
Key Features of the Internal Migration Process in Romania - An Economic and Historical Perspective

Tudorel ANDREI, Professor, PhD
(e-mail: andreitudorel@yahoo.com),
The Bucharest University of Economic Studies

Andreea MIRICĂ, Assistant Lecturer, PhD
(e-mail: miricaandreea89@gmail.com)
The Bucharest University of Economic Studies

ABSTRACT

Internal migration is one of the most important drivers for reducing poverty and facilitating economic development. However, the factors that affect population mobility within a country, as well as the relationship between internal migration and economic development, are difficult to understand. This paper aims to provide an analysis of the population mobility in Romania, so that one understands the relationship between the economic development and internal migration. In order to achieve this objective, official data provided by the National Institute of Statistics as well as various statistical and econometric techniques (simple regression, entropy) are used. The research led to three major findings: (i) the internal migratory process is characterized by 7 historical periods, highly related to the social, economic and political phenomena that shaped the Romanian history; (ii) economic development of a county and the internal migration inflows are highly dependent; (iii) internal migration flows concentrate towards just four counties: Bucharest, Timisoara, Cluj and Constanta, leading to major agglomerations. These findings are highly valuable for the decision makers at county level.

Keywords: internal migration, historical perspective, economic development, internal migration flows, internal migration process

JEL Classification: J110

1. INTRODUCTION

Internal migration is a very important driver for reducing poverty and increasing well-being (Deshingkar and Grimm, 2004). In this respect, Deshingkar (2006 p.1) argues that “it is an important driver of growth in many sectors including agriculture, manufacturing, construction, coastal economies

and services". Furthermore, Tacoli (2009) points out that population mobility may address environmental challenges.

It is crucial to understand internal migration and the relationship to economic development in order to design suitable policies that facilitate development, promote workers' rights and prevent food shortages due to the lack of balance between the number of inhabitants in urban and rural areas (Afsar, 2003; Satterthwaite et al. 2010). However, such an in-depth understanding of this phenomenon is not easy to achieve, due to at least two reasons. Firstly, because each country may experience different phases of the internal migration process, in different historical periods. For example, in the case of Zambia, internal migratory flows were shaped by a single industry, cooper mining: when the industry registered an ascending trend, people moved to urban areas, when cooper prices lowered, people moved back to rural areas (Girard and Chapoto, 2017). Secondly, there are several particularities of internal migration to urban and rural areas, depending on the level of development of a country. For example, according to Statistics New Zealand (2007), migration to urban areas in this country is determined by economic reasons or the need to pursue a certain level of education, while migration to rural areas may be determined by environmental factors. With regard to metropolitan areas in the United States, Wright et al. 1997) observed that for all categories of workers, internal relocation is determined by industrial reorganization.

In this context, the overall objective of this paper is to perform an analysis of the population mobility in Romania, so that one might understand the relationship between the economic development and internal migration. Achieving this objective means answering the following four research questions:

1. How did the internal migration process evolve in Romania over time?
2. What were the particularities of the population mobility in different phases of the internal migration process?
3. How strong is the relationship between the economic development of a county and the internal migration flows?
4. Did internal migration lead to the creation of major agglomerations?

The second section of this article presents the methodology used in order to answer the above questions. The third section will present the results. The results section is organized into four subsections each addressing one of the above research question. Finally, some conclusions will be drawn, pointing out the implications of the findings and future research directions.

2.METHODOLOGY

In order to answer the first research question, data from The Demographic Yearbook, 2015 edition, provided by the National Institute of Statistics is used. The publication offers a series of useful data for characterizing internal migration between 1968 and 2014 based on various criteria (see pages 535-584). Based on these data, the historical periods of the internal migration process were identified and characterized. In this respect, several descriptive indicators were computed and graphically represented: the internal migration rate; the average internal migration flow; the ratio between departures and arrivals for urban and rural areas; the ratio of departures to arrivals by type of area of residence of the departure and arrival places; the average age of persons that changed their permanent residence, overall and by area of residence.

The second question is briefly addressed based on the available literature. The literature was selected in order to understand the context of change of residence to another county in Romania. The analysis is performed separately for the periods before and after the Romanian Revolution in 1989, as this event led to major economic, legislative, political and social changes.

The third question is the most complex one of this research, because in order to understand the relationship between economic development and internal migration, one must have a clear picture of the internal migratory flows. Firstly, it is necessary to clarify the concepts used (how do we define the internal migrant for the purpose of the analysis?). Secondly, it is necessary to identify a reliable data source. Thirdly, one must specify the level of analysis. These three steps are described in the following three paragraphs.

According to Rees and Kupiszewki (1999, p.553), change of residence is “*the only strictly comparable measure of internal migration*”, while “*the most crucial attributes are age and sex*”. Only one aspect of population mobility was considered, namely permanent internal migration, defined as a permanent change of residence. Such a definition is proposed by Rees and Kupiszewki (1999). Scientific literature often uses the concept of life-time migrant, as defined by the United Nations Department of Economic and Social Affairs in 2010, to name migrants that have a different permanent residence compared to the one declared by the mother at birth (see for example Ghețău, 2018; Rotariu, et. al 2017). The internal migration flow, referred to in this paper, is defined as the number of life-time migrants entering or leaving the county in Romania.

In order to assess population mobility at the regional level, Population and Census data from 2011 were used. The census was chosen because in

countries that experienced the post-Soviet era, some persons may choose not to declare their residence when they move to another area, making administrative registers unreliable; moreover, for Romania, there is no survey designed to capture migration history like in the case of Estonia (see Sjoberg and Tammaru, 1999).

In order to determine whether a person is a life-time migrant, his/her residency declared at the census was compared with the residency of the mother at birth (questionnaire P, question 14 within the Census form). In this paper we will assess only the migration between the counties, without taking into account the changes in the permanent residence within each county. After analyzing the data, two categories of persons were identified: those who have the same residency as when they were born, and those who changed their county of residency. These categories don't account for changes of residency between the birth date and the census date, but simply compare the residency at the census date with the one at birth. Mobility was analyzed for the entire population as well as for subgroups born in certain periods. For the entire population as well as for each subgroup, the share of those who declared another county of residency compared to the one at birth, was computed. The results are presented at national level as well as by county.

In order to answer the third question, for each county of Romania, the share of changes in the permanent residency at county level in the total residency changes at national level is computed (y_i^m). Then in order to assess the relationship between the level of development at county level and population mobility, a simple regression (Andrei and Bourbonnais, 2017) was performed, between this indicator and the share of the GDP at county level in the total GDP (y_i^{PIB}). The regression is based on the following formula:

$$y_i^m = b + ay_i^{PIB} + u_i, u_i - \text{whitenoise} \quad [1]$$

The estimations do not include the data for Bucharest.

The fourth question is highly relevant in the context of this research, as spatial distribution of population defined in terms of population concentration is "*the single most significant aspect of internal migration*" (Rees et al. 2017 p. 2). In order to assess to what extent the population distribution as well as the permanent migrants distribution changed at county level, the entropy was computed (Guiasu, 1966) based on the distribution of the resident population by county and the distribution of the population that changed the residency at county level. In order to compute the entropy for the two data series, the following formula was used:

$$E = - \sum_i y_i \log y_i \quad [2]$$

3. RESULTS

3.1. How did the internal migration process evolve in Romania over time?

In this subsection, some features of internal migration will be identified using the data from the Demographic Yearbook, 2015 edition. These features allow us to assess the historical evolution of the internal migration process in Romania, overall, by area of residency and by age.

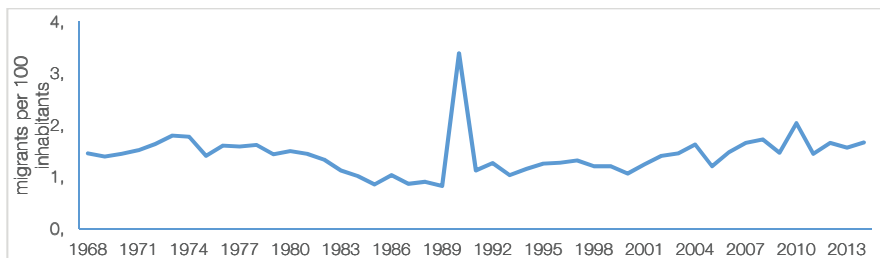
Firstly, one can observe several aspects related to the evolution of internal migration during the period 1968 - 2014. Figure 1 presents the evolution of the internal migration rate between 1968 and 2014. Analyzing these data one can distinguish seven historical periods of the internal migration process: 1968 – 1974, 1975 – 1980, 1980 – 1989, 1990, 1991 – 2004, 2005 – 2010 and 2011 – 2014. For each of these periods, the average annual migration flow was computed. The results are displayed in figure 2. Based on these two figures, the historical periods of the internal migration process in Romania are briefly characterized below:

- 1) Between 1968 and 1974, internal migration grows together with the development of industry and constructions. In 1974, domestic migration grew by more than 90000 people compared to 1968. Also, one can observe an annual relative increase in the internal migration flow for this period. In 1974, the internal migration flow maintained at the level of the previous year;
- 2) Between 1975 and 1980, there was a stabilization of the internal migration flow. The internal migration flow in 1975 was over 20% lower than in the previous year and almost 7% lower than the annual average of the migration flow between 1968 and 1974. As a whole, the average annual migration flow was 335000 people, 4.3% higher than the annual average of the previous period;
- 3) Between 1980 and 1989, there was a decrease in the internal migration flow. Thus, the average annual internal migration flow at the level of the period was only 236000 persons, being nearly 30% less than the average annual flow of the previous period. The size of internal migration at the level of 1989 was half that of 1980;
- 4) In 1990 there was a spectacular increase in the number of people who changed their permanent residence. The value of the internal

- migration flow was almost 790000 persons, more than 4 times higher than in 1989. Practically, this year 3.4% the population of Romania has changed its residence. As legislative restrictions loosen, each Romanian citizen became free to choose his/her home;
- 5) Between 1991 and 2004, one can observe an increasing trend of the internal migration flow, together with relatively large fluctuations from year to year. It should be noted that between 1998 and 2008 there was a reduction of this indicator;
 - 6) Between 2005 and 2010 the annual internal migration flow registers an increasing trend with significant yearly variations. The annual average of the flow is over 358000 people, up 7% from the annual average of 1975-1980 period;
 - 7) During the 2011-2014 period the annual average value of the internal migration flow is over 300000 people, with significant yearly variations.

The evolution of the internal migration rate between 1968 and 2014

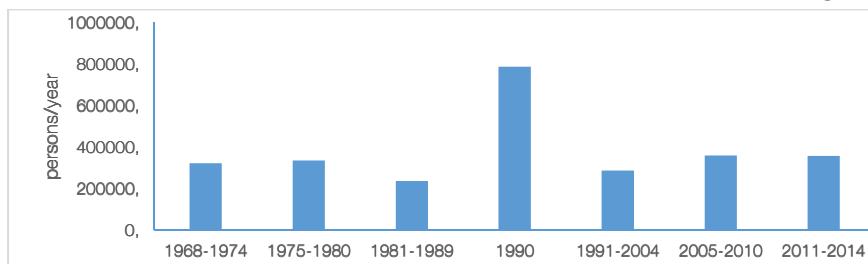
Figure 1



Source: authors design and calculations based on data from the Demographic Yearbook, 2015 edition

Average internal migration flow by historical period

Figure 2

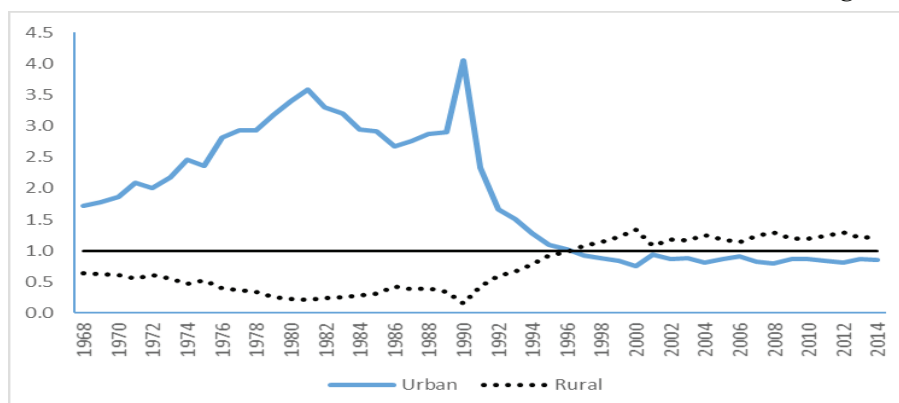


Source: authors design and calculations based on data from the Demographic Yearbook, 2015 edition

A second observation on internal migration is related to the different evolution of departures and arrivals by area of residence before and after 1989. Figure 3 shows the ratio between total departures and total arrivals for urban and rural areas. The ratio of arrivals in urban areas from rural areas and the arrivals in rural areas from urban areas calculated for the 1968 - 2014 period are presented in Figure 4. The results obtained show that before 1989, most of the arrivals in urban areas were recorded as a result of rural departures, a phenomenon that has diminished since the Revolution. Furthermore, since 1997 there has been an increase in the share of internal migration in rural areas as a result of urban departures. In 1968 60% of urban arrivals were due to rural exits, while in 2014 they accounted for 41%. Moreover, in 1968, arrivals in rural areas due to the departure of urban people account for 25%, while this ratio was over 60% in 2014.

Ratio between departures and arrivals for urban and rural areas

Figure 3



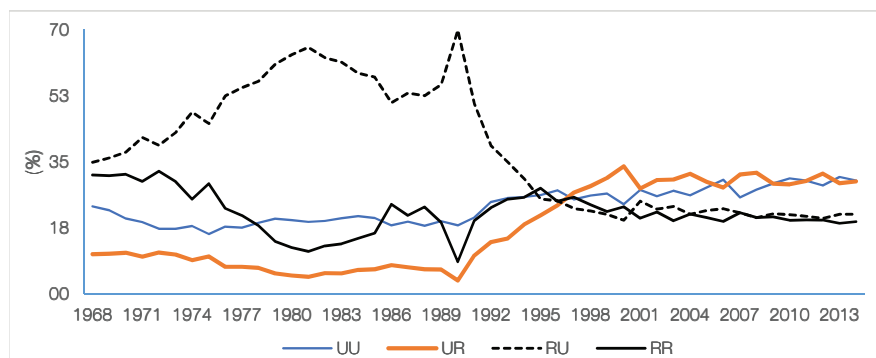
Source: authors design and calculations based on data from the Demographic Yearbook, 2015 edition

The graph in Figure 4 shows the evolution of the ratios of the four types of internal migration by the place of departure and the place of arrival of the person: from urban to urban areas (the UU line), from urban to rural areas (the UR line), from rural to rural areas (the RR line) and from rural to urban areas (the RU line). Thus, by 1990, the largest share of migratory flows in each year was represented by rural departures towards urban areas: they increased continuously between 1968 and 1980, from 35% to over 63%. Since 1981, their share has started to decline, reaching 53% in 1988. In 1990, their share increased to 70%, and in the period that followed, they declined, reaching 21% in 2014. However, the migration flow from urban to

rural areas evolved quite differently: until 1990, the flow from urban to rural areas had a small intensity, less than 10% of the total number of people who changed their residence falling into this category; since 1990, when the share of this category was 4%, this flow increased in intensity, accounting for about 34% of total domestic migration in 2000; starting with 2000 the intensity of this flow has a flat evolution, around 30%, with variations from one year to another of at most 2pp. Until 1989, the internal migration flow represented by departures from one city to another was relatively low, their share being around 20%, with relatively low oscillations from one year to another. During the socialist period, between 1968 and 1989, the mobility of the population, represented by the change of residence from one rural area to another rural area, decreased continuously. After 1990, the four internal migration flows have radically changed: urban departures to rural areas and urban departures to other urban areas reached a value of around 30%, each while the other two categories of streams, rural-urban and rural-rural, reached a value of around 20%, each.

The evolution of the ratio of departures to arrivals by area of residence

Figure 4



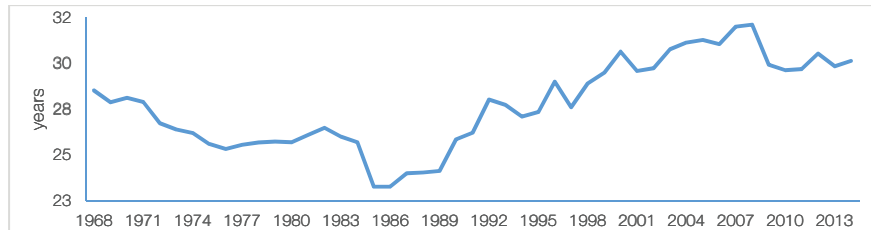
Source: authors design and calculations based on data from the Demographic Yearbook, 2015 edition

Another important feature of internal migration is related to the age at which people change their permanent residence. Figure 5 shows the evolution of the average age of people who have changed their permanent residence within the country. Until the year 1986 there is a constant decrease of the average age. Thus, if at the level of 1968 the average age of the persons who changed their permanent residence was 28.4 years, it decreased in 1986 by 4 years. Since 1987, average age has been growing steadily until 1992, reaching 28 years. Until 2008, the average age increases, with certain variations from

one year to the next, reaching a maximum of 32 years. Over the past six years, there has been a downward trend in the average age, reaching 30 in 2014.

Average age of persons that changed their permanent residence

Figure 5

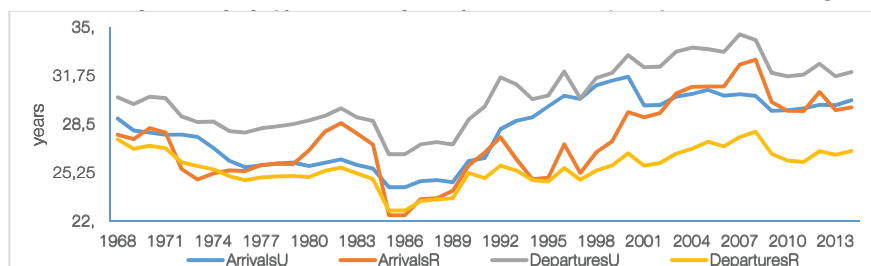


Source: authors design and calculations based on data from the Demographic Yearbook, 2015 edition

Figure 6 shows the evolution of the average age of people who have changed their permanent residence on four flows: people arriving in the urban area, people arriving in the rural area, people who left the urban area and people who left the rural area. The obtained results show different evolutions for the periods 1968 - 1989 and 1990 - 2014, respectively. If in the first stage, the four series have a downward trend, in the 1990 - 2007 period they are on an ascending trend. Overall, the highest average age is registered among those leaving the urban area, and the lowest among those leaving the rural area. Moreover, the gap between the annual values of the two series increases from 2.8 years in 1968, to 6.9 years in 2007. It should be noted that before 1989 the value of the gap was between 2 and 3, while after 1992 all the values are higher than 5. From 2008 until 2014, there is a slight reduction in the average age for people in the four categories.

Average age of persons that changed their permanent residence by area of residence

Figure 6



Source: authors design and calculations based on data from the Demographic Yearbook, 2015 edition

3.2. What were the particularities of the population mobility in different phases of the internal migration process?

Firstly, the internal migration process in Romania during the socialist era will be briefly described. Scientific literature offers several papers that assess the size and factors that have led to internal migration to Romania over the last century (see for example Sandu, 1984; Sandu, 1987). The research field expanded after the Romanian Revolution in 1989 with other significant works (see for example Ghetau, 2018; Rotariu and Mezei, 1999, Rotariu et al. 2017). All these works point out that for certain periods during the communist era the intense process of industrialization was accompanied by a high degree of urbanization. In this context, people were encouraged to move from rural to urban areas.

Secondly, the internal migration process in Romania after 1989 will be analyzed. Looking at this process, from a macroeconomic perspective, during the transition period after 1989, Horvath (2016) points out that it was determined by the change in the administrative regulations that no longer compelled citizens to move to highly industrialized cities, as well as the deindustrialization process that caused a massive relocation from urban to rural areas. Analyzing internal migration from a broader perspective, Sandu and de Jong (1996) point out that the intention to relocate is influenced by personal factors (family values, age, degree of urbanization, life satisfaction), social factors (political values, employment) and economic development.

In order to fully understand the internal migration process during the transition period, a more in depth analysis is needed with regard to social, economic and personal variables that act as its determinants. With regard to unemployment as main social driver of internal migration, Bornhorst and Commander (2004), analyzing unemployment rates at regional level in 2001 compared to 1991, observed a very small decrease in regional disparities in Romania as well as other transition countries. Furthermore, the authors point out that unaffordable rents are the main causes of this issue. Considering the 1990-2011 period, Torok (2014) identifies two sub periods with opposite trends in the flow of internal migrants in Romania: 1990-1996 (when people moved from rural to urban areas and mainly from East to West) and 1997-2011 (when people moved from urban to rural areas, either because of the worsening economic conditions in major cities or the suburbanization process). A decision to move to another area, with better employment opportunities, is highly influenced by the personal adversity to risk, usually higher in the case of those living in rural areas (Pop et al, 2016). Bunea (2012) points out several economic factors that affect internal migration at county level in Romania: real GDP per capita, density of public roads, infrastructure development (sewage pipes, natural gas network, drinking water supply, urban green space areas).

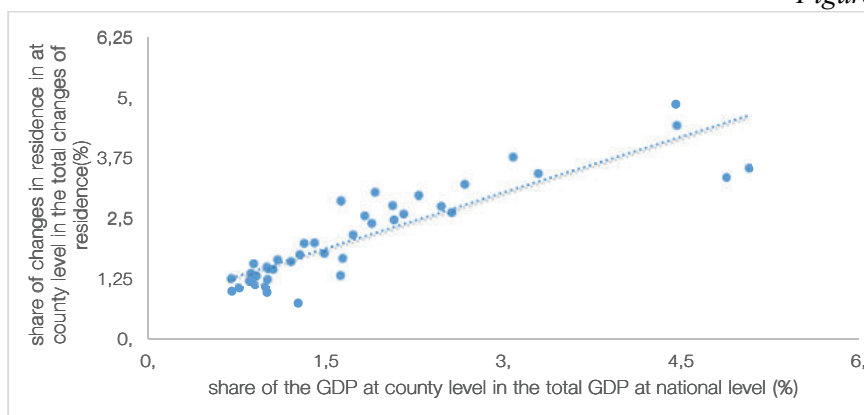
Up to this, this section has presented general patterns of internal migration at national level for Romania before and after 1989. However, there are several cultural and economic particularities with regard to internal migration in Romania, especially after 1989. One such example is Maramures. Maramures, an area partly in Romania and partly in Ukraine, is considered a “*single region*” due to “*the unity of the natural environment and long common history*” (Boar, 2005 p. 2). The author further points out that migration in the Romanian part of the region after 1990 occurred towards the areas in the Tisa Valley because of the strong economic, social and cultural cross-border relationships. Also, one must note that counties that attracted internal migrants (Cluj, Mures, Sibiu, Arad, Caras-Severin, Bucharest and Constanta) were considerably more economically developed, due to the historic circumstances, before the communist regime as well as during this period and after its fall (Wilfried and Ianos, 2004).

3.3. How strong is the relationship between the economic development of a county and the internal migration flow?

Figure 7 and Table 1 show the linear dependency between the share of changes in the permanent residency at county level in the total residency changes at national level and the level of development assessed through the share of GDP at county level in the GDP at national level. The linear correlation coefficient computed between these two variables is 0.95, revealing a strong dependency between the level of development and permanent residency changes. The regression shows significant results.

Dependency between the residency changes and level of development

Figure 7



Source: authors design and calculations based on data from the Population and Housing Census 2011 and data offered by the National Institute of Statistics Romania for the GDP at county level

Regression result based on equation [1]*Table 1*

	Coefficient	t - statistic	R ²
b	-2.06	-7.3	0.90
a	1.86	19.9	

Source: authors design and calculations based on data from the Population and Housing Census 2011 and data offered by the National Institute of Statistics Romania, for the GDP at county level

Comparing a person's residency at the census date with the residency declared by the mother at birth, one can conclude that 6182888 persons, representing 30.7% of the total population in Romania, had changed their county of residency. Next, Table 2 presents information with regard to population mobility, at national and county level for the entire population as well as by several time periods when migration occurred. As one can observe, there are significant differences at county level. There are 4 counties where residency changes were significantly lower compared to the national level: Olt (10.6%), Botosani (16.2%) and Maramures (17%). There are several counties where residency changes were significantly higher than the national level: Timis (44%), Hunedoara (42.2%), Ilfov (41.6%), Bucharest (40,5%), Arad (39.6%), Cluj (39.5%), Brasov (38.5%) and Sibiu (38.4%). Most frequent changes in residency occurred in counties that have strong university centres or are highly developed, having a high contribution in the national GDP. Such highly developed counties are: Bucharest and Ilfov – 26.8%, Timiș – 4.6%, Cluj – 4.4%, Brașov – 3.3%, Arad – 2.1%, Sibiu – 2.1% and Hunedoara – 1.6%. On the other hand, Olt – 1.3%, Teleorman – 1.0%, Botoșani – 0.8% and Maramureș – 1.6% have a low contribution to the national GDP. In all other counties, residency changes are near the national level.

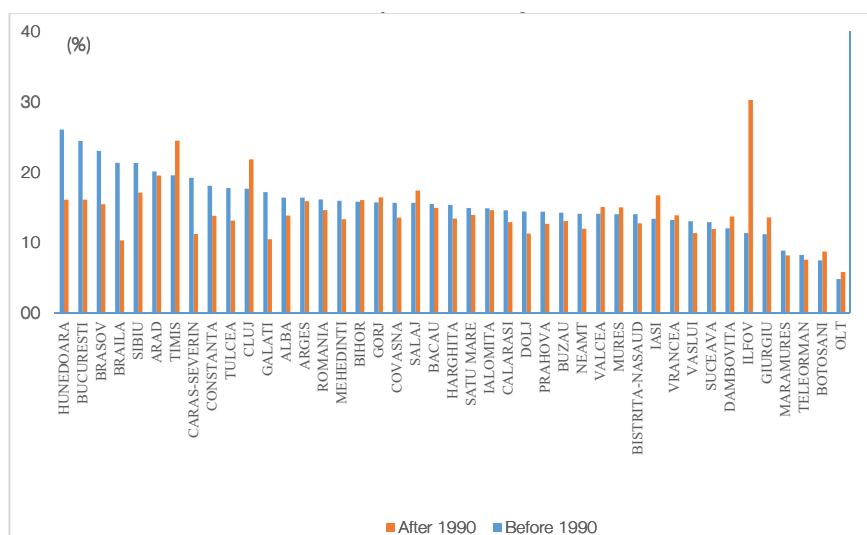
Table 2 shows for each county the share of the persons in the county for which the place of birth is in another county (indicator used for assessing the migration related to life-time migrants between counties), both for the whole period and for various sub-periods of time. The indicators calculated at the level of the sub-periods are used to compare the counties with the internal migration phenomenon. For the comparative analysis of different periods at the level of each county, but also at national level, it is recommended to determine an annual average value as a ratio between the value of the indicator in a given period of time and the number of years in that period.

Figure 8 presents the distribution of changes in residency by county before and after 1989. The results presented in Figure 8 show an increase of the share of such changes from a period to the other in the Ilfov County. The share

of the persons that changed their residency before 1989 in the total number of persons registered at the 2011 Population and Housing Census in the Ilfov County is 11.3%. However, taking into account, the changes of residency after 1989, this indicator reaches 30.3%. As a consequence, in the Ilfov County, 58.4% of the inhabitants have the same residency as the one declared by the mother at his/her birth. In Cluj, Timisoara and Iasi the share of changes in residency remained high after 1989 compared to the previous period. All these counties have strong university cities. There are several counties where people were relocated before 1989 in order to sustain the production process in growing production plants: Braila (the share of the persons that changed their residency before 1989 in the total number of persons registered at the 2011 Population and Housing Census is 21.3%), Hunedoara (26.1%), Caras-Severin (19.2%), Brasov (23%), Galati (17.2%). In all these counties, the share of the persons that changed their residency after 1989 in the total number of persons registered at the 2011 Population and Housing Census is considerably lower: Braila (10.3%), Hunedoara (16.1%), Caras-Severin (11.2%), Brasov (15.4%), Galati (10.4%).

The share of the persons that changed their residency before and after 1989 in the total number of persons registered at the 2011 Population and Housing Census

Figure 8



Source: authors design and calculations based on data from the Population and Housing Census 2011

Changes in permanent resident at national and county level (%)

Table 2

	Whole period	Values with regard to certain periods										Average annual data			Values in column 15 less values in column 14
		Before 1940	1940 - 1944	1945 - 1964	1965 - 1989	1990 - 2006	2007	2008	2009	January - October 2010	November - October 2011	1945 - 1964	1965 - 1989	1990 - 2006	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Romania	30.7	0.3	0.6	11.6	40	32.5	2.5	2.9	3.1	3.3	3.3	0.6	1.6	1.9	0.3
Alba	30.2	0.3	0.4	10.8	42.7	32.7	2.3	2.5	2.8	2.9	2.6	0.5	1.7	1.9	0.2
Arad	39.6	0.3	0.5	10.8	39.1	37.2	2.1	2.5	2.5	2.7	2.2	0.5	1.6	2.2	0.6
Arges	32.2	0.1	0.3	8.7	41.7	35	2.6	3	3.1	3.1	2.5	0.4	1.7	2.1	0.4
Bacau	30.4	0.2	0.3	11.8	38.5	34	2.6	3	3.2	3.2	3	0.6	1.5	2.0	0.5
Bihor	31.9	0.2	0.4	9.9	39.1	35.2	2.6	3.2	3.1	3.1	3.1	0.5	1.6	2.1	0.5
Bistrita-Nasaud	26.7	0.2	0.4	7.4	44.4	34.1	2.4	2.9	2.8	2.7	2.7	0.4	1.8	2.0	0.2
Botosani	16.2	0.2	0.3	8.2	37.3	40.4	2.1	2.7	3.4	3.2	2.3	0.4	1.5	2.4	0.9
Brasov	38.5	0.3	0.6	14.4	44.6	26.8	2.3	2.7	2.7	3	2.7	0.7	1.8	1.6	-0.2
Braila	31.6	0.5	0.8	18.9	47.2	23.9	1.5	1.9	1.9	1.7	1.7	0.9	1.9	1.4	-0.5
Buzau	27.3	0.2	0.5	10.7	40.8	35.4	2.3	2.6	2.8	2.7	2	0.5	1.6	2.1	0.4
Caras-Severin	30.4	0.3	0.5	14.7	47.8	27.5	1.9	1.9	1.9	2	1.6	0.7	1.9	1.6	-0.3
Calarasi	27.5	0.4	1.1	12.9	38.7	34.4	2.3	2.8	2.9	2.8	1.7	0.6	1.5	2.0	0.5
Cluj	39.5	0.3	0.5	10.7	33.2	30	3.1	4.7	5.1	5.5	7	0.5	1.3	1.8	0.4
Constanta	31.9	0.3	1.1	11.5	43.9	31	2.2	2.5	2.4	2.4	2.8	0.6	1.8	1.8	0.1
Covasna	29.2	0.3	0.7	9	43.6	33.3	2.5	2.8	2.7	2.6	2.4	0.4	1.7	2.0	0.2
Dambovita	25.7	0.2	0.3	8.3	38	36	2.9	3.3	3.6	4.5	2.8	0.4	1.5	2.1	0.6
Dolj	25.7	0.3	0.5	12.6	42.7	30.5	2.1	2.6	2.9	2.7	3.1	0.6	1.7	1.8	0.1
Galati	27.6	0.3	0.6	14.2	47.1	27	1.9	2.1	2.4	2.6	1.8	0.7	1.9	1.6	-0.3
Giurgiu	24.8	0.3	0.5	10.1	34.3	37.5	3.2	4.1	4.1	3.5	2.4	0.5	1.4	2.2	0.8
Gorj	32.1	0.1	0.2	7.6	40.9	38.4	2.4	2.5	2.7	2.8	2.3	0.4	1.6	2.3	0.6
Harghita	28.8	0.3	0.5	9.5	43	32.2	2.5	2.8	3.2	3.1	3	0.5	1.7	1.9	0.2
Hunedoara	42.2	0.2	0.4	16	45.2	28.1	1.7	2	2.1	2.1	2.2	0.8	1.8	1.7	-0.2
Ialomita	29.5	0.3	0.4	9.8	40	36.9	2.4	2.7	2.9	2.8	1.9	0.5	1.6	2.2	0.6
Iasi	30.1	0.2	0.4	10.8	33.1	33.3	3.4	4.2	4.5	4.8	5.3	0.5	1.3	2.0	0.6
Iilfov	41.6	0.1	0.2	5	22	36.1	5.6	7.3	7.9	8.8	7	0.3	0.9	2.1	1.2
Maramures	17	0.3	0.4	10.4	41	34.7	2.3	2.7	2.9	2.9	2.3	0.5	1.6	2.0	0.4
Mehedinti	29.3	0.1	0.3	9.5	44.6	33.3	2.2	2.7	2.8	2.7	1.9	0.5	1.8	2.0	0.2
Mures	29	0.3	0.6	11.7	35.7	36	2.8	3.1	3.4	3.4	3	0.6	1.4	2.1	0.7
Neamt	26	0.2	0.3	11.9	41.8	33.3	2.3	2.6	2.8	2.7	2.2	0.6	1.7	2.0	0.3
Olt	10.6	0.1	0.3	8.2	36.5	38.1	2.5	3	3.3	5.8	2.3	0.4	1.5	2.2	0.8
Prahova	27	0.2	0.4	12.6	39.9	32.4	2.4	2.9	2.8	2.8	3.5	0.6	1.6	1.9	0.3
Satu Mare	28.8	0.3	0.5	9.9	41	34.3	2.7	3	3.1	2.8	2.5	0.5	1.6	2.0	0.4
Salaj	33	0.2	0.3	6.3	40.6	38.5	2.5	3.1	3.2	2.7	2.6	0.3	1.6	2.3	0.6
Sibiu	38.4	0.3	0.5	13.2	41.5	29.3	2.5	3	3.4	3.5	2.9	0.7	1.7	1.7	0.1
Suceava	24.8	0.2	0.6	11	40.1	32.7	2.5	3	3.2	3.2	3.3	0.6	1.6	1.9	0.3
Teleorman	15.8	0.2	0.4	9.9	41.6	35.8	2.3	2.5	2.6	2.9	1.9	0.5	1.7	2.1	0.4
Timis	44	0.3	0.5	8.9	34.6	35.2	3.1	3.6	3.6	4.7	5.5	0.4	1.4	2.1	0.7
Tulcea	30.9	0.3	1.4	10.9	44.8	30	1.9	2.3	2.4	3.1	2.9	0.5	1.8	1.8	0.0
Vaslui	24.4	0.2	0.4	11	41.9	34	2.4	2.5	3	2.5	2.1	0.5	1.7	2.0	0.3
Valcea	29.1	0.1	0.3	8.2	39.7	38.3	2.4	2.8	3.1	2.8	2.2	0.4	1.6	2.3	0.7
Vrancea	27.1	0.3	0.4	9.6	38.5	37.4	2.4	2.8	3.6	2.7	2.3	0.5	1.5	2.2	0.7
Bucuresti	40.5	0.6	1.3	16.4	42	27.3	1.9	2	2.3	2.3	3.9	0.8	1.7	1.6	-0.1

Source: authors design and calculations based on data from the Population and Housing Census 2011

3.4. Did internal migration lead to the creation of major agglomerations?

Next, the results for computing the entropy based on the distribution of the resident population by county and the distribution of the life-time migrants are presented. The entropy for the first distribution is 1.537 and the entropy for the second distribution is 1.573. Thus, one can observe a higher concentration of residency changes by county compared to the distribution of the resident population by county.

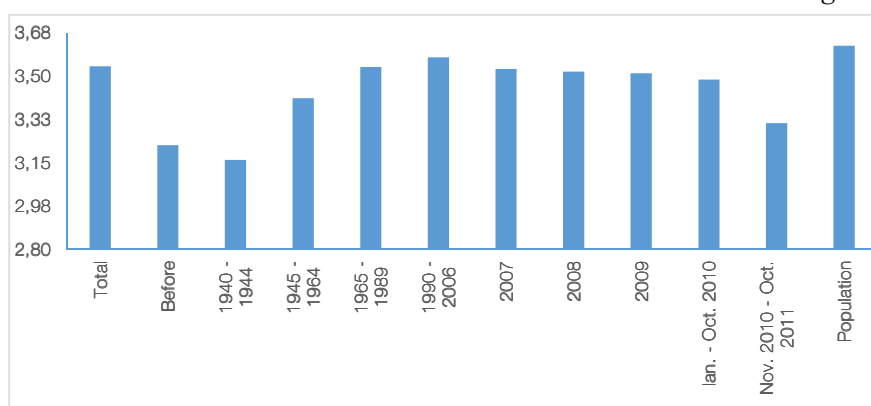
The analysis based on the entropy was extended by the year or period of when the change in the permanent residency of life-time migrants occurred. However, in order to fully understand the results of this analysis, one must also look at it in the overall data context. As a consequence, below are presented not only several results of the entropy analysis by year of periods of when the change in the permanent residency of life-time migrants occurred, but also some contextual data, such as the population distribution by age.

Persons born before 1940 represent 11.7% of the total population registered at the 2011 Population and Housing Census. Out of these persons, only 0.75% declared that they changed their county of residency. At national level 17739 persons from this age category declared that they changed their residency, most of them registered in counties where big cities are located: 25.4% of these 17739 persons had their residency in Bucharest at the Census date, 5.65% of them in Timis, 3.93% in Cluj and 3.42% in Constanta. Other counties registered values under 3%.

In order to compare the degree of concentration of changes in residency by county, for each sub period, the entropy was calculated using the distribution of residency changes by county (Figure 9). The highest diversity of changes in residency was registered for the periods 1965-1989 and 1990-2006. In these periods, changes in residency, as a result of a high population mobility are observed for all counties.

The entropy computed for the population distribution by county as well as the distribution by county of the persons that changed their residency

Figure 9



Source: authors design and calculations based on data from the Population and Housing Census 2011

4. CONCLUSIONS

This paper aimed to provide an accurate analysis of the population mobility in Romania, so that one may understand the relationship between economic development and internal migration. Specifically, the research had four objectives: to describe the internal migration process from a historical perspective, using statistical data; to highlight the most important characteristics of this process throughout history; to determine the relationship between the internal migration flow and economic development at county level and to determine to what extent internal migration leads to major agglomerations. In order to achieve these objectives, official data provided by the National Institute of Statistics are used.

The research led to several important conclusions. Firstly, 7 historical periods of the internal migratory process could be identified. These periods are highly related to the social, economic and political phenomena that shaped the Romanian history. Secondly, there is a high dependency between the economic development of a county and the internal migration inflows. Thirdly, internal migration flows concentrate towards just four counties: Bucharest, Timisoara, Cluj and Constanta. This may lead to major agglomerations over time.

These findings have important consequences for future developments of the regions that receive and lose people. For example, United Nations (1983) point out that internal relocations often result in dysfunctional families and major imbalances on the labour market. The consequences of

internal migration are severe, also because of the fact that internal migration in Romania blends with international migration, emigrants representing approximately 18.2% of the population (World Bank 2018). In this respect, Rees et al (2016) pointed out that there are three possible outcomes after an intense period of internal and international migration: “(a) re-urbanisation, (b) counter-urbanisation, or (c) dynamic equilibrium” (Rees et al 2016, p.17).

This research can be further pursued. For example, one could assess the impact of internal migration on the welfare of households affected by departures of several of its members at different points in time, like in the study of Eggar (2008). Moreover, it may be possible to assess the impact of internal migration on key social variables such as the under-five mortality rates (see for example Issaka et al 2017). However, the possibility of conducting such studies is limited by the availability of data.

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