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## DEMOGRAPHIC, SOCIAL AND ECONOMIC IMPLICATIONS OF RURAL POPULATION AGING

LORENA FLORENTINA CHIȚEA<sup>1</sup>

**Abstract:** Romania, like most European countries in recent years, is faced with a worrying demographic phenomenon of population aging with multiple consequences of demographic, social, cultural, economic, political nature etc. The main factors that caused this situation were: declining birth rates, rising life expectancy and external migration; reducing or stopping this population decline must be achieved by improving the combined result of the three mentioned factors. The implications of aging are complex and are felt both at the macroeconomic (influencing economic growth, pension and health care system functionality, investments etc.) and micro economic level (individual level, which must adapt their behavior to the evolution of the economic environment). The present paper aims to surprise the rural population aging phenomena from demographic and social perspective. The working hypothesis is that, as the county shows a more pronounced level of rurality, so its population is aging, less educated, with high employment in agriculture, generating low levels of competitiveness.

**Key words:** rural areas, demographic ageing, dependency, employment

### INTRODUCTION

Romania, like most European countries, is confronted with the complex economic and social phenomena of a population under slow but continuous demographic ageing. The main factors that generated this situation are the following: birth rate decrease, life expectancy increase and external migration; by the combined effect of improving the three factors, the demographic decline could be decreased or stopped.

From the competitive point of view, in the last years, Europe lagged behind compared to other advanced economies, and this gap has been intensified as a result of the low productivity growth. Thus, it is absolutely necessary to improve the human capital, the performance of research, education and training systems by encouraging innovation, which is essential for increasing productivity.

In this context, the problems investigated in the paper with regard to the demographic ageing, the precarious education and high employment in agriculture represent important issues both at national and European level; thus, competitiveness increase by investing in human capital becomes a priority.

### MATERIAL AND METHOD

The present paper intends to evaluate the rural areas at county level from the point of view of the aging of the population, depending on the rurality level.

To establish indicators battery I left the set of demographic indicators proposed Balestieri, 2014, when its model for assessing competitiveness. The indicators are selected according to the competitive impact reflected by each of them. The main working hypothesis is that in the case of counties with higher rurality levels, the population is older and less educated, resulting in low competitiveness.

Based on these indicators of social demo will achieve a competitiveness analysis in close to the degree of rurality. The data source was the National Statistics Institute (tempo Online 2014). The data collected were processed using SPSS, using mainly factorial method.

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## RESULTS AND DISCUSSIONS

Given the fact that human resource is one of the key factors of development (Florian, V., 2004), population aging affects the entire system of social, economic, cultural and political. Even if Europe is guided by model development neo-endogenous (in development is achieved as a result of interaction between local forces and global (Lowe et al., 1995)) and in Romania prevailing patterns of endogenous development (the development is based on a balance of local resources - natural, human and cultural - (Picchi, 1994)), the problem of an aging population - as a factor in depreciation of human capital - is very important regardless of the type of development to which we refer. Both for Europe and for Romania, is very important, at present, increasing competitiveness can not be achieved with an aging population (Europe 2020).

### Rurality level

The starting point is the definition of the rurality concept, which continues to be the main topic of ample research works and debates, several points of view existing with regard to its definition.

In the year 2010, at the European Union level, a new typology of urban/rural areas was adopted starting from the revised OECD typology, which takes into consideration both the population density and the presence of large urban units and their share in the total population of the region. The purpose of this new methodology is to provide a common basis for all the European Commission reports and publications. The typology agreed by the European Union establishes 3 categories of regions: predominantly rural regions, intermediate regions and predominantly urban regions.

### Ageing rural population – demographic and social evaluations

The indicators used in assessing social and demographic phenomenon of aging are:

- ageing rate – reflecting the ageing level of a society, with great implications from the social and economic point of view;
- structural dependency ratio – the ratio of the working-age population to the non-working age population, reflecting the pressure exercised on the working-age population by the inactive population;
- population replacement rate – reflecting the replacement of elderly population by the young population;
- employment rate in agriculture – reflecting the employment of the rural population of working age in agriculture.

**Table 1. The indicators used in assessing social and demographic phenomenon of aging by rurality level, in the year 2015**

	Predominantly urban	Intermediate	Predominantly rural
Rural population's ageing rate	91,66	106,52	119,61
Rural population's dependency ratio	42,53	49,97	53,08
Rural population replacement rate	103,46	89,57	89,33
Rural population's employment rate in agriculture	22,32	35,59	38,58

Source: tempo online, INS, 2015

These indicators will be analyzed both individually and in close connection to the rurality level.

The indicators will be analyzed at county level, for the rural area, grouping the counties into 5 categories depending on the level reached by the investigated indicator: 1. Very low, 2. Low, 3. Medium, 4. High, 5. Very high.

**Table 2: Distribution of counties according to the ageing rate, in the rural area, in the year 2015**

Groups	Average rural population's ageing rate %		Average dependency ratio of rural population %		Average rural population replacement rate %		Average employment rate in agriculture of the rural population %	
Very low level	CT, Sb, Is, Bv, SM, SV, CV, BC, TM, Vs, BN, IIF, MS, BH, GL	82,95	IIF, TM, CT, SM	43,41	Vs, Is, SV, BT, BC, NT, GL	69,95	DJ, TL, HD	53,58
Low level	HR, MM, BT, DB, NT, AR, TL, VN, PH, CL, IL, SJ	110,36	AR, TL, MM, GJ, GL, Sb, DB, PH, BC, Is, HR, CS, Bv	48,45	SM, BN, Sb, VN, GJ, SJ, IL, CL, BR, MS, MH, MM, DB, GR, DJ, BH, Bv, CT, HR, TM	87,36	CS, AB, CJ, OT, BT, BR, MM, MH	45,92
Medium level	GJ, CJ, AB, AG, BR, GR, MH, CS, BZ, DJ	136,68	AB, NT, AG, BN, BH, CV, HD, MS, SV, CJ, VN, OT, GR	52,19	CV, OT, AG, BZ, AB, PH, VL, AR, TL, CJ, IIF	98,11	SV, CL, SM, VN, CT, SJ, Vs, VL, BZ, BH, IL	38,90
High level	VL, OT	173,52	VL, CL, BR, MH, BZ, DJ, Vs	56,46	TL, CS	113,67	AG, BN, CV, GL, AR, HR, NT, TL, TM, MS, GR	32,74
Very high level	HD, TL	198,68	IL, SJ, BT, TL	60,49	HD	136,87	IIF, PH, BC, Sb, Bv, DB, GJ, Is	25,56

Sursa: Tempo online, INS 2015

The ageing rate is the ratio of the population aged over 65 years to the population aged 0-14 years, in 100 persons, and reflects the population's demographic ageing with multiple long-term implications on the population structure as well as at social, economic, cultural and political level.

The average ageing rate is 108.02%, indicating an old-aged population. The values of this indicator reveal high discrepancy between counties, even though the ageing tendency is omnipresent: the lowest values are found in the counties Constanța 66.64%, Sibiu 69.53%, Iași 67.85%, while the highest values are found in Teleorman 208.72%, Hunedoara 188.63%, Olt 177.40%. In this case there is a directly proportional relation between the ageing rate and the rurality level.

In the period 2010-2015, the average ageing rate increased from 103.54% to 108.02%. It is only in the predominantly urban counties that this indicator decreased, from 109.10% in the year 2010 to 91.66% in 2015, mainly due to the population's migration to the rural areas limitrophe to

the large cities. The highest increase of the population's ageing rate was found in the predominantly rural counties, from 112.37% in the year 2010 to 119.61% in the year 2015.

The ageing trend has been maintained in most counties, except for: Ilfov, where the ageing rate was down by 17.44%, Cluj by 5.89%, Ialomița by 3.45%, Brașov by 0.84% and Călărași by 0.17%.

The highest ageing rate increase values are found in the following counties: Vâlcea – 28.90%, Olt – 26.10%, Hunedoara – 20.04%, Gorj – 17.21%, Caraș-Severin – 16.36%, and Teleorman – 15.02%.

The macro-region with the highest ageing rate increase is macro-region four with 11.76 %, while the other macro-regions have more moderate increases – 2.19% in macro-region three, 2.78% in macro-region one and 3.84% in macro-region two.

Rural population's ageing generates additional costs for elderly people's maintenance and care in the communities, which limits the investment process that could generate new incomes for the community. In order to limit these costs, measures to maintain the elderly people in the productive community as long as possible can be taken. Unfortunately, in the rural area, this implies underemployment in subsistence farming.

The demographic ageing implications are complex and are felt both at macro-economic level (impact upon economic growth, functionality of the pensions and healthcare system, investments, etc.) and at micro-economic level (at individual level, people having to adapt their behaviour to the economic environment evolution).

If in Romania the social problems generated by demographic ageing are not properly managed, the dependency ratio pressure will raise serious problems for the state budget, taking into consideration the fact that the state budget is the main income source for elderly people.

The demographic dependency ratio is the ratio of the number of "dependent" age persons (persons under 15 years old and older than 64 years) to the population of working age (15-64 years), on percentage basis.

The dependency ratio is an indicator of the demographic pressure on the productive population, being one of the most important indicators used to evaluate the financial incidence of the ageing process on the pension system. The indicator does not take into consideration the "dependent" persons who are economically active and the "dependent" persons of working age.

The higher the dependency ratio, the higher the pressure exercised by the inactive population on the active population. In the absence of firm economic development policies, population's ageing may slow down the population's living standard increase.

The average dependency ratio in the Romanian rural area is 51.38%. The highest pressure is found in the counties Teleorman 63.47%, Botoșani 61.13%, Sălaj 59.46%. The lowest pressure is found in the county Ilfov 42.53%, followed by Timiș 42.99% and Constanța 43.55%.

The rurality level has a direct effect in determining the demographic dependency ratio, so that when the county has a higher rurality level, the pressure of the dependent population on the population of working age is also higher.

In this context, the hypothesis according to which the dependency ratio in the rural area is higher when the rurality level of the county is higher has been confirmed.

The average dependency ratio in the rural area decreased from 54.71% to 51.38% in the period 2010 – 2015. This situation was determined by the decrease in number of the dependent population – population under 15 years old (by 5.24%) and of the population older than 65 years (by 1.82%) – and by the increase of the number of population of working age (by 1.55%)<sup>2</sup>.

If we have in view only the dependency ratio evolution, the situation would be quite encouraging, but if we consider the evolution by age groups, a series of problems emerge. The elderly population will disappear and would be replaced by a numerous population coming from the present age group 15-64 years, while the group 15-64 years will benefit from low contingents of young population, which would result in a high demographic dependency ratio.

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<sup>2</sup>The utilized statistical data refer to the period 2010-2014

If the young population decrease rate is maintained and no economic and social policy interventions are made for encouraging the birth rate, the situation will continue to generate disequilibria at the level of the population's age structure.

The **rural population replacement rate** is calculated as ratio of elderly population (55-64 years) to the young population (15-24 years). This indicator reflects the demographic renewal capacity so that the population can continue to carry out the economic and social activities in the respective communities.

In the case when this indicator is higher than 100, the population has a fast growth tendency, if it is equal to 100 it expresses stagnation, and if it is lower than 100, the number of the population is decreasing.

In the Romanian rural area, we can notice that 100 working age persons aged 55-64 years will be replaced by only 86 persons aged 15-24 years, resulting in a population deficit of 14 persons. The values of this indicator range from 63.90% in the county Vaslui to 136.87% in the county Hunedoara.

The concentration of counties in the lower part of the interval (65.85%), i.e. in the category low level and very low level of the rural population replacement rate, reveals a low level of elderly population replacement by the young population in rural Romania.

In the period 2010-2015, the average demographic replacement rate significantly increased from 75.77% to 86.42%. The replacement rate increased in most counties, except for the following counties: Teleorman (from 104.90% to 100.53%), Dolj (from 91.57% to 89.75%), Botoșani (from 70.83% to 69.25%) and Sălaj (from 87.02% to 85.58%). The highest increases are found in the counties Tulcea (from 85.11% to 111.06%), Constanța (from 66.42% to 91.63%), Ilfov (from 78.90% to 103.46%), Hunedoara (from 113.86% to 136.87%).

In the case of the intermediate and predominantly rural counties there are no significant discrepancies with regard to the rural population replacement rate, while the predominantly urban counties stand out with a replacement rate of 103.46%.

The population replacement rate decreases as far as the rurality level increases, so that the initial hypothesis – according to which the rural population replacement rate increases with the decreasing rurality level – has been confirmed.

The average demographic replacement rate in the rural area, regardless of the rurality level, is on the rise, namely:

- the predominantly urban counties experienced increases from 78.90% in the year 2010 to 103.46% in the year 2015;
- the intermediate counties experienced increases from 76.03% in the year 2010 to 89.57% in the year 2015;
- the predominantly rural counties experienced increases from 79.15% in the year 2010 to 89.33% in the year 2015.

### **Employment rate in agriculture**

The employment in agriculture of total population aged 15-64 years is a relevant indicator for competitiveness assessment, so that the higher the values of this indicator, the lower the competitiveness at county level, as agriculture is an economic activity with lower capital gain, at least at the present moment. Competitiveness in agriculture could be increased in two modalities:

- by introducing innovation both in the agricultural production structure and at the level of farm endowments and production means;
- increasing the diversification of economic activities, by encouraging those activities that best put into value the local advantages.

The average agricultural employment level in the rural area is 35.93% in total population aged 15-64 years. The lowest levels are found in the county Ilfov 22.32%, Prahova 22.33% and Bacău 23.74%, while the highest values are found in the counties Hunedoara 57.42%, Teleorman 52.33% and Dolj 50.99%.

Across macro-regions, the hierarchy of the employment rate in agriculture of the rural population aged 15-64 years is the following: macro-region three (31.99%), macro-region two (34.59%), macroregion one (37.07%) and macro-region four (41.40%).

The rurality level directly influences the employment rate in agriculture, i.e. the higher the rurality level, the higher the employment rate in agriculture of the population of working age, so that the initial hypothesis has been confirmed.

The large number of people who are involved in farming activities represents a first premise of the low labour productivity level and of the agricultural sector competitiveness implicitly.

A major constraint in reaching the convergence between the agriculture competitiveness of our country and the agriculture of other EU member states continues to be the labour force employed in agriculture, oversized compared to the EU standards.

A significant part of the population employed in agriculture is vulnerable from the social point of view, old-aged and with a very low educational level; this resulted in the existence of real poverty bags in the Romanian rural area, under the background of the low capacity of rural communities to attract investments. This situation acts as a vicious circle, so that the absence of investments in agriculture as well as in other non-agricultural sectors leads to the employment of the largest part of the population in the subsistence, non-productive and non-competitive farming sector, resulting in low incomes. This mechanism also limits the access to innovation in agriculture, as well as in the agro-processing sector, innovation being the starting point in increasing productivity and agricultural competitiveness.

In the rural area, the high level of employment in agriculture is also determined by the existence of major problems on the labour market, which constrain the attraction of the population into non-agricultural activities; among these problems, the most important are the following:

- inadequate structure of local labour force: mismatch between the existing jobs and skills;
- lack of agricultural job diversification;
- difficult access from the place of residence to a job adequate to people's education and training.

### **Demographic potential of rural areas**

For an overall picture of the demographic and social situation of the Romanian rural area, the counties were grouped into 3 categories, depending on the demographic potential of the rural areas (rural areas with low, medium and high demographic potential). This classification was made by each rurality level.

Starting from the investigated demographic indicators, i.e. the demographic ageing rate, the replacement rate, the dependency ratio, the counties were assigned scores from 1 to 5 depending on the favourability level of each demographic indicator in part. Finally, each county obtained a cumulated score, according to which 3 groups were established for each rurality level: intermediate rural area with low, medium and high demographic potential; predominantly rural area with low, medium and high demographic potential. The urban area is not subject to any classification, as only one county is included here, which also has rural population.

Taking into consideration that the favourability scores were not assigned for the entire Romanian rural system and not separately by the rurality level, there are no significant differences with regard to the demographic potential between the intermediate areas and the predominantly rural areas; yet a slight gap is maintained in favour of the intermediate areas by each favourability category.

**Table3 :**  
**Demographic and social indicators by the 3 favourability classes**  
**in rural area, in the year 2015**

Rural subsystems	Ageing rate	Replacement rate	Dependency ratio	Share of population employed in agriculture
Urban area	91,66	103,46	42,53	22,32
Intermediate rural area with low demographic potential	129,21	84,23	54,71	43,58
Intermediate rural area with medium demographic potential	113,82	91,08	50,37	36,49
Intermediate rural area with high demographic potential	82,69	90,67	46,57	29,53
Predominant rural area with low demographic potential	151,76	89,59	57,95	43,68
Predominant rural area with medium demographic potential	115,47	83,41	54,08	38,22
Predominant rural area with high demographic potential	100,42	93,88	48,88	35,3

Source: tempo online, INS, 2015

This classification is useful for an accurate picture of the demographic phenomenon. For instance, if we evaluate the rural subsystem of the county Hunedoara only on the basis of the ageing rate indicator, we could say that the demographic situation is disastrous, as the ageing rate is extremely high, i.e. 188.63% (one of the highest at national level); however, we can also notice that the county Hunedoara has the highest replacement rate, i.e. 136.87%, which indicates demographic regeneration, so that the situation is not so critical even though there is a slow and continuous population ageing process.

### CONCLUSIONS

This classification is also useful in orienting the national, regional and local policies for solving up the specific problems, namely:

- in the areas with high demographic potential the interventions should be targeted on business sector stimulation, mainly for those activities that have in view the introduction and adaptation of certain innovative products and processes, being also necessary to encourage the linkages between education, the research institutes and the business representatives in order to supply well-trained labour force, etc.;

- in the areas with low demographic potential, with a high population aging rate, a high demographic dependency ratio and a low replacement rate, social protection measures are needed through the development of elderly care services, as well as measures for natural population increase, etc.

In other words, depending on the intensity of demographic changes, the rural areas need different support strategies.



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