

The Futures Market in Agricultural Products and an Evaluation of the Attitude of Farmers: A Case Study of Cotton Producers in Aydin Province in Turkey

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1. Introduction

Producers of agricultural products permanently face the risk of price and production (Parcell and Price, 2000). Production risks arise from factors such as weather conditions, genetics, insect damage and diseases which impact yields, while price risks come from fluctuations in price caused by factors of supply and demand (Riley and Anderson, 2009). At the same time, the rise of the global free market and variations in agricultural policies within countries serve to increase these risks. The increase in variability in price and production in particular has made farmers see the importance of risk management (Parcell and Pierce, 2000). In the context of price risk, there are several ways in which risk management can be achieved. These include futures and options contracts, forward contracts and product insurance. Most of the ways of managing risk which are currently used to minimize price risk have been in existence for many years. The best known of these risk management methods has a history going back to 1848, and is known as futures contracts. Other means of risk management, forward and insurance products, are used by a smaller number of farmers (Riley and Anderson, 2009).

Futures market perform two important functions of price discovery and price risk management with reference to the given commodity. It is highly useful to the segments of economy

Abstract

This study evaluates the futures market, well-established in the world but newly developing in Turkey, in the context of the agricultural sector. It also presents the findings of a survey which shows the attitudes of farmers towards the futures market in agricultural products. This survey was carried out among the cotton farmers of Aydin province in Turkey; the study identifies and details the views and opinions of farmers on the futures market.

When the level of knowledge of cotton farmers about the futures market was examined, it was found that 74% of farmers had no knowledge of the market, and the remaining 26% had very little knowledge. It was found that 90% of these farmers have tendency to use the futures market. The remaining 10% were deterred by worries such as their belief that the risk in the futures market was very high, their lack of knowledge on how the commodity futures exchange works, the fact that trade in futures on the commodity futures exchange was not viewed as real transactions, or their fear of not being able to fulfil the annual contracts for cotton which they had with the cooperatives they belonged to.

Key words: cotton, price risk, cotton futures, futures markets, farmers' attitudes.

Résumé

L'objectif de cette étude est d'évaluer les marchés à terme agricoles, déjà bien établis dans le monde, mais en phase de développement actuellement en Turquie. Les résultats d'une enquête, menée auprès des producteurs de coton de la province d'Aydin en Turquie, sont présentés pour illustrer leur attitude envers les marchés à terme agricoles, en mettant en évidence leurs opinions et points de vue à ce sujet. En examinant le niveau de connaissance des producteurs de coton sur les marchés à terme, il a été possible de montrer que 74% d'entre eux n'ont aucune connaissance en la matière alors que les 26% restants ont une connaissance très limitée. De plus, 90% de ces producteurs tendent à avoir recours aux opérations à terme. En revanche, les 10% restants sont freinés par des préoccupations comme la conviction que les marchés à terme posent un risque très élevé, leur méconnaissance du mécanisme d'échange des marchandises par cette voie, le fait que les opérations à terme ne sont pas considérées comme des transactions réelles, ou bien leur crainte de ne pas être en mesure de faire face aux contrats annuels sur le coton dans lesquels ils s'engagent avec leurs coopératives d'appartenance.

Mots-clés: coton, risqué de prix, contrats à terme sur le coton, marchés à terme, attitude des producteurs.

(Easwaran and Ramasundaram, 2008). The hedging and price discovery functions of futures markets promote more efficient production, storage, marketing and agro-processing operations, financing, and overall agricultural marketing performance (Shim, 2006). A futures contract is a binding agreement between a seller and a buyer to make (seller) and to take (buyer) delivery of the underlying commodity (or financial instrument) at a specified future date with agreed upon payment terms (Mintert et al., 1999). Futures and options contracts have been used at high volumes in the world for many years. 2007 figures indicate that trading volume of futures exchanges has exceeded USD 2.2 quadrillions and approximately 15 billions contracts have been traded (TurkDex, 2010a). In 2009, the total number of futures and options contracts was around 17.7 billion, and was showing a general upward trend (Burghardt and Acworth, 2010). However, when the number of futures and options

contract transactions in agricultural products is compared with the number in other trading categories, it can be seen to be at an insufficient level. Thus, in the first six months of 2010, the 582.754.069 transactions (the number of contracts trade) in agricultural products came fourth after the equity index, the individual equity and interest rates, and formed only 5.2% of the world total of transactions (11.221.484.660) (Acworth, 2010).

This topic can be said to become all the more important when it concerns the agricultural sector, which is the locomotive of a nation's economy. By means of futures contracts in agricultural

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products, it will be possible to set prices for the future, plan production, manage risk effectively, have a greater participation in setting prices, and in setting prices reduce to a minimum the effects of seasonal production and consumption factors, and thus agricultural production can be turned into a vehicle of investment (Cetinkaya, 2006). In the same way that these contracts can help to reduce the uncertainty of the market in agricultural products, they can be an important means of transferring risk to the industries which use products from the agriculture sector as raw material (Erbay, 2007).

This study is important in that it takes an overall view of the futures market, which has been part of world trade for many years but is still in the development stage in Turkey, and evaluates this topic with respect to the agricultural sector. In particular, the study brings a new point of view from other studies because it was carried out after the futures market came into action in Turkey. The central importance of the study is that it sets out the findings obtained by the survey carried out on cotton farmers with the aim of discovering their attitude towards this system, which has only recently come into being in Turkey. A small number of studies have been carried out on this topic, but so far none has been found which is supported by a survey and explained by examples. These are some of the reasons for the importance of this work.

2. Materials and Methods

This study examined the futures market in two stages: at macro and micro level. For the macro level, the study made use of data from relevant studies in the literature. Sources included books, research, articles and statistics.

Data for the micro level were obtained from the survey work. This survey work had the aim of determining the views of the farmers involved in agricultural production on the futures market. When making the choice of which agricultural product to examine, attention was paid to which products were traded on the Futures and Options Exchange, which operates in the Turkish city of Izmir. In this regard, one of the two agricultural commodities which are traded in this exchange is cotton (the other is wheat), and this was chosen. The choice of this product was affected by the fact that, although there has been a decline in recent years, production is being carried out on the not inconsiderable area of 420.000 ha (TurkStat, 2009a), that cotton production is carried out in four areas of Turkey, namely the Aegean Region, Antalya, Cukurova and South-east Anatolia, and that in these regions a large number of agricultural operators are involved in cotton production, that closely involves the textile sector, and that it is one of the products most at risk from prices.

The survey was carried out in 2006 in the Aegean region of Turkey, which has 25% of the country's cotton production, with the aim of determining the attitudes of cotton farmers to the futures market (Ozudogru, 2006). One province was chosen from within the Aegean region which was important in terms of area and quantity of production. The province chosen as the base for the survey was the province of Aydin, which has 33.26% of the Aegean region's cotton producing area, and 34.78% of the region's production of cotton fibre. In the choice of sub-provinces where the survey would be carried out, note was taken of the dis-

tance from the provincial capital. It was considered that cotton farmers who were located in sub-provinces which were closer to the provincial capital would have a better chance to be able to communicate easily with the neighbouring province of Izmir, where the Futures and Options Exchange is situated. In this way, the three sub-provinces of Aydin Central, Kosk and Yenipazar were chosen. Cotton farmers to be interviewed were chosen by judgment sampling, and their number was set at 50.

The distribution by sub-province of the cotton farmers who were interviewed was performed according to the relative weighting of the sub-provinces in cotton production. The result of this was that 33 cotton farmers were interviewed in Aydin Central sub-province (Dalama, Armutlu, Karahayit, Godrenli, Baltakoy, Kirklar and Alanli), 11 in Yenipazar (Hamzabali), and 6 in Kosk (Ciftlikkoy).

In order to assess the views of cotton farmers on the futures market, a questionnaire form was prepared in advance of the survey. The questionnaire form contained a large number of statements concerning the futures market, and a five-point Likert scale was used to assess the degree of importance accorded to each of these statements. In this way a score was obtained for each statement showing the degree of importance the cotton farmers attached to it.

3. The Structure of Cotton Market and Organisation of Futures Market in Turkey

The general flow of cotton marketing channels in Turkey is shown in Figure 1. The Turkish grower typically sells seed cotton to either the cooperative gin or a private ginner (Hudson, 1997). According to the results of a survey study carried out in Aegean Region of Turkey, it was determined that a significant portion of cotton farmers (63.10%) sold cotton to the cotton marketing (or sales) cooperative (Adanacioglu, 2009). Contract ginning does take place but on a very limited basis. Private sector ginners typically act alone in that they are independent firms with no umbrella organization. The cooperative gin, in contrast, is acting as a part of a larger organization, and typically has access to substantial financial resources.

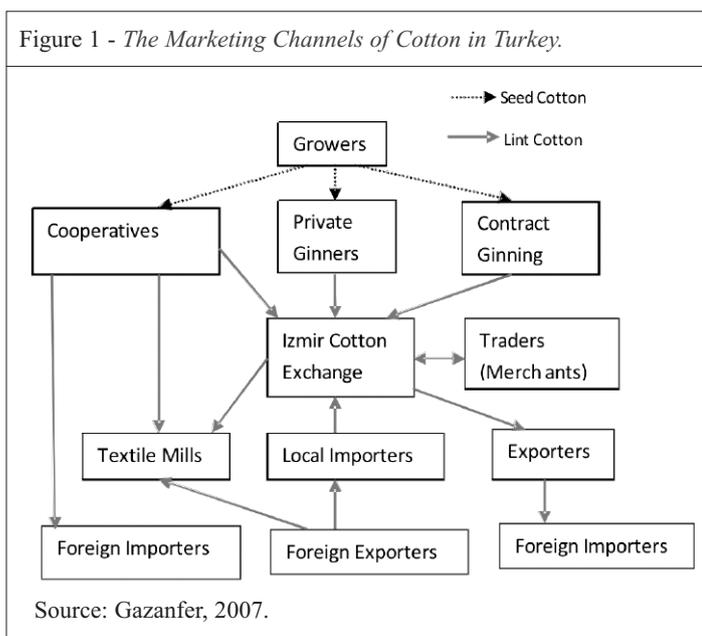
During harvesting and ginning, seed cotton prices are established in the local markets, reflecting the price at which seed cotton is traded between cotton growers and ginners (Gazenfer, 2007). Seed cotton is also bought by intermediaries, who subsequently sell it to nearby ginners. Price formation in seed cotton is largely linked to the prevailing lint cotton prices and cotton seed oil prices. Until 1993 Governments implemented a support price policy through the Agricultural Sales Cooperative Unions (ASCUs). Since 1998 growers have been receiving 'Premium (bonus) payments', which contribute significantly to the sustainability of domestic production.

ASCUs play a considerable role in the cotton sector, with Taris (Aegean), Antbirlik (Antalya) and Çukobirlik (Mediterranean and south-east) providing agricultural inputs (i.e seeds, fertilizers, chemicals) and finance to their members, buying the seed cotton and, after ginning, selling the lint cotton in the domestic or export markets.

Main players in the market are ASCUs, spinners and traders.

There exists a well-functioning spot market for lint cotton in the Izmir Mercantile Exchange (IME), which has been active since 1891. The IME, the cash exchange for the Aegean Region, is the most active cash (spot) exchange in Turkey. Lint cotton prices established at the IME are registered and announced daily.

Cotton imports have become a growing necessity to meet the increased demand from the booming textile and garment sector, especially after 1993, when Turkey became a net cotton importing country and cotton exports declined to low volumes.



There are four different types of exchanges operating in Turkey. These are: the commodity exchanges where the agricultural products are traded as spot, Istanbul Stock Exchange (ISE) where the stocks are traded, Istanbul Gold Exchange (IGE) where the precious metals are traded and the Derivatives Exchange (TurkDex) where the financial and agricultural contracts are traded. Turkdex is the first private exchange of Turkey. Opened in February 2005, Turkish Derivatives Exchange (TurkDex) has become an important derivatives exchange in the region (IME, 2010). As Turkey's first entirely electronic derivatives exchange, TurkDex offers a core product base of financial and commodity instruments. Its primary objective is to develop and provide derivatives to help traders, hedgers, and investors to manage their risks effectively. With the launch of TurkDEX, market participants now have the proper tools for managing their exposures to price fluctuations in foreign currency, interest rates, equities and commodities (cotton, wheat, gold).

According to the Futures Industry Association, TurkDex was one of the fastest developing exchange in the world in 2009. TurkDex has witnessed a tremendous growth in its trading volume since its first year of operation. TurkDex reached a total trading volume of over 140 billion USD at the end of June 2010. In terms of number of contracts, as of June 2010 total trading volume reached 34 million contracts. Daily average trading volume

of TurkDex also increased significantly and was around 1.2 billion USD as of June 2010 (TurkDex, 2010b). However, futures and options trading in the agricultural commodities is at a negligible level. In Turkey, 11.148 transactions (\$7206) were made for agricultural commodities on this market in 2009, which is equivalent to 0.000003% of the total of trading volume (TurkDex, 2009).

An examination of contracts made in the world for agricultural products shows that the top ten products are sugar, soybeans, soybean meal, corn, rubber, soy oil and wheat. It has been found that futures and options trading in soybeans is particularly widespread (Acworth, 2010). In Turkey, however, only cotton and wheat are traded on the futures and options exchange.

Cotton is one of the major agricultural products of Turkey. Farmers, cotton traders and all the other people who buy or sell cotton or its derivatives face the cotton price risk. Cotton prices have been weak for years and there is also fluctuation in seasonal prices. The fluctuation in cotton prices has revealed a negative result in terms of planning and production in general. Therefore, the area under cotton cultivation in Turkey has seen a significant decrease. This reduction in the area of cotton production can be seen in Turkey in the ten-year period between 1999 and 2009. Taking 1999 as a base (719.294 ha), the area under cotton in Turkey showed a decrease of approximately 42% in 2009 (420.000 ha). As a result of a continued decline in harvested cotton area, the production of cotton fibre, which was 781.298 tons in 1999, also fell by 18.3% to 638.250 tons in 2009 (TurkStat, 2009a). Apart from this, industrialists or merchants that are affected by price fluctuations can not do risk management. Cotton prices in cash or spot markets are composed of some intermediaries. A very wide participation in the market can not be achieved. Now with the introduction of the cotton future contract, these people have the chance to hedge this risk effectively and are able to make longer future plans (TurkDex, 2010a). However, there is almost no cotton futures and options trading on the Turkish Derivatives Exchange.

4. Results and Discussion

4.1. Socio-Economic Characteristics of the Cotton Farmers

The average age of cotton farmers on the farms which were examined was found to be 49.78 years. 52% were in the 15 to 49-year age group, and the remaining 48% were aged 50 or over. They had an average of 6.16 years of formal education, and had worked for approximately 28 years (27.66 years) in cotton growing.

In farms producing cotton, it was found that the average area per farm devoted to cotton production was approximately 3.9 ha (3.85 ha), and that a significant proportion of the farms examined (70%) had 4 ha or less under cotton.

When the level of knowledge of cotton farmers concerning the futures market was examined, it was found that 74% of them had no knowledge of it, and that the remaining 26% had very little knowledge of it. Moreover, of those farmers who stated that they

had very little knowledge, it was found that some did not know exactly what the futures market meant, and others confused it with the Izmir Mercantile Exchange. Farmers who said that they had heard about the subject from the local press or television were found not to have taken part in any education programme.

In order to assess the attitudes of the cotton farmers being studied to the futures market, they were asked whether they would enter into an agreement or contract before the beginning of the cotton-growing season (for example in March) which fixed the price at the time of harvest in September or October. 90% of farmers gave a totally positive answer to this question without any reservations. But at the same time there were some, albeit a small

number, of cotton farmers who were not willing to enter into futures trading. Among the reasons for this were that they saw it as a risk, they thought their level of knowledge was insufficient for futures trading, they were afraid that they would not be able to fulfil their annual commitments to the cooperative (Taris) they belonged to, and that their trust in the futures market was low because they had not seen examples to guide cotton farmers on the futures and options market.

Significant statistical differences were found between the cotton farmers who showed an interest in the futures market and those who did not in terms of education, the length of time they had spent producing cotton, and the size of the cotton fields which they worked (Table 1). These results indicate that those who showed an interest in the futures market for cotton were younger and had spent less time in cotton production. These younger and less experienced farmers showed a greater entrepreneurial spirit. Goodwin and Schroeder (1994) found that the use of management strategies for price risk (futures, forward trading, etc.) declined in proportion to an increase in experience.

In addition, it was found that the size of the area under cotton worked by those who showed an interest in the futures market was greater than that of those who did not. Previous studies have also shown that farmers with larger farms were more likely to make use of forward trading and futures contracts (Musser et al., 1996).

At the same time, it was found that the level of time spent in education of those who showed an interest in the futures market was slightly longer than that of those who showed no interest. Previous research also showed that education influenced the use of futures markets (Makus at al., 1990). Another study, carried out on farmers of corn and soybean (Goodwin and Schroeder, 1994), reached the conclusion that education was a factor affect-

ing the adoption of forward trading and the futures market.

After identifying cotton farmers' views on the futures market, a Likert table was prepared to measure the extent to which they agreed with various statements concerning the futures market. Table 2 gives the statements and the responses received, in order of scale average.

	Likert scale average
The use of the futures market can reduce price risks	4,52
Futures trading provides the possibility of higher process than do price mechanisms that operate on cash transactions	4,44
The use of futures trading increases income more than expenses	4,12
Trading on the futures market is very complicated	2,94
Prices of cotton at planting time suggest what prices will be at the time of harvest	1,64
1) I completely disagree 5) I completely agree	

Currently, cotton farmers' income, which is affected by price risk, shows variability in relation to prices. For a cotton producer who makes use of the futures market, however, there is no such risk. Responses by cotton farmers to the statement "Use of the futures market can reduce price risk" showed an average of 4.52 on the Likert scale, which meant that they were almost all in agreement with the statement.

A substantial proportion of the farmers thought that alternative price mechanisms such as the futures market could bring higher prices than a market using cash. The average score on the Likert scale for this statement was 4.44, which is an indication of the beliefs that farmers have about the futures market.

Cotton prices in recent years have not reached desired levels, and have even fallen below production costs, so that the income of farmers has suffered a severe reduction. This has even brought some farmers to the point of pulling out of cotton production. Cotton farmers in the farms studied believe that this problem could be overcome by means of the futures market. Thus the majority of cotton farmers (4.12) agreed that their incomes would be greater than their expenses if they changed over to futures trading.

Although cotton farmers in the farms examined were positive towards the futures market, they generally (2.94) drew attention to the difficulty of trading on this market. Since these farmers did not have much knowledge of how trading on the futures market was carried out, it can be seen as normal that they should make such an evaluation. However, as this type of trading begins to spread in Turkey, it seems likely that a new era will eventually open up for farmers.

With regard to other considerations, a substantial proportion of cotton farmers stated that it was difficult to estimate what the price of cotton would be at harvest time by looking at the prices at the time of planting (1.64). However, as already stated, this

Table 1 - Education, Length of Time Spent Growing Cotton, Age and Area of Land under Cotton of Producers with and without an Interest in Using the Futures Market.

	Education (years)	Time spent growing cotton (years)	Age (years)	Area of land under cotton (ha)
Interest	6,20	27,02	49,44	3,90
No interest	6,16	33,40	52,80	3,38
Pearson Chi-Square	15,83	448,97	1333,08	83,09
Significant (p değeri)	.003*	.000*	.000*	.000*
*p<0.05, significant				

problem can be overcome by examining historical price data. For example, the Agricultural Marketing Services department of the United States Department of Agriculture publishes on a monthly basis the changes in cotton prices for each region. The difference between futures prices and spot or cash local prices is also set by the use of this data (Seamon et al., 1997).

4.3 Evaluation of the Weak Points of the Futures Market in Relation to the Agriculture Sector in Turkey

The futures market can in some important ways be a means of risk management for the agricultural sector. Some of these strong points are that it provides protection from price risk, it presents possibility of flexibility to participants in that transactions can be opened or closed at any time, and it creates an objective environment for the spot market because it is completely open. At the same time, however, the futures market has its weak points. One of these is trading risk. Because of cross-hedging, more products are differentiated, and thus the difference between the futures price and the spot price increases (Meulenberg and Pennings, 2002). Cross-hedging is the pricing of a cash commodity position by using futures for different commodities. Simple cross-hedging uses futures of one commodity to offset a cash position, and multiple cross-hedging uses two or more different commodities. However, cross-hedging is more complicated than direct hedging. Difficulties arise in selecting the appropriate futures contracts as cross-hedging vehicles and determining the size of the futures position to be established. Potential cross-hedging vehicles must be commodities that are likely to demonstrate a strong direct or inverse price relationship to the cash commodity (Rahman et al., 2001). For example, if a farmer producing barley is afraid that the price of his product may fall in the future, and if he wants to determine the sale price as of the present, he has to sell a futures contract drawn up on barley. However, if futures contracts on barley are not being traded on the market, but contracts for wheat are being traded, the farmer can provide cross-hedging by selling a futures contract for wheat rather than barley, given that the correlation between them is high (Anonymous, 2009). The fact that only cotton and wheat are traded on the Futures and Options Exchange in Turkey further increases this cross-hedging risk.

Another trading risk is that the market depth risk is great. Market depth is generally analyzed by determining the slope dPF/dQ , where PF is the futures price, and Q is the quantity traded. The lack of sufficient market depth results in relatively high hedging costs, and inhibits the growth of futures contract volume (Pennings et al., 2003). It has been shown that market depth risk is particularly felt at small commodity futures exchanges (Pennings et al., 1998). Thus, the market depth risk of the Turkish Futures and Options Exchange can be said to be high. The fact that trading in agricultural products on this market is negligible and is not showing an increase makes the level of risk very large.

A further trading risk is that farmers cannot specify the amount to be hedged to correspond to the quantity they have available for sale. Thus, a futures hedge may not exactly match the amount of the de-

sired sale or purchase (Meulenberg and Pennings, 2002). The fact that the amount to be protected from risk is small causes farmers to resort more to the spot market, which is exposed to uncertain changes in price. An increase in the amount to be protected from risk causes a decrease in the effects of that risk. The futures market in Turkey is just beginning to develop; farmers do not yet know enough about this type of trading; and Turkish farmers behave with great caution where risk is concerned. All of this shows that there will be a smaller amount to protect from risk in the futures market.

A final trading risk concerns cost margins. The buyer or seller of a futures contract must put down an initial margin (a deposit or starting guarantee), and a maintenance margin (maintenance guarantee) related to developments in the price. For example, an investor wishing to buy or sell one wheat or cotton futures contract on the Turkish Futures and Options Exchange must have \$155¹ in his account as a starting guarantee. If the balance of the guarantee account of an investor with a long or a short position in a wheat or cotton futures contract falls below \$116 (maintenance guarantee), he is called to complete the guarantee (to make up the balance to \$155) (TurkDex, 2010b). According to Kalavathi and Shanker (1991), an increase in the cost margin reduces the demand for futures contracts by hedgers acting to shelter from risk. It is thought that in Turkey, this cost margin (especially the initial and maintenance guarantees) must have a deterrent effect on farmers considering using the futures market.

Another weak point of the futures market is its negative image. Various potential users of the futures market see it as a form of gambling, and thus display a negative attitude to it (Meulenberg and Pennings, 2002). The reason for this is the manipulation of the futures market which happened in the past. For example, the possibility of futures transactions in agricultural products on the Turkish Futures and Options Exchange having no physical delivery but being performed entirely in cash shows that it was more open to manipulation. It is thought that corrections to increase the economic function of the futures market will help to reduce this negative image. In addition, it is expected that the image of the futures market will improve in parallel with an increase in the number of entrepreneurs in farming and the agro-food industry.

The lack of suitable products for futures trading is another weak point of this market. In the world in general, futures trading contracts are available for a large number of agricultural commodities. However, there is no possibility of futures trading in many agricultural commodities such as fresh horticultural products, and this limits the potential scope of the futures market (Meulenberg and Pennings, 2002). Not only is it the case that fresh product is not traded on this exchange, the only two agricultural products which are traded on the Turkish futures exchange are cotton and wheat. This trade is conducted in cash and at a negligible level. In order to expand the range of agricultural products traded on the futures market in Turkey, it will be necessary first to ensure the success of the trade in these two items.

4. Conclusions

Futures trading in agricultural products is a means of market-based risk management which can help to establish an effective agricultural market. The futures market is used with the aim of protection from price risk, and just as it enables a low-cost and high-ef-

¹ annual average exchange rate (TL/USD) in 2009: 1,5471TL .

efficiency service, at the same time it provides the possibility of a forum for the exchange of information about the conditions of supply and demand, and thus provides a clear mechanism to determine future prices. The functions of the futures market in protection from risk and determining price will encourage production, storage, marketing and processing of agricultural products to be more efficient and help to improve the performance of the agricultural market as a whole (Anonymous, 2007)².

Along with this, the share of GDP of agriculture is 9.8% (TurkStat, 2009b), and it can be seen that the application of futures trading to the market in agricultural products has not been very successful. Thus, the fact that the volume of trade in agricultural products on the Futures and Options Exchange in the city of Izmir in Turkey constitutes no more than 0.01% of total trade is an important indicator of this. This problem can be examined from various angles. The findings obtained in the present study indicate that the first and most basic problem which needs to be solved is that farmers involved in agricultural activities are still not well enough informed on the topic of futures trading. The fact that 74% of cotton farmers involved in this study had no knowledge of the futures market supports this argument. A plan to disseminate information on this topic to farmers of agricultural products on the Izmir Futures and Options Exchange would contribute greatly to the solution of this problem. This would help Turkish farmers, who dislike risk and generally show a tendency to thriftiness, to adapt more easily to the futures market. For example, the National Commodities and Derivatives Exchange in the city of Mumbai in India has launched pilot projects in the States of Gujarat, Madhya Pradesh and Andhra Pradesh to help farmers understand the concept and benefits of hedging the price risk on the trading platform of an Exchange prior to harvesting. (Anonymous, 2004)³.

Furthermore, it can be seen that it is not enough to inform farmers about the futures market. Thus, it is important for a farmer who wishes to enter the futures market to know the factors which affect the price of his product or products. Such factors are the production and consumption figures of the product within the country, the amount in stock, variations in production, consumption and stock in the world, expectations of crop yield according to weather conditions, the development of other products which could be a substitute for the product in question, product quality, government policy concerning the crop in question, economic developments, legal restrictions on the import and export of the product, and changes in taxation (Bagci, 2004). However, serious cause for concern is how the Turkish farmer, whose level of education is generally low, will acquire and use this information. In order to dispel these anxieties, it is necessary to help farmers who have entered the futures market or who wish to do so with a support service. For example, the establishment of an organization like the Agricultural Marketing Services of the US Department of Agriculture and for this organization to work together with the Futures and Options Exchange would have very beneficial results. In this way the volume of trading would show an increase in line with the increase in the number of farmers trading on the exchange. Also, along with this positive develop-

ment, the way could be opened for more agricultural products to be traded on the futures market than the two products, wheat and cotton, which are marketed there at the present time.

One of the important steps that must be taken to enable farmers to move over to the futures market is the need to increase the number and effectiveness of cooperative-like organizations. Thus, it is not very probable that farmers in developing countries will directly enter the futures market for agricultural produce and the other markets which manage price risk. In the United States even, where futures markets have been around for more than a century, only a small proportion of farmers use these markets directly, but instead accomplish their futures and options trading by means of agents or brokers. The majority of farmers trade on the market through such intermediaries as cooperatives, agents and merchants. In particular, farmers' associations or organizations can be the first point of contact between the farmers and the futures exchange. These associations or organizations, by their size, attract the attention of banks, which are ready to give credit, and brokers. Apart from this, these farmers' associations provide greater security because the risk is shared between the farmers. Also, access to information, the dissemination of information, and the establishment of communications with the trading exchanges are all made easier when they are done through these associations (Combe, 1997). In this regard, it is seen as important that policies should be put in place to stimulate and facilitate organization by farmers, as farmers' organization in Turkey is insufficient. Despite having been made autonomous, the existing cooperative associations in Turkey have not shown great success, but they could protect themselves and thus the farmers from possible future risks by trading on the futures market.

Another necessary action to increase the volume of trade in agricultural products on the futures exchange and to make these transactions easier is to establish licensed warehouses. As previously mentioned, transactions concerning agricultural products on the Futures and Options Exchange in Turkey are currently conducted in cash, and no actual physical delivery is involved. Because a significant proportion of the trade on the exchange involves delivery agreements, licensed storage facilities play an important role in commodity (or futures) trading. This storage facility has various basic characteristics, such as being run by an independent third party, providing sufficient storage places, assuring quality and quantity, being geographically located in a suitable place, and having facilities for preservation and certification (Thomas, 2007). For this reason, measures to establish a licensed warehouse system in Turkey need to be given priority.

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