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RURAL HOUSEHOLD IN THE PROCESS OF MODERNIZATION-DEVELOPMENT OF THE ROMANIAN RURAL AREA

Lorena CHIȚEA

Institute of Agricultural Economics, INCE, Romanian Academy, 13 Calea 13 Septembrie, District 5, Bucharest, Phone/Fax:021/3182411; E-mail: chitu_lorena@yahoo.com

Corresponding author: chitu_lorena@yahoo.com

Abstract

The goal of this paper was to establish a causal relationship between the socio-economic modernization level and the development level of the Romanian rural area, as main point of modernization of the rural household. The starting point in establishing this causal relationship was the development of a theoretical model for the assessment of the modernization and socio-economic development level of the rural area in terms of rural household modernization potential. The output of these models was 3 composite indices that were analysed both as independent indices, in dynamics, and in relation to the other indices, as well as to the dimensions and indicators related to each index. The main hypothesis of the research was the existence of an intrinsic link between the modernization degree and the socio-economic development of the rural area, thus the integration of modernization elements entailing development and implicitly, at rural household level, the continuous improvement of the quality of life and welfare of the rural population. The rural household was considered an important component of the Romanian rural space, being the driving engine that makes all the subsystems of the rural space work.

Key words**:** *rural household, rural area, sustainable rural development*

INTRODUCTION

The main economic activity in the Romanian rural area is agriculture, while the non-agricultural economy (industry, services, tourism, etc.) has a small share in the Romanian countryside [4]. The farming practice is generally of subsistence or semi-subsistence type, generating a much lower standard of living of the rural inhabitants compared to urban residents. This farming practice became a defining characteristic for the Romanian rural space [1], [8]. Yet the social function of subsistence and semi-subsistence household farms should not be neglected, as, through the farming activity, rural inhabitants can meet their food needs in the situation of insufficient money income. These agricultural holdings also had a social buffer role in the periods of crisis [11]. The rural household, in most cases, coincides with the peasant household farm/individual farm (small, subsistence farm), and due to the low diversification of the Romanian rural economy, the development of rural area is strongly correlated with the viability of agricultural structures [3], [5]. "In the future, the rural household has the mission to preserve the authentic national values of rural areas, in the context of modernizing and streamlining the activities carried out, in a traditional but profitable way" [10].

MATERIALS AND METHODS

Once the theoretical matrices regarding the investigated phenomena have been conceptualised [2], [6], the next stage is the collection of data from statistical sources and the creation of databases (SPSS and Excel). Each indicator of the model will go through the normalization stage, according to the following formula:

$$In = (X-Xmin)/(Xmax-Xmin),$$

where:
In – value of normalized indicator;
X – current value of indicator;
Xmin – minimum value of indicator;
Xmax – maximum value of indicator.
For each normalized indicator, each analysed entity is ordered in the range 0-1, where the

lowest value receives 0, and the highest value receives 1.

For each dimension the size index will be calculated, according to the formula:

$$Id= (Ind1+Ind2+....Indn)/n$$

where:
Id – size index
Ind1, Ind2 .... Indn – normalised indicators
n – number of selected indicators.

The final index is calculated according to the following formula:

$$Ig=(Id1+Id2.....+Idn)/n$$

where:
Ig – global index;
Id1 ....Idn – size index
n – number of dimensions related to the model.

Each indicator will have equal weights within the dimension, and each dimension has equal weights in the global index. The values of indices of modernization and socio-economic development of the rural area are available for the period 2007-2018, and the values of index of rural household modernization refer to the years 2007, 2013 and 2016, when the Farm Structure Survey was carried out.

RESULTS AND DISCUSSIONS

The rural socio-economic development index

The rural socio-economic development index, in the present research work, aims to capture the rural development phenomenon at county level, as an evolutionary process in the post-accession period. For a most clear picture of rural development in the territory, we considered both the composite index (which made it possible to establish a hierarchy, a typology of counties by their rural development), and the component dimensions to be able to identify the factors that influence the rural development level.

As strange as it may seem, the rural socio-economic development index had a downward trend in the period 2007-2018, which was not expected from the beginning, considering the investments made in the rural area in the post-accession period. The main causes of this phenomenon could be the following:

- development punctuality, focused on road, technical, educational or sanitary infrastructure, targeting certain (agricultural or non-agricultural) businesses, yet without generating social and economic development at community level.
- development selectivity – certain rural communities have benefited from the increase of the rural development level, these being peri-urban communities; some communities (mainly those remote from the urban centers, isolated communities) have experienced devolvement processes (demographic decline, disappearance of social and economic activities, loss of local traditions).

Thus, in terms of development, there are two types of rural communities: the first type includes the favoured communities, specific to the areas in the proximity of cities, suffering from "wild suburbanization" [7] with a spectacular increase, in statistical terms, of the technical and economic development level, yet with the loss of specific rural identity; the second type includes the great majority of rural settlements characterised by demographic, social and economic underdevelopment. There are few examples of communities that have managed to develop economically with minimum cultural, economic and environmental losses.

Depending on the rurality level, the rural socio-economic development index (RDI) is higher as the rurality level decreases: thus, the predominantly urban counties have the highest values (2.04), followed by the intermediate rural counties (1.57) and next by the predominantly rural counties (1.38). The index has a decreasing trend in all these categories.

The variations of the rural socio-economic development index, at macro-regional level, in the period 2007-2018, reveal an increasing trend only in Macro-region 1 (from 1.59 to 1.72); the remaining macro-regions had declining trends, the strongest decline being in Macro-region 3 (from 1.69 to 1.39).

At the level of development regions, the region București-Ilfov ranks first in terms of

the index value (2.04), followed by the region Nord-Vest (1.73), the region Centru (1.71), the region Vest (1.56), the region Nord-Est (1.49); the regions Sud (1.30) and Sud-Est (1.14) rank on the last positions in this hierarchy. At county level, the hierarchy begins with the county Timiș (2.09), Ilfov (2.04), Maramureș (2.03), Suceava (1.94), Brașov (1.93) and ends up with Olt (0.83), Teleorman (0.87), Buzău (0.97).

Table 1. Evolution of the Rural Socio-Economic Development Index - at macro-regional and regional level, in the period 2007-2018

	2007	2010	2013	2016	2018
TOTAL	***1.58***	***1.56***	***1.46***	***1.48***	***1.48***
MACRO-REGION ONE	1.59	1.71	1.60	1.63	1.72
Region NORD-VEST	1.52	1.71	1.57	1.64	1.73
Region CENTRU	1.66	1.70	1.63	1.62	1.71
MACRO-REGION TWO	1.61	1.56	1.45	1.48	1.40
Region NORD-EST	1.71	1.59	1.54	1.51	1.49
Region SUD-EST	1.50	1.54	1.37	1.45	1.31
MACRO-REGION THREE	1.69	1.54	1.43	1.43	1.39
Region SUD-MUNTENIA	1.61	1.47	1.34	1.33	1.30
Region BUCURESTI – ILFOV	2.23	2.02	1.99	2.10	2.04
MACRO-REGION FOUR	1.44	1.40	1.30	1.33	1.32
Region SUD-VEST OLTENIA	1.35	1.21	1.18	1.18	1.14
Region VEST	1.57	1.64	1.46	1.52	1.56

Source: author's own calculations based on NIS tempo online data [9].

As the territorial unit to which we refer gets smaller, there is a higher discrepancy according to the development index: if the gap is 0.40 at macro-region level, it increases to 0.90 at development region level, to reach 1.26 at county level.

The ranking of counties by rural development level reveals the following structure:

-Counties with a good development level: Timiș, Ilfov, Maramureș, Suceava, Brașov, Sibiu;

-Counties with acceptable development level: Bistrița-Năsăud, Cluj, Alba, Mureș, Satu-Mare, Iași, Bihor;

-Counties with medium development level: Harghita, Prahova, Bacău, Arad, Constanța, Vrancea, Dâmbovița, Neamț, Gorj, Călărași, Sălaj, Covasna, Hunedoara, Argeș;

-Counties with low development level: Tulcea, Ialomița, Galați, Brăila, Caraș-Severin; Dolj, Botoșani, Mehedinți, Vaslui;

-Counties with very low development level: Vâlcea, Giurgiu, Buzău, Teleorman, Olt.

Rural socio-economic modernization index

The rural socio-economic modernization index aims to capture the rural modernization phenomenon at county level, as evolutionary process in the post-accession period. Rural modernization is different from rural development, as development is the last stage in the modernization process, which implies deep and long-lasting changes in the technological, economic and ecological field, with implications in the entire social and cultural system.

In the investigated period, the rural socio-economic modernization index had quite a stable trend. When the value of modernization index is analysed, we could say that there was no accentuated dynamics of the modernization process; if the analysis is performed at the level of dimension, indicator, we can notice some important changes. Thus, in terms of the index size, there is a significant depreciation of the demographic and social dimensions, while the economic dimension is maintained constant, and only the ecological dimension significantly increases.

Depending on the degree of rurality, the modernization index had an increasing trend in the predominantly urban areas (from 1.13 in the year 2007 to 1.45 in 2018) following the increase of the attractiveness of these areas for the younger population; there was a slightly downward trend in the intermediate areas (from 1.60 in the year 2007 to 1.56 in 2018) and in the predominantly rural areas (from 1.55 in 2007 to 1.49 in 2018).

Table 2. Evolution of the Rural Socio-Economic Modernization Index - at macro-regional and regional level, in the period 2007-2018

	2007	2010	2013	2016	2018
Total	1.56	1.50	1.42	1.60	1.51
At macro-regional level					
Macro-region 1	1.55	1.53	1.47	1.68	1.62
Macro-region 2	1.60	1.51	1.49	1.54	1.40
Macro-region 3	1.53	1.46	1.31	1.58	1.51
Macro-region 4	1.56	1.47	1.39	1.58	1.54
At regional level					
Region Nord-Vest	1.41	1.40	1.34	1.56	1.48
Region Centru	1.68	1.67	1.60	1.80	1.76
Region Nord-Est	1.50	1.44	1.45	1.53	1.34
Region Sud-Est	1.70	1.59	1.52	1.56	1.46
Region Sud	1.58	1.50	1.35	1.59	1.51
Region București-Ilfov	1.13	1.19	0.96	1.55	1.45
Region Sud-Vest	1.53	1.45	1.31	1.54	1.44
Region Vest	1.61	1.49	1.49	1.63	1.66

Source: author's own calculations based on NIS tempo online data [9].

The variation of the Rural Modernization Index (RMI) at macro-regional level, in the period 2007-2018, reveals a significant decrease in Macro-region 2 (from 1.60 in 2007 to 1.40 in 2018), a slight decrease in Macro-regions 3 (from 1.53 in 2007 to 1.51 in 2018) and 4 (from 1.56 in 2007 to 1.54 in 2018).

By development regions, the hierarchy based on RMI index was the following: region Centru (1.76), region Vest (1.66), region Sud (1.51), region Nord-Vest (1.48), region Sud-Est (1.46), region București-Ilfov (1.45), region Sud-Vest (1.44) and region Nord-Est (1.34).

At county level, the following counties ranked first: Brașov (1.96), Harghita (1.90), Sibiu (1.86), Timiș (1.82) and Cluj (1.81); at the opposite pole, we can find the counties Satu Mare (1.09), Botoșani (1.13), Neamț (1.18), Bacău (1.19), Vaslui (1.31).

The classification of counties by rural modernization level revealed the following structure:

-Counties with a good modernization level (12.20%): Brașov, Harghita, Sibiu, Timiș, Cluj;

-Counties with an acceptable modernization level (14.63%): Ialomița, Bistrița-Năsăud, Hunedoara, Arad, Covasna, Suceava;

-Counties with a medium modernization level (41.46%): Vâlcea, Brăila, Mureș, Iași, Teleorman, Alba, Constanța, Giurgiu, Argeș, Sălaj, Buzău, Bihor, Dâmbovița, Olt, Călărași, Caraș-Severin, Ilfov;

-Counties with a low modernization level (21.95%): Mehedinți, Prahova, Tulcea, Dolj, Galați, Vrancea, Gorj, Maramureș;

-Counties with a very low modernization level (9.76%): Bacău, Neamț, Botoșani, Satu-Mare.

In the investigated period, the gap between the counties with the highest socio-economic modernization level and the lowest modernization level narrowed from 1.37 in 2007 to 0.86 in 2018. The share of counties with acceptable modernization level decreased (from 48.78% to 14.63%); at the same time, the share of counties with low and very low modernization level increased (from 9.76% to 31.71%), the same situation being noticed in the case of counties with medium modernization level (the share of which increased from 31.71% to 41.46%). These modifications reveal a demographic and social restructuring in the rural area: even though there is a narrowing gap between counties, a shift from the top of the ranking to the bottom can be noticed.

The rural household socio-economic modernization index

The modernization of rural households is an important step in supporting rural area viability. The working hypothesis, in this context, is the following: the higher the modernization degree of rural households, the higher the attractiveness of rural areas.

The rural household modernization index (RHMI) has as main research subject the agricultural household farm that largely overlaps the rural household. In the period 2007-2016, RHMI followed a downward trend, which confirms the negative effect of a discontinuous modernization process. According to the degree of rurality, the rural household modernization index had an

upward trend only in the predominantly urban areas (from 1.76 in the year 2007 to 1.87 in 2016), with the highest depreciation in the predominantly rural areas (from 1.39 in 2007 to 0.98 in 2018). This process reveals that the Romanian rural area behaves differently depending on the proximity of large cities (see counties județele Timiș, Ilfov, Cluj, Sibiu, Constanța, Brașov), and the rural households in the proximity of cities have an easier access to utilities, education, social services and more attractive jobs.

Table 3. Evolution of rural household socio-economic modernization index, in the period 2007-2016

	2007	2013	2016
Macro-region 1	1.49	1.25	1.15
Macro-region 2	1.28	1.01	0.95
Macro-region 3	1.31	1.05	1.08
Macro-region 4	1.45	1.20	1.06
Region Nord-Vest	1.37	1.19	1.07
Region Centru	1.61	1.31	1.22
Region Nord-Est	1.11	0.85	0.82
Region Sud-Est	1.45	1.17	1.08
Region Sud	1.24	0.96	0.96
Region București-Ilfov	1.76	1.69	1.87
Region Sud-Vest	1.33	1.05	.92
Region Vest	1.60	1.39	1.25
Predominantly urban	1.76	1.69	1.87
Intermediate	1.34	1.17	1.14
Predominantly rural	1.39	1.08	0.98
Total	1.38	1.13	1.06

Source: author's own calculations based on NIS tempo online data [9].

The variation of the rural household modernization index, at macro-regional level, in the period 2007-2018, reveals a downward trend in all macro-regions, the most pronounced decline being noticed in Macro-region 4 (from 1.45 in 2007 to 1.06 in 2018), which led to its downgrading in the macro-regional ranking.

Across regions, the only development region with an upward trend was the region București-Ilfov (+6.25%); the region Sud-Vest lies at the opposite pole, with -30.77%. By the value of rural modernization index, the hierarchy of regions was the following: region București-Ilfov (1.87), region Vest (1.25), region Centru (1.22), region Sud-Est (1.08), region Nord-Vest (1.07), region Sud (0.96), region Sud-Vest (0.92) and region Nord-Est (0.82).

The classification of counties by the level of rural household modernization reveals the following structure:

-Counties with a good level of rural household modernization: Constanța, Brașov, Ilfov;

-Counties with an acceptable level of rural household modernization: Sibiu, Timiș;

-Counties with a medium level of rural household modernization: Sălaj, Teleorman, Bistrița-Năsăud, Covasna, Ialomița, Gorj, Maramureș, Brăila, Arad, Cluj, Tulcea;

-Counties with a low level of rural household modernization: Mehedinți, Prahova, Călărași; Botoșani, Dâmbovița, Iași, Alba, Mureș, Satu Mare, Galați, Hunedoara, Harghita, Dolj; Argeș, Caraș-Severin;

-Counties with a very low level of rural household modernization: Buzău, Bacău, Bihor, Olt, Giurgiu, Vrancea, Vâlcea, Suceava, Vaslui, Neamț.

In the investigated period, the gap between the counties with the highest modernization level of households and the counties with the lowest modernization level of households increased from 1.08 in 2007 to 1.30 in 2016. The share of counties with an acceptable level of rural household modernization decreased from 24.39% to 4.88%; at the same time, the share of counties with a low and very low modernization level of households increased from 43.90% to 60.98%, and in the case of those with medium modernization level from 21.95% to 26.83%. Thus, we can notice an increase in the gap between counties and a translation from the top of the ranking to the bottom, highlighting the increase of disparities between counties in terms of rural household modernization.

The relationship between the rural household modernization and the modernization and socio-economic development of the Romanian rural area

Modernization is a defining process for the rural areas; an ongoing process for rural areas, it succeeded in certain areas, through

continuous accumulations to generate the emergence of elements specific to rural development. The gradual transition from modernization to development is slow, and characteristic to certain limited areas. On the other hand, rural modernization entails a beneficial process on the rural household: while at the beginning of the period, in the year 2007, the link was weak, it intensified over time, to reach a significant correlation between the Rural Modernization Index and the Rural Household Modernization Index (+0.364*).

The strongest link is with rural development, the increase of living standard being the main determinant for rural household modernization. The elements of rural development (demographic, social and economic dimensions) had a favourable impact on household modernization; according to the relational analysis, there is a strongly significant correlation between the Rural Development Index and the Rural Household Modernization Index (+0.589**). In other words, there is a direct causal relationship between the modernization – socio-economic development phenomena in the rural area and the rural agricultural household modernization.

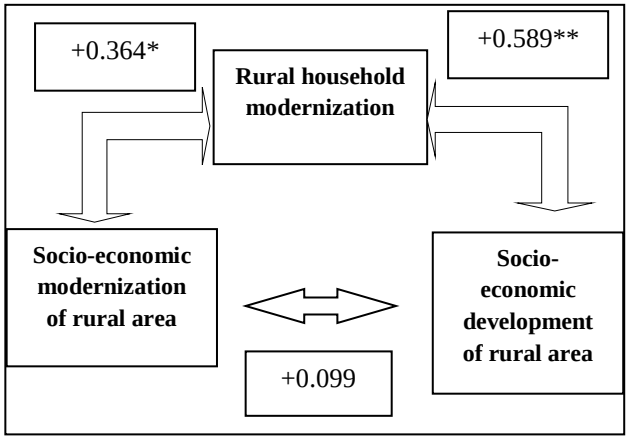

Fig. 1. The causal relationship between the rural household modernization and the modernization and socio-economic development of the Romanian rural area

Source: author's own calculations based on NIS tempo online data [9].

From the endogenous relational analysis (rural development – own dimensions) the following findings emerged: the demographic dimension is the most important in the period 2007-2018, being the main factor in the rural development process. For instance, there are significant direct relationships between rural development and the natural increase of the population (+0.535**). The second factor with significant influence is materialized in the economic activities: from a significant correlation in 2007 (0.396*) to a strongly significant correlation in the period 2007-2018 (0.651** in 2018). The development process focuses on the agricultural activities – significant correlations with the share of animal production (+0.529**), with the number of tractors/100 ha (+0.408**). The social dimension has a decreasing trend in the investigated period, from a strongly significant influence (0.549**) to a low influence (0.216 in 2018). The ecological dimension has an oscillating trend, but the specific element of sustainable development had a significant correlation: the amount of natural fertilizers / 100 ha agricultural land (+0.685**).

To sum up, in the period 2007-2018, rural development was a complex process, depending on demographic factors and phenomena (mainly the natural increase of the population), on farming activities (share of animal production and number of tractors/100 hectares) and on pro-environmental behaviour (use of natural fertilizers/100 hectares).

The endogenous statistical analysis of rural modernization, in the same period, reveals the particular importance of the social trend dimension, with increases of all the incorporated factors, which in their entirety have a significantly strong connection with the modernization phenomenon throughout the period (from a value of Pearson correlation of 0.473** in 2007 to 0.701** in 2018).

The demographic dimension increased significantly in the investigated period, from a weak correlation (0.140 in 2007) to a significant correlation, to reach a value of Pearson correlation of 0.489** in 2018. The ecological dimension had a significant influence throughout the investigated period yet under decline: from 0.529 (2007) to 0.471 at the end of the period. There is a lower

importance of the economic dimension on the modernization index in the analysed period.

In conclusion, the rural modernization process depends on social factors/phenomena, followed by demographic and ecological factors. In the analysed period, we can speak about social modernization, in statistical terms, in the first place.

The rural household modernization process was noticeable in demographic terms, specific to the living space, as well as in economic terms. If we analyse the relationships that exist between the **Rural Household Modernization Index** and its dimensions, we can notice that the strongest and relatively constant relationships are with the demographic criterion (+0.601**) and the economic criterion (+0,692**), throughout the analysed period.

The dwelling modernization criterion has also a significantly strong influence on the rural household modernization index, this increasing in the analysed period, from a significant influence in 2007 (+0.371*) to a strongly significant influence (+0.601**).

The relational matrix is characterised by:

- Direct links with the rural household modernization phenomenon: significant relationship with the following indicators: living space per person (+0.419**), share of new dwellings (+0.535**), amount of natural gas supplied to the population (+0.458**), UAA per household farm (+0.553**);
- Significant relationship with indicators: amount of drinking water supplied to the population (+0.389*) and LLU per household farm (+0.319*);
- Indirect (inverse) relationship with the number of household farms (-0,650**);
- Weak relationship with the number of persons who work on the household farm (+0.257), number of days worked / person on the agricultural household farm (+0.298).

CONCLUSIONS

The compound socio-economic indices of household modernization and Romanian rural area socio-economic modernization and development (RDI, RMI, RHMI) had a decreasing trend, in the period 2007-2018; the main factors that influenced the evolution of phenomena were the following:

-increasing gap between rural communities in terms of modernization and socio-economic development of rural area and of rural household modernization in Romania;

-shift of counties in the lower part of the ranking regarding the modernization of the Romanian rural household modernization and rural socio-economic modernization;

-increased appreciation of modernization and socio-economic development, mainly in peri-urban areas

-another cause, yet not tested, is the absence of data at county level on the non-agricultural economy, as the main economic indicators mainly refer on agriculture. Thus, the depreciation of economic indicators is strongly linked to the agricultural activity, yet significant depreciations are noticed in the case of demographic and social indicators.

The peri-urban rural areas have a more diversified economy, with a mixed economy (agriculture, industry and services), and their agriculture is adapted to the demand of sales markets.

The rural household is adapted to its environment, it is not a competitive household, it continues to represent a refuge and a buffer in the face of changes and economic crises. Its basic activity is still agriculture, which generates low and unreliable incomes, but at the same time ensures the survival of rural household on short term.

The evolution of the socio-economic development and modernization of the Romanian rural area over time has not led to rural household consolidation, it has rather led to the perpetuation of the subsistence status in most rural areas of the country. The rural household is at risk of disappearing due to the lack of attractiveness of rural areas, the young population leaves the countryside, preferring to go to town or abroad for a better living, while the elderly people remain in the village, and there are no other young family members to take over the farming activity. Until this demographic decline does not stop, the rural household is at risk of not being able to

support the existence of some rural communities.

There is a strong direct link between the modernization process, the rural socio-economic development respectively and the process of rural household modernization, which tends to intensify. The evolution of the importance of dimensions related to the analysed processes (modernization, development of rural areas, rural household modernization respectively) reveals the following situations:

- The rural socio-economic development process largely depends on the demographic, economic and ecological phenomena.
- The rural socio-economic modernization process depends on social and demographic phenomena: the link with the social dimension was strongly significant and growing throughout the investigated period; the link with the demographic dimension had an increasing evolution, from a weak link at the beginning of the investigated period to a strong link at the end of the period; the link with the ecological dimension is strongly significant throughout the period; the link with the economic dimension is losing importance.
- Rural household modernization was materialised at three levels: the link with the demographic and economic dimensions was strongly significant and relatively constant; the link with dwelling modernization also has a strongly significant influence on the rural household modernization index, this increasing in the investigated period, from a strong influence in 2007 to a significantly strong influence in 2018.

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