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AGRICULTURAL LAND MARKET AS A TOOL OF SUSTAINABLE DEVELOPMENT OF RURAL AREAS IN THE REPUBLIC OF MOLDOVA

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Abstract

The paper has two main applications: it represents a model for pricing – which might be used by investment funds, or other organizations interested in agricultural land acquisitions; the interest is in buy/sell transactions - a financial mechanism could be created to facilitate these transactions. For example, the creation of a Land Bank or to attract land banking investment funds, which would have the goal to improve the transaction system, develop financial tools necessary for increasing efficiency, improving financial structure. This study explorers the historical transactions and specifics of the land market in Republic of Moldova and how it is affected by social indicators in rural areas.

***Key words*:** *financial instrument, land bank, land market, linear regression,, transaction prices*

INTRODUCTION

Since its independence in 1991, the land market has a tendency to be used mostly for agricultural purposes.

Generally, any market is driven by two fundamental forces: supply and demand. In a market economy, these forces establish the market price, which creates the basis for buy-and-sell transactions. These fundamentals also apply in the land market. Usually the land market can be used in the following activities: Industrial, Construction (residential/ commercial), Agricultural (farming).

In the market economy, land is considered an economic good which is sold and purchased on the market of production factors. The well-functioning of the land market implies that there exists a land price which indicates the monetary value necessary to transfer ownership of a piece of land from one individual/legal entity to another individual/legal entity, through the sell-purchase document.

Agricultural real estate seems to draw less interest from developed economies as commercial real estate is considered more profitable. However, for country in transition like Republic of Moldova, the question of land market is of primordial interest.

Regarding the land market for agricultural purposes, the fundamentals remain the same. The demand is driven by consumers - farmers, in our case, but also by potential investors such as private individuals, public institutions, joint stock companies, private-public cooperation, corporate farmers, investment funds (which are currently not present in the Republic of Moldova). The investors are driven by incentives, different from the farmer's production goal: urban spaces absorption from a longer-term perspective, leasing the land, speculative motives, and change in land usage (for example, from agricultural to residential). On the other side, the supply is constituted of existing landowners and in some cases state ownership.

The market price of land is the result of the interaction between supply and demand for land, determined in the negotiation between sellers and buyers, each of them looking to get the most from the transaction (CIMPOIEŞ, 2008). The factors determining the level and the evolution of land prices can be limited to:

-Supply and demand of land – the natural limitation of the quantity of land available makes the supply rigid, it being not sensitive to price variation. As a consequence, land prices evolve proportionately to the demand,

to the number of people willing to invest in agriculture.
-The possibility to use land alternatively: agriculture, forestry, construction, industry.
-The interest rate – buying a piece of land is an investment. As a consequence, if the interest rate is higher than the efficiency expected from using that piece of land, the investor would rather deposit his money in a bank, thus influencing the demand for agricultural land.
-The increase in the demand for agricultural products determines an increase in the demand for agricultural land, thus increasing their prices.
Given the fundamental market model, when these forces meet, the land market price is created. In developed, well-functioning market economies, this price is also considered the optimal price, which governs an effective buy-and-sell transaction system. This allows for the market value to be usually equal to the investment value (*MV = IV*) and most of the participants to be marginal.
This study aims to discover this optimal land price, and the casual factors which influence this price. But, it is adapted to an economy in a transition period, such as Republic of Moldova. Since it has an under-developed economy, the market mechanism is ill-functioning. This means that the market value is almost never equal to the investment value (**MV ≠ IV**), and the majority of participants are described as intra-marginal. As a consequence, the system for buy-and-sell transactions is broken and ineffective. The market is also described by an imperfect competition.
Generally, there are several specific features attributable to a country, or a group of similar countries. In this context, the most important features for the Republic of Moldova are:
-According to local experts, the "real" transaction prices are not declared, especially when the transacted area is of significant size. This fact is related to the whole ill-functioning system of public administration, cultural values, corruption and other factors. This effect spreads in all sectors of real estate. As a result, the official records of transaction at the Cadastral Agency in Moldova do not reflect the real market prices mainly due to evasion of taxes, low level of trust in associations, decrease the transaction commissions.
-Although the holding of landowners comprise on average several parcels of land, they prefer to view them as a single one. This signifies that transactions regard not to a single parcel, but all of them. The landowners would prefer to sell all of their parcels.
-The land reform created a lot of independent, small landowners (as previously explained). But the reform lacked a proper mechanism for land usage. The major reasons for not developing the land are: insufficient labor, lack of finance, non-profitable activity and lack of machinery (CIMPOIEŞ et al., 2009).
-While the legislation provides opportunities for foreign investors in land for residential or commercial use, the law on land for agricultural use has several drawbacks. Currently, the investors can be only residents of Republic of Moldova, with no partnerships with foreign institutions or foreign capital. This creates considerable obstacles for land development. Combined with an inefficient and ineffective land usage, the whole land market system has remained at an early development phase for many years. The developed countries can afford this strategic reasoning, while an economy in transition has nothing but to gain from opening more its land market.

MATERIALS AND METHODS

The investment cycle of the land real estate market has four phases. Each stage could be analysed as a separate investment described by its specific timeframe, risks/return and costs. Although the phases might overlap, the value might be added at each of them (DRESCHER,2001).
The stages are the following:
1.Land in its raw form – the investment opportunity is based on purchasing land which is not designated for any development and holding it until demand creates a development opportunity. The usual holding period is from four to six years. The risks are related to public policy, significant economic

disturbances, and demographic shifts. The return is mostly based on land appreciation (BARRY,1980).

2.Pre-development and approval – represents purchasing land and entitle it through necessary legislative procedures for a specific project/use. Respectively, the land might be sold or developed after entitlement. The costs for this stage could be high. Most of the expenses concerns obtaining approvals, attorney fees, engineering. The timeline for this phase depends on each country, and varies from six months to several years. The return, or the value added, should include not only the original cost of land, but also the costs associated with approval and a profit for taking the risks.

3.Development – this stage usually involves purchasing the land (with already obtained permits) and start development/construction. It also includes obtaining pre-lease agreements or pre-sales. The period is shorter than other phases, from 6 months up to 2-3 years. However, there are a lot of required expenses, such as: marketing campaign, expertise fees, environmental and architectural studies, human resources and overhead expenses. An important step is to manage well the risks, which comprise market downturns, public policy changes, and tenant/lessee risks. The return varies mostly on market conditions and country's specifics.

4.Income Generation – represents purchasing the land from previous phase (development), an asset which generates stable cash-flow. The maintenance costs are the main expenses. The risks are related to market conditions, and general factors which influence the real estate market. The return depends on the sector of the real estate.

Any investment can be evaluated using the fundamental NPV model, which also applies in the land market. However, the period between pre-developed and growing phases of land dynamics is considered long-term. Also, it is very difficult to estimate the future income and discount rates associated with a particular parcel of land. Too many uncertainties make any model unreliable as the expectations are completely subjective (KING,1994).

The land market in Moldova could be considered in undeveloped phase. Thus, the investment opportunities are great. Several statistics about comparable countries demonstrate this fact: the average price for 1 hectare of land was 10.3 thousand MDL (in 2008) in Moldova representing almost 675 EURO , which is much lower than the average price of a hectare of land in many other European countries. For example, the average price of land for 1 hectare (in Euro):

Netherlands – 14.800, France – 8300, Belgium – 8500, Slovakia – 6000, Russia – 2000, while **Moldova –** only **675.** However, the 675 Euro per hectare is the average price for the whole Republic. The situation is completely different when looking at prices close to urban areas, especially Chisinau, the capital.

The state policy regarding land development, which currently functions only through re-parcelling projects, has proven to be inefficient. After the re-parcelling pilot project, which was implemented with the help of the World Bank in 6 rural communities from the Republic of Moldova, the number of land parcels has been reduced from 7200 to only 5500 at the cost of approximately 1 million US dollars. The amount spent is excessive when comparing to the modest results that have been achieved. Also, the high transaction costs and non-economic incentives can reduce the dynamic of the land market. This is why it is necessary to examine other, more efficient ways of land development, which have been successfully implemented in other countries.

In order to accelerate the development of land market, an important financial and management tool is proposed, by introducing a new player on the land market in Republic of Moldova. **Land banking** is apparently an important mechanism present in many European countries for improving the whole system of land markets. This player has a significant contribution in several aspects of the land market: improving the planning and development, a more reliable transaction

system, higher liquidity and financial resources, more available information (CIMPOIEŞ, 2011).

There are 3 main categories of land banks:

I.Land banks a developer. This category is mainly used by private investors, when it is necessary to change the land usage of a land plot. Thus, the main goal is to offer an efficient transition mechanism. It is possible for the new activities to be related to commercial real estate (from agricultural to urban), town expansion, nature, recreation, etc. This land banking system can also be used in reconstructed areas. The rotation of the used land takes place more in the suburbs of the big cities. This category is also linked to the practices called speculations. Someone buys land with the goal that the planned areas of the municipalities will allow changing the destination of the land after a period of time. Usually, the land value surges when the main activity changes from agricultural to commercial (construction). As a result, it is considered one of the most profitable investments in the world. When someone sells the land at the right time, he gains a profit. Thus, in this case, the land banking is an opportunistic investment. The state can also use this instrument to make sure that its goals will be attained.

II.Land banking as financial instrument. The land bank offers the possibility to lease land for a long period of time to farmers or other organizations for preserving the landscape. It is long-term mechanism to finance the land. The land bank functions as a financial instrument due to insurance of different payments for a long period of time.

III.Exchange land banks. The land bank represents a mechanism through which land is bought to be temporarily kept for the subsequent exchange of land. This form of land bank has already been practiced for a long time. The bank owns land which is then exchanged with land in proximity to that of other land owners, in order to be used more efficiently. Traditionally, this kind of banks operates only in areas of agricultural land consolidation. Also, these institutions operate in rural areas and in areas concerned with green spaces. For this kind of land bank, the exchange of land is quick, diminishing the need for the financial aspect (KARAFOTAKIS, 2006).

The analysis is based on primary and secondary data. The main source of data is the survey performed between 2007 and 2009 by the team of the State Project[1], financed by the Academy of Sciences of Moldova. Additional information is taken from the National Cadastral Agency (State Registry) and the National Bureau of Statistics.

The survey data comprises the general characteristics of the landowners. The total number of respondents is 1617. The information collected was from 3 communes in Republic of Moldova: Sadova – Calarasi District, Braviceni –Orhei District and Doina – Cahul District.

The information from survey includes questions about characteristics of the landowner, the economic activity, buy-and-sell transactions, leasing, family, the issues with land and other.

The following general information is included in the survey about the landowner:

-Age of the landowner – could provide some explanations in buy-and-sell transactions and leasing;

-Family members – usually, developing countries, the family composition relates to farm labor;

-Education – could have implications on the income of the respondent;

-Income of the landowner – this variable includes his personal wage and extra-income from non-land activities.

Economic data about parcels of land owned comprises the following:

-Parcel size;

-Household area;

-Used area;

-Leasing information;

-Reasons for not using the land;

-Reasons for not leasing-in and leasing-out the land;

-Reasons for buying land;

[1]The State project on land consolidation 08.814.08.01A, financed by the Academy of Sciences of Moldova.

-Paid price for purchased land.

Data about resources used regarding the owned land consists of:

-Number of employees – including family members and seasonal workers;

-Fixed assets used in the last 3 years;

-Expenses or investments concerning the owned land.

The variables mentioned above could provide some factors that influence the land value or the buy-and-sell transactions. Several of these variables are used for a descriptive and regression analysis in order to have a deeper understanding from the landowner's perspective.

For the application of the regression model data only from Calarasi District, commune of Sadova are selected. The number of parcels of land is 199, which represents the number of included observations. Each landowner can have more parcels of land, while the total number of owners is 45. The primary data used regards the economic characteristics of parcels of land and its owners (CIMPOIEŞ et al.,2009).

The regression model uses 3 main components:

1.The endogenous variable

2.The explanatory or exogenous variables

The choice of the endogenous variable is not necessarily the actual price in currency. Generally, in under-developed market economies a more abstract measure of real estate appraisal could be considered (actually it is encouraged). The main reason is that the transaction prices registered at the Cadastral Agency are not the „real" prices, as the participants try to bilk taxes or other commissions.

In this case, the endogenous variable is chosen an *equivalent measure of value (EMV)* which represents a more abstract notion of value – and is defined by a utility level. It is characterized by a coefficient measure, which can be transformed into the actual market prices by multiplying with another average national (or regional) coefficient. It will be denoted as **EMV** for this study.

The next step is description of exogenous variables, which define the causal factors. For the purpose of data description, these variables are limited to the ones which indicate significant contribution (higher than 10%) to the coefficient of determination R2 of the econometric model.

The following exogenous variables are considered:

I.Farm Area -calculated in hectares (ha). One hectare is equivalent to 10000 square meters. This variable is included because it is assumed that the parcel size (in units) affects the land value.

II.Income-calculated in Moldovan lei (national currency). It represents level of income of the respondents, the landowners. It seems obvious to include this variable as it affects the land price.

III.Investments-calculated in lei. It represents an important variable because this is the amount of expenses concerning land maintenance.

IV.Number of employed personnel -denoted in number of persons, usually including the owner and his family, and seasonal workers. It seems logical to include this variable because of the different productivity levels and specific agricultural production.

RESULTS AND DISCUSSIONS

There are several significant factors that affect the value of the parcels of land in buy-and-sell transactions. For example, *the land area* should positively affect land value. The shape of the parcels is also an important factor. Usually, square parcels of land have an advantage over those shaped like a polygon. For example, a rectangle with a width of 2 meters and a length of 1 kilometre, which has been assigned according to cadastral law, has a considerable disadvantage in land transactions. The location of the parcel of land is another factor among other significant factors like roads, means of production processing and storage.

The owner's income (or family capital) is a psychological factor that also influences the price of the transaction. Wealthy people that do not directly depend on the land's income want a higher price and are not willing to

agree for a lower one. Also, remittances (which are very representative of Republic of Moldova), negatively affect the balance between supply and demand of agricultural land. These sources of finances could be used to invest in land from a longer-term perspective. This factor is expected to affect positively transaction prices.

Labour that cultivates the land consists of family members and employees. Family members usually work throughout the whole year, while the employees are hired seasonally. Consequently, it is believed that there exists a negative correlation between the number of employees and the price. Thus, the need for a higher number of employees will negatively affect the price. This can also be explained work style, level of productivity and so on.

Expenses (investments) include mechanical work, taxes, rent payment or payment in-kind, medical and social insurances.

Table 1. Descriptive statistics for variables describing the leasing market, average for 3 years, 2007-2009

Specification	Units	Total Survey	Lease-out	Lease-in
Age of landowner	Years	56	60	52
Age of wife/husband	Years	53	54	44
Family members	Nr.	3	2	4
Total Area	ha	2,43	1,98	4,98
Number of parcels	Nr.	5,39	6,00	5,22
Lease payment	MDL/ha	2070	2144	1765
Expenses	MDL	6640	2645	7523
FamilyIncome, total	MDL	15138	12328	16721
Number of respondents	Nr.	1617	383	94

Source: own calculations

It is expected that this factor will negatively affect the price of land.

In leasing operations and the sale-purchase transactions, there are factors that indirectly affect the land value. These factors have been thoroughly described in the survey conducted by ASM.

The main reasons for leasing land:

-Distance (land is far from owner's home);
-Soil quality;
-Technological process;
-Access to necessary means of production – fertilizers, seeds, equipment
-Lack of money – financial resources for carrying out work;
-Labor insufficiency – due to active population's migration from villages;
-The negative effects of land reforms – administration issues

Main difficulties in purchasing of land:

-Nobody in the close proximity of the buyer is willing to sell land – for many landowners it is the only mean of existence and thus they have no motivation to sell;
-Lack of information – there are no efficient methods of communication or institutions;
-The prices in the land market are not public (everyone feels like is being tricked), which moves the price from its real value;
-Legislative aspects which affect the transaction;
-Transaction costs are too high, and in some cases can be equal to the price of the land;
-Too many owners with small parcels of land – need to negotiate with a lot of owners;
-Lack of financial resources for buying;
-Sellers impose exaggerated conditions.

However, the value of the land is most importantly influenced by the distance from a strategic point. In our case - the distance from the centre of the village (primaria). Land adjacency is also a significant factor.

The leasing transactions are an important part of any land market. The table 1 presents descriptive statistics for variables describing the leasing transactions included in the survey in all 3 communes. The numbers in the table are the average of 3 years, from 2007 to 2009. The numbers were analysed from the leasing perspective, and factors which might influence the transactions. Thus, the

households were classified in 2 categories: lease-in and lease-out
participants. Also, the average of the total survey is provided. Out of the total number of respondent, only 24% prefer to lease-out at least a part of owned land, while only 6% prefer to lease-in.

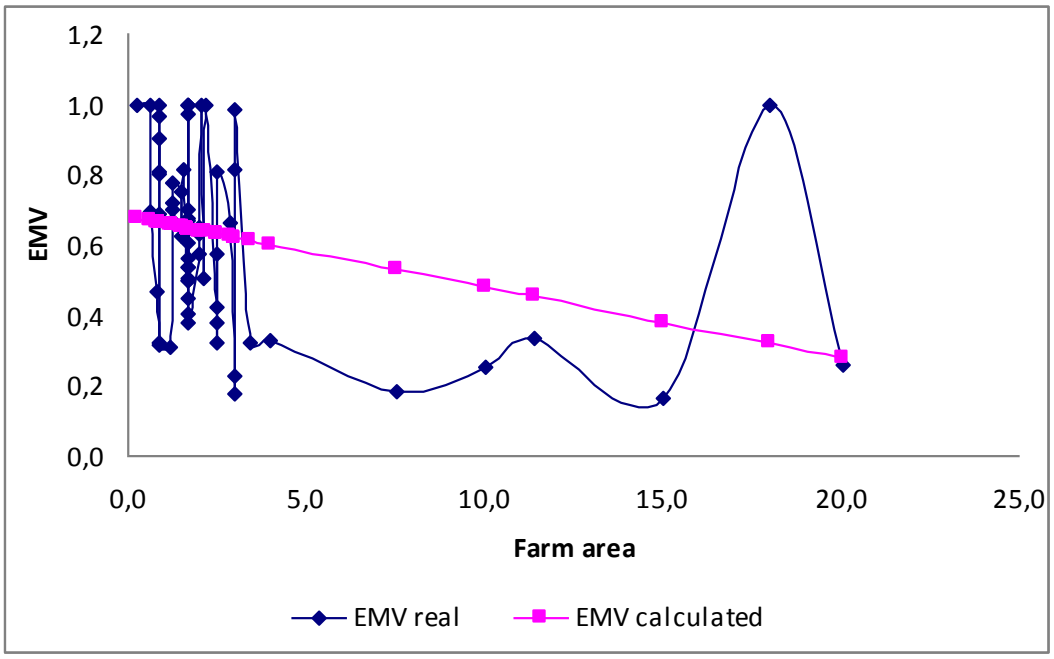

Figure1. The correlation between farm size and land value

The majority of landowners have between 5 and 6 parcels, which means that the land market is highly fragmented. It can be observed that the average value for both categories is almost the same, which signifies that the number of parcels owned does not determine the participation in the lease transactions. A more pronounced difference can be examined from the size of owned parcels. Respectively, the smallest landowners prefer to offer their land for rent, while the larger landowners prefer to lease-in more land. The difference is significant – 2.4 ha relative to almost 5 ha.

Another distinctive feature regards the age, family composition and human resources. The research of these variables reflect that families which lease-in land are on average younger than those who lease-out. Thus, the average age of the lessee is 52 years old compared with 60 years old of the lessor. The same conclusion can be reached concerning the his/her wife or husband. The number of family members
plays also an important role. The lessees families are usually more numerous than the families of lessors. These results confirm the expected ones and also the situation in other countries: younger and more numerous families prefer to own (or cultivate) more land than older families with less working capacity.

Another important indicator of leasing is the payment. The difference in result can be explained by a random insignificant error, with the average payment representing approximately 2000 MDL.

The dependency between area of parcels of land and land value can be evaluated using the total numbers from survey, which offers the possibility to calculate the trend according to a simple linear regression:

$$Y = a_0 + a_1 X$$

In Figure 1, are presented the real and estimated values in the commune of Sadova, Calarasi District.

The table 2 presents the same linear regression model for other communes from the survey. According to table 2, the mean value of EMV in available data is 0.672. It represents a high indicator (the range is from 0 to 1). The decreasing trend of EMV with

increasing surface area is specified for 3 regions. For example, for the Orhei District – which is described by high degree of land fragmentation, the estimated coefficient is the highest of -0.146.

Main results interpretation directs us to value land using various characteristics specific for **the real estate market.**

Location plays the primary role in land appraisal due to two main reasons: proximity to favourable or strategic places, and spatial dependence between characteristics of adjacent real estate assets, which should not be ignored.

Tabel 2. Estimated coefficient for other regions

Commune/District	EVM	Coefficient estimates		Standard Errors	t - Student
Sadova	0.622	a_0	0.680	0.038	17.705
		a_1	-0.020	0.008	-2.483
Orhei	0.679	a_0	1.072	0.058	18.550
		a_1	-0.146	0.020	-7.365
Cahul	0.734	a_0	0.901	0.104	8.660
		a_1	-0.083	0.045	-1.856

Source: Own calculations

This study uses distance from village centre (primaria), which integrates a broader notion of the location component. Usually, it comprises closeness to infrastructure, human resources, storage, household, roads and other. The result of the empirical study shows that the value of land decreases by almost 8% for each kilometre further from the primaria. It is worth noting that this result does not apply for strategic regions, such as the urban sprawl near the capital, where sellers ask for 1 ha of land with agricultural designation as much as 2.4 million MDL[2] (or 155,000 euro), which is an excessive price compared to the average "official" transaction price of 10301 MDL (665 euro/ha). According to the National Cadastral Agency, the average offer price for 1 ha of land in Moldova was actually 8,000 euro in 2011, but it includes only the published offer prices in various local magazines, newspapers or internet.

Also, the literature suggests employing various ***explanatory variables***, which might be divided using different approaches. This study uses the economic characteristics of land and its owners such as: *area, family income, investments and labour* (CIAIAN, 2006).

Income is represented as the personal wage of the owner. It is specific for developing countries and constitutes mostly a psychological effect. Someone with a lower wage is more willing to sell his land for a lower price (which is demonstrated in this study, coefficient of +0.004). This result also affects the rental prices, especially when the owners don't have the means to use land themselves. From the land development perspective, this factor can be improved by facilitating the buy-and-sell transactions using appropriate support system from the public administration and different management and financial tools, such as land banking (discussed in the introductory part) or land owners associations.

As for the *area*, results (coefficient of -0.022) show that consolidated land is cheaper to purchase. However, it should be noted that

[2] 1 Euro = 15.5 MDL

there are several specific features in Moldova which influence this variable. For example, usually for large transacted areas the participants declare officially much less than transacted real prices (due to tax evasion). Another interesting observation is that given all other factors equal, the consolidated land from Northern regions is relatively cheaper than land from the Central and Southern regions.

Also, *investments (coefficient of* -0.056) play a significant role in land pricing *as* high land maintenance costs combined with many bureaucratic obstacles negatively influence the land market dynamics.

There are several significant factors that affect the value of the parcels of land in buy-and-sell transactions. For example, *the land area* should positively affect land value. The shape of the parcels is also a factor. Usually, square parcels of land have an advantage over those shaped like a polygon. For example, a rectangle of 2 meters in width and a length of 1 kilometre, has a considerable disadvantage in land transactions. The location of the parcel of land is another factor among other significant points like roads, means of production processing and storage (LIVANIS, 2006).

The family income is a psychological factor that also influences the price of the transaction. Wealthy people that do not directly depend on the land's income want a higher price and are not willing to agree for a lower one. Also, remittances (which are very representative of Republic of Moldova), negatively affect the balance between supply and demand of agricultural land. These sources of finances could be used to invest in land from a longer-term perspective. This factor is expected to affect positively transaction prices.

The farm labour consists of family members and employees. Family members usually work throughout the whole year, while the employees are hired seasonally. Consequently, it is believed that there exists a negative correlation between the number of employees and the price. Thus, the need for a higher number of employees will negatively affect the price. This can also be explained by the work style, level of productivity and so on.

Expenses (investments) include mechanical work, taxes, rent payment or payment in-kind, medical and social insurances. It is expected that this factor will negatively affect the price of land.

In leasing operations and the sale-purchase transactions, there are factors that indirectly affect the land value.

The main reasons for leasing land are (CIMPOIEŞ, 2010):

-Distance (land is far from owner's home);
-Soil quality;
-Technological process;
-Easy access to necessary means – fertilizers, seeds, equipment;
-Lack of money – financial resources for carrying out work;
-Labor insufficiency – due to active migration of rural abroad;
-The negative effects of land reforms – administration issues;

Main difficulties in purchase of land are:

-Nobody in the close proximity of the buyer is willing to sell land – because for many it is the only mean of existence and thus they have no motivation to sell;
-Lack of information – there are no efficient methods of communication or institutions;
-The prices in the land market are not public (everyone feels like is being tricked), which moves the price from its real value;
-Legislative aspects which affect the transaction;
-Transaction costs are too high, and in some cases can be equal to the price of the land;
-Too many owners with small parcels of land – need to negotiate with a lot of owners;
-Lack of financial resources for buying;
-Sellers impose exaggerated conditions.

However, the value of the land is most importantly influenced by the distance from a strategic point. In this case - the distance from village hall. Land adjacency is also a significant factor.

CONCLUSIONS

It is of no surprise that the land market in an economy of transition, as Republic of Moldova, is described by a buy-and-sell transaction mechanism functioning ineffectively and low land values due to poor efficiency. However, the statistics suggests improving land dynamics. The land development can favour several stakeholders, such as investors, government, citizens. This study is performed mostly from the investor's perspective and can have two main applications.

Firstly, the model discovers the significant variables which influence land value. It represents a pricing model, which might be used by investment funds or other organizations interested in the land market. For example, investors interested in purchasing cheaper land should look for low-income land owners, low maintenance expenses, larger parcels of land, and further away from the town hall.

Secondly, there exist financial and management tools to improve the land market dynamics. A financial mechanism, like a land bank could be created to facilitate these transactions. Another option would be attracting land banking investment funds, which would have the goal to improve the buy-and-sell transaction system, develop the financial tools necessary for increasing efficiency, improving the financial structure and others.

There are several ideas that might be studied in future research: replicate this study for land with different destinations, change or add other explanatory variables, describe the urban pressure effect in a strategic region.

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