
INSTITUTIONAL FACTORS INFLUENCING AGRICULTURAL SALES OF THE INDIVIDUAL FARMERS IN ROMANIA*

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ABSTRACT

The paper analyses the impact of institutional factors on the agricultural sales of the individual farmers in Romania. The analysis relies on the Agricultural Household Survey conducted in 15 villages in 2003 in Romania and on interviews with the agricultural engineers at the village level. The study uses the social analysis framework of Williamson to structure and analyse the impact of institutional factors on sales. Furthermore a logit regression is employed in order to empirically verify the relation between institutional and other factors and sales. The study finds that high transaction costs on the input and output markets, reinforced by the small size of the individual farms, by their lack of endowment with factors of production and by their rejection of cooperation hinder sales. The transaction costs involved in the establishment and enforcement of property rights negatively impact the decision of sales as well. The results suggest that until these factors are not addressed the Romanian agriculture will continue to serve as a social buffer and not as a commercial sector.

Keywords: subsistence farming, sales, institutional factors, Romania.

1 INTRODUCTION

Romania is one of the Central and Eastern European countries where the transition process from communism to a market economy has taken place, bringing about several changes in the economy in general and in agriculture in particular. The structural reforms in agriculture concentrated on the privatization of the land and downsizing of large agricultural production units having as a result the emergence of numerous small farms. The new farmers, so called individual farmers, currently possess the largest part of agricultural land as compared to other production entities. However they are constrained in their development by the lack of necessary assets and undeveloped factor and output markets. As a

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result of the constraints the farmers have increased self-consumption at the expense of marketed output sometimes to the extent that they do not sell output at all. The paper addresses the question how do the institutional factors resulting from the structural change in agriculture enforce respectively offset the constraints the individual farmers face and contribute to the selling of agricultural products. The understanding of the institutional factors influencing the sales suggests what constraints should be addressed to move out the Romanian agriculture from the role of social buffer and transform it into a commercial agriculture.

The methodology consists of qualitative and quantitative analysis. First the institutional factors, which are assumed to influence sales, are structured on the four levels of social analysis (WILLIAMSON 2000). Furthermore, the transaction costs on factor and output markets, cooperation among producers and transaction costs involved in the establishment and protection of property rights are analysed in detail. Next a logit model is employed, where variables approximating the institutional factors analysed in the first part together with other variables like the endowment of the household with factors of production are regressed on the decision of sales/no sales of the individual household. For the analysis, the study relies on an agricultural household survey¹ (AHS) from 2003 and on the interviews conducted with the agricultural engineers².

2 VARIATION IN THE CHARACTERISTICS OF THE SURVEYED REGIONS AND IN SALES

The individual farms emerging in Romania in the transition played mainly a social role, providing basic subsistence to rural and in part to the urban population. Indeed, it is estimated that individual farms contributed 85% to total agricultural production while only 20% of the families sold some of their output. According to estimates around half of the total production of the individual farms has been marketed by the sellers (OECD 2000). Other surveys from other years have different figures for sales, however they all suggest a strong subsistence character. For example according to a survey conducted in 1999, the share of agricultural households that have sold some products on the market was 36% for Romania (MATHIJS AND NOEV 2002). The AHS 2003 reflects that the percentage of sellers

¹ The AHS 2003 was conducted in 304 households in 15 villages all over Romania. The sites were chosen with the help of multistage stratified representative random sampling. The questions have referred to year 2002 and concerned among others variable and fixed transaction costs related to the purchase/sale of inputs/outputs.

² The interviews with the agricultural engineers at the village level focused on the overall characteristics related to the village while some questions referred to the institutional factors influential on the decision of sales of the agricultural producers.

from the surveyed farmers was on average 57%, higher than the 20% respectively 36% reported above³.

Table 1: Characteristics of the study sites

Regions	Study sites	Landscape	Best road	Distance to the county main city (km)
Transylvania	<i>Harghita</i>	Mountain	Communal	41
Moldova	<i>Iasi</i>	Hill	European	15
Moldova	<i>Vaslui</i>	Hill	Communal	50
Moldova	<i>Vrancea</i>	Hill	Communal	15
SR	<i>Braila</i>	Plain	County	7
SR	<i>Constanta</i>	Plain	Communal	60
SR	<i>Ialomita</i>	Plain	National	25
SR	<i>Oltenia</i>	Plain	Communal	25
SR	<i>Valcea</i>	Hill	Communal	85
SR	<i>Mehedinti</i>	Mountain	National	33
Transylvania	<i>Arad</i>	Plain	National	50
Transylvania	<i>Bihor</i>	Hill	Communal	49
Transylvania	<i>Cluj</i>	Hill	County	25
Transylvania	<i>Alba</i>	Mountain	Communal	33
Transylvania	<i>Mures</i>	Hill	International	13

Source: AHS 2003

In the AHS 2003 there was a significant variation in sales across the regions. The variation in sales together with the diversity of the study sites resulting from the sampling strategy is a starting point for understanding the determining factors of sales in the regional context. The survey was conducted in seven regions, defined by respecting the borders of the three main historical regions of Romania (Transylvania, Moldova, South Romania), by taking into consideration landscape as well proximity to important markets like the capital city or bordering countries. The regions were the following: Transylvania, subdivided into Transylvania inner and Transylvania outer regions, Moldova, subdivided into Sub-

³ The difference in the percentage of sellers may be due to the different years the data originate from, as well the different measurement of sales. For example in the AHS 2003 barter was included in the category of sales, and 17 crops as well as 16 animals and animal product types were considered, while there is no information on the benchmark used for defining a farmer as a seller in the other surveys.

Carpathian Moldova and other Moldova and South Romania (SR), subdivided into Sub-Carpathian SR, SR far from Bucharest and SR close to Bucharest. The regions were further divided in case there was a high variation within the region with respect to landscape and infrastructure.

Based on the size of the agricultural territory the number of surveyed localities in each region was defined, further separating the type of localities into communes⁴ and villages. In concordance with the diversity of locations several parameters vary across the regions, like for example landscape, best road leading to the village and distance to the main city of the given county⁵ (Table 1).

Table 2: Variation in the number of sellers in the villages

Counties	Observations (no)	Sellers (%)	Sellers' sales from total pro- duction (%)
Harghita	20	55%	20%
Iasi	18	50%	18%
Vaslui	17	53%	12%
Vrancea	20	60%	50%
Braila	20	65%	31%
Constanta	20	55%	13%
Ialomita	17	24%	26%
Oltenia	20	35%	19%
Valcea	21	52%	19%
Mehedinti	20	40%	23%
Arad	20	90%	31%
Bihor	20	55%	25%
Cluj	20	55%	16%
Alba	22	64%	16%
Mures	21	95%	23%
Total	296⁶		

Source: Own calculations from AHS 2003

⁴ Communes are administrative centres for the surrounding villages, and have one mayor and one agricultural engineer responsible for the localities belonging to the commune.

⁵ Counties are administrative territorial units in Romania with a main city as headquarter.

⁶ Questionnaires 24, 43, 53, 55, 76, 182, 202 and 203 are left out of the analysis after cleaning.

Parallel with the diversity of the regions there is a difference in the percentage of sellers from the interviewed households as well as degree of commercial orientation, measured by the value of sold output over total output across the villages (Table 2). This fact emphasizes the importance of location, with regional characteristics like the specificity of factor and output markets and different institutional arrangements for decreasing transaction costs and encouraging sales.

3 INSTITUTIONAL FACTORS

3.1 Analytical framework

The diversity of the study sites is linked to the variation in the institutional factors. The four levels of social analysis (WILLIAMSON 2000) serve as a starting point for the structuring of the institutional factors determining agricultural sales and for mapping the interaction between the factors. Figure 1 presents the four levels of analysis and the corresponding institutional factors present in the Romanian context.

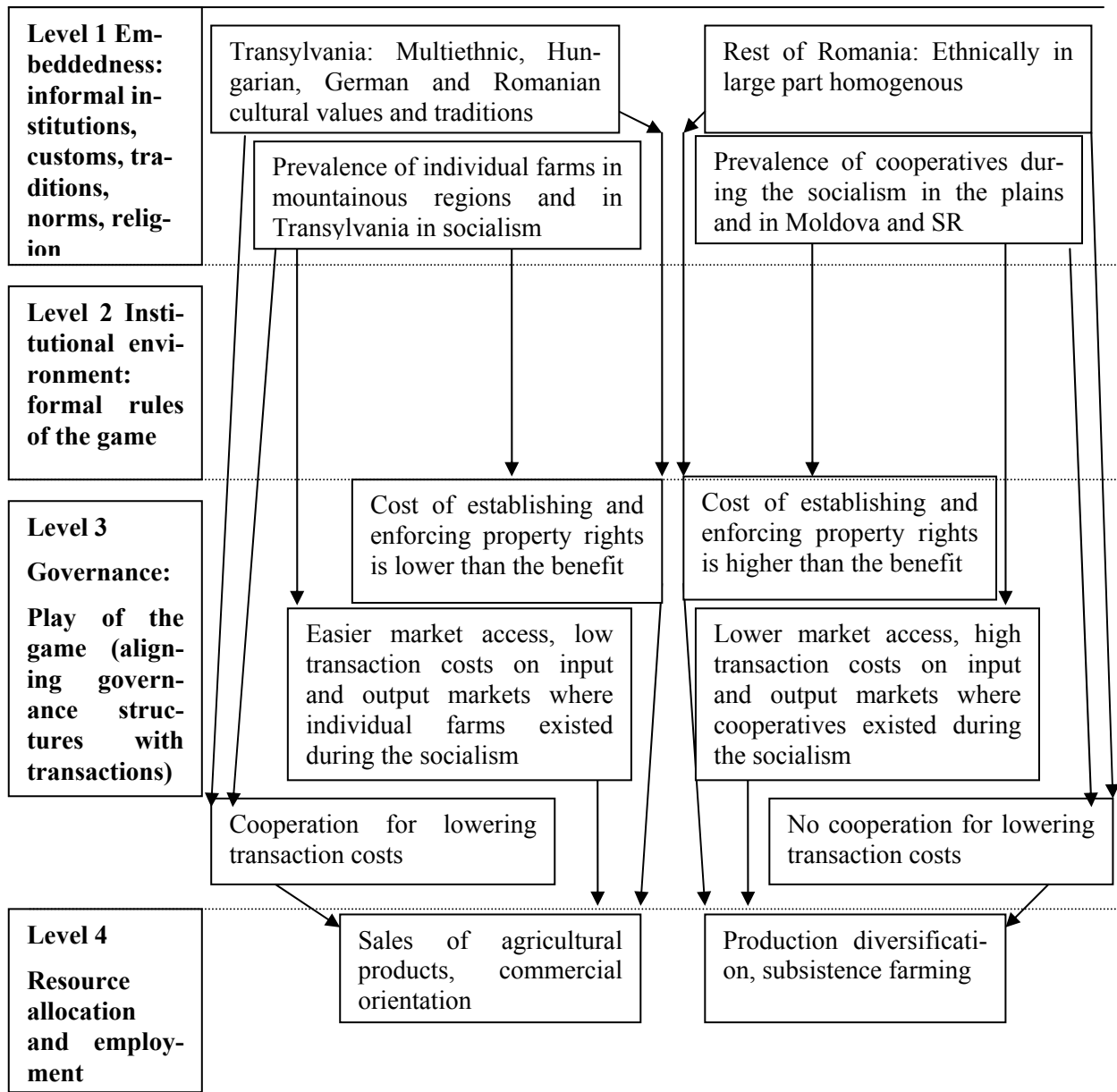
Next to each level of analysis there are two columns of boxes; in the right one the institutional factors having a positive impact on sales and in the left one those having a negative impact are listed. For example on the first level, that of social embeddedness the cultural diversity, the impact of the multiethnic region of Transylvania is listed as beneficial for development of cooperation among agricultural producers as well as for low property right establishment and enforcement costs. Cooperation and low property right enforcement costs in turn promote sales and commercial orientation, through lower transaction costs.

Figure 1 is highly stylized: the fact that the ethnically homogeneous parts of Romania are likely to cause higher property rights enforcement costs does not mean that there are no villages in this region where the opposite is true. The only suggestion of Figure 1 is that low property rights enforcement costs are more likely in Transylvania as compared to other parts of Romania.

There is no information listed for level 2, the level of the institutional environment –the formal rules of the game. The reason for no information is that in the formal rules there is no variation across the country, therefore they cannot account for the difference in sales across the regions.

The arrows show how different factors situated on different levels influence each other. The arrows are all going in one direction, from the higher to the lower levels. However this does not mean that there is no interaction in the other direction as well, like in the original figure of Williamson. The reason for the illustration of one-direction interactions is to simplify the scheme and because the focus is on the institutional factors which contribute to the decision of sales.

Figure 1: Institutional factors influencing sales structured according to the framework of social analysis of Williamson



Given that the most important level of analysis is the third one, the level of governance, since it directly influences sales and this level is also influenced by the first two levels, in what follows the factors on the third level –transaction costs and cooperation– are going to be described in detail. At the same time the interactions with the other levels will also be looked at.

3.2 Transaction costs

Subsistence farming partly emerged because the new agricultural producers have faced high input purchase and sales transaction costs during the transition process. The reason for high transaction costs was related to the fact that prior to economic transition, collective and state farms occupied 90% of the agricultural

territory with the input and output side of production organized by state companies (KENNETH 2003, OECD 2000). The reforms did not target the restructuring of down and upstream sectors in line with the needs of the individual farmers, therefore the input and output markets were not suitable for them (TESLIUC 2000).

The situation was better in terms of transaction costs in the regions where individual farming existed before the transition. Individual farms were present in the socialism mainly in Transylvania as well as mainly in the mountainous regions, where it was not possible to join large territories into cooperatives of agricultural production. The individual farmers have always been supplying the local vegetable markets and using the local input markets; therefore they had an easier local market access than those peasants who have become individual farmers only in the transition (KENNETH 2003, OECD 2000). The AHS 2003 illustrates what input as well as output related transaction costs are the peasants in Romania presently confronted with.

3.3 Endowment with factors of production and transaction costs on the input markets

The endowment of the households with factors of production, like capital, workforce and land, have an indirect impact on the decision of sales together with the characteristics of the input markets. Indeed those with low endowment of factors of production are more vulnerable to the transaction costs on the input markets since they encounter the transaction costs if they want to increase their production and be able to sell. In the conditions of badly functioning input markets mainly those endowed with factors of production will manage to produce the necessary quantity of output for sales. If they possess some means of transportation or have other type of market access, they will also be more likely to sell the surplus products after satisfying self-consumption.

The descriptive statistics from the AHS 2003 shows that most of the peasants have low endowment with factors of production. A first problem at the household level is the aging of the rural population, with an average age of 60 years for the head of the household and 54 years for the adult household members⁷, which implies a low endowment with labor. Secondly, the agricultural production process shows a low degree of mechanization due to a severe lack of and access to machinery. For example, only 13% of the surveyed agricultural households own a tractor. The households also lack financial capital: 74% of the households had less than 800 Euro per capita yearly income in 2002.

Due to the inappropriate land restitution, the land plots are small and dispersed, with an average of 5 plots per household and an average distance of 2 kilometres

⁷ Adult household member is defined as older than 14 years.

between plots. The average size of total cultivated land from that owned by the household is 2.8 hectares (AHS 2003). The dispersed plots imply increased costs of production as well as sales, and the small land size has as a consequence loss of economies of scale in input purchase, output supply and production itself. Despite the low endowment with factors of production the degree of reliance on input markets is rather low. Only 1% of the households hired permanent agricultural workers, 38% hired seasonal workers, 10% purchased land, 42-51% purchased pesticides, fertilizers and/or seeds, 77% made payments for agricultural services, 5% applied for credit and 1% insured for their agricultural production (AHS 2003).

The low level of purchase of inputs is probably mainly due to the lack of financial resources of the households, however input related transaction costs may be also influential. Examples of input related transaction costs are the need to transport the seasonal workers to the land of the employer in 5% of the cases. In case of transportation the average transportation costs were equal to one day's wage. Finalization of land purchase took on average 53 hours, with the first most important difficulty of no money and the second difficulty the high notary fees. 66% of those purchasing fertilizers had to travel to get them, the travel taking on average 3 hours. There is a transaction cost implied by the monitoring of the input quality. More than 50% of those expressing an opinion complained about bad input quality like seeds, fertilizers, machinery pieces and agricultural services (AHS 2003).

3.4 Transaction costs on the output markets

Besides the transaction costs encountered on the input markets the transaction costs involved in accessing the output markets also negatively influence sales. However, the observation of the transaction cost of selling cannot provide information on the decision of sales, since the household has to first decide to sell in order to have transaction costs related to it. This is in line with the argument that when transaction costs are so high as to prohibit sales to occur, they may be different from those occurring when the transaction takes indeed place; therefore they are unobservable (STAAL ET AL 1997).

The transaction costs observed for those selling agricultural products can serve as an orientation to illustrate the transaction costs implied by the output markets. Table 3 illustrates the transaction costs of accessing the market, underlining the importance of the location and of the distance to the sales point. Different products, depending on where the output market or the processor company for the particular good is located, have different transaction costs. For example, the farmers had to transport wheat on average for 6 kms and on average they travelled 24 kms in a year to sell their entire wheat production. The unit cost of transportation had the highest percentage from the price in the case of sunflower

–25 %–, because sunflower is mostly sold to processing companies, which are usually further away than the market for other agricultural crops. The total average distance of annual transportation of sunflowers per individual farmer was 66 kms.

Table 3: Sales and transaction costs of selected agricultural products

Summary statistics/ Product	Wheat	Maize	Potato	Sun-flower	Pig	Milk
Production cases out of 296 (no)	131	274	87	55	262	167
Sales cases (no)	18	21	10	25	71	57
Average quantity of product sold per household in a year (kilogram or no or liter)	22356	6760	905	7878	6	2361
Average distance of transportation (km)	6	6	4	15	8	4
Maximum distance of transportation (km)	30	25	40	150	70	28
Average total distance of transportation (km)	24	22	8	66	14	474
Average percentage, the unit cost of transportation in the price of product represents	5	3	0	25	3	7

Source: Own calculations from AHS 2003

Anecdotic evidence illustrates other problems faced by the agricultural producers when willing to sell. A factor hindering sales is the disappearance of some markets in certain regions. For example very few households from those surveyed have been producing and selling sugar beets—sugar beet sales occurring mainly in the village from Mures county. In two villages (in Harghita and Constanta) the agricultural engineers named the closure of sugar processing factories as the main reason for people not producing and selling sugar beets anymore. Of course people could transport the sugar beets to the further away sugar processing factories, but this would imply very high transportation costs. The regional disparity in sugar-beet production is confirmed by national data for 2000 as well. Mures had one of the highest sugar beet productions as compared to other counties where the survey was conducted, while the sugar beet production was very low in the counties Harghita and Constanta (NCS 2002).

The lack of purchasing power of the consumers hinders sales of good quality products. In the village in county Vrancea, one of the most famous wine producing areas of the country, the agricultural producers find it very difficult to find customers for good quality wine. One of the interviewed farmer said that his clientele is a small group of university professors from the capital city acquired through acquaintances throughout the years (own interviews).

3.5 Cooperation among producers

Given the transaction costs encountered when using the agricultural input and output markets a solution for the individual farmers would be to cooperate with respect to the various agricultural activities. Indeed the advantages of organizing the farmers into groups are widely acknowledged in the literature. The advantages comprise the reduction of transaction costs in accessing input and output markets and the strengthening of the negotiation power of the farmers (STAAL ET AL. 1997, KHERALLAH AND KIRSTEN 2001).

Among the various forms of cooperatives, service cooperatives are considered to be most beneficial for the transition countries. Service cooperatives are defined as providing services in the areas of input supply, marketing, credit, or technology. They are particularly useful in the transition economies, characterized by incomplete markets, often lack of technical knowledge and other problems (DEININGER 1995).

Despite the advantages of cooperation, the qualitative information obtained in the villages during the AHS 2003 underlines that currently peasants in Romania reject cooperation. Indeed this result is reconfirmed by several surveys and case studies from all the Eastern European countries (DOBAY 1996).

The rejection of cooperation is related to the social embeddedness factors, mentioned in the Figure 1. Firstly, there is a significant difference between Transylvania and the rest of Romania as concerns „social embeddedness”. Transylvania was a former Hungarian territory inhabited by ethnic Hungarians from the 10th century on and by ethnic Germans beginning with the 12th century. The unification of Transylvania with the Kingdom of Romania in 1918 turned the Hungarians and Germans into „minorities”. These minorities had to start their struggle, especially under the „romanization” policy of the socialist regime, for the maintenance of the ethnic identity (FEDERAL RESEARCH DIVISION 1989).

The multiethnic character and history of Transylvania has different implications for cooperation than the other parts of Romania. Firstly, the history of the Transylvanian Germans and Hungarians was marked by the spirit of ethnic togetherness. This spirit of togetherness, therefore cooperation was reinforced by the presence of threats on ethnic identity, especially during the socialist regime.

Moreover formal cooperation for agricultural production was established early in the German and Hungarian context, at the same time when the first forms of cooperation in agriculture appeared in Western Europe. On the contrary, in the Romanian context the first ideas of cooperatives have penetrated together with the socialist ideology. The practical knowledge of the organization of cooperatives –represented by names like Rochdale, Schulze-Delitzsch or Raiffeisen has occurred relatively late (DOBAY 1996).

Given all the above factors at play in the Transylvanian context, it is not surprising that large share of villagers were members of professional associations in Transylvania region in the first place. Table 4 presents that from the 15 visited localities there were several villagers member of professional associations in 4 localities, all of them in Transylvania. Moreover, there were two villages in the sample with predominant Hungarian ethnic composition and in both of these villages professional associations existed. The inhabitants of the Hungarian villages reconfirmed that the tradition of professional associations has existed in their village from the time before the socialism.

Table 4: Individual farms in the county and the existence of professional associations in the village

Regions	Land- scape	Study sites	Land used in individual farms before 1985 in the county ¹ (%)	Land used in individual farms as of 1993 in the county ¹ (%)	Peasants mem- ber of profes- sional associa- tions in the vil- lage
Transylvania	Mountain	<i>Harghita</i>	12.17	94.30	Yes
Moldova	Hill	<i>Iasi</i>	0.33	28.40	No
Moldova	Hill	<i>Vaslui</i>	0.25	17.40	No
Moldova	Hill	<i>Vrancea</i>	15.24	74.60	No
SR	Plain	<i>Braila</i>	0.11	2.20	No
SR	Plain	<i>Constanta</i>	0.68	30.40	No
SR	Plain	<i>Ialomita</i>	0.11	1.00	No
SR	Plain	<i>Oltenia</i>	0.57	29.70	No
SR	Hill	<i>Valcea</i>	25.23	97.00	No
SR	Mountain	<i>Mehedinti</i>	12.73	88.00	No
Transylvania	Plain	<i>Arad</i>	5.51	58.60	Yes
Transylvania	Hill	<i>Bihor</i>	11.27	81.30	No
Transylvania	Hill	<i>Cluj</i>	7.53	92.90	No
Transylvania	Hill	<i>Alba</i>	32.35	85.30	Yes
Transylvania	Hill	<i>Mures</i>	5.78	79.50	Yes

¹Source: Rizov et al 2001

Source: AHS 2003

Besides the difference in the impact of the historical regions, the rejection of cooperation is also related to the regional difference in the impact of the socialist cooperatives, as well as of the Agricultural Societies (AS) established in their place after the fall of socialism. As mentioned already at the transaction costs section, there was a significant variation in the existence of agricultural cooperatives and whether individual farms were formed in their place across

the regions. Table 4 illustrates the regional variation: the lowest share of land was farmed in individual farms in the hills of Moldova and the plains of South Romania in 1985.

The agricultural cooperatives as well as later the AS offered negative experiences to the peasants as concerns cooperation. Agricultural cooperatives of production were created beginning with 1949, when the forced collectivization of the agricultural land has taken place. In these forms of production the peasants have lost their property rights and got only remuneration after the work done (DOBAY 1996). However, the agricultural cooperatives have failed to perform, because of general organizational problems⁸.

In the transition many of the cooperatives were directly transformed into AS, encouraged by the government (DOBAY 1996). The information about the percentage of land farmed in individual farms in 1985 and 1993 in the counties, presented in Table 4, underline that AS were usually formed where the land was predominantly farmed in cooperatives before. Many members of the previous socialist cooperatives left their land in the newly established AS, often without having it physically demarcated. At the beginning of the privatisation joining of AS seemed to be a good solution due to the endowment of the AS with factors of production and the advantages of economies of scale (SABATES-WHEELER 2001).

However with time it has become evident that people did not receive appropriate returns after the land contributed. Many individual farmers still have their land in AS despite the lack of appropriate returns from them. Among the reasons are the too low endowment with factors of production to farm individually or that the farmers have become „land locked”. Land-lockedness results from the land not being physically demarcated, thus the managers of the AS can demarcate any territory from the common land to the farmers who would like to exit. The managers threaten the farmers that they would allocate them very bad territories if they want to take their land out from the AS (SABATES-WHEELER 2001). The bad experiences of cooperation in the agricultural cooperatives of production and AS determine especially those farmers who have been members of these forms of organizations to avoid formal cooperation.

⁸ The failure of the cooperatives is not unique for Romania, the history of traditional cooperatives in developing countries is rather similar. Cooperatives in most cases have failed to serve the needs of their members, one of the drawbacks being that the state had the main financial stake in the cooperative. In addition, the lack of clearly defined property right assignments resulted in opportunistic behavior, moreover cooperatives were characterised by bureaucratic inefficiencies and under-investment in the activities (KHERALLAH and KIRSTEN 2001).

An example where cooperation could encourage sales originates from a village in Vaslui, where previously cooperatives and currently AS operate. In the village people fail to cooperate with respect to sales of such products like milk. Milk can be sold only 40 kms away, and since the peasants have only few liters of milk each of them, for none of them is worth to transport the milk to the city. If there could be organized a common transportation ensuring also the necessary conditions for transport the peasants could benefit from the income from milk. Currently they are feeding their pigs with the milk, more rentable than selling it.

3.6 Transaction costs of establishing and maintaining property rights

An important aspect influencing commercial orientation is the transaction costs involved in establishing and enforcing property rights. The costs can be direct costs, as well as inefficiencies which result in production or in misallocation of resources due to the need to protect property rights (ALLEN 2000).

The transaction costs involved in the establishment of property rights of agricultural land exercise a significant influence on agricultural sales. In the Romanian agriculture, since the ownership of land is fragmented, the producers who want to increase their land size and produce to the market face high transaction costs when they want to purchase new land territories. Indeed the buyers have to coordinate with many owners to acquire land, and usually not all the owners of adjacent land plots are willing to sell their land, therefore there are also search costs involved in identifying a larger land territory which can be entirely purchased.

The enforcement of property rights implies a significant transaction cost as well. In the village from Ialomita for example, the interviewed farmers as well as the veterinary doctor reported that the lack of safety of property rights determines the peasants not to have surplus production and sell. Indeed, in this village there were the fewest sellers from the interviewed households as compared to other surveyed localities. The veterinary doctor said that products are stolen already from the field, therefore people have to guard their agricultural produce all the time. He named the existence of a large share of gipsy minority in the village as the main reason for the lack of safety of property rights⁹ and claimed not too positively that “in the village only the old, the stupid, the thieves and the cheaters remained”. The Ialomita village case is an example where the transaction cost of enforcement of rights are higher than the benefits associated with them. There is also an indirect transaction cost, resulting from the not optimal level of production due to the threat of theft.

Since the state does not have the capacity to fully enforce the protection of property rights, individuals need to watch after their products themselves. The feasi-

⁹ The author does not share the view of the veterinary doctor about the gipsy minority.

bility and the cost of monitoring of agricultural products depends on how far is the land plot from the house of the farmer, how much workforce the household possesses which can be engaged in monitoring activities but especially on how safe the region is.

The safety of the region is influenced by the development of the region, whether there is ethnic minority and the past of cooperatives. Transylvania is in general more developed, more occidental than the other parts of Romania due to historical reasons, but also because of its location in the North-Western part of the country. Moreover, as mentioned already at the issue of cooperation, the regions inhabited by ethnic minorities have a stronger community spirit. Therefore the likelihood of theft is for example lower in Transylvania than in the other parts of Romania.

The past of cooperatives can also influence the safety of property rights, since in cooperatives everything was considered common property and adequately used by the people. Indeed, the agricultural engineers reported that where formerly agricultural cooperatives of production existed, all the equipment was stolen during the transition. This information is underlined also by the literature: when AS were formed from the old cooperatives for agricultural production, they lost a significant part of their assets because for example “animals were sold to pay off debt, stables destroyed for their bricks and in some instances animals and machines were stolen” (EUROCONSULT 1995).

4 FACTORS INFLUENCING THE DECISION OF SALES: AN ECONOMETRIC ANALYSIS

In order to illustrate how the institutional factors described in the analysis before influence the decision of sales, a logit regression model is employed. The dependent variable is the decision of sales of agricultural products, taking a value of 1 if the household has sold agricultural products and 0 otherwise. Independent variables are the endowment of the household with factors of production –age, gender, education, participation in a specific agricultural training of the household head, amount of family and hired labor, yearly non-agricultural per capita income, size of cultivated land, livestock, machinery, ownership of a car. Other independent variables are the approximation of informal cooperation, regional characteristics like distance to the next city, road leading to the village and a dummy for Transylvania.

Education is an ordered variable with values from 1 to 5, 1 being the lowest and 5 the highest level of education, while the categories are less than 4 years of education, primary school, 8 classes, 12 classes and university or high school. Participation in a specific agricultural training is binomial, taking the value of 1 if the household head has participated in any kind of agricultural courses or studied in an agricultural domain.

In the model non-agricultural income and not total income is used, in order to avoid the two way causality between the decision of sales and total income. Indeed, higher total income can determine the decision of sales, but the decision of sales is also important in determining the revenue generated from sales, therefore total income.

Livestock is calculated adding the number of cattle, the number of pigs multiplied by 0.5 and the number of sheep multiplied by 0.3. Machinery is calculated adding 1 for the ownership of a truck, 1 for the ownership of a tractor, 0.2 for the ownership of a plough for the tractor, 2 for the possession of a combine, 0.5 for the ownership of a carriage and 1 for the ownership of a harvesting machine. Therefore machinery can take the minimum value of 0 and maximum value of 5.7. The calculations for the livestock and machinery are based on the methodology of another study on Romania (RIZOV ET AL 2001). The variable ownership of a car takes value of 1 if the household owned a car and 0 otherwise.

The approximation for informal cooperation is a variable with the value of 1 if the household was cooperating with the owners of the neighbouring plot with respect to the planting of compatible of crops and 0 if not. This variable is a very rough approximation of informal cooperation, however it is the only available.

The indicator road leading to the village takes the value of 0 for international, 1 for European, 2 for national, 3 for county and 4 for communal road. The variable Transylvania takes the value of 1 if the village is located in Transylvania and 0 otherwise. The reason for not including the existence of the dummy for the localities where there was a large number of households member of professional association is that it overlaps with the variable for Transylvania. The model was tested also with the dummy for these localities and it gave positive significant result, just like the dummy for Transylvania.

Table 5 presents the results of the estimation. The household head's characteristics are not significant, however the gender of the household head is close to significance and it suggests that male household heads are more likely to sell. The hired in labour has a positive impact on sales, underlining the importance of the use of labour markets for agricultural sales.

The cultivated land size is highly significant and positively influences sales. Indeed, the larger the land size, the more it allows the household to have a surplus production above the subsistence needs and be able to sell. Moreover, as mentioned already in the qualitative analysis, large land size can decrease input purchase, production and sales related transaction costs, due to the advantage of economies of sales and since the household does not need to use the land markets to increase its land size. The yearly per capita income of the household is also highly significant but its coefficient is 0, therefore it does not have any economic meaning.

Table 5: Logit model estimation results

Dependent variable: sales	Coefficient	Standard Error
Intercept	-1.17	1.61
Age of the household head (years)	0.00	0.01
Gender of the household head (1-male, 0-female)	0.58	0.41
Education of the household head (1-lowest, 5-highest)	0.02	0.20
Agricultural education (1-yes, 0-no)	0.43	0.52
Family labor (mandays/month)	0.00	0.01
Hired labor (mandays/month)	0.13*	0.07
Yearly per capita non-agricultural income (euro)	0.00*	0.00
Size of cultivated land (ha)	0.23**	0.10
Livestock	0.32***	0.08
Machinery	0.21	0.33
Ownership of car (1-yes, 0-no)	-0.11	0.38
Informal cooperation (1-yes, 0-no)	0.38	0.34
Distance to the closest city (km)	-0.02	0.01
Best road leading to the village (0-international, 4-communal)	-0.20	0.13
Transylvania (1-yes, 0-no)	0.63**	0.31
Log-likelihood	-121,99	
No observations	288	
Prob>chi2	0.000	
Pseudo R2	0.31	

Notes: *** Significance at the 1% level; ** Significance at the 5% level; * Significance at the 10% level.

The amount of livestock in the possession of the household has a positive impact on sales. Livestock is a modality of storage of wealth and the ownership of livestock permits the household to have animal products for sales. Ownership of machinery and of car is not significant, indeed these variables are more likely to influence the amount of sales but not so much the decision of sales.

Informal cooperation has the expected sign but it is not significant. Among the regional characteristics the distance to the nearest city, as well as the quality of the road leading to the village are close to significance and they have the right sign. The larger the distance to the nearer city the less sales can occur and the worse the road type the lower the amount of sales, both variables meaning lower market access. The dummy for Transylvania is significant and positively influences sales. This result was expected, since as it was presented in Figure 1 the

households from the localities in Transylvania are likely to have a more cooperative attitude and face lower transaction costs than in the other parts of Romania.

5 CONCLUSION

The paper aimed at determining what institutional factors are important for the decision of sales of the individual farmers. For this purpose the social analysis framework of Williamson was employed, the transaction costs on the input markets together with the household's endowment with factors of production, the transaction costs on the output markets, cooperation and the transaction costs of establishing and enforcing property rights were analyzed with the help of qualitative analysis, descriptive statistics and finally with a logit regression.

The analysis shows that the high transaction costs emerging as a result of the inadequate restructuring of the input and output markets, reinforced by the small size of the individual farms, their lack of endowment with factors of production hinder commercial orientation. Most of the households reject cooperation, a modality of reducing transaction costs, due to no tradition/spirit of cooperation in certain regions as well as due to the negative experiences of formal cooperation from the time of the socialism and from the time of transition. Moreover the transaction costs involved in the establishment and enforcement of property rights negatively impact the decision of sales.

By showing how do the different institutional factors influence sales of the individual farmers the paper contributes to the understanding how did the structural reforms in agriculture lead to the amplification of the phenomena of subsistence farming and the low degree of commercialization of agriculture. Moreover it suggests that only by addressing the institutional factors leading to the lack of sales of agricultural products, can the number of sellers be increased and the performance of Romanian agriculture improved. The challenge is to answer the question how could institutional factors like high transaction costs or the rejection of cooperation be influenced and it is an important topic for further research.

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