

# **Determination of the Valuation Criteria in Rural Areas and the Account of the Scoring Weights of Some**

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**Key words:** Rural area, valuation of the rural area, irrigable land, arid land.

## **SUMMARY**

The valuation of real property in urban areas in today's Turkey where a rapid urban migration to rural areas is experienced is being regulated by teaching, law and models. Thus some public and corporate institutions issued regulations and circulars about the areas that they are involved in. In short even though the valuation in rural areas has some problems, it has been into a recovery process.

Valuation of rural areas has been of more importance in our country where the population has been accumulated in cities and the dietary habits are growing, where the urban lands are constantly moving towards rural lands and the application of agricultural insurance is widespread where bank loans are taken by showing agricultural lands as assurance and where the public treasury lands have been put on sale for their users. Especially the foreigners' obtaining lands in Central Anatolia region for agricultural purposes has increased the importance of the issue.

Those who want to make a valuation in rural areas are facing the lack of data and models the net annual income of products, field planting plan, the valuation criteria of the agricultural zone and its method. In our country as the majority of people dealing with valuation are involved in valuation of urban areas, the valuation of rural areas has been neglected. It can not also be said that those who are engaged in valuation of rural areas have developed a valuation measure (and weight) and a valuation method that is adaptable to the conditions of the country.

In this study, local valuation criteria concerning rural areas and weights of some of them are tried to be determined also by the help of the experiences gained during the practices of expertise on the valuation of rural areas in Central Anatolia.

## ÖZET

Kırsal bölgeden kentsel bölgeye hızlı bir göçün yaşandığı günümüz Türkiye'sinde, kentsel alanlardaki taşınmaz değerlendirilmesi; öğretisi, yasa ve model olarak bir düzene konulmaya çalışılmaktadır. Nitekim bazı kamu ve tüzel kurumlar, değerlemenin kendilerini ilgilendiren boyutuyla ilgili yönetmelik ve genelgeler yayımlamıştır. Kısacası, kentsel alanlarda değerlendirme sorunu da olsa bir düzelmeye sürecine girmiş durumdadır.

Nüfusun kentlere yığıldığı, beslenme alışkanlıklarının arttığı, kent topraklarının tarım arazilerine doğru sürekli ilerlediği ve tarım sigortası uygulamasının yaygınlaştığı, tarım arazilerinin karşılık gösterilerek banka kredilerinin alınmaya başlandığı, hazine arazilerinin kullanıcılarına satışa çıkarıldığı ülkemizde kırsal alan değerlendirilmesi de önem kazanmaya başlamıştır. Özellikle yabancıların İç Anadolu bölgesinden tarımsal amaçlı büyük arazi almaları konunun önemini bir kat daha artırmıştır.

Kırsal alanda değerlendirme yapmak isteyenler, o tarım bölgesine ait değerlendirme ölçütü, yöntemi, arazi ekim planı, ürünlerin yıllık net geliri gibi pek çok model ve veri eksikliği ile karşılaşmaktadır. Ülkemizde değerlendirme ile uğraşanların çoğunluğu enerjilerini kentsel alan değerlemesine yoğunlaştırdıklarından kırsal alan değerlendirilmesi ihmal edilmiştir. Kırsal alan değerlendirilmesiyle uğraşanların da ülke koşullarına uyumlu, değerlendirme ölçütü (ve ağırlığı) ve yöntemi geliştirdiği de söylenemez.

Bu çalışmada; İç Anadolu bölgesindeki kırsal alan değerlendirilmesi ile ilgili bilirkişilik uygulamalarından edinilen deneyimlerden de yararlanılarak tarım alanlarını ilgilendiren yöresel değerlendirme ölçütleri ve bazılarının ağırlıkları belirlenmeye çalışılmıştır.

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## 1. INTRODUCTION

Real property valuation has become more important in urban and agricultural areas since the beginning of 1990 when Liberal economy began to be implemented in our country. Real property valuation in urban areas has improved in terms of criteria, intensity, method and modeling [1]. The reasons are;

- a) A few scientists (Açlar, Demir, Yomralıoğlu, Ülger, Uzun, Çağdaş, Erkan, ...) who have been engaged in academic studies on this subject since the early 1970s,
- b) Rapid urbanization,
- c) The liberal economic system,
- d) Big construction firms,
- e) The Public Housing Administration,
- f) Foreign capital.

Valuation of real estate in our country has been come up in urban areas, but has been neglected in agricultural areas. The reasons are;

- a) Acceleration of migration from Rural to urban (urban population is 62% of the country in 2000 whereas it is 76% in 2010) [2] demand for land in cities has increased for that reason real property demand traffic become more than villages,
- b) Buyers and sellers in the urban area are in a wide range in cities while they are in very narrow range in villages,
- c) The lack of importing freedom and inventiveness in agricultural sector.

For the three main reasons, real estate valuation in rural areas has been applied on selling the treasury lands to their users, bank mortgage and credit transaction more than purchasing between individuals. However, in recent years, the real property valuation in agricultural lands has become important because of the increase on banking transactions, credit transactions, sale of treasury lands, and privatization, investments on technology done by the large land owners.

The number of people who needs balanced and adequate nutrition has been increasing with the increase in world population. The new agricultural lands are the areas which belong to the state and that lost their forest land feature and the village lands used for threshing or pasture lands that weren't planted before. In recent years the sale of these lands has been done according to the statement no: 313 of National Real Estate General Directorate numbered 26557 and dated 19.06.2007 Official Gazette [3]. According to this statement, the selling of these kinds of lands to its present users who used the lands for agriculture purposes before the date 31.12.2002 can be done and valuation of the lands have to be done by the method of **income capitalization interest**, and the purchase priority right would be given to the ex-user or his inheritors if he is dead.

## 2. REAL PROPERTY VALUATION

Value can be defined as an abstract measure of something to show its importance or the cost of it [4]. Valuation is determining the value of any object. The most difficult point in agricultural valuation is to determine the local capitalization interest rate. The most difficult part of this is the difficulty in obtaining necessary data, the lack of information and variation of the rate from region to region and even from land to land.

A global definition of real estate valuation is determining the current normal price of a real property in real property market by using one of the suitable methods. Real property valuation means comparison in its classical sense and it is done by using the income and cost methods or both of them [5]. According to the paragraph f in article 11 of Nationalisation Law ” the expert group calculate and report the value of real property or resources according to the conditions and location at the time of nationalization and on the condition of its current use” **income method** has been used in agricultural lands.

Till today, regional capitalization rates are calculated according to usage of land as it is suitable for irrigated or dry farming and by this way the value of real property is reached. However,

- a) The valuation criteria established by law,
  - b) The weights of these metrics
- are needed to calculate.

## 3. VALUATION CRITERIA FOR RURAL AREA

There aren't enough studies on rural area valuation in our country whereas sufficient studies are seemed in European countries. Studies on the rural area has been carried out by several scientists such as (Mülayim, Tanrıvermiş, ...) [6]. Rural valuation criteria in these studies can generally be listed as below [7];

- a) The opportunity of producing a new parcel,
- b) The size of the land,
- c) The overgrowth of the population of the city or town,
- d) Having one piece of land,
- e) The cadastre,
- f) Population density,
- g) Property security
- h) The ease of purchase - sale,
- i) The ease of transport,
- j) Having a building and its accessories,
- k) The proximity to a city or town,
- l) The facility of irrigation,
- m) Land planting plan,
- n) The regional variety of products,
- o) Slope,
- p) Soil depth
- q) Soil class,

- r) Land Shape,
- s) Proximity to Forestry border,
- t) The status of wild animals (pigs, mice, moles),

However, these criteria can be divided into two main groups.

These are:

- a) The **positional** criteria affect the location value,
- b) The **fertility** criteria affect amount of product taken from the field.

Since the product value is affected by both positional and fertility criteria, the capitalization interest is affected directly or indirectly and this affects the value of the land unit. Here are the calculation of the criteria and their influence weights.

### 3.1 Evaluation Criteria and Weights

**a) The opportunity of producing a new parcel ( $k_{ps}$ ):** The opportunity of producing a parcel is directly proportional to the size of the parcel. The article 11 of the Soil Protection and Land Use Law classifies agricultural lands according to the smallest size considering the planting type. According to this article, Parcel size in agricultural lands is determined considering with social, economical and ecological data of regions. Determined the size of the parcel cannot be smaller than;

- 1 hectare in *absolute* agricultural land and *private product* lands,
- 0.5 hectares in *planted* agricultural lands,
- 0.3 hectares in *greenhouse* agricultural lands,
- 2 hectares in *marginal* agricultural lands.

and it is formed and used in a large scale that agricultural machines can work productively without giving any harm to land. However, these criteria are given for the topographic state of the land.

Since agriculture is done by economic and physical contributions of the whole family members, enough land must be inherited for living to the inheritors of the farmer after his death. In this sense, the facility of producing new parcel must be more. The criteria must not be **the smallest** size that law says but large enough for farmer family to live. This size for dry areas is 188 da and for wet lands 49 da in the Central Anatolia Region. Value is increased 5% for each produced parcel. And it is calculated as:

$$k_{ps} = 0.05 \times \text{produced parcel number}$$

**b) The overgrowth of the population of the city or town ( $k_n$ ):** According to the Municipal Law places of which central population is more than 750.000 is accepted as metropolitan. Therefore, this criterion is important for agricultural areas around the metropolitan. In fact the surplus population in the city is a criterion of the land and when it will become an urban land (raw settlement land). As the population increase, surrounding farmlands are under the threat of being converted to urban land. It must be admitted that the worst urban land is expensive than the most fertile land. Its mathematical weight depends on the conjuncture.

**c) Having one piece of land ( $k_l$ ):** The investment is important in aspects of transportation cost, planting plan, agricultural equipment and crop transport when the land is in one piece and large (the distributing norm) enough for a farmer family to live. Value is increased 5% for having one piece of land. 1st class living land for Konya region is  $f_{dn}= 188$  da for dry lands and  $f_{dn}= 49$  da for the wet lands.

$$k_l = \frac{f_p}{f_{dn}} \times 0.05$$

**d) Having cadastre in the region ( $k_k$ ):** There is no weight since our country's cadastre is completed.

**e) Population density ( $k_{ny}$ ):** The more the population is many the more agriculture is easy in a village. As density increases, agricultural fertilizer factories, agricultural equipment factories and agricultural workers will come to village easier and cheaper. However, the population shouldn't exceed 5 000, because after 5000, the right of being a municipality is obtained according to the Reconstruction Law. Therefore, it becomes a city. An ideal village population is 750 to 3000. If the population is in these limits the value of increased 3% . If the population is less than 750, the value is reduced 2%.

**f) Property security ( $k_{mg}$ ):** Property security is a situation whether there is a danger for the farmers to go to their lands and prevent them planting or collecting their crops or not. There is no such a problem in Central Anatolia. For this reason, the value is increased 1%.

**g) The ease of purchase – sale ( $k_{as}$ ):** All kinds of difficulties prevent buying and selling is called the ease of purchase–sale these difficulties in the region are;

- Tribal structure,
- Farmers' intention not to pay their taxes or credit.

The difficulty coefficient is determined as follows. Banks give 25% less value (75% of the value) of the land as a credit to continue their lives. The value that the banks reduced from 75% for such lands is taken and used in calculation. The rate in the Central Anatolia region is between 75 to 70  $k_{as}$  value is reduced from the land value per unit.

$$k_{as1} = \%75 - \%75 = \%0 \quad k_{as2} = \%75 - \%70 = \%5 \quad k_{as} = \frac{k_{as1} + k_{as2}}{2} = \%2.5$$

**h) Ease of Transportation ( $k_u$ ):** The distance from farmer's house to;

- The main road ( $k_{uay}$ ),
- The village center ( $k_{ukm}$ ),
- Petrol station ( $k_{upi}$ ),
- Crop buying center ( $k_{uam}$ )

are important. Determining distance is 10 km. because the agricultural vehicles can go 25 km/h when they are empty and 20 km/h when they are full. Since transportation experts says

that journeys which took from more than 30 minutes makes people tired, the distance is determined as 10 km. Separate scoring for these three basic criteria can be done as below;

Distance (km)	1	3	5	7	9	10	12	14	16	18	20
$k_{uay}$ (%)	5	4	3	2	1	0	-1	-2	-3	-4	-5
$k_{ukm}$ (%)	5	4	3	2	1	0	-1	-2	-3	-4	-5
$k_{upi}$ (%)	5	4	3	2	1	0	-1	-2	-3	-4	-5
$k_{uam}$ (%)	5	4	3	2	1	0	-1	-2	-3	-4	-5

**i) Having a building and equipments ( $D_{yd}$ ):** The buildings and equipments are;

- Electrical installation,
- Drainage installation,
- Warehouse,
- Housing

Their presence of these increases the productivity and quality of crops and makes the harvest easier. The constitution cost of these structures and equipments in a land is calculated. Then depreciation is discounted from the constitution cost and divided by remaining life span ( $D_{yd}$ ). Total area is divided by the former division value and the result is added to annual net income.

$$D_{yd} = \frac{D_{yd}}{f_p}$$

**j) The proximity to the city or town ( $k_{ky}$ ):** The distance of the land to the city ( $U_k$ ) is important. The ideal distance is between 50 and 70 km. because if it is nearer than 50 km to the city, it loses its agricultural land feature and passes to urban land speculation. Each 8 km from 70 km increases the cost of transport (transport vehicles go 8 km with 1 liter of diesel). Thus, the cost of the product increases 1% in each 8 km. For this reason, value is reduced 1%.

$$k_{ky} = \frac{U_k - 70}{8} \times 0.01$$

**k) The facility of irrigation ( $k_{si}$ ):** Is a major criterion. Irrigated land or arid land agriculture in a land affects a planting plan directly. Because in the same class land, the land planting plan for arid land agriculture is applied: wheat + barley + fallow = 3 years; the land planting plan for irrigated land agriculture is applied: sugar beet + sunflower (or corn) + wheat + barley = 4 years. 1 of 3 years used in fallow and the other 2 years passes with grain cultivation of which value is very low in stock market whereas 4 years are fully used and sugar beet and sunflower (or corn) which is 2 times expensive than grain in irrigated lands. According to the experience of Expertise (court decisions), the transfer coefficient between lands is determined as follows.

Table 3.1.1 Transition index table of land classes

Index	Irrigated	Arid
1st Class Land	800	240
2nd Class Land	350	130
3rd Class Land	140	100

It can be seen from the table that there is a remarkable income difference between the irrigated and arid lands. This criterion is also affected by land planting plan and a regional product variety. The Index on table 3.1.1. are used in calculating  $k_{si}$ .

**l), Slope, soil depth and soil class ( $k_{akk}$ ):** In this system, terrain, slope, texture, depth, water permeability, physical properties, are handled according to the erosion criteria. All of these criteria create "the ability of land use". Due to the formation, agricultural lands are classified as 1st class, 2nd class, 3rd class. In terms of valuation, this classification is sufficient. The criteria mentioned above and limit values can be created as in Table 3.1.2.

Table 3. 1. 2 Land Classification according to use ability

Criterion	1st Class Land	2nd Class Land	3rd Class Land
Slope (%)	0 - 2	2 - 4	4 - 6
Texture (structure)	Loamy	Clay	Sandy
Depth (cm)	+ 90	90 - 50	50 - 25
Water Permeability	Early Absorption	Middle Absorption	Early Absorption
Physical Properties	Dark Color	Light Color	Stony
Erosion	Never	Middle	Happened

This table allows us to compare all the land within their own class.

**m) The shape of the land ( $k_b$ ):** When the shape of the land has much zigzag corners, plow loses are much in the land. Because of not being easy to maneuver tractor and one cannot come closer less than 75 cm to the property boundary, the amount of unplanted land increases. Here, the question comes to mind "What is the ideal size of the land?" The **golden ratio** series which exists in the nature and makes the human body appearance aesthetic comes in mind. As is known, this series are the sum of the two previous numbers: 0 to 1 - 1 - 2 - 3 - 5 to 8 - 13 - 21 to 34 - 55 - 89-144 - . If we compare the elements of the serial with each other beginning with the 8th term, coefficient 1.62 is obtained and we can get it as 1.60.

From here on we can come to the conclusion that the land should be rectangle and have 1.60 rates between the edges. After this judgment we can create the weight criteria as follows:

$$f_i = a^2 \cdot 1,6 \text{ and}$$

If we take  $f_i = f_p$  the ideal size of the land is  $a$

From here  $f_p = a^2 \cdot 1,6$  is obtained and if we take off  $a$  it is calculated as  $a = \sqrt{\frac{f_p}{1.6}}$

Ideal land periphery is  $C_i = a + 1.6a + a + 1.6a = 5.2a$  When  $a$  is put in  $C_i$  it is

$$C_i = 5.2 \sqrt{\frac{f_p}{1.6}}$$

From here the shape measure of land is calculated as:

$$k_b = \left( \frac{5.2 \sqrt{\frac{f_p}{1.65}}}{C_p} - 1 \right)$$

**n) Proximity to Forest Border ( $k_{os}$ ):** This proximity carries two threats with it. The first, wild animal and the second is expansion of the forest border with legal regulations. The second risk may result of nationalization of your land. However, thus forest creates a natural environment; there is no need to use pesticides for insects such as stink bug that are harmful for wheat.

**o) The status of wild animals ( $D_{yh}$ ):** Pig, mouse, mole are wild animals which give damage to the product. Total cost of struggle with these animals ( $D_{yh}$ ) such as traps and poisons is divided by total size of land and obtained product is rated as %.

$$D_{ky} = \frac{D_{yh}}{f_p}$$

### 3.2 Weighted Evaluation

As it is known, land value is calculated by the correlation as below;

$$D_i = \frac{G_i}{k}$$

( $G_i$ : The annual net income,  $k$ : Capitalization rate  $D_i$ : Land value). In order to account more accurate value of land, the annual net income  $G_i$  must be calculated by taking into account of the criteria given in previous section. If the annual net income shown as  $G_a$ , calculation model below is recommended:

$$G_a = G_i x (1 + k_{ps} + k_t \text{ } \neq k_{ny} + k_{mg} - k_{as} \text{ } \neq k_{uay} \text{ } \neq k_{ukm} \text{ } \neq k_{upi} + k_{ky} \text{ } \neq k_{si} + k_b) + D_{yd} + D_{yh}$$

After this weighted income calculation, the valuation process is continued. After that correlation is transformed into

$$D_i = \frac{G_a}{k}$$

As a result of scientific studies and court decisions, the capitalization interest rate is observed as 5-6 % in arid lands and 8-9% in irrigated lands.

#### **4. THE REASONS OF LOW CAPITALIZATION INTEREST**

Interest, a price of a certain amount of capital paid to the owner for using it in a certain period of time. Local capitalization rate of interest is, the using right of invested capital for the land [6]. Farmers have become more dependent to land because of its reliability, being a low risk investment, cannot be removed, cannot be increased and giving its owner a privilege of monopoly.

Using market interest rates in determining local capitalization rate is applicable for developed countries. In our country where national income is low and the population rate is not lower than 10% (rural Population of Turkey is 24%) this rule is not acceptable.

Land is one of the most secure investments. Therefore, the capitalization interest rate of invested capital is lower than other risky investments.

Beside this economic reason, there are other non-economic reasons that drop the capitalization from other interest rate of investments. They are:

- a) The land passion; a person does not own a land for investing his money in a certain rate. A person becomes a political power when he is the owner of a land, thus, passion for the land becomes important. Land passion affects the capitalization rate of small pieces of lands.
- b) The investment tool; in the case that buying a land where the whole family members can work, it is not considered as a place where savings are invested. Land is also a business tool. In Turkey where unemployment is a serious problem, a peasant can pay a high value to buy a farm because the villagers will guarantee the whole of their family's workforce. Since the villager guarantees the whole of their family's workforce, he will not take into consideration of low rate of interest capitalization.
- c) Social and political power; land gives social and political power to the owner. This factor is especially important in large enterprises.

All of these non-economic factors show us why land investors accept low interest rates or in other words, the reasons of low land capitalization interest rates [6].

#### **5. CONJUNCTURE (GENERAL STATE)**

Real estate valuation means determining the value of a real estate by a suitable method of the conditions of a day and a region according to the habits of real estate market. However, the value of the property is affected by not only with location and soil quality but also conjuncture [8].

A conjuncture refers to the whole rising, dropping and undulant or wavy movements of the economy of a country. In other words, it refers situations occurred from all kinds of conditions or positions [9].

Conjuncture is all kinds of political and economic fluctuations in our country and in the world. It affects little the countries which have low inflation and high welfare (national income above of \$ 20,000). On the other hand real estate market is quickly affected in such countries where inflation rate is more than 10% and annual national income per person is less than \$ 5000. In such cases, investment tools moves away from real estate market and stock exchanges and go towards foreign exchange and gold. In real estate market in our country, an economic drop of 69% on 5 April 1994, 20% on 21 February 2001 and 27% on 11 September was experienced in crisis [10].

Since there is no change conjuncture of Turkey in last term, no change is experienced in real estate market.

## 6 ABBREVIATIONS

- $f_p$  : Land space
- $f_i$  : Ideal sized of land space,
- $f_d$  : Distribution norm space,
- $D_{yd}$  : Annual value of buildings and establishments of 1 year value
- $U_k$  : Distance to the city,
- $C_p$  : Total perimeter of the land,
- $C_i$  : Total perimeter of ideal sized land,
- $k_{akk}$  : Land using ability criterion
- $k_{as}$  : Criterion of the ease of purchase – sale of land
- $k_b$  : Criterion of the land form,
- $k_k$  : Criterion of having the land cadastre or not,
- $k_{ky}$  : Criterion of the proximity of the land to the city or town,
- $k_{mg}$  : Criterion of security of property,
- $k_n$  : Criterion of over population of the city or town,
- $k_{ny}$  : Criterion of population density,
- $k_{os}$  : Criterion of proximity to the forestry border,
- $k_{ps}$  : Criterion of productivity of new parcel,
- $k_{si}$  : Criterion of the facility of irrigation
- $k_t$  : Criterion of being one piece of land,
- $k_u$  : Criterion of ease of transport,
- $k_{uam}$  : Criterion of proximity to crop buying center,
- $k_{uay}$  : Criterion of reaching to the main road,
- $k_{ukm}$  : Criterion of ease of access to the village center,
- $k_{upi}$  : Criterion of proximity to petrol station,
- $k_{yd}$  : Criterion of the buildings and establishments of the land,
- $k_{yh}$  : Criterion of wild animals.

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