10 Cow's Milk Producing Countries (1000 Tonnes)

Countries	2005	2006	2007	2008	2009	2009 world share (%)
European Union	149.081	148.515	147.989	149.390	148.086	25,51
USA	80.255	82.463	84.189	86.160	85.859	14,79
India	39.759	41.148	43.477	44.100	45.140	7,78
China	27.837	32.257	35.574	35.854	36.116	6,22
Russian Federation	30.893	31.186	31.915	32.100	32.326	5,57
Brazil	25.384	26.186	25.327	27.579	n.a	4,75
New Zealand	14.638	15.332	15.842	15.217	n.a	2,62
Pakistan	8.848	10.726	11.130	11.550	11.985	2,06
Turkey	10.026	10.867	11.279	11.255	11.583	2,00
Ukraine	13.424	13.017	12.003	11.524	11.364	1,96
World	543.071	559.105	569.605	578.696	580.482	73,26

Source: Faostat, Agricultural Statistics, 2010.
n.a: not available

International Dairy Federation (IDF) is one of the strongest federations in the world. IDF is source of scientific and technical expertise for all stakeholders of the dairy chain. IDF Membership covers 56 countries. IDF accounts for about 86% of current total milk

production worldwide.[205] 1.200 experts appointed by IDF members (the National Committees) work on the projects in the milk sector.

One of IDF's key tasks is to provide science-based information for the benefit of the dairy sector as well as to international organizations, governments and legislators. IDF is committed to promote development in dairying through cooperation with other international organizations, notably FAO.

Dairy Milk Per Capita Consumption

Dairy milk per capita consumption generally increases in the countries where per capita income is high. In Australia, Canada and USA per capita consumption is high for dairy products. In European Union, per capita milk consumption was 89,3 lt in 2010, while in Turkey, per capita consumption was 26,2 lt in the same year.

Dairy Milk Per Capita Consumption (Lt)

Australia	107,2
Canada	92,1
European Union	89,3
USA	82,6
Iran	82,4
Argentine	43,9
Turkey	26,2

Source: Ulusal Süt Konseyi, 2011, p. 69.

School Milk Application in the World

School Milk is a type of consumer subsidy. Consumer subsidies can be given to encourage domestic consumption of products. Many countries in the world give importance to school milk consumption: [206] More than 60 countries apply school milk subsidies. In Thailand, school milk consumption account for 25% of total milk consumption. It is 9% in Japan, 7% in USA, 5% in Finland, 4% in Norway and Sweden, 3% in Canada and Denmark. In

[205] http://www.fil-idf.org, 29 April 2010.
[206] TZOB, April 2008, p. 51-52.

Denmark, after application of school milk subsidies, the milk consumption has increased by 40%. In Turkey, school milk subsidies were applied in 2001-2002 and 2002-2003. After 2003, no more school milk subsidies were given. School milk application started again on 08 February 2010 in Turkey.

4.4.1 MILK IN THE EUROPEAN UNION

The Common Market Organization for milk covers milk and creams; buttermilk, yogurt and kephir; whey; butter and other fats; cheese and curd; preparations used as animal feed.

The share of the milk sector in total agricultural product is 6,7%.[207] Annual milk production (cow's milk) is 148 million tonnes. The quantity of cows' milk collected remained stable in the last years, due to the milk quota system. The yield of milk changes from country to country, but it is annually approximately 6.000 litres (one cow-head) on average for the whole European Union. Milk production takes place in all EU Member States. The biggest producers are Germany, France, Netherlands, United Kingdom, Poland and Italy. They contribute more than 70 % of the cows' milk collected in the EU.

Of the milk (from cows, sheep, goats and buffalos) collected in 2007, almost one third was used to produce fresh products:[208] Drinking milk and cream for direct consumption each accounted for about 12 % of the milk. Other fresh products, such as yoghurt and milk-based drinks, made up about 6 %. Over two thirds of the milk was used for manufactured products, with butter and cheese each representing about 30 % of the total milk volume.

A. Reforms

A common market organization for milk and milk products was set up in 1968. The main change in the sector was made in 1984. The problem was that demand in the dairy sector was stagnant, while supply was liable to increase.[209] High support prices were encouraging

[207] Eurostat, 2009, p. 103.
[208] Eurostat, 2009, p. 103.
[209] Wyn Grant, 1997, p. 111.

a level of production above domestic consumption. Increasing EAGGF expenditures due to the support system was another problem of the milk regime. In 1984 milk quotas were introduced to balance supply and demand of the product and to bring spending on dairy sector under control. The surpluses disappeared by the mid-1990s and the sector's share of EAGGF expenditure fell from 43% in 1980 to 10,3 % in 1995.[210] This milk quota regime has been extended to 31 March 2015.

Agenda 2000 proposed a reduction in institutional prices of 15% from 2005/2006 for the dairy sector.

2003 CAP Reform

The target price was abolished on 1 July 2004 as part of the reform. The reform of the Common Agricultural Policy in June 2003 proposed continuation of milk quotas and introduced dairy premiums and Single Payment Scheme' (SPS) for dairy regime.

B. Agricultural Support Policy

Agricultural support policy in the milk sector covers milk quotas, net-safety intervention, direct support payments and school milk subsidies.

Milk Quotas and Superlevy

Council Regulation No 1788/2003 established a levy system. For each Member State, the Regulation sets reference quantities for the production of cow's milk. Each Member State has two quotas, one for deliveries to dairies, and the other for direct sales to consumers. These quantities are broken down among producers (individual quotas) in each Member State.

The national quotas are set according to the production quantity and fat content of milk because, quality and quantity of milk products obtained from milk are higher when the fat content is high. Under the quota system, if a farmer delivers more milk than his quota in any one year he can be penalised financially. This means, the farmer has to pay a

[210] Wyn Grant, 1997, p. 108.

'superlevy' on the over-quota amount. This surplus levy has to be paid by producers of cow's milk on all quantities of milk or milk equivalent in excess of the quota marketed during a 12-month period, which runs from 1 April to 31 March.

The levy for 100 kilograms of milk is set at EUR 33,27 for the period 2004/05, EUR 30,91 for 2005/06, EUR 28,54 for 2006/07 and EUR 27,83 for 2007/08 and periods thereafter. [211] If a producer exceeds the quantity allocated by the Member State, he/ she then pays his/her contribution to the levy. The Member States transfer these levies to the European Agricultural Guarantee Fund (EAGF).

Table 4-46: Milk Quotas in European Union

	2007/08	2008/09
Dairy Deliveries		
Available quota for deliveries, tonnes	139.626.315	142.986.835
Total deliveries, tonnes	137.404.951	137.605.411
Overrun, tonnes	1.217.164	348.414
Levy, 1000 €	+1.547	+96.964
% Overrun	+0.9%	+0.2%
Direct Sales	2.816.535	2.654.659
Available quota for direct sales, tonnes	3.434.110	3.425.547
Overrun, tonnes	4.542	7.533
Levy, 1000 €	+1.264	+2.096

Source: European Commission, 15 October 2009.

For the 2008/09 quota year (April 2008-March 2009), the total quota for deliveries to dairies was 143 million tonnes (Table 4-46). The quota is divided into 935.000 individual quotas for the whole of the European Union. Furthermore, there is a separate quota of 3,4 million tonnes for direct sales to consumers which is divided into 405.000 individual quotas.

In the 2008/09 marketing year, five Member States (Austria, Cyprus, Italy, Luxembourg, and the Netherlands) exceeded their deliveries quotas. Altogether these account for an overrun of 348.400 tonnes, resulting in a levy of € 97 million. Deliveries in 13 countries (United Kingdom, Slovakia, Finland, Estonia, Latvia, Greece, Hungary, Sweden, Slovenia, Bulgaria,

[211] European Commission, 2003a, p. 1.

Lithuania, Malta and Romania) were at least 5 percent below quota. Total EU milk production in the 2008-09 quota year (April- March) was 4,2 percent below quota. The total levy to be paid is substantially lower in 2008/2009 than in 2007/2008 (-71%).[212]

On 20 November 2008 the EU agriculture ministers reached a political agreement on the Health Check of the Common Agricultural Policy:[213] The agreement increases milk quotas gradually leading up to their abolition in 2015. For butter and skimmed milk powder, intervention purchases will be 30,000 tonnes and 109,000 tonnes respectively, beyond which intervention will be by tender.

Market Support: 'safety-net' Intervention

As in other agricultural sectors, the elements of dairy market support are oriented towards a 'safety-net' approach, with public intervention (buying into storage) for butter and skimmed milk powder (SMP):[214]

The butter intervention price was reduced by 25 % over a four-year period, beginning on 1 July 2004, in 2007, meaning a price level of (Council Regulation No 1255/1999). Intervention price will be:

- 328,20 €/100 kg from 1 July 2000 to 30 June 2004
- 305,23 €/100 kg from 1 July 2004 to 30 June 2005
- 282,44 €/100 kg from 1 July 2005 to 30 June 2006
- 259,52 €/100 kg from 1 July 2006 to 30 June 2007
- 246,39 €/100 kg from 1 July 2007 onwards

Under the butter intervention scheme, intervention agencies may buy in butter during the period 1 March to 31 August of any year. The quantity of butter offered for intervention was 70.000 tonnes in 2004, 60.000 tonnes in 2005, 50.000 tonnes in 2006, 40.000 tonnes in 2007 and 30.000 tonnes in 2008 and subsequent years.

[212] European Commission, 15.10.2009.
[213] European Commission, 02.02.2009.
[214] European Commission, 2003a, p. 1.

The SMP intervention price was reduced by 15 % over a three-year period, with reductions of 5 % in each of 2004, 2005 and 2006, resulting in the following price levels (Council Regulation No 1255/1999). Intervention prices are:

- 205,52 €/100 kg in 2003/04;
- 195,24 €/100 kg in 2004/05;
- 184,97 €/100 kg in 2005/06;
- 174,69 €/100 kg from 1 July 2006.

SMP intervention is open between 1 March and end-August each year, for a maximum quantity of 109.000 tonnes.

Direct Payments

To compensate for cuts in intervention prices, between 2004-2007 milk producers received direct support payments. These were paid per calendar year, per holding. The total amounts available for direct dairy premiums in a given year were based on quota held at the end of the preceding quota year and were as follows: [215]
EUR 8,15/tonne of quota for calendar year 2004
EUR 16,31/tonne of quota for calendar year 2005
EUR 24,49/tonne of quota for calendar year 2006

Dairy Premium is included in the Single Payment Scheme (SPS). A 'reference amount' is attributed to each farmer under the SPS, which is calculated by taking the average annual direct aid he received in 2000, 2001 and 2002. Member states could introduce the Single Payment Scheme in 2005, 2006 or 2007. Dairy payments might be included in the SPS beginning in any one of these years. The SPS, including for the dairy sector is implemented by 2007.

[215] European Commission, August 2006, p. 19.

School Milk Subsidies

Distribution of milk to the students in the schools started in 1999 in European Union (Regulation 1255/1999). The dairy regulation states the specific value of the school milk subsidy as:

- EUR 23,24/100 kg for 2003/04;
- EUR 21,69/100 kg for 2004/05;
- EUR 20,16/100 kg for 2005/06;
- EUR 18,61/100 kg for 2006/07;
- EUR 18,15/100 kg from 1 July 2007.

C. Trade with non-EU Countries

Import and export of milk and milk products are subject to presentation of import or export license.

Export arrangements

European Union began to reduce the export subsidies in milk and milk products in 2003. In 2007 export subsidies were totaly abolished. Export refunds for certain dairy products were introduced again in 2009. The decision was taken in response to the serious situation on the EU dairy market, caused by fall in producer prices. Export refunds are to allow EU exporters to continue to be present on the world market.

The export refunds in the dairy sector are:[216]

For skimmed milk powder (SMP), bids were accepted for a total of 5,612 tonnes at a maximum refund of 200 EUR per tonne (out of total bids for 15,172 tonnes). For butter (82 percent fat), bids were accepted for 2,299 tonnes at a maximum refund of 500 EUR per tonne (out of total bids for 9,566 tonnes). For butteroil, bids were accepted for 80 tonnes at a maximum refund of 580 EUR per tonne (out of total bids for 980 tonnes). At the same time, lower rates were fixed for the standing refunds (the refund rates at which exports can

[216] European Commission, 23.01.2009.

be carried between regular tenders). The rates were 170 EUR per tonne for SMP, 450 EUR per tonne for butter, 260 EUR per tonne for whole milk powder, and 220 EUR per tonne for cheeses.

Import arrangements

In general, in trade with non-EU member countries, milk and milk products are subject to the rates of duty in the common customs tariff.

EU Customs Tariffs in Milk Products:

CN Code	Product Description	Tariff Rate
	B:Other	
	II. Gruyere, Sbrinz	

Source: Common Customs Tariff, Commission Regulation No 1031/2008 of 19 September 2008, p. 62, 70-71.

Many of the EU's trading partners benefit from Tariff Rate Quotas (TRQs):[217] TRQs are 68.537 tonnes for skimmed milk powder and the rate of duty is 475 €/1000 kg. There are TRQs for different cheese types – amounting to over 122.000 tonnes. The butter TRQ is 86.000 tonnes and the rate of duty is 70 €/100 kg. Tariff quotas may be awarded using the first come/first served principle. Out-of quota rates are given above.

Turkey has only 0% duty for the cheese made exclusively from sheep's milk or buffalo milk in the import into the EU within quota limits (1.500 tonnes). Over quota duty is 67,19 €/100kg.[218]

[217] European Commission, August 2006, p. 18.
[218] DPT, 2001, p. 383.

4.4.2 MILK IN TURKEY

Turkey is among the 10 largest milk producers in the world. Turkey's total milk production was 12,5 million tonnes in 2009. About 92 percent of this production is cow milk; 6% is sheep milk and 1,5% is goat milk (Table 4-47). In 30 years, the milk production of sheep, goat and buffalo decreased sharply and cow milk production increased from 62% to 92%.

Table 4-47: Number of Animals Milked by Types and Quantity of Milk Production

Years	Total Milk Production (Tons)	Share in Total Production (%)			
		Sheep	Goat	Cow	Buffalo
1980	5.472.345	20,97	11,51	62,51	5,01
1990	9.617.415	11,91	3,51	82,77	1,81
1995	10.601.550	8,81	2,61	87,49	1,08
2000	9.793.962	7,91	2,25	89,16	0,69
2001	9.495.550	7,62	2,31	89,40	0,67
2002	8.408.568	7,82	2,49	89,08	0,61
2003	10.611.011	7,26	2,62	89,66	0,46
2004	10.679.406	7,23	2,43	89,98	0,37
2005	11.107.897	7,11	2,28	90,26	0,34
2006	11.952.100	6,65	2,12	90,92	0,30
2007	12.329.789	6,35	1,93	91,48	0,25
2008	12.243.040	6,10	1,71	91,93	0,26
2009	12.542.186	5,85	1,53	92,35	0,26

Source: TUIK, 2010c.

In Turkey, produced milk is distributed in four ways. 54% of raw milk is distributed to the modern dairy factories and medium size establishments and dairies; 35% is consumed in farms and 11% of milk is marketed as street milk.[219]

Numbers of the both bovine and ovine animals milked had declined since 1980 (Table 4-48). Especially, the number of goat and sheep decreased sharply, while the number of milking cows increased.

[219] TZOB, April 2008, p. 26.

Table 4-48: Total Animals Milked

Years	Total Animals Milked	Share of Animals Milked (by Type)			
		Sheep	Goat	Cow	Buffalo
1980	39.268.620	61,24	22,78	15,10	0,88
1990	35.791.950	66,21	16,80	16,46	0,52
2000	25.062.038	63,52	15,13	21,07	0,28
2001	23.771.389	62,46	15,87	21,39	0,27
2002	21.634.825	63,03	16,42	20,30	0,24
2003	20.701.613	60,27	15,10	24,35	0,28
2004	16.310.848	60,81	15,18	23,76	0,24
2005	16.629.386	61,13	14,59	24,04	0,23
2006	16.890.820	60,66	14,33	24,79	0,22
2007	16.633.516	60,78	13,61	25,43	0,18
2008	15.751.542	61,21	12,68	25,90	0,20
2009	15.404.189	61,07	11,89	26,83	0,21

Source: TUIK, 2010c.

Milk Yield per Cow and Herd Size

Milk yield per cow in Turkey is almost half of the yield in European Union. In Turkey, milk producing enterprises are smallholder dairy farming – characterized by subsistence farming and a lack of a professional approach to production. [220]

In European Union, average number of animals per holding was 9,8 heads in 2007. The average number of cattle per farm is 4,7 heads in Turkey.[221] Small-scale family farming is a result of low yield in milk. Inadequate animal breeding is also a reason of the low yield. [222]

Milk Yield in Turkey and European Union (kg/Animal)

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
European Union	5.702	5.752	5.952	6.019	6.077	6.135	5.936
Turkey	1.888	2.479	2.508	2.595	2.667	2.758	2.803

Source: Faostat, 2010.

[220] FAO and TC Gıda, Tarım ve Hayvancılık Bakanlığı, July 2007, p. 5.
[221] FAO and TC Gıda, Tarım ve Hayvancılık Bakanlığı, July 2007, p. 12
[222] Ahmet Yücer et al., 2006, Cilt 1, p. 89.

Consumption of Milk

Milk consumption in Turkey is generally low when compared with European countries. In Turkey, annual per capita milk consumption is about 26 lt, while the average of European Union is 89 lt. In many countries, school milk subsidies are applied to encourage milk consumption. National Milk Council in Turkey started school milk project on 08 February 2010. İstanbul, İzmir, Ankara and Diyarbakır are selected as pioneer cities and the Milk Council distributes milk in the schools in these cities. Daily milk subsidy is 200 ml per student. The project will contribute to milk consumption among students and to a healthy way of living.[223]

Milk and Milk Feed Prices

Milk feed is an important input for milk producers, but the milk feed price is generally high. The percentage increase in milk feed prices have been higher than milk price increase. As seen in the Table 4-49, feed price was 44% of the milk price in 2000 but this ratio increased in ten years and reached 63% in 2009. So the milk producer pays 63% of his milk earnings for the milk feed. Milk premium payment decreased in the last 3 years. Premium amounted for 27% of milk feed price and 12% of milk price in 2006. In 2009, these ratios decreased to 8% and 5% respectively.

Table 4-49: Milk and Milk Feed Prices

Years	Milk Premium (TL/t)	Milk feed price		Premium/ Milk feed (%)	Milk price		Premium/ Milk (%)	Feed price/ Milk price (%)
		TL/t	% change		TL/t	% change		
2000	5	97	60	5	222	41	2	44
2001	5	137	42	4	296	34	2	46
2002	10	204	49	5	409	38	2	50
2003	20	252	23	8	529	29	4	48
2004	20	320	27	6	604	14	3	53
2005	75	385	20	20	630	4	12	61
2006	85	311	-19	27	710	13	12	44
2007	36	412	32	9	720	1	5	57
2008	40	497	21	8	800	11	5	62
2009	40	496	-0,2	8	790	-1,3	5	63

Sources: Yıldırım İçöz, August 2007, p. 40.
Ülkü Karakuş, December 2009, p. 10.

[223] Ulusal Süt Konseyi, 24.02.2010.

Main Organisations in the Milk Sector

The National Milk Council in Turkey was established on 21 January 2009. National Milk Council aims developing of the milk sector and has roles in sector regulation.

The other main professional organisations in Turkey supporting the dairy sector are: Cattle Breeders Association of Turkey (CBAT); Union of Dairy, Beef and Food Industrialists of Turkey (SETBIR); Cooperative Unions; Union of Agriculture Chambers (TZOB); Turkish Veterinary Medical Association (VHB); Milk, Meat and Stud Cattle Breeders Association (TÜSEDAD).

A. Agricultural Support Policy

There is no public intervention in milk sector. The milk is supported under livestock premium payments.

Livestock Premium Payments

The overall goal of this support scheme is to develop a sustainable and competitive livestock sector by increasing production and quality.

This scheme comprises supports related to;

- animal health,
- animal improvement,
- breeding techniques,
- fodder crops, and
- Increasing crop quality and hygienic conditions.

Objectives of the payment are:

- Attain food security by increasing the consumption of animal proteins and catching up the levels of developed countries,
- Assurance of food security from primary production to ultimate consumption,
- Institution of well defined standards and competitiveness in the livestock industry.

Table 4-50: Livestock Support Types

Support Type		2009	2010
Fodder Crops (TL/da)	Alfalfa (green)	115	125
	Alfalfa (hay)	70	70
	Sainfoin	75	80
	Silage maize (green)	45	50
	Silage maize (hay)	30	30
	Artificial Meadow and Pasture	75	75
Milk premium (TL/Kg)	Bovine animal	0,04	0,04
	Ovine animal	0,10	0,10
Animal payment (TL/head)	Cattle	225	225
	Buffalo	250	250
	Cattle (Pre-herd book)	50	50
	Disease free	300	300
	Sheep-Goat	10	10
Food safety, Official Veterinary (TL/head)	Bovine animal	1,32	1,32
	Ovine animal	0,32	0,32
Vaccination (TL/ head)	Bovine animal brucellosis	1,5	1,5
	Ovine animal brucellosis	0,5	0,5
	Bovine animal (şap)	0,75	0,75
	Ovine animal (şap)	0,5	0,5
Protection of animal genetic resources (TL/head)	Bovine animal	400	400
	Ovine animal	70	70

Source: TC Gıda, Tarım ve Hayvancılık Bakanlığı, 25.01.2010.

As seen in the Table 4-50, the livestock premium payments in 2010 are at the same level as in 2009. Only support amount in fodder crops is increased.

Premium Payments:

Milk premium payments were first given in 1987. These payments are given under the support scheme of "livestock premium payments" (2.11.2008 dated Official Gazette, issue number: 15537). Milk premium payments for the bovine animal breeding and ovine animal breeding are 40 TL/lt and 10 TL/lt respectively.

B. Trade Measures

No import (except for tariff quotas arising from bilateral agreements) and export licenses for milk and milk products are required. Sanitary and Phytosanitary controls for the dairy products are made by TC Gıda, Tarım ve Hayvancılık Bakanlığı.

Tariff Rates

Turkey's Bound Rate of Duties are 180% for milk, creams, butter and cheese. For other cheese like gruyere, cheddar and parmesan, the duties are 45%.[224]

EU benefits from Turkey's tariff rate reductions in milk and cream of a fat content by weight, not exceeding 1,5% (1.500 tonnes with 100% tariff rate reduction) and in milk and cream of a fat content by weight, exceeding 1,5% (2.500 tonnes with 100% tariff rate reduction). [225]

Turkey has 0% duty for only cheese made exclusively from sheep's milk or buffalo milk in the import into the EU within quota limits (1.500 tonnes). Over quota duty is 67,19 €/100kg. [226]

Export Refunds

The export subsidy commitments of Turkey are given in the Table 4-51. But in reality no export refund is given.

[224] Turkish Customs Tariff Schedule (Available at: http://www.gumruk.gov.tr).
[225] DPT, 2001, p. 390.
[226] DPT, 2001, p. 383.

Table 4-51: WTO Milk and Milk Products Commitments

	Milk and Milk Products	Annual Outlay Commitment (US $)	Annual Quantity Commitment (Tones)
0401 01	Creams	9.904,3	155,7
0401 30	Milk	1.171,2	19,8
0403	Yogurt	6.042,0	227,9
0405 00	Butter	42.137,4	143,6
0406	Cheese	351.509,9	2.634,2

Source: Official Gazzette, Number: 22213, 23 February 1995.

Turkey's Milk Trade with European Union

Milk trade statistics in table above include export and import values of milk and cream, yogurt and butter made from milk (CN Code : 401,402,403,404,405).

Table 4-52: Turkey's Milk Trade with European Union

Years	**Export (mn $)**	**Import (mn $)**	**Trade Deficit (mn $)**
1990	0,04	13,73	**-13,69**
1991	0,00	11,68	**-11,68**
1992	0,08	16,35	**-16,27**
1993	0,10	16,36	**-16,26**
1994	0,10	13,24	**-13,14**
1995	0,01	19,00	**-18,99**
1996	0,11	22,23	**-22,12**
1997	0,03	18,68	**-18,65**
1998	0,01	23,67	**-23,66**
1999	0,07	22,69	**-22,62**
2000	0,20	16,17	**-15,96**
2001	0,04	7,41	**-7,37**
2002	0,16	13,94	**-13,78**
2003	0,18	26,47	**-26,28**
2004	0,13	24,48	**-24,35**
2005	0,06	22,12	**-22,06**
2006	0,11	19,96	**-19,85**
2007	0,10	23,69	**-23,60**
2008	0,11	36,93	**-36,81**
2009	0,14	27,94	**-27,81**

Source: TUIK, 2011b.

Turkey generally imports milk powder from European Union. Turkey is a net importer in milk powder and has a negative trade balance with the EU. Turkey's trade deficit with EU was between 14-37 million dollars in the last years (Table 4-52).

C. Turkey's Adaptation to European Union's Milk Support Policy

Compared to EU, in Turkish milk sector, there is no quantitative restriction in milk production, no public intervention and no public storage mechanism. Milk is supported by premium payments since 1987. But, school milk application started on 08 February 2010 in Turkey similar with the European Union.

In Turkey, the customs duty for milk and cream, butter and cheese is 180%. For other types of cheese the duty changes. EU has the right to subsidise the exports of milk products while Turkey does not have export subsidy right in the milk products.

Table 4-53: Comparison of Milk Policies between Turkey and European Union, 2009

TURKEY	EUROPEAN UNION
Milk Producer Price	
790 TL/t	283,1 €/t*
Domestic Support	
No quantitative restriction in milk prod. No public intervention No public storage mechanism Milk incentive premium School milk application (200 ml per pupil/day)	Milk quotas Safety-net intervention Public storage mechanism Single payment Scheme School milk application (€ 18.15/100 kg per pupil/year)
External Trade	
Import Tariffs	
180%	TRQs for SMP, Butter, Cheese Out of quota: Milk: 13,8 €/100 kg Butter:189,6 €/100 kg Cheese:185,2 €/100 kg
Use of export subsidies	
No	Yes

Source: Information is taken from Table 4-50, and chapters 4.5.1 and 4.5.2.
* 610 TL/t (TCMB €/TL exchange rate 2009 = 2,153). Source: European Commission, September 2010.

In the Screening Report Turkey, the degree of alignment and implementing capacity of Turkey in the milk sector is assessed and it has been noted that the legal framework and institutional requirements in the milk not aligned with the acquis:[227] Turkey has neither production quotas nor intervention systems; it has to establish a market intervention and milk production registration system in the milk sector. There is no significant surplus on the market yet the price paid to the producer is equivalent to 90 % of the milk price in Poland. However, milk producer organizations need to be reinforced. Milk collecting systems as well as milk quality need to be significantly improved.

D. Evaluation of Milk Support Policies in Turkey

Turkey is a larger milk producer in the world (among the 10 largest producers). In the last 30 years (since 1980), the number of animals milked decreased by 60%, but total milk production increased by more than 50%. Milk yield was 577 kg/animal in 1980, 1.654 kg/animal in 2000 and 2.803 kg/animal in 2009. Milk production and consumption have increasing trends, but per capita consumption is very low in Turkey (26,2 lt), while it is 89,3 lt in European Union. School milk subsidies are started in order to increase milk consumption.

The milk support policies in Turkey and European Union are different. Milk is supported by premium payments since 1987 in Turkey. EU applies quota and intervention price to the milk products.

Turkey has a trade deficit with European Union in milk products. Turkey generally imports milk powder from European Union. In 2009, trade deficit was 27,8 million $. EU benefits from preferential trade regime with Turkey and has 100% tariff reductions in milk products (within quantity limits). However, Turkey does not have this kind of advantage. Turkey has only 0% duty for the cheese made exclusively from sheep's milk or buffalo milk in the import into the EU within quota limits (1.500 tonnes). Over quota duty is 67,19 €/100kg.

[227] ABGS, Screening report Turkey Chapter 11 – Agriculture and Rural Development, 7 September 2006, p. 16.

5 THEORETICAL FRAMEWORK AND METHODS

In this thesis three methods are used. First method is the OECD's producer support estimate calculation. Second method is the least squares method used to find supply and demand parameters. Third method is the welfare analysis. With the help of the welfare analysis, the effects of policy changes, EU accession impact and Doha Round impact are examined.

5.1 MEASURING SUPPORT LEVEL IN AGRICULTURE: PRODUCER SUPPORT ESTIMATE

One of the most widely used indicators to measure support to agriculture are the OECD indicators. The OECD indicators were developed in order to monitor and evaluate developments in agricultural policy, to establish a common base for policy dialogue among countries, and to provide economic data to assess the effectiveness and efficiency of policies.[228]

OECD uses Producer Support Estimate (PSE), Consumer Support Estimates (CSE), General Services Support Estimate (GSSE) and Total Support Estimate (TSE) to measure the level of agricultural support.[229] In this study, PSE and CSE of the selected commodities will be taken into account.

Producer Support Estimate (PSE) is the annual monetary value of gross transfers[230] from consumers and taxpayers to agricultural producers, measured at the farm-gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. PSE is associated with total agricultural production,

[228] OECD, 2009b, p. 51.

[229] General Services Support Estimate (GSSE) is the annual monetary value of transfers arising from policy measures which support producers collectively. It comprises budgetary financed expenditures for the provision of services such as research and development, training, inspection, infrastructure, public stockholding, and marketing and promotion.
Total Support Estimate (TSE) is the overall annual monetary value of transfers arising from all policy measures that support agriculture. It is calculated by adding together the PSE, the GSSE and the taxpayer cost of consumption subsidies (OECD, 2009a, p. 2).

[230] Transfer: Consumers of agricultural commodities and taxpayers represent the two sources of transfers, i.e. the economic groups bearing the cost of agricultural support (OECD, 2009b, p. 18).

for commodities domestically produced. If it is negative, the amounts represent an implicit or explicit tax on producers.

Producer Single Commodity Transfers (producer SCT) is the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policy measures directly linked to the production of a single commodity such that the producer must produce the designated commodity in order to receive the transfer.

Calculation of Producer Single Commodity Transfer

Producer SCT = Support based on commodity output + Payments based on input use

A. Support based on commodity output

A.1. Market price support (MPS): transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level.

MPS = TPC + TPT – PL – EFC

TPC: Transfers to producers from consumers

TPT: Transfers to producers from taxpayers

PL: Price levies

EFC: Excess feed cost

Price levies:[231] production taxes, which can be imposed on producers as part of market price support policy. An example of such a tax is the levy imposed on EU milk producers when they exceed their production quotas.

Excess Feed Cost (*EFC*)[232] is a component accounting for the price transfers that go from livestock producers to feed producers as a result of policies which alter the domestic market price for feed crops, an important input for the former group.

[231] OECD, 2009b, p. 55.

Transfers to producers from consumers (TPC)

These transfers occur when the consumers pay higher prices to the domestically produced commodities due to the market price support[233]. If the consumption is greater than production (in import situation), the consumption of imported commodities are not taken into account. Only consumption of domestic production is used in calculation. The transfers to producers from consumers are the amount of the multiplication of market price deficit with the domestic production (Figure 5-1).

$TPC = (MPD^* QP_2)$

DP: Domestic price

MP: Import price

QP : Quantity of domestic production

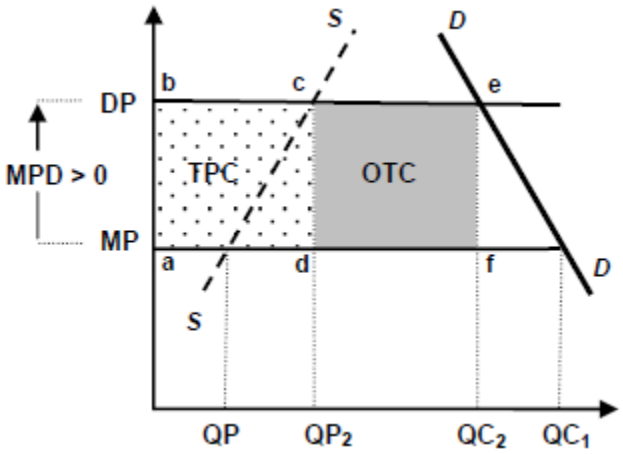
QC: Quantity of domestic consumption

MPD: Market Price Differential

MPD = DP – MP (border price (import price) – domestic market price)

OTC: Other transfers from consumers

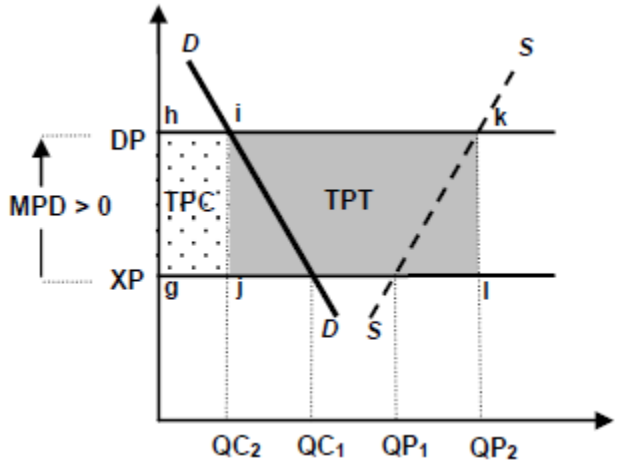
Figure 5-1: Market Price Transfers (in Imported Commodity)



Source: OECD, 2010b, p. 47.

[232] OECD, 2009b, p. 55.
[233] Erol Çakmak and Halis Akder, 2005, p. 166.

Figure 5-2: Market Price Transfers (in Exported Commodity)



Source: OECD, 2010b, p. 47.

DP: domestic price

XP : export price

MPD= DP – XP (domestic price – export price)

TPT: Transfers form taxpayers

If the consumption is smaller than production (in export situation), the exported quantity is not taken into account, while they are not consumed domestically. The transfers to producers from consumers are the amount of the multiplication of market price deficit with the domestic consumption (Figure 5-2).

$TPC = (MPD^* QC_2)$

Transfers to producers from taxpayers (TPT)

These transfers represent the part of producer price support borne by taxpayers in the form of budgetary outlays on export subsidisation or food aid.[234]

If consumption is smaller than production, then TPT is calculated as follows:

$TPT = (QP_2 - QC_2)^*MPD;$

[234] OECD, 2009b, p. 54.

If consumption is greater than production, then the TPT is "0".

A.2. Payments based on output: transfers from taxpayers to agricultural producers from policy measures based on current output of a specific agricultural commodity. This category includes premium payments.

B. Payments based on input use*:* transfers from taxpayers to agricultural producers arising from policy measures based on on-farm use of inputs:

B.1. Variable input use: transfers reducing the on-farm cost of a specific variable input or a mix of variable inputs like *Interest concession, feed payments, fertiliser payments, certificated seed payments, pesticides payments, water payments (irrigation), electricity payments (irrigation).*

B.2. Fixed capital formation: transfers reducing the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage and soil improvements.

Consumer Support Estimate (CSE): the annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on consumption of farm products. If it is negative, CSE represents transfer from consumers, if it is positive CSE shows the transfers to consumers.

Consumer Single Commodity Transfers (consumer SCT): the annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures directly linked to the production of a single commodity.

Consumer SCT = TCT – (TPC – OTC) + EFC

TCT: Transfers to consumers from taxpayers
TPC: Transfers to producers from consumers
OTC: Other transfers from consumers
EFC: Excess feed cost

Transfers to consumers from taxpayers (TCT)

TCT are budgetary payments to consumers that are given for the specific purpose of compensating them for the higher prices they pay for agricultural products that result from policies that support producer prices. An example of such transfers is subsidies to the first purchasers of agricultural commodities such as mills, dairies or slaughterhouses. The *TCT* is obtained from the information on budgetary expenditures.[235]

Other transfers from consumers (OTC)

These transfers occur when consumers pay the higher price for all consumption, whether the commodity is produced domestically or imported [236]

If consumption is greater than production, then formula is as follows (Figure 4-1):

$OTC = (QC_2 - QP_2)*MPD;$

If consumption is smaller than the production, then the OTC is 0.

TPC and *OTC* are given a negative sign because these transfers represent an implicit tax on consumers.

Consumer NPC, Consumer Nominal Protection Coefficient: is the ratio between the average price paid by consumers (at farm gate) and the border price (measured at farm gate).

$$\text{Consumer NPC} = \frac{PP}{RP}$$

PP = Price paid at farm gate

RP = Border price

[235] OECD, 2009b, p. 130.
[236] OECD, 2009b, p. 53.

5.2 ECONOMETRIC ANALYSIS

In this study, Least Squares Method (as an econometric method) is used to estimate supply and demand models in four products. Level of production and consumption, yield (production quantity per area/tree/cow), producer prices, national income, fertiliser prices, milk feed prices, prices of the commodities – one year before[237] and population are the used statistics in the estimation of models. The data are time series data, taken from Türkiye İstatistik Kurumu, Toprak Mahsulleri Ofisi, Türk Şeker Kurumu, International Olive Oil Council, OECD and TC Gıda, Tarım ve Hayvancılık Bakanlığı. The used statistics are presented in the Annex (p. 316-321).

Double logaritmic production and consumption models are used in the econometric models. Estimated models were tested for autocorrelation, normality, heteroscedasticity, specification error and structural breakpoint by using Breusch-Godfrey LM, Durbin Watson d, Durbin h, Jarque-Bera, Heteroscedasticity White, Ramsey-Reset and Cusum Square (CUSUMSQ) tests.

The supply and demand price elasticities are found in the estimated models which are the coefficients of the parameter (of price). With the help of the supply and demand price elasticities, new supply and demand models (with price as the only endogenous variable) are formed. These new supply and demand models and equilibrium conditions are used in the analysis of welfare effects of agricultural support policies. In the calculation of supply, demand levels and equilibrium conditions at different price levels, the logaritmic values of production, consumption and price are used.

Testing the assumptions[238]

We formulate one null hypothesis (H_0) and one alternative hypothesis (H_1) for the tests. H_1 shows that H_0 is invalid. H_0 is tested and rejected or not rejected.

Sample Model: $Y_t = \beta_o + \beta_1 x_t + \beta_2 z_t + u_t$

[237] According to the Cobweb theorem, farmers generally base their production plans for the relevant period on previous period's price.

[238] Used books: Damador Gujarati, 1995.
Damador Gujarati, 2005 (Turkish translation).
Selahattin Güriş and Ebru Çağlayan, 2005.

A. t Test

With the help of the t test, the coefficients of the estimated parameters in the regression model are tested whether they are statistically significant.

H_0: $\beta_o = 0$, coefficient is statistically insignificant

H_1: $\beta_o \neq 0$ coefficient is statistically significant

For constant parameter (β_o) t test statistic is, under H_0 hypothesis:

$$t = \frac{\hat{\beta}_0}{se(\hat{\beta}_0)}$$

H_0: $\beta_1 = 0$ coefficient is statistically insignificant

H_1: $\beta_1 \neq 0$ coefficient is statistically significant

For slope parameter (β_1) t test statistic is:

$$t = \frac{\hat{\beta}_1 - \beta_1}{se(\hat{\beta}_1)}$$

Under the normality assumption, the variable follows the t distribution with (n-k) degree of freedom. At the 5% significance level, for (n-k) degree of freedom, if t-statistic〈 t critical value, H_0 is not rejected and it is concluded that coefficient is statistically insignificant.

B. F Test

With the help of the F test, all of the coefficients of the estimated parameters in the regression model are tested whether they are statistically significant. The coefficient of constant parameter is not tested. The null hypothesis is a joint hypothesis that β_1 and β_2 are jointly or simultaneously equal to zero.

H_0: $\beta_1 = \beta_2 = 0$, regression is generally insignificant

H_1: $\beta_1 \neq \beta_2 \neq 0$, regression is generally significant

F test statistic:

$$F=\frac{\sum(\hat{Y}_t-\bar{Y})^2/(k-1)}{\sum\hat{u}_t^{\,2}/(n-k)}$$

Under the assumption of normal distribution for u_t and the null hypothesis $\beta_1 = \beta_2 = 0$, the variable is distributed as the F distribution with (k-1) and (n-k) degree of freedom. At the 5% significance level, for (k-1) and (n-k) degree of freedom, if F-statistic > F-critical value, we reject the null hypothesis and conclude that regression is generally significant.

C. Coefficient of Determination (R-squared)

R-Squared (R^2) is the determination coefficient of the regression. R^2 measures the goodness of fit of the fitted regression line to a set of data. If R-Squared is close to 1.0, it shows a good fit.

D. Jarque-Bera (JB) Test for Normality

JB tests whether the residuals of the sample are normally distributed. Under the null hypothesis that the residuals are normally distributed, Jarque-Bera shows that asymptotically the JB statistic follows the chi-square (X^2) distribution with 2 degree of freedom, $X^2_{(2)}$.

H_0: residuals are normally distributed

H_1: residuals are not normally distributed

JB test statistic:

JB ~ $X^2_{(2)}$

At the 5% significance level, if the *p* value of the computed chi-square statistic in an application is sufficiently low, one can not reject the H_0 and the decision is that the residuals are normally distributed.

E. Autocorrelation Tests

In time-series, autocorrelation occurs when the errors in one time period are correlated with their own values in other periods.

Durbin-Watson d Test

Durbin Watson d test detects serial correlation and defined as:

$$d=\frac{\sum_{t=2}^{t=n}(\hat{u}_t-\hat{u}_{t-1})^2}{\sum_{t=2}^{t=n}\hat{u}_t^2}$$

d is the ratio of the sum of squared differences in successive residuals to the RSS (Residual Sum of Squares).

$\hat{\rho}=\frac{\sum \hat{u}_t\hat{u}_{t-1}}{\sum \hat{u}_t^2}$ is the sample first-order coefficient of autocorrelation, an estimator of ρ.

$$d\cong 2\left(1-\frac{\sum \hat{u}_t\hat{u}_{t-1}}{\sum \hat{u}_t^2}\right)$$

$d\cong 2(1-\hat{\rho})$

Since $-1\le \rho \le 1$, then $0\le d\le 4$.

d value must lie within these limits. For the given sample size and given number of explanatory variables, the critical d_L and d_U values are found.

Decision rules:

Null hypothesis	Decision	If
No positive autocorrelation	Reject	$0\langle d\langle\ d_L$
No positive autocorrelation	No decision	$d_L\le d\le d_U$
No negative correlation	Reject	$4\text{-}d_L\ \langle d\langle\ 4$
No negative correlation	No decision	$4\text{-}d_U\le d\le 4\text{-}d_L$
No autocorrelation, positive or negative	Do not reject	$d_U\ \langle d\langle\ 4\text{-}d_L$

Durbin h Test

Durbin h test is used for first order autocorrelation in a time-series regression. We use this test when there is lagged dependent variable as an explanatory variable in the regression model, following relationship between residuals.

$\hat{u}_t = \rho_1 \hat{u}_{t-1} + \varepsilon_t$

$H_0: \rho_1 = 0,$

$H_1: \rho_1 \neq 0$

Durbin h test statistic:

$h = \hat{\rho}\sqrt{\frac{n}{1 - nVar(\hat{\beta})}}$

$\hat{\rho} \cong 1 - \frac{d}{2}$

d is the Durbin Watson d statistic

h is asymptotically normally distributed with zero mean and unit variance. If h statistic is in $\pm Z_{\alpha/2}$, H_0 is not rejected and there is no autocorrelation; if $h \rangle Z_{\alpha/2}$, there is first-order positive autocorrelation. If $h \langle -Z_{\alpha/2}$, then there is first-order negative autocorrelation.

Breusch-Godfrey LM Test

Breusch-Godfrey LM Test is used for higher order error autocorrelation.

$Y_t = \beta_o + \beta_1 x_t + \beta_2 z_t + \beta_3 y_{t-1} + u_t$

$\hat{u}_t = \rho_1 \hat{u}_{t-1} + \rho_2 \hat{u}_{t-2} + \ldots + \rho_p \hat{u}_{t-p} + \varepsilon_t$

$H_0: \rho_1 = \rho_2 = \ldots\ldots = \rho_p = 0$

$H_1: \rho_1 \neq \rho_2 \neq \ldots \neq \rho_p \neq 0$

B-G LM test statistic: $\text{BG LM} = n R_u^2$

For the pth order, BG LM(p) = $n R_u^2 \sim X^2(p)$

n times the R_u^2 follows the chi-square test with p degree of freedom. If an n R_u^2 exceeds the critical value at the chosen level of significance, H_0 is rejected and concluded that there is autocorrelation.

F. White Heteroscedasticity Test

One of the assumptions of the regression is that the variance of the error term is constant. If the variance of the error term is not constant, then they are heteroscedastic.

Model: $Y_t = \beta_o + \beta_1 x_t + \beta_2 z_t + u_t$

Auxiliary regression:

$\hat{u}_t^2 = \alpha_1 + \alpha_2 x_t + \alpha_3 z_t + \alpha_4 x_t^2 + \alpha_5 z_t^2 + v_t$

H_0: $\alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$, variance of the disturbance term is constant

H_1: $\alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$, variance of the disturbance is heteroskedastic of unknown form.

Under the null hypothesis that there is no heteroscedasticity, it can be shown that sample size (n) times the R_u^2 obtained from the auxiliary regression asymptotically follows the chi-square distribution with degree of freedom equal to the number of regressors in the auxiliary regression. So, white heteroscedasticity test statistic is as follows:

W= n $R_u^2 \sim X_{sd}^2$

sd=number of explanatory variables in the auxiliary regression

At the 5% significance level, for sd degrees of freedom, if the calculated value w $\langle X_{sd}^2$, H_0 is not rejected and the conclusion is that variance of the disturbance term is constant.

G. Ramsey Reset Test, Test for Specification

Ramsey Reset test is used to measure the specification error.

$Y_t = \beta_o + \beta_1 x_t + u_t$

Test equation is specified by using the squared fitted values obtained from the first regression:

$$\hat{u}_t = \alpha_1 + \alpha_2 x_t + \alpha_3 \hat{Y}_t^2 + \alpha_4 \hat{Y}_t^3 + v_t$$

H_0: $\alpha_3 = \alpha_4 = 0$, the correct specification is linear.

H_1: $\alpha_3 \neq \alpha_4 \neq 0$, the correct specification is non-linear.

At the 5% significance level, for (n-k) degree of freedom, if t-statistic > t-critical value, we reject the null hypothesis and the conclusion is that correct specification is non-linear.

H. Cusum Square Test

Cusum Square (CUSUMSQ) test measures if there is structural change in the model. In the CUSUMSQ graph, if the lines are inside the confidence bands, there is no structural change in the model regression.

5.3 WELFARE EFFECTS OF AGRICULTURAL SUPPORT POLICIES

In this study, partial equilibrium analysis is used to calculate the welfare effects of agricultural support policies on producer and consumer. Partial equilibrium model focuses only on the commodity market and ignores the relations between the commodities, sectors and factors.

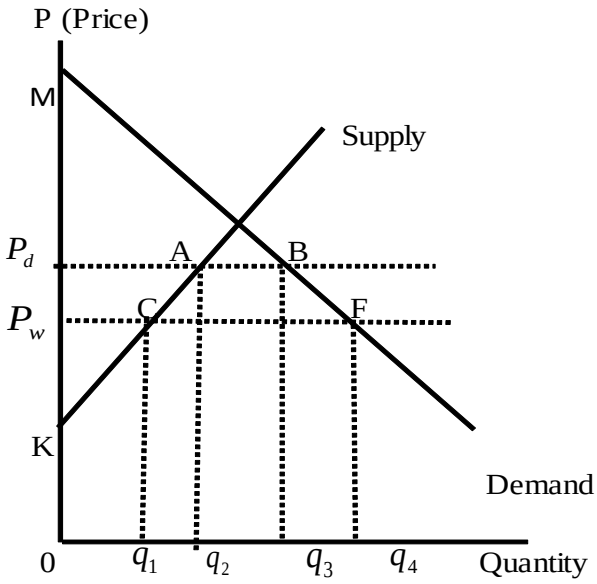
Turkey can not affect the world prices of the agricultural commodities through applying border measures, and changing its production and consumption quantities (except a few products); so, small country assumption is used in the analysis.[239]

Producer and consumer surpluses[240] are calculated to find out the welfare effects on producer and consumer that are caused by the price changes due to the agricultural support policy changes. [241] Finally, total effect of support policies is found.

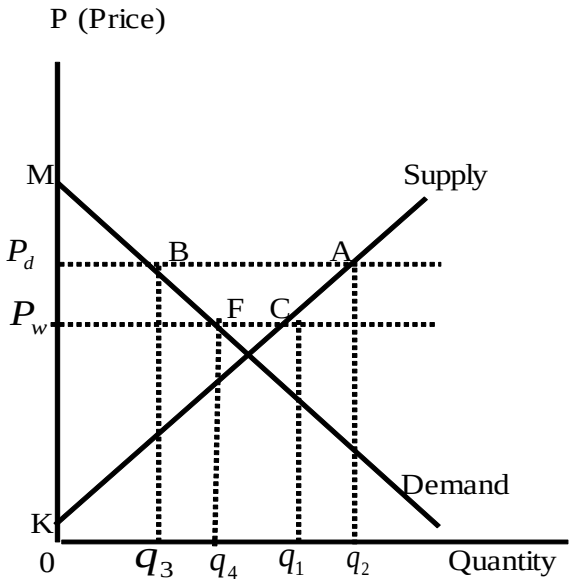
[239]Çakmak et al., 1998, p. 7.

Figure 5-3: Producer and Consumer Surplus

Importing country



Exporting Country



P_d : Domestic price

P_w : Reference price

q_1 : Production quantity (at reference price)

q_2 : Production quantity (at domestic price)

q_3 : Consumption quantity (at domestic price)

q_4 : Consumption quantity (at reference price)

*Reference price (Pw) is the world price level in free trade situation. In free trade situation (the situation where there is no implementation agricultural support policy), the domestic price is Pw. After an application of agricultural support policy (like import tariff, export subsidy, intervention buying…) domestic price Pw rises to Pd. So Pd will be the new domestic price level.

[240] The concept of consumer surplus was first formulated by the French engineer Dupuit (1844). Marshall (1890/1920) was first in introducing the concept to the English-speaking world (Source: Yew-Kwang Ng, 2010, p. 97).

[241] The production and consumption levels at domestic and reference price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.

In Figure 5-3, the new high price level stimulates supply and reduces the demand for a given product. Consumers will be hurt, producers will benefit due to the high price level.

Producer Surplus

Producer surplus is the difference between the price that a producer actually receives for a given quantity of goods and the amount corresponding to the minimum price at which he would be willing to supply the same quantity.[242] In the figure 5-3, producer surplus is shown as the area above the supply curve but under the price line.

Transition from one agricultural support policy (for ex: free trade, price is Pw) to another support policy (for ex: intervention buying, price is Pd) causes a change in producer surplus. To find out the producer surplus due to the policy changes, production level at domestic price and reference price are taken into calculation. In this case, the change in the producer surplus is the 'A C Pw Pd' area shown in the figure 5-3 and calculated as follows:

Change in Producer Surplus = (K A P_d) – (K C P_w)

K C P_w area shows the producer surplus before policy change

K A P_d area shows the producer surplus after policy change

Change in Producer Surplus= $\left(\frac{q_2+q_1}{2}\right)*(P_d - P_w)$

Consumer Surplus

Consumer surplus is the difference between what consumers would be willing to pay for each unit of the commodity and what they actually pay.[243] In the figure 5-3, consumer surplus is shown as the area under the demand curve but above the price line.

Transition from one agricultural support policy (for ex: free trade, price is Pw) to another support policy (for ex: intervention buying, price is Pd) causes a change in consumer surplus. To find out the consumer surplus due to the policy changes, consumption level at domestic price and reference price are taken into calculation. In this case, the change in the

[242] Michael Burda and Charles Wyplosz, 2005, p. 554.
[243] Dominick Salvatore, 1998, p. 225.

consumer surplus is the 'B F Pw Pd' area shown in the figure 5-3 and calculated as follows:

Change in Consumer Surplus = (M F P_w) - (M B P_d)

M F P_w area shows the consumer surplus before policy change

M B P_d area shows the consumer surplus after policy change

Change in Consumer Surplus = $\left(\frac{q_4+q_3}{2}\right)*(P_w-P_d)$

5.3.1 INSTRUMENTS OF DOMESTIC SUPPORT POLICIES AND THEIR WELFARE EFFECTS

The welfare effects of the Turkish past and present support policies of selected commodities are analysed. The changes in producer and consumer surplus are examined below.

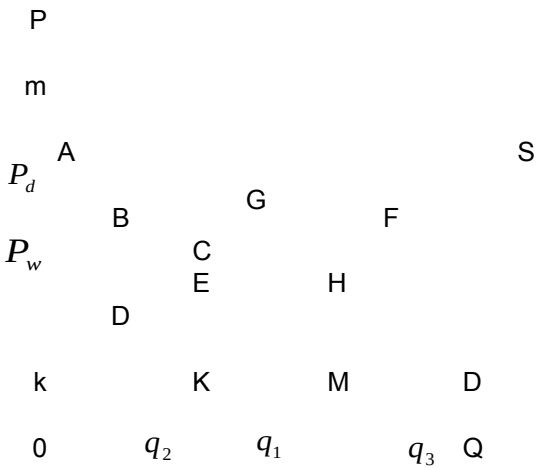
A. Intervention Buying (Market Price Support)

In Intervention buying system:

Government announces to buy the product at an intervention price of P_d . If the market price falls below the P_d , the government will enter the market and buy a quantity of q_3 at the price P_d (Figure 5-4). Here, the producers' income increases as much as "BCG" area. The private sector also has to pay P_d to buy the product.[244]

[244] Okan Gaytancıoğlu, 2009, p. 32-34.

Figure 5-4: Implementation of Intervention Buying



Source: David Colman and Trevor Young, 1988, p. 281.

In figure 5-4, the market is in equilibrium at price P_w and at quantity q_1. The guaranteed price is set at P_d, that means; the government guarantees to buy the products which the farmers are ready to sell from the price P_d. Due to the high guaranteed price (which is above the market price P_w), the supplied quantity is q_3, demand is q_2. The surplus quantity $q_2 - q_3$ is purchased by the authorities. These authorities store the products (if they are storable) or try to dispose them on the domestic or world market.

Welfare Effects of Intervention Buying

	Equilibrium	After the Intervention Buying
Domestic Price	P_w	P_d
Production	q_1	q_3
Consumption	q_1	q_2
Intervention buying	-	$q_2 - q_3$
Cost of Intervention Buying	-	C +G +F+E+H+K+M
Producer Surplus	D + E	B + C + D + E + G
Increase in producer surplus	-	B + C + G
Consumer Surplus	A + B + C	A
Decrease in consumer surplus	-	B + C

Total welfare = Increase in producer surplus – Decrease in consumer surplus – Cost of Intervention buying

Total welfare = (B + C + G) – (B + C) – (C + G + F+E+H+K+M)

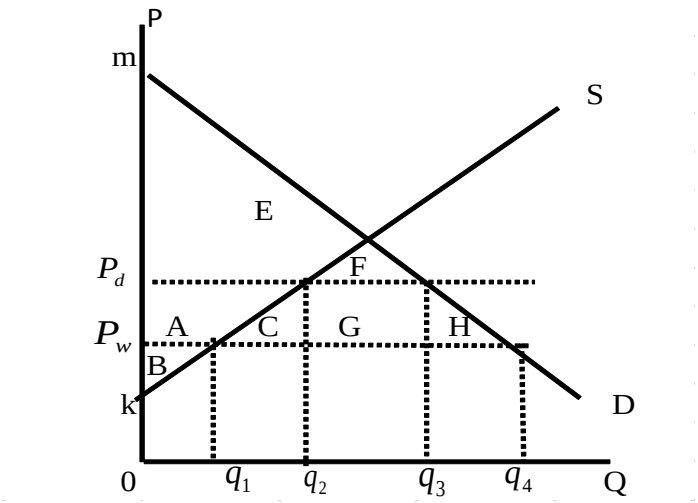
Total welfare = -(C + F+ E+H+K+M)

The producer surplus increases as much as the area "BCG". Net welfare loss is the area "CF", found by subtraction of decrease in consumer surplus (B+C) and cost of intervention buying from the increase in producer surplus (B+C+G).

B. Deficiency Payments (Premium Payments)

In the figure 5-5, the market price is P_w (world price) for the quantity supplied q_1. P_D is the quaranteed producer price – target price (but the consumer price is P_w). The difference between P_w and P_D is paid to the farmers; so total deficiency payment is "A+C" in the figure. In this case, the welfare loss is G+H-A, found by difference between increase in consumer surplus (A+C+G+H) and the total deficiency payment (A+C) plus change in producer surplus (A).

Figure 5-5: Implementation of Deficiency Payment



Source: Erol Çakmak et al., 1998, p. 7.

(The figure shows the deficiency payment system in the imported commodity)

Welfare Effects of Deficiency Payment

	No intervention	After Deficiency Payment
Producer price	P_w	P_d
Consumer price	P_w	P_w
Production	q_1	q_2
Consumption	q_4	q_4
Import	$q_4 - q_1$	$q_4 - q_2$
Producer surplus	B	B+A
Increase in producer surplus	-	A
Consumer surplus	E+F+A+C+G+H	E+F+A+C+G+H
Change in consumer surplus	-	-
Cost of deficiency payment	-	A+C

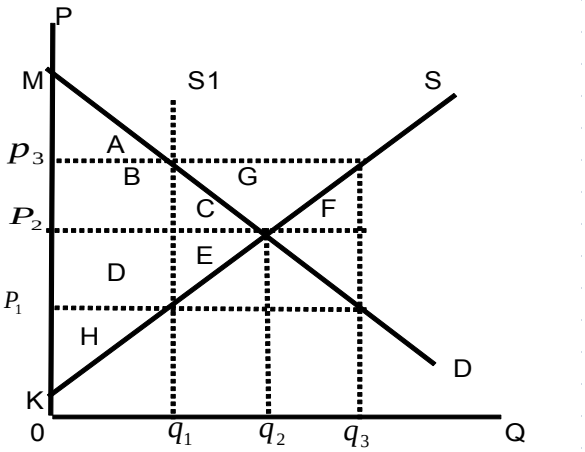
Total Welfare = Increase in producer surplus – Cost of deficiency payment

Total Welfare = (A) – (A +C) = -C

C. Production Quotas

As seen in the figure 5-6, the production and consumption is q_2 at the price level P_2. If the quantity of production is limited to a level of q_1, then the price increases to P_3. Supply curve shifts to S1. This resulted in a decrease of consumer surplus to the area "A" shown in the figure and increase in producer surplus to the area "B" minus "E". In this situation, the total welfare loss is "E+C".

Figure 5-6: Implementation of Production Quota



Source: B. Douglas Bernheim and Michael Whinston, December 2007, p. 23.

Welfare Effects of Production Quota

	Equilibrium	Production Quota
Price	P_2	P_3
Production	q_2	q_1
Consumption	q_2	q_1
Consumer Surplus	A + B + C	A
Decrease in Consumption Surplus	-	B + C
Producer Surplus	D + E+H	B + D+H
Increase in Production Surplus	-	B – E

Total welfare = Increase in producer surplus – Decrease in consumer surplus

Total welfare = (B – E) - (B + C)

Total welfare = -(E + C)

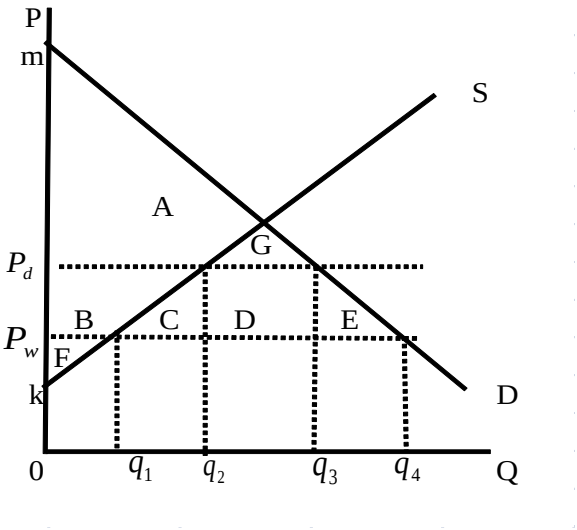
5.3.2 EXTERNAL TRADE MEASURES

In Turkey, import tariffs are used as market access measures in the selected commodities. Export subsidy is provided to the olive oil exporters.

A. Tariffs

The figure below shows the partial equilibrium analysis of a tariff in a small nation. [245]

Figure 5-7: Tariff Effect in a Small Country (Partial Equilibrium Analysis)



Source: Dominick Salvatore, 1998, p. 224.

In the situation of free trade, the price is P_w, the quantity demanded is Q_4, the supply is Q_1, and a quantity of Q_1 - Q_4 is imported. A tariff imposition (between P_d and P_w) raises the price to P_d and leads to a fall in demand to Q_3. Domestic production increases to Q_2, so only Q_2 Q_3 is imported. The government receives a tariff revenue of:

(Q_3 - Q_2) *x* (P_d - P_w), the area D.

Welfare Effects of Import Tariffs

	Free trade	Tariff effect
Domestic price	P_w	P_d
Production	q_1	q_2
Consumption	q_4	q_3
Consumer surplus	A+B+C+D+E+G	A+G

[245] In economics, "small country" does not affect the world prices and is the "price taker country". When a small nation imposes import tariff, this will not affect the exporter country's price (Osman Küçükahmetoğlu, 2005, p. 44).
*The large country affects international prices by its trading (Source: Dominick Salvatore, 1998, p. 237).

Decrease in Consumer surplus	-	B+C+D+E
Producer surplus	F	F+B
Increase in Producer surplus	-	B
Import quantity	q_1 _ q_4	q_2 _ q_3
Tariff revenue	-	D

Total Welfare = Tariff revenue + Gain in producer surplus – Loss in consumer surplus

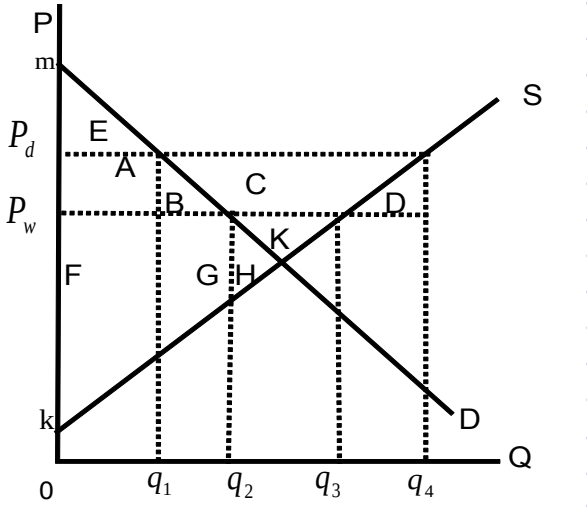
Total Welfare = D + B – (B+C+D+E)

Total Welfare = - (C+E)

B. Export Subsidies

The production quantity is q_3 and consumption is q_2 at price level P_w. If the price is set at P_d the demand will decrease to q_1 and the supply rises to q_4. The surplus quantity (q_4 - q_1) has to be sold on the world market at a price of P_w, which implies an export subsidy of the difference between P_d and the world market price P_w (Figure 5-8).

Figure 5-8: Export Subsidy Effect in a Small Country (Partial Equilibrium Analysis)



Source: Dominick Salvatore, 1998, p. 269.

Welfare Effects of Export Subsidies

	Free trade	Export subsidy effect
Domestic price	P_w	P_d
Production	q_3	q_4
Consumption	q_2	q_1
Consumer surpluss	E+A+B	E
Decrease in consumer surplus	-	A+B
Producer surplus	F+G+H+K	F+G+H+K+A+B+C
Increase in producer surplus	-	A+B+C
Export quantity	$q_3 - q_2$	$q_4 - q_1$
Export subsidy	-	$P_d - P_w$

Total Welfare = Gain in producer surplus – loss in consumer surplus – cost of export subsidies

Total Welfare = (A+B+C) – (A+B) – (B+C+D)

Total Welfare = -(B+D)

The Effects of Agricultural Support Policies

The effects of agricultural support policies change from policy to policy. The policy instruments may affect the production and consumption level, price of the products, level of imports and exports and the budget of the country. The table 5-1 summarizes the effects of the policies.

As can be seen from the table 5-1, domestic production increases in the cases of all support policies except the production quota. If the government wants to prevent an increase in production and food surpluses, production quota may be implemented. If the objective is to increase domestic consumption, deficiency payment is a suitable policy. To increase exports and to get rid of food surpluses, export subsidies can be granted. But the result would be the distortion of world markets (due to the expose of the exports at lower prices) and increase in budgetary expenditure. If the government aims to restrict imports and let the consumers prefer domestic consumption, tariffs are used for this kind of protection.

Table 5-1: Summary of the Effects of Agricultural Support Policies

	Intervention buying	Deficiency payments*	Production quota	Tariffs*	Export subsidies
Domestic consumption	decreases	increases	decreases	decreases	decreases
Domestic production	increases	increases	decreases	increases	increases
Domestic consumer price	increases	decreases	increases	increases	increases
Imports	decreases	decreases	-	decreases	decreases
Exports	-	-	-	-	increases
Budgetary expenditures	increases	increases	-	-	increases
Budget revenue	-	-	-	tariff revenue	-

*Information is taken from: Bernadette Andreosso-O'Callaghan, 2003, p. 74.

5.4 EUROPEAN UNION ACCESSION IMPACT

According to Avrupa Birliği Genel Sekreterliği (ABGS), the expected European Union accession of Turkey will be in the year 2014.[246] Also, the next financial framework of European Union will start in 2014. So, in this study, it is supposed that the possible EU accession of Turkey will be in 2014 and the EU accession impact is analysed in four commodities markets after 2014 by using welfare analysis, explained in part 5.3. European Union's prices for wheat, milk, sugar and olive oil are used. The EU membership situation is compared with the non EU membership situation.

For converting the EU prices from Euro to TL, the euro/TL exchange rates after 2014 are estimated by using GDP deflator in Turkey which is estimated by OECD FAO Agricultural Outlook 2010-2019.[247]

The statistics for the calculations are presented in the Annex.

[246] Ahmet Yeşiltepe (NTVMSNBC), 06.04.2011.
[247] OECD FAO, 2010, p. 73. For the exchange rate estimations see Annex, p. 322.

5.5 DOHA ROUND EFFECT

Turkey has no Aggregate Measure of Support (AMS) reduction commitments. So modalities about overall reduction in trade-distorting domestic support (in Doha Round) in Turkey are not analysed in this study.

The draft modalities about tariff reductions are important for Turkey. If the Doha Round is completed and the draft modalities are accepted, Turkey has to reduce tarriff rates of some agricultural products. The tariff rate for wheat is 130%. Turkey has to reduce the import tariff by 42,67%. The tariff rate for sugar is 135%. The average cut will be 46,67% on the tariff rate. The tariff rate for skim milk powder is 180%, so the average cut will be 46,67% on the tariff rate (Table 2-1, p. 37). Doha Round impact is analysed by using welfare analysis in part 5.3. The tariff reduction situation is compared with the current tariff rates. The observed period covers the years between 2013-2019, supposing that the Doha Round ends in 2012, and the revised dratf modalities are accepted and Turkey starts reduction in tariffs in 2013. Export subsidies will be eliminated in 2016 in developing countries. The effect of elimination of export subsidies is analysed in the Turkish olive oil market for 2017.

The statistics for the calculations are presented in the Annex.

6 PRESENTATION AND EVALUATION OF THE RESULTS

6.1 RESULTS AND EVALUATION OF WHEAT SUPPORT POLICIES

6.1.1 PRODUCER SUPPORT ESTIMATE IN WHEAT

The Table 6-1 shows the producer support estimate in wheat between 1986-2009. OECD uses the data below for the calculation of PSE in wheat:
The producer price is the average purchase price of TMO; and the reference price (border price) is the weighted average c.i.f. price of Turkish wheat imports (15% to hard wheat and 85% to soft wheat, for bread), adjusted for handling and marketing used for the European Union. The level of production data is taken from TUIK. Premium payments are deficiency payments that are per tonne payments to the wheat producers.

Transfer to consumers from taxpayers is "0" and Price levies (PL) is "0" in wheat.

In 1995 and 2008, the producer's price in wheat was less than the border's price. In these years, consumers paid less money than the border's price. So, the consumers' and the taxpayers' transfers to producers are at minimum levels which shows that market price support is also minimum in these two years.

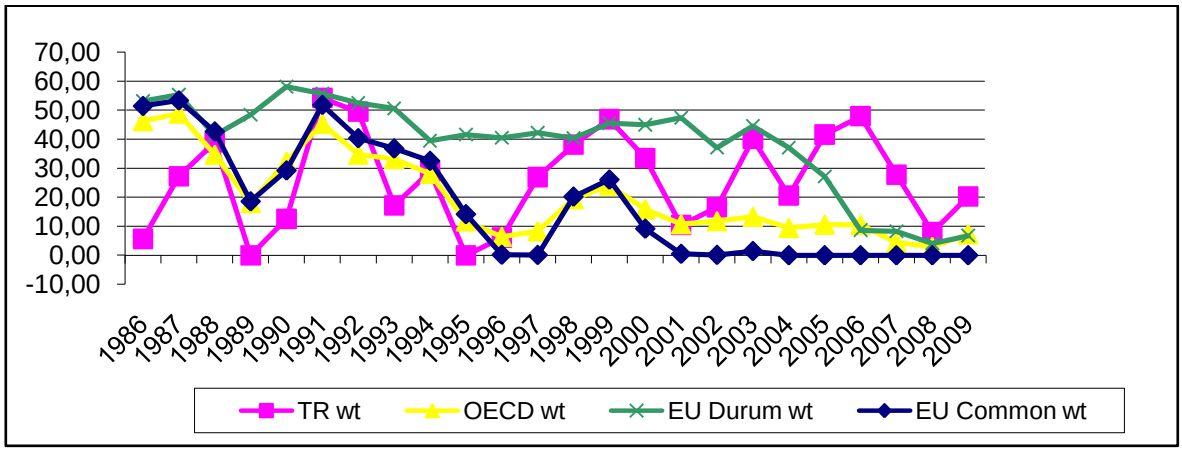
After 2002, market price differential has increased. The implementation of deficiency payments after 2005 let to an increase in producer support estimate and reached to a maximum level of 47,92% in 2006. That means, 47,92% of the farmer's earnings come from policy induced transfers, and the remaining come from the value of sales measured at border prices (that is, not including price support). In 2008, the market price differential decreased after the world wheat price inrease due to the food crisis. The producer support estimate (7,96%) in 2008 was recorded as the lowest level in the last 10 years.

Table 6-1: Producer Support Estimate in Wheat in Turkey

						Market Transfers			Budgetary Transfers						
Year/ Unit	Reference Price	Producer Price	Market Price Differential	Quantity Produced	Quantity Consumed	Transfers to producers from consumers (TPC)	Other transfers from consumers	Excess feed cost	Transfers to producers from taxpayers	Market Price Support	Payments based on output (Premiums)	Producer SCT	% Producer SCT	Consumer SCT	Consumer NPC
	(TL/t)	(TL/t)	(TL/t)	(1000 t)	(1000 t)	bn TL	bn TL	bn TL	bn TL	bn TL	bn TL	bn TL	%	bn TL	%
1986	0,07	0,08	0,00	15.390	14.005	0,06	0,00	0,00	0,01	0,07	0,00	0,07	5,65	-0,06	1,06
1987	0,07	0,10	0,03	15.309	14.235	0,37	0,00	0,02	0,03	0,40	0,00	0,40	27,20	-0,36	1,37
1988	0,10	0,17	0,07	16.790	14.789	0,97	0,00	0,07	0,13	1,10	0,00	1,10	38,93	-0,90	1,64
1989	0,37	0,33	0,00	13.268	14.888	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00
1990	0,44	0,50	0,06	16.560	15.043	0,95	0,00	0,06	0,10	1,05	0,00	1,05	12,54	-0,89	1,14
1991	0,35	0,76	0,41	16.891	15.446	6,38	0,00	0,46	0,60	6,98	0,00	6,98	54,17	-5,93	2,18
1992	0,58	1,16	0,57	15.980	15.659	8,95	0,00	0,60	0,18	9,13	0,00	9,13	49,43	-8,35	1,98
1993	1,53	1,84	0,32	17.388	16.042	5,08	0,00	0,35	0,43	5,51	0,00	5,51	17,19	-4,73	1,21
1994	2,55	3,59	1,04	14.492	16.655	15,03	2,24	1,12	0,00	15,03	0,00	15,03	28,88	-16,15	1,41
1995	8,43	7,43	0,00	14.905	16.012	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00
1996	17,38	18,51	1,13	15.317	16.213	17,28	1,01	1,18	0,00	17,28	0,00	17,28	6,10	-17,11	1,06
1997	25,67	35,14	9,47	15.442	16.395	146,19	9,02	10,89	0,00	146,19	0,00	146,19	26,94	-144,33	1,37
1998	33,17	53,57	20,40	17.220	16.533	337,23	0,00	23,46	14,01	351,24	0,00	351,24	38,08	-313,77	1,61
1999	40,36	75,96	35,60	14.800	16.700	526,86	67,64	42,72	0,00	526,86	0,00	526,86	46,86	-551,78	1,88
2000	64,73	97,33	32,59	17.220	16.750	545,95	0,00	65,85	15,32	561,27	0,00	561,27	33,49	-480,11	1,50
2001	140,72	157,10	16,38	16.000	16.500	262,06	8,19	30,85	0,00	262,06	0,00	262,06	10,43	-239,40	1,12
2002	191,43	229,32	37,89	16.100	16.602	610,09	19,02	75,00	0,00	610,09	0,00	610,09	16,52	-554,12	1,20
2003	211,96	353,62	141,66	15.800	16.500	2.238,19	99,16	273,74	0,00	2.238,19	0,00	2.238,19	40,06	-2.063,61	1,67
2004	278,26	350,44	72,18	17.300	16.500	1.190,99	0,00	146,00	57,74	1.248,73	0,00	1.248,73	20,60	-1.044,99	1,26
2005	199,61	331,54	131,93	18.250	16.500	2.176,92	0,00	56,10	230,89	2.407,81	185,17	2.592,98	41,58	-2.120,82	1,66
2006	196,49	349,53	153,04	17.000	16.600	2.540,47	0,00	65,41	61,22	2.601,69	471,52	3.073,20	47,92	-2.475,06	1,78
2007	321,94	425,00	103,06	14.525	16.200	1.496,89	172,62	36,21	0,00	1.496,89	300,47	1.797,36	27,76	-1.633,30	1,32
2008	484,23	463,00	0,00	16.803	17.780	0,00	0,00	0,00	0,00	0,00	673,14	673,14	7,96	0,00	1,00
2009	383,70	458,00	74,30	20.600	17.800	1.322,54	0,00	29,72	208,04	1.530,58	477,97	2.008,56	20,26	-1.292,82	1,19

Source: OECD, 2011a.

Graph 6-1: Comparison of Wheat PSE Levels between EU, OECD and TR



Source: OECD, 2011a, 2011b, 2011c.

Graph 6-1 shows the comparison of wheat PSE between Turkey, European Union and OECD average. According to the graph, the Producer Support Estimate in Turkish wheat is higher than the PSE levels of European Union common wheat and OECD level. The main reason for the high PSE in Turkey is the high prices of wheat. The wheat producer price in Turkey is almost double of the common wheat price in the European Union (Table 6-2). In European Union, the wheat prices decreased in time and the wheat producers received compensatory payments for the price reductions. Durum wheat price increased in the European Union in especially food crisis years (2007, 2008).

Table 6-2: Comparison of Wheat Producer Prices in Turkey and European Union

	Unit/Year	2005	2006	2007	2008	2009
Ave. wheat price in Turkey	TL/t	332	350	425	463	458
Common wheat Price in EU	€/t	97	117	183	174	114
Common wheat Price in EU	TL/t	155	218	314	373	246
Durum wheat Price in EU	€/t	144	158	269	311	195
Durum wheat Price in EU	TL/t	230	293	462	667	419
€/TL exchange rate		1,5952	1,8604	1,7142	2,1435	2,153

Source: OECD, 2011a, 2011b.

To conclude, the main reason of the high PSE level in Turkey when compared with EU PSE levels can be explained as the high wheat price in Turkey and low wheat price in the

European Union (Table 6-2). Turkey protects the wheat sector by high import tariffs and thus high prices (although not officially expressed).[248]

Consumer Support Estimate is negative in wheat. This shows the transfer from consumers due to the high producer prices. The consumers pay more than reference prices in Turkey. Consumer Nominal Protection Level (ratio of price paid by the consumer to the border price) is above 1, which means that consumer pays more money than the border price.

6.1.2 ESTIMATION OF WHEAT SUPPLY AND DEMAND PARAMETERS

The data are time series and represent 20 years, from 1990 to 2009. Demand and supply equations were estimated for the wheat sector in order to conduct welfare analysis.

First model is wheat production model:
Many explanatory variables like wheat price, wheat yield (ha/t), fertiliser price, harvested area, TMO purchase quantity, agricultural support policy in wheat as dummy variable (intervention buying is indicated as "0" for the period 1990-2004; the years between 2005-2009 are shown as "1") and 1994 and 2001 economic crisis as dummy variable (1994 and 2001 are indicated as "1" and the other years are shown as "0") were used in different combinations in order to estimate wheat production model. Only wheat price, wheat yield and fertiliser price were selected as explanatory variables because they are closely related to production level. The other variables were not selected because they are insignificant in the model. Food crisis years (2007 and 2008 are indicated as "1" and the other years are shown as "0") were also added in the model as a dummy variable which affected the wheat prices and production levels in the world. The best fitted wheat production model and the tests are presented below.

[248] Halis Akder, May 2008, p. 83.

The best fitted wheat production model:

Dependent variable		Coefficient	Std. Error	t-Statistic	Prob.
ln(pl)	Production level				
Constant parameter		16.26	0.07	216.69	0.0000
ln(wp(-1))	Wheat price	0.05	0.02	21.947	0.0210
ln(frt(-1))	Fertiliser price	-0.06	0.02	-3.32	0.0051
ln(y)	Wheat yield	0.75	0.11	6.86	0.0000
dm	Food crisis dummy	-0.12	0.02	-4.83	0.0003

R-squared	0.87	Adjusted R-squared	0.84
F-statistic	24.71346	Prob (F-statistic)	0.000003

Testler

B-G LM (nR2) Lags=1	0.141572	B-G LM (Prob. nR2)	0.706724
B-G LM (nR2) Lags=2	0.141572	B-G LM (Prob. nR2)	0.931661
Jarque-Bera	0.571786	Jarque-Bera (prob.)	0.751343
White Heteroscedasticity (nR2)	7.409521	White Heteroscedasticity (prob.nR2)	0.387520
Ramsey-Reset test (F-statistic)	0.213852	Ramsey-Reset test (Prob. F-stat)	0.651410

The model is:

$$lnpl = 16{,}26 + 0{,}05\ lnwp_{t-1} - 0{,}06lnfrt_{t-1} + 0{,}75lny - 0{,}12dm$$

Supply Price Elasticity of wheat is 0,05.

Second Model is Wheat Consumption Model:

When estimating the wheat consumption model, explanatory variables like wheat price, population, GDP, 1994 and 2001 economic crisis, world food crisis were used. Population which can affect the consumption level was not used because it was insignificant. 1994 and 2001 economic crisis and world food crisis were also used as dummy variables but they were also insignificant. Only wheat price and GDP (an increase in GDP can stimulate wheat consumption) were selected as explanatory variables in the wheat consumption model. The best fitted wheat consumption model and the tests are presented below. There is no structural change in the model as seen in the CUSUMSQ graph.

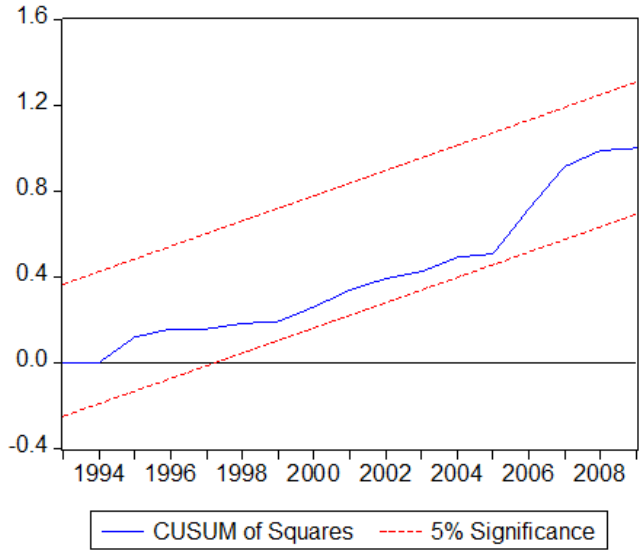
The best fitted wheat consumption model:

Dependent variable		Coefficient	Std. Error	t-Statistic	Prob.
ln(cl)	Consumption level				
Constant parameter		15.98	0.15	103.69	0.0000
ln(wp)	Wheat price	-0.08	0.03	-3.06	0.0071
ln(gdp)	GDP	0.08	0.02	3.73	0.0016

R-squared	0.82	Adjusted R-squared	0.79
F-statistic	38.44584	Prob (F-statistic)	0.000000

Tests

Durbin-Watson	2.18		
Jarque Bera	0.150006	Jarque Bera (prob.)	0.927741
White Heteroscedasticity (nR2)	2.811458	White Heteroscedasticity (prob.nR2)	0.589856
Ramsey-Reset test (F-statistic)	0.389330	Ramsey-Reset test (Prob. F-stat)	0.541447
B-G LM (nR2) Lags=1	0.357177	B-G LM (Prob. nR2)	0.550078
B-G LM (nR2) Lags=2	0.384091	B-G LM (Prob. nR2)	0.825269



The model is:

lncl= 15,98 – 0,08lnwp + 0,08lngdp

Demand Price Elasticity is -0,08.

Supply and demand price elasticities of wheat in other studies are as follows:

Research Studies	Wheat supply price elasticity	Wheat demand price elasticity
Erol H. Çakmak, Haluk Kasnakoğlu, Tülay Yıldırım (1998)	0,5	-0,3
Ahmet Şahinöz, Selim Çağatay, Özgür Teoman (2007)	0,2	-0,12
Taylan Kıymaz (2008)	0,34	-0,39

6.1.3 WELFARE EFFECTS OF SUPPORT POLICY CHANGES IN WHEAT

Past and present support policies in wheat are analysed with the help of the welfare analysis.

Between the years 1938-2002 market price support (intervention buying) was implemented in wheat. Since 2002, TMO does not make support purchases. Public warehousing activities were continued; TMO announced the purchase price and purchase prices were gradually determined by TMO. Since 2005, deficiency payment has been given to the wheat producers. In this part, it is aimed to answer the question, "if the intervention buying continued, how this policy would affect the producer and consumer welfare". So, welfare effects of these 2 systems (intervention buying and deficiency payment) are analysed between 2005-2009. The prices and the production and consumption quantities are taken from OECD and TUIK.

In Table 6-3, the welfare effects of the intervention buying and deficiency payment are measured.

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.

3. The policy changes in the intervention buying and in the deficiency payment policy are compared with the equilibrium situation. The equilibrium situation is the situation where there is no implementation of support policy.
4. All prices are adjusted to the farm gate.
5. Producer price is also the consumer price.
6. The border (reference) price is taken as import price (Table 6-1, p. 168). Border price is the weighted average c.i.f. price of Turkish wheat imports (15% to hard wheat and 85% to soft wheat, for bread), adjusted for handling and marketing used for the European Union.
7. Tariff revenue of net trade is calculated. Tariff revenue is the difference between reference price (border price) and the producer price.
8. TMO purchase quantities are used as the intervention buying quantities in the intervention buying policy.
9. Purchase price is the sum of producer price (in deficiency payment policy) and the deficiency payment.
10. The cost of purchase is only taken into account in the calculation. The further sales of the purchased quantity by the TMO (TMO's loss/revenues from the sales) are ignored.

Table 6-3: Welfare Effects between Intervention Buying and Deficiency Payment in Wheat

	2005		2006		2007	
	Deficiency Payment	Intervention Buying	Deficiency Payment	Intervention Buying	Deficiency Payment	Intervention Buying
Prices						
Equilibrium price	214	214	311	311	477	477
a. Producer price TL/t	332	362	350	385	425	470
Premium payment (TL/t)	30		35		45	
Quantities (1000 tons)						
b. Production	20.318	20.578	18.909	19.175	16.286	16.520
c. Consumption	17.237	16.892	18.109	17.714	16.979	16.607
Net Trade (b-c)	3.081	3.686	801	1.462	-693	-87
Equilibrium (S=D)	19.065	19.065	18.595	18.595	16.554	16.554
Welfare Effect (million TL)						
d. Producer surplus	2.324	2.934	731	1.397	-854	-116
e. Consumer surplus	-2.142	-2.661	-716	-1.343	872	116
f. Deficiency Payments	-319	0	-472	0	-580	0
g. Intervention Buying	0	-1.510	0	-561	0	-57
h. Tariff revenue	0	0	0	0	72	13
i. Total welfare	-138	-1.237	-456	-507	-491	-44

	2008		2009	
	Deficiency Payment	Intervention Buying	Deficiency Payment	Intervention Buying
Prices				
Equilibrium price	570	570	310	310
a. Producer price TL/t	463	508	458	508
Premium payment (TL/t)	45		50	
Quantities (1000 tons)				
b. Production	16.804	17.020	19.467	19.745
c. Consumption	18.089	17.727	16.961	16.584
Net Trade (b-c)	-1.285	-708	2.506	3.161
Equilibrium (S=D)	17.290	17.290	18.458	18.458
Welfare Effect (million TL)				
d. Producer surplus	-1.824	-1.064	2.806	3.782
e. Consumer surplus	1.893	1.086	-2.621	-3.469
f. Deficiency Payments	-468	0	-888	0
g. Intervention Buying	0	-32	0	-1.916
h. Tariff revenue	0	0	0	0
i. Total welfare (d+e+f+g+h)	-399	-10	-702	-1.603

a. Wheat Prices in Deficiency Payment and Intervention Buying:

The wheat prices during the deficiency payment system are given in the table below. Given the prices in deficiency payment policy, the wheat price in intervention buying would be (price+deficiency payment):

Year	Wheat Price in Deficiency Payment Policy (TL/t)	Deficiency Payment (TL/t)	Wheat Price in Intervention Buying Policy (TL/t)
2005	332	30	362
2006	350	35	385
2007	425	45	470
2008	463	45	508
2009	458	50	508

*wheat prices are taken from: OECD, 2011a.

The prices are high in intervention buying, but low in deficiency payment policy. The low prices in deficiency payment are compansated by premium (deficiency) payments.

Below, an example of the comparison is given for the 2009/10 marketing year.

Example for the welfare effect of intervention buying in wheat (2009/10):

In 2009, the producer price was 458 TL/t (average TMO purchase price of wheat, of all grades) and deficiency payment was 50 TL/t. If market price support (intervention buying) was applied in the wheat sector, the intervention price would be: 508 TL/t (producer price + deficiency payment).

2009/10 Wheat Statistics in Turkey

Production level (pl): 19.467.000 tonnes

Consumption level (cl): 16.961.236 tonnes[249]

Ending stocks: 965.487 tonnes

Import: 2.951.007 tonnes

[249] Consumption = Production + imports - exports - ending stocks

Export: 4.491.284 tonnes

Wheat price (wp): 458 TL/t

Deficiency payment: 50 TL/t

Purchase price: 508 TL/t

Purchased quantity: 3.771.343 tonnes

(Purchase quantity of TMO was 3.771.343 tonnes in 2009/10).

From the elasticity formula below, supply and demand models with price as only endogenous variable can be found.[250]

($\mathcal{E}$ * production level (or consumption level)) = β * wheat price)

$\mathcal{E}$ * pl = β *wp

Calculation of Supply model:

$\mathcal{E}$ = 0,05

$\mathcal{E}$* lnpl = β * lnwp (pl=19.467.000, wp= 458)

0,05 * 16,78 = β * 6,13

β = 0,14

α = lnpl - β * lnwp

α = 16,78 – 0,14* 6,13

α = 15,95

Logarithmic Expression of Supply Model is:

S = 15,95 +0,14* lnwp (S=lnpl)

Calculation of Demand Model:

$\mathcal{E}$ * cl = β *wp

$\mathcal{E}$ = -0,08

$\mathcal{E}$* lncl = β * lnwp (cl=16.961.236, wp=458)

-0,08 * 16,65= β * 6,13

[250] The calculation method: Fahri Yavuz, 2004, p. 128.

β = -0,22

α = lncl - β * lnwp

α = 16,65– (-0,22 *6,13)

α = 17,98

Logarithmic Expression of Demand Model is:

D = 17,98 – 0,22 * lnwp (D=lncl)

Market Equilibrium Price and Quantity (logarithmic values)

Supply = Demand

15,95 +0,14* lnwp = 17,98 – 0,22 * lnwp

lnwp=5,74 (Logaritmic value of wheat price)

wp= $e^{5,74}$ = 310

S = 15,95 +0,14* lnwp

ln pl_{eq} = 15,95 +0,14* 5,74

ln pl_{eq} =16,73

$pl_{eq} = e^{16,73}$ = 18.458.283

Equilibrium production level would be 18.458.283 tonnes.

b. Production quantity at intervention price (508 TL/t)

S = 15,95 +0,14* lnwp (S= ln pl_i)

ln pl_i = 15,95 +0,14* 6,23

ln pl_i = 16,80

$pl_i = e^{16,80}$ = 19.744.750

Production quantity at intervention price would be 19.744.750 tonnes.

c. Consumption quantity at intervention price (508 TL/t)

D = 17,98 – 0,22 * lnwp

$\ln cl_i$ = 17,98 – 0,22 * 6,23

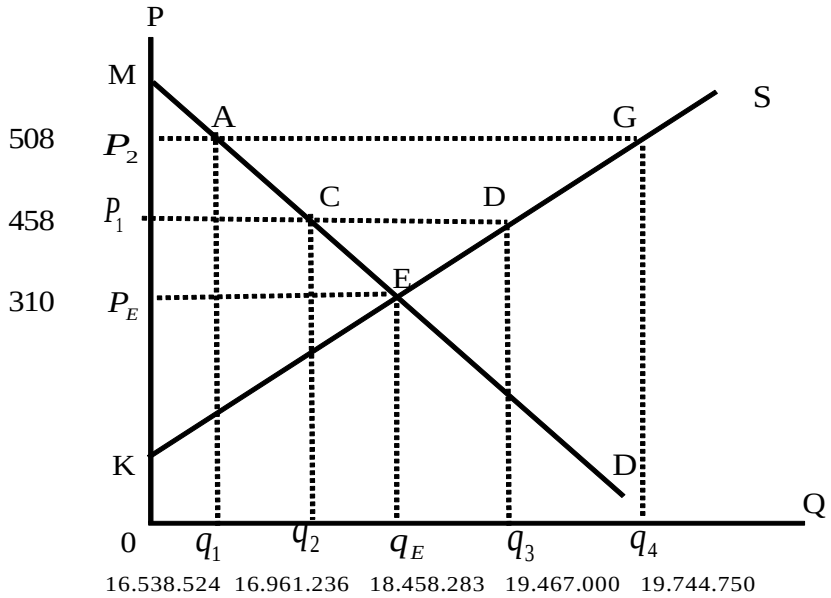
$\ln cl_i$ = 16,62

$cl_i = e^{16,62}$ = 16.583.524

Consumption quantity at intervention price would be: 16.583.524 tonnes.

The figure 6-1 shows the supply and demand of wheat at three situations: equilibrium, intervention buying policy and deficiency payment policy for the marketing year 2009/10.

Figure 6-1: Demand and Supply of Wheat (2009/10)



The intervention price (508 TL/t) causes an increase in the production quantiy to 19.744.750 tonnes and a decrease in consumption quantity to 16.583.524 tonnes (relative to the equilibrium situation). When we compare the intervention buying and deficiency payment with equilibrium situation, we see that the price and the production quantity in the intervention buying system increase more relative to the equilibrium situation. So, the market-distortion is higher in the intervention buying than in the deficiency payment.

Welfare Effects of Policy Options

	Equilibrium	Deficiency Payment	Intervention Buying
Production (t):	18.458.283	19.467.000	19.744.750
Consumption (t):	18.458.283	16.961.236	16.583.524
Producer price:	310	458 TL/t	508 TL/t
Premium payment:	-	50 TL/t	-
Producer Surplus	K E Pe	K D P1	K G P2
Change in Producer Surplus	-	E D P1 Pe	E G P2 Pe
Consumer Surplus	M E Pe	M C P1	M A P2
Change in Consumer Surplus	-	-C E P1 Pe	-A E P2 Pe

d. Change in Producer Surplus:

Increase in Producer Surplus in Deficiency Payment Policy
(Area E D P1 Pe) = ((q3+qe)/2)*(P1-Pe)
((19.467.000+18.458.283)/2)*(458-310) = 2.806.470.942 TL

In deficiency payment policy, producer surplus increases by 2.806 million TL.

Increase in Producer Surplus in Intervention Buying Policy
(Area E G P2 Pe)= ((q4+qe)/2)*(P2-Pe)
((19.744.750 + 18.458.283)/2)*(508-310) = 3.782.100.267 TL

In intervention buying policy, producer surplus increases by 3.782 million TL. In intervention buying, the garantie of the purchase by the government and the high producer price would cause an increase in producer's gain and thus increase in producer surplus. The producer surplus increases in the intervention buying more than in the deficiency payment (relative to the equilibrium).

e. Change in Consumer Surplus:

Decrease in Consumer Surplus in Deficiency Payment Policy
(Area C E P1 Pe)= ((q2+qe)/2)*(Pe-P1)
((16.961.236 + 18.458.283)/2)*(310-458) = -2.621.044.406 TL

The consumer surplus decreases by 2.621 million TL in the deficiency payment policy.

Decrease in Consumer Surplus in Intervention Buying Policy
(Area A E P2 Pe)= ((q1+qe)/2)*(Pe-P2)
((16.583.524+ 18.458.283)/2)*(310-508) = -3.469.138.893 TL

In intervention buying policy, consumer surplus decreases by 3.469 million TL. In intervention buying, the price is high, so the consumption quantity decreases and the consumer surplus is lower.

f. g. Costs of Intervention Buying and Deficiency Payment would be:

In intervention buying, the budget cost depends on the cost of purchased quantity. In deficiency payment, the budget cost is the deficiency payments.

Cost of intervention buying is the multiplication of the purchased quantity of TMO with the purchase price between 2005-2009. Cost of premium payment is taken from TC Gıda, Tarım ve Hayvancılık Bakanlığı, and is the multiplication of the quantity eligible for premium payment with the premium price.

	Cost of Intervention Buying			Cost of Deficiency Payment		
Year	TMO Purchase Quantity (tons)*	Purchase Price (TL/t)	Cost of Purchase (TL)	Quantity of Wheat Eligible for Premium (tons)**	Premium Payment (TL/t)	Cost of Premium Payment (TL)
2005	4.171.303	362	1.510.011.686	10.650.636	30	319.440.819
2006	1.456.571	385	560.779.835	13.471.877	35	471.515.712
2007	121.920	470	57.302.400	12.895.431	45	580.294.405
2008	62.934	508	31.970.472	10.404.110	45	468.184.931
2009	3.771.343	508	1.915.842.244	17.750.000	50	887.500.000

*http://www.tmo.gov.tr
**http://www.tarim.gov.tr

In 2009/10, cost of premium payment was 887,5 million TL in the deficiency payment policy, while the cost of intervention buying was calculated as 1.916 million TL.

h. Tariff revenue

In 2007 and 2008 marketing years, there is net import situation. In the other years, Turkey seems net wheat exporter. In 2008, customs duty was 0% for wheat (table 4-14, p. 73), so tariff revenue is calculated only for the year 2007.

Tariff revenue:

		2007	
		Deficiency Payment	Intervention Buying
I	Producer price, TL/t	425,00	470,00
II	Reference price, TL/t	321,94	321,94
III	Market price differential (I-II), TL/t	103,06	148,06
IV	Net import quantity, t	693.939	86.992
V	Tariff revenue (III*IV), TL	71.517.353	12.880.036

*reference price = import price (Table 6-1, p. 168)

In intervention buying policy, import quantity decreases (because the high price stimulates the production). Also, in intervention buying policy tariff revenues are higher than the revenues in deficiency payment policy because the market price differential is higher in intervention buying.

i. Total Welfare (d+e+f+g+h)

Total welfare is the sum of producer, consumer surplus and tariff revenue minus cost of deficiency payment (in deficiency payment policy) or cost of intervention buying (in intervention buying policy).

According to the Table 6-3, total welfare loss of the intervention buying is high when compared with the deficiency payment system in the years 2005, 2006 and 2009 (when the purchased quantity is higher). In 2009, total welfare amounts -702 million TL in deficiency payment, while it is -1.603 million TL in intervention buying policy. The difference occurs from the high cost of intervention buying and from the fall in consumer surplus. The total welfare loss in deficiency payment is high in the years 2007 and 2008 (when the purchased quantity is lower). The producer surplus is lower and the consumer surplus is higher in the deficiency payment than in the intervention buying due to the lower price level. Import

quantity decreases in the intervention buying policy, because high wheat price stimulates domestic production.

The market distortion is higher in the intervention buying than in the deficiency payment policy. The market distortion arises from the price effect (the purchase price increased relative to the equilibrium price) and production effect (the production quantity also increases more relative to the equilibrium quantity).

6.1.4 WELFARE ANALYSIS OF EUROPEAN UNION ACCESSION IMPACT ON TURKISH WHEAT MARKET

The European Union accession impact is analysed for the Turkish wheat market. There are two cases in the table: First case is the non EU membership (OUT-EU) and the continuation of the present wheat support policy in Turkey. The second case is the EU membership situation (IN-EU) and the implication of EU wheat support policy in Turkey.

In OECD FAO Agricultural Outlook 2010-2019 Database, the wheat production and consumption levels and wheat prices in Turkey are estimated between the years 2010-2019 (see Annex, p. 325). The estimated wheat prices in the EU after 2014 are also taken from the OECD FAO Database. To examine the second case, by using the estimated statistics in OECD FAO research, the welfare effect of EU accession is analysed for Turkey between 2015-2019.

For converting the EU prices from Euro to TL, the euro/TL exchange rates after 2014 are estimated by using the difference between GDP deflator in Turkey (6%) and GDP deflator in EU (2%), which are estimated by OECD FAO Agricultural Outlook 2010-2019.

Supposed that, Turkey applies European Union’s wheat policy after EU accession. Table 6-4 compares the EU membership (IN-EU) and non EU membership (OUT-EU) situations. In the first case, deficiency payments continue. In the second case, there is no deficiency payment. The prices are lower. Below, the assumptions are summarised:

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the IN-EU and OUT-EU situations are compared with the equilibrium situation. Equilibrium is the situation where there is no implementation of support policy.
4. All prices are adjusted to the farm gate.
5. Producer price is also the consumer price.
6. Doha Round impact (its possible completion) is ignored.

IN-EU Assumptions:

7. It is assumed that, the EU wheat policy started to be applied in 2015 in Turkey (after the possible accession in 2014).
8. It is assumed that all the wheat imports are made from the European Union, so there is no tariff revenue.
9. No compensatory payments are taken into account due to the price reduction in wheat in the IN-EU case.
10. The EU fund for the harmonization of Turkish agricultural policy to the CAP is ignored.

OUT-EU Assumptions:

11. The present Turkish wheat policy (premium payments) continues after 2014 in the OUT-EU case.
12. In the last years, it is observed that, the premium payment is appr. 10% of the wheat producer price. The premium payment is supposed to be 10% of the wheat producer price in the OUT-EU case.

Table 6-4: Comparison of OUT-EU and IN-EU Situations for Turkish Wheat Market

	2015		2016		2017	
	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices						
EU Producer price €/t	148	148	149	149	147	147
EU Producer priceTL/t	427	427	447	447	459	459
TR Producer price TL/t	528	427	548	447	566	459
Deficiency payment (TL/t)	53		55		57	
Equilibrium price (TL/t)	523	523	515	515	539	539
Quantities (1000 tons)						
a. Production	21.398	20.781	22.045	21.446	22.241	21.624
b. Consumption	21.320	22.317	21.567	22.532	21.869	22.869
Net Trade (a-b)	78	-1.536	479	-1.087	372	-1.245
Equilibrium	21.367	21.367	21.859	21.859	22.097	22.097
Welfare Effect (million TL)						
c. Producer surplus	107	-2.023	734	-1.472	600	-1.749
d. Consumer surplus	-107	2.097	-726	1.509	-595	1.799
e. Deficiency payments	-1.134	0	-1.212	0	-1.268	0
f. Total welfare (c+d+e)	**-1.134**	**74**	**-1.205**	**37**	**-1.263**	**50**

	2018		2019	
	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices				
EU Producer price €/t	148	148	146	146
EU Producer priceTL/t	481	481	493	493
TR Producer price TL/t	592	481	609	493
Deficiency payment (TL/t)	59		61	
Equilibrium price (TL/t)	563	563	578	578
Quantities (1000 tons)				
a. Production	22.491	21.878	22.802	22.174
b. Consumption	22.116	23.107	22.402	23.420
Net Trade (a-b)	375	-1.230	399	-1.246
Equilibrium	22.345	22.345	22.647	22.647
Welfare Effect (million TL)				
c. Producer surplus	641	-1.813	693	-1.905
d. Consumer surplus	-636	1.864	-687	1.958
e. Deficiency payments	-1.327	0	-1.391	0
f. Total welfare (c+d+e)	**-1.322**	**50**	**-1.385**	**53**

An example of welfare analysis for the 2015/2016 marketing year:

First case:

TR Wheat price (wp): 528 TL/t

EU Wheat price: 427 TL/t

Production level (pl): 21.397.666 tonnes

Consumption level (cl): 21.319.880 tonnes

From the elasticity formula below, supply and demand models with price as only endogenous variable can be found.

(ε * production level (or consumption level)) = β * wheat price)

ε * pl = β *wp

Calculation of supply model

ε = 0,05

ε* lnpl = β * lnwp (pl=21.397.666, wp=528)

0,05 * 16,88 = β * 6,27

β = 0,14

α = lnpl - β * lnwp

α = 16,88 – 0,14* 6,27

α = 16,02

Logarithmic Expression of Supply Model is:

S = 16,02 +0,14*lnwp (S=lnpl)

Calculation of demand model:

ε * cl = β *wp

ε= -0,08

ε* lncl = β * lnwp (cl=21.319.880, wp=528)

-0,08 * 16,88= β * 6,27

β = -0,22

α = lncl - β * lnwp

α = 16,88– (-0,22 *6,27)

α = 18,23

Logarithmic Expression of Demand Model is:

D = 18,23 – 0,22 *lnwp (D=lncl)

Market Equilibrium Price and Quantity

Supply = Demand (lnpl=lncl)

16,02 +0,14* lnwp = 18,23 – 0,22 * lnwp

lnwp=6,26 (Logaritmic value of wheat equilibrium price)

wp= $e^{6,26}$ = 523

S = 16,02 +0,14* p (S= ln pl_{eq})

ln pl_{eq} = 16,02 +0,14* 6,26

ln pl_{eq} =16,88

$pl_{eq} = e^{16,88}$ = 21.367.287

Equilibrium production level would be 21.367.287 tonnes.

a. Production quantity at EU price (427 TL/t)

S = 16,02 +0,14* lnwp (S= ln pl_1)

ln pl_1 = 16,02 +0,14* 6,06

ln pl_1 = 16,85

$pl_1 = e^{16,85}$ = 20.780.958

Production quantity at EU price would be 20.780.958 tonnes.

b. Consumption quantity at EU price (427 TL/t)

D = 18,23 – 0,22 * lnwp (D= ln cl_1)

ln cl_1 = 18,23 – 0,22 * 6,06

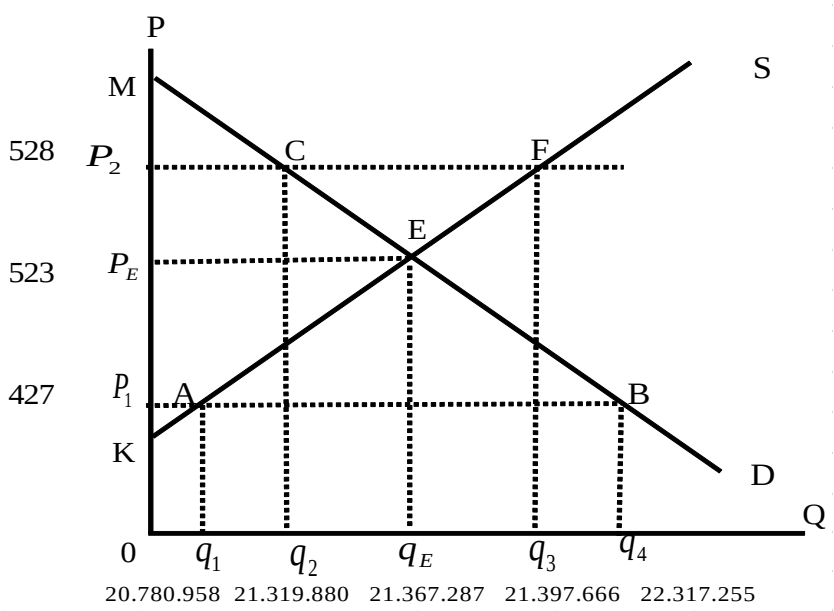
ln cl_1 = 16,92

$cl_1 = e^{16,92}$ = 22.317.255

Consumption quantity at EU price would be: 22.317.255 tonnes.

The figure 6-2 shows the supply and demand of wheat at three situations: equilibrium, IN-EU and OUT-EU for the marketing year 2015.

Figure 6-2: Demand and Supply of Wheat (2015)



In the first case (OUT-EU), the net export quantity is 77.786 tonnes. In the second case (IN-EU), there is net import of 1,5 million tonnes. Turkey turns into a net importer of wheat in the IN-EU scenario.

Welfare Effects of Policy Options

	Equilibrium	OUT-EU	IN-EU
Production (t):	21.367.287	21.397.666	20.780.958
Consumption (t):	21.367.287	21.319.880	22.317.255
Producer price (TL/t):	523	528	427
Premium payment (TL/t):	-	53	-
Producer Surplus	K E Pe	K F P2	K A P1
Change in Producer Surplus	-	E F P2 Pe	-(A E P1 Pe)

Consumer Surplus	M E Pe	M C P2	M B P1
Change in Consumer Surplus	-	-(C E P2 Pe)	E B P1 Pe

c. Change in Producer Surplus:

Increase in Producer Surplus in OUT-EU case
(Area E F P2 Pe)= ((q3+qe)/2)*(P2-Pe)
((21.397.666 + 21.367.287)/2)*(528-523) = 106.912.383 TL

In OUT-EU case, producer surplus increases by 107 million TL.

Change in Producer Surplus in IN-EU
(Area A E P1 Pe)= ((q1+qe)/2)*(P1-Pe)
((20.780.958+ 21.367.287)/2)*(427-523) = -2.023.115.760 TL

In IN-EU case, producer surplus decreases by 2.023 million TL.

d. Change in Consumer Surplus:

Decrease in Consumer Surplus in OUT-EU case
(Area C E P2 Pe)= ((q2+qe)/2)*(P2-Pe)
((21.319.880 + 21.367.287)/2)*(523-528) = -106.717.918 TL

The consumer surplus decreases by 107 million TL in the OUT-EU case.

Increase in Consumer Surplus in IN-EU case
(Area E B P1 Pe)= ((q4+qe)/2)*(Pe-P1)
((22.317.255+ 21.367.287)/2)*(523-427) = 2.096.858.016 TL

In IN-EU case, consumer surplus increases by 2.097 million TL. The price is low, so the consumption quantity decreases and the consumer surplus is higher.

e. Deficiency Payment

Deficiency payments in the last years in wheat are approximately 10% of the wheat price. If the deficiency payment policy continues in the OUT-EU situation, it is supposed that the premiums will be 10% of the wheat price. The table below shows the total deficiency payments. It is supposed that all the farmers are registered in the National Farmer Registration System and so total estimated production quantity after 2014 is eligible for the aid.

Year	Producer Price (TL/t)	Deficiency Payment (TL/t)	Production quantity (tons)	Total Deficiency Payments (TL)
2015	528	53	21.396.880	1.134.034.640
2016	548	55	22.045.450	1.212.499.750
2017	566	57	22.240.990	1.267.736.430
2018	592	59	22.490.640	1.326.947.760
2019	609	61	22.802.470	1.390.950.670

In 2015/16 marketing year, cost of total deficiency payment is 1.134 million TL

Tariff revenue

In IN-EU scenario, Turkey will be net importer of wheat according to the table 6-4. In the case of EU membership situation, the import quantity increases. But as Turkey becomes an EU member, she imports from EU countries with 0% import duty. So, there is no tariff revenue.

f. Total Welfare (c+d+e)

Total welfare is the sum of producer, consumer surplus and tariff revenue minus cost of deficiency payment (in OUT-EU scenario). Total welfare increases in the EU accession case. According to the table 6-4, in the 2015/16 marketing year, total welfare is -1.134 million TL in the non EU membership situation, but 75 million TL in the EU membership situation.

EU Accession Impact on Turkish Wheat Market (%)

The EU accession situation is compared with the equilibrium situation in Table 6-5. There is significant fall in wheat prices in the EU membership case. The wheat price decreases by 18,5% in 2015. The EU membership case has positive effect in consumption (increases by 3,5%), but negative effect in production (decrease by 2,2%) in the observed period. In the IN-EU case, the producer surplus decreases and the consumer surplus increases because of the low prices. IN-EU situation also raises total welfare in Turkish wheat market. Total welfare increases by appr. 100% in the IN-EU case (relative to the OUT-EU case).

Table 6-5: EU Accession Impact (%) on Turkish Wheat Market

Impact (%)	2015		2016		2017		2018		2019	
	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Price change	1,0	-18,5	6,5	-13,0	5,0	-14,8	5,1	-14,6	5,3	-14,7
Production change	0,1	-2,7	0,9	-1,9	0,7	-2,1	0,7	-2,1	0,7	-2,1
Consumption change	-0,2	4,4	-1,3	3,1	-1,0	3,5	-1,0	3,4	-1,1	3,4

6.1.5 WELFARE ANALYSIS OF WTO DOHA ROUND IMPACT IN TURKISH WHEAT MARKET

Turkey imposes an import tariff of 130% for wheat. It is assumed that Doha Round is completed in 2012 and the revised draft modalities are accepted. The reduction shall be 42,67% of the wheat tariff in Turkey. Total reduction will be 55,47% (130*42,67%= 55,47).

Turkey shall reduce the final bound tariffs in eleven equal annual instalments over ten years (2013-2022). The annual reduction shall be = 55,47/11=5,04%. After 10 years, the tariff rate shall be 80% (Table 6-6).

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The prices are adjusted to the farm gate.
4. It is assumed that, Doha Round is completed in 2012 and the revised draft modalities for the tariff reductions are accepted. The tariff reduction starts in 2013.
5. The tariff reduction scenario is calculated according to the Uruguay Round approach (equal annual reductions).
6. The EU accession process is ignored.
7. In the first case, it is assumed that 130% tariff rate does not change in the following years.

a. Tariff Reduction and Import Price Scenario in Wheat (2013-2019)

Import prices are taken from OECD FAO Agricultural Outlook 2010-2019 database (Annex, p. 325). With the current tariff rate application (130%), the import price shall be 1.073,2 TL/t in 2019. A reduction of tarif rate (in case of Doha Round completion in 2012 and acceptance of the revised draft modalities) would reduce the import price. In 2019, the import price shall be 908,49 TL/tonne. Table 6-6 shows the import prices in the case of tariff reduction, and in the case of 130% tariff rate.

Table 6-6: Tariff Reduction Scenario in Wheat

		A	B	C	D	E	F
	Year	Traiff Rate (t%)	Annual Reduction (A*42,67%)/ 11	Import Price	Import Price with Present Tariff Rate (C*(1+130%))	New Import Price with Doha Tariff Rate (C*(1+A%))	Reduction in Import Price ((D-E)/D)/100
	2012	130	5,04	323,94	745,06	745,06	0,0%
1st year	2013	125	5,04	343,94	791,06	773,72	2,2%
2nd year	2014	120	5,04	364,47	838,28	801,52	4,4%
3rd year	2015	115	5,04	402,05	924,72	863,89	6,6%
4th year	2016	110	5,04	421,28	968,94	883,97	8,8%
5th year	2017	105	5,04	433,52	997,10	887,79	11,0%
6th year	2018	100	5,04	453,28	1.042,54	905,40	13,2%
7th year	2019	95	5,04	466,61	1.073,20	908,49	15,3%
8th year	2020	90	5,04				
9th year	2021	85	5,04				
10th year	2022	80					

Table 6-7 shows the welfare effects of tariff reduction scenario and present tariff implication scenario.

Table 6-7: Welfare Effects of Tariff Reduction in Wheat

	2013		2014		2015		2016	
	present tariff	After Doha	present tariff	After Doha	present tariff	After Doha	present tariff	After Doha
Prices								
Import price (TL/t)	344		364		402		421	
a. Tariff Rate (t)	130%	125%	130%	120%	130%	115%	130%	110%
a. Import price (1+t%)	791	774	838	802	925	864	969	884
Equilibrium price	777	777	832	832	914	914	905	905
Quantities (1000 tons)								
b. Production	20.938	20.877	21.153	21.033	21.398	21.216	22.045	21.796
c. Consumption	20.813	20.906	21.097	21.287	21.320	21.609	21.567	21.959
Net trade (b-c)	125	-29	56	-254	78	-393	479	-163
Equilibrium quantity	20.889	20.889	21.131	21.131	21.367	21.367	21.859	21.859
Welfare Effect (mn TL)								
d. Producer surplus	294	-63	133	-632	229	-1.065	1.404	-458
e. Consumer surplus	-293	63	-133	636	-229	1.074	-1.388	460
f. Tariff revenue	0	13	0	111	0	181	0	75
g. Total welfare	**1**	**13**	**0**	**115**	**0**	**191**	**15**	**77**

	2017		2018		2019	
	present tariff	After Doha	present tariff	After Doha	present tariff	After Doha
Prices						
Import price (TL/t)	434		453		467	
a. Tariff Rate (t)	130%	105%	130%	100%	130%	95%
a. Import price (1+t%)	997	888	1.043	905	1.073	908
Equilibrium price	946	946	989	989	1.015	1.015
Quantities (1000 tons)						
b. Production	22.241	21.926	22.491	22.105	22.802	22.344
c. Consumption	21.869	22.372	22.116	22.731	22.402	23.138
Net trade (b-c)	372	-446	375	-626	401	-794
Equilibrium quantity	22.097	22.097	22.345	22.345	22.647	22.647
Welfare Effect (mn TL)						
d. Producer surplus	1.133	-1.277	1.200	-1.867	1.318	-2.407
e. Consumer surplus	-1.123	1.290	-1.190	1.893	-1.306	2.449
f. Tariff revenue	0	203	0	283	0	350
g. Total welfare	**10**	**216**	**10**	**309**	**12**	**393**

First case: no tariff reduction (tariff rate is 130%)

Second case: tariff reduction (acceptance of revised draft modalities in Doha) and tariff rate is: 95%.

An example of welfare analysis for the 2019 marketing year:

First case:

TR Wheat price (wp): 1.073 TL/t

Production level (pl): 22.802.470 tonnes

Consumption level (cl): 22.401.690 tonnes

From the elasticity formula below, supply and demand models with price as only endogenous variable can be found:

(ε * production level (or consumption level)) = β * wheat price)

ε * pl = β *wp

Calculation of Supply model:

ε = 0,05

ε* lnpl = β * lnwp (pl=22.802.470, wp=1.073)

0,05 * 16,94 = β * 6,98

β = 0,12

α = lnpl - β * lnwp

α = 16,94 – 0,12* 6,98

α = 16,09

Logarithmic Expression of Supply Model is:

S = 16,09+0,12* lnwp (S=lnpl)

Calculation of Demand Model:

ε * cl = β *wp

ε = -0,08

ε * lncl = β * lnwp (cl=22.401.690, wp=1.073)

-0,08 * 16,92=β * 6,98

β = -0,19

α = lncl - β * lnwp

α = 16,92– (-0,19 *6,98)

α = 18,28

Logarithmic Expression of Demand Model is:

D = 18,28– 0,19 *lnwp (D=lncl)

Market Equilibrium Price and Quantity (logarithmic values)

Supply = Demand (lnpl=lncl)

16,09+0,12*lnwp = 18,28– 0,19 *lnwp

lnwp=6,92 (Logaritmic value of wheat equilibrium price)

wp= $e^{6,92}$ = 1.015

S = 16,09+0,12*lnwp (S= ln pl_{eq})

ln pl_{eq} = 16,09+0,12*6,92

ln pl_{eq} =16,94

$pl_{eq} = e^{16,94}$ = 22.646.987

Equilibrium production level would be 22.646.987 tonnes.

b. Production at new import price after Doha Round (908 TL/t)

S = 16,09+0,12*lnwp (S= ln pl_1)

ln pl_1 = 16,09+0,12*6,81

ln pl_1 = 16,92

$pl_1 = e^{16,92}$ = 22.344.015

Production quantity at new import price would be 22.344.015 tonnes.

c. Consumption at new import price after Doha Round (908 TL/t)

D = 18,28– 0,19 *lnwp (D= $\ln cl_1$)

$\ln cl_1$ = 18,28– 0,19 *6,81

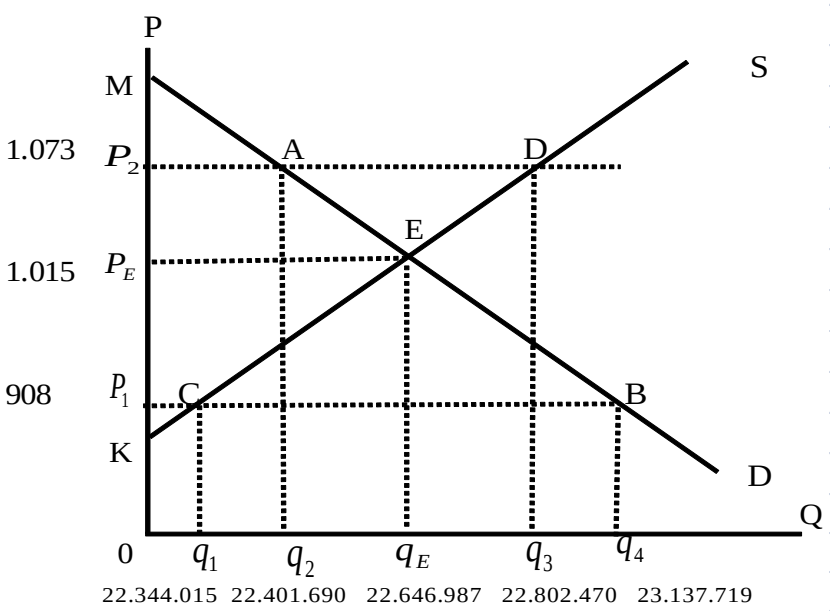
$\ln cl_1$ = 16,96

$cl_1 = e^{16,96}$ =23.137.719

Consumption quantity at EU price would be: 23.137.719 tonnes.

The figure 6-3 shows the supply and demand of wheat at three situations: equilibrium, first scenario, second scenario:

Figure 6-3: Supply and Demand of Wheat (2019)



Welfare Effects of Policy Options

	Equilibrium	1st scenario	2nd scenario
Production (t):	22.646.987	22.802.470	22.344.015
Consumption (t):	22.646.987	22.401.690	23.137.719
Producer price (TL/t):	1.015	1.073	908
Producer Surplus	K E Pe	K D P2	K C P1

Change in Producer Surplus	-	E D P2 Pe	-(C E P1 Pe)
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	-(A E P2 Pe)	E B P1 Pe

d. Change in Producer Surplus:

1st scenario

(Area E D P2 Pe)= ((q3+qe)/2)*(P2-Pe)

((22.802.470 + 22.646.987)/2)*(1.073-1.015) = 1.318.034.253 TL

In the first scenario, producer surplus increases by 1.318 million TL due to the high price.

2nd scenario

(Area C E P1 Pe)= ((q1+qe)/2)*(P1-Pe)

((22.344.015+ 22.646.987)/2)*(908-1.015) = -2.407.018.607 TL

In the second scenario, producer surplus decreases by 2.407 million TL.

e. Change in Consumer Surplus:

1st scenario

(Area A E P2 Pe)= ((q2+qe)/2)*(P2-Pe)

((22.401.690 + 22.646.987)/2)*(1.015-1.073) = -1.306.411.633 TL

The consumer surplus decreases by 1.306 million TL in the first scenario.

2nd scenario:

(Area E B P1 Pe)= ((q4+qe)/2)*(Pe-P1)

((23.137.719+ 22.646.987)/2)*(1.015-908) = 2.449.481.771 TL

In the second scenario, consumer surplus increases by 2.449 million TL. The price is low, so the consumption quantity decreases and the consumer surplus is higher.

f. Tariff Revenue

The tarif revenue is added in the calculation. In the first scenario Turkey is a net exporter in wheat. In 2019, in the second scenario, the net import level of wheat is 793.704 tonnes. Total tariff revenue is calculated as the multiplication of the import quantity with the tariff revenue of one unit import.

Tariff revenue = tariff revenue* net import quantity

= (908-467)*793.704 = 350.333.009

= 350 million TL

g. Total Welfare and Doha Round Tariff Reduction Impact on Turkish Wheat Market

Total welfare is the sum of producer and consumer surplus, and tariff revenue. In the second scenario, government shall receive more tariff revenue because of the increased import quantity. However, total welfare seems better in the first scenario than in the second scenario.

Table 6-8: Doha Round Tariff Reduction Impact (%) on Turkish Wheat Market

	2013		2014		2015		2016	
Impact (%)	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Price change	1,8	-0,4	0,8	-3,6	1,2	-5,5	7,1	-2,3
Production change	0,2	-0,1	0,1	-0,5	0,1	-0,7	0,9	-0,3
Consumption change	-0,4	0,1	-0,2	0,7	-0,2	1,1	-1,3	0,4

	2017		2018		2019	
Impact (%)	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Price change	5,4	-6,1	5,4	-8,5	5,7	-10,5
Production change	0,7	-0,8	0,7	-1,1	0,7	-1,3
Consumption change	-1,0	1,2	-1,0	1,7	-1,1	2,2

Table 6-8 summarises the change in total welfare in tariff reduction scenario (relative to the equilibrium situation). Currently, the import tariff in wheat is 130%. The consumer welfare declines due to the high tariffs. Tariff reduction after Doha Round shall let to a fall

in import price and thus to an increase in the imported quantity. The production decreases in some years (between 0,1% and 1,3%) but the consumption generally increases (between 0,1% and 2,2%). As the consumers gain from the lower prices after tariff reductions, producers harm from the increased import. In 2013 and 2016, there is a decrease in total welfare in the tariff reduction scenario. In the other years, tariff reduction in wheat affects total welfare positively. In 2019, total welfare is 12 million TL in the first case, while it is calculated as 393 million TL in the tariff reduction case.

6.2 RESULTS AND EVALUATION OF SUGAR SUPPORT POLICIES

6.2.1 PRODUCER SUPPORT ESTIMATE

Table 6-9 shows the Producer Support Estimate in the Sugar between 1986 and 2009.

OECD uses the data below for the calculation of the PSE are:

- Level of production: Volumes of sugar produced from sugar beet and processed by the TŞFAŞ each year.
- Level of Consumption: Production + imports - exports +(change in stocks)
- Producer price: TŞFAŞ average purchase prices for sugar beet (at the farm gate).
- Reference price: Paris Stock Exchange white sugar price, minus handling and marketing margin based on the ratio of the TŞFAŞ's wholesale price for granulated sugar to its average purchase price for sugar beet (at the farm gate).
- Payments based on input use:
  Sugar pulp for feed: Total value of sugar beet pulp returned by TŞFAŞ free of charge to beet producers and used as feed.
  Fertiliser and diesel payments.

Producer support estimate (% Producer SCT) is between 2-65% in the sugar sector (Table 6-9). Generally, the PSE values are above 20% in the observed years. The reason is the high producer prices. The sugar producer prices are higher than the reference sugar price.

In 2009, PSE was 23,04%. 23,04% of the farmer’s earnings come from policy induced transfers, and the remaining come from the value of sales measured at border prices (that is, not including price support).

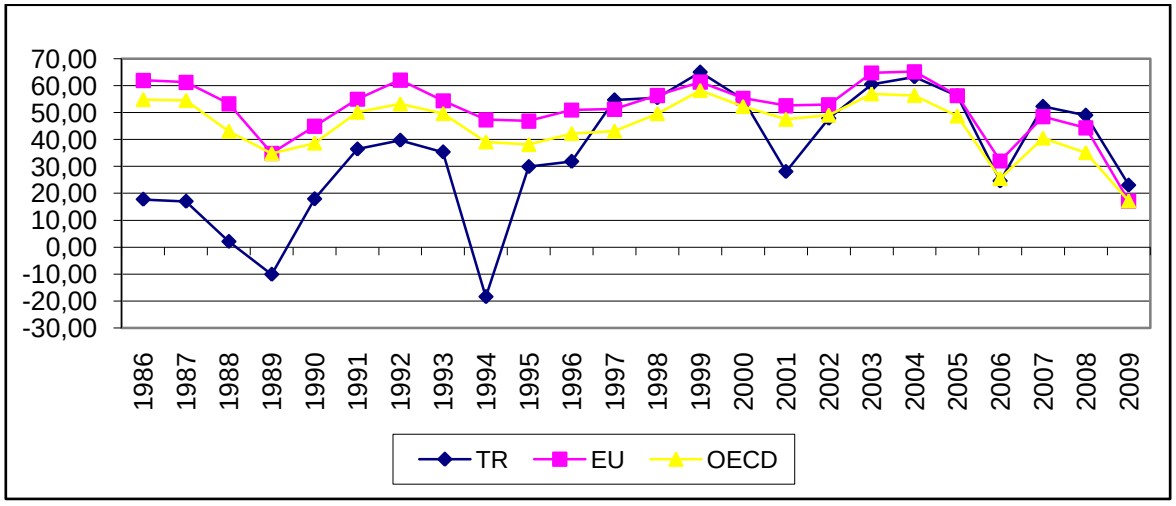
Table 6-9: Producer Support Estimate in Sugar in Turkey

						Market Transfers		Budgetary Transfers						
Year/ Unit	Reference Price	Producer Price	Market Price Differential (MPD)	Quantity Produced (QP)	Quantity Consumed (QC)	Transfers to producers from consumers (TPC)	Other transfers from consumers (OTC)	Transfers to producers from taxpayers (TPT)	Market Price Support (MPS)	Payments based on input use	Producer SCT	% Producer SCT	Consumer SCT	Consumer NPC
	(TL/t)	(TL/t)	(TL/t)	(1000 t)	(1000 t)	TL bn	TL bn	TL bn	TL bn	TL bn	TL bn	%	TL bn	%
1986	0,11	0,13	0,02	1.301	1.364	0,02	0,00	0,00	0,02	0,01	0,03	17,77	-0,03	1,17
1987	0,14	0,16	0,02	1.641	1.525	0,03	0,00	0,00	0,04	0,01	0,05	17,03	-0,03	1,16
1988	0,37	0,36	0,00	1.301	1.412	0,00	0,00	0,00	0,00	0,01	0,01	2,07	0,00	1,00
1989	0,78	0,68	-0,10	1.268	1.510	-0,13	-0,03	0,00	-0,13	0,04	-0,09	-10,14	0,16	1,00
1990	0,89	1,04	0,15	1.789	1.575	0,24	0,00	0,03	0,28	0,07	0,35	17,92	-0,24	1,17
1991	1,12	1,68	0,56	1.888	1.500	0,84	0,00	0,22	1,06	0,15	1,21	36,47	-0,84	1,50
1992	1,67	2,71	1,04	1.968	1.611	1,67	0,00	0,37	2,04	0,13	2,17	39,75	-1,67	1,62
1993	2,70	4,07	1,36	2.039	1.665	2,27	0,00	0,51	2,78	0,24	3,02	35,38	-2,27	1,50
1994	9,87	8,10	-1,77	1.486	1.735	-2,63	-0,44	0,00	-2,63	0,35	-2,29	-18,46	3,08	1,00
1995	15,84	22,13	6,29	1.388	1.831	8,73	2,79	0,00	8,73	0,65	9,39	29,93	-11,52	1,40
1996	25,38	36,53	11,15	1.841	1.900	20,52	0,66	0,00	20,52	1,33	21,86	31,87	-21,18	1,44
1997	40,21	87,40	47,19	2.372	1.938	91,45	0,00	20,48	111,93	3,46	115,38	54,75	-91,45	2,17
1998	61,90	138,02	76,12	2.711	1.910	145,39	0,00	60,97	206,36	3,43	209,79	55,56	-145,39	2,23
1999	77,12	218,38	141,26	1.989	1.678	237,04	0,00	43,93	280,97	4,87	285,85	65,08	-237,04	2,83
2000	111,99	245,86	133,87	2.535	1.705	228,25	0,00	111,11	339,37	7,03	346,40	54,96	-228,25	2,20
2001	262,07	360,08	98,01	1.652	1.795	161,92	14,02	0,00	161,92	7,20	169,12	28,09	-175,94	1,37
2002	298,27	566,82	268,54	2.157	1.640	440,41	0,00	138,84	579,25	12,19	591,43	47,90	-440,41	1,90
2003	266,50	665,19	398,69	1.762	1.714	683,35	0,00	19,14	702,49	18,13	720,62	60,55	-683,35	2,50
2004	275,05	733,77	458,71	1.901	1.596	732,11	0,00	139,91	872,01	27,39	903,90	63,35	-732,11	2,67
2005	325,24	729,46	404,23	1.998	1.634	660,51	0,00	147,14	807,64	27,76	835,41	56,25	-660,51	2,24
2006	524,60	684,01	159,41	1.924	1.883	300,17	0,00	6,54	306,70	22,96	329,67	24,62	-300,17	1,30
2007	332,21	681,33	349,12	1.766	1.699	587,75	0,00	23,18	610,93	14,93	631,48	52,33	-593,16	2,05
2008	387,53	769,23	381,70	2.151	1.829	712,18	0,00	57,24	769,42	14,07	835,10	49,06	-698,13	1,98
2009	608,64	788,04	179,40	2.531	1.944	358	0,00	84	442,09	11,71	465,84	23,04	-348,76	1,29

Source: OECD, 2011a.

When compared with OECD and EU values, PSE in Turkey is almost at the same level with the OECD countries and the European Union. Sugar is one of the most protected commodities in the world. So generally, the PSE values are higher in the sugar sector in OECD countries and in EU (Graph 6-2).

Graph 6-2: Comparison of Sugar PSE Levels between EU, OECD and TR



Source: OECD, 2011a, 2011b, 2011c.

In 2009, PSE was recorded as 23% in Turkey and 17% in the European Union. The high PSE levels in Turkey occur due to the high domestic prices (relative to the reference prices). When the sugar beet and refined sugar prices in Turkey are compared with the prices in the European Union, it can be said that the prices in Turkey almost double of the EU levels (Table 6-10, 6-11).

Table 6-10: Sugar and Sugar beet Price and Support Levels in European Union

	Unit/ Year	2005	2006	2007	2008	2009
Sugar Beet Price	€/t	46,72	32,86	29,8	27,83	26,29
Sugar Beet Price	TL/t	74,53	61,13	51,08	59,65	56,60
Refined Sugar Price	€/t	309	206,59	184,65	160,41	164,25
Refined Sugar Price	TL/t	493	384	317	344	354
€/TL exchange rate		1,5952	1,8604	1,7142	2,1435	2,153

Source: European Commission, September 2006, p. 3.
OECD, 2011b.

Table 6-11: Sugar and Sugar beet Price Levels in Turkey

	Unit/Year	2005	2006	2007	2008	2009
Sugar Beet Price	TL/t	99	92	96	110	116
Refined Sugar Price	TL/t	729	684	681	769	788

Source: Pankobirlik, 2011.
OECD, 2011a.

Consumer Support Estimate is negative in sugar. This shows the transfer from consumers due to the high producer prices. Consumer NPC is almost 2 in sugar. That means the consumers in Turkey pay double of the reference prices.

6.2.2 ESTIMATION OF SUGAR SUPPLY AND DEMAND PARAMETERS

The data are time series and represent 20 years, from 1990 to 2009. Production and consumption models were estimated for the sugar sector in order to conduct classic welfare analysis.

Explanatory variables like sugar price, sugar beet yield (ha/t), fertiliser price, sugar beet production level, sugar beet harvested area, agricultural support policy in sugar as dummy variable (quota application is indicated as “1” for the period 2002-2009; the years between 1990-2001 are shown as “0”), food crisis years (2007 and 2008 are given the value “1” and the other years are shown as “0”) and 1994 and 2001 economic crisis as dummy variable (1994 and 2001 are numbered as “1” and the other years are indicated as “0”) are used in different combinations in order to estimate sugar production model. Only sugar price, sugar beet yield and fertiliser price are selected as explanatory variables because they are closely related to production level (the other variables are not selected because they are insignificant in the model). The model and the tests are presented below. There is no structural breakpoint as seen in the CUSUMSQ graph.

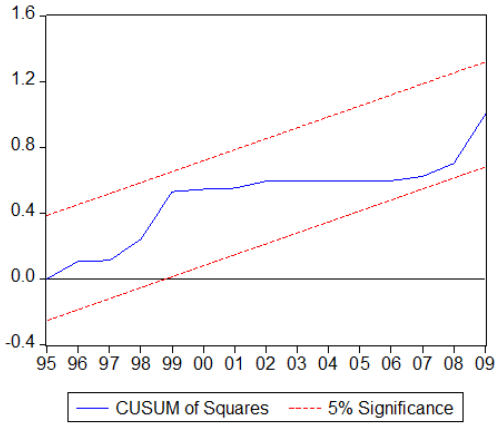
The best fitted sugar production model and the tests

Dependent variable		Coefficient	Std. Error	t-Statistic	Prob.
ln(spl)	Sugar production level				
Constant parameter		1.60	0.66	2.42	0.0284
ln(sp(-1))	Sugar price	0.16	0.03	4.54	0.0004
ln(frt(-1))	Fertiliser price	-0.20	0.03	-5.55	0.0001
ln(y)	Sugar beet yield	1.61	0.18	8.80	0.0000

R-squared	0.86	Adjusted R-squared	0.84
F-statistic	31.97460	Prob (F-statistic)	0.000001

Tests

B-G LM (nR2) Lags=1	0.959575	B-G LM (prob. nR2)	0.327294
B-G LM (nR2) Lags=2	7.347647	B-G LM (prob. nR2)	0.025379
Jarque-Bera	1.08045	Jarque-Bera (prob.)	0.582617
White Heteroscedasticity (nR2)	7.384594	White Heteroscedasticity (pr. nR2)	0.286739
Ramsey-Reset (F-statistic)	0.179126	Ramsey-Reset (prob. F-stat)	0.838030



The model is:

$$lnpl = 1{,}60 + 0{,}16lnsp_{t-1} - 0{,}20lnfrt_{t-1} + 1{,}61lny$$

Supply Price Elasticity of sugar is 0,16.

Sugar Consumption Model

When estimating the sugar consumption model, sugar price, population, GDP, sugar production, production of other sugar substitutions (HFCS-High Fructose Corn Syrup) as dummy variable (1990-1994 are indicated as “0”, and the years after 1995 when the HFCS production started in Turkey are indicated as “1”), 1994 and 2001 economic crisis dummy, world food crisis dummy were used in various combinations. Some variables were

significant but the R-squared was low (0,50). Only sugar price, GDP (an increase in GDP can stimulate sugar consumption), sugar production, HFCS dummy and economic crisis dummy were selected as explanatory variables in the sugar consumption model.

The best fitted sugar consumption model:

Dependent variable		Coefficient	Std. Error	t-Statistic	Prob.
ln(cl)	Sugar consumption level				
Constant parameter		5,31	0.74	7.17	0.0000
ln(sp)	Sugar price	-0.16	0.05	-2.78	0.0145
ln(gdp)	GDP	0.10	0.04	2.43	0.0292
ln(spl)	Production level	0.19	0.08	2.22	0.0429
dm1	HFCS dummy	0.33	0.08	4.10	0.0011
dm2	economic crisis dummy	0.14	0.05	2.78	0.0146

R-squared	0.64	Adjusted R-squared	0.52
F-statistic	5.039599	Prob (F-statistic)	0.007534

Tests

Durbin-Watson	1.717561		
Jarque Bera	1.088391	Jarque Bera (prob.)	0.580308
Heteroscedasticity (nR2)	1.330557	Het. test (Prob. nR2)	0.995177
Ramsey-Reset test (F-statistic)	0.043171	Ramsey-Reset test (Prob. F-stat)	0.838624
B-G (nR2) Lags=1	0.279189	B-G (Prob. nR2)	0.597233
B-G (nR2) Lags=2	1.052083	B-G (Prob. nR2)	0.590940

The model is:

lncl= 5,31 – 0,16lnsp + 0,10lngdp + 0,19lnspl + 0,33dm1 + 0,14dm2

Demand Price Elasticity is -0,16.

Supply and demand price elasticities of sugar in other studies are as follows:

Research Studies	Sugar supply price elasticity	Sugar demand price elasticity
Sevinç Demirci (1999)	0,9	-0,14
Sevinç Demirci (2003)	0,53	-0,04
Fahri Yavuz (2004)	0,32	-0,04
Ahmet Şahinöz, Selim Çağatay, Özgür Teoman (2007)	0,34	-0,05
Selim Çağatay, Özgür Teoman (2008)	0,34	-0,05
Taylan Kıymaz (2008)	0,46	-0,13

6.2.3 WELFARE ANALYSIS OF SUPPORT POLICIES IN SUGAR

Since 2002, sales quota has been implemented in the sugar sector. Deficiency payment system, which is implemented in some agricultural products, is added to the analysis. In table 6-12, welfare effects of the 2 systems (sales quota and deficiency payment) are compared. The question "If the deficiency system was implemented in the sugar, what would be its effect in the sector" will be answered in this part.

The prices, the production and consumption quantities are taken from OECD, PSE Data base for Turkey, 2010.

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the quota and in the deficiency payment policy are compared with the equilibrium situation. The market distortion effects of the two support policies are found.
4. All prices are adjusted to the farm gate.
5. Producer price is also consumer price.
6. In deficiency payment policy producer and the consumer price is the reference price. Reference price is the Paris Stock Exchange white sugar price, minus handling and marketing margin based on the ratio of the TŞFAŞ's wholesale price for granulated sugar to its average purchase price for sugar beet (at the farm gate).
7. The border (reference) price is taken as import price (Table 6-9, p. 202).
8. Tariff revenue (reference price – producer price) of net import is calculated.

Table 6-12: Welfare Effects of the Policy Options in Sugar Sector

	2006		2007	
	Quota	Deficiency Payment	Quota	Deficiency Payment
Prices				
Producer price TL/t	684	525	681	332
Premium payment (TL/t)		52		33
Equilibrium price TL/t	663	663	645	645
Quantities (1000 tons)				
a. Production	1.924	1.762	1.766	1.371
b. Consumption	1.883	2.069	1.699	2.187
Net trade (a-b)	41	-307	67	-817
Equilibrium quantity	1.904	1.904	1.732	1.732
Welfare Effect (million TL)				
c. Producer surplus	40	-254	64	-485
d. Consumer surplus	-40	275	-62	613
e. Deficiency Payments	-	-92	-	-46
g. Total welfare	0	-71	1	82

	2008		2009	
	Quota	Deficiency Payment	Quota	Deficiency Payment
Prices				
Producer price TL/t	769	388	788	609
Premium payment (TL/t)		39		61
Equilibrium price TL/t	611	611	541	541
Quantities (1000 tons)				
a. Production	2.151	1.683	2.531	2.309
b. Consumption	1.829	2.321	1.944	2.127
Net trade (a-b)	322	-637	587	183
Equilibrium quantity	1.981	1.981	2.215	2.215
Welfare Effect (million TL)				
c. Producer surplus	327	-409	586	154
d. Consumer surplus	-301	481	-514	-148
e. Deficiency Payments	-	-65	-	-141
g. Total welfare	25	6	72	-134

An example of comparison between two support policies in sugar for the marketing year 2009/10:

In 2009, the refined sugar price was 788 TL/t (price is adjusted to the farm gate as it is given in OECD statistics). If deficiency payment system implemented in the sugar sector, then the producer price would be the reference price (609 TL/t).

2009/10 Sugar Statistics in Turkey

Production level (pl): 2.531.000 tonnes

Consumption level (cl): 1.944.000 tonnes

Sugar producer price (sp): 788 TL/t

Sugar reference price: 609 TL/t

From the elasticity formula below, supply and demand models with price as only endogenous variable can be found.

(ε* production level (or consumption level)) = β * price)

ε * pl = β *sp

Calculation of Supply model:

ε_s = 0,16

ε* lnpl = β * lnsp (pl=2.531.000, sp= 708)

0,16* 14,74 = β * 6,67

β = 0,35

α = lnpl - β * lnsp

α = 14,74 – 0,35* 6,67

α = 12,38

Logarithmic Expression of Supply Model is:

S = 12,38+0,35*lnsp (S=lnpl)

Calculation of Demand Model:

ε * cl = β *sp

ε = -0,16

ε* lncl = β * lnsp (cl=1.944.000, sp=788)

-0,16 * 14,48=β * 6,67

β = -0,35

α = lncl - β * lnsp

α = 14,48– (-0,35 *6,67)

α = 16,80

Logarithmic Expression of Demand Model is:

D = 16,80 – 0,35 *lnsp (D=lncl)

Market Equilibrium Price and Quantity

Supply = Demand (lnpl=lncl)

12,38+0,35*lnsp = 16,80 – 0,35 *lnsp

$\ln sp_{eq}$ =6,29 (Logaritmic value of sugar equilibrium price)

sp= $e^{6,29}$ = 541

S = 12,38+0,35*lnsp (S= $\ln pl_{eq}$)

$\ln pl_{eq}$ = 12,38+0,35*6,29

$\ln pl_{eq}$ =14,61

$pl_{eq} = e^{14,61}$ = 2.214.996

At equilibrium price 541 TL/t, the equilibrium quantity is 2.214.996 tonnes.

a. Production at deficiency payment policy (sp=609 TL/t)

S = 12,38+0,35*lnsp (S= $\ln pl_1$)

$\ln pl_1$ = 12,38+0,35*6,41

$\ln pl_1 = 14{,}65$

$pl_1 = e^{14{,}65} = 2.309.226$

Production quantity at reference price (609 TL/t) would be 2.309.226 tonnes.

b. Consumption at deficiency payment policy (sp=609 TL/t)

D = 16,80 – 0,35 *lnsp (D= $\ln cl_1$)

$\ln cl_1 = 16{,}80 - 0{,}35 * 6{,}41$

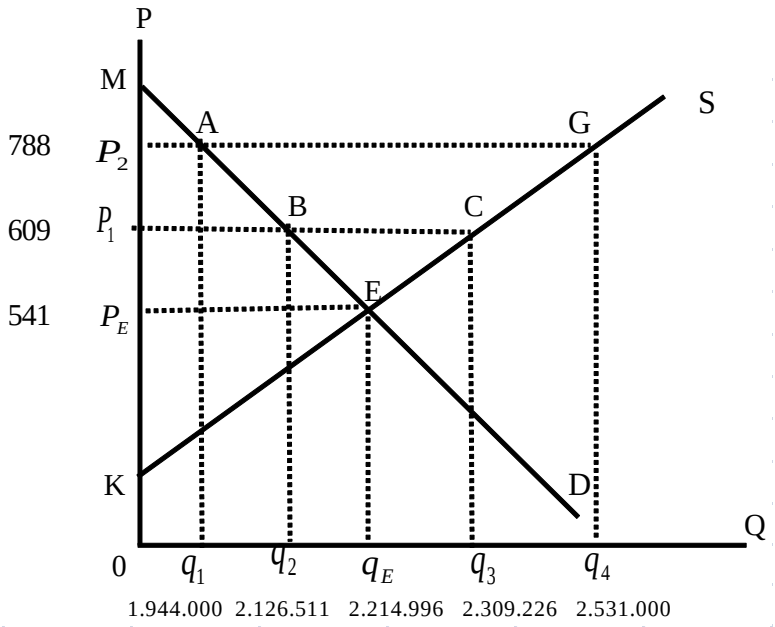
$\ln cl_1 = 14{,}57$

$cl_1 = e^{14{,}57} = 2.126.511$

Consumption quantity at reference price would be: 2.126.511 tonnes.

The figure 6-4 shows the supply and demand of wheat at three situations: equilibrium, quota and deficiency payment policy for the marketing year 2009/10.

Figure 6-4: Demand and Supply of Sugar (2009/10)



The reference price (609 TL/t) causes a decrease in the production quantiy to 2,3 million tonnes and an increase in consumption quantity to 2,1 million tonnes (when compared with the quota policy).

Welfare Effects of Policy Options

	Equilibrium	Quota	Deficiency payment
Production (t):	2.214.996	2.531.000	2.309.226
Consumption (t):	2.214.996	1.944.000	2.126.511
Producer price (TL/t):	541	788	609
Premium payment:	-		61
Producer Surplus	K E Pe	K G P2	K C P1
Change in Producer Surplus	-	E G P2 Pe	E C P1 Pe
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	-A E P2 Pe	-B E P1 Pe

c. Change in Producer Surplus:

Increase in producer surplus in quota policy:

= ((q4+qe)/2)*(P2-Pe)

((2.531.000 + 2.214.996)/2)*(788-541) = 586.130.506 TL

In quota, producer surplus increases by 586 million TL.

Change in producer surplus in deficiency payment policy

= ((q3+qe)/2)*(P1-Pe)

((2.309.226 + 2.214.996)/2)*(609-541) = 153.823.548 TL

At the reference price, producer surplus increases by 154 million TL.

d. Change in Consumer Surplus:

Decrease in consumer surplus in quota

= ((q1+qe)/2)*(P2-Pe)

((1.944.000 + 2.214.996)/2)*(541-788) = -513.636.006 TL

The consumer surplus decreases by 514 million TL in the quota case.

Decrease in consumer surplus in the deficiency payment
=((q2+qe)/2)*(Pe-P1)
((2.126.511+ 2.214.996)/2)*(541-609) = -147.611.238 TL

In deficiency payment, consumer surplus decreases by 148 million TL. The consumer price is 609 TL/t. The consumption increases in the deficiency payment policy due to the lower price.

e. Cost of the Deficiency Payments

The deficiency payment is supposed to be 10% of the sugar reference price.
Cost of deficiency payment = deficiency payment * production quantity

Cost of deficiency payment would be in deficiency payment:

Year	A.Reference price (TL/t)	C.Deficiency Payment (TL/t) (A*10%)	D.Production Quantity (t)	E.Cost of Deficiency Payment (TL) (C*D)
2006	525	52	1.761.872	92.428.664
2007	332	33	1.370.922	45.514.610
2008	388	39	1.683.307	65.312.312
2009	609	61	2.309.226	140.631.863

In 2009, cost of deficiency payment would be 140,6 million TL.

f. Tariff revenue

In the case of deficiency payment, Turkey is a net importer of refined sugar in 2006, 2007 and in 2008 marketing years. But reference price (border price) is the domestic price, so there is no import revenue.

g. Total Welfare (c+d+e+f)

In the sugar sector, budget cost is lower in the quota than the costs in deficiency payment policy. Total welfare seems better in quota when there is no budget cost in this system. In

2009, total welfare is calculated as 72 million TL in the quota policy, but -134 million TL in the deficiency payment policy.

In case of consumers, the consumer surplus is low in the quota system. In deficiency payment system, the consumers are better off due to the reference price. In deficiency payment system, while the decrease in the producer price is compensated by deficiency payment, the producer's gain does not decrease.

When we compare the quota with the deficiency payment, the last one is more preferable in terms of consumer welfare. The producer's gain does not decrease because they are receiving deficiency payment. In terms of producer welfare, quota seems better due to the high prices. However, the quota policy has more market distortion effect (the distortion arises from price and production effect) than the deficiency payment policy.

6.2.4 WELFARE EFFECT OF EU ACCESSION ON TURKISH SUGAR MARKET

After 2006 Sugar Reform, the restructuring of the sugar enterprises started in the European Union. The new sugar reform of the Common Agricultural Policy offered producers, who would be uncompetitive at the new lower price, a financial incentive to leave the sector. A restructuring aid was determined for the producers who dismantle the production facilities of the factories concerned. The mergers of small companies with other companies and also closures of some factories occured in the member states. The number of the factories with a daily sugarbeet processing capacity under 5.000 tonne decreased from 42 to 23 in 2008/09 (Table 6-13). Most of the restructuring process occured especially in the new acceding countries. Of the 37 factories under a daily capacity of 5.000 ton in the 12 new member countries, 27 of them are either merged with others or closed.

Table 6-13: Number of Sugar Factories with Their (Daily Sugarbeet Processing) Capacities in the EU and in Turkey

Daily capacity of sugar factories	EUROPEAN UNION (27)		TURKEY
	2006/07	2008/09	2010/11
<5.000 t	42	23	18
5.000 < 8.000 t	39	28	9
8.000 < 12.000 t	34	23	3
12.000 < 15.000 t	21	19	2
15.000 t	19	17	1
Total	155	110	33

Sources: CEFS (Comite Europeen des Fabricants de Sucre), 2009, p. 19-24.
Türk Şeker, 12 April 2011.

Table 6-14: Sugar Factories and Their Capacities

TÜRK ŞEKER	Average Target Capacity Ton/Daily	TÜRK ŞEKER	Average Target Capacity Ton/Daily
AFYON	7.000	ERZURUM	3.300
AĞRI	3.400	ESKİŞEHİR	7.200
ALPULLU	3.700	ILGIN	7.000
ANKARA	3.700	KARS	1.750
BOR	3.800	KASTAMONU	3.700
BURDUR	5.200	KIRŞEHİR	3.600
ÇARŞAMBA	3.000	MALATYA	3.600
ÇORUM	6.800	MUŞ	3.600
ELAZIĞ	1.800	SUSURLUK	7.000
ELBİSTAN	3.800	TURHAL	7.200
ERCİŞ	2.100	UŞAK	1.800
EREĞLİ	8.000	YOZGAT	3.600
ERZİNCAN	1.850	TÜRKŞEKER	107.500

Source: Türk Şeker, 12 April 2011.

In Turkey, more than half of the sugar factories' capacities are less than 5.000 tonne/daily (Table 6-13, 6-14). In the accession process of European Union, there is the problem that some inefficient sugar factories in Turkey may be closed. Celal Er (2007) and Taylan Kıymaz (2002) analysed the efficiency of the Türk Şeker factories and concluded that 9 factories (Ağrı, Alpullu, Çarşamba, Elazığ, Kars, Malatya, Muş, Susurluk and Uşak) may

dismantle production facilities because they are inefficient and sugar beet yield is very low in that places.[251]

In the EU, the closed factories received a restructuring aid of:
730 €/t in the first year
730 €/t in the second year;
625 €/t in the third year;
520 €/t in the fourth year.

Here, the European Union accession impact is analysed for the Turkish sugar market. There are 2 scenarios:
First scenario (OUT EU): is the non EU membership situation and the continuation of present sugar policy in Turkey.
Second scenario is the EU membership situation (IN EU): the EU's sugar price is valid, 9 factories are closed and restructuring aid is received.

In OECD FAO Agricultural Outlook 2010-2019 Database, the refined sugar production and consumption levels in Turkey are estimated (Annex, p. 326). Refined sugar prices in Turkey are inflation (GDP deflator in Turkey is estimated by OECD FAO Agricultural Outlook 2010-2019) adjusted prices. Refined sugar price in the EU is the current reference price for the refined sugar (it is supposed that this reference price is valid between 2015-2019). For converting the EU prices from Euro to TL, the euro/TL exchange rates after 2014 are estimated by using the difference between GDP deflator in Turkey and GDP deflator in EU, which are estimated by OECD FAO Agricultural Outlook 2010-2019.

To examine the second case, by using the estimated statistics in OECD FAO research, the welfare effect of EU accession is analysed for Turkey between 2015-2019. Supposed that, Turkey applies European Union's sugar prices after EU accession. Table 6-15 compares the EU membership and non EU membership situations.

[251] Taylan Kıymaz also added two factories more (Erciş and Erzurum) which are not efficient and may be closed. Celal Er and Taylan Kıymaz also suggested that the other inefficient factories can operate efficiently when their capacities are increased because the sugar beet yield is high in their locations.

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the IN-EU and OUT-EU situations are compared with the equilibrium situation. Equilibrium is the situation where there is no implementation of support policy.
4. All prices are adjusted to the farm gate.
5. Producer price is also the consumer price.
6. Possible impact of Doha Round is ignored.

IN-EU Assumptions:

7. It is assumed that, the EU sugar price policy started to be applied in 2015 in Turkey (after the possible accession in 2014).
8. It is assumed that all the sugar imports are made from the European Union, so there is no tariff revenue.
9. No compensatory payments are taken into account due to the price reduction in wheat in the IN-EU case.
10. The EU fund for the harmonization of Turkish agricultural policy to the CAP is ignored.
11. 9 factories of Türk Şeker are closed and restructuring aid is received after 2015.
12. The cost of closing factories and the effects of promoting the sugar beet farmers moving to alternative commodity farming in those places are not taken into account.

OUT-EU Assumptions:

13. The present Turkish sugar policy (quota) continues after 2014 in the OUT-EU case.

Table 6-15: EU Accession Impact on Turkish Sugar Market

	2015		2016		2017	
	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices						
EU Producer price €/ton	335,2	335,2	335,2	335,2	335,2	335,2
EU Producer priceTL/ton	968	968	1.006	1.006	1.047	1.047
TR Producer price TL/t	1.101	968	1.168	1.006	1.238	1.047
Equilibrium price TL/t	1.194	1.194	1.256	1.256	1.312	1.312
Quantities (1000 tons)						
a. Production	2.403	2.297	2.462	2.341	2.548	2.409
b. restructuring (7,5% * a)		174		176		181
c. Production after restr.(a-b)		2.123		2.166		2.349
d. Consumption	2.542	2.655	2.585	2.718	2.649	2.801
Net Trade	-139	-532	-123	-552	-101	-452
Equilibrium quantity	2.473	2.473	2.523	2.523	2.598	2.598
Welfare Effect (million TL)						
e. Producer surplus	-227	-519	-219	-586	-190	-655
f. Consumer surplus	233	579	225	655	194	715
b. Restructuring aid	-	366	-	381	-	339
g. Tariff revenue	18,4	0	20,0	0	19,3	0
h. Total welfare	**25**	**426**	**25**	**449**	**23**	**399**

	2018		2019	
	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices				
EU Producer price €/ton	335,2	335,2	335,2	335,2
EU Producer priceTL/ton	1.088	1.088	1.132	1.132
TR Producer price TL/t	1.312	1.088	1.391	1.132
Equilibrium price TL/t	1.390	1.390	1.494	1.494
Quantities (1000 tons)				
a. Production	2.623	2.465	2.681	2.505
b. restructuring (7,5% * a)		185		188
c. Production after restr.(a-b)		2.280		2.317
d. Consumption	2.726	2.900	2.811	3.007
Net Trade	-103	-620	-129	-690
Equilibrium quantity	2.674	2.674	2.745	2.745
Welfare Effect (million TL)				
e. Producer surplus	-207	-748	-279	-916
f. Consumer surplus	211	842	286	1.041
b. Restructuring aid	-	293	-	-
g. Tariff revenue	23,0	0	33,4	0
h. Total welfare	**27**	**387**	**40**	**125**

An example for EU Accession Impact on Turkish Sugar Market for the 2015/16 Marketing year:

First scenario: OUT EU

2015/16 Sugar Statistics in Turkey

Production level (pl): 2.403.190 tonnes

Consumption level (cl): 2.541.840 tonnes

TR sugar price (sp): 1.101 TL/t

EU sugar price: 968 TL/t

From the elasticity formula below, supply and demand models with price as only endogenous variable can be found.

($\mathcal{E}$ * production level (or consumption level)) = β * price)

$\mathcal{E}$ * pl = β *sp

Calculation of Supply model:

$\mathcal{E}$ = 0,16

$\mathcal{E}$* lnpl = β * lnsp

0,16 * 14,69 = β * 7,00 (pl=2.403.190, sp=1.101)

β = 0,35

α = lnpl - β * lnsp

α = 14,69 – 0,35* 7,00

α = 12,22

Logarithmic Expression of Supply Model is:

S = 12,22 +0,35*lnsp (S=lnpl)

Calculation of Demand Model:

$\mathcal{E}$ * cl = β *sp

ε = -0,16

ε* lncl = β * lnsp (cl=2.541.840, sp=1.101)

-0,16 * 14,75=β * 7,00

β = -0,34

α = lncl - β * lnsp

α = 14,75– (-0,34 *7,00)

α = 17,11

Logarithmic Expression of Demand Model is:

D = 17,11 – 0,34 *lnsp (D=lncl)

Market Equilibrium Price and Quantity

Supply = Demand (lnpl=lncl)

12,22 +0,35*lnsp = 17,11 – 0,34 *lnsp

lnsp=7,09 (Logaritmic value of sugar equilibrium price)

sp= $e^{7,09}$ = 1.194

S = 12,22 +0,35*lnsp (S= ln pl_{eq})

ln pl_{eq} = 12,22 +0,35*7,09

ln pl_{eq} =14,72

$pl_{eq} = e^{14,72}$ = 2.473.107

Equilibrium production level would be 2.473.107 tonnes.

a. Production at EU price (sp=968)

S = 12,22 +0,35*lnsp (S= ln pl_1)

ln pl_1 = 12,22 +0,35*6,88

ln pl_1 = 14,65

$pl_1 = e^{14,65}$ = 2.296.578

Production quantity at EU price would be 2.296.578 tonnes.

b. Restructuring aid

IN-EU situation case:

9 factories are closed, and a restructuring aid per tonne of renounced quota was provided amounting 730 € for the first year and second year; 625 € for the third year; 520 € for the fourth year. Total restructuring aid would be:

		Restructuring aid				
Factories	2009/10 Sugar Production (tons)	2015/2016	2016/2017	2017/2018	2018/2019	Total Aid million €
		730	730	625	520	
Ağrı	16.233	11,85	11,85	10,15	8,44	42,29
Alpullu	16.465	12,02	12,02	10,29	8,56	42,89
Çarşamba	11.176	8,16	8,16	6,99	5,81	29,11
Elazığ	8.870	6,48	6,48	5,54	4,61	23,11
Kars	3.363	2,45	2,45	2,10	1,75	8,76
Malatya	32.600	23,80	23,80	20,38	16,95	84,92
Muş	39.900	29,13	29,13	24,94	20,75	103,94
Susurluk	27.070	19,76	19,76	16,92	14,08	70,52
Uşak	17.950	13,10	13,10	11,22	9,33	46,76
Total	173.627	126,75	126,75	108,52	90,29	452,30
Total Restructuring aid (Million TL)		**365,86**	**380,50**	**338,80**	**293,15**	**904,60**
€/TL rate projection		2,8865	3,0020	3,1221	3,2469	

*The quota allocation of the each factory is a private information of TŞFAŞ. So instead of quota quantity, last production quantity (in 2009/10 marketing year) is used in the calculation.

In the case of dismantling production facilities in the 9 factories, the production decreases by 173.627 tonnes. So, the restructuring aid amounts for in 2015 366 million TL, in 2016 380 million TL, in 2017 339 milion TL and in 2018 293 million TL.

c. Production quantity after restructuring

Production quantity after restructuring = q1 – dismantled production quantity (2015/16 production of the closed factories):

2.296.578 – 173.627 = 2.122.951

In EU price, the production quantity is 2.296.578 tonnes. The production quantity after restructuring is 2.122.951 tonnes. The production quantity decreases by 7,5% after restructuring. It is assumed that, in the following years, the production quantity also decreases by 7,5% due to the restructuring process.

d. Consumption at EU price (sp=968)

D = 17,11 – 0,34 *lnsp (D= $\ln cl_1$)

$\ln cl_i$ = 17,11 – 0,34 * 6,88

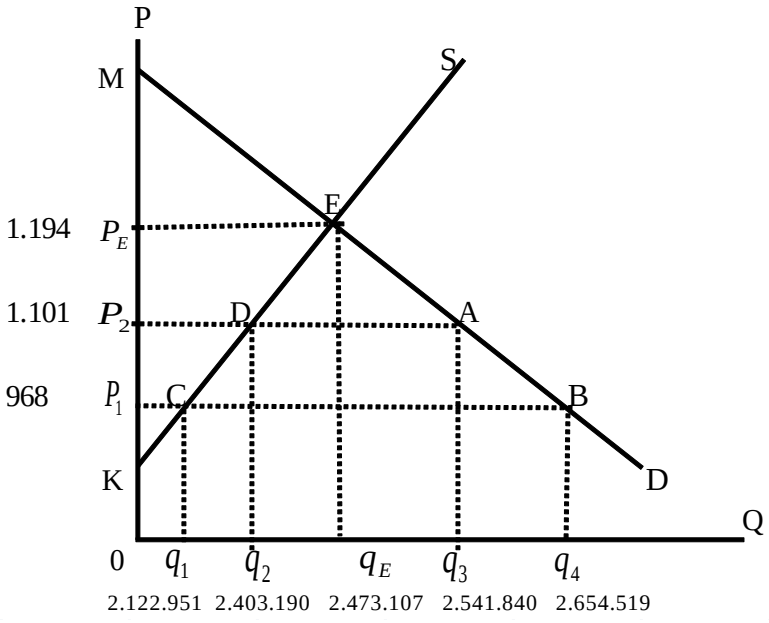
$\ln cl_i$ = 14,79

$cl_i = e^{14,79}$ = 2.654.519

Consumption quantity at reference price would be 2.654.519 tonnes.

The figure 6-5 shows the supply and demand in sugar at EU and TR Price levels:

Figure 6-5: Supply and Demand in Sugar (2015)



Welfare Effects of Policy Options

	Equilibrium	OUT-EU	IN-EU
Production (t):	2.473.107	2.403.190	2.122.951
Consumption (t):	2.473.107	2.541.840	2.654.519
Producer price (TL/t):	1.194	1.101	968
Producer Surplus	K E Pe	K D P2	K C P1
Change in Producer Surplus	-	E D P2 Pe	E C P1 Pe
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	-A E P2 Pe	-B E P1 Pe

e. Change in Producer Surplus:

Decrease in producer surplus in OUT-EU

=((q2+qe)/2)*(P2-Pe)

((2.403.190 + 2.473.107)/2)*(1.101-1.194) = -226.747.811 TL

In OUT-EU, producer surplus decreases by 227 million TL.

Change in producer surplus in IN-EU

= ((q1+qe)/2)*(P1-Pe)

((2.122.951+ 2.473.107)/2)*(968-1.194) = -519.354.554 TL

In the case of EU membership, producer surplus decreases by 519 million TL due to the price reduction in 2015. Producer has less incentive for production because of the low prices.

f. Change in Consumer Surplus:

Increase in consumer surplus in OUT-EU

=((q3+qe)/2)*(Pe - P2)

((2.541.840 + 2.473.107)/2)*(1.194-1.101) = 233.195.036 TL

The consumer surplus increases by 233 million TL in the OUT-EU case.

Increase in consumer surplus in the IN-EU case

IN-EU = ((q4+qe)/2)*(Pe-P1)

((2.654.519+ 2.473.107)/2)*(1.194 - 968) = 579.421.738 TL

In the case of EU accession, consumer surplus increases by 579 million TL in 2015.

g. Tariff revenue

In the case of EU membership situation, the import quantity increases. But as Turkey becomes an EU member, she imports from EU countries without import duty. So, there is no tariff revenue.

In the non-EU membership situation, the net import quantity is 138.650 tonnes in 2015. Tariff revenue in OUT-EU situation is calculated as:

Net import quantity*(producer price – reference price)

		2015	2016	2017	2018	2019
I	Producer price TL/t	1.101	1.168	1.238	1.312	1.391
II	Reference price TL/t	968	1006	1.047	1.088	1.132
III	Market price differential (I-II)	133	162	191	224	259
IV	Net import quantity (t)	138.650	123.360	100.870	102.760	129.140
V	Tariff revenue (III*IV), mn TL	18,44	19,98	19,27	23,02	33,45

In 2015, tariff revenue is 18,4 million TL in the non-EU membership situation.

h. Total Welfare (e+f+g+b)

Total welfare is the sum of producer and consumer surplus, and restructuring aid. Total welfare is better in the EU accession scenario. In the EU membership case, the producer surplus decrease and the consumer surplus increase because of the low prices. In 2015/16, total welfare is 25 million TL in the first case, while it is 426 million TL in the second case (EU membership).

EU accession has positive impact in total welfare. Total welfare increases more especially in the years of restructuring aid.

EU Accession Impact (%) in Turkish Sugar Market

The sugar price in Turkey will fall by appr. 19-24% in the observed period in the case of EU membership (compared to the OUT-EU situation). The low price shall have a positive impact in consumption (increases by 7-9,5%). But the low price and restructuring have a negative impact in production (decreases by appr. 7-9%) in the observed period. The import quantity increases in the IN-EU situation.

Table 6-16: EU Accession Impact (%) in Turkish Sugar Market

	2015		2016		2017		2018		2019	
Impact	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Price change (%)	-7,8	-18,9	-7,0	-19,9	-5,6	-20,2	-5,6	-21,7	-6,9	-24,2
Production change (%)	-2,8	-7,1	-2,4	-7,2	-1,9	-7,3	-1,9	-7,8	-2,3	-8,7
Consumption change (%)	2,8	7,3	2,5	7,7	2,0	7,8	1,9	8,4	2,4	9,5

6.2.5 WELFARE EFFECT OF DOHA ROUND IN SUGAR

Turkey imposes an import tariff of 135% for sugar. If the Doha Round is completed in 2012 and the revised draft modalities are accepted, the reduction shall be 46,67% of the sugar tariff in Turkey. Total reduction will be 63% (135*46,67%= 63%).

Turkey shall reduce the final bound tariffs in eleven equal annual instalments over ten years. The annual reduction shall be = 63%/11=5,73%. After 10 years, the tariff rate shall be 80%. Table 6-17 shows the import prices in the case of tariff reduction, and in the case of 135% tariff rate.

There are two scenarios:
First case: no tariff reduction (tariff rate is 135%)
Second case: tariff reduction (acceptance of revised draft modalities in Doha)

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the two scenarios are compared with the equilibrium situation.
4. The EU accession process is ignored.

First scenario:

5. It is assumed that 135% tariff rate in sugar does not change in the following years.

Second scenario:

6. It is assumed that, Doha Round is completed in 2012 and the revised draft modalities for the tariff reductions are accepted.
7. The tariff reduction scenario is calculated according to the Uruguay Round approach.

a. Tariff Reduction and Import Price Scenario in Sugar (2012-2019)

Import prices are taken from OECD FAO Agricultural Outlook 2010-2019 database (Annex, p. 326). With the current tariff rate application (135%), the import price shall be 2.317 TL/t in 2019. A reduction of tarif rate (in case of Doha Round completion in 2012 and acceptance of the revised draft modalities) would reduce the import price. In 2019, the import price shall be 1.969 TL/tonne (Table 6-17).

Table 6-17: Tariff Reduction Scenario in Sugar

	Year	A	B	C	D	E
		Traiff Rate (t%)	Annual Reduction (A*46,67%)/ 11	Import Price	Import Price with Present Tariff Rate (C*(1+135%))	New Import Price with Doha Tariff Rate (C*(1+A%))
	2012	135	5,73	657,83	1.546	1.546
1st year	2013	130	5,73	666,29	1.566	1.532
2nd year	2014	125	5,73	749,31	1.761	1.685
3rd year	2015	120	5,73	721,01	1.694	1.585
4th year	2016	115	5,73	709,49	1.667	1.524
5th year	2017	110	5,73	801,31	1.883	1.681
6th year	2018	105	5,73	877,43	2.062	1.796
7th year	2019	100	5,73	985,76	2.317	1.969
8th year	2020	95	5,73			
9th year	2021	90	5,73			
10th year	2022	85				

Table 6-18 shows the welfare effects of tariff reduction scenario and present tariff implication scenario.

Table 6-18: Welfare Effects of Tariff Reduction Scenario in Sugar

	2013		2014		2015		2016	
	present	After Doha	present	After Doha	present	After Doha	present	After Doha
Prices								
Import price (TL/t)	666		749		721		709	
Import Tariff (t)	135%	130%	135%	125%	135%	120%	135%	115%
a. Import price (1+t%)	1.566	1.532	1.761	1.685	1.694	1.585	1.667	1.524
Equilibrium price	1.686	1.686	1.902	1.902	1.852	1.852	1.801	1.801
Quantities (1000 tons)								
b. Production	2.367	2.350	2.393	2.360	2.403	2.353	2.462	2.393
c. Consumption	2.483	2.500	2.513	2.548	2.542	2.596	2.585	2.660
Net Trade (b-c)	-116	-150	-120	-188	-139	-243	-123	-267
Equilibrium quantity	2.425	2.425	2.453	2.453	2.471	2.471	2.523	2.523
Welfare Effect (mn TL)								
d. Producer surplus	-288	-368	-342	-522	-384	-644	-333	-681
e. Consumer surplus	295	379	350	543	395	676	341	718
f. Tariff revenue	104	130	121	176	135	210	118	218
g. Total welfare	**111**	**141**	**130**	**197**	**146**	**242**	**126**	**255**

	2017		2018		2019	
	present	After Doha	present	After Doha	present	After Doha
Prices						
Import price (TL/t)	801		877		986	
Import Tariff (t)	135%	110%	135%	105%	135%	100%
a. Import price (1+t%)	1.883	1.681	2.062	1.796	2.317	1.969
Equilibrium price	2.002	2.002	2.193	2.193	2.500	2.500
Quantities (1000 tons)						
b. Production	2.548	2.458	2.623	2.512	2.681	2.549
c. Consumption	2.649	2.745	2.726	2.846	2.811	2.954
Net Trade (b-c)	-101	-287	-103	-334	-129	-405
Equilibrium quantity	2.598	2.598	2.675	2.675	2.746	2.746
Welfare Effect (mn TL)						
d. Producer surplus	-306	-811	-347	-1.030	-497	-1.406
e. Consumer surplus	312	858	354	1.096	508	1.513
f. Tariff revenue	109	253	122	306	172	398
g. Total welfare	**115**	**299**	**128**	**373**	**184**	**506**

An example for the tariff reduction scenario in sugar (2019):

In the first scenario, the import price shall be 2.317 TL/t, the production quantity is 2.681.360 tonnes and the consumption quantity is 2.810.500 tonnes in 2019.

In the second scenario, the import price shall be 1.969 TL/tonne in 2019. To find the production and consumption levels at the price level 1.969 TL/t, the supply-price elasticity and demand-price elasticity formulas are used:

An example of welfare analysis for the 2019 marketing year:

Calculation of the supply model:

ε* production level = β * price

ε * pl = β *sp

ε = 0,16

ε* lnpl = β * lnsp (pl=2.681.360, sp=2.317)

0,16 * 14,80 = β * 7,75

β = 0,31

α = lnpl - β * lnsp

α = 14,80 – 0,31* 7,75

α = 12,40

Logarithmic Expression of Supply Model is:

S = 12,40 +0,31* lnsp (S=lnpl)

Calculation of Demand Model:

ε * cl = β *sp

ε = -0,16

ε * lncl = β * lnsp (cl=2.810.500, sp= 2.317)

-0,16 * 14,85= β * 7,75

β = -0,31

α = lncl - β * lnsp

α = 14,85– (-0,31 *7,75)

α = 17,22

Logarithmic Expression of Demand Model is:

D = 17,22 – 0,31 * lnsp (D=lncl)

Market Equilibrium Price and Quantity (logarithmic values)

Supply = Demand (lnpl=lncl)

12,40 +0,31* lnsp= 17,22 – 0,31 * lnsp

lnsp=7,82 (Logaritmic value of sugar equilibrium price)

sp= $e^{7,82}$ = 2.500

S = 12,40 +0,31* lnsp (S= ln pl_{eq})

ln pl_{eq} = 12,40+0,31*7,82

ln pl_{eq} =14,83

$pl_{eq} = e^{14,83}$ = 2.745.557

Equilibrium production level would be 2.745.557 tonnes at equilibrium price level 2.500 TL/t.

b. Production in the second scenario (price:1.969 TL/t)

S = 12,40 +0,31* lnsp (S= ln pl_1)

ln pl_1 = 12,40 +0,31* 7,59

ln pl_1 = 14,75

$pl_1 = e^{14,75}$ = 2.549.282

c. Consumption in the second scenario (price:1.969 TL/t)

D = 17,22 – 0,31 * lnsp (D= $\ln cl_1$)

$\ln cl_1 = 17{,}22 - 0{,}31 * 7{,}59$

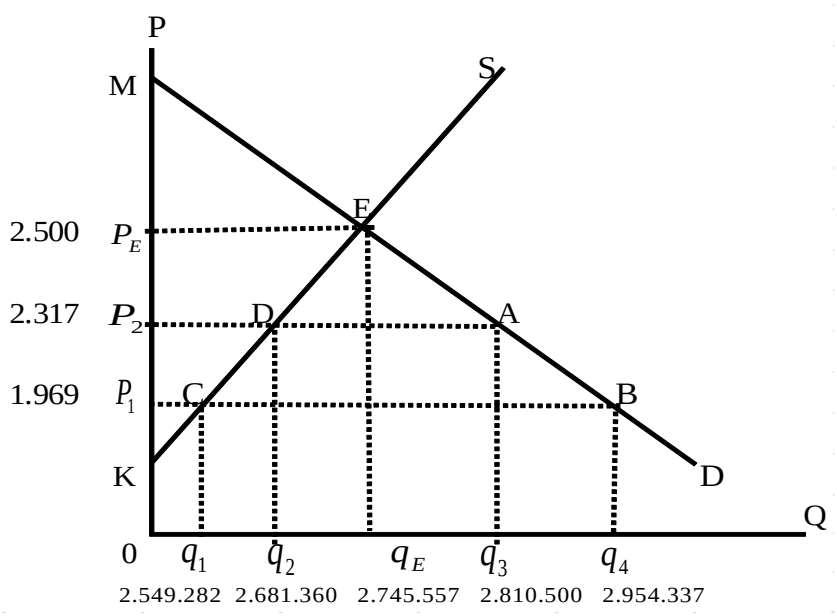
$\ln cl_1 = 14{,}90$

$cl_1 = e^{14{,}90} = 2.954.337$

In the second scenario, the production and the consumption quantity would be 2.549.282 and 2.954.337 tonnes, respectively.

The figure 6-6 shows the supply and demand of sugar at three situations: equilibrium, present and Doha situations:

Figure 6-6: Supply and Demand of Sugar (2019)



Welfare Effects of Policy Options

	Equilibrium	1st scenario	2nd scenario
Production (t):	2.745.557	2.681.360	2.549.282
Consumption (t):	2.745.557	2.810.500	2.954.337
Producer price (TL/t):	2.500	2.317	1.969
Producer Surplus	K E Pe	K D P2	K C P1
Change in Producer Surplus	-	-E D P2 Pe	-E C P1 Pe

Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	A E P2 Pe	B E P1 Pe

d. Change in Producer Surplus:

1st scenario

((q2+qe)/2)*(P2-Pe)

((2.681.360 + 2.745.557)/2)*(2.317 – 2.500) = -496.562.906 TL

Producer surplus decreases by 497 million TL.

2nd scenario:

= ((q1+qe)/2)*(P1-Pe)

((2.549.282+ 2.745.557)/2)*(1.969 – 2.500) = -1.405.779.755 TL

In the second scenario, producer surplus decreases by 1.406 million TL due to the price reduction in 2019. Producer has less incentive for production because of the low prices.

e. Change in Consumer Surplus:

1st scenario

= ((q3+qe)/2)*(Pe - P2)

((2.810.500 + 2.745.557)/2)*(2.500 – 2.317) = 508.379.216 TL

The consumer surplus increases by 508 million TL.

2nd scenario:

= ((q4+qe)/2)*(Pe-P1)

((2.954.337+ 2.745.557)/2)*(2.500 – 1.969) = 1.513.321.857 TL

In the second scenario, consumer surplus increases by 1.513 million TL in 2019.

f. Tariff Revenue

In the second scenario import quantity increases. Tariff revenue is calculated as the multiplication of the import quantity with the difference between domestic and import price.

First case: Tariff: 135%
In 2019, the net import level of sugar will be 129.140 tonnes.
Total tariff revenue = tariff revenue * net import quantity
= (2.317 - 986)*129.140 = 171.885.340
= 172 million TL

Second case: Tariff: 100%
In 2019, the net import level of sugar will be 405.055 tonnes.
Total tariff revenue = tariff revenue * net import quantity
= (1.969 - 986)*405.055 = 398.169.065

In the second scenario, total tariff revenue is 398 million TL.

g. Total Welfare (d+e+f)

The tariff reduction situation will cause an increase in consumer's welfare while a decrease in producer's welfare. In the second scenario, tariff revenues increase and tariff reduction has a positive effect in total welfare. In 2019, total welfare is calculated as 184 million TL in the first scenario and 506 million TL in the second scenario.

Doha Round Tariff Reduction Impact (%) in Turkish Sugar Market

If the revised draft modalities are accepted in Doha round, the import tariff in sugar will be decreased. The low trade barriers may harm domestic producers. There is a significant fall in sugar prices and production level. The fall in prices is appr. 6-8% on average in the observed period. Production decreases 2% and consumption increases by 2-3% in the observed years when compared with the first scenario (Table 6-19). The import quantity also rises due to the low prices and increased demand. Total welfare increases in tariff reduction scenario.

Table 6-19: Doha Round Tariff Reduction Impact (%) in Turkish Sugar Market

	2013		2014		2015		2016	
Impact (%)	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Price change	-10,3	-7,1	-9,1	-7,4	-11,4	-8,5	-14,4	-7,4
Production change	-3,5	-2,4	-3,1	-2,4	-3,8	-2,8	-4,8	-2,4
Consumption change	2,8	2,4	3,1	2,5	3,9	2,9	5,1	2,5

	2017		2018		2019	
Impact (%)	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Price change	-15,4	-5,9	-16,0	-6,0	-18,1	-7,3
Production change	-5,1	-1,9	-5,4	-1,9	-6,1	-2,3
Consumption change	5,5	1,9	5,6	1,9	6,4	2,4

6.3 RESULTS AND EVALUATION OF OLIVE OIL SUPPORT POLICIES

6.3.1 PRODUCER SUPPORT ESTIMATE

The data used in the calculation of PSE are:
As the reference price, extra virgin olive oil price in Spain is used.[252] The olive oil producer prices are extra virgin olive oil prices in Turkey.[253] Production and consumption statistics are taken from the International Olive Oil Council.[254]
Deficiency payments are premium payments given to olive oil producers (Table 4-40 in page 118).

As seen in Table 6-20, producer support estimate is appr. 30% in the olive oil sector. In 2009, PSE in olive oil was calculated as 32%. That means, in 2009, 32% of the farmer's earnings come from policy induced transfers, and the remaining come from the value of sales measured at border prices (that is, not including price support). However, the producer received a premium payment of 25 kr per kilogram. The high PSE results from the gap between the reference and producer price.

[252] Prices are taken from the article:
European Commission, 2004a, p. 15,
European Commission, September 2010.
[253] ABGS, Screening with Turkey Olive Oil and Table Olives (Non-exhaustive list of issues and questions to facilitate preparations for bilateral meetings), 2006, p. 7 and
TC. Sanayi ve Ticaret Bakanlığı, August 2010, p. 12.
[254] International Olive Oil Council, November 2010.

Table 6-20: Producer Support Estimate in Olive Oil

						Market Transfers		Budgetary Transfers						
Year/ Unit	Reference Price (RP)	Producer Price (PP)	Market Price Differential (MPD)	Quantity Produced (QP)	Quantity Consumed (QC)	Transfers to producers from consumers (TPC)	Other transfers from consumers (OTC)	Transfers to producers from taxpayers (TPT)	Market Price Support (MPS)	Payments based on output: Premium payments	Producer SCT	% Producer SCT	Consumer SCT	Consumer NPC
	TL/t	TL/t	TL/t	1000 t	1000 t	mn TL	mn TL	mn TL	mn TL	mn TL	mn TL	%	mn TL	%
1992	23,32	22,22	-1,1	56	50	-0,06	0,00	-0,007	-0,06	0,00	-0,06	-4,99	0,06	0,95
1993	39,67	42,86	3,2	48	50	0,16	0,01	-0,01	0,15	0,00	0,15	7,44	-0,17	1,08
1994	134,01	133,70	-0,3	160	54	-0,02	0,00	-0,033	-0,05	0,00	-0,05	-0,23	0,02	1,00
1995	306,80	361,85	55	40	63	3,47	1,27	0,00	2,20	0,00	2,20	15,21	-4,73	1,18
1996	330,23	405,64	75	200	75	5,66	0,00	9,43	15,08	0,00	15,08	18,59	-5,66	1,23
1997	411,70	460,17	48	40	85,5	1,94	2,21	0,00	1,94	0,00	1,94	10,53	-4,14	1,12
1998	855,57	792,12	-63	170	85	-5,39	0,00	-5,39	-10,79	18,00	7,21	5,36	5,39	0,93
1999	1.046	1.596	550,40	70	60	33,02	0,00	5,50	38,53	0,00	38,53	34,48	-33,02	1,53
2000	1.065	1.504	439,59	175	72,5	31,87	0,00	45,06	76,93	48,50	125,43	47,65	-31,87	1,41
2001	2.378	3.417	1.039	65	55	57,14	0,00	10,39	67,53	1,80	69,33	31,21	-57,14	1,44
2002	3.688	4.556	868	140	50	43,42	0,00	78,15	121,57	17,40	138,97	21,79	-43,42	1,24
2003	4.281	4.030	-251	79	46	-11,54	0,00	-8,28	-19,82	6,30	-13,52	-4,25	11,54	0,94
2004	5.297	4.250	-1.047	145	60	-62,82	0,00	-89,00	-151,83	23,60	-128,23	-20,81	62,82	0,80
2005	5.960	5.790	-170	112	50	-8,50	0,00	-10,54	-19,04	3,60	-15,44	-2,38	8,50	0,97
2006	5.035	6.880	1.845	165	80	147,60	0,00	156,83	304,43	6,70	311,13	27,41	-147,60	1,37
2007	4.276	6.320	2.044	72	85	147,14	26,57	0,00	147,14	2,77	149,91	32,94	-173,70	1,48
2008	4.437	6.000	1.563	130	108	168,80	0,00	34,39	203,18	9,34	212,52	27,25	-168,80	1,35
2009	4.658	6.770	2.112	147	110	232,34	0,00	78,15	310,49	11,75	322,24	32,38	-232,34	1,45

Source: Own calculations

In Turkey, olive oil prices are generally higher than in the European Union. However, according to the Table 6-21 and Table 6-22, the total price that the European producer receives is more than the Turkish producer receives. In European Union, producers are supported more than the producers in Turkey. An olive oil producer in the EU received a support payment of 63% of the olive oil price, while in Turkey, producer received a support payment of 4% of the olive oil price in 2009/10. So, the producers' and consumers' gains are better in the EU than in Turkey due to the low olive oil price and high support payments in EU.

Table 6-21: Olive Oil Price and Support Level in European Union

	Unit/ Year	2005	2006	2007	2008	2009
Olive oil Price	€/t	3.736	2.706	2.495	2.070	2.107
Production Aid	€/t	1.332,5	1.332,5	1.332,5	1.332,5	1.332,5
Total producer price	€/t	5.069	4.039	3.827	3.403	3.440
Total olive oil price	TL/t	8.086	7.514	6.561	7.293	7.405
Support/Producer price	%	36	49	53	64	63
€/TL exchange rate		1,5952	1,8604	1,7142	2,1435	2,153

*Exchange rates are TCMB end-year exchange rates

Table 6-22: Olive Oil Price and Support Level in Turkey

	Unit/ Year	2005	2006	2007	2008	2009
Olive oil price	TL/t	5.790	6.880	6.320	6.000	6.770
Premium payment	TL/t	100	110	200	189	250
Total producer price	TL/t	5.890	6.990	6.520	6.189	7.020
Support/Producer price	%	1,7	1,6	3,2	3,2	3,7

Consumer Support Estimate is negative in olive oil. This shows the transfer from consumers due to the high producer prices. The consumers pay more than reference prices in Turkey. The gap between reference price and domestic price widened after 2005. Consumer NPC is between 1 -1,5 especially in the last years. Consumer NPC is between 1,5 and 2 in the last years which shows that consumer pays 1 – 1,5 times of the reference price.

6.3.2 ESTIMATION OF OLIVE OIL SUPPLY AND DEMAND PARAMETERS

The data are time series and represent 20 years, from 1990 to 2009. Production and consumption equations were estimated for the olive oil sector in order to conduct classic welfare analysis.

Explanatory variables like olive oil price, olive (for oil) yield (tree/olive quantity), 1994 and 2001 economic crisis as dummy variable (1994 and 2001 are indicated as "1" and the other years are shown as "0"), agricultural support policy in olive oil (intervention buying was implemented between the years 1990-1994; after 1998 deficiency payment is implemented. The years 1995-1997 are shown as "0" and the years when support policy is implemented are as "1"), and periodicity (as dummy variable) are used in different combinations in order to estimate olive oil production model. Only olive oil price and olive yield are selected as explanatory variables because they are closely related to production level (the other variables are not selected because they are insignificant in the model). There is no structural breakpoint as seen in the CUSUMSQ graph. The model is also tested below.

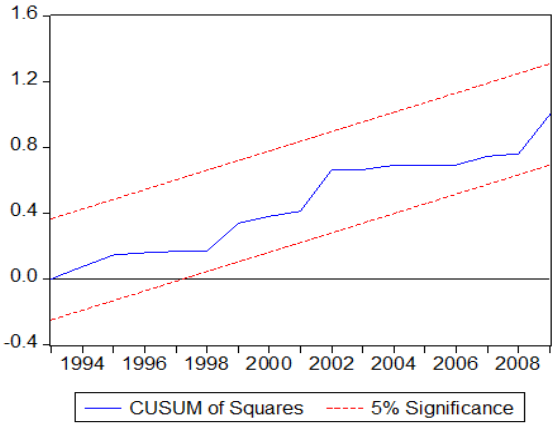
The best fitted olive oil production model

Dependent variable		Coefficient	Std. Error	t-Statistic	Prob.
lnpl	Oliveoil production level				
Constant parameter		3.16	0.65	4.87	0.0001
lnop(-1)	Olive oil price	0.05	0.01	3.68	0.0018
lny	Olive yield	0.88	0.07	12.01	0.0000

R-squared	0.91	Adjusted R-squared	0.90
F-statistic	63.85222	Prob (F-statistic)	0.000000

Tests

B-G LM (nR2) Lags=1	1.692548	B-G LM (Prob. nR2)	0.193265
B-G LM (nR2) Lags=2	1.917836	B-G LM (Prob. nR2)	0.383307
Jarque-Bera	0.336168	Jarque-Bera (prob.)	0.845283
White Heteroscedasticity (nR2)	0.869617	White Heteroscedasticity (Prob.nR2)	0.928879
Ramsey-Reset (F-statistic)	0.936170	Ramsey-Reset (Prob. F-st)	0.413875



The model is:

$\ln pl = 3{,}16 + 0{,}05 \ln op_{t-1} + 0{,}88 \ln y$

Supply Price Elasticity of olive oil is 0,05.

Olive Oil Consumption Model

When estimating the olive oil consumption model, olive oil price, $consumption_{t-1}$, population, GDP, 1994 and 2001 economic crisis, periodicity in olive tree, sunflower oil price, export quantity of olive oil were used. GDP which can affect the consumption level was not used because it was insignificant. 1994 and 2001 economic crisis dummy, periodicity and sunflower oil price were also insignificant. Olive oil price, export quantity, $consumption_{t-1}$ and population were selected as explanatory variables in the olive oil consumption model.

Dependent variable		Coefficient	Std. Error	t-Statistic	Prob.
lncl	Oliveoil consumption level				
Constant parameter		-75.27	35.81	-2.10	0.0529
lnop	Olive oil price	-0.16	0.08	-1.98	0.0655
lnp	Population	4.38	2.00	2.18	0.0455
lncl(-1)	$Consumption_{t-1}$	0.71	0.19	3.65	0.0024
lnihrm	Export quantity	0.09	0.07	1.27	0.2236

The ln(ihrm) parameter is insignificant in the model above (t < t critical value). The years (1998, 2000, 2002, 2003, 2004, 2005) when the export quantity is equal or higher than the consumption quantity are added to the model as dummy variable. Finally, the best fitted model and the tests are presented below:

The best fitted olive oil consumption model:

Dependent variable		Coefficien	Std. Error	t-Statistic	Prob.
lncl	Oliveoil consumption level				
Constant parameter		-81,84	30.87	-2.65	0.0190
lnop	Olive oil price	-0.17	0.07	-2.46	0.0272
lnp	Population	4,76	1.73	2.75	0.0155
lnihrm	Export quantity	0.21	0.07	2.70	0.0171
lncl(-1)	$Consumption_{t-1}$	0.57	0.18	3.24	0.0058
dm	Dummy	-0.29	0.12	-2.51	0.0247

R-squared	0.75	Adjusted R-squared	0.66
F-statistic	8.492876	Prob (F-statistic)	0.000711

Tests

B-G LM (nR2) Lags=1	3.815251	B-G LM (Prob. nR2)	0.050788
B-G LM (nR2) Lags=2	4.915509	B-G LM (Prob. nR2)	0.085627
Jarque Bera	1.516070	Jarque Bera (prob.)	0.468586
White Heteroscedasticity (nR2)	7.391408	White Heteroscedasticity (Pr.nR2)	0.495050
Ramsey-Reset (F-statistic)	0.799745	Ramsey-Reset (Prob. F-st)	0.472011
Durbin Watson d	2.642283		
Durbin h	-2.41213		

The model is:

$$lncl = -81,84 - 0,17lnop + 4,76lnp + 0,21lnihrm + 0,57lncl_{t-1} - 0,29dm$$

Demand Price Elasticity is -0,17.

6.3.3 WELFARE EFFECTS OF PAST AND PRESENT SUPPORT POLICIES IN OLIVE OIL

Between 1966-1994 market price support (intervention buying) was implemented in olive oil. Since 1998, intervention buying was phased out and replaced by deficiency payment system. In this part, it is aimed to answer the question, "if the intervention buying continued, how this policy would affect the producer and consumer welfare". So, welfare effects of these 2 systems (intervention buying and deficiency payment) are analysed between 2006-2009.

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. Producer price is the wholesale price of the extra virgin olive oil (table 6-20, p. 236).
4. Export subsidies are taken from the table 4-41 (p. 119).
5. The purchased quantity is the quantity eligible for premium payment in deficiency payment policy.
6. Purchase price is the sum of producer price (in deficiency payment policy) and the deficiency payment.
7. The policy changes in the intervention buying and in the deficiency payment policy are compared with the equilibrium situation.
8. The cost of purchase is only taken into account in the calculation. The further sales of the purchased quantity and the cost of stocks are ignored.

Table 6-23: Welfare Effects between Intervention Buying and Deficiency Payment in Olive Oil

	2006		2007	
	Deficiency Payment	Intervention Buying	Deficiency Payment	Intervention Buying
Prices				
Olive Oil Price TL/t	6.880	6.990	6.320	6.520
Deficiency Payment (TL/t)	110		200	
Equilibrium price (TL/t)	512	512	11.344	11.344
Export Subsidy ($/t)	100	100	125	125
Export Subsidy (TL/t)	141	141	146	146
Quantities (1000 tons)				
a. Production	165,0	165,2	72,0	72,1
b Consumption	80,0	79,7	85,0	84,4
Export	45	45	15	15
Equilibrium quantity	141	141	75	75
Welfare Effect (million TL)				
c. Producer surplus	973	990	-369	-354
d. Consumer surplus	-702	-714	401	384
e. Export Subsidy Payments	-6,4	-6,4	-2,2	-2,2
f. Deficiency Payments	-6,7	-	-2,77	-
g. Intervention Buying	-	-426	-	-90
h. Total welfare	264	-149	30	-61
TCMB $/TL rate	1,4124		1,1649	

	2008		2009	
	Deficiency Payment	Intervention Buying	Deficiency Payment	Intervention Buying
Prices				
Olive Oil Price TL/t	6.000	6.189	6.770	7.020
Deficiency Payment (TL/t)	189		250	
Equilibrium price (TL/t)	3.192	3.192	2.509	2.509
Export Subsidy ($/t)	100	100	100	100
Export Subsidy (TL/t)	153	153	149	149
Quantities (1000 tons)				
a. Production	130,0	130,3	147,0	147,4
b Consumption	108,0	107,2	110,0	109,1
Export	31	31	29,5	29,5
Equilibrium quantity	125	125	137	137
Welfare Effect (million TL)				
c. Producer surplus	357	382	606	642
d. Consumer surplus	-327	-347	-527	-556
e. Export Subsidy Payments	-4,7	-4,7	-4,4	-4,4
f. Deficiency Payments	-9,34	-	-11,75	-
g. Intervention Buying	-	-306	-	-330
h. Total welfare	22	-271	67	-244
TCMB $/TL rate	1,5291		1,4945	

*TCMB $/TL rates are year-end rates (December, 31).

In table 6-23, welfare effects of these 2 systems (intervention buying and production quota) are analysed. The production and consumption quantities are taken from International Olive Oil Council.

Example for the welfare effect of intervention buying in olive oil (2009/10):

If market price support (intervention buying) was applied in the olive oil sector, the equivalent intervention price would be 7.020 TL/t (producer price + deficiency payment).

2009/10 Olive Oil Statistics in Turkey

Production level (pl): 147.000 tonnes

Consumption level (cl): 110.000 tonnes

Olive oil producer price (op): 6.770 TL/t

Deficiency payment: 250 TL/t

Intervention price: 7.020TL/t

To find the production and consumption levels at intervention price, the supply-price elasticity and demand-price elasticity formulas are used:

(ε * production level (or consumption level)) = β * price)

ε * pl = β *op

Calculation of Supply model:

ε = 0,05

ε* lnpl = β * lnop (pl=147.000, op=6.770)

0,05 * 11,90 = β * 8,82

β = 0,07

α = lnpl - β * lnop

α = 11,90 – 0,07* 8,82

α = 11,30

Logarithmic Expression of Supply Model is:

S = 11,30+0,07*lnop (S=lnpl)

Calculation of Demand Model:

ε * cl = β *op

ε = -0,17

ε* lncl = β * lnop (cl=110.000, op=6.770)

-0,17 * 11,61=β * 8,82

β = -0,22

α = lncl - β* lnop

α = 11,61– (-0,22 *8,82)

α = 13,58

Logarithmic Expression of Demand Model is:

D = 13,58 – 0,22 * lnop (D=lncl)

Market Equilibrium Price and Quantity (logarithmic values)

Supply = Demand (lnpl=lncl)

11,30+0,07*lnop = 13,58 – 0,22 * lnop

lnop=7,83 (Logaritmic value of olive oil equilibrium price)

op= $e^{7,83}$ = 2.509

S = 11,30+0,07*lnop (S= ln pl_{eq})

ln pl_{eq} = 11,30+0,07*7,83

ln pl_{eq} =11,83

$pl_{eq} = e^{11,83}$ = 137.353

Equilibrium production level would be 137.353 tonnes at price level 2.509 TL/t.

a. Production quantity at intervention price

S = 11,30+0,07*lnop (S= $\ln pl_1$) (op=7.020 TL/t)

$\ln pl_1$ = 11,30+0,07*8,86

$\ln pl_1$ = 11,90

$pl_1 = e^{11,90}$ = 147.365

b. Consumption quantity at intervention price

D = 13,58 – 0,22 * lnop (D= $\ln cl_1$) (op=7.020 TL/t)

$\ln cl_1$ = 13,58 – 0,22 *8,86

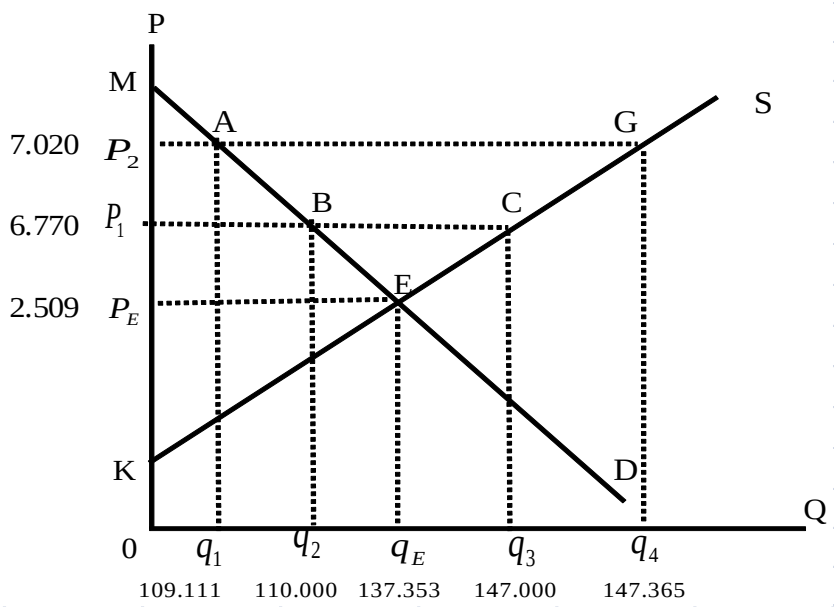
$\ln cl_1$ = 11,60

$cl_1 = e^{11,60}$ = 109.111

Production and consumption quantities at intervention price would be 147.365 and 109.111 tonnes, respectively.

The figure 6-7 shows the production and consumption levels at three situations.

Figure 6-7: Supply and Demand in Olive Oil (2009)



Welfare Effects of Policy Options

	Equilibrium	Intervention Buying	Deficiency Payment
Production (t):	137.353	147.365	147.000
Consumption (t):	137.353	109.111	110 .000
Producer price (TL/t):	2.509	7.020	6.770
Premium payment (TL/t):	-	-	250
Producer Surplus	K E Pe	K G P2	K C P1
Change in Producer Surplus	-	E G P2 Pe	E C P1 Pe
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	-A E P2 Pe	-B E P1 Pe

c. Change in Producer Surplus:

Increase in producer surplus in intervention buying policy
(area E G P2 Pe)= ((q4+qe)/2)*(P2-Pe)
((147.365 + 137.353)/2)*(7.020 – 2.509) = 642.181.449 TL

In intervention buying, producer surplus increases by 642 million TL relative to the equilibrium situation.

Change in producer surplus in deficiency payment policy
(area E C P1 Pe)= ((q3+qe)/2)*(P1-Pe)
((147.000+ 137.353)/2)*(6.770 – 2.509) = 605.814.067 TL

At the reference price, producer surplus increases by 606 million TL relative to the equilibrium situation.

In intervention buying, the high producer price would cause an increase in producer's gain and so producer surplus. In intervention buying policy, producer surplus increases by 642 million TL (relative to the equilibrium situation) by 36 million TL (relative to the deficiency payment).

d. Change in Consumer Surplus:

Decrease in consumer surplus in intervention buying policy
(area A E P2 Pe)= ((q1+qe)/2)*(P2-Pe)
((109.111+137.353)/2)*(2.509 – 7.020) = -555.899.552 TL

The consumer surplus decreases by 556 million TL in the intervention buying policy.

Decrease in consumer surplus in the deficiency payment
(area B E P1 Pe)= ((q2+qe)/2)*(Pe-P1)
((110.000+137.353)/2)*(2.509 – 6.770) = -526.985.567 TL

In intervention buying, the price is high so, the consumption quantity decreases and the consumer surplus is lower. In intervention buying policy, consumer surplus decreases by 556 million TL. In deficiency payment system, consumer surplus decreases by 527 million TL when compared with the equilibrium situation.

e. Export Subsidies

In 2009, the export quantity was 29.500 tonnes[255] and the export subsidy was 100 $/ton (149,45 TL/t) [256]. So total cost of export subsidies is 4,4 million TL:

Total export subsidies = 29.500 * 149,45= 4.408.775 TL

Costs of Intervention Buying and Deficiency Payment would be:

f. Deficiency Payment

In 2009, the olive oil quantity eligible for premium payment was 47.000 tonnes and the premium payment was 250 TL/t. Total premium payment is 11,75 million TL.

Total Premium = 47.000*250 = 11.750.000 TL

[255] See Table 4-33, p. 107.
[256] $ Exchange rate : 1,4945 (31.12.2009, TCMB).

g. Intervention Buying

Suppose that, intervention buying system is applied in the sector. The purchased quantity is taken as 47.000 tonnes which is the quantity eligible for premium payment. Total cost of intervention buying is 329,94 million TL in 2009:

Costs = 47.000 *7.020 = 329.940.000 TL

h. Total welfare

The welfare loss of the intervention buying is high when compared with the deficiency payment system (Table 6-23). In 2009, total welfare is calculated as 91 million TL in deficiency payment policy and -244 million TL in intervention buying policy. In intervention buying, the price is high so, the consumption quantity decreases and the consumer surplus is lower. The budget cost is higher in the intervention buying system, so deficiency payment policy seems better policy in olive oil.

Furthermore, market price distortion effect of deficiency payment policy is lower than of intervention buying policy.

6.3.4 WELFARE ANALYSIS OF EU ACCESSION IMPACT ON TURKISH OLIVE OIL MARKET

The European Union accession impact is analysed for the Turkish olive oil market. There are two cases in the Table: First case is the non EU membership (OUT EU) and the continuation of the present olive oil support policy in Turkey. The second case is the EU membership situation (IN EU) and the implication of EU olive oil support policy in Turkey.

The production quantities of olive oil after 2010 are estimated according to the periodicity in olive yield in the last ten years (2000-2009). The production quantity of olive oil increased by 55,9% on average in the years with even numbers (relative to the one year before) and decreased by 19,2% on average in the years with odd numbers (relative to the one year before).

The olive oil prices after 2010 are inflation adjusted price. The prices are estimated by using GDP deflator in Turkey which is estimated by OECD FAO Agricultural Outlook 2010-2019. It is 6,8% in 2010, and estimated as 5,5% for 2011. From 2012 onwards, GDP deflator in Turkey is estimated as 6% by OECD. The EU olive oil price after 2014 is found by using estimated GDP deflator of European Union (Annex, p. 328). For converting the EU prices from Euro to TL, the euro/TL exchange rates after 2014 are estimated by using the difference between GDP deflator in Turkey and GDP deflator in EU, which are estimated by OECD FAO Agricultural Outlook 2010-2019.

The consumption quantities after 2010 are estimated by multiplication of population with the per captia consumption. In the last years the per capita consumption of olive oil was 1,5 lt. It is assumed that per capita consumption is unchanged in the following years and it is 1,5 lt. Table 6-24 shows the production and consumption quantities and the olive oil prices.

Table 6-24: Olive Oil Production, Consumption and Price Estimations

Year	Production quantity (t)	Price (TL/t)	Consumption Quantity (t)
2000	175.000	1.504	72.500
2001	65.000	3.417	55.000
2002	140.000	4.556	50.000
2003	79.000	4.030	46.000
2004	145.000	4.250	60.000
2005	112.000	5.790	50.000
2006	165.000	6.880	80.000
2007	72.000	6.320	85.000
2008	130.000	6.000	108.000
2009	147.000	6.770	110.000
2010	160.000	7.230	109.505
2011	129.338	7.628	110.925
2012	201.692	8.086	112.328
2013	163.040	8.571	113.717
2014	254.247	9.085	115.061
2015	205.524	9.630	116.402
2016	320.497	10.208	117.717
2017	259.078	10.821	119.006
2018	404.010	11.470	120.260
2019	326.586	12.158	121.475

Supposed that, Turkey applies European Union's olive oil policy after EU accession. Table 6-25 compares the EU membership and non EU membership situations.

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the IN-EU and OUT-EU situations are compared with equilibrium situation.
4. The EU and TR producer prices are wholesale prices of extra virgin olive oil.
5. Producer price is also consumer price.
6. Possible impact of Doha Round completion is ignored.

IN-EU Assumptions:

7. It is assumed that, the EU olive oil policy started to be applied in 2015 in Turkey (after the possible accession in 2014).
8. No compensatory payments are taken into account due to the price reduction in olive oil in the IN-EU case.
9. The EU fund for the harmonization of Turkish agricultural policy to the CAP is ignored.
10. The Turkish olive oil producers receive production aid in the EU membership situation. The production aid payments are ignored in this calculation, so far it will be paid by the Union.

OUT-EU Assumptions:

11. The present Turkish olive oil policy (premium payments) continues after 2014 in the OUT-EU case.
12. In the last years, it is observed that, the premium payment is appr. 3% of the olive oil producer price. The premium payment is taken as 3% of the olive oil producer price in the OUT-EU case.
13. Export subsidy payments are ignored.

Table 6-25: EU Accession Impact on Turkish Olive Oil Market

	2015		2016		2017	
	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices						
EU Producer price €/t	2.344	2.344	2.391	2.391	2.439	2.439
EU Producer priceTL/t	6.767	6.767	7.178	7.178	7.615	7.615
TR Producer price TL/t	9.630	6.767	10.208	7.178	10.821	7.615
Equilibrium price	1.315	1.315	301	301	682	682
Quantities (1000 t)						
Production	206	201	320	313	259	253
Consumption	116	126	118	127	119	128
Export	89	75	203	186	140	125
Equilibrium quantity	179	179	251	251	215	215
Welfare Effect (million TL)						
Producer surplus	1.599	1.035	2.832	1.939	2.403	1.622
Consumer surplus	-1.228	-830	-1.827	-1.300	-1.693	-1.190
Deficiency Payment	-59	0	-98	0	-84	0
Total welfare	**312**	**204,3**	**906**	**638,9**	**626**	**432,3**

	2018		2019	
	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices				
EU Producer price €/t	2.488	2.488	2.537	2.537
EU Producer priceTL/t	8.077	8.077	8.569	8.569
TR Producer price TL/t	11.470	8.077	12.158	8.569
Equilibrium price	157	157	353	353
Quantities (1000 t)				
Production	404	394	327	319
Consumption	120	130	121	131
Export	284	265	205	188
Equilibrium quantity	300	300	257	257
Welfare Effect (million TL)				
Producer surplus	3.981	2.749	3.444	2.365
Consumer surplus	-2.376	-1.700	-2.233	-1.592
Deficiency Payment	-139	0	-119	0
Total welfare	**1.466**	**1.048,3**	**1.092**	**772,7**

An example of welfare analysis for the 2015/2016 marketing year:

First case (OUT EU):
TR olive oil price (op): 9.630 TL/t
EU olive oil price: 6.767 TL/t
Production level (pl): 205.524 tonnes
Consumption level (cl): 116.402 tonnes

Second case (IN EU):
To find the olive oil production and consumption levels at EU price level in Turkey, the supply-price elasticity and demand-price elasticity formulas are used.

(ε * production level (or consumption level)) = β * price)

ε * pl = β *op

Calculation of Supply model:

ε = 0,05

ε* lnpl = β * lnop (pl=205.524, op=9.630)

0,05 * 12,23 = β * 9,17

β = 0,07

α = lnpl - β * lnop

α = 12,23 – 0,07* 9,17

α = 11,60

Logarithmic Expression of Supply Model is:

S = 11,60 +0,07*lnop (S= lnpl)

Calculation of Demand Model:

ε * cl = β *op

ε = -0,17

ε* lncl = β * lnop (cl= 116.402, op=9.630)

-0,17 * 11,66= β * 9,17

β = -0,22

α = lncl - β * lnop

α = 11,66– (-0,22 *9,17)

α = 13,65

Logarithmic Expression of Demand Model is:

D = 13,65 – 0,22 * lnop (D=lncl)

Market Equilibrium Price and Quantity (logarithmic values)

Supply = Demand (lnpl=lncl)

11,60 +0,07*lnop = 13,65 – 0,22 * lnop

lnop=7,18 (Logaritmic value of olive oil equilibrium price)

op= $e^{7,18}$ = 1.315

Equilibrium price: 1.315 TL/t

S = 11,60 +0,07*lnop (S= ln pl_{eq}) (op=1.315)

ln pl_{eq} = 11,60 +0,07*7,18

ln pl_{eq} =12,10

$pl_{eq} = e^{12,10}$ = 179.018

Equilibrium production level would be 179.018 tonnes.

a. Production quantity at EU price (op=6.767)

S = 11,60 +0,07*lnop (S= ln pl_1)

ln pl_1 = 11,60 +0,07*8,82

ln pl_1 = 12,21

$pl_1 = e^{12,21}$ = 200.556

b. Consumption quantity at EU price (op=6.767)

D = 13,65 – 0,22 * lnop (D= $\ln cl_1$)

$\ln cl_1 = 13{,}65 - 0{,}22 * 8{,}82$

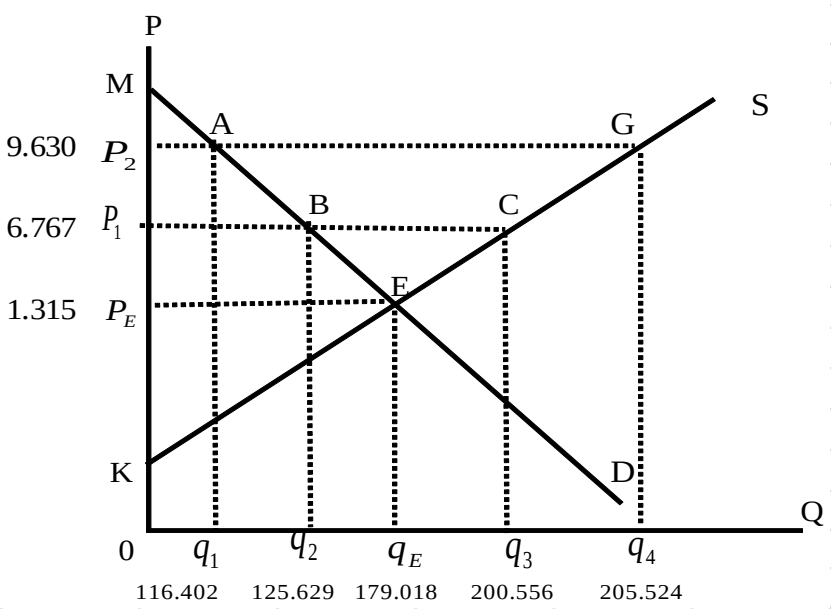
$\ln cl_1 = 11{,}74$

$cl_1 = e^{11{,}74} = 125.629$

Production and consumption quantities at EU price would be 200.556 and 125.629 tonnes, respectively.

The figure 6-8 shows the supply and demand in the olive oil sector at three situations for the marketing year 2015.

Figure 6-8: Supply and Demand in Olive Oil (2015)



The EU price (6.767 TL/t) causes a decrease in the production quantiy to 200.556 tonnes and an increase in consumption quantity to 125.629 tonnes (when compared with OUT-EU situation).

Welfare Effects of Policy Options

	Equilibrium	OUT-EU	IN-EU
Production (t):	179.018	205.524	200.556
Consumption (t):	179.018	116.402	125.629
Producer price (TL/t):	1.315	9.630	6.767
Producer Surplus	K E Pe	K G P2	K C P1
Change in Producer Surplus	-	E G P2 Pe	E C P1 Pe
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	-A E P2 Pe	-B E P1 Pe

c. Change in Producer Surplus:

Increase in producer surplus in OUT-EU situation
(area E G P2 Pe)= ((q4+qe)/2)*(P2-Pe)
((205.524+179.018)/2)*(9.630 – 1.315) = 1.598.774.102 TL

In OUT-EU, producer surplus increases by 1.598 million TL.

Change in producer surplus in IN-EU situation
(area E C P1 Pe)= ((q3+qe)/2)*(P1-Pe)
((200.556+179.018)/2)*(6.717 – 1.315) = 1.034.718.724 TL

In the case of EU membership, producer surplus increases by 1.035 million TL due to the price reduction.

d. Change in Consumer Surplus:

Decrease in consumer surplus in OUT-EU situation
(area A E P2 Pe)= ((q1+qe)/2)*(Pe-P2)
((116.402+179.018)/2)*(1.315 – 9.630) = -1.228.239.946 TL

Decrease in consumer surplus in IN-EU situation
(area B E P1 Pe)= ((q2+qe)/2)*(Pe-P1)

((125.629+179.018)/2)*(1.315 – 6.767) = -830.467.722 TL

Consumer surplus decreases by 830 million TL in the case of EU accession, and by 1.228 million TL in the OUT-EU scenario (relative to the equilibrium situation).

e. Deficiency Payment

Deficiency payments in the last years in olive oil are approximately 3% of the olive oil price. If the deficiency payment policy continues in the OUT-EU situation, it is supposed that the premiums will be 3% of the olive oil price. The table below shows the total deficiency payments. It is supposed that all the farmers are registered in the National Farmer Registration System and so total estimated production quantity after 2014 is eligible for the aid.

Year	Producer Price (TL/t)	Deficiency Payment (TL/t)	Production quantity (tons)	Total Deficiency Payments (TL)
2015	9.630	289	205.524	59.375.884
2016	10.208	306	320.497	98.149.001
2017	10.821	325	259.078	84.104.491
2018	11.470	344	404.010	139.019.841
2019	12.158	365	326.586	119.118.978

In 2015/16 marketing year, cost of total deficiency payment is 59 million TL

Total Welfare (c+d+e)

Total welfare is the sum of producer and consumer surplus minus cost of deficiency payment (in OUT-EU scenario). Total welfare decreases in the EU accession case. In the 2015/16 marketing year, total welfare is 312 million TL in the non EU membership situation, but 204 million TL in the EU membership situation.

EU Accession Impact on Turkish Olive Oil Market

When we compare the EU accession situation with the OUT-EU situation, we can say that there is significant fall in olive oil prices in the EU membership case. The olive oil price decreases by 30% in in the observed period. The EU membership case has positive effect in consumption, but negative effect in production. Production decreases by 2,4% but

consumption increases by 7,8% in the observed period. In the IN-EU case, the producer surplus decreases and the consumer surplus increases because of the low prices. In the IN-EU case, total welfare decreases by appr. 30% in the observed years. The CAP supports (which are ignored here) will be crucial for the producer and total welfare in the EU accession situation.

Table 6-26: EU Accession Impact on Turkish Olive Oil Market (comparison with the OUT-EU situation)

Impact (%)	2015	2016	2017	2018	2019
Price change	-29,7	-29,7	-29,6	-29,6	-29,5
Production change	-2,4	-2,4	-2,3	-2,4	-2,3
Consumption change	7,9	7,9	7,8	7,7	7,7
Total welfare change	-34,4	-29,5	-30,9	-28,5	-29,2

6.3.5 WELFARE ANALYSIS OF DOHA ROUND IMPACT ON TURKISH OLIVE OIL MARKET

Export subsidies will be abolished in 2013 in developed countries and in 2016 in developing countries. The elimination of the export subsidy in a country will let to a fall in the domestic prices. In this part, the effect of export subsidy elimination in Turkey will be analysed for the marketing year 2017. Two cases (export subsidy application and export subsidy elimination are compared with each other).

In 2009/2010, the average olive oil export price was 3.400 $/t[257] and the export subsidy payment was 100 $ for 1 ton[258]. In this case, the exporter receives a subsidy of 2,9% (100/3.400) of the export price. In 2010/2011 export subsidy payment was 80 $/t.

In 2017, the olive oil price would be 10.821 TL/t (table 6-24, p. 249). After elimination of export subsidy in 2016, the olive oil price would decrease to 10.507 TL/t (10.821 – (10.821*2,9%)) in 2017.

[257] TC Sanayi ve Ticaret Bakanlığı, 2010, p. 12.
[258] Export subsidy payments are given in the table 4-41, p. 119.

Effect of export subsidy elimination

a. Production at P1 price level (figure 6-9)

Supply price elasticity (ε_S): 0,05

$$\varepsilon_s = \frac{\text{percentage change in quantity supplied}}{\text{percentage change in price}}$$

$$\varepsilon_S = \frac{\frac{q4 - q3}{q4 + q3}}{\frac{p2 - p1}{p2 + p1}}$$

q3 Production level at P1 (without export subsidy payment)

q4 Production level at P2 (with export subsidy payment)[259]

p2 Producer price (with export subsidy payment)

p1 Producer price (without export subsidy payment)

$$\frac{259.078 - q3}{10.821 - 10.507} * \frac{10.821 + 10.507}{259.078 + q3} = 0{,}05$$

q3 = 258.887

b. Consumption at P1 price level

Demand price elasticity (ε_D): -0,17

$$\varepsilon_D = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

$$\varepsilon_D = \frac{\frac{q1 - q2}{q1 + q2}}{\frac{p2 - p1}{p2 + p1}}$$

[259] Price, production and consumption quantities are given in the table 6-24, p. 249.

q2 Consumption level at P1 (without export subsidy payment)

q1 Consumption level at P2 (with export subsidy payment)

p2 Producer price (with export subsidy payment)

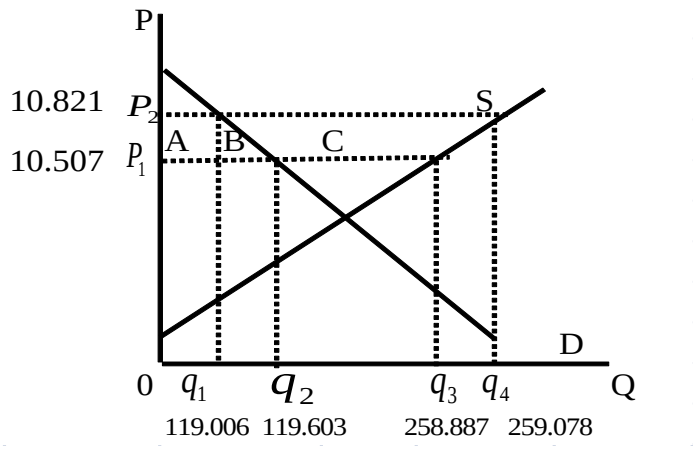
p1 Producer price (without export subsidy payment)

$$\frac{119.006 - q2}{10.821 - 10.507} * \frac{10.821 + 10.507}{119.006 + q2} = -0{,}17$$

q2 = 119.603

After export subsidy elimination, the price will fall by 2,9%. The production decreases by 0,07% and the consumption increases by 0,5%. So, there won't be a significant change in the olive oil. The figure shows the production and consumption levels with and without export subsidy payment.

Figure 6-9: Export Subsidy Effect in Olive Oil (2017)



Export subsidy payment is 80 $/t (215 TL/t)[260] in 2010. Assume that, the export subsidy payment will not change in the following years and the export quantity is 140.072 (259.078 – 119.006) tonnes in the first case. So, total export subsidy payment would be the multiplication of export quantity with the export payment:

Total export subsidy payment in 2017 = 215 * 140.072

[260] $/TL Exchange rate is estimated as 2,6923 for the year 2017 (Annex, p. 323). For converting the subsidy payment from Dollar to TL, the $/TL exchange rates after 2014 are estimated by using the GDP deflator in Turkey, which is estimated by OECD FAO, 2010.

= 30.115.480

The cost of export subsidy payment would be 30 million TL.

Table 6-27: Welfare Effects of Export Subsidies in Olive Oil (2017, million TL)

Welfare Effects on Economy	**Formula**	**Export Subsidy**	**Export Subsidy Elimination**
Change in Producer Surplus Area (A+B+C)	$\frac{259.078+258.887}{2} * (10.821-10.507)$	**81**	**-81**
Change in Consumer Surplus Area (A+B)	$\frac{119.006+119.603}{2} * (10.507-10.821)$	**-37**	**37**
-Export Subsidy Payment	140.072*215	**-30**	
Total Welfare		**13,8**	**-43,9**

Export subsidy does not have a significant effect in the production and consumption quantities. Nevertheless, export subsidy has an impact in domestic prices. The elimination of the subsidy reduces the domestic price which raises the consumer surplus (Table 6-27). The export subsidy elimination reduces the producer surplus due to the lower domestic price. Total welfare is 13,8 million TL in the first case, and -43,9 million TL in the second case (export subsidy elimination situation).

6.4 RESULTS AND EVALUATION OF MILK SUPPORT POLICIES

6.4.1 PRODUCER SUPPORT ESTIMATE

OECD uses the data below for the calculation of the PSE in milk:

Production level is the total production of cow's milk, calendar year.
Reference price of milk is the border prices of butter and SMP converted into a milk equivalent border price using technical coefficients minus a processing margin, calendar year. The border prices of butter and of SMP are the unit c.i.f. import values. The processing margin is calculated as a simple average of the processing margins for the four main exporting countries: Australia, EU, New Zealand and the United States.
Producer price of milk is the average TSEK (Türkiye Süt Endüstrisi Kurumu) purchase prices for raw milk.

Table 6-28 shows the Producer Support Estimates in milk. The PSE in milk is really high in the observed years. The milk producer prices are significantly higher than the reference prices. Especially in the last years, the market price differential between producer and reference price has a large gap.

Table 6-28: Producer Suport Estimate in Milk in Turkey

Year/ Unit	Reference Price	Producer Price	Market Price Differential (MPD)	Quantity Produced (QP)	Quantity Consumed (QC)	Market Transfers			Market Price Support (MPS)	Payments based on output	Producer SCT	% Producer SCT	Consumer SCT	Consumer NPC
						Transfers to producers from consumers (TPC)	Other transfers from consumers (OTC)	Excess feed cost (EFC)						
	(TL/t)	(TL/t)	(TL/t)	(1000 t)	(1000 t)	TL bn	TL bn	TL bn	TL bn	TL bn	TL bn	%	TL bn	%
1986	0,04	0,11	0,07	5.024	5.082	0	0	0	0	0,0	0,3	58,6	-0,4	2,90
1987	0,06	0,14	0,07	5.167	5.244	0	0	0	0	0,0	0,3	44,9	-0,4	2,20
1988	0,11	0,25	0,14	5.484	5.522	1	0	0	1	0,0	0,8	55,4	-0,8	2,29
1989	0,22	0,43	0,21	5.359	5.390	1	0	0	1	0,0	1,2	49,7	-1,2	1,98
1990	0,15	0,74	0,60	5.249	5.414	3	0	0	3	0,1	2,9	73,6	-3,2	5,00
1991	0,14	1,14	1,00	5.629	5.885	6	0	1	5	0,1	5,1	78,7	-5,9	8,08
1992	0,59	2,10	1,51	5.759	6.063	9	0	1	8	0,1	7,9	64,9	-9,2	3,58
1993	1,37	3,14	1,77	5.903	6.129	10	0	2	9	0,1	9,0	48,4	-10,8	2,29
1994	3,59	8,07	4,48	6.019	6.157	27	1	1	26	0,6	26,6	54,1	-27,6	2,25
1995	7,84	15,99	8,15	6.136	6.269	50	1	0	50	1,8	51,8	51,8	-51,1	2,04
1996	12,79	27,18	14,38	6.282	6.413	90	2	6	84	4,8	89,2	50,8	-92,3	2,12
1997	23,06	50,59	27,53	6.010	6.180	165	5	20	146	6,4	152,1	49,0	-170,2	2,19
1998	40,85	104,47	63,62	5.975	6.176	380	13	58	322	8,2	330,7	52,3	-392,9	2,56
1999	59,35	156,90	97,55	7.520	7.744	734	22	77	657	10,4	667,4	56,1	-755,4	2,64
2000	92,88	221,61	128,73	7.342	7.422	945	10	66	879	11,7	890,9	54,4	-955,5	2,39
2001	236,93	296,14	59,21	7.424	7.472	440	3	17	422	11,7	434,0	19,6	-442,4	1,25
2002	215,51	409,34	193,83	6.900	7.009	1.337	21	39	1.299	17,5	1.316,4	46,3	-1.359	1,90
2003	261,98	529,16	267,19	7.629	7.833	2.038	55	215	1.824	38,2	1.861,9	45,7	-2.093	2,02
2004	335,92	603,64	267,72	10.338	10.508	2.768	46	237	2.530	65,0	2.595,2	41,2	-2.813	1,80
2005	338,18	633,66	295,47	10.026	10.195	2.962	50	255	2.708	116,0	2.823,7	43,7	-3.012	1,87
2006	325,64	708,15	382,51	10.867	11.017	4.157	57	209	3.947	161,5	4.108,8	52,3	-4.214	2,17
2007	508,17	716,64	208,47	12.300	12.470	2.564	35	38	2.526	177,5	2.704,0	30,1	-2.600	1,41
2008	513,83	797,86	284,03	12.240	12.460	3.476	62	143	3.334	0,3	3.333,9	34,1	-3.539	1,55
2009	430,24	710,24	280,00	12.061	12.211	3.377	42	362	3.015	0,2	3.015,0	35,2	-3.419	1,65

Source: OECD, 2011a.

The results of Producer Support Estimate (PSE) show that, the milk prices in Turkey are really high. However, when we compare the milk prices in the European Union and in Turkey, it can be said that prices in the EU were also high until 2009 (Table 6-29). In 2009, the milk price was 710 TL/t in Turkey, while it was 576 TL/t in the EU.

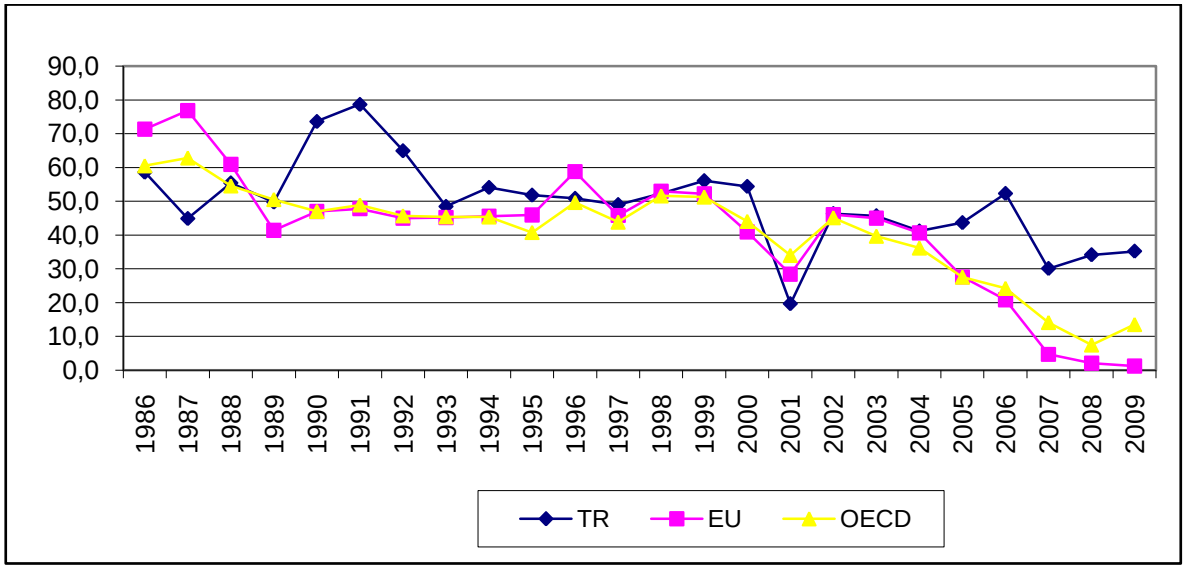
Table 6-29: Milk Producer Price and Support Level in European Union

	Unit/ Year	2005	2006	2007	2008	2009
EU milk producer price	€/t	290	278	318	342	267
EU milk producer price	TL/t	463	517	544	732	576
TR milk producer price	TL/t	634	708	717	798	710
€/TL exchange rate		1,5952	1,8604	1,7142	2,1435	2,153

Sources: OECD, 2011a.

OECD, 2011b.

Graph 6-3: Comparison of Milk PSE Levels between EU, OECD and TR



Source: OECD, 2011a, 2011b, 2011c.

The Milk PSE levels in European Union, Turkey and of OECD average are shown in the Graph 6-3. The Milk PSE in Turkey is higher than the EU and OECD levels. Especially, after 2006, the PSE levels of EU and OECD had a declining trend, while the milk PSE in Turkey increased and reached its highest level of 52,3% in 2006. In 2009, PSE was recorded as 35%. That means, in 2009, 35% of the farmer's earnings come from policy

induced transfers, and the remaining come from the value of sales measured at border prices (that is, not including price support).

Consumer Support Estimate is negative in milk. The CSE values are really low in the last years. This shows the transfer from consumers due to the high producer prices. The consumers pay more than reference prices in Turkey. Consumer NPC is between 1,5 and 2 in the last years which shows that consumer pays 1,5 – 2 times of the reference price.

6.4.2 ESTIMATION OF MILK SUPPLY AND DEMAND PARAMETERS

The data are time series and represent 20 years, from 1990 to 2009. Demand and supply equations were estimated for the milk sector in order to conduct classic welfare analysis.

Explanatory variables like milk price, milk yield (animal-head/milk production quantity), milk feed price, meat price, number of milked animals, milk incentive premium, 1994 and 2001 economic crisis as dummy variable (1994 and 2001 are indicated as "1" and the other years are shown as "0") and world food crisis years (2007 and 2008 are indicated as "1" and the other years are shown as "0") are used in different combinations in order to estimate milk production model. Only milk price, milk yield, milk feed price and food crisis dummy are selected as explanatory variables because they are closely related to production level (the other variables are not selected because they are insignificant in the model). The best fitted model is shown and tested below.

The best fitted milk production model:

Dependent variable		Coefficient	Std. Err	t-Statistic	Prob.
lnpl	Milk production level				
Constant parameter		1.45	0.59	2.47	0.0260
lnmp(-1)	Milk price	0.19	0.05	3.34	0.0045
lnfeed(-1)	Milk feed price	-0.18	0.06	-3.08	0.0076
lny	Milk yield	0.97	0.08	12.03	0.0000
dm	Food crisis dummy	0.07	0.04	1.99	0.0643

R-squared	0.98	Adjusted R-squared	0.97
F-statistic	214.5460	Prob (F-statistic)	0.000000

Tests			
B-G LM (nR2) Lags=1	1.179720	B-G LM (Prob. nR2)	0.277413
B-G LM (nR2) Lags=2	2.927601	B-G LM (Prob. nR2)	0.231355
Jarque-Bera	0.571786	Jarque-Bera (prob.)	0.751343
White Heteroscedasticity (nR2)	12.05761	White Heteroscedasticity (Pr.nR2)	0.098680
Ramsey-Reset (F-statistic)	1.991410	Ramsey-Reset (Prob. F-st)	0.176022

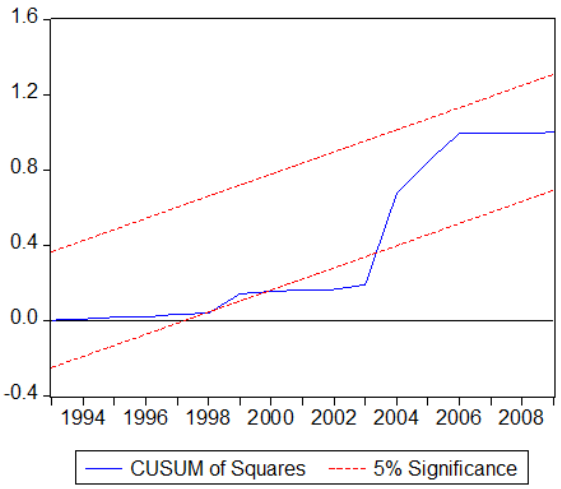
The model is:

$$lnpl = 1{,}45 + 0{,}19\ lnmp_{t-1} - 0{,}18 lnfeed_{t-1} + 0{,}97 lny - 0{,}07 dm$$

Supply Price Elasticity of milk is 0,19.

When estimating the milk consumption model, milk price, population, GDP, 1994 and 2001 economic crisis, world food crisis were used. Population which can affect the consumption level was not used because it was insignificant. 1994 and 2001 economic crisis and world food crisis were also used as dummy variables but they were also insignificant. Only milk price and GDP (an increase in GDP can stimulate wheat consumption) were selected as explanatory variables in the milk consumption model. However, structural breakpoint occured in the model below as seen in the CUSUMSQ graph.

Dependent variable lncl Milk consumption level	Coefficient	Std. Err	t-Statistic	Prob.
Constant parameter	4.65	0.74	6.24	0.0000
lnmp Milk price	-0.65	0.14	-4.49	0.0003
lngdp GDP	0.66	0.13	5.20	0.0001



Finally, the structural breakpoint years (1997, 1998, 2000-2004) were added as dummy variable in the model. So, the best fitted model is presented below.

The best fitted milk consumption model:

Dependent variable		Coefficient	Std. Err	t-Statistic	Prob.
lncl	Milk consumption level				
Constant parameter		6.05	0.79	7.63	0.0000
lnmp	Milk price	-0.36	0.16	-2.33	0.0333
lngdp	GDP	0.42	0.13	3.11	0.0067
dm	Structural breakpoint	-0.16	0.05	-2.87	0.0111

R-squared	0.91	Adjusted R-squared	0.90
F-statistic	58.41781	Prob (F-statistic)	0.000000

Tests

Durbin-Watson d	1.43		
Jarque-Bera	0.140220	Jarque-Bera (prob.)	0.932291
White Heteroscedasticity (nR2)	3.094028	White Hetersocedasticity (Pr.nR2)	0.685492
Ramsey-Reset (F-statistic)	2.937910	Ramsey-Reset (Prob. F-st)	0.086024
B-G LM (nR2) Lags=1	1.966492	B-G LM (Prob. nR2)	0.160821
B-G LM (nR2) Lags=2	2.138051	B-G LM (Prob. nR2)	0.343343

The model is:

lncl= 6,05 – 0,36lnmp + 0,42lngdp – 0,16dm

Demand Price Elasticity is -0,36.

One research study was found which searched the milk supply and demand price elasticities:

Research Studies	Milk supply price elasticity	Milk demand price elasticity
Taylan Kıymaz (2008)	0,036	-0,18

6.4.3 WELFARE ANALYSIS OF EUROPEAN UNION ACCESSION IMPACT ON TURKISH MILK MARKET

The European Union accession impact is analysed for the Turkish milk (cow's milk) market. There are 2 scenarios:
First scenario is the non EU membership situation and the continuation of premium payment system (OUT-EU).
Second scenario is the EU membership situation and the implication of EU milk price (IN-EU).

In OECD FAO Agricultural Outlook 2010-2019 and 2011-2020 database, the milk production, consumption and milk prices in Turkey and in European Union are estimated for the years between 2011-2020.[261]

To examine the second case, by using the estimated statistics in OECD FAO research, the welfare effect of EU accession is analysed for Turkey between 2015-2019.

Supposed that, Turkey applies European Union's milk prices after EU accession. Table 6-30 compares the EU membership (IN-EU) and non EU membership (OUT-EU) situations.

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the IN-EU and OUT-EU situations are compared with the equilibrium situation. Equilibrium is the situation where there is no implementation of support policy.
4. Producer price is also the consumer price.
5. All prices are adjusted to the farm gate.
6. Possible impact of Doha Round (its possible completion) is ignored.

[261] See Annex, p. 327.

IN-EU Assumptions:

7. It is assumed that, the EU milk price policy started to be applied in 2015 in Turkey (after the possible accession in 2014).
8. No compensatory payments are taken into account due to the price reduction in wheat in the IN-EU case.
9. The EU fund for the harmonization of Turkish agricultural policy to the CAP is ignored.

OUT-EU Assumptions:

10. The present Turkish milk policy (premium payments) continues after 2014 in the OUT-EU case.
11. In the last years, it is observed that, the premium payment is appr. 5% of the milk producer price. The premium payment is taken as 5% of the milk producer price in the OUT-EU case.

Table 6-30: EU Accession Impact on Turkish Milk Market

	2015		2016		2017	
	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices						
EU Producer price €/t	256	256	257	257	264	264
EU Producer priceTL/t	739	739	772	772	824	824
TR Producer price TL/t	1.664	739	1.800	772	1.955	824
Premium Payment TL/t	83		90		98	
Equilibrium price TL/t	1.623	1623	1.757	1757	1.910	1910
Quantities (1000 t)						
a. Production	12.451	8.994	12.826	8.992	13.207	9.224
b. Consumption	12.083	22.973	12.461	24.225	12.845	25.142
Net trade	368	-13.979	366	-15.233	363	-15.918
Equilibrium quantity	12.326	12.326	12.698	12.698	13.080	13.080
Welfare Effect (million TL)						
c Producer surplus	513	-9.424	553	-10.682	596	-12.111
d. Consumer surplus	-505	15.602	-545	18.184	-587	20.754
e. Premium Payment	-1.036	0	-1.155	0	-1.291	0
f. Total welfare	**-1.029**	**6.179**	**-1.147**	**7.502**	**-1.283**	**8.643**

	2018		2019	
	OUT-EU	IN-EU	OUT-EU	IN-EU
Prices				
EU Producer price €/t	270	270	280	280
EU Producer priceTL/t	877	877	946	946
TR Producer price TL/t	2.126	877	2.314	946
Premium Payment TL/t	106		116	
Equilibrium price TL/t	2.078	2078	2.263	2263
Quantities (1000 t)				
a. Production	13.599	9.442	13.976	9.701
b. Consumption	13.239	26.199	13.616	26.964
Net trade	360	-16.757	360	-17.263
Equilibrium quantity	13.473	13.473	13.850	13.850
Welfare Effect (million TL)				
c Producer surplus	656	-13.761	703	-15.508
d. Consumer surplus	-648	23.823	-694	26.876
e. Premium Payment	-1.446	0	-1.617	0
f. Total welfare	**-1.437**	**10.062**	**-1.608**	**11.368**

An example of welfare analysis for the 2015/2016 marketing year:

First case (OUT-EU):
TR milk price (mp): 1.664 TL/t
EU milk price: 739 TL/t
Production level (pl): 12.451.330 tonnes
Consumption level (cl): 12.083.252 tonnes

Second scenario: IN-EU:
To find the production and consumption levels at EU price, the supply-price elasticity and demand-price elasticities are used:

From the elasticity formula ($\mathcal{E}$ * quantity = β * price), supply and demand models with price as only endogenous variable can be found.

($\mathcal{E}$ * production level (or consumption level)) = β * price)

$\mathcal{E}$ * pl = β *mp

<u>Calculation of Supply model:</u>

$\mathcal{E}$ = 0,19

$\mathcal{E}$* lnpl = β * lnmp (pl=12.451.330, mp=1.664)

0,19 * 16,34= β * 7,42

β = 0,40

α = lnpl - β * lnmp

α = 16,34 – 0,40* 7,42

α = 13,37

Logarithmic Expression of Supply Model is:

S = 13,37+0,40*lnmp (S=lnpl)

Calculation of Demand Model:

ε * cl = β *mp

ε = -0,36

ε* lncl = β * lnmp (cl=12.083.252, mp=1.664)

-0,36 * 16,31=β * 7,42

β = -0,79

α = lncl - β * lnmp

α = 16,31– (-0,79 *7,42)

α = 22,18

Logarithmic Expression of Demand Model is:

D = 22,18 – 0,79* lnmp (D=lncl)

Market Equilibrium Price and Quantity

Supply = Demand (lnpl=lncl)

13,37 +0,40*lnmp = 22,18 – 0,79* lnmp

lnmp=7,39 (Logaritmic value of milk equilibrium price)

mp= $e^{7,39}$ = 1.623

S = 13,37 +0,40*lnmp (S= ln pl_{eq})

ln pl_{eq} = 13,37 +0,40*7,39

ln pl_{eq} =16,33

$pl_{eq} = e^{16,33}$ = 12.326.398

Equilibrium production level would be 12.326.398 tonnes at the equilibrium price level of 1.623 TL/t.

a. Production level at EU price

S = 13,37 +0,40*lnmp (S= ln pl_1) (mp=739)

$\ln pl_1 = 13{,}37 + 0{,}40 * 6{,}61$

$\ln pl_1 = 16{,}01$

$pl_1 = e^{16{,}01} = 8.994.440$

Production quantity at EU price would be 8.994.440 tonnes.

b. Consumption level at EU price

D = 22,18 – 0,79* lnmp (D= $\ln cl_1$) (mp=739)

$\ln cl_1 = 22{,}18 - 0{,}79 * 6{,}61$

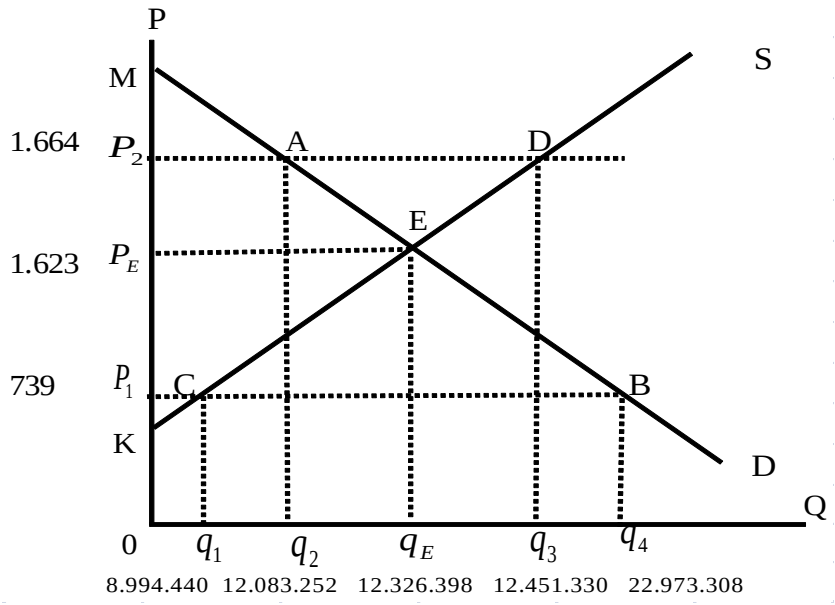
$\ln cl_1 = 16{,}95$

$cl_1 = e^{16{,}95} = 22.973.308$

Consumption quantity at EU price would be 22.973.308 tonnes.

The figure 6-10 shows the supply and demand in the milk sector at three situations for the marketing year 2015.

Figure 6-10: Supply and Demand in Milk (2015)



Welfare Effects of Policy Options

	Equilibrium	OUT-EU	IN-EU
Production (t):	12.326.398	12.451.330	8.994.440
Consumption (t):	12.326.398	12.083.252	22.973.308
Producer price (TL/t):	1.623	1.664	739
Premium payment (TL/t):	-	83	-
Producer Surplus	K E Pe	K D P2	K C P1
Change in Producer Surplus	-	E D P2 Pe	-(C E P1 Pe)
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	-(A E P2 Pe)	E B P1 Pe

c. Change in Producer Surplus:

Increase in Producer Surplus in OUT-EU case

(area E D P2 Pe) = ((q3+qe)/2)*(P2-Pe)

((12.451.330+ 12.326.398)/2)*(1.664 – 1.623) = 507.943.424 TL

In OUT-EU case, producer surplus increases by 508 million TL.

Change in Producer Surplus in IN-EU

(area C E P1 Pe) = ((q1+qe)/2)*(P1-Pe)

((8.994.440+ 12.326.398)/2)*(739 – 1.623) = -9.423.810.396 TL

In IN-EU case, producer surplus decreases by 9.424 million TL.

d.Change in Consumer Surplus:

Decrease in Consumer Surplus in OUT-EU case

(area A E P2 Pe)= ((q2+qe)/2)*(P2-Pe)

((12.083.252 + 12.326.398)/2)*(1.623 – 1.664) = -500.397.825 TL

The consumer surplus decreases by 500 million TL in the OUT-EU case.

Increase in Consumer Surplus in IN-EU case

(area E B P1 Pe)= ((q4+qe)/2)*(Pe-P1)

((22.973.308+ 12.326.398)/2)*(1.623 – 739) = 15.602.470.052TL

In IN-EU case, consumer surplus increases by 15.602 million TL. The price is low, so the consumption quantity decreases and the consumer surplus is higher.

e. Cost of premium payment

In the last years, it is observed that, the premium payment is appr. 5% of the milk producer price. If premium payment policy continues in the non EU membership situation, it is supposed that the premiums will be 5% of the milk price. The table shows the total premium payments. It is supposed that all the farmers are registered in the National Farming System and so total production is eligible for the aid.

Cost of premium payment:

Year	Producer Price (TL/t)	Premium Payment (TL/t)	Production quantity (t)	Total Premium Payments (TL)
2015	1.664	83	12.451.330	1.035.950.656
2016	1.800	90	12.826.320	1.154.368.800
2017	1.955	98	13.207.240	1.291.007.710
2018	2.126	106	13.599.420	1.445.618.346
2019	2.314	116	13.976.110	1.617.035.927

In 2015, cost of total premium payment is 1.035 million TL.

f.Total Welfare (c+d+e)

Total welfare is the sum of producer and consumer surplus minus cost of premium payment (in the first scenario). Total welfare is negative in the first scenario due to the high consumer price and cost of premium payments. But total welfare is positive in the second scenario (EU accession). The increase in total welfare in the second scenario stems from positive consumer surplus.

EU accession impact (%) on Turkish Milk Market

In Turkey, milk prices are higher than the milk prices in the EU. In the case of EU accession, the Turkish milk prices will decrease by more than 50% in the observed years according to the table 6-31.

Table 6-31: EU accession impact (%) on Turkish Milk Market

Impact	2015		2016		2017		2018		2019	
	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU	OUT-EU	IN-EU
Price change (%)	2,5	-54,5	2,5	-56,1	2,4	-56,9	2,3	-57,8	2,2	-58,2
Production change (%)	1,0	-27,0	1,0	-29,2	1,0	-29,5	0,9	-29,9	0,9	-30,0
Consumption change (%)	-2,0	86,4	-1,9	90,8	-1,8	92,2	-1,7	94,5	-1,7	94,7

According to the table above, EU accession has negative impact in production. The production level decreases by appr. 29%. However, EU accession has positive impact on consumption and total welfare. Consumption increases by appr. 90% in the observed years. In terms of total welfare, EU accession will have positive effect in the Turkish milk market according to the table 6-30. In 2015, total welfare is calculated as -1.029 million TL in OUT-EU scenario, and as 6.179 million TL in IN-EU scenario. Increase in total welfare in IN-EU case stems from generally positive and high consumer surplus.

6.4.4 WELFARE ANALYSIS OF DOHA ROUND IMPACT ON TURKISH MILK MARKET

Tariff reduction impact is analysed for the skim milk powder import of Turkey. Turkey imposes an import tarif of 180% for skim milk powder (SMP). If the Doha Round is completed in 2012 and the revised draft modalities are accepted, the reduction shall be 46,67% of the SMP tariff in Turkey. Total reduction will be 84% (180*46,67%= 84).

Turkey shall reduce the final bound tariffs in eleven equal annual instalments over ten years. The annual reduction shall be = 84%/11=7,64%. At the end of 10th year, the tariff rate shall be 104%.

The SMP prices are taken from OECD FAO Agricultural Outlook 2010-2019 (Annex, p. 327). Table 6-32 shows the tariff reduction scenario and the implication of present tariff rate scenario for the years between 2013-2019.

SMP production and consumption quantities are calculated by using milk production and consumption quantities. The milk equivalent of skim milk powder is 10,05 (1 kg SMP = 10,05 kg milk).[262] 7,6% of the total milk production was used for SMP production in the last years and 17% of the total milk was consumed as SMP.[263]

Assumptions:

1. Supply and demand quantities at different price levels are estimated under ceteris paribus assumption, that the shift factors (prices of other commodities, consumers' incomes and tastes….) are constant.
2. It is assumed that supply and demand curves are linear.
3. The policy changes in the two scenarios are compared with the equilibrium situation.
4. The EU accession process is ignored.

First scenario:

5. It is assumed that 180% tariff rate in SMP does not change in the following 8 years.

Second scenario:

6. It is assumed that, Doha Round is completed in 2012 and the revised draft modalities for the tariff reductions are accepted.
7. The tariff reduction scenario is calculated according to the Uruguay Round approach.

[262] TEAE, August 2007, p. 28.
[263] See Annex, p. 324.

Table 6-32: Doha Impact in Skim Milk Powder Consumption and Trade in Turkey

	2013		2014		2015		2016	
	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Prices								
Import price (TL/t)	4.074		4.403		4.691		5.075	
Import Tariff (t)	180%	172%	180%	165%	180%	157%	180%	149%
a. Import price (1+t%)	11.407	11.096	12.327	11.655	13.136	12.061	14.210	12.659
Equilibrium price (TL/t)	32.024	32.024	37.310	37.310	40.054	40.054	43.650	43.650
Quantities (1.000 tons)								
b. Production	89	89	92	91	94	92	97	94
c Consumption	193	196	199	204	204	213	211	222
Net trade	-104	-107	-107	-114	-110	-120	-114	-128
Equilibrium	119	119	119	119	122	122	126	126
Welfare Effect (million TL)								
c Producer surplus	-2.147	-2.173	-2.632	-2.687	-2.907	-2.997	-3.276	-3.409
d. Consumer surplus	3.220	3.295	3.972	4.147	4.390	4.681	4.951	5.391
e. Tariff revenue	763	753	850	825	931	887	1.039	970
f. Total welfare	**1.835**	**1.875**	**2.191**	**2.285**	**2.415**	**2.571**	**2.714**	**2.951**

	2017		2018		2019	
	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Prices						
Import price (TL/t)	5.582		5.858		6.212	
Import Tariff (t)	180%	142%	180%	134%	180%	127%
a. Import price (1+t%)	15.631	13.499	16.401	13.717	17.393	14.072
Equilibrium price (TL/t)	48.464	48.464	51.163	51.163	54.530	54.530
Quantities (1.000 t)						
b. Production	100	97	103	99	106	101
c Consumption	217	232	224	243	230	254
Net trade	-117	-136	-121	-144	-125	-153
Equilibrium	129	129	133	133	137	137
Welfare Effect (million TL)						
c Producer surplus	-3.764	-3.950	-4.102	-4.342	-4.505	-4.807
d. Consumer surplus	5.691	6.324	6.207	7.043	6.819	7.901
e. Tariff revenue	1.180	1.075	1.277	1.134	1.394	1.202
f. Total welfare	**3.107**	**3.449**	**3.382**	**3.834**	**3.708**	**4.295**

Tariff Reduction and Import Price Scenario in Skim Milk Powder (2013-2019)

Table 6-33: Tariff Reduction Scenario in Skim Milk Powder (SMP)

	Year	A	B	C	D	E	F
		Traiff Rate (t%)	Annual Reduction (A*46,67%)/ 11	Import Price	Import Price with Present Tariff Rate (C*(1+180%))	New Import Price with Doha Tariff Rate (C*(1+A%))	Reduction in Import Price ((D-E)/D)/100
	2012	180	7,64	3.797	10.631	10.631	0,0%
1st year	2013	172	7,64	4.074	11.407	11.096	2,7%
2nd year	2014	165	7,64	4.403	12.327	11.655	5,5%
3rd year	2015	157	7,64	4.691	13.136	12.061	8,2%
4th year	2016	149	7,64	5.075	14.210	12.659	10,9%
5th year	2017	142	7,64	5.582	15.631	13.499	13,6%
6th year	2018	134	7,64	5.858	16.401	13.717	16,4%
7th year	2019	127	7,64	6.212	17.393	14.072	19,1%
8th year	2020	119	7,64				
9th year	2021	111	7,64				
10th year	2022	104					

An example of the Second Scenario (year: 2019)

There are two scenarios:
First scenario is the continuation of the present tariff rate (180%)
Second scenario is the Doha Round completion in 2012 and acceptance of the revised draft modalities.

In the first scenario, the import price shall be 17.393 TL/t in 2019; production level (pl) is 105.690 t and consumption level (cl) is 230.329 tonnes.
In the second scenario, the import price shall be 14.072 TL/tonne in 2019.

From the elasticity formula (ε * quantity =β * price), supply and demand models with price as only endogenous variable can be found.

<u>Calculation of Supply model:</u>

(ε * production level (or consumption level)) = β * price)

ε * pl = β *mp

ε = 0,19

ε* lnpl = β * lnmp (pl=105.690, mp=17.393)

0,19 * 11,57 = β * 9,76

β = 0,23

α = lnpl - β * lnmp

α = 11,57 – 0,23* 9,76

α = 9,36

Logarithmic Expression of Supply Model is:

S = 9,36 +0,23*lnmp (S=lnpl)

Calculation of Demand Model:

ε * cl = β *mp

ε = -0,36

ε* lncl = β * lnmp (cl=230.329, mp=17.393)

-0,36 * 12,35= β * 9,76

β = -0,46

α = lncl - β * lnmp

α = 12,35– (-0,46*9,76)

α = 16,79

Logarithmic Expression of Demand Model is:

D = 16,79 – 0,46 * lnmp (D= lncl)

Market Equilibrium Price and Quantity (logarithmic values)

Supply = Demand (lnpl=lncl)

9,36 +0,23* lnmp = 16,79 – 0,46 * lnmp

lnmp=10,91 (Logaritmic value of milk equilibrium price)

wp= $e^{10,91}$ = 54.530

S = 9,36 +0,23* lnmp (S= $\ln pl_{eq}$)

$\ln pl_{eq}$ = 9,36 +0,23* 10,91

$\ln pl_{eq}$ =11,83

$pl_{eq} = e^{11,83}$ = 136.907

Equilibrium production level would be 136.907 tonnes.

a. Production at price level: 14.072 TL/t

S = 9,36 +0,23* lnmp (S= $\ln pl_1$)

$\ln pl_1$ = 9,36 +0,23*9,55

$\ln pl_1$ = 11,52

$pl_1 = e^{11,52}$ = 100.738

Production quantity at new price level would be 100.738 tonnes.

b. Consumption at price level: 14.072 TL/t

D=16,79 – 0,46 * lnmp (D= $\ln cl_1$)

$\ln cl_1$ = 16,79 – 0,46 * 9,55

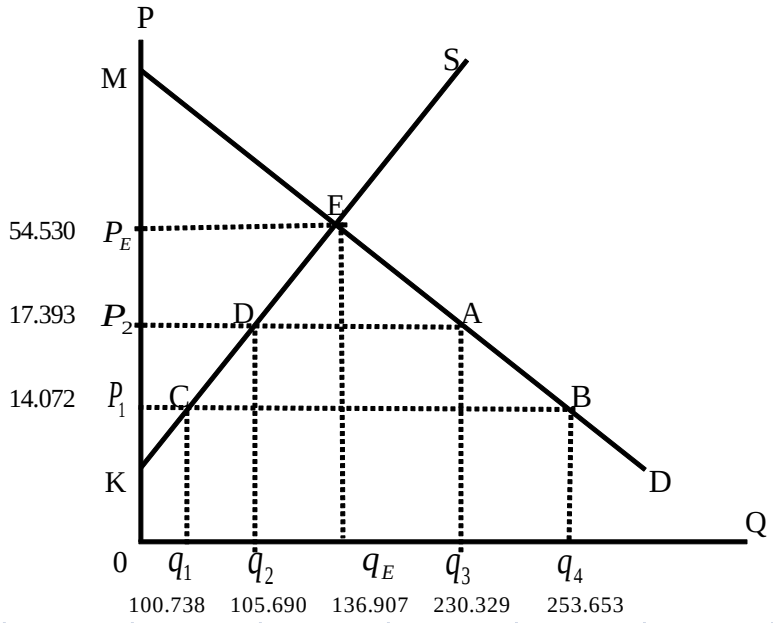
$\ln cl_1$ = 12,44

$cl_1 = e^{12,44}$ =253.653

The consumption level increases to 253.653 tonnes at the new price level.

The figure 6-11 shows the production and consumption levels at three situations:

Figure 6-11: Tariff Reduction Effect in SMP (2019)



In the first case (tariff: 180%), the import quantity is 124.639 tonnes. In the second case (tariff:127%), the import quantity is 152.915.

Welfare Effects of Policy Options

	Equilibrium	1st scenario	2nd scenario
Production (t):	136.907	105.690	100.738
Consumption (t):	136.907	230.329	253.653
Producer price (TL/t):	54.530	17.393	14.072
Producer Surplus	K E Pe	K D P2	K C P1
Change in Producer Surplus	-	-E D P2 Pe	-E C P1 Pe
Consumer Surplus	M E Pe	M A P2	M B P1
Change in Consumer Surplus	-	A E P2 Pe	B E P1 Pe

c. Change in Producer Surplus

Decrease in producer surplus in the 1st scenario

= ((q2+qe)/2)*(P2-Pe)

((105.690 + 136.907)/2)*(17.393– 54.530) = -4.504.662.395 TL

Decrease in producer surplus in the 2nd scenario

= ((q1+qe)/2)*(P1-Pe)

((100.738+ 136.907)/2)*(14.072 – 54.530) = -4.807.320.705 TL

The producer surplus decreases by 4.807 million TL in the tariff reduction scenario.

d. Change in Consumer Surplus

Increase in consumer surplus in the 1st scenario
= ((q3+qe)/2)*(Pe – P2)
((230.329+ 136.907)/2)*(54.530 – 17.393) = 6.819.021.666 TL

Increase in consumer surplus in the 2nd scenario
= ((q4+qe)/2)*(Pe-P1)
((253.653+ 136.907)/2)*(54.530 - 14.072) = 7.900.638.240 TL

Due to the lower price, consumer surplus increases by 7.900 million TL after tariff reduction.

e. Tariff Revenue

The tarif revenue is added in the calculation of welfare effects of tariff reduction. Tariff revenue is calculated as the multiplication of the import quantity with the tariff revenue for one unit.

In 2019, the import level of SMP will be 124.639 tonnes (the import tariff is 180%).

Total tariff revenue = import quantity * (tariff revenue)
= 124.639*(17.393 – 6.212) = 1.393.588.659
= 1.394 million TL

In the tariff reduction scenario, the import quantity of SMP will be 152.915 tonnes (the import tariff is 127%).

Total tariff revenue = import quantity * (tariff revenue)
= 152.915*(14.072 – 6.212) = 1.201.911.900
= 1.202 million TL

f. Total Welfare (c+d+e)

Total welfare is the sum of consumer surplus and tariff revenue. The consumer surplus increases and the import quantity increases but tariff revenue falls in the second scenario. Tariff reduction has a positive and higher impact on total welfare when compared with the first scenario.

Tariff Reduction Impact (%) on Turkish Milk Market

According to the results of welfare analysis, tariff reduction after Doha Round shall let to a fall in import price and thus to an increase in the imported quantity of SMP. Due to the lower price, consumption increases but production decreases. In the observed period, the consumption quantity increases by 64-85% and production quantity decreases 25% on average (Table 6-34). Between 2012-2019, there is an increase in total welfare in the tariff reduction scenario. In 2019, total welfare is calculated as 3.708 million TL in the first scenario, and 4.295 million TL in the second scenario.

Table 6-34: Doha Round Tariff Reduction Impact (%) on Turkish Milk Market

Impact	2013		2014		2015		2016	
	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Price change (%)	-64	-65	-67	-69	-67	-70	-67	-71
Production change (%)	-25	-26	-23	-24	-23	-24	-23	-25
Consumption change (%)	62	64	68	72	68	75	68	77

Impact	2017		2018		2019	
	present tariff	after Doha	present tariff	after Doha	present tariff	after Doha
Price change (%)	-68	-72	-68	-73	-68	-74
Production change (%)	-23	-25	-23	-26	-23	-26
Consumption change (%)	68	80	68	82	68	85

6.5 SUMMARY OF THE RESULTS AND EVALUATIONS

Table 6-35 summarizes the results and the evaluations of EU accession impact and tariff reduction impact in wheat, sugar, olive oil and milk. Sharp decline in prices especially in milk shall lead to an increase in consumption level in both EU accession case and Doha Round scenario.The consumers will definitely benefit from EU accession due to the declining prices. Consumption quantity increases in the IN-EU case in the all relevant commodities. However, the production declines in the IN-EU case. Turkey seems to be a net importer in milk and wheat in the EU accession case. The import quantity also increases in sugar. In olive oil, exporter situation of Turkey does not change in the EU accession case.

According to the Doha Round scenario, consumers shall benefit from the lower prices in due to the tariff reduction. The production quantity decreases and import quantity increases. Export subsidy elimination is not expected to have a great impact in Turkey's olive oil export. Export quantity decreases by 0,6% in olive oil. Turkey seems to be a net importer in milk and wheat in the tariff reduction scenario also. The import quantity of sugar increases after tariff reduction.

Table 6-35: Summary of the Results

	WHEAT	SUGAR	OLIVE OIL	MILK
EU IMPACT, % (2015-2019)				
Price change	-15,1	-20,1	-29,6	-56,7
Production change	-2,2	-8,1	-2,4	-29,1
Consumption change	3,5	8,1	7,8	91,7
Net trade	net importer	import increases	exporter	net importer
DOHA IMPACT, % (2013-2019)				
Price change	-5,3	-7,1	-2,9	-70,6
Production change	-0,7	-2,3	-0,07	-25,1
Consumption change	1,1	2,4	0,5	76,5
Net trade	net importer	import increases	export decreases by 0,6%	net importer

7 CONCLUSION

The objective of this thesis is to examine agricultural support policies in four agricultural products; wheat, sugar, olive oil and milk in Turkey and to analyse the effects of support policy changes. Three methods are used. First one is the Producer Support Estimate (PSE) which is the OECD method. Second method is the econometric analysis in order to find supply and demand parameters. Third method is the welfare analysis. The support policies are evaluated in four ways by using the methods: Firstly, the transfers to the producers due to the support policies are measured by the OECD's Producer Support Estimate method to determine support level in the related commodities. Secondly, the effects of the policy changes on producers' and consumers' surplus are examined by comparing past and present support policies with the help of the Welfare Analysis. Thirdly, the policy change in the situation of European Union membership is analysed. Finally, the Doha Round (if completed in 2012) impact on the markets of selected commodities is examined.

By using the first method and way "PSE", the support levels are found in sugar, wheat, olive oil and milk. It is also possible to compare the support levels in Turkey with the EU average and OECD average support levels.

In wheat, PSE level was 20% in 2009. That means, in 2009, 20% of the farmer's earnings come from policy induced transfers, and the remaining come from the value of sales measured at border prices (that is, not including price support). In the European Union, the PSE level started to decrease after the reform in 1992 and reached to 0,1% in common wheat and 8% in durum wheat in 2009. Turkey's PSE level is also above the OECD PSE level. When we compare the PSE levels of wheat in the EU, OECD and in Turkey, we observe that, the high PSE level in Turkey arises from the high wheat producer prices. Also we can say that, wheat is protected through high custom duties.

In sugar, the PSE level was 23% in 2009. When we compare the PSE level in Turkey with PSE level in the European Union, we see that, European Union also protects sugar. In 2009, the PSE of sugar in the EU was almost the same as in Turkey. Generally, we can say that, sugar is one of the most protected agricultural commodities in OECD countries.

The olive oil prices in Turkey are higher than the reference olive oil prices in Spain. However, the producer receives 1.322,5 €/t production aid and private storage aid when the market price is less than the reference price. In Turkey, producer received 250 TL/t (116 €/t) in 2009. This shows that, an important export commodity is not supported enough in Turkey when compared with the EU olive oil. Nevertheless, the PSE level in Turkey seems high because of the market price support.

When we look at the PSE levels in milk, we can see that, the milk PSE levels in Turkey are high. The milk PSE levels are given between the years 1986-2009. The PSE level in Turkey is 35% in 2009. The PSE levels in EU and OECD average were high in 1980s and 1990s and started to decrease in in the last years. However, in Turkey, the PSE level increased in the last years reached its highest level of 52% in 2006. The high PSE again arises from the large gap between reference price and poroducer price. To sum up, the high price policy in the selected commodities creates high PSE levels in Turkey. Due to the high prices, the transfers from consumers to the producers increase.

Through "welfare analysis", the past and present policies of the wheat and olive oil are compared. For the sugar, deficiency payment system is added to the analysis and compared with the quota policy.

In this thesis, in wheat, the deficiency payment is given to a limited production quantity (the data is taken from Tarım Bakanlığı) in the calculations of welfare analysis. Generally, it is found that the budget cost of deficiency payment is lower than the intervention buying policy while it is given to a limited production. It is also found that consumer surplus increases and total welfare seems better in the deficiency paymet policy. The producer surplus is higher in the intervention buying policy, but the lower price in the deficiency payment (relative to the intervention buying) is compensated with the deficiency payments, and thus, the lower producer surplus is compensated too. To conclude, the shift of support policy from intervention buying to deficiency payment in the wheat had positive effects in the consumer and also producer welfare and finally for the total welfare.

In the sugar sector, the two support policies; deficiency payment and production quota are compared. The reference price is taken as the producer and consumer price which is lower

than the price in the quota policy. The deficiency payment is calculated as the 10% of the producer price. We compared the quota with the deficiency payment and found that deficiency payment is more advantageous in terms of consumer surplus. However, quota policy has advantages in terms of budget cost. But if the deficiency payments are given to a limited production quantity, its budget cost will be lower.

In olive oil, as in the wheat, the intervention buying was compared with the deficiency payment system. The deficiency payment started to be implemented in 1998. This policy change had positive effects in consumer welfare and total welfare. The budget cost is also lower in the deficiency payment sytem than the purchase cost. Deficiency payment seems better than the intervention buying policy in the olive oil.

To sum up, in the welfare analysis of past (intervention buying) and present (deficiency payment) policies in wheat and olive oil, deficiency payment policy has advantage over the intervention buying. In the sugar, deficiency payment is added as an alternative policy and the results showed that consumer welfare is better in the deficiency payment system but total welfare is better in the quota system.

Furthermore, through the welfare analysis, EU accession impact is examined in wheat, sugar, olive oil and milk. Before passing to the results and evaluations of EU accession impact, the legal basis of agricultural trade relations between Turkey and the EU, the main differences and similarities in the Turkish support policies of wheat, sugar, olive oil and milk between the Common Agricultural Policy implications should be mentioned.

When we compare the support policies in wheat, sugar, olive oil and milk, we see differences between applications in Turkey and the European Union. Present support policy in the EU is intervention price system in wheat. In Turkey the intervention price is abolished and deficiency payment is introduced. The deficiency payment is approximately 10% of the wheat purchase price of Toprak Mahsulleri Ofisi and given to the farmers who are registered in the National Farmer Registration System. European Union applies tariff rate quotas and out of quota (specific) tariffs to the wheat imports, while Turkey applies advalorem tariffs to the wheat imports. EU can subsidize wheat exports, but Turkey can not subsidize wheat according to the URAA. In Turkey, TMO makes studies about legislation

harmonization in the wheat sector. The purchase periods and the minimum purchase quantities are determined in line with the wheat intervention policy in EU. The studies for legislation harmonization continue in TMO.

Sugar is one of the most protected commodities in the world. In the European Union, production quota is applied in the sugar sector. After the last sugar reform in the EU, the sugar prices were reduced and the quota allocation changed. Some countries left the sugar sector while some raised their sugar quotas. In Turkey sugar factories make contract farming with the sugar beet producers which limit the sugar beet land. In 2002, quota was introduced for the sugar. But the quota policies in the EU and Turkey are different. In the EU the quota is applied to the production quantity, while in Turkey quota is applied to the sales quantity. In the EU, intervention price is determined for sugar beet and sugar, but in Turkey there is no intervention price system. There are also differences in external trade measures. EU can subsidize the sugar export, but Turkey can not subsidise sugar export. EU applies tariff rate quotas to the sugar import and out of quota tariff; on the other hand Turkey applies ad valorem tariffs.

In olive oil, European Union and Turkey are important producers and exporters. The support policy in Turkey and in the EU are different form each other. In Turkey, olive oil was supported by intervention buying and in 1998, support purchase was phased out and deficiency payment system was introduced. The premium payment in Turkey has been generally 3-4% of the producer price. In the EU, the producer receives high production aid and private storage aid. In Turkey, there is no intervention price system and production limitation as in the EU. Turkey and EU can both subsidize olive oil export.

European Union is the biggest producer in milk. The milk sector is supported by production quota and intervention price in butter and skim milk powder. In Turkey, milk incentive premiums are given to the milk producers. In Turkey there is no limit in production, no intervention price and storage system like in the EU.

Generally, the Turkish producer prices in wheat, sugar, olive oil and milk are higher than the prices in the EU. The support systems are different. Turkey has to establish storage system and intervention price system as in the EU during the harmonisation process. The

EU accession process will change the producer prices and support policies in Turkey. So, a transition period is necessary for Turkey before the changes in support policies occur in the harmonization process. Turkey has to establish necessary systems like in the EU and complete the farmer registration system.

In the analysis of EU accession impact two scenarios are formed. The first scenario describes the OUT-EU situation, which is the continuation of present policies in Turkey. Second scenario is the IN-EU situation, in which the EU accession of Turkey is supposed to be realised in 2014 and the EU support policies are applied in Turkish wheat, sugar, olive oil and milk after 2014. While the EU prices are valid in IN-EU case, the prices decrease in Turkey.

In the IN-EU case, the wheat prices in Turkey will decrease which will cause an increase in consumer surplus and decrease in producer surplus. Also, Turkey will be net importer of wheat in the IN-EU case. In terms of total welfare, EU accession will have positive impact on the Turkish wheat sector according to the calculations in part six.

In the sugar market, firstly the possible restructuring process after EU accession is examined. It was pointed out that 9 state-owned sugar factories can be closed in the restructuring process. The argument about the restructuring is taken into account in this thesis and the restructuring aid is calculated for the nine sugar factories in the IN-EU case (the costs of moving to the alternative policies in those places, where sugar factories are closed, were not taken into account). It is supposed that the EU sugar reference price is valid in Turkey after the EU accession. The producer price decreases by appr. 23%. The lower price causes an increase in the consumer surplus and decrease in the producer surplus. The import quantity rises in the IN-EU case. Generally total welfare seems better in the IN-EU case. The EU accession will have positive impacts on the Turkish sugar market.

In the olive oil market, EU accession has negative impact on the producers but positive impact on the consumers due to the price reduction. The total welfare decreases in the IN-EU situation. However the Turkish olive oil producers will benefit from the production aid given in the framework of CAP in the case of EU accession.

In the milk market, the prices are higher than the EU milk prices in Turkey. The EU accession of Turkey is expected to reduce the milk prices by appr. 55% in Turkey which will be benefit of the consumer. The lower milk price raises the consumption by 90% and reduces the production by 30%. The consumer surplus increases. Total welfare increases in the IN-EU case. So, the EU accession has positive effect on the Turkish milk market.

To sum up, in this thesis, it is found that the EU accession has positive impact on total welfare in wheat, sugar and in milk but negative impact on olive oil. The consumers will definitely benefit from EU accession due to the declining prices. The consumer surplus increases in the IN-EU case in the all relevant commodities. However, the producer welfare declines in the IN-EU case. Compensatory payments may be given to the producers for the price cuts like experienced in the EU. The effect of EU accession on producer will depend on the payments and aid from the EU. So, the CAP payments will be crucial for the producer welfare in the related commodities especially in olive oil.

Lastly, the WTO Doha Round impact is analysed for the wheat, sugar, olive oil and milk in Turkey. It is supposed that, Doha Round is completed in 2012 and revised draft modalities in agriculture are accepted. This would reduce the import tariffs for wheat, sugar and skim milk powder in Turkey. To analyse the impact of tariff reduction, two scenarios are made. The first scenario is the continuation of present tariff rates for the relevant commodities. The second scenario is the completion of the Doha Round in 2012 and implication of tariff reductions as in the modalities after 2012. The impact of export subsidy elimination in 2016 is analysed for the olive oil market in Turkey.

In wheat, the low price causes an increase in consumer surplus but a decrease in producer surplus. The production quantity and the export quantity of wheat decline in the tariff reduction scenario. The tariff reduction has positive impact on the total welfare in wheat, and is on behalf of the consumer.

In the sugar, import quantity increases in the tariff reduction scenario creating tariff revenue. The consumers benefit from the low prices, but the production decreases. Generally, tariff reduction has positive impact on total welfare.

Doha Round impact is analysed for the olive oil in the case of export subsidy elimination in 2016. The export subsidy is appr. 2,9% of the export price in this study. The elimination of the subsidy will reduce the domestic price. This will not have a significant change in the production and consumption levels. But a slight change occurs in the producer and consumer surplus. Producer surplus and total welfare decrease in the case of export subsidy elimination due to the declining olive oil price. The elimination of export subsidy shall not have a significant impact in the olive oil market.

In the case of tariff reduction scenario, the import price would decrease in the skim milk powder which would be on behalf of the consumer. The consumption and the import quantity would increase. In the tariff reduction scenario, the tariff revenues are lower, but it has positive impact on the total welfare in milk. To sum up, consumers shall benefit from the lower prices in the tariff reduction scenario. The production quantity decreases and import quantity increases. Tariff reduction has positive impact on total welfare in wheat, sugar and skim milk powder. Consumers will aslo benefit from the declining olive oil price after export subsidy elimination. But this scenario will have a negative impact in total welfare of olive oil.

The results of Doha Round scenario point out the significance of protection through border measures in increasing producer welfare and lowering consumer welfare in Turkey. Turkey had no amber box reduction commitments, so modalities about overall reduction in trade-distorting domestic support (in Doha Round) in Turkey are not analysed in this study. Nevertheless, a change in blue box measures (elimination or reduction) may affect deficiency payments in some commodities.

Most of the results of this study were in congruent with the expectations. As previously mentioned before, deficiency payment policy has positive effects in total welfare and is better for consumer in wheat and olive oil according to the results. Premium payment shall continue in the milk. Deficiency payment for olive oil is low when compared with the EU's production aid. Deficiency payment for olive oil and milk premium payment can be increased (within the Turkish budget limits and considering the de minimis rule of WTO) in order to increase production and export potential in the olive oil, and to lower the input

costs (like milk feed…) in the milk production. Also in the sugar the present policy "quota" is better than deficiency payment in terms of total welfare. This research showed that the producer prices in the selected commodities are high (relative to the world prices) and Turkey protects the domestic producers through high prices. In addition the study marked that Turkey reduced the support (protection) level by shifting the support policy from intervention buying to deficiency payment in olive oil and wheat. But, the protection remained still high in the sugar as the sales quota (which is the most market distorting policy) is applied.

This thesis also tried to show the possible impacts of EU accession and concluded that producers will harm from the accession process due to the price reductions. Milk production will be affected negatively from EU accession. High milk prices, low number of milking animals per holding, subsistence animal-husbandry are the main problems in Turkey which shall make Turkey uncompetitive in the European market. Turkey has disadvantage in the European olive oil market due to the preferential trade agreements of EU with some olive oil exporter countries (especially Tunisia). The olive oil producer will be hurt from the declining prices in the IN-EU case but also from the preferences that EU granted to the other exporters. EU membership shall also affect Turkish wheat production negatively. The wheat imports from the EU may increase. With regards to adaptation to CAP, Turkish sugar sector shall go on restructuring. The sugar beet yield and efficiency of the sugar factories are generally low. Many farmers and workers are engaged in the sugar sector. The sugar factories are in the privatisation process. In the case of privatisation, the continuation of sugar and sugar beet production and increasing the efficiency of factories are really important for Turkish sugar sector and for livelihood of farmers and workers. It is hoped that the closure of the inefficient sugar factories (which was an assumption in the EU-accession case in this thesis) shall not be necessary in the restructuring process also when they are not privatised. A transition period may be necessary for sugar sector (in fact for whole agriculture) in the EU accession case in order to protect the sector from the EU's competitive sugar sector. Consumers will benefit from the membership due to the decline in the prices. For the benefit of the producers, the CAP payments will be crucial.

In addition, the thesis disclosed that Doha Round shall affect Turkish consumers positively, but producers negatively due to the low prices. It was expected that Doha Round will

reduce protectionist measures which create price distortions in Turkey, in the world. So, after completion of Doha Round, the new trade rules shall have positive effects in the domestic market. Turkey is a net importer in skim milk powder and shall benefit from tariff reductions after Doha Round. Export subsidy elimination is not expected to have a great impact in Turkey's olive oil export. The main impact of Doha Round will be seen in the wheat and sugar markets. Turkey protects wheat and sugar with high tariffs. After tariff reduction, import of wheat may increase in Turkey which may damage domestic production. Wheat is a basic food stuff of people and can be designed as special product in the Doha Round based on the criteria of food security and livelihood security. The tariff reduction will have negative impact on domestic production of sugar on which many farmers' livelihood depends on. Some criteria for the designation of special products in draft modalities (2008) are suitable for designation of sugar as special product in Turkey: Sugar consumption is met by domestic production. A significant proportion of agricultural labor is engaged in sugar beet farming. The income of sugar beet farmers are derived from this sugar production. After the end of Doha Round (tariff reduction), sugar will be sensitive to imports. Turkey will face competition from the sugar cane producers after trade liberalisation. Domestic production of sugar may decline and imports may increase. So, Turkey may design sugar as special product in the Doha Round in order to provide continuation of domestic production and farmers' livelihood.

EU accession and completion of WTO Doha Round do not have precise deadlines in fact. Doha Round agriculture negotiations started in 2000 with the aim of further liberalisation. European Union is one group in the WTO. Turkey remains in the G-33. Besides, Turkey is a candidate country of the European Union. In the negotiation positions of EU and Turkey, there are diverging and also converging points. Both apply high tariffs and defensive in the market access provisions. But Turkey insists on developing country status to be placed in a different band, so closer to G-33 in special products and special safeguard mechanism. Turkey like other developing countries is demanding further trade liberalisation from developed countries, but also needs to protect its agricultural sector. EU proposes further cuts in trade-distorting domestic support but on the other hand defends the blue box through which EU can support its agriculture while staying within URAA commitments. They both proposed a reduction in de minimis for developed countries. Besides, Turkey expects an increase in "de minimis" for developing countries.

Export subsidies will be abolished in 2013. Both European Union and Turkey are in line with this decision. The main divergence points between Turkey and the European Union are in the domestic support and market access provisions. Because of the lack of capital developing countries can not allocate enough budget to support their agricultural sectors through domestic support and export subsidies like in the developed countries. Generally developing countries protect their agricultural sectors through border measures. So discussions and positions about market access are important for G-33 countries. Also Turkey protects its agricultural sector through high tariffs. In the market access conditions, the most important discussion point was about special safeguard measures (SSM). Turkey did not have the right to use SSM according to the Uruguay Round results. EU demands the maintenance of the SSM as in the Uruguay Round Agreement on Agriculture which will be a disadvantage for Turkey. Turkey shall be on the G-33 side for extension of special safeguard measures to all developing countries while the only way of protection against an increase in import volume and decrease in import prices is the customs tariffs. Especially for sugar and wheat, the import quantity increases in the Doha Round scenario. So SSM will be important for sudden import surges after trade liberalisation. Another important discussion point was about the reduction formulas in which European Union and Turkey were both defensive since they apply high tariffs. They proposed minimum reductions per each tariff line on the basis of average bound rates, and Uruguay Round approach for the reductions in tariffs. Turkey protects the agricultural sector through border measures, so the proposal about the reduction formula and minimum cut per tariff line would be a benefit for Turkey. In the case of discussions about "special products", Turkey's better on the G-33 side, demanding the right to self-designate at least 20 percent of tariff lines as "Special Products". On the contrary, EU's proposal was the classification of a limited number of products as special products. Turkey like other developing countries needs to support its agricultural sector and protect the products which are important for food security, livelihood security and rural development.

Turkey did not have reduction commitments in the AMS commitments in the Uruguay Round. Amber box policies of Turkey may not also have to be reduced in the Doha Round while they are not at high levels of agricultural production value. In this case Turkey may take a position on the G-33 side, demanding steeper cuts in the amber box especially from developed countries. Turkey gives deficiency payments for some products including wheat

and olive oil. So far, deficiency payments are in the blue box, Turkey's proposal in the domestic support measures can be maintenance of blue box. Many developing countries proposed an overall reduction in domestic support including blue box. A reduction in blue box may affect some of agricultural products in Turkey. In this case Turkey may defence the maintenance of blue box with the European Union. Regarding the green box, divergence point between Turkey and EU was about the review of the box to ensure that they are minimally trade distorting (Turkey, on the G-33 side) or maintenance of the box (EU). Green box measures are generally agricultural services and are productive policies. In fact these policies are really important for all developing countries since they aim to increase the productivity in agriculture and to improve efficient use of resources. Turkey also needs to improve productivity in agriculture by supporting these green box policies. When we think about the low consumption of olive oil and milk, Turkey may provide marketing and promotion services (which are green box measures) to increase milk and olive oil consumption for health reasons. Agricultural training services, infrastructural services, including electricity reticulation, roads and other means of transport, water supply facilities have to be also improved in Turkey. Turkey may propose the maintenance of the green box like the European Union. So, in domestic support provisions Turkey is better to stand by European Union. For the harmonization of CAP to Turkeish agriculture, Turkey may converge its domestic support policies and proposals about domestic support to EU's position.

Turkey's position in the Doha Round may challenge with the EU's position. It is a discussion point whether Turkey shall be on the G-33 side or on the EU side. In some situations where EU's position also Turkey's interest, Turkey may stand by European Union. But in most of the positions as mentioned above Turkey shall be on the G-33 side.

Turkey just tries to continue negotiation process with the EU, and on the other hand tries to be active in the WTO. It is really complex for Turkey to stand by European Union and to defence its own proposals inside the G-33 at the same time. It is better for Turkey to formulate its Doha Round negotiation proposal which will be a benefit of the Turkish agricultural sector when we think that the EU accession process will last some years more.

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http://www.fo-licht.com	F.O Licht GMBH
http://www.turkseker.gov.tr	Türkiye Şeker Fabrikaları A.Ş. (TŞFAŞ)
http://www.pankobirlik.com.tr	Pancar Ekicileri Kooperatifleri Birliği
http://www.tarim.gov.tr	Tarım ve Köy İşleri Bakanliği
http://www.internationaloliveoil.org	International Olive Oil Council
http://www.igc.int	International Grains Council
http://www.aeri.org.tr	Tarımsal Ekonomi Araştırma Enstitüsü
http://europa.eu	European Union On-line

http://tuik.gov.tr	Türkiye İstatistik Kurumu
http://www.dtm.gov.tr	Dış Ticaret Müsteşarlığı
http://www.tmo.gov.tr	Toprak Mahsulleri Ofisi
http://www.abgs.gov.tr	Avrupa Birliği Genel Sekreterliği
http://www.dairyco-net	The Dairy Farming Information Centre
http://www.wto.org	World Trade Organisation
http://www.fas.usda.gov	United States Department of Agriculture Foreign Agriculture Service
http://www.tzob.org.tr	Türkiye Ziraat Odaları Birliği
http://www.oecd.org	Organisation for Economic Co-operation and Development
http://www.igc.org.uk	International Grains Council
http://www.isosugar.org	International Sugar Organisation
http://www.gumruk.gov.tr	TC Başbakanlık Gümrük Müsteşarlığı
http://www.zmo.org.tr	TMMOB Ziraat Mühendisleri Odası
http://www.tcmb.gov.tr	Türkiye Cumhuriyeti Merkez Bankası
http://www.fil-idf.orf	International Dairy Federation
http://www.bloomberg.com	
http://www.economist.com	
http://www.bbc.co.uk	
http://www.ntvmsnbc.com	

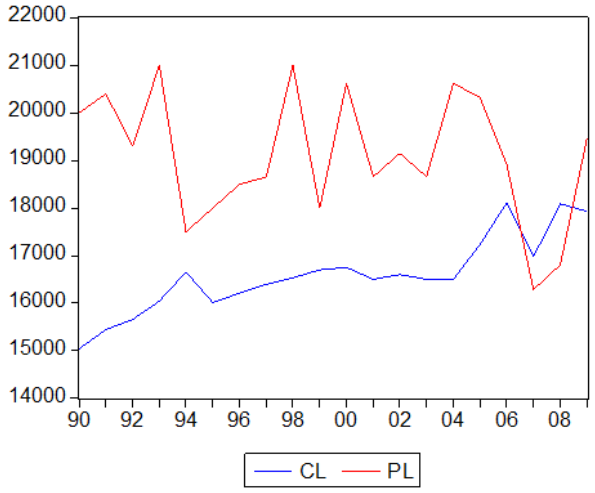
ANNEX

I. The statistics which are used in the econometric models are presented below

A. Wheat Statistics in Turkey, 1990-2009

Year	Production (t)	Yield (t/ha)	Price (TL/t)	Consumption (t)
1990	20.000.000	2,12	0,50	15.043.000
1991	20.400.000	2,12	0,76	15.446.000
1992	19.300.000	2,01	1,16	15.659.000
1993	21.000.000	2,14	1,84	16.042.000
1994	17.500.000	1,79	3,59	16.655.000
1995	18.000.000	1,92	7,43	16.012.000
1996	18.500.000	1,98	18,51	16.213.000
1997	18.650.000	2,00	35,14	16.395.000
1998	21.000.000	2,23	53,57	16.533.000
1999	18.000.000	1,92	75,96	16.700.000
2000	20.622.000	2,23	97,33	16.750.000
2001	18.658.000	2,03	157,10	16.500.000
2002	19.149.000	2,10	229,32	16.602.000
2003	18.658.000	2,09	353,62	16.500.000
2004	20.622.000	2,26	350,44	16.500.000
2005	20.317.500	2,32	331,54	17.236.836
2006	18.909.400	2,36	349,53	18.108.700
2007	16.286.130	2,13	425,00	16.979.069
2008	16.803.990	2,20	463,00	18.089.265
2009	19.467.000	2,54	458,00	16.961.236

Sources: TUIK, 2009a, TUIK, 2011a, OECD, 2011a, TMO, 2010a.

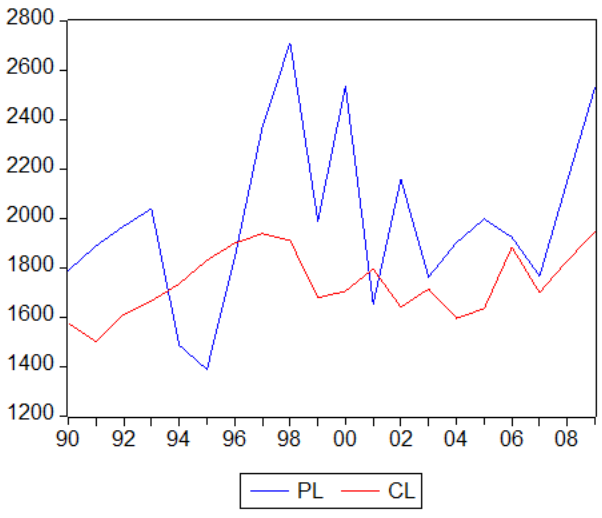


PL=production level CL=consumption level

B. Sugar Statistics in Turkey, 1990-2009

Year	Sugar Production (t)	Sugarbeet Yield (t/ha)	Sugar Producer Price (TL/t)	Average Fertiliser Price (TL/t)	Sugar Consumption (t)
1990	1.789.000	36,82	1,04	0,56	1.575.000
1991	1.888.000	38,56	1,68	0,82	1.500.000
1992	1.968.000	37,78	2,71	1,25	1.611.000
1993	2.039.000	36,91	4,07	1,67	1.665.000
1994	1.486.000	31,42	8,10	7,78	1.735.000
1995	1.388.000	35,77	22,13	6,38	1.831.000
1996	1.841.000	34,42	36,53	10,46	1.900.000
1997	2.372.000	38,93	87,40	17,60	1.938.000
1998	2.711.000	44,17	138,02	31,40	1.910.000
1999	1.989.000	40,41	218,38	47,40	1.678.000
2000	2.535.000	45,90	245,86	79,40	1.705.000
2001	1.652.000	35,21	360,08	152,00	1.795.000
2002	2.157.000	44,36	566,82	236,60	1.640.000
2003	1.762.000	40,03	665,19	281,30	1.714.000
2004	1.901.000	42,87	733,77	349,20	1.596.000
2005	1.998.000	45,21	729,46	368,60	1.634.000
2006	1.924.000	44,37	684,01	394,40	1.883.000
2007	1.766.000	41,35	681,33	499,80	1.699.000
2008	2.151.000	48,10	769,23	923,20	1.829.000
2009	2.531.000	53,24	788,04	520,00	1.944.000

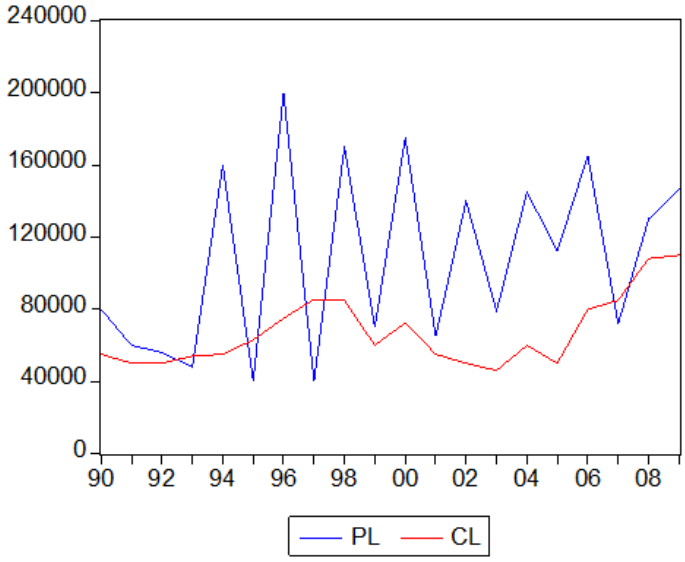
Sources: TŞFAŞ, 2010.
OECD, 2011a.
TUIK, 2009a.



C. Olive Oil Statistics in Turkey, 1990-2009

Year	Production (t)	Table Olive (for oil) Yield (t/tree)	Producer Price (TL/t)	Consumption (t)	Export Quantity (t)
1990	80.000	9.467	10,50	55.000	10.000
1991	60.000	5.631	14,70	50.000	10.500
1992	56.000	6.387	22,22	50.000	5.500
1993	48.000	4.284	42,86	54.000	9.000
1994	160.000	12.775	133,70	55.000	55.000
1995	40.000	3.794	361,85	63.000	19.000
1996	200.000	16.406	405,64	75.000	40.500
1997	40.000	3.614	460,17	85.500	35.000
1998	170.000	14.211	792,12	85.000	86.000
1999	70.000	4.132	1.596,13	60.000	16.500
2000	175.000	14.686	1.504,23	72.500	92.000
2001	65.000	4.056	3.417,08	55.000	28.000
2002	140.000	14.722	4.556,34	50.000	74.000
2003	79.000	5.420	4.029,74	46.000	46.000
2004	145.000	12.638	4.250,25	60.000	93.500
2005	112.000	8.279	5.790,30	50.000	73.000
2006	165.000	12.386	6.880,00	80.000	45.000
2007	72.000	5.954	6.320,00	85.000	15.000
2008	130.000	8.971	6.000,00	108.000	31.000
2009	147.000	7.612	6.770,00	110.000	22.000

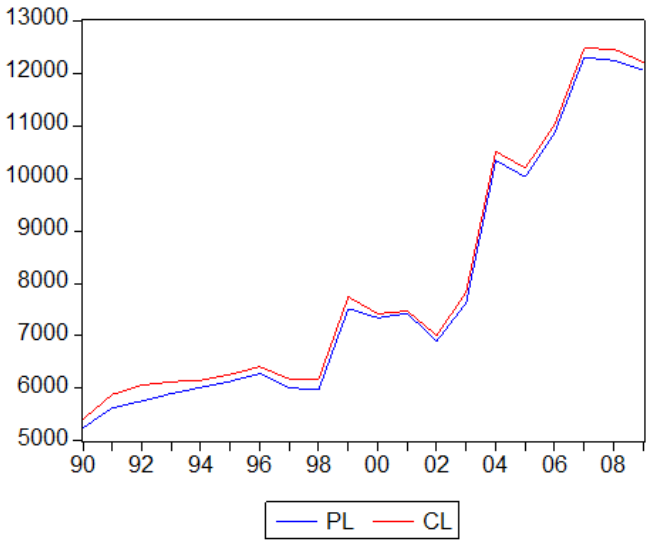
Sources: International Olive Oil Council, Nobember 2010.
TC. Sanayi ve Ticaret Bakanlığı, August 2010, p. 12.
TUIK, 2011c.
ABGS, Screening with Turkey Olive Oil and Table Olives (Non-exhaustive list of issues and questions to facilitate preparations for bilateral meetings), 2006, p. 7.



D. Milk Statistics in Turkey, 1990-2009

Year	Milk Production (t)	Milk Yield (kg/head)	Producer Price (TL/t)	Feed Price (TL/t)	Milk Consumption (t)
1990	5.249.200	891	1,06	0,54	5.413.925
1991	5.628.700	920	1,67	0,89	5.884.700
1992	5.759.000	949	2,80	1,51	6.063.000
1993	5.903.000	979	4,34	2,68	6.129.000
1994	6.019.000	990	8,07	5,97	6.157.000
1995	6.136.000	1.043	15,99	12,53	6.269.000
1996	6.282.000	1.053	27,18	19,78	6.413.000
1997	6.010.000	1.074	50,59	36,40	6.180.000
1998	5.975.000	1.089	104,47	47,62	6.176.000
1999	7.520.000	1.358	156,90	78,61	7.744.000
2000	7.342.000	1.391	221,61	96,68	7.422.000
2001	7.424.000	1.460	296,14	137	7.472.000
2002	6.900.000	1.571	409,34	204,3	7.009.000
2003	7.629.000	1.514	529,16	253,3	7.833.000
2004	10.338.000	2.667	603,64	319,6	10.508.000
2005	10.026.000	2.508	630	314,0	10.195.000
2006	10.867.000	2.595	710	326,0	11.017.000
2007	12.300.000	2.908	720	412,0	12.470.000
2008	12.240.000	3.000	800	497,0	12.460.000
2009	12.061.000	2.918	790	445,0	12.211.000

Sources: TUIK, 2010b.
OECD, 2011a.
Turkiye Yem Sanayicileri Birliği, 2011.



E. Population and National Income in Turkey

Year	GDP (1000 TL, current prices)	Mid-year Population
1990	393.060	55.120.000
1991	630.117	56.055.000
1992	1.093.368	56.986.000
1993	1.981.867	57.913.000
1994	3.868.429	58.837.000
1995	7.762.456	59.756.000
1996	14.772.110	60.671.000
1997	28.835.883	61.582.000
1998	52.224.945	62.464.000
1999	77.415.272	63.364.000
2000	124.583.458	64.252.000
2001	178.412.439	65.133.000
2002	277.574.057	66.008.000
2003	359.762.926	66.873.000
2004	430.511.477	67.723.000
2005	487.202.362	68.566.000
2006	576.322.231	69.395.000
2007	843.178.421	70.215.000
2008	950.534.251	71.095.000
2009	952.558.579	72.050.000

Year	Mid-year population estimations and projections
2010	73.003.000
2011	73.950.000
2012	74.885.000
2013	75.811.000
2014	76.707.000
2015	77.601.000
2016	78.478.000
2017	79.337.000
2018	80.173.000
2019	80.983.000

Source: TUIK, 2009b.
TUIK, 2011d.
Note: Mid-year population are estimated and projected based on 2008 Address Based Population Registration System and Population and Health Surveys.

F. Fertiliser Prices (TL/t)

Years	A.Nitrat %26	A.Sülfat	ÜRE	DAP	20.20	Average Fertiliser Price (TL/t)*
1990	0,4	0,3	0,5	1,0	0,6	0,56
1991	0,6	0,5	0,8	1,3	0,9	0,82
1992	1,0	0,7	1,1	2,0	1,5	1,25
1993	1,4	1,3	1,7	2,2	1,7	1,67
1994	6,9	5,4	8,8	9,9	7,8	7,78
1995	5,2	4,2	7,2	8,7	6,6	6,38
1996	8,1	7,5	11,8	14,4	10,6	10,46
1997	13,8	12,3	17,8	26,0	18,3	17,6
1998	25,8	18,8	27,5	51,5	33,5	31,4
1999	33,5	31,0	39,5	79,5	53,5	47,4
2000	59	52	78	120	88	79,4
2001	130	111	161	205	153	152
2002	176	162	237	354	254	236,6
2003	230	195	309	388	285	281,3
2004	274	268	346	500	358	349,2
2005	294	251	421	503	374	368,6
2006	298	257	465	553	399	394,4
2007	350	329	602	725	493	499,8
2008	510	564	760	1.672	1.110	923,2
2009	436	325	630	689	520	520,0

*Average prices of A. Nitrat 26, A. Sülfat, Üre, 20.20, DAP.

Sources: DPT, 9. Bes Yıllık Kalkınma Planı Gübre-Tarım İlaçları Çalışma Grubu Raporu Raporları, 2008, p. 34.
TÜGEM; Tarım İstatistikleri, 2011, p. 32.
Leyla Dolun, Kimyasal Gübre Sektör Araştırması, 2002, p. 42.

II. EXCHANGE RATES

A. Euro/TL Exchange Rates

Years	Buying	Selling
1996	0,1332	0,1339
1997	0,2252	0,2272
1998	0,0366	0,3680
1999	0,5421	0,5447
2000	0,6186	0,6215
2001	1,2813	1,2875
2002	1,7189	1,7272
2003	1,7575	1,7660
2004	1,8233	1,8321
2005	1,5875	1,5952
2006	1,8515	1,8604
2007	1,7060	1,7142
2008	2,1332	2,1435
2009	2,1427	2,1530
2010	2,0551	2,065
2011	2,4438	2,4556

Source: TCMB (year end exchange rates: as of 31.12)

B. €/TL rate projection (2011-2019)

Year	Inflation in Turkey	Inflation in EU	€/TL rate
2011	5,5%	0,6%	2,4556
2012	6,0%	1,5%	2,5661
2013	6,0%	2,0%	2,6687
2014	6,0%	2,0%	2,7755
2015	6,0%	2,0%	2,8865
2016	6,0%	2,0%	3,0020
2017	6,0%	2,0%	3,1221
2018	6,0%	2,0%	3,2469
2019	6,0%	2,0%	3,3768

Source: 2011 €/TL Exchange rate is 31.12.2011 TCMB rate.
Inflation rates after are GDP deflator estimates taken from "OECD FAO Agricultural Outlook 2010-2019, p. 73, 2010".
Euro/TL rates after 2011 are adjusted to the inflation rate (difference between inflation in Turkey and inflation in European Union).

C. Dollar/TL Exchange Rates

Years	Buying	Selling
2000	0,6718	0,6750
2001	1,4466	1,4536
2002	1,6397	1,6477
2003	1,3933	1,4000
2004	1,3363	1,3427
2005	1,3418	1,3483
2006	1,4056	1,4124
2007	1,1593	1,1649
2008	1,5218	1,5291
2009	1,4873	1,4945
2010	1,5376	1,5450
2011	1,8889	1,8980

Source: TCMB (year end exchange rates: as of 31.12)

D. $/TL rate projection (2011-2019)

Years	Buying	Selling	Inflation estimation
2011	1,8889	1,8980	6%
2012	2,0022	2,0119	6%
2013	2,1224	2,1326	6%
2014	2,2497	2,2605	6%
2015	2,3847	2,3962	6%
2016	2,5278	2,5400	6%
2017	2,6794	2,6923	6%
2018	2,8402	2,8539	6%
2019	3,0106	3,0251	6%

Source: 2011 $/TL Exchange rate is 31.12.2011 TCMB rate.
Inflation rates after are GDP deflator estimates taken from "OECD FAO Agricultural Outlook 2010-2019, p. 73, 2010".
Dollar/TL rates after 2011 are adjusted to the inflation rate in Turkey.

III. SKIM MILK POWDER PRODUCTION AND CONSUMPTION

SMP production and consumption estimation (tonnes)

	A	B	C	D	E	F
Year	Milk Production	Milk Consumption	SMP equivalent of Milk Production	SMP equivalent of Milk Consumption	SMP Production	SMP Consumption
			A/10,05	B/10,05	C*7,6%	D*17%
2012	11.415.320	11.038.049	1.135.853	1.098.313	86.325	186.713
2013	11.799.760	11.424.718	1.174.105	1.136.788	89.232	193.254
2014	12.147.810	11.774.525	1.208.737	1.171.594	91.864	199.171
2015	12.451.330	12.083.252	1.238.938	1.202.314	94.159	204.393
2016	12.826.320	12.460.737	1.276.251	1.239.874	96.995	210.779
2017	13.207.240	12.844.660	1.314.153	1.278.076	99.876	217.273
2018	13.599.420	13.238.967	1.353.176	1.317.310	102.841	223.943
2019	13.976.110	13.616.482	1.390.658	1.354.874	105.690	230.329

Source: OECD FAO, Agricultural Outlook 2011-2020 Database.

*The milk equivalent of skim milk powder is 10,05 (1 kg SMP = 10,05 kg milk). Source: TEAE, August 2007, p. 28.

IV. OECD FAO, AGRICULTURAL OUTLOOK (COMMODITY PROJECTIONS)

A. WHEAT PROJECTIONS FOR TURKEY

Year	TR Price (TL/t)	Import Price (TL/t)	Production (t)	Consumption (t)
2009	458	340	20.600.000	17.900.000
2010	429	332	20.725.000	19.903.000
2011	390	303	21.305.000	20.288.000
2012	433	324	20.053.000	20.544.000
2013	451	344	20.938.000	20.813.000
2014	479	364	21.153.000	21.097.000
2015	528	402	21.397.666	21.319.880
2016	548	421	22.045.450	21.566.790
2017	566	434	22.240.990	21.868.790
2018	592	453	22.490.640	22.115.640
2019	609	467	22.802.470	22.401.690

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

*Import prices do not include customs tariff

B. EU WHEAT PRICE PROJECTION

Year	EU Price (€/t)	EU Price (TL/t)	€/TL exchange rate
2009	133	287	2,1530
2010	141	291	2,0650
2011	127	312	2,4556
2012	132	339	2,5661
2013	135	360	2,6687
2014	138	383	2,7755
2015	148	427	2,8865
2016	149	447	3,0020
2017	147	459	3,1221
2018	148	481	3,2469
2019	146	493	3,3768

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

C. SUGAR PROJECTIONS FOR TURKEY

Year	TR Price (TL/t)	Import Price (TL/t)	Production (t)	Consumption (t)
2009	788	980	2.531.000	1.944.000
2010	827	771	2.357.000	2.391.000
2011	872	666	2.347.000	2.432.000
2012	925	658	2.319.170	2.458.660
2013	980	666	2.367.060	2.483.160
2014	1039	749	2.392.930	2.513.030
2015	1.101	721	2.403.190	2.541.840
2016	1.168	709	2.461.900	2.585.260
2017	1.238	801	2.548.050	2.648.920
2018	1.312	877	2.623.450	2.726.210
2019	1.391	986	2.681.360	2.810.500

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

*Import prices do not include customs tariff

D. EU SUGAR PRICE PROJECTION

Year	EU Price (€/t)	EU Price (TL/t)	€/TL exchange rate
2009	335,2	722	2,1530
2010	335,2	692	2,0650
2011	335,2	823	2,4556
2012	335,2	860	2,5661
2013	335,2	895	2,6687
2014	335,2	930	2,7755
2015	335,2	968	2,8865
2016	335,2	1.006	3,0020
2017	335,2	1.047	3,1221
2018	335,2	1.088	3,2469
2019	335,2	1.132	3,3768

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

E. MILK PROJECTIONS FOR TURKEY

Year	TR Price (TL/t)	Production (t)	Consumption (per capita, kg)	Population estimation	Consumption (t)
2015	1.664	12.451.330	155,71	77.601.000	12.083.252
2016	1.800	12.826.320	158,78	78.478.000	12.460.737
2017	1.955	13.207.240	161,90	79.337.000	12.844.660
2018	2.126	13.599.420	165,13	80.173.000	13.238.967
2019	2.314	13.976.110	168,14	80.983.000	13.616.482

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

OECD FAO, Agricultural Outlook 2011-2020 Database.

F. EU MILK PRICE PROJECTION

Year	EU Price (€/t)	EU Price (TL/t)	€/TL exchange rate
2009	276	594	2,1530
2010	249	514	2,0650
2011	260	638	2,4556
2012	273	701	2,5661
2013	280	747	2,6687
2014	281	780	2,7755
2015	256	739	2,8865
2016	257	772	3,0020
2017	264	824	3,1221
2018	270	877	3,2469
2019	280	946	3,3768

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

G. MILK POWDER PROJECTIONS FOR TURKEY

Year	Import Price (TL/t)
2013	4.074
2014	4.403
2015	4.691
2016	5.075
2017	5.582
2018	5.858
2019	6.212

Source: OECD FAO, Agricultural Outlook 2010-2019 Database.

*Import prices do not include customs tariff

EU OLIVE OIL PRICE PROJECTION

Year	EU Olive Oil Price (€)	EU Olive Oil Price (TL)	Inflation in EU	€/TL exchange rate
2010	2.163	4.467	0,5%	2,0650
2011	2.176	5.344	0,6%	2,4556
2012	2.209	5.669	1,5%	2,5661
2013	2.253	6.013	2,0%	2,6687
2014	2.298	6.379	2,0%	2,7755
2015	2.344	6.767	2,0%	2,8865
2016	2.391	7.178	2,0%	3,0020
2017	2.439	7.615	2,0%	3,1221
2018	2.488	8.077	2,0%	3,2469
2019	2.537	8.569	2,0%	3,3768

Source: Prices are estimated by using exchange rate estimations.

V. GROUPS IN WTO AGRICULTURE NEGOTIATIONS

Cairns group: Argentina, Australia, Bolivia, Plurinational State of, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Pakistan, Paraguay, Peru, Philippines, South Africa, Thailand, Uruguay.

G-10: Chinese Taipei, Iceland, Israel, Japan, Korea, Republic of, Liechtenstein, Mauritius, Norway, Switzerland.

G-20: Argentina, Bolivia, Plurinational State of, Brazil, Chile, China, Cuba, Ecuador, Egypt, Guatemala, India, Indonesia, Mexico, Nigeria, Pakistan, Paraguay, Peru, Philippines, South Africa, Tanzania, Thailand, Uruguay, Venezuela, Bolivarian Republic of, Zimbabwe.

G-33: Antigua and Barbuda, Barbados, Belize, Benin, Bolivia, Plurinational State of, Botswana, Côte d'Ivoire, China, Congo, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, India, Indonesia, Jamaica, Kenya, Korea, Republic of, Madagascar, Mauritius, Mongolia, Mozambique, Nicaragua, Nigeria, Pakistan, Panama, Peru, Philippines, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Senegal, Sri Lanka, Suriname, Tanzania, Trinidad and Tobago, Turkey, Uganda, Venezuela, Bolivarian Republic of, Zambia, Zimbabwe

Mercosur: Argentina, Brazil, Paraguay, Uruguay.

African, Caribbean and Pacific countries (ACP) (WTO members: 58)
European Union (WTO members: 27)
G-90: African Group+ACP+Least Developed Countries
LDCs (WTO members: 31)
Small, Vulnerable Economies (WTO members: 15)
Recent New Members (WTO members: 19)
Low Income Economies in Transtition (WTO members: 3)
Tropical Products (WTO members: 8)
Cotton-4 (WTO members: 4)

VI. LIST

referred to in Article 38 of the Treaty

-1 No in the Brussels nomenclature	-2 Description of products
Chapter 1	Live animals
Chapter 2	Meat and edible meat offal
Chapter 3	Fish, crustaceans and molluscs
Chapter 4	Dairy produce; birds' eggs; natural honey
Chapter 5	
	Guts, bladders and stomachs of animals (other than fish), whole and pieces thereof
	Animal products not elsewhere specified or included; dead animals of Chapter 1 or Chapter 3, unfit for human consumption
Chapter 6	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
Chapter 7	Edible vegetables and certain roots and tubers
Chapter 8	Edible fruit and nuts; peel of melons or citrus fruit
Chapter 9	Coffee, tea and spices, excluding maté (heading No 0903)
Chapter 10	Cereals
Chapter 11	Products of the milling industry; malt and starches; gluten; inulin
Chapter 12	Oil seeds and oleaginous fruit; miscellaneous grains, seeds and fruit; industrial and medical plants; straw and fodder
Chapter 13	
ex13.03	Pectin
Chapter 15	
	Lard and other rendered pig fat; rendered poultry fat
	Unrendered fats of bovine cattle, sheep or goats; tallow (including "premier jus") produced from those fats
	Lard stearin, oleostearin and tallow stearin; lard oil, oleo-oil and tallow oil, not emulsified or mixed or prepared in any way
	Fats and oil, of fish and marine mammals, whether or not refined
	Fixed vegetable oils, fluid or solid, crude, refined or purified
	Animal or vegetable fats and oils, hydrogenated, whether or not refined, but not further prepared
	Margarine, imitation lard and other prepared edible fats
	Residues resulting from the treatment of fatty substances or animal or vegetable waxes

Chapter 16	Preparations of meat, of fish, of crustaceans or molluscs
Chapter 17	
	Beet sugar and cane sugar, solid
	Other sugars; sugar syrups; artificial honey (whether or not mixed with natural honey); caramel
	Molasses, whether or not decolourised
	Flavoured or coloured sugars, syrups and molasses, but not including fruit juices containing added sugar in any proportion
Chapter 18	
	Cocoa beans, whole or broken, raw or roasted
	Cocoa shells, husks, skins and waste
Chapter 20	Preparations of vegetables, fruit or other parts of plants
Chapter 22	
	Grape must, in fermentation or with fermentation arrested otherwise than by the addition of alcohol
	Wine of fresh grapes; grape must with fermentation arrested by the addition of alcohol
	Other fermented beverages (for example, cider, perry and mead)
ex22.08(1)	Ethyl alcohol or neutral spirits, whether or not denatured, of any strength, obtained from agricultural products listed in Annex I to the Treaty, excluding liqueurs and other spirituous beverages and compound alcoholic preparations (known as "concentrated extracts") for the manufacture of beverages
ex22.09(1)	
ex22.10(1)	Vinegar and substitutes for vinegar
Chapter 23	Residues and waste from the food industries; prepared animal fodder
Chapter 24	
	Unmanufactured tobacco, tobacco refuse
Chapter 45	
45.01	Natural cork, unworked, crushed, granulated or ground; waste cork
Chapter 54	
54.01	Flax, raw or processed but not spun; flax tow and waste (including pulled or garnetted rags)
Chapter 57	
57.01	True hemp (Cannabis sativa), raw or processed but not spun; tow and waste of true hemp (including pulled or garnetted rags or ropes)

Source: European Commission (25 March 1957): *The Treaty of Rome.*

VII. ASSOCIATON COUNCIL DECISION NO 1/95

PROCESSED AGRICULTURAL COMMODITIES

CN-code	Description
Ex 0403	Buttermilk, curdled milk and cream, yoghurt, kephir and other fermented or acidified milk and cream, whether or not concentrated or containing added sugar or other sweetening matter or flavoured or containing added fruit, nuts or cocoa;
0403 10 51 to 0403 10 99	- Yoghurt, flavoured or containing added fruit or cocoa
0403 90 71 to 0403 90 99	- Other, flavoured or containing added fruit or cocoa
0710 40 00	Sweet corn (uncooked or cooked by steaming or boiling in water), frozen
0711 90 30	Sweet corn provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption;
Ex 1517	Margarine; edible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this Chapter, other than edible fats or oils or their fractions of heading No 1516;
1517 10 10	- Margarine, excluding liquid margarine containing more than 10% but not more than 15% by weight of milk fats
1517 90 10	- Other, containing more than 10% but not more than 15% by weight of milk fats
1702 50 00	Chemically pure fructose
Ex 1704	Sugar confectionery (including white chocolate), not containing cocoa; excluding liquorice extract containing more than 10% by weight of sucrose but not containing other added substances, falling within CN code 1704 90 10
1806	Chocolate and other food preparations containing cocoa
1901	Malt extract; food preparations of flour, meal, starch or malt extract, not containing cocoa powder or containing cocoa powder in a proportion by weight of less than 50%, not elsewhere specified or included; food preparations of goods of heading Nos 0401 to 0404, not containing cocoa powder or containing cocoa powder in a proportion by weight of less than 10%, not elsewhere specified or included
Ex 1902	Pasta, excluding stuffed pasta falling within CN codes 1902 20 10 and 1902 20 30; couscous, whether or not prepared
1903	Tapioca and substitutes therefor prepared from starch, in the form of flakes, grains, pearls, siftings or similar forms
1904	Prepared foods obtained by the swelling or roasting of cereals or cereal products (for example, corn flakes); cereals, other than maize (corn), in grain form, pre-cooked or otherwise prepared
1905	Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa; communion wafers, empty sachets of a kind suitable for pharmaceutical use, sealing wafers, rice paper and similar products
2001 90 30	Sweet corn (Zea mays var. saccharata), prepared or preserved by vinegar or acetic acid
2001 90 40	Yams, sweet potatoes and similar edible parts of plants containing 5 % or more by weight of starch, prepared or preserved by vinegar or acetic acid
2004 10 91	Potatoes in the form of flour, meal or flakes, prepared or preserved otherwise than by vinegar or acetic acid, frozen

CN-code	Description
2004 90 10	Sweet corn (Zea mays var. saccharata) prepared or preserved otherwise than by vinegar or acetic acid, frozen
2005 20 10	Potatoes in the form of flour, meal or flakes, prepared or preserved otherwise than by vinegar or acetic acid, not frozen
2005 80 00	Sweet corn (Zea mays var. saccharata) prepared or preserved otherwise than by vinegar or acetic acid, not frozen
2008 92 45	Preparation of the muesli type based on unroasted cereal flakes
2008 99 85	Maize (corn), other than sweet corn (Zea mays var. saccharata) otherwise prepared or preserved, not containing added spirit or added sugar
2008 99 91	Yams, sweet potatoes and similar edible parts of plants containing 5 % or more by weight of starch, otherwise prepared or preserved, not containing added spirit or added sugar
2101 10 99	Preparations with a basis of extracts, essences and concentrates of coffee or with a basis of coffee, other than those of CN code 2101 10 91
2101 20 90	Extracts, essences and concentrates of tea or maté and preparations with a basis of these extracts, or with a basis of tea or maté, other than those of CN code 2101 20 10
2191 30 19	Roasted coffee substitutes excluding roasted chicory
2101 30 99	Extracts, essences and concentrates or roasted coffee substitutes excluding those of roasted chicory
2102 10 31	Bakers' yeast
2102 10 39	
2105	Ice cream and other edible ice, whether or not containing cocoa
Ex 2106	Food preparations not elsewhere specified or included other than those falling within CN codes 2106 10 10 and 2106 90 91 and other than flavoured or coloured sugar syrups
2202 90 91 2202 90 95 2202 90 99	Non-alcoholic beverages, not including fruit or vegetable juices of CN code 2609, containing products of CN codes 0401 to 0404 or fat obtained from products of CN heading Nos 0401 to 0404
2905 43 00	Mannitol
2905 44	D-Glucitol (sorbitol)
Ex 3501	Caseins, caseinates and other casein derivatives
Ex 3505 10	Dextrins and other modified starches, excluding esterified or etherified starches of CN code 3505 10 50
3505 20	Glues based on starches or on dextrins or other modified starches
3809 10	Finishing agents, dye carriers to accelerate the dyeing or fixing of dyestuffs and other products and preparations (for example, dressings and mordants), of a kind used in the paper, leather or like industries, with a basis of amylaceous substances, not elsewhere specified or included
3823 60	Sorbitol other than of CN code 2905 44

VIII. ASSOCIATON COUNCIL DECISION NO 1/98

ANNEX 1

ARRANGEMENTS APPLICABLE TO THE IMPORTATION INTO THE COMMUNITY OF AGRICULTURAL PRODUCTS ORIGINATING IN TURKEY

A	B	C	D	E	F	G
CN code	Description	CCT ad valorem duty		Specific duty		
		Duty reduction (%)	Tariff quota (t)	In quota duty	Tariff quota (t)	Over quota duty
0204	Meat of sheep or goats	100	—	0	200	
0207 25 10	Meat of turkeys, not cut in pieces, frozen			ECU/t 170	1 000	
0207 25 90				ECU/t 186		
0207 27 30	Turkey cuts and offal other than liver, frozen			ECU/t 134		
0207 27 40				ECU/t 93		
0207 27 50				ECU/t 339		
0207 27 60				ECU/t 127		
0207 27 70				ECU/t 230		
0406 90 29	Kashkaval cheese			0	1 500	ECU 67,19/100 kg
Ex 0406 90 31	Cheese made exclusively from sheep's milk or buffalo milk, in containers containing brine, or in sheepskin or goatskin bottles					
Ex 0406 90 50	Other cheese made exclusively of sheep milk or buffalo milk in containers containing brine, or in sheep or goatskin bottles					
Ex 0406 90 86	Tulum Peyniri, made from sheep or buffalo milk, in individual plastic or other kind of packing of less than 10 kg					
Ex 0406 90 87						
Ex 0406 90 88						
Ex 0701 90	Potatoes, from 1 January to 31 March	100	—			
Ex 0703 10 11	Onions, from 15 February to 15 May	100	—			
Ex 0703 10 19		100	—			

A	B	C	D	E	F	G
CN code	Description	CCT ad valorem duty		Specific duty		
		Duty reduction (%)	Tariff quota (t)	In quota duty	Tariff quota (t)	Over quota duty
Ex 0703 10 11 Ex 0703 10 19	Onions, from 16 May to 14 February	100 100	2 000			
Ex 0708 20 20 Ex 0708 20 95	Beans, from 1 November to 30 April	100	—			
Ex 0708 90 00	Broad beans (Vicia Faba major L.), from 1 July to 30 April	100	—			
Ex 0709 30 00	Aubergines, from 15 January to 30 April	100	—			
Ex 0709 30 00	Aubergines, from 1 May to 14 January	100	1 000			
Ex 0709 40 00	Ribbed or stick celery (Apium graveolens L., var dulce (Mill) Pers.), from 1 January to 30 April	100	—			
0709 90 71 Ex 0709 90 73 Ex 0709 90 79	Courgettes, from 1 December to end February	100	—			
Ex 0709 90 73 0709 90 75 0709 90 77 Ex 0709 90 79	Courgettes, from 1 March to 30 November	100	500			
Ex 0709 90 90	Pumpkins, from 1 December to end February	100	—			
Ex 0709 90 90	Wild onions of the genus Muscari comosum, from 15 February to 15 May	100	—			
0802 21 00 0802 22 00	Hazelnuts or filberts (Corylus spp)	Duty rate: 3 %	—			
0806 10 21 Ex 0806 10 29 0806 10 30 Ex 0806 10 40 Ex 0806 10 50 0806 10 61 0806 10 69	Fresh table grapes, from 15 November to 30 April and from 18 June to 31 July	100	—			
Ex 0807 11 00	watermelons, from 1 April to 15 June	100	—			

A	B	C	D	E	F	G
CN code	Description	CCT ad valorem duty		Specific duty		
		Duty reduction (%)	Tariff quota (t)	In quota duty	Tariff quota (t)	Over quota duty
Ex 0807 11 00	Watermelons, from 16 June to 31 March	100	14 000			
Ex 0807 19 00	Other melons, from 1 November to 31 May		—			
Ex 0809 40 10			—			
Ex 0809 40 20	Plums, from 1 May to 15 June		—			
0811 10 11	Strawberries, frozen	100	—	0	100	
0811 20 11	Raspberries, etc., frozen	100	—	0		
0811 90 19	Other fruits frozen	100	—	0		
1002 00 00	Rye			Reduction according to Article 3 (4)	—	
1107 10	Malt, not roasted			Reduction of ECU/t 6,57	—	
1107 20 00	Malt roasted			Reduction of ECU/t 6,57	—	
1509 10 10	Lampante virgin olive oil			10 % reduction	—	
1509 10 90	Other virgin olive oil			10 % reduction	—	
1509 90 00	Other olive oil than virgin			5 % reduction	—	
1510 00 10	Crude olive oil			10 % reduction	—	
1510 00 90	Other olive oil			5 % reduction	—	
2002 10	Prepared tomato, whole or in pieces				—	
2202 90 11 2002 90 19	Other prepared tomatoes, with a dry matter content of less than 12 % by weight	100	8 000		—	
2002 90 31 2002 90 39 2002 90 91 2002 90 99	Other prepared tomatoes, with a dry matter content of not less than 12 % by weight	100	30 000 t (equivalence 28/30 % dry matter content)			

A	B	C	D	E	F	G
CN code	Description	CCT ad valorem duty		Specific duty		
		Duty reduction (%)	Tariff quota (t)	In quota duty	Tariff quota (t)	Over quota duty
2007 91 30	Jams, jellies, marmalades, puree and pastes, being cooked preparations, other than homogenised preparations, of citrus fruit, with a sugar content exceeding 13 % but not exceeding 30 % by weight	100	—	0	100	
2007 99 39	Other preparations, with a sugar content exceeding 30 % by weight	100	—	0	100	
Ex 2008 50 92 Ex 2008 50 94	Apricot pulp, not containing added spirit or sugar in immediate packing of a net content of 4,5 kg or more	100	600			
2204 10	Sparkling wine			0	—	
2204 21	Other wine, grape must with fermentation prevented or arrested by the addition of alcohol, in containers holding 2 litres or less			0	—	
2204 29	Other wine; grape must with fermentation prevented or arrested by the addition of alcohol, in containers holding more than 2 litres			0	—	
2206 00	Other fermented beverages; mixtures of fermented beverages and mixtures of fermented beverages and non-alcoholic beverages, not elsewhere specified or included			0	—	
Ex 2007	Undenatured ethyl alcohol of an alcoholic strength by volume of 80 % vol or higher and ethyl alcohol and other spirits, denatured, of any strength, obtained from agricultural goods listed in Annex II to the EC Treaty			0	—	
2009 00	Vinegar and substitutes for vinegar obtained from acetic acid			0	—	

ANNEX

ARRANGEMENTS APPLICABLE TO THE IMPORTATION INTO TURKEY OF AGRICULTURAL PRODUCTS ORIGINATING IN THE COMMUNITY

A	B	C	D
CN code	Description	Reduction of the MFN duty (%)	Tariff quota (tonnes)
0102 10	Live bovines: pure bred breeding animals	100	Unlimited
0102 90 29	Live bovine animals, other than pure bred breeding animals, of a weight from 80 to 160 kg	100	2 000
ex 0102 90 (0102 90 29 excluded)	Live bovine animals; other than pure bred breeding animals, other than those of a weight from 80 to 160 kg	50	1 500
0202 20	Other cuts of bovine meat, with bone in, frozen	50 % reduction with maximum duty: 1998, 43 % 1999, 37 % from 2000, 30 %	5 000
0202 20	Other cuts of bovine meat, with bone in, frozen	30 % reduction with maximum duty: 1998, 61 % 1999, 52 % from 2000, 43 %	14 000
0402 10	Milk and cream in powder, granules or other solid forms, of a fat content by weight, not exceeding 1,5 %	100	1 500 (*)
0402 21	Milk and cream in powder, granules or other solid forms, of a fat content by weight, exceeding 1,5 % not containing added sugar or other sweetening matter	100	2 500 (*)
0405 10 0405 20 90 0405 90	Butter and other fats and oils derived from milk; dairy spreads	100	3 000
0406 30	Processed cheese, not grated or powdered	100	300
0406 90	Other cheese	100	2 000
0601	Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, dormant, in growth or in flower; chicory plants and roots other than roots of heading No 1212	100	200

(*) These quotas are foreseen for imports under the inward-processing scheme.

A	B	C	D
CN code	Description	Reduction of the MFN duty (%)	Tariff quota (tonnes)
ex 0602 90 (0602 90 91 excluded)	Live plants, other	100	3 000
0603 10	Cut flowers, etc. fresh	100	100
0604	Foliage, branch, and other parts of plants, without flowers or flower buds, and grasses, mosses and lichens, being goods of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared	100	100
0701 10 00	Seed potatoes, fresh or chilled	100	5 000
0808 10 except: 0808 10 51 0808 10 61 0808 10 71 0808 10 92	Apples fresh, other than of the variety golden delicious	100	1 000
ex 0809 30 31 ex 0809 30 39 0809 30 41 0809 30 49 0809 30 51 0809 30 59	Peaches, including nectarines, fresh, from 15 July to 31 December	100	1 000
0810 90 30	Tamarinds, cashew apples, lychees, jackfruit and sapodilla plums, fresh	100	1 000
0810 90 40	Passion fruit, carambola and pitahaya, fresh	100	500
0810 90 85	Other fruit, fresh	100	500
0902	Tea	Maximum duty: 45 %	200
ex 1001 10 00	Durum wheat, from 1 September to 31 May	100	100 000
ex 1001 90	Wheat, from 1 September to 31 May, other than durum wheat	100	200 000
ex 1002 00 00	Rye, from 1 September to 31 May	100	20 000
ex 1003 00	Barley, from 1 September to 31 May, for malting	100	46 000
ex 1005 90 00	Maize (corn), from 1 December to 31 May, other than seed	100	52 000

A	B	C	D
CN code	Description	Reduction of the MFN duty (%)	Tariff quota (tonnes)
1006 30	Semi-milled or wholly milled rice	100	28 000
1207 20 90	Cotton seeds, other than for sowing	100	1 500
ex 1209	Seeds, fruit and spores, for sowing, except 1209 11 00	100	1 000
1209 11 00	Sugar beet seed	100	300
1502	Fats of bovine animals, sheep or goats	100	3 000
ex 1507 10	Soya bean crude oil, from 1 January to 31 August	100	60 000
ex 1507 90	Refined soya oil, from 1 January to 31 August	50	2 000
ex 1512 11	Sunflower seed or safflower crude oil, from 1 January to 31 August	100	18 000
ex 1514 10	Rape and colza or mustard crude oil, from 1 January to 31 August	100	10 000
1701 99	Cane or beet sugar and chemically pure sucrose, in solid form, other than raw sugar, not containing added flavouring or colouring matter	20 %, with a maximum duty of 50 %	80 000
2002 90	Tomatoes prepared, other	100	1 500
2209 00	Vinegar and substitutes obtained from acetic acid	100	2 500
2301	Flours, meals and pellets, of meat or meat offal, or fish or of crustaceans, molluses or other aquatic invertebrates, unfit for human consumption; greaves	100	—
2304	Cake and other solid residues from soya-bean oil	100	—
2309 10	Dog or cat food, put up for retail sale	100	1 000
2309 90	Other preparations of a kind used in animal feeding	100	6000

IX. ILLUSTRATIVE LIST OF INDICATORS FOR THE DESIGNATION OF SPECIAL PRODUCTS

1. The product is a staple food, or is a part of the basic food basket of the developing country Member through, *inter alia*, laws and regulations, including administrative guidelines or national development plan or policy or historical usage, or the product contributes significantly to the nutritional or caloric intake of the population.

2. A significant proportion of the domestic consumption of the product in its natural, unprocessed or processed form, in a particular region or at a national level, is met through domestic production in the developing country Member concerned.

3. Domestic consumption of the product in the developing country Member is significant in relation to total world exports of that product; or a significant proportion of total world exports of the product are accounted for by the largest exporting country.

4. A significant proportion of the total domestic production of the product in a particular region or at the national level is produced on farms or operational land holdings of up to and including 10 hectares, or is produced on farm or operational land holdings which are of a size equal to or less than the average farm size of the developing country Member concerned, or a significant proportion of the farms or operational land holdings producing the product are up to and including 10 hectares in size or of the average farm size or less of the developing country Member concerned.

5. A significant proportion of the total agricultural population or rural labour force, in a particular region or at the national level, is employed in the production of the product.

6. A significant proportion of the producers of the product, in a particular region or at the national level, are low income, resource poor, or subsistence farmers, including disadvantaged or vulnerable communities and women or a significant proportion of the domestic production of the product is produced in disadvantaged regions and areas including, *inter alia*, drought-prone or hilly or mountainous regions.

7. A significant proportion of the total value of agricultural production or agricultural income of households, in a particular region or at the national level, is derived from the production of the product.

8. A relatively low proportion of the product is processed in the developing country Member as compared to the world average; or the product contributes a relatively high proportion to value addition in the rural areas, in a particular region or at the national level, through its linkages to non-farm rural economic activities, including handicrafts and cottage industries or any other form of rural value addition.

9. A significant proportion of the agricultural customs tariff revenue is derived from the product in a developing country Member.

10. A significant proportion of the total food expenditure, or of the total income, of households in a particular region or at the national level in the developing country Member concerned, is spent on the product.

11. The product in respect of which product specific AMS or blue box support has been notified by any WTO Member and which has been exported by that notifying Member during any year from 1995 to the starting date of the implementation of Doha Round.

12. The productivity per worker or per hectare of the product in the developing country Member, in a particular region or at the national level, is relatively low as compared to the average productivity in the world.