



## A research on agricultural land market in Turkey

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**ABSTRACT:** *The main structural problems related to agricultural enterprises in Turkey are the small scale of the enterprises, the fragmented and multi-shareholding of the enterprise land. However, insufficiencies in infrastructure investments that provide direct access to the parcel and irrigation canal, the increase in the misuse of agricultural lands, constantly shrinking and fragmented lands, migration and land abandonments threaten land management and food security. To solve these problems and create a sustainable land market, Soil Conservation and Land Use Law numbered 5403 was issued in 2005, is of great importance. In this study, the socio-economic characteristics of the farmers who made agricultural land purchases and sales (230 farmers) in September, October and November of 2019 in Konya province and the structural developments after the new land law were examined, and the factors affecting their perspectives on the policies applied on land markets were determined by “Multinomial Logistic Regression” analysis. As a result of the analysis, it was determined that as the age of the farmers selling land increased, their views on the new land law were negatively affected, and the increase in the number of shares of the sellers who had more than one share positively affected their views on the new land law.*

**Key words:** *agricultural enterprises, land division, land market, new land law, land sale.*

## Uma pesquisa sobre o mercado de áreas agrícolas na Turquia

**RESUMO:** *Os principais problemas estruturais relacionados às empresas agrícolas na Turquia são a pequena escala das empresas, a fragmentação e a participação múltipla das terras da empresa. No entanto, insuficiências nos investimentos em infra-estruturas que dão acesso direto à parcela e ao canal de irrigação, o aumento do uso indevido de terras agrícolas, terras cada vez menores e fragmentadas, migração e abandono de terras ameaçam a gestão da terra e a segurança alimentar. Para resolver esses problemas e criar um mercado de terras sustentável, a Lei de Conservação e Uso do Solo número 5403 foi emitida em 2005, é de grande importância. Neste estudo, foram examinadas as características socioeconômicas dos agricultores que fizeram compras e vendas de terras agrícolas (230 agricultores) em setembro, outubro e novembro de 2019 na província de Konya e os desenvolvimentos estruturais após a nova lei de terras, e os fatores que afetam suas perspectivas sobre as políticas aplicadas nos mercados de terras foram determinadas pela análise de “Regressão Logística Multinomial”. Como resultado da análise, foi determinado que à medida que a idade dos agricultores que vendem terras aumentava, suas opiniões sobre a nova lei de terras eram afetadas negativamente, e o aumento no número de ações dos vendedores que tinham mais de uma ação positivamente afetaram seus pontos de vista sobre a nova lei de terras.*

**Palavras-chave:** *empresas agrícolas, divisão de terras, mercado de terras, nova lei de terras, venda de terras.*

## INTRODUCTION

Agriculture is one of the sectors whose importance is increasing day by day for many reasons such as production area for food safety, employment tool, raw material supply for industry, and foreign exchange with exports in Turkey as in the whole world. Land, which has been considered as a scarce resource in recent years, maintains its importance as the most essential natural production factor of the agricultural sector.

In today's world, where the world population is increasing and food supply and

reliability gain importance, the decrease in the amount of fertile agricultural land should be prevented and it is important to take measures in this context. In recent years, it is known that many developed countries have cultivated the fertile agricultural lands in some continental countries such as South America, Africa, West and Far East Asia either by purchasing or long-term leasing in order to meet their food needs in the coming years. Especially in African countries, “The Commission for Africa Report (2005), FAO, (2005) State of Food Insecurity Report, the Interacademy Council (IAC) Report for Africa (2004), the NEPAD Comprehensive African Agricultural Development

Pro-gramme (CAADP) (2003), and the UN Millennium Project (2005)” reports draw attention.

Under current economic conditions, rural areas are gradually decreasing due to the lack of competitive small and medium-sized agricultural enterprises, despite significant land resources (DANKEVYCH et al., 2017). Likewise today, the protection and efficient use of agricultural land has started to gain strategic importance. For this purpose, countries have made and continue to make regulations on agricultural land management. In many European countries, legal regulations have been made regarding the use of agricultural lands and efforts have been made to prevent businesses from turning into uneconomic production units. For example, in England, agricultural lands are transferred to the eldest brother by inheritance, while in France, the brothers leave the land to one of the heirs within the scope of their decision, and a favorable loan opportunity is provided to make it easier for the heir to pay the shares of the inheritance to other heirs. (LATRUFFE & LE MOUËL, 2006). In Germany, conversely, with the “Administrative Control of the Change of Ownership of Agricultural Enterprises Law” enacted in 1961, measures are taken to protect the scale of enterprises (WINKLER, 1992).

One of the main structural problems related to agricultural lands in Turkey is that the size of the enterprise is small, the lands are fragmented and scattered (TANRIVERMIS & SANLI, 2008; TURKER, 2011; TURKER, 2017). EKINCI & SAYILI, (2010) claimed that among the reasons for the fragmentation of agricultural lands are the use of the lands such as industrial and tourism facilities, dams, roads, housing construction, but also operating in the form of tenancy and/or sharecropping. In Turkey, where there are 3 million agricultural enterprises in a total of 23.2 million hectares of agriculture, the average size of the farmland is 5.9 hectares. In other words, an enterprise cultivates an average of 10 parcels of land with an average of 13 shareholders (ANONYMOUS, 2019a). These data reveal the fragmented land structure and small scale of agricultural enterprises in Turkey. However, in Turkey, the amount of agricultural lands operated in the form of tenancy, half-ownership or sharecropping, whose conditions are determined in an uncontrolled manner, is increasing and the enterprises involved in agricultural production without land are becoming widespread. Those who do not own land to acquire more land and reduce inequality often use Land leases, but the size of the leased land is often small. Similar situations in world agriculture have been demonstrated by studies (BLAREL, 1994; PENDER & FAFCHAMPS,

2006; HOLDEN et al., 2006; BALAND, et al., 2007; LAVIGNE-DELVILLE et al., 2001).

Throughout the history of the Republic, many legal regulations have been made regarding the sustainable use and protection of agricultural lands in Turkey. The most important law with agricultural land management is the “Soil Conservation and Land Use Law” numbered 5403, which entered into force in 2005. With this law, it aims to classify, protect and develop land and agricultural lands, prevent dividing them into the determined land sizes, and use them under sustainable development principles.

While simple land consolidation based on village and irrigation investment was implemented in Turkey until 2008, consolidation projects were accelerated after this date and basin-based and multi-purpose consolidation practices were started. However, the regulations and practices made could not solve structural problems and the formation of a solid agricultural land market. (TURKER & GENÇEL, 2010; TURKER, 2017). By 2012, approximately 4.2 million ha was aggregated (ANONYMOUS, 2019a, ANONYMOUS, 2019b). REMBOLD, (2003) stated that land consolidation is not the only solution, besides, there should be a land management system and it should be considered in non-farmlands. So, it was observed that consolidation projects solved the problem of fragmentation but did not solve the problem of equity and did not enlarge the business scale with the current application. Land divisions through inheritance and sale continued in the consolidated agricultural areas (TURKER, 2011; TURKER et al., 2014; TURKER, 2017). For this reason, legal and institutional arrangements were needed to prevent the fragmentation of agricultural lands and to establish a well-functioning agricultural land market. In this context, a reform-like amendment was made in the land protection and land use law numbered 5403 in 2014. The inheritance law was amended and competent income land sizes (dry, irrigated, plantation enterprises and greenhouses) were determined on a district basis and the division of agricultural lands under these sizes determined by both inheritance and sales was stopped. In addition, regulations regarding land banking applications such as inheritance management, land sales, tenancy and partnership services, and loan provision are included. In the law, four agreement options have been given to the heirs within 1 year from the date of death of the owner regarding the sharing or transfer of the lands subject to inheritance seen below:

1) Transfer the entire land to an heir, without taking its size into consideration.

2) Transfer of family properties to be established in notary publics.

3) Transfer all heirs to the limited company they will establish in proportion to the inheritance share.

4) Handing over to third parties (ANONYMOUS, 2014).

If the Ministry determines that the land subject to inheritance has not been transferred within 1 year, the heirs are given 3 months for the transfer. Suppose the transfer has not been made at the end of this period. In that case, the Ministry is in a position to file a lawsuit against the competent heir who made the request, if there is no competent heir, the willing heir who made the most bid, otherwise, to the competent magistrate court for sale to third parties. It is said that the new right holder determined through the court pays the land value of the other shareholders within 6 months. In addition, if the land transferred by inheritance is used for non-agricultural purposes within 20 years and there is an increase in value, the way has been opened for the brothers to get their share from the increase in value (ANONYMOUS, 2014). There are studies on the functioning and possible consequences of the law amended in 2014 to prevent the fragmentation of agricultural lands by inheritance in Turkey. KAVASOGLU & SAYIN, (2016) claimed that the new inheritance law is important in that has not been covered addressed yet, however giving one year to the heirs in the transfer of ownership by inheritance extends the transfer process of the inherited agricultural lands. Also, YUCER et al., (2016) analyze the views of agricultural stakeholders to these proposed legal changes to prevent further fragmentation of agricultural land. The interviewed stakeholders are separated into two groups; Those "in favor of the solution" and those "opposed to the solution" by a two-step cluster analysis, taking into account the social and economic characteristics of the stakeholders as well as the region where the study is conducted. It is determined that their economic concerns are the primary obstacle to creating effective policy. Education, social security, living place, tradition, and experience in the implementation of the policy are identified as other influential factors.

Since 2014, 575,000 notices have been sent on this matter, but the Ministry of Agriculture and Forestry has filed no lawsuits. Although, no lawsuits were filed, 6.362.951 agricultural parcels were transferred to the heirs without division. The division of 1.5 million ha of land was also prevented through sales (ANONYMOUS, 2021). BUDZYAK, (2008) regards the agricultural land market as the economic and legal system, organizational,

economic and administrative relations between private entities, state and municipal ownership to transfer or sell agricultural land plots in certain situations. In Turkey, the purchase and sale of agricultural lands are carried out in the free market. Heritage management and sales are monitored online in the web environment under the Ministry of Agriculture and Forestry coordination and General Directorate of Land Registry and Cadastre.

This study determined the perspective of land market and socio-economic characteristics of the enterprises that purchased and sold land in Konya in 2018-2019, and the factors affecting their perspectives on policies on land markets were discussed. The research results constituted an essential reference for both researchers and lawmakers, as well as the evaluation of the changes, regulations and developments that took place in 2014 when the last legal regulation on the agricultural land market was made.

## MATERIALS AND METHODS

In this study, Konya province was determined as the research area since it takes place in Turkey in the first place in terms of land area and the size of agricultural land. Within the scope of the research, the persons to be surveyed were explicitly identified, and in the selection of Konya provinces, districts, and villages, features that will reflect the overall Konya province (such as land assets, shareholding and fragmentation of enterprises, irrigation facilities, transportation network, migration, breeding and production potential) were taken into account. In this context, face-to-face surveys were conducted with 230 people, 115 of whom were selling agricultural lands (sellers) and 115 of whom were purchasers of agricultural land, in 14 districts and 64 villages of Konya province, and the primary data of the study were obtained.

In this research, a 48-question questionnaire was applied to both buyers and sellers on 115 transactions made in september, october, and november 2019. A total population sampling method was used. While determining the sample size, all the farmers who traded in the specified region were interviewed on the specified date. The characteristics of the farmers who buy or sell their lands and the lands they sell and buy have been analyzed according to the size of the enterprises, their sales and purchasing shares in the total size of the lands sold or purchased.

Multinomial logistic regression analysis was used to determine the factors affecting the sellers'

perspectives on the new land law. Classical regression analysis is not an appropriate method in studies where the dependent variable has a categorical structure, and logistic and multinomial logistic regression analysis are the preferred methods (CAMERON & TRIVEDI, 2010; LONG & FREESE, 2001). Logistic regression analysis is a method used when the dependent variable has two categories. Multinomial logistic regression analysis is used when the dependent variable contains at least three or more categories (WASHINGTON et al., 2003; HOSMER et al., 2013). The most basic feature that distinguishes the multinomial regression model from the logistic regression model is the comparison of people's different choices.  $P_i (Y = j)$  as a function of all other alternatives calculates the probability of choosing the  $j$  alternative on the selection of its case (DUQUENNE & VLONTZOS, 2012). Multinomial logistic regression analysis is a method that is frequently used in social sciences in many subjects, such as determining consumer behavior preferences and determining the probability of benefiting from agricultural supports (GURIS et al., 2007; ZORTUK et al., 2013; ABAY et al., 2017).

In this study, the dependent variable was determined as the sellers' perspective on the new land law and divided into three groups (0 = No Idea, 1 = Positive, 2 = Negative).

The general view of the multinomial logistic model used in this research is given as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10}$$

Independent variables are determined as the age of the seller, the level of education, experience status, the number of tractors, the status of animal breeding, the status of training in agriculture, the width of the land with full shares, the width of the land with more than one share, whether there is a problem in the land transferred by inheritance and how long after transaction realized when the sale is decided (Table 1).

## RESULTS AND DISCUSSION

The average age of the sellers was 57 and the average age of the buyers was 45. 69.57% of the sellers and 59.13% of the buyers are primary school graduates. It was determined that over 90% of both buyers and sellers do not have an engineer/veterinarian in their families and 70.58% of the sellers and 80.81% of the buyers do not have non-agricultural income.

According to the research results, when the residence places of the farmers are examined, it was

determined that 67.83% of the sellers and 63.48% of the buyers reside in the village. While 75.65% of the farmers who sell agricultural lands own tractors, it found that this rate is 86.96% in those who buy land. In another study in Konya, the number of tractors per farm was found 1.57 (OGUZ et al., 2017). It has been determined that the analyzed agricultural enterprises are also engaged in livestock activities, and it is seen that 57.39% of the enterprises selling land and 66.09% of the enterprises that buy land involve livestock activities in their enterprises.

The land assets and ownership status of the farmers were also researched. In this context, it was determined that the enterprises that sell agricultural lands mostly own land with full-shares (91.40%), while the share of enterprises with "more than one shareholding land" among the enterprises selling land is 7.62%. However, it has been determined that 71.34% of the agricultural enterprises that buy agricultural land purchased "land with full shares", and 25.05% of them operate the agricultural lands by renting (Table 2). This shows us that the amendment to the inheritance has successfully prevented the fragmentation of agricultural land. According to the law, the lands over the indivisible land size and the shares in the lands with shares can be sold to common shareholders without being divided. According to the law, the transfer of ownership must be made by agreeing between the heirs within one year on the jointly owned lands. These data show the accuracy of law enforcement. It was found a similar result that 87% of the lands in Konya were full share (DURDURAN et al., 2018).

Research results showed that the law fulfills the objectives of the amendment, but the purpose of this amendment is not well understood by the taxpayers subject to inheritance. Although, the primary purpose is to prevent rural enterprise sizes from falling below the sufficient income size through inheritance or sale, it is understood that the heirs insist on equal sharing.

As a matter of fact, it was determined that the rate of those who had problems among the sellers who transferred their lands through inheritance was high (76.52%). It has been determined that the most common problems faced by the sellers are the inability to allocate the agricultural land to the children equally, the fact that the land is not allowed to be sold on a parcel basis, enforcement of liquidation and not getting credit. Conversely, among the reasons for the negative view of the collection of lands in one shareholder; seeing their lands as the security of their children, having no other work to do other than agriculture (YUCER et al., 2016).

Table 1 - Variables of the model.

Name of the variable	Definition of the variable
-----Dependent variable-----	
Standpoint	0: No idea 1: Positive 2: Negative (Reference Category)
-----Independent Variables-----	
Age	Level year
Experience	Level year
Education	1: Literate 2: Primary school 3: Middle school 4: High school 5: University
Number of tractors	Number
Animal breeding	1: Yes 2: No
Training in agriculture	1: Yes 2: No
Land with a full share	Da
Land with more than one share	Da
The problem in the land transferred by inheritance	1: Yes 2: No
How long after the transaction realized when the sale is decided	1: 1-10 days 2: 11-20 days 3: 21-30 days 4: 31-60 days 5: 61-90 days

The research revealed information about how long after the transaction realized when the sale is decided by the enterprises that sell agricultural lands (Table 3). It was determined that 35.65% of the farmers who sell agricultural lands make the sale 1-10 days after the decision is made, and 40.87% make the sale after 21 or more days. According to the research results, it found that the land sales were made mostly within 1-10 days (41 sales), and only 3.48% of the realized sales (4 sales) were completed within 61-90 days. It has been also observed that medium-sized fertile agricultural lands that are close to the city, on the plain, near a road, and having irrigation facilities are sold in a shorter time than other lands.

It was determined that 41.7% of the sellers did not have an opinion about the "New Land Law", 30.4% of them expressed positive opinions

and 27.8% of them stated negative opinions. This situation indicates that more work should be done on the promotion of legal regulations.

In the study, a Multinomial Logistic Regression analysis was applied to determine the factors affecting the perspectives of the enterprises that sell land towards the new land law (Table 4).

Perspectives of land sellers on the new land law, which is the dependent variable in the model, are grouped as "0 = No Idea, 1 = Positive and 2 = Negative", and the model is analyzed based on the "Negative" variable as the reference variable. Analysis results were compared separately for "Positive and No Idea" variables since the "Negative" variable was taken as the reference. According to the analysis results, the variables of age ( $P < 0.05$ ), land with more than one share ( $P < 0.10$ ), land with full

Table 2 - Land characteristics of the farmers participating in the questionnaire (ha).

Land Characteristics	Seller	Percentage (%)	Sold Land	Percentage (%)	Buyer	Percentage (%)
Fully owned land	11.266	91.40	3.799	96.64	149.7	71.34
Land with multiple shares	0.939	7.62	0.048	1.22	0.528	2.52
Inheritance and subsidiary land	0.084	0.68	0.084	2.14	0.016	0.08
Leased land	-	-	-	-	5.257	25.05
Sharecropped land	0.037	0.30	-	-	0.216	1.03
Total	12.326	100.00	3.931	100.00	20.991	100.00

shares and more than one share ( $P < 0.05$ ) were found to be significant. Analysis results were compared separately for “Positive and Non-Intellectual” variables since the “Negative” variable was taken as the reference. According to the analysis results, the variables of age ( $P < 0.05$ ), land with more than one share ( $P < 0.1$ ), land with full shares and more than one share ( $P < 0.05$ ) were found to be significant.

The age variable was found to be statistically significant as a result of the comparison of the “No Idea” and “Negative” categories ( $P < 0.05$ ). It found that a one-unit increase in the age of land sellers leads to a 6.3% increase  $[(1-0,937) * 100]$  in the likelihood of them changing their views on the new land law negatively from people who have no idea.

As a result of the comparison of “Positive” and “Negative” categories, the variables of age ( $P < 0.05$ ), land with more than one share ( $P < 0.1$ ) and land with full shares and more than one share ( $P < 0.05$ ) were found to be statistically significant. It found that a one-unit increase in the age of land sellers leads to a 7.9% increase  $[(1-0.921) * 100]$  in their probability of changing

their views on the new land law from a positive to a negative side. It was also determined that a one-unit increase in the sellers’ lands with more than one share also led to a 21.3% increase  $[(1-1,213) * 100]$  in the probability of changing their views from a negative to a positive direction. Additionally, a one-unit increase in the sellers’ land with full shares and multiple shares leads to a 0.3% increase in the probability of changing their views from positive to negative  $[(1-0,997) * 100]$  (Table 4).

## CONCLUSION

As in the rest of the world, agricultural land in Turkey is one of the scarce resources, whose importance is increasing daily in terms of sustainable agriculture and food security, urbanization, industry, and energy trade. Increasing demands of all sectors on agricultural land create great pressure, and considering the negative effects of climate change, this pressure works against agriculture. Requests for land are met by land market tools such as purchase, lease, or joint use.

The likelihood of experiencing problems during the sale of agricultural land increases the

Table 3 - Information about how long after transaction realized when the sale is decided.

Duration	Number of Sales	%
1-10 days	41 sales	35.65
11-20 days	27 sales	23.48
21-30 days	30 sales	26.09
31-60 days	13 sales	11.30
61-90 days	4 sales	3.48

Table 4 - Results of Multinomial Logistic Regression Analysis.

	Name of the variable	Coefficient	Standard error	Probability ratio	
No Idea	Age	-0.065**	0.032	0.937	
	Experience	-0.007	0.025	0.993	
	Number of tractors	0.601	0.716	0.703	
	-----Training in agriculture-----				
	Yes	-0.327	0.591	0.721	
	-----No (Reference)-----				
	-----The problem in the land transferred by inheritance-----				
	Yes	-0.255	0.649	0.695	
	-----No (Reference)-----				
	-----Animal breeding-----				
	Yes	-0.050	0.627	0.951	
	-----No (Reference)-----				
	-----How long after the transaction realized when the sale is decided-----				
	1-10 days	1.218	1.492	3.380	
	11-20 days	0.843	1.536	2.324	
	21-30 days	0.039	1.508	1.040	
	31-60 days	2.518	1.826	12.399	
	-----61-90 days (Reference)-----				
	Land with full share (a)	-0.002	0.004	0.998	
	Land with more than one share (b)	0.142	0.096	1.153	
a * b	-0.002*	0.001	0.998		
Age	-0.083**	0.036	0.921		
Experience	0.017	0.027	1.017		
Number of tractors	0.804	0.713	2.235		
-----Training in agriculture-----					
Yes	-0.610	0.633	0.543		
-----No (Reference)-----					
-----The problem in the land transferred by inheritance-----					
Yes	-0.438	0.689	0.645		
-----No (Reference)-----					
-----Animal breeding-----					
Yes	-0.712	0.648	0.491		
-----No (Reference)-----					
Positive	-----How long after the transaction realized when the sale is decided-----				
	1-10 days	-0.028	1.364	0.973	
	11-20 days	0.292	1.395	1.340	
	21-30 days	-0.843	1.366	0.430	
	31-60 days	1.575	1.743	4.833	
	-----61-90 days (Reference)-----				
	Land with full share (a)	0.000	0.004	1.000	
	Land with more than one share (b)	0.193*	0.102	1.213	
	a * b	-0.003**	0.001	0.997	
	-----Significance Level; *** P < 0.01 **P < 0.05 * P < 0.1-----				
	----- -2 Log Likelihood= 206.353-----				
	-----Nagelkerke R <sup>2</sup> = 0.350-----				
	-----χ <sup>2</sup> =42.664 (0.021)-----				

importance of the measures to be taken to eliminate the problems. Resolving the problem related to the inability of the farmers to share their agricultural lands equally to their heirs should be considered as essential for the smooth operation of the land markets.

According to the research results, it is noteworthy that the views of the agricultural land enterprises about the new land law change negatively as their age increases. While the individuals who engage in agriculture in the village want the agricultural lands to be transferred to those who are actually engaged in agriculture, the owners over the age of 70 insist on giving their limited land equally to their children due to fear of not ensuring equality among their children.

Informing efforts for senior sellers on the importance and implementation of the new land law is important for the sustainability of the law. In addition, it has been revealed in the research results that the increase in the land width with more than one share positively changes the views on the new land law. This situation is an important result in terms of protecting the land integrity, which is also aimed at the law.

To make the desired improvements in the agricultural structure, it is necessary to create a well-functioning agricultural land market as well as prevent land fragmentation. Therefore, while making legal and institutional arrangements, the problems experienced in the purchase and sale of agricultural land, obtaining credit and partnership-tenancy works should be taken into consideration. The existing law and the institutional structure are not sufficient, the existing law works on a voluntary basis, incentives and penal sanctions are not sufficient, therefore, a legal regulation should be made to eliminate the deficiencies. Priority should be given to work with international institutions, and financial models such as “Heritage Loan” and “Land Acquisition Loan”, which should be developed by examining developed country practices in this regard.

## DECLARATION OF CONFLICT OF INTEREST

I have no conflict of interest to declare.

## AUTHORS' CONTRIBUTIONS

Author critically revised the manuscript and approved of the final version.

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