The Analysis of the *Market Price Support* and *Difference Payment System* Practices in Turkey Using Partial Equilibrium Model

*Halil KIZILASLAN – A. Zafer GURLER – Nuray KIZILASLAN**

Abstract

In Turkey, the effectiveness of the agricultural support policies is a constantly discussed matter. The purpose of this study is to analyse and compare the effects of the „MPS" and „DPS" on the welfare of the producer and the consumer, and on the net society losses and gains. In the study, „wheat" has been taken into account, which is generally accepted as the key product. In line with the purpose of the study, Partial Equilibrium Model(PEM) has been used when analysing the data.In accordance with the results of the study, it has been established that „DPS" is the preferred alternative as far as net social revenues are concerned, and „MPS" is the preferred alternative as far as reducing the budget burden is concerned.

Keywords: *Difference Payment System (DPS), Market Price Support (MPS), Partial Equilibrium Model (PEM), Turkey, Wheat*

JEL Classification: Q14, Q18

1. Introduction

Reform in agricultural policies is always in the agenda of the developing countries. The reason for this is the fact that the agricultural policies implemented are not sufficient in meeting objectives, as the purpose-outcome relations in agricultural support policies conflict with the different points of view of circles with different interests. Therefore, mostly, the trends that the rest of the world prefers are not taken into account, and the policies set are not based on objective criteria. On the other hand, the relation of the transfers made in the agricultural sector with the budget deficits is constantly being questioned (Cakmak et al., 1998).

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Due to the globalisation trends throughout the world and the effects of the World Trade Organisation (WTO), significant changes have been foreseen in Turkish agricultural policies. The agriculture issue has been brought under rules and a discipline for the first time in the framework of one of the annexed agreements of the WTO in 1995 upon its entry into force. The agreement aims at establishing an equitable and predictable system based on free market mechanisms for agricultural products. In this scope, under the main subject matter headings of market access, internal support and protection measures and export subsidies in agricultural products, and rules that member countries are liable to abide by have been determined, and it has been sought to integrate the international agricultural products trade, which was subject to interventions and non-tariff barriers at a considerable scale prior to the signing of the agreement, into the multilateral system (Dolekoglu, 2003).

During the Uruguay Round, member countries of the WTO have taken various commitments on market access, internal support and protection measures and export subsidies. WTO Treaty on Agriculture recognizes the right to commitments in different proportions and durations for Developped Countries (DC) Countries in Phase of Development (CPD) and Least Developped Countries (LDC). As a matter of fact, Turkey, having CPD status in the WTO framework, benefited in all her concessions and commitments pertaining to agriculture, from the terms of differentiated and advantageous treatment envisaged by the Agriculture Agreement for CPD (Cakmak and Akder, 1999).

Article 20 of the WTO Agricultural Agreement stipulates the continuation of the reform program started in the agricultural sector with the Uruguay Round and aimed at increasing market access possibilities and substantial progressive reduction in support and protection, in the form of export subsidies and internal measures (Kasnakoglu et al., 2000). This process which is called the *Advanced Agricultural Negotiations* has been started, as provided for in the WTO Treaty, by decision of the WTO General Council one year before the end of the implementation period, at the date of 23 – 24 March 2000, and is currently being pursued (Abay et al., 2005).

Between the dates of 27 to 31 July 2004, a framework agreement has been signed in the scope of WTO Advanced Agriculture Negotiations conducted in Geneva. This agreement includes decisions that concern Turkey very closely. According to this agreement, the means of protection of agricultural (including cereals and animal products) and industrial products through customs arrangements will come to an end. With this agreement, it is also foreseen that price support measures would be lifted in a definite manner, which means that the present contribution brought to agriculture at yearly amounts varying between

1.2 and 3 billion USD will no longer be made. In line with these changes Turkey is moving towards „Direct Income Support (DIS)" system instead of the „Market Price Support (MPS)" and „input subsidies" it had been implementing for several years now. This system is implemented for some products in the European Union (EU), USA, and some developed countries. With some reforms implemented in the EU in 1992, direct payment has been put into practice instead of price support. This different feature has been supported with structural measures that particularly involve environmental protection (Tarditi, 1998). Indeed, in these countries, while the ration of the price support was 80 % within the entire support measures, currently it is down to 60 %. It is being stated that as far as the agricultural supports are concerned, the EU spends more for the agricultural supports (Blandford, 2001).

The DIS system, projected to replace all other support measures in agriculture signifies that all governmental support from the sector of agriculture will be retired, is not put in implementation on its own in any country at present. DIS system are the complimentary state aid measures directed toward farmers independently of production quantities and prices (Caliskan and Turkes, 2005). It is stated that the USA and the EU endeavour to widen the application of DIS in order to reduce agricultural products prices and the production (Oyan, 2000).

With the justification that it is impartial as far as the market effects are concerned, it is stated that re-distributing the revenues that are independent of production is the most appropriate means of policy (Giannakas and Fulton, 1998). On the other hand, it is also stated that in order to facilitate and accelerate the agricultural policy reform, the public support for the make-up payments independent of production needs to have a long past (Beard and Swinbank, 2001).

Reform in agricultural policies is in Turkey's agenda since some time. The most important reason being the inadequacy shown by the pursued agricultural policies in attaining objectives. In a high-inflation environment fuelled by budget deficits, the transfer of resources to the agricultural sector has started to be questioned. Furthermore, the fact that the general economic policies conducted privilege the free market system, and that the WTO agreements are of a nature to support this system, accelerated the search for a new agriculture policy. In this context, difference payment system has been brought to the agenda (Sahinoz et al., 2005). Changing the system for the interventions made in the agricultural products markets is an important part of these new agricultural policies. The revenue transfer made toward producers as a consequence of intervention on product prices may need to pull on the resources provided by consumers and/or taxpayers. Among these, in the policies currently put in implementation, the trend of a transfer from the consumer to the producer is remarked to hold more weight (Cakmak et al., 1998).

Difference Payment System (DPS), is an instrument used when producer's production costs are above the market price in order to bring product prices and producer's labour revenues to an equitable, and this, without influencing the prices paid by consumers. DPS is defined as the payment by the state to the producer, of the difference between a „target price" determined by adding a certain benefit ratio to average product costs and the prices as shaped freely by the market. As for the „target price", it is a price level expected to be received by the producer (and representing, in most cases, the maximal price levels consumers would pay). The target price is defined as a price that would be at the same level of the state's support or slightly above that level (Eraktan, 2001).

By having recourse to the DPS, the producer's price is kept above the market price (a balanced price or the global price). Consumers and the industries processsing agricultural products may buy the product at the market price. The difference between the market price and the producer's price is met by the state. In this manner, costs and issues relating to storage and shipment of goods in question are also put to an end. Interventions that are of a nature to restrict international trade, such as customs duties and quotas, are not necessitated. Agricultural support becomes a visible item in the budget. On the other hand, taxpayer's burden is of course increased. When met through income tax systems based on increasing tax ratios, the DPS cost, it becomes a transfer of revenue from high-income groups to low-income groups.

In summary, the most important difference between MPS and the DPS arises at the level of consumer welfare. This is because, while under the MPS system, consumer shape their demand for the product on the basis of the target price, in the DPS this demand is formed through a limit price. If the objective pursued with the implemented policies is to increase consumer welfare, then the DPS will be applied. While in the MPS system, the burden of the budget is on the consumers, in the DPS that focuses on consumer welfare, the burden of the budget is assumed by taxpayers. And taxpayers are composed of both the producers and the consumers, as well as other groups and layers in the society. When considered that taxes paid by farmers constitute a small share in the overall taxation, the burden of the DPS implementation is assumed mainly and indirectly by the other groups and layers in the society (Akca, 2002).

It cannot be neglected that when Turkey starts to modify its agricultural policy based on WTO criteria, the most important effect will be concerning the key product, which is wheat. Wheat is the most important agricultural product of Turkey both in the political sense, and in the economical sense. 75 per cent of the 4 million agricultural establishments are involved in wheat production. One third of the arable agricultural areas and two third of the total grain production

area has been reserved for wheat production. These figures correspond to approximately 4.26 per cent of the world wheat production area.

The aim of the present study is to examine the effects on producer and consumer welfare and on budget deficits of the transition from MPS to the DPS. Because, both due to the economic crises it has experienced, and due to the work to be done for harmonization with the EU Common Agricultural Policy (CAP), and also due to its obligations stemming from the WTO agriculture agreement, force Turkey to implement different policies. For this reason, and before putting any policy element in practice, it is of importance that decisions are taken by evaluating the proposed support policies through its economic and social aspects by means of quantitative analyses. With this objective in mind, the effects on welfare of the implementation of MPS and DPS for wheat has been put through a comparative analysis (in terms of production, consumption, foreign trade, producer and consumer welfare, net social loss and the budget burden).

2. The Application of the Model

In the research, the official 2003 data have been used (Anonymous, 2004 a, b, c). In the welfare effects analysis of „MPS" and „DPS", Partial Equilibrium Model (PEM) has been used. In the model, the supply and demand price elasticity values to calculate the new situation that may arise, in case a new policy is to be implemented instead of the currently implemented policy, is needed. When the elasticity is being calculated, the general equation (1) was taken as the starting point (Slomon, 1996).

$$\varepsilon = \left(\delta Q \div \delta P\right) \times \left(P_{avr} \div Q_{avr}\right) \tag{1}$$

Accordingly, the supply elasticity used in the research has been given in the equation (2).

$$\varepsilon_s = \left[\left(Q_T - Q_B\right) \div \left(P_T - P_B\right)\right] \times \left[\left(P_T + P_B\right) \div \left(Q_T + Q_B\right)\right] \tag{2}$$

here:

ε_S – Price elasticity of the supply; Q_T – Quantity supplied with the target price; Q_B – Quantity supplied with the border price; P_T – Target price; P_B – Border price.

Here, the *production quantity that can take place at the border price* „Q_B" has been given in equation (3).

$$Q_B = Q_T \frac{\left\{\left[\left(P_T + P_B\right)\right] - \left[\left(\varepsilon_S\right) \times \left(P_T - P_B\right)\right]\right\}}{\left[\left(\varepsilon_S\right) \times \left(P_T - P_B\right)\right] + \left(P_T + P_B\right)} \tag{3}$$

If we show the demand elasticity as in equation (4):

$$\varepsilon_D = \left[\left(q_T - q_B\right) \div \left(P_T - P_B\right)\right] \times \left[\left(P_T + P_B\right) \div \left(q_T + q_B\right)\right] \quad (4)$$

here:

ε_D – Price elasticity of the demand; q_T – Quantity demanded with the target price; q_B – Quantity demanded with the border price; P_T – Target price; P_B – Border price.

Here, the equation where the *production quantity that can take place at the border price* (q_B) is obtained.

$$q_B = q_T \frac{\left\{\left[\left(P_T + P_B\right)\right] - \left[\left(\varepsilon_D\right) \times \left(P_T - P_B\right)\right]\right\}}{\left[\left(\varepsilon_D\right) \times \left(P_T - P_B\right)\right] + \left(P_T + P_B\right)} \quad (5)$$

Percentage calculations have been used in establishing the effects of MPS and DPS policies on production and consumption based on the border price taken as the basis for wheat. Equation No (6) can be prepared with this purpose:

$$\Re = \left(\varphi \div Q_B\right) \times 100 \quad (6)$$

$\Re$ – The effect of MPS or DPS

φ – Quantity attained as a result of MPS or DPS

Q_B – Quantity at the border price.

The analysis of the impacts on the MPS and DPS on the *welfare effect* have been calculated with the below group of equations no. (7). The meaning that the notations contain is given in Appendix Table 1 and 2. Furthermore, The effects on general welfare of MPS and DPS in Turkish wheat sector have been presented in the Appendix Graphic 1.

$$\begin{aligned}
\alpha &= \left[\left(Q_T - Q_B\right) \times \left(P_T - P_B\right)\right] \div 2 \\
\beta &= \left[\left(q_B - q_T\right) \times \left(P_T - P_B\right)\right] \div 2 \\
\mu &= \alpha + \beta \\
\Psi &= \left[\left(q_B + q_T\right) \times \left(P_T - P_B\right)\right] \div 2 \\
\lambda &= \left[\left(Q_B + Q_T\right) \times \left(P_T - P_B\right)\right] \div 2 \\
\omega &= \left(Q_T - q_T\right) \times \left(P_T - P_B\right) \\
\eta &= \left(Q_T\right) \times \left(P_T - P_B\right)
\end{aligned} \quad (7)$$

Sensitivity Analysis (SA) is the study of how the variation in the output of a model (numerical or otherwise) can be apportioned, qualitatively or quantitatively, to different sources of variation. Sensitivity Analysis (SA) aims to ascertain how the model depends upon the information fed into it, upon its structure and upon the framing assumptions made to build it. This information can be invaluable, as

• Different level of acceptance (by the decision-makers and stakeholders) may be attached to different types of uncertainty.

• Different uncertainties impact differently on the reliability, the robustness and the efficiency of the model (http:/jrc.cec.eu.int/default2.asp?page=sa).

In the study, the impacts of production, consumption and DPS on the budget burden are being calculated with sensitivity analysis. In the sensitivity analysis, the border price has been taken as the basis. In calculations, the following cases have been taken into account: where the average production cost is equal to the border price, 5 per cent below it and 20 per cent above it and where the border price is the same, with 10 per cent decrease or 10 per cent increase.

3. Findings and Discussion

*The analysis of the effects of „**market price support**" for the 2003 wheat production in Turkey have been summarised in Appendix Table 1'. Accordingly:*

***Prices**:* The support price is 160.67 USD/Ton, and the border price is 144.32 USD/Ton. Accordingly, with the market price support policy practice, a support of 16.35 USD per ton has been provided for the wheat producer.

Actualised Quantities: Wheat production quantity had actualised as 19 million tons and consumption quantity approximately 17.933 million tons. In this case, the exportable wheat quantity is assumed as 1.067 tons.

***The quantities that can be actualised at the border price**:* The production quantity that can be actualised at the border price is determined as approximately 18.008 million tons and consumption quantity, 18.519 million tons. In this case, as the consumption quantity will be higher than the production quantity, Turkey will be an importing country.

***Support Policy Effect**:* There has been an increase of 5.51 per cent in production, and 3.56 per cent decrease in consumption. In other words, Turkey has experienced a transition from being an importer country to an exporter country.

***Net Social Loss**:* The total welfare loss encountered in production and consumption gives the net social loss. During the working period, as a result of the wheat market price support, there has been a net social loss of 12.90 million USD, due to the wheat market price support.

***Changes in the Producer and Consumer Welfare**:* As a result of the wheat market price support, there was an increase of approximately 302.54 million USD in the producer welfare, and a decrease of 297.99 million USD in the consumer welfare. In this context, another study conducted in Turkey (Yildirim et al., 1998), examines the effects of the price support policies implemented for wheat quantity and quality as well as on the producer and the consumer. In this study, it has been calculated that, in the case of a transition toward liberalization and market economy in the wheat market, an annual decrease of 1.11 billion USD can be attained in the transfers made by consumers and taxpayers

toward producers. Alongside this point, it is stated that the tariffs restricting imports put in place by the state and the price policy implemented incite low quality wheat production.

Changes in the State Revenues (Budget Burden): The budget burden of the market price support for wheat has been calculated as 7.45 million USD. With the market price support, the burden of most of the support given to the wheat producer is being covered by the consumers. Furthermore, partially, due to the export subsidies, it remains on the budget. The sensitivity toward budgetary issues have been exposed through another study that has been done. Gray and Smith (1997) in their study, have examined the changes that took place in the programs for cereals and oleaginous seeds in the USA and Canada during the years 1985 to 1996. It is stated in their study that the majority of the changes occuring in the period examined emanated from such factors as budget pressures, diminition in the political influence of agricultural lobbies, evolution of cereal and oleaginous seeds prices, as well as growing sensitivities toward environmental issues.

Net Social Gain of the Market Price Support Policy: The net social welfare loss as a result of the MPS is approximately 12.90 million USD. Yeni (2000), in his study, states that support policy instruments attempted to be put in practice in Turkey to this day do not, generally, comply with WTO Agriculture Agreement rules and are not in harmony with the CAP. It is pointed that the support system in Turkey is usually shaped through short-term political considerations. It is stressed that the MPS system implemented does not contribute to improving production planning and agricultural structure.

In the Mid-Term Review (MTR), the European Commission proposed of changes to the CAP. A important part of these changes was significant decoupling of support payments from production.The changes that are made in the MTR have the effect of reducing the production of the major commodities by varying amounts based on the importance of payments in production and the degree to which these payments are currently production inducing (Binfield et al., 2003).

*The analysis of the net social loss, changes in the consumer and producer welfare and the changes that will occur in the state revenues in case „**difference payment system**" is implemented is summarised in Appendix Table 2. Accordingly:*

Prices: DPS is a system that takes into account both producer and consumer welfare. With this policy practice, the farmer can sell the wheat produced with the target price; and the consumer can buy the same product with the border price. If in 2003, the DPS had been implemented for wheat; the producer price (= target price) would be 160.67 USD/ton, and in turn, the consumer price (= border price) would be 144.32 USD/ton.

Actualised Quantities: Had the DPS been implemented, as the producer price would be at the level of target price, the wheat production quantity would be around 19 million tons. On the other hand, as wheat could be sold in the market with the border price, the consumption quantity would be approximately 18.519 million tons.

The quantities that can be actualised at the border price: The production and consumption quantities that can be actualised at the border price reflect the production

according to the price in the world stock exchanges and the situation that shapes consumption. The production quantity that can occur at the border price is calculated as 18.008 million tons, and the consumption quantity is calculated as 18.519 million tons. Accordingly, if the DPS had been implemented in 2003, Turkey would have had to import 511 thousand tons of wheat.

Support Policy Effect: It would have led to an increase of 5.51 per cent in wheat production, and the same year, it would not have cause any increases or decreases in consumption, as the DPS is a consumer supported system, and when the producers sell the product with the target price, the consumers will continue to buy the same product with the border price.

Net Social Loss: The total welfare loss encountered in the DPS is not due to production only. This is value-wise, approximately 8.11 million USD. Schmitz and Chambers (1986), in a study conducted in this field, have examined the effects on welfare of the difference payment system for the US wheat market by means of Partial and General Balance Models (under the hypothesis of open and large markets) and by taking the years 1978 and 1981 as basis. They arrive at the conclusion that, as the difference between the target price and the market price increases, the transfers to be made and the resulting social loss will also increase; whereas in the opposite situation, the social losses would remain low compared to production and export values.

Changes in the Producer and Consumer Welfare: In the DPS, the increase in the producer welfare is approximately 302.54 million USD. There are no changes in the consumer welfare, as the consumers can buy the wheat at the border price level in this system.

Change in State Revenues (Budget Burden): In the research period, the burden that the difference payment system for wheat would bring on wheat was around 310.65 million USD. While the 302.54 million-dollar portion of this amount is transferred to the producers as welfare increase, the 8.11 million-dollar portion expresses the net social loss due to production.

Net Social Gain of the Support Policy: In case the difference payment system is implemented, the social welfare loss will only be as much as the net social loss from the production (8.11 million USD).

Comparison of the Systems

In Appendix Table 3, the MPS and the DPS have been analysed comparatively and the possible effects have been discussed. Furthermore, in 2003 the possible outcomes of the practice of „DPS" instead of „MPS" have been discussed. The conclusions have been summarised below.

- While MPS is a system aiming at increasing the producer welfare, the DPS is a support system that takes into account consumer welfare as well in addition to producer welfare.

• If in 2003, instead of the MPS to the wheat consumer, the DPS had been implemented; as in the new system the producer price would equal the target price, there would not have been any changes in the production quantity.

• As a difference from the MPS system, in the DPS, the consumer price will be at the border price level.

• While the exportable wheat quantity in MPS is 1.067 million tons, this figure is around 480.757 thousand tons in the DPS.

• The production that may be actualised at the border price, the consumption and foreign trade quantities are the same in both systems.

• In both systems, the net social loss in production is equal to each other (8.11 million dollars). However, there is a difference between the two systems as far as the net social loss in consumption is concerned. The reason for this is while there is a net social loss in consumption with 4.79 million approximately in MPS systems, there is no net social loss in consumption in the DPS.

• The net social gain of the MPS system is approximately 12.90 million USD. In the DPS, this has been calculated as 8.11 million USD. Accordingly, had the MPS practice been abandoned for wheat in 2003 and had the DPS been preferred in its stead, there would be an earning of 4.79 million USD in comparison with the first case.

• In the MPS, the entire support provided for producers is met by the consumers. Therefore, the state burden of this policy is only the export subsidies it will pay in order to dispose of the excess supply product. In the DPS, with the assumption that the entire product will be paid difference payment, the burden of the support will be met from the state budget.

Sensitivity Analysis

When deciding in a country which one of the alternative policies to implement, the burden of that policy on the budget is important. The factors that determine the cost of the policy implemented are the border price, target price and supply elasticity of that product.

When the sensitivity analysis is made, the border price has been taken as the basis in the study. On the other hand, the production quantity is also taken as the basis, and the budget burdens calculated according to different price scenarios (in the cases where target and border prices are low, same or high) have been shown in Appendix Table 4.

As it can be seen in Appendix Table 4, when the border price increases in comparison with the target price, the burden of the support decreases. On the other hand, when the border price decreases, the cost of the DPS increases. Again, when the target price increases in comparison with the border price; the

burden of the DPS on the budged increases. On the contrary, when the target price decreases, the cost of the DPS on the budget is decreased. In the scenario where the DPS has the lowest budget burden, the target price lowest, and the border price highest, the result was approximately 390 million USD. The highest budget burden of the DPS is approximately 2.14 billion USD when the target price is the highest and the border price is the lowest. Accordingly, even in the budget burden where the DPS is the lowest, the MPS are higher than the budget burden.

When the study is assessed as a whole, the policy objectives have to be clearly stated in order to be able to express whether the DPS is favourable or unfavourable in comparison with the other support policies. In order to establish the effectiveness of the means in reaching the ends, and the costs thereof, various methods can be used and projections can be made. Liapis (1998), in the study he has made, has examined by means of „Partial Balance Agricultural Sector Model" the three forms of policies (MPS, direct payments and input subsidies) that are used in an extensive manner in many countries of the world, from the viewpoint of use of resources and efficiency in the transfer of income toward producers. In this research, it has been concluded that, in the transfer of income toward producers, the input subsidies practice has the lowest efficiency level, whereas direct payments have the highest, but on the other hand, in the use of increasing input, the direct payments practice has the lowest efficiency level, whereas input subsidies have the highest.

Gohin et al. (2001), in the study he has made, has evaluated the three policy objectives defined as „support for agricultural income", „support for positive externalities" and „reduction of negative externalities" in terms of their accomplished efficiency, as well as the alternative income support systems (payment programs tied to production, payment programs tied to land and payment systems which are independent of these two factors). According to the conclusions of the analysis, it is stated that none of the programmes exhibit a clear overall advantage over another.

Fernandez (1996) has examined the potential conclusions of the effects on Spanish wheat and sunflower sectors of the CAP Reform. In this scope, analysis of the effects of different compensatory payments accorded to oleaginous seeds and wheat sectors, on wheat and sunflower production and consumption in Spain, as well as on sunflower oil and sunflower seed net trade and the total area of sunflower fields, has been made. Demirci (1998) stresses the importance of seeking solutions against agricultural market instabilities through the market economy, and points that this trend caused the increasing importance of commodities markets in Turkey. In this study, two markets that play an influential role in the marketing of wheat in Turkey (market price support that take the form

of state intervention into markets and the commodities markets based on spot trading) have been examined and furthermore, the questions of whether these two could constitute an alternative for each other and how they could be applied in conjunction have been raised. As a result of the researches conducted, it has been concluded that wheat market price support could have commodities markets as alternatives. But, by considering that abandoning the practice of MPS will not be easy, it is suggested that operations in conjunction between both MPS and the commodities futures markets could be necessary.

In the process of harmonization with the EU, it is observed rather that intensive studies and restructurations are in the agenda for the agricultural sector. The keyword to be retained while Turkey prepares for this process should be 'competition'. The most preoccupying quality issue in Turkey is observed with regards to the durum wheat. The main cause is the lack of a pricing system to constitute a reference for the quality. A price difference accorded for quality wheat will prevent setbacks in the production. Especially for the grains sector, even in the developped countries of the world, marketing activities are not conducted without state intervention. The Turkish Grain Board (TGB) which realized the MPS at marketing stage in Turkey to this day and which assumes a role of warrant for the markets as of 2001, is in a phase of restructuration. Besides this restructuration, with new formations such as more developped commodity markets and the legal groundwork for the establishment of licenced storage facilities, cereal markets take on a new direction. In the EU countries, besides the storage facilities of highly influential producer's organizations, private storage facilities are also used extensively. Turkey is under an obligation to set up market arrangements suitable for its agricultural structure in order to safeguard income stability for its producers in the framework of this restructuration, given that a field such as the grains sector concern 85 per cent of its producers. Inside these arrangements, reduction of production costs bears a priority importance. In the meantime, while the Turkish Grain Board (TGB) infrastructure pursues purchases by keeping on with its task as warrant in the name of the state and to protect producers from price losses in the developping commodities markets, these producers should be incited to organizing themselves for the purposes of product marketing (Anonymous, 2005).

While in the EU, the institutions set up to provide support are single-handed and centralized and are adapted according to product quality and the regional development level, in Turkey, a policy based upon scattered structures and varying according to the product variety and one that does not take into account the product quality and the regional development level is in implementation (Gokturk, 2003). Since Turkey is a large agricultural country and Turkish agriculture presents important differences as compared to the EU agriculture, compliance with

the CAP conditions may create considerable difficulties. As with the previous adhesions to the EU, it is expected that Turkish agriculture's harmonization with the CAP will take place in a progressive manner (Bayrac and Yenilmez, 2005).

In a study conducted in Slovakia (Szabo and Grznar, 2002), the support measures in practice for the agricultural sector in this country prior to entry into the EU and their effects have been examined. The rate of the current support for the agricultural sector in Slovakia is not very high. That could be an advantage at the expected EU entry, as it makes local farmers to increase their competitiveness and performance.

With full harmonization with the CAP, Turkish agriculture will encounter a more protectionist and supportive price and market policy. Furthermore, rural and environmental supports, as well as various funds directed toward rural areas may influence the agricultural sector and, indirectly, price and market policies. In the case of full harmonization of Turkish agriculture to the CAP, agricultural products prices in Turkey and the EU will be set even. In Turkey, prices of many agricultural products, and especially of animal products are well above EU price levels. According to Cakmak and Kasnakoglu, who have drawn estimates, on the basis of 2005 prices, for the price changes resulting from a case of full harmonization with the CAP, prices will decrease in most cereals, animal products and oleaginous seeds, and will increase for some industrial plants as well as for fruits and vegetables. The developments that may occur inside the CAP toward more liberalization may cause still more considerable reductions in prices (Cakmak and Kasnakoglu, 2001). Turkey's compliance to EU norms in means and methods for support as well as for requirements of good agricultural conduct may only be realized through well-prepared programs which are adequate in terms of their technical and financial aspects. But, when socio-economic conditions under which Turkey is at present are taken into account, it is clear that the structural problems inherent to Turkish agriculture are the ones that are the most difficult and time-consuming to resolve, and therefore will be the subject matter that will present the highest difficulties in the harmonization negotiations (Eraktan and Oren, 2005).

Conclusion

In this study, the most important difference between support and difference payment system reveals itself in the consumer welfare. Furthermore, when copared with regards to the net social yield, the DPS is considered more favourable in comparison with the MPS. The budget burden of a DPS based on the entire production gives high results in comparison with the MPS. The criticisms concerning the fact that the support policies implemented in Turkey bring too much budget burden are still valid. Therefore, it can be stated that the DPS would be beneficial to implement for products with significance for the country economy, such as wheat.

Appendix

Table 1

Effects of MPS in Turkey for Wheat Production (2003)

PRICES	Notations	Values
Border Price (USD/Ton)	P_B	144.32
Support Price (USD/Ton)	P_T	160.67
ACTUALISED QUANTITIES		
Production Quantity (Ton)	Q_T	19 000 000
Consumption Quantity (Ton)	q_T	17 933 000
Exports (Ton)	$Q_T - q_T$	1 067 000
PRICE ELASTICITY (*)		
Supply	$\varepsilon_S = 0.50$	
Demand	$\varepsilon_D = -0.30$	
AMOUNTS THAT CAN BE ACTUALISED WITH BORDER PRICES		
Production Quantity (Ton)	Q_B	18 008 031
Consumption Quantity (Ton)	q_B	18 519 243
Imports (Ton)	$q_B - Q_B$	511 212
EFFECT OF THE SUPPORT POLICY		
Production Effect (%)	$Q_B \rightarrow Q_T$ (↑)	5.51
Consumption Effect (%)	$q_B \rightarrow q_T$ (↓)	–3.56
Imports Effect (%)		–108.72
WELFARE EFFECT (USD)		
Net Social Loss in Production	α	8 109 347
Net Social Loss in Consumption	β	4 792 537
Net Social Loss	μ	12 901 884
Change in Consumer Welfare	ψ	–297 997 087
Change in Producer Welfare	λ	302 540 653
Change in State Revenues (Budget Burden)	ω	–17 445 450
NET SOCIAL GAIN		–12 901 884

(*) FAO, 1997.

Table 2

Effects of the DPS in Turkey for Wheat Production (2003)

PRICES	Notations	Values
Producer Price (= Target Price (USD/Ton)	P_T	160.67
Consumer Price (= Border Price, Reference Price) (USD/Ton)	P_B	144.32
ACTUALISED QUANTITIES		
Production Quantity (Ton)	Q_T	19 000 000
Consumption Quantity (Ton)	q_B	18 519 243
Exports (Ton)	$Q_T - q_B$	480 757
AMOUNTS THAT CAN BE ACTUALISED WITH BORDER PRICES		
Production Quantity (Ton)	Q_B	18 008 031
Consumption Quantity (Ton)	q_B	18 519 243
Imports (Ton)	$q_B - Q_B$	511 212
SUPPORT POLICY EFFECT		
Production Effect (%)	$Q_B \rightarrow Q_T$ (↑)	5.51
Consumption Effect (%)	$q_B \rightarrow q_B$ (→)	0
Exports Effect (%)		–5.95
WELFARE EFFECT (USD)		
Net Social Loss in Production	α	8 109 347
Net Social Loss in Consumption	–	0
Net Social Loss	μ	8 109 347
Change in Consumer Welfare	ψ	0
Change in Producer Welfare	λ	302 540 653
Change in State Revenues (Budget Burden)	η	–310 650 000
NET SOCIAL GAIN		–8 109 347

Table 3

Comparative Analysis of the Welfare Effects of the MPS and DPS Turkey for Wheat (2003)

PRICES (USD/Ton)	*MPS(1)*	*DPS(2)*	*DIFFERENCE (2) – (1)*
Target Price	160.67	160.67	
Border Price	144.32	144.32	
Producer Price	160.67	160.67	
Consumer Price	160.67	144.32	–16.35
ACTUALISED QUANTITIES			
Production Quantity (Ton)	19 000 000	19 000 000	
Consumption Quantity (Ton)	17 933 000	18 519 243	586 243
Exports (Ton)	1 067 000	480 757	–586 243
AMOUNTS THAT CAN BE ACTUALISED WITH BORDER PRICES			
Production Quantity (Ton)	18 008 031	18 008 031	
Consumption Quantity (Ton)	18 519 243	18 519 243	
Net Imports (Ton)	–511 212	–511 212	
WELFARE EFFECT (USD)			
Net Social Loss in Production	8 109 347	8 109 347	0
Net Social Loss in Consumption	4 792 537	0	–4 792 537
Net Social Loss	12 901 884	8 109 347	–4 792 537
Change in Consumer Welfare	–297 997 087	0	297 997 087
Change in Producer Welfare	302 540 653	302 540 653	0
Change in State Revenues (Budget Burden)	–17 445 450	–310 650 000	–293 204 550
Difference Payments		–310 650 000	
NET SOCIAL GAIN	–12 901 884	–8 109 347	4 792 537

Table 4

The Sensitivity Analysis of the DPS in Turkey for Wheat (2003)

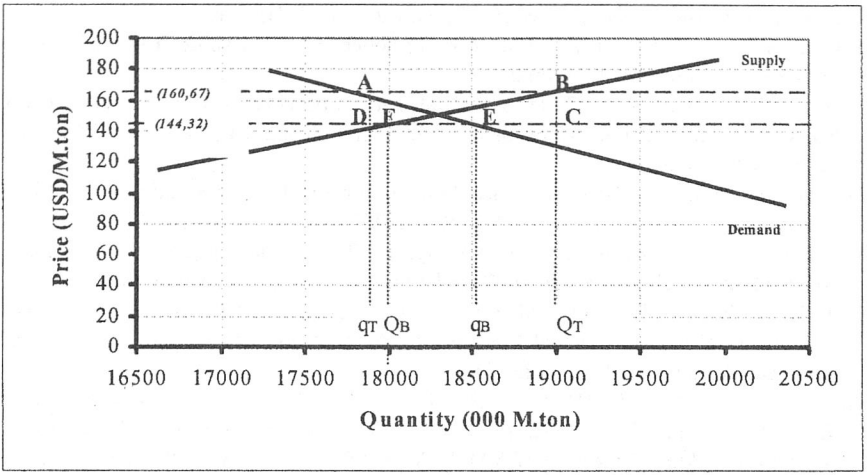
Alternative Prices (USD/Ton)	Low	Same	High
Target Price	178.24	187.62	225.14
Border Price	129.89	144.32	158.75
Production Quantity (Ton)	20 006 828	20 520 995	22 431 095
Difference Payment Cost Matrix (USD)		Target Price	
Border Price	Low (178.24)	Same (187.62)	High (225.14)
Low (129.89)	967 330 134	1 184 677 041	2 136 561 799
Same (144.32)	678 631 606	888 559 084	1 812 881 098
High (158.75)	389 933 078	592 441 126	1 489 200 397

Note:

Target Price: (Average Production Cost x 1.3).
Target Price Low: 5 % below the Average Production Cost Border Price.
Target Price Same: Average Production Cost Border Border Price Low: Price % Equal at the Border Price.
Target Price High: Price 20 % above the Average Production Cost Border Price Decrease by 10.
Border Price Same: No Change in the Border Price.
Border Price High: Price at 10 % Increase at the Border Price.

Graph 1

The Effects on General Welfare of Market Price Support (MPS) and Difference Payment System (DPS) in Turkish Wheat Sector



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