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Subsistence economy and food security – the case of rural households from Romania

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Abstract

Romania is the country with the largest number of subsistence farms in the European Union. Practically, out of the 3.7 million farms from Romania, 3.3 million can be considered subsistence farms, having in view the extremely low value of the obtained productions. Although these small farms have a less important role on the markets, they are important in the rural world, as they provide food and social security for the population, contributing to environment preservation through the use of traditional production methods. The paper attempts to investigate the small farm role in the economy of rural areas and in the welfare of peasant households. The data source used were the Agricultural Census, for the analysis of small farm production structure and the Household Budget Survey in order to reveal the importance of own resources in the food consumption and incomes of rural households. The main conclusions of the paper refer to the strong production diversification on the small farms compared to the large farms, which are much more specialized. The analysis of food consumption behavior of the rural households reveals high shares of self-consumption in most products, a lower food diversification compared to urban households and a lower cost of calories in the rural households diet.

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1. Introduction

With almost half of the population living in the rural areas, rural development remains a challenge for Romania. As in many other countries from the European Union, the rural areas have lower incomes, lower employment rates and a relatively high dependence on the primary sector, compared to the urban regions. At the same time, there is a great diversity as regards the situation in the rural areas from the different regions of the country. In spite of this, agriculture contribution to the Gross Domestic Product and to population's employment remains quite significant in Romania, although it has experienced a permanent decreasing tendency. The share of the population employed in agriculture in the European Union was 5.3% in 2011 (EC, 2012), while in Romania it was 32.6 % in the same year. For many farmers and their families, agriculture is an important income source, although it began to steadily lose its importance as main income source. Agriculture directly contributes to the welfare of rural households, due to the double status of rural households as producers and at the same time consumers of agricultural and food products. This characteristic is specific to the subsistence farm household pattern, which includes both the consumption decisions and the production decisions under a single framework.

Due to the high share of rural population, Romania is characterized by a mixed food consumption pattern. Thus, there is a consumption pattern of the urban population, in which the access to food is mainly restricted by the households' purchasing power and the rural pattern, which includes the families that possess land and whose food situation depends both on their own farm production and on their purchasing power, resulting from the ratio of the prices of sold farm products to the prices of products bought on the market. It is obvious that these consumption patterns do not exist under a pure form, as even the urban population features a significant self-consumption, resulting directly or indirectly from the farming activity of the household members or their relatives.

The effects of transition on the dynamics of these consumption patterns have been materialized into the strengthening of the subsistence and autarchic character mainly for the rural households and mainly in the economic recession years, when the population's survival strategies were based on the small peasant farm production. At present, although the food situation began to improve, this phenomenon is still a common practice.

However, even in the present situation, the cash flow is much lower in rural areas, as revealed by the economic variables, represented by the household incomes and expenditures, and there is a poor connection of rural households to the market.

2. Method

In this study, we approach the households' food security issue from the perspective of their access to the food necessary for a healthy living, by the identification and analysis of the economic factors conditioning it in the subsistence and semi-subsistence economy from Romania. As working method, we compared the population's access to food on the urban and rural households, by using a set of relevant indicators mainly coming from the Household Budget Survey in the period 2001 – 2013. We mention that the indicators used are also included in the FAO methodology for the population food security evaluation. We refer here to the indicators of the households' incomes and their evolution in relation to consumption prices, sources and nature of incomes, structure of consumption expenditures, and importance of household's own resources in meeting the household's food consumption needs. In order to complete the information on the household's resources, we used data from the Farm Structure Surveys, in order to highlight the subsistence and semi-subsistence farm behaviour from our country. As the diversity of food is as important as the quantitative aspects related to food we calculated the Berry index for the evaluation of food diversity of households in the two residence areas. The following formula is used for the calculation of this index:

$$BI_i = 1 - \sum_{j=1}^N s_{ij}^2$$

where BI_i is Berry Index for household i , and s_{ij} represents the share of expenditures on product j on the household i food budget.

In order to evaluate this index we used the microdata from the Household Budget Survey, 1st quarter 2011, the number of possible food products being $N=104$.

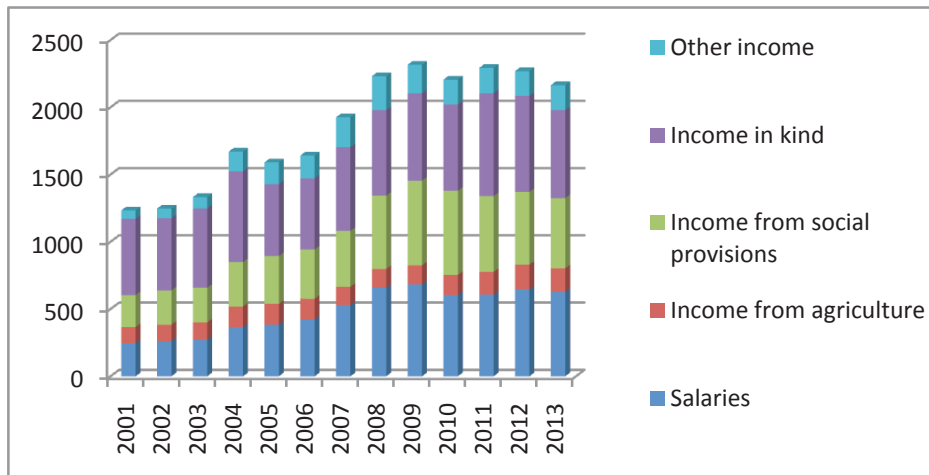
The Berry index takes values in the interval $(0,1)$. $BI=0$, means that the household bought only one food product in the investigated period, and $BI=1$ means that the household equally bought all the 104 food products taken into consideration. The studies on food security indicate a positive correlations between the food diversity and the economic and demographic indicators, such as incomes, household head' educational level, number of children, residence area (Thiele, S. at all, 2003).

3. Results

3.1. Rural household incomes

The interdependence between agriculture and the rural world starts from the position that this economic branch has in our country in the rural employment and providing livelihood means for the rural people. The largest part of the rural population is employed in agriculture (55% of the employed population in the rural area is working in agriculture), and the farming incomes are essential for the subsistence of rural households' members. Agriculture contributes to the rural households incomes mainly under the form of incomes in kind and cash incomes from the farming activity, i.e. from the sale of agricultural products or under the form of payment for the work in agriculture; however, these amounts are quite small. The share of incomes in kind in the incomes of rural households decreased from 46.5% in the year 2001 to 28.0% in the years 2008-2009, and the share of cash incomes from agriculture was maintained at 9-10%.

The decrease in importance of the incomes in kind took place under the background of the increase in importance of incomes from wages and social security benefits; this phenomenon was mainly noticed in the years of economic growth from the period 2003-2008. In this context, we consider that the decrease in importance of incomes in kind can be associated with the growth of incomes coming from the payments received as social security pensions and allowances and with the rural population's employment growth in the economic growth period of the last decade. The decrease in importance of the incomes obtained from the farming activity, even on the rural households with agriculture as main activity, is a phenomenon that is present in other countries of the European Union as well. On many rural households, although the main occupation of household members is agriculture, the share of non-agricultural income sources is on the rise. Thus, in many countries, the agricultural incomes have quite a low share in total incomes of rural households with agriculture as main activity: 5% in Germany, 8% in Netherlands, 11% in Finland, 17% in Greece and 12% in Denmark (Defra, 2005). In Romania, the extremely high share of incomes from agriculture in total incomes of rural households stems from the poverty and subsistence character of these holdings, where the agricultural products go directly to self-consumption, without reaching the market. As we have already mentioned, most incomes from agriculture are incomes in kind. The high share of incomes in kind in the rural household incomes generates household income fluctuations depending on the good or bad agricultural years. In Fig. 1 we can notice an increase of rural household incomes by 25% in the year 2004 compared to 2003. The agricultural year 2004 was an extremely good one, in which the grain harvest was almost double compared to the previous year and this obviously contributed to the increase of agricultural incomes on the rural households. The most important contribution to this peak in rural households incomes in the year 2004 came from agriculture (25% is due to the increase of incomes in kind and 8% to the increase of sales of agricultural products), as well as from the increase of social security payments (22% of the total increase of rural incomes is due to the increase of social security contributions: pensions, unemployment benefits, social aids for the poor). 2004 was an electoral year and such improvements of the living standard in the countryside were also noticed in other electoral years (1996 and 2009, for instance).



Source: Tempo on line, NIS
 Fig. 1: Evolution of rural households incomes, deflated values, 2013=100

At the same time, there are significant disparities between households. In the year 2013, the incomes of a farmer household accounted for 82% of the average income of a household in Romania. The poorest households were the households of unemployed (66%) and the households of self-employed (77%).

In many EU member states, the households of farmers have incomes above the average. Yet, there are countries with a situation quite similar to that of Romania, as at the moment when these countries joined the European Union, they maintained significant economic gaps compared to the EU Old Member States and they had an important agricultural sector, which occupationally prevailed in the rural area (Portugal or Greece, for instance).

3.2. Role of small farms in the rural area economy

Romania is the country with the mostly fragmented agrarian structure in EU-27, with 32.2% of the number of EU farms and 7.7% of the utilized agricultural area. Land restitution to former owners and their heirs, initiated in the 1990s, contributed to the present fragmentation. With all the legislative amendments throughout the years, and the measures applied to stimulate the increase of average farm size, the land consolidation process is very slow and probably many years from now Romania will have an extremely dispersed agrarian structure.

Table 1. Agrarian structure evolution in Romania in the last decade

	2002	2005	2007	2010
Number of farms	4485	4256	3931	3856
Utilized agricultural area (thousand ha)	13931	13907	13753	13298
Average area per farm (ha)	3.1	3.3	3.5	3.4

Source: General Agricultural Census, NIS, 2004, 2012, Bucuresti

Although the total number of agricultural holdings in Romania was down by almost half a million in the last decade, from 4.48 million registered by the 2002 census to 3.85 million according to the 2010 census (Table 1), it remains one of the highest in the EU countries and reveals the social subsistence character of a large part of agricultural holdings. At EU level as well, the number of farms constantly decreased in the last decades, with the

strongest diminution in the EU New Member States (-4.7% per year), while the process was slower in the EU Old Member States (-2.2% per year) (EC-2013). However, the farm structure differences were maintained. While the average farm size in the EU Old Member States is 23.6 ha, in the New Member States it is only 7.1 ha. Due to its extremely fragmented agrarian structure, Romania fully contributed to the increase of the number of small farms in EU after its accession in the year 2007. In the year 2010, 43% of the European farms under 5 ha were found in Romania. For measuring the farm economic activity, the standard output indicator is used, which measures the monetary value of farm agricultural output at farm-gate prices for all crop and livestock production activities. The standard output distribution by farms also reveals great disparities between the EU-15 Old Member States and those which subsequently joined the European Union. Thus, out of the total number of farms from EU-28, 44% had a standard output lower than 2000 euro in the year 2010, while in Romania 73% of the number of farms had a standard output lower than 2000 euro.

At present, Romania does not have a clear definition of the small farm yet, but for the purpose of this analysis we can take into consideration the holdings under 5 ha and even those under 10 ha. The 3.5 million holdings under 5 ha accounted for 93% of total number of holdings and they operated almost 30% of the utilized agricultural area at national level. About 98% of holdings were under 10 ha, with about 39% of utilized area. The small holdings are obviously non-legal entities.

Table 2. Share of farms smaller than 5 hectares in total number of farms and in the utilized agricultural area, in the year 2010

Country	% of total farms	% of utilized agricultural area
EU-27	69.2	6.9
Greece	77.1	31.7
Great Britain	8.9	0.2
Italy	72.9	14.4
Denmark	7.3	0.2
Germany	9.1	0.3
Spain	53.1	4.4
France	26.9	1.0
Portugal	75.6	10.8
Romania	93.1	29.7
Latvia	33.9	4.0
Lithuania	58.7	11.4
Poland	55.2	13.9

Source: EC, 2013

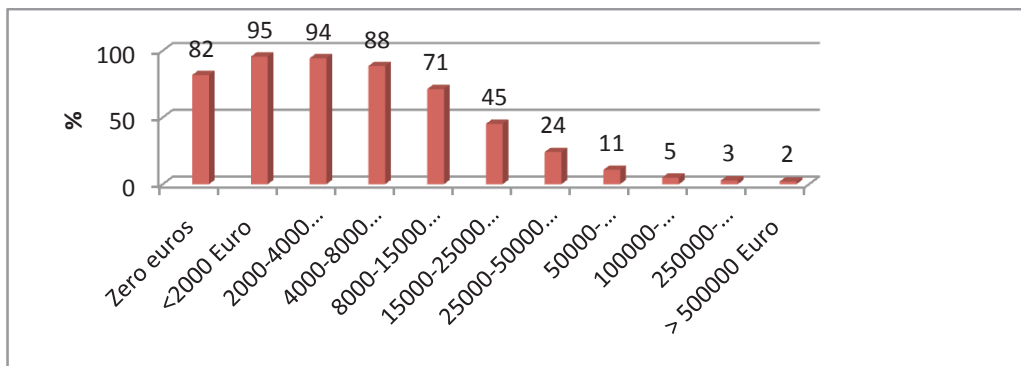
3.3. Agriculture contribution to the food security of rural households

Food security is defined as the “the access of all people, on a permanent basis, to the necessary food for an active and healthy life” (FAO, 1996). Food security can be evaluated at different levels, yet most references are made at world level, national level and micro-economic level, i.e. at household and individual level. Depending on the level to which reference is made, the focus is laid on one or several of the four food security dimensions, namely: food availability, supply stability, economic access and the individual’s desire for healthy, nutritious food. Thus, in the case of using the food security concept at world or national level, the focus is mainly laid on the capacity of countries to provide a sufficient agricultural supply for meeting the population’s food and nutritional needs (Pinstrup, A, 2009). At the same time, recent approaches (FAO, 2007) focus on “food autonomy” as factor of food security stability, which reduces the vulnerability to the fluctuations of domestic and world agricultural markets.

Yet food availability does not guarantee the access to food, as the problems related to the distribution of incomes at society level can seriously impact the access to food and the food security at household level implicitly. As a result, food security is considered, in the last instance, a problem at family or individual level. In a general sense, food insecurity and hunger are the direct result of poverty. With the economic growth and increase in incomes, the poor households will have the ability and presumptively also the desire to have an adequate diet (Senauer, B., et al, 2007). Although in most studies on population's nutritional situation, household is used as unit of observation, the key problem is nutrition at individual level, particularly in the case of those persons considered to be subject to nutritional risk. In the present study, we approach the households' food security issue from the perspective of the identification of factors conditioning the access to food in the subsistence and semi-subsistence economy from Romania.

On the rural households from our country, the access to food depends not only on the households' incomes, but also on the agricultural resources that these households have in the first place. This because most peasant farms in Romania are small-sized, poorly connected to the market, and their production goes mainly to self-consumption. According to recent estimates, 82% of the farms from Romania mainly produce for self-consumption (Eurostat 2013) and according to the Farm Structure Survey (NIS, 2008) only 16.5% produce mainly for direct sales. From Fig. 2, we can notice that on more than 90% of the small and medium-sized farms (with an output value less than 8000 euro), more than 50% of the obtained production goes to self-consumption.

Thus, subsistence agriculture appears as a safety net for the poor population living in the countryside, as well as for certain urban households, which have agricultural land into ownership, making up for the absence of cash incomes and providing for a nutritional standard for survival. This happens in the conditions when the food consumption of households from our country continues to have quite high shares in the consumption expenditures, indicating the vulnerability of all households to agriculture, more exactly to the agricultural prices on the domestic and foreign markets. In the last decade, a diminution in the share of food consumption expenditures took place, from 56 % in the year 2001 to 44% in more recent years, as an effect of economic growth and population's incomes growth. Anyhow, the 44% share of food expenditures in total consumption expenditures is among the highest in the European Union. In the rural area, this share is even higher, yet it significantly decreased in the last five years: from 67 % in the year 2001 to 52% in the year 2013.



Source: Eurostat

Fig. 2. Percentage of farms on which more than 50% of production goes to self consumption, by economic size (Standard output)

On the rural households, there is an overwhelming self-consumption share in certain products. Thus, in the year 2011, self consumption represented 50% in fresh meat, 56% in fresh milk, 53% in cheese, 83% in eggs and 60% in vegetables. The only products in which self-consumption was extremely low were sugar, beer, non-alcoholic beverages and partially fats (vegetable oils). In time, the importance of self-consumption on the rural households slightly decreased, with the increase of their incomes in the economic growth years. The differences between the food consumption from the urban and rural areas by types of products reveal a higher consumption of cereal-based

products (bread, maize flour), potatoes, eggs, milk and alcoholic beverages in the rural area, together with a lower consumption of fruit, vegetables and products of animal origin (meat and cheese). The information from Table 5 reveals a lower diversity of food consumption in the rural area, mainly as a result of the lower consumption of fruit and vegetables, which features significant seasonality.

Table 3. Food consumption by residence areas, in the year 2013

yearly averages per capita

Product	UM	Total	Urban	Rural	R-U
Bread	Kg	102.0	96.8	108.3	11.5
Fresh meat	Kg	38.2	40.8	35.1	-5.6
Meat products	Kg	12.4	12.9	11.7	-1.3
Milk	L	70.4	67.6	73.9	6.4
Cheese	Kg	16.2	16.8	15.6	-1.2
Eggs	Pcs	160.5	156.3	165.6	9.2
Fruit	Kg	41.4	48.3	32.9	-15.3
Potatoes	Kg	39.8	38.9	40.8	1.9
Vegetables	Kg	91.4	93.9	88.4	-5.5
Non-alcoholic beverages	L	53.9	72.8	30.8	-42.0
Alcoholic beverages	L	27.8	24.4	31.9	7.5

Source: NIS, 2014

The economic variables, represented by the household incomes and expenditures, mainly reflect the lower cash flows and the poor connection of rural households to the market. The structure of food consumption expenditures and the low share of cash expenditures in particular is the result of the autarchic character of rural households and reveals that in the rural area, the solvent demand represented by the purchased food quantities is much lower than in the urban area (see Table 4). Practically, in the rural area, there is a significant solvent food demand only for those products that cannot be obtained on people's own households (bread – where only 15% of the consumed amount is produced on people's households, sugar, oil, certain non-alcoholic drinks, beer).

The rural households have a lower monetary value of food consumption, and in quantitative terms, here the daily consumption of calories per person is higher than in the urban area, resulting a lower calorie cost and hence a lower quality of diet.

Table 4. Incomes, food expenditures and consumption expressed in nutritive factors, in the year 2013

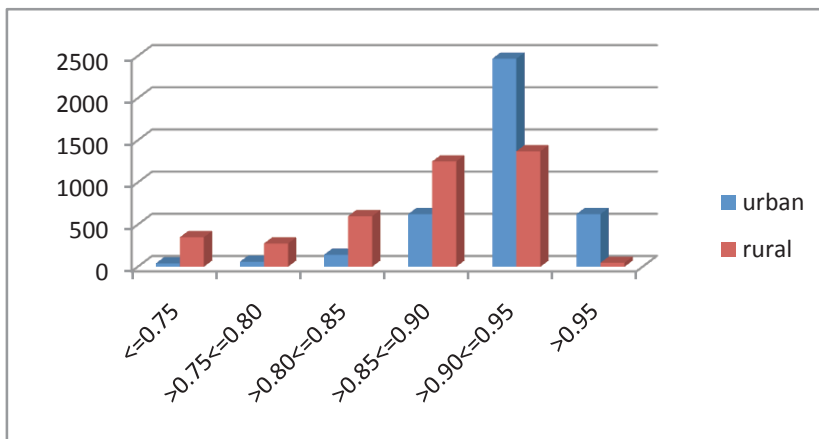
monthly averages

Variable	U.M.	Urban	Rural	Urban/Rural
Total incomes	RON/household	2859	2165	1.32
Cash incomes	RON/household	2636	1482	1.78
Total consumption expenditures	RON/household	1877	1398	1.34
Food consumption expenditures	RON/household	770	726	1.06

Food consumption expenditures in cash	RON/household	619	395	1.56
Calories, out of which	Number/person/day	2370	2443	0.97
Calorie cost	0.01 RON	0.393	0.331	1.19

Source: authors' calculations based on the information from NIS, 2014

The structure of diet reveals the prevalence of cereals in the population's food consumption pattern in Romania, and this is even more pregnant in the case of the population from the rural area, where the consumption of cereal-based products (bread, wheat flour, maize flour) is much higher than in the urban area. In nutritive terms, the cereals provide for 43% of the calorie intake of the rural population, versus 37% representing the calorie intake from cereals in the urban population's diet.



Source: HBS microdata, NIS, 2011

Fig. 3: Distribution of urban and rural households in relation to the diversity of bought foodstuffs

Food diversity evaluation by calculating the Berry index is presented in Graph 3. We can notice that the group of households with high diversity, in which the Berry index is higher than 0.90, includes 77% of urban households and only 36% of rural households. As we have mentioned before, food diversity is an important indicator of nutrition quality on the households.

4. Conclusions

The Romanian population's food consumption pattern still preserves the poverty valences, yet poverty implications upon population's nutrition are more drastic in the urban area compared to the rural area.

The interaction between agriculture and the rural households is materialized into more secure food availability, although the food has lower quality parameters (less animal protein, a little more alcohol, prevalence of fats of animal origin, rich in cholesterol).

At the same time, comparing the consumptions by residence areas, we can notice an even lower diversification of rural food consumption, as revealed by a lower consumption of meat, fresh vegetables and fruit. The food diet in the rural area follows the cycle of seasons, the out-of-season consumption of fruit and vegetables being very low. It is obvious that in practice, doubling the consumption of alcoholic beverages cannot increase the quality of the population's food pattern in the rural area.

References

- DEFRA, 2005, A Vision for the Common Agricultural Policy, Department for Environment Food and Rural Affairs, Marea Britanie
- European Commission, (2012), Statistical and economic information
- European Commission, (2013), Structure and dynamics of EU farms: Changes, trends and policy relevance
- FAO, 1996, Declaration on world food security, The World Food Summit, Rome
- FAO, 2007, Food Security: Some Macroeconomic Dimensions, Rome
- NIS, 2008, Farm Structure Survey in the year 2007, Bucuresti
- NIS, 2004, General Agricultural Census in the year 2002/2003, Bucuresti
- NIS, 2012, General Agricultural Census 2010, Bucuresti
- NIS, 2014, Co-ordonates of living standard in Romania, Population income and consumption in the year 2013, Bucuresti
- NIS, 2014, Tempo on line database, Ancheta Bugetelor de Familie 2001-2013, NIS, Bucuresti
- Pinstrup, A., 2009, Food security: definition and Measurement, *Food Security* (2009) 1:5-7, Springer
- Senauer, B., Roe, T., 1997, Food security and the household, paper presented at the Congress of the International Association of Agricultural Economists, Sacramento, USA
- Thiele, S., Weiss, C. 2003, Consumer demand for food diversity: evidence for Germany, *Food Policy* 28 (2003) 99-115