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# INDIVIDUAL SECTOR OF AGRICULTURE IN MOLDOVA: A PATH TO RURAL DEVELOPMENT?

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***Abstract***

*The individual farms are the backbone of rural areas and account more than 80% of all farms. Family farms are quite diverse: from subsistence and semi-subsistence to fully market-oriented farms, often using technologies advances. Presently, the agricultural sector of Moldova is divided into two categories: a large number of small individual farms and some large corporate farms. The investigation is analysing the level of development of individual farms in Moldova and its possible contribution to the development of rural areas. The study is based on individual farms survey. The data was collected as part of the institutional research project 15.817.05.31A "Sustainable Rural Development in the Republic of Moldova in the Context of European Integration". It includes data analysis of 938 individual farms from 9 different districts. The survey includes different parts related to: the social-demographic characteristics, infrastructure and financial information. The obtained results shows changes in the social demographic aspects, mostly generated by the migration process and the "modest" incomes characteristic for rural areas. The individual farms surveyed present the average technical efficiency which is mostly influenced by the level of income and the small size of agricultural area, while the level of expenses has little influence.*

***Key words*:** *agriculture, individual sector, rural areas, rural development, survey analysis*

## INTRODUCTION

The individual farms are the backbone of rural areas and account more than 80% of all farms. The key element is the family and family members who are "employed" within the farm and administrates it. Family farms are quite diverse: from subsistence and semi-subsistence to fully market-oriented farms, often using advanced technology. According to FAO data there are over 500 million family farms in the world and they produce over 70% of total worldwide food supply [5].

In developing the term of "family farms", FAO conducted a literature review on the topic and identified the main features of family farms. Several features that presents family farms are: the freedom in choosing employment, the transfer of property through generations and affinity with kinship or marriage [5]

Individual farms are of different types and sizes, with full and part-time work, with paid or unpaid activities. Some specialize in commercial business operations, while others mainly produce products to meet domestic food needs, so-called semi-subsistence farms [4].

In the context of the International Year of Family Farming 2014, the United Nations proposed general principles that define family agriculture (which includes all family-based farming activities): "Family farms includes all types of family farming activities and covers several areas of rural development. Family farming is a way of organizing agricultural, forestry, fish, grazing and aquaculture production, carried out and managed by the family and based primarily on the work of family members, both women and men. The family and the farm are connected, they develop and integrate economic, environmental, social and cultural functions. These principles are translated into strict definitions that can be used for statistical and political purposes in all regions and for a long time the family farm is an agricultural holding that is managed by a family and in which agricultural labour is largely represented by this household" [5]

Family farms are an integral part of European agriculture - the basis of a sustainable and market-oriented European agricultural sector. Across E.U. countries the number of farms is decreasing while the average farm size is increasing. Despite this fact, in the E. U., family farms persist as an organizational model in the agricultural activity [4].

In Moldova, the agricultural sector of the Republic of Moldova includes two main categories: many small individual farms and some large corporate farms.

The individual sector is separated between many small households and individual farms. They are typical family farms, and the main difference is in their size and commercial orientation. Households are usually smaller than family farms in size and usually located near the house. Also an important feature for individual farms is that they ensure the food supply for their family, they mostly have the characteristics of subsistence farming, but these groups often overlap. The activity of individual farms relies on the own members labour supply. By contrary, the corporate sector includes more large-scale farms, which during the reforms in 90s, replaced the large collective and governmental farms. This sector is represented by the organizational form of private companies owned by one or more shareholders. These farms operate a large area of own or rented land, hire labour force and focus on specialization of production.

This paper aims to appreciate the progress in the development of individual sector of agriculture in Moldova and its possible positive outcome for the development of rural areas.

## MATERIALS AND METHODS

The study is based on individual farms survey. The data was collected as part of the scientific institutional project 15.817.05.31A "Sustainable Rural Development in the Republic of Moldova in the Context of European Integration". It consists on a data set of over 900 individual farms across 9 different districts that participated in this survey: Ialoveni, Causeni, Briceni, Calarasi, Orhei, Telenesti, Stefan Voda, Cahul, Ocnita. The survey includes different parts related to: the social-demographic characteristics (age, gender, family composition, education, primary and secondary employment, etc.); infrastructure (availability of water supply, sewage system, heating, household appliances, etc.); and financial information (the size and structure of farms, the level of costs and incomes, the yield of individual crops, as well as information on lending and subsidies).

## RESULTS AND DISCUSSIONS

The transformation processes in the 90s determined many changes for Moldovan agricultural sector. Among those changes is related to agricultural land use. According to the General Agricultural Census, there are 2,498.3 thousand hectares of agricultural land, from which arable land accounts 1,812.7 thousand hectares while orchards and vineyards - 298.8 thousand hectares.

The average size of utilized agricultural land per farm is 2.29 hectares. From total area of utilizedagricultural land (1.94 million hectares), corporate farms (0.4% of all farms), benefit from 61% of the utilized area with an average of 391.27 hectares per farm, while individual farms (99.6% of all farms) benefit from 39% from utilized agricultural area, with an average value of 0.89 ha per farm.

Almost 71% of all farms (640,438 units), which operate 10% of the utilized area of farmland (196,546.81 hectares) benefit from less than 1 hectare of land. In fact, the Moldova's agricultural sector is characterized by the coexistence of many small individual farms with few corporate farms (0.01%). Less than 0.3% of all agricultural producers (2,412 units), have an average farm size of more than 100 hectares, operate 63.4% of the total utilized area (1,229,549.02 hectares). From them 88.3% are corporate farms.

According to NBS data, almost 70% of corporate farms fall into the category "100-500 hectares" (343 farms) or "500 hectares or more" (1,339 farms), utilizing over 97% of all agricultural area (1,191,019.25 hectares).

Over 98% of individual sector (884,326 farms) are concentrated by size of land into the category of up to 5 hectares, utilizing over 76% of all agricultural land belonging to farmers (570,535.83 hectares).

An individual farm in Moldova benefits in average from 0.4 hectares of land, while in the surveyed sample only from 0.33 hectares. The average size of farmer plots is 1.62 ha, with 0.41 ha less than the value presented in the sample (2.03 hectares). The largest area of the individual farms is utilized for crops (about half of the area), vineyards (20%), sunflower (11%), fruits (5%) and melons and gourds (2%) (Figure 1).

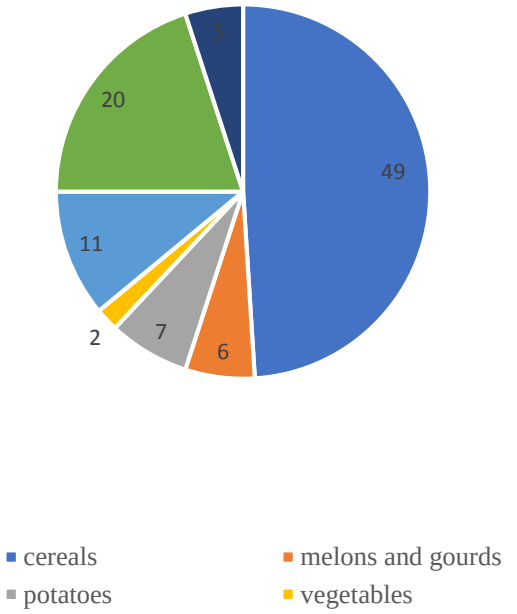


Fig. 1. Structure of production of family farms according to the main crops, %
Source: own calculation

According to General Agricultural Census [8], more than 97% of all farms (877,290 farms) cultivate fully owned land, which accounts for 57% of all land (1,285,137.85 ha). The share of fully owned land varies significantly depending on the legal status of the farm: 34.1% (433,675.85 hectares) of land is concentrated in corporate farms while 87.7% (851,462 hectares) is owned by individual farms. Only 2,685 of farms or 0.3% of utilized are managed by tenants, which represent 25.5% of the total (571,503.71 ha). Corporate farms utilizes not only fully owned land but also leased land (43%). Meanwhile, individual farms utilize mainly fully owned land (only 3% of their total area is leased).

An important aspect for development represent the rural areas. Moldova's rural area is characterized by the existence of 1,614 villages and a population of 2.42 million people (57.5% from total population). Nowadays a decline in rural areas population is persisting. Moldova faces a serious demographic crisis, which lead to the disappearance of four villages and 10 thousand inhabitants.

From the processed survey the types and characteristics of families in rural areas has changed (Figure 2). The main change is regarding the family size. A family with three or four children used to be common, now the share of these types of families does not reach even 10%.

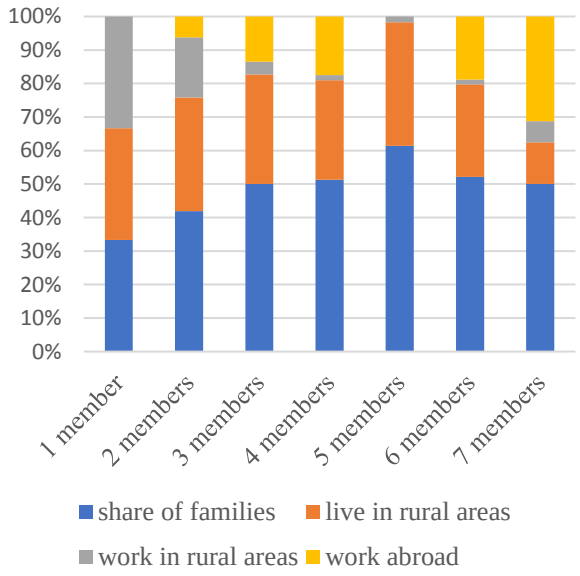


Fig. 2. Types and characteristics of families in rural areas
Source: own calculation

The vast majority of families consist of two or three people. More common are considered families with two family members (24%). The share of such families reaches a critical point about 70%. While the share of families consisting of seven people, reaches only - 0.90%. Financial situation, related to low incomes in rural areas is one of the principal reasons that led to the deterioration of the birth rate. According to demographers, every

fifth family is faced with the problem of maintaining their own children, while the government support nowadays is low. Although the amount of lump-sum allowance at birth has increased 10 times over the past 15 years, it is not able to cover all necessary expenses [6, 7, 11 ].

Migration is a serious problem that affect mostly rural areas. Typically larger families (3-4 members) have the highest rate of migration, 26 and 32 percent. There is no outflow of people abroad only in families with 1 person or retired members. For them a high level of job security or over 50 percent is characteristic.

Ageing population is a problem for Moldovan rural areas. Another serious contrast in rural areas is related to the average age of farm managers. Most of farm managers (75%) are aged between 41 and 70 y.o., while young farmers represent only 5%. Thus, the opinion that the largest number of young people are trying to open their own business is not confirmed, since the main group of entrepreneurs are people whose age is more than 30 years. This phenomenon indicates an intensive urbanization of a large part of the country's "younger part", as well as a significant migration flow [10, 12].

Farm management is concentrated in age categories between 30 to 50 years old (36), 50 to 60 years old (29%) and over 60 years old (34%). Many individual farms are headed by people of pre-retirement and retirement ages from 50 to 70 years (52%). The gender gap in farm administration is also large. Mostly men are farm managers (75%), while the farms run by females only reach 25%.

Education is an important aspect that can affect farms level of development. Some empirical studies have shown that wages increase followed by a growth in the education level [6, 7]. In our survey we considered farm managers level of education (Figure 3). From the results, less than 20% of all farm owners received incomplete secondary education. Incomplete higher education is less than 9%, while higher education - 10%. The largest share (36%) is represented by farm owners that have a secondary general education. Second position in the chart is referred to farmers with partially secondary education.

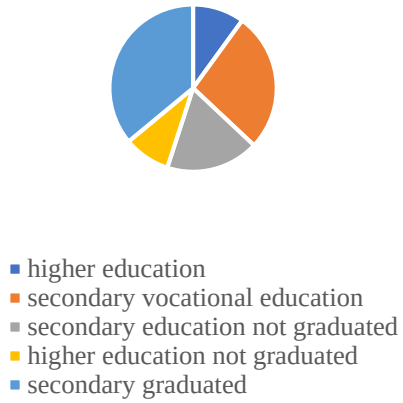


Fig. 3. The level of education of farm manager
Source: own calculation

Agriculture is still considered the main source of income for over 60% of rural inhabitants. The farms survey data reveals that wages represent the major source of income for rural population. The incomes received from agricultural activities have a modest share of 17.5%, while remittances from abroad represent 23.4%.

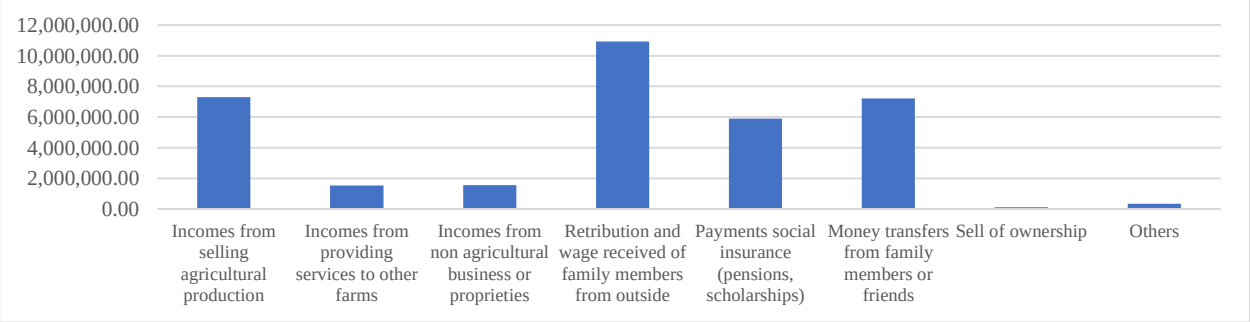


Fig. 4. The main source of incomes in rural areas
Source: own calculation

Some studies affirm that the money received from remittances, or around 10% of them tend to be invested in agricultural activities. The last years downturn in the agricultural sector caused a decrease in offered jobs, thus most of the income of in rural areas are related to non-farm activities.

Thus an expansion of population incomes sources in rural areas and development of non-farm activities is the key element to rural development [1, 2].

The non-agricultural sector includes all other activities in the rural space, except for activities in agriculture, fishing and hunting. Non-agricultural activities may include work for farm family members in a city or in another country.

The survey data analysis shows that 37% of managers receive income from rural activities, which is tantamount to non-agricultural employment. Non-agricultural employment is the main source of income and represents 36%, which is 4% more than the farms activity indicator.

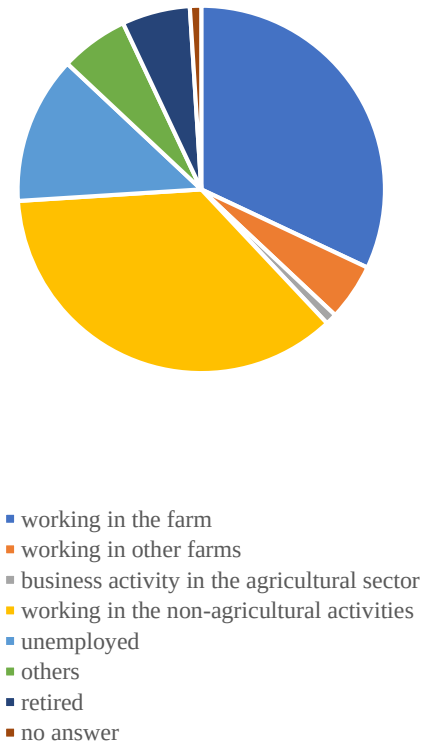


Fig. 5. Non-agricutural activities in rural areas
Source: own calculation

Farm efficiency is a key element for achieving both agricultural and rural development. The obtained competitive results of farms are generated by an efficient use of production factors.

According to Ratinger [9], efficiency consists of three different types: technical, allocative and social. Farell [3] presented the method used to appreciate the economic efficiency which consists of two main parts: allocative and technical efficiency.

Technical efficiency obtain scores from 0 to 1. Technical efficiency represents farms capacity to generate a maximum amount of output from a set of inputs.

Technical efficiency will help us to estimate the farm development level. From the scores obtained on the surveyed sample of 723 farms, technical efficiency presents an average a score of 0.538.

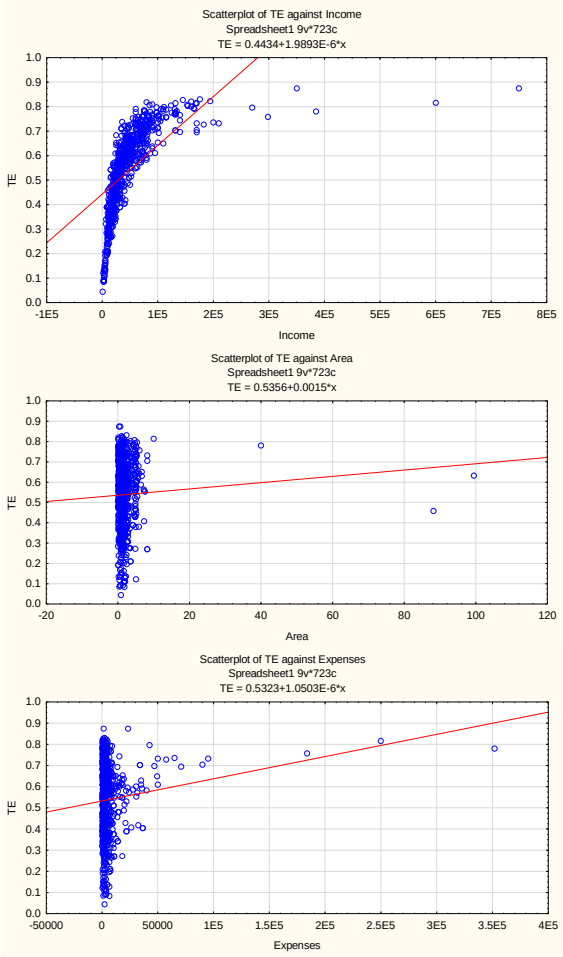


Fig. 6. The interdependence between farm technical efficiency and income, agricultural area and expenditures.
Source: own calculation

The obtained values have a range between 0.044 and 0.874. The increase of farm

technical efficiency could be a key not only to farm performance but also to a greater and sustained growth in the agricultural sector, followed by an increase of income for individual farmers and development of rural areas.

From previous research [1], multiple regression analysis shows a strong correlation between the farm technical efficiency and factors as: income, agricultural area and expenditures. A stronger impact on technical efficiency has the farm income (0.81).

The results of regression analysis separate for the three factors of influence (Figure 6) reveals a medium strong correlation between technical efficiency and incomes(0.6) and area (0.4). In the same time expenditures level tend to show week impact on farm technical efficiency (0.12).

## CONCLUSIONS

The agricultural sector of Moldova could be described by the coexistence of many small individual farms and some large corporate holdings. The average size of the utilized land of farms in the surveyed sample is 0.33 hectares. Over 50% of the utilized agricultural area is cultivated under crops. Family structure in rural areas had changed substantially overtime, a family with 2-3 members having the largest share in the survey.

Farm managers hold a certain level of education. Most farm managers have higher or secondary vocational education. Agriculture still represents a principal source of income for rural population, while non-agricultural activities have a small share.

According to the results of the surveyed sample of 723 farms, technical efficiency presents an average a score of 0.538. The obtained values have a range between 0.044 and 0.874. The results of regression analysis presents a medium strong correlation between technical efficiency and incomes (0.6) and area (0.4). The increase of farm technical efficiency could lead not only to farm performance but also to higher growth in the agricultural sector, contributing to the increase of income for individual farmers and sustained development of rural areas.

## ACKNOWLEDGEMENTS

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