

## NOTES ON THE DEMOGRAPHIC TRANSFORMATIONS IN POSTCOMMUNIST ROMANIA<sup>1</sup>

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**ABSTRACT.** The article presents a few of the demographic transformations in Romania in the period after the fall of the communist regime in 1989, when the new social circumstances, along with legal changes, had an undeniable effect on the manifestation of the demographic phenomena and thus on the volume and the structure of the population. The present article summarizes and also describes the transformations, with a few attempts at explaining them, without, however, aligning to any major theory that attempts to explain what has happened and to predict what will come next. In order to avoid entrapment within an enclosed discursive universe, there will be references to the situation of other countries, mainly in the geographical area of Romania and, more widely, in the European Union. The demographic phenomena that are analysed individually are fertility and mortality, which have a direct impact on the natural growth of the population. There are only a few suggestions on transnational migration in the section devoted to the changes of the population. Last, but not least, the text is a critical analysis of some of the official demographic statistics put forward by the National Institute of Statistics and even by EUROSTAT – data that is questionable or outright false and risks misleading the reader that is less familiar with the demographic situation of Romania.

**Keywords:** demographic transformations, fertility, mortality, population, postcommunist Romania

**The numerical and structural transformations of the Romanian population, 1990-2017**

*The definition of the various types of population and their transformation*

A basic precondition in order to accurately describe the evolution of a population is, one is bound to agree, that the definition of that population and the manner in which the demographic events that contribute to changes in the

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volume of that population are recorded remain constant throughout the entire period under analysis. Regrettably, in the case of Romania after 1989, there were several changes in the definitions of the terms, a fact that came about firstly in the transition from an authoritarian regime to a democratic one and secondly due to the integration in the European Union and the consequent adoption of its standards.

If we look at the volume of the population, up until 1989 the annual numbers were based on the population registered in the previous census (the surveyed population included those officially living abroad), which was subsequently adjusted annually based on the natural growth and on the net permanent migration rate (immigrants to the country and emigrants from the country that had changed their permanent address and/or citizenship). Thus, starting off from the last census conducted under the communist regime, that of 1977, it was calculated that the population of the country on the 1<sup>st</sup> of January 1990 was 23,211,395.<sup>3</sup> This is the number used as a reference point by most of the calculations regarding the subsequent evolution; it is also the number that I will use myself, despite well-founded doubts regarding its accuracy.<sup>4</sup>

On the January 7<sup>th</sup>, 1992 census, the first after the fall of the communist regime, records show what will be hereafter called a “settled population”<sup>5</sup> of 22,810,035, that is to say a drop of 400,000 individuals, way beyond the official loss of population for the years 1990-1991. This is explained by the settled population no longer including those temporarily<sup>6</sup> abroad for a period of more than six months. The same phenomenon will happen in the next census, that of March 18<sup>th</sup>, 2002, when the population, 21,680,974, was about 700,000 individuals

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<sup>3</sup> In what follows, unless otherwise stated, the numbers are taken from the publications of the National Institute of Statistics (statistic yearbooks, demographic yearbooks) or from the database (TEMPO) available on the website of the Institute. I will specify the source only when necessary.

<sup>4</sup> The lack of confidence is caused by the long time interval since the latest census, which leads to the accumulation of errors and typically an overestimation of the population. For instance, those that have emigrated illegally have not been deducted from the volume of the population. Also, as previously indicated (Rotariu, Dumănescu, Hărăguș, 2017:84), basic calculations done on the basis of annual official data on births, deaths and legal migration indicate a population smaller by about 100,000.

<sup>5</sup> This concept is related to that of “usually resident population” that would be used after Romania joined the European Union. The main difference is that in the case of the settled population the time interval taken into account is six months, while in the case of the resident population it is one year (for example, a person with a Romanian domicile that is abroad for more than six months is not part of the settled population, while for the same person to be excluded from the resident population, they would have to be abroad for more than a year).

<sup>6</sup> Hereinafter we will use the following terminology for migrants: those who have emigrated without changing their domicile will be called *temporary migrants*; those who establish their domicile in another country will be called *permanent migrants*.

fewer than the volume of the population calculated based on current statistical data, using as a starting point the numbers from the 1992 census. This was a period in which temporary transnational migration increased and the number of Romanians abroad grew significantly larger, while the national statistics institute was not able to estimate annually the migratory flows. Moreover, the fundamental demographic events, births and deaths, were still calculated for the entire population with a Romanian domicile.

The October 20<sup>th</sup>, 2011 census was conducted according to the methodology required by the European statistical institution, introducing the concept of “usually resident population” of Romania („populație cu reședința obișnuită în România”) – hereinafter “resident population”. Leaving aside the doubtful quality of this census, that has faced numerous criticisms at the time, let us mention that, according to the newly introduced criteria, the resident population of Romania at the time of recording was 20,121,641.

This number was used as a baseline to determine the population in the years that followed. This time, the calculations took into account the flow of *temporary transnational migration*, without however giving clear information about the way in which the number of emigrants had been calculated. Therefore, we can not evaluate the reliability of this data. The numbers from the latest census also served as a baseline for the National Institute of Statistics (Institutul Național de Statistică, hereinafter INS) to reconstruct the demographic data on the basis of the resident population for the period 2003-2010. The data for the resident population for the previous years is established based on the previous criteria: those of 1990 and 1991 based on the number calculated at the end of 1989, those for 1992-2002 based on the 1992 census adjusted to take into account natural movement (for all the population with a Romanian domicile) and permanent migratory movement (only for migrants who had changed their domicile). INS publications use two versions for the resident population, namely that from the start of the year (1st of January) and that from the middle of the year (1st of July). The latter is to be found in the TEMPO database; the first appears in the same place as well, starting with 2003, and in the 2006 Demographic Yearbook, for the previous years (in the previously mentioned understanding of settled population).

Probably aware of the problems raised when it comes to interpreting a series of data where criteria had changed and the conditions for coherence had not been fully respected, the INS specialists have also put together a different statistical series regarding the movement of *the population with the domicile in Romania*, which we will also call, for convenience, *the legal or de jure population*. This is the same with the settled population only for the years 1990 and 1991. The legal population is larger than the settled population starting with the

following year and for the period 1992-2001, and larger than the resident population since 2002. I believe presenting this series is very important, since it is the only one that is logically coherent when we need to calculate the indicators for the demographic phenomena, such as total fertility rate (TFR) or expectation of life at birth – more so because, as we will see, the attempt to distinguish solely the events for the resident population is unconvincing at best.

We must also mention that the volume of the population of Romania can be found in the EUROSTAT databases as well, where for the 1st of January the numbers are retrieved from the first INS series, as defined above, while for the middle of the year<sup>7</sup> there are minor differences as compared to the INS data. In what follows, I will use the INS numbers and I will list in Annex 1 the data for the two series, each of them both for the beginning and the middle of the year. The ones in the beginning of the year will be useful to calculate the growth of the population for every year, as well as for longer periods of time. The ones from the 1st of July are used by INS to calculate the annual rates for the various demographic phenomena.

To sum up, we have statistical data for “the population of Romania”, with the concept used to describe: (i) *the resident or de facto population* (which until 2001 is the settled population) and (ii) *the population domiciled in Romania or, to use different terms, the legal or de jure population*. It is however obvious we can introduce a third meaning for the same concept, when it refers to all of the individuals with *Romanian citizenship*. This understanding refers to a larger population than the previous two, since it includes, on top of the individuals with the domicile in Romania and with a residence abroad, those Romanian citizens that no longer have a Romanian domicile, but have held their citizenship; in principle, they hold a special type of passport for *Romanian citizens with the domicile abroad*. The volume of this population can not be found in the current statistics of any of the national institutions, but is often present in public debates, since it makes up the base for selecting the population with a right to vote. Let us just say that the Permanent Electoral Authority has made an announcement that in December 2018 the number of all of the individuals appearing on the electoral lists that have the type of passport mentioned above came up to 670,927<sup>8</sup>, out of a total of 18.94 million electors. If we take into account the fact that this number includes only electors, that is, individuals at least 18 years old, as well as the fact that there are Romanian

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<sup>7</sup> I am not sure about the source of these differences. It might be a minor difference in the way in which the calculations are made, since EUROSTAT speaks about the “average population” and INS of “population on the 1st of July”.

<sup>8</sup> Number retrieved in a statement found at <http://www.roaep.ro/prezentare/wp-content/uploads/2019/01/Anexa-nr.3-31.12.2018.pdf>, accessed on 02.02.2019. It must be said that the main stock of this population is made up of individuals with their domicile in the Republic of Moldova (about a third of the total).

citizens without such a passport, then we can infer that the number of Romanian citizens domiciled abroad is considerably higher than this. In what follows, I will not refer to the population consisting of Romanian citizens, since there is too little information about it and there can be no analysis on it beyond simply estimating its volume.

Going back to the two main populations and taking a look at the numbers in Annex 1, we can see that for the 28 years for which we have the data, that is, between the 1<sup>st</sup> of January 1990 and the 1<sup>st</sup> of January 2018, the resident population of Romania has declined by about 3.68 million (from 23.21 to 19.53 million), and the population domiciled in Romania has declined by about 3.68 million (from 23.21 to 19.53 million). We can also see in the last column of the table in Annex 1 that the difference between the population domiciled in Romania and the population that is resident in the country has increased constantly and has reached, on the 1<sup>st</sup> of January 2018, 2.66 million. This number is often interpreted as that of individuals with a domicile in the country, but resident abroad, that is to say – *the stock of temporary migrants*. But I will come back to the issue of the stock of emigrants from Romania, since things are a little more complicated.

### ***Sex and age distribution***

In what follows, I will present briefly the transformations in the sex and age distribution, as well as the structural differences between the two population categories for which we have such data. As is customary, structure analyses use the average or 1<sup>st</sup> of July population, according to the Romanian statistics. The populations that will be compared are those from the middle of the years 1990 (23,206,720) and 2017, in the two versions – the population domiciled in Romania (22,213,586) and the population resident in Romania (19,591,668), the difference between the two being 2,621,918 individuals.

As far as the distribution by sex is concerned, there are no spectacular findings. Just like all the other populations in our cultural area, the Romanian population comprises a larger proportion of women. The share of the female sex was 50.7% in 1990 and it went up in 2017 to 51.2% of the legal population and 51.1% of the resident population. What needs to be mentioned, however, is that women are the majority (51.8%) when it comes to the category of population obtained as the difference between the two previous populations and interpreted, not very rigorously, as *the stock of temporary migrants*.<sup>9</sup>

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<sup>9</sup> We will discuss below the precise significance of the population that results as a difference between the legal and the resident population. For now, as far as the sex and age distribution is concerned, we can consider it as the stock of temporary migrants.

As far as the age distribution is concerned, it is evolving as expected; that is to say, as is the case with all the populations in our region, the demographic ageing process continues after the end of the demographic transition. To illustrate the extent of this change in the analysed time interval, I present in Annex 2 the percentages showing the structure of the population (in total and for women) for a few of the large age groups in the middle of the 1990s and in 2017. For the latter case, I differentiate the three populations mentioned above: by domicile, by residence, and that resulting from the difference between the two (temporary migrants). The general results are obvious. The 2017 population, whether domiciled or resident in Romania, is clearly aged as compared to the 1990 population. For example, the weight of the individuals 65 years and older soars from 10.4% to 16.1% in the legal population and to 18% in the resident population. Let us keep in mind that this ageing process bears a direct influence on the number of deaths and on the death rate (and therefore on the natural growth) of the population, regardless of the evolution of mortality.

The emigrated population clearly has a specific age distribution, with the working age population overrepresented. In order to estimate the extent to which these departures have influenced the age distribution, I have introduced in the table in Annex 2 a column that shows the proportions in the absent population as compared to the domiciled population. Overall, according to the INS data, 11.8% of the legal population is missing. However, in different age groups the demographic absences are more significant (more than 20% for the 25-40 years old) or a lot less significant (for children and the elderly). For the women 25-35 years old, the weight of those abroad is even more significant (about 24%), a fact that, as we will see, can not be neglected in interpreting the fertility data.

Demographic ageing is a universal phenomenon in the current stage of the evolution of the populations and there are two main causes for it: (i) the large contingents of population born before the decline of fertility in the recent decades have joined the ranks of the elderly; these contingents have reached this age in large numbers not only because they started off with large numbers, but also because they have benefited throughout their lives from a substantial drop in mortality (especially infant mortality), and (ii) the increase in the life expectancy of older persons, that is to say, the better survival probability for the elderly. The first factor has been the most important by far until now and will remain so for a while longer, until the large cohorts from the years immediately after the war disappear. Romania, as already mentioned, is part of this process, but lags behind many European countries. Indeed, if we look at the resident population alone, of which, as we have seen, about 2.6

million individuals of relatively young ages are missing, the proportion of the elderly in our population (of about 18%) is, as the EUROSTAT data indicates, smaller than in other countries – 22.3% in Italy, 21.5% in Greece, 21.2% in Germany, 21.1% in Portugal. Some of these countries are precisely the ones that have benefitted from strong immigration, including from the stock of younger population in Romania, a factor that has put a halt to their ageing process. We should also note that Italy, for example, had reached the ageing level of Romania at the end of the 1990s. We can therefore anticipate that the process will continue in Romania as well, both for the legal population (a little younger) and for the resident population (more aged). The generations born before 1989 are relatively numerous and will gradually feed and enlarge the age group of 65+, even if in the near future the cohort to cross the official old age threshold will be those born in the age of free abortion, which are slightly smaller cohorts.

### ***Natural growth and net migration***

Traditionally, Romanian statistics record the children born to women domiciled in Romania, which undergo civil registration in Romania (regardless of the country where they were born), and the children are automatically allocated the same domicile as well. The deceased accounted for in the statistical and demographic yearbooks are also distributed by domicile; therefore, all of the deceased individuals with a Romanian domicile are taken into account. The natural growth has been calculated based on these numbers. The data obtained is presented in Annex 3, in the first columns of the table.

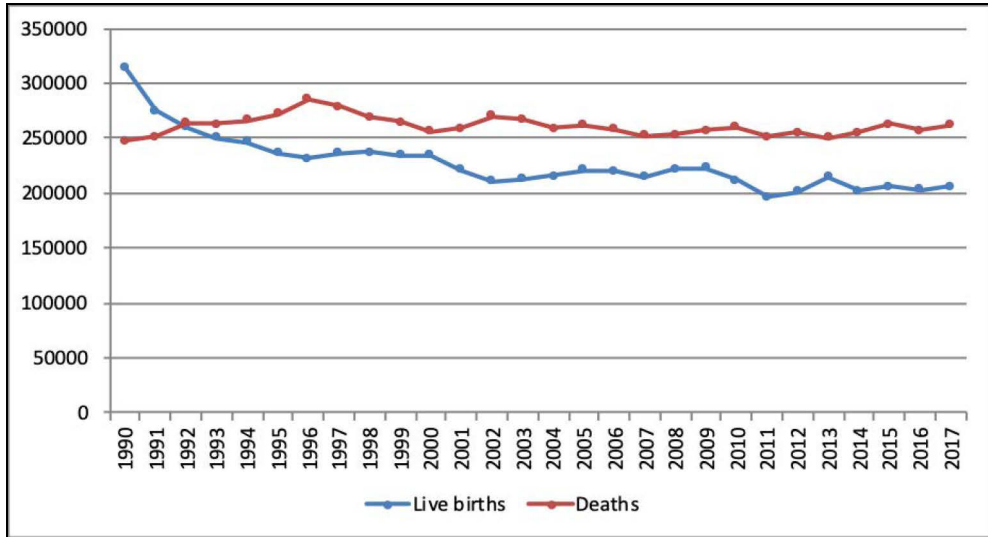
Starting with 2012, there was an attempt to calculate these events (births and deaths) for the resident population only – the one that, as we shall see, is taken as a baseline in the recent years to determine the indicators of the demographic phenomena. To this purpose, for the years 2012 and 2013 those who have been born and respectively those who have died abroad have been excluded from the total population, so that an annual number could be calculated for the events that characterize the resident population alone. In both situations, it is difficult to accept the data for what it wants to represent. The version for the years 2012-2013 is actually embarrassing for INS, given that, for anyone at least a bit familiar with the context, the fact that a child was born abroad is not a criterion to exclude them from the population that is resident in the country. Considering the underwhelming facilities in the maternity hospitals in Romania, many women from the upper classes travel abroad to give birth, and so do many living near the border, especially near the border with Hungary. As for the numbers in the following years, starting with 2014, it is difficult to comment, considering INS does not release the clear

criteria for placing newborns in the resident category. The inconsistency of the numbers becomes obvious if we differentiate between the two categories. The number of the children born in the domiciled population is larger than that for the resident population as follows: in 2012 and 2013 by 20,000 and 26,000 respectively, while in the following years the difference dropped to only 3-4 thousand. This means on the one hand that the three categories of data (those for before 2012, those for 2012-2013, and those for the years after 2013) can not be joined in a statistical series and, on the other hand, that the very tiny difference of the last years can not be taken seriously considering the women resident abroad are, as we have seen, generally younger women of fertile age. Given their larger proportion in the fertile groups (20-25% of the legal population, according to INS data), even if, due to their status, we can assume they give birth to fewer children than the women in the country, their contribution to the total of births can not be as low as presented in the statistics. Their exclusion from the population of Romania would have to imply the exclusion of a much larger number of newborns than those attributed to the resident population. For the deaths, the annual differences between the stocks from the two populations are a lot smaller, of a different scale altogether, so they do not influence the indicators.

Under these circumstances, it is absolutely normal to analyse the evolution of the *natural growth* by referring to the population domiciled in Romania, since this is the only series of data that is reasonably consistent. Natural growth was a positive number only in the first two years after the fall of the communist regime, 1990 and 1991, and this situation was never to be encountered again. With the exception of a few previous isolated situations, the greatest population losses in the last years happened due to negative natural growth.

In Figure 1 I present the evolution of the two phenomena, using the absolute numbers of the live births and the deaths, to have a clearer perception of the natural growth. Looking at things through the lens of the absolute numbers, we can see that as far as the live births are concerned, the numbers seem to stabilize somewhere around 200,000, with some fluctuations after the year 2002, but without the clear downward trend that was visible in the 1990s. On average, across the years, the stock of live births appears smaller and smaller; this was to be expected, since the cohorts of women reaching fertile age are themselves smaller. The number of deaths is also quite stable, after the year 2000, settling at a level a little over 250,000. This stock is determined by the transformations of the age structure and the evolution of mortality. The two factors have had, at least after 2000, as we will see when looking at mortality, divergent influences on the number of deaths: an increase due to the ageing of the population and a drop due to the positive changes in the field of mortality.





**Figure 1.** The evolution of live births and deaths for the population domiciled in Romania, 1990-2017

If we look at *net migration*, then for the population with a domicile in Romania we need to take into account what we have called *permanent migration*, which is to account for the people that have established their domicile in Romania and the Romanians that have given up on their domicile here and moved to other countries. We present on the first columns of Annex 4 the data needed to calculate the balance of migration. The data for the numbers of migrants in 1990 is unfortunately missing from the INS statistics.<sup>10</sup> We will omit this number, considering it is modest and does not significantly impact the general balance.

The series for definitive migration is extremely interesting. Annual variations are frequent and rather broad, and explanations would be needed for sudden changes. Unfortunately, such information is lacking from those who produce the data. What we can safely say is that the massive emigration in the first years after the regime change can be explained through the previous constraints placed on Romanian citizens regarding transnational mobility (and

<sup>10</sup> It is likely that in 1990 the “tradition” from the communist times was still preserved: for transnational migration, the official statistical publications only gave the numbers for emigrants, and not for immigrants. This data, managed throughout by agencies of the Interior Ministry, clearly exists and could easily be reconstituted, if there was an interest for this from INS.

in particular going abroad). The switch of the migratory balance in the last few years from negative to positive is also understandable, taking into account the fact the country has become attractive after joining the European Union.

Temporary migration, through changing one's residence, has been registered only for a few years, as can be seen in Annex 4, where we have the data for the migratory flows since 2008. Since I have serious doubts about the ability of INS to evaluate correctly this kind of data, I will make no comments about those numbers and I will not use them to learn about the stock of emigrants or the general balance of migration for 1990-2017. To this purpose, I will instead do a basic calculation using the data on the natural and migratory movement through *the change of domicile*. In this manner we will obtain the numbers for the population domiciled in Romania on the 1<sup>st</sup> of January 2018 and we will compare it with that from the INS publications. Here are the calculations for the period 1990-2017:

- Live births: 6,359,811
- Deaths: 7,311,803
- *Natural growth*: -951,992
- Immigrants: 320,414
- Emigrants: 550,326
- *Net migration*: -229,912
- **Population growth (natural growth + net migration): -1,181,904**

Using this data and starting off from a population of 23,211,395 on the 1<sup>st</sup> of January 1990, we should end up with a population of 22,029,491 on the 1<sup>st</sup> of January 2018. A small difference – due to small errors and to the fact we did not include the 1990 immigrants (probably around 2,000-3,000) – should clearly be expected. However, as we can see in Annex 1, the number put forward by INS for this date is 22,193,562, about 160,000 higher. This difference should be given a plausible explanation by the data provider.

If we accept the number provided by INS for the legal population at the beginning of 2018 and implicitly the 2.66 million difference from the resident population put forward by the same institution, then I will return to the interpretation already mentioned above, namely that this difference can be understood as the stock of Romanians that are temporary migrants abroad. Even if the numbers are calculated correctly, we need to make slight adjustments when it comes to interpreting them. In theory, the resident population of Romania includes the foreigners living here for a period of at least one year. INS, however, does not give this number in any of its publications and we could be tempted to leave it out of any calculation and assume it is negligible. Nonetheless, EUROSTAT data shows that on the 1<sup>st</sup> of January 2017, there were 114,527 foreign

citizens in Romania, which indicates that the difference between the number of Romanians domiciled in the country and the number of Romanians resident in the country is larger than 2.66 million. Assuming that the number of foreign residents in Romania has gone up a bit until the 1<sup>st</sup> of January 2018, we can estimate that *the stock of temporary migrants, thus calculated, would be around 2.8 million on that date.*<sup>11</sup>

In order to check these numbers, it is recommended that we look for other information as well. Going back to the EUROSTAT database, we will see that for the countries mentioned there alone (EU, including the UK, and a few European countries with few Romanians) there were, on the 1st of January 2017, 3.22 million Romanian citizens, who can therefore be included in the stock of emigrants. On the other hand, a report on migration of the United Nations (UN, 2017:13) lists Romania among the top twenty sending countries of immigrants, with a total of 3.6 million. This number includes both the Romanian citizens domiciled in the country and those domiciled abroad<sup>12</sup>, the latter adding up to about a million, as we have seen. Therefore, if the 3.6 million number is accurate and we take into account a stock of only 800-900.000 Romanian citizens domiciled abroad, it becomes apparent that the number of those abroad, but with a domicile in Romania is about 2.7-2.8 million. This confirms the estimation of the resident population by the INS, of about 19.5-19.6 million in 2017. Finally, let us note that the number of citizens listed by the electoral register was, at the end of 2018, about 18,942,000.<sup>13</sup> If we take into account the age structure of the population domiciled in the country, we will see that the stock of individuals 18 years old and older makes up about 82% of the total population, which means that the number of electors above is extracted from a total population of about 23.1 million, number resulting once we have added the approximately 0.8-0.9 million Romanians domiciled abroad.

To sum up: the safest population number to use from all those mentioned is the one referring to those domiciled in Romania, also called the *de jure or legal population*, which, on the 1<sup>st</sup> of January 2018, was 22.2 million. From the electoral register I have deducted that in 2018 the *population of Romanian citizens* must be around 23.1 million or maybe a little more, if we

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<sup>11</sup> This number includes the children born and resident abroad, who are incorporated in the legal population (at the mother's domicile). Because they have not actually moved, they cannot be considered *stricto sensu* as migrants. We have no information about the stock of this population, but in any case they can be included in the category of emigration, if we widen a little the meaning of the concept.

<sup>12</sup> In the INS statistics the numbers describing the stock of emigrants refer to long term temporary migration only (change of residence of at least 12 months).

<sup>13</sup> According to the Permanent Electoral Authority, <http://www.roaep.ro/prezentare/stire/numarul-total-de-alegatori-inscrisi-in-registrul-electoral-la-data-de-31-decembrie-2018>.

accept that not all of them are listed in the electoral register. Finally, the resident (or de facto) population released by INS for the 1<sup>st</sup> of January 2018, 19.5 million, seems to be confirmed, if we accept the number of 3.6 million of Romanians abroad, out of which 0.8-0.9 domiciled abroad.

The 23.1 million number clearly raises questions, even if it is supported by the calculations mentioned above, considering it is only 100,000 smaller than the population of Romania at the beginning of 1990. The country has lost almost 1 million in this period through natural growth, plus negative net migration (permanent migration) of more than 200,000. This loss could only be compensated by the number of Romanian citizens already abroad before 1990 and still alive (not included in the population of the country), as well as the stock of individuals who have become Romanian citizens after 1990, but are still domiciled in their countries of origin (mainly citizens of the Republic of Moldova). These two categories are not included in the official statistics.

## **The evolution of the main demographic phenomena**

### ***Fertility***

As is widely known, Romania has been affected in the last decades of the communist regimes by one of the toughest pronatalist policies in the Eastern Block, following a period that was rather ultra-liberal, including the full judicial and moral decriminalization of abortion in the 1955-1966 period, on the footsteps of the Soviet model. The measures taken in 1966 and the following years attempted to maintain a high fertility. Without these measures, Romania would have completed the fertility transition at the beginning of the 1970s, when the level of the total fertility rate would have dropped below replacement level fertility. Due to these measures, fertility stayed above that level and was conducive to constant population growth, generating a population about 3-4 million more numerous than expected on the basis of the fertility level in 1966.

After the fall of the communist regime, one of the first decisions taken by the newly installed leaders was to abolish all of the previous measures in this field, mainly by decriminalizing abortion and by permitting the sale and use of contraceptive means. In this situation, it was to be expected that fertility would drop suddenly, and this did happen in the first years: from 2.2 children born per woman in 1989, the total fertility rate dropped to 1.8 in 1990, 1.4 in 1993 and go to 1.3 in 1995. In the following years, there was a long period where the rate stabilized at this level, occasionally dropping to 1.2.

Whoever looks at the INS publications, such as the statistic yearbooks, will be surprised to notice that the fertility of Romanians has grown suddenly to 1.4, 1.5 and even 1.6 children born per woman, starting with 2012. This is obviously not a turnaround of fertility, but simply a change in the way in which this indicator is calculated: the fertility rates by ages (the sum of which amounts to the total fertility rate) are calculated by relating the number of live births to the resident population. But, as we have seen, the stock of live births attributed to this population is almost identical to the one attributed to the population domiciled in the country, while the stock of women of fertile age in the resident population is about 20% smaller than the population actually responsible for all the live births. This is clearly bringing up the value of the fertility rates by age and *eo ipso* of the total fertility rate. If we check the EUROSTAT databases, we will see that they use a similar procedure and started using it longer ago, therefore showing an increase of the fertility rate since about 2006.

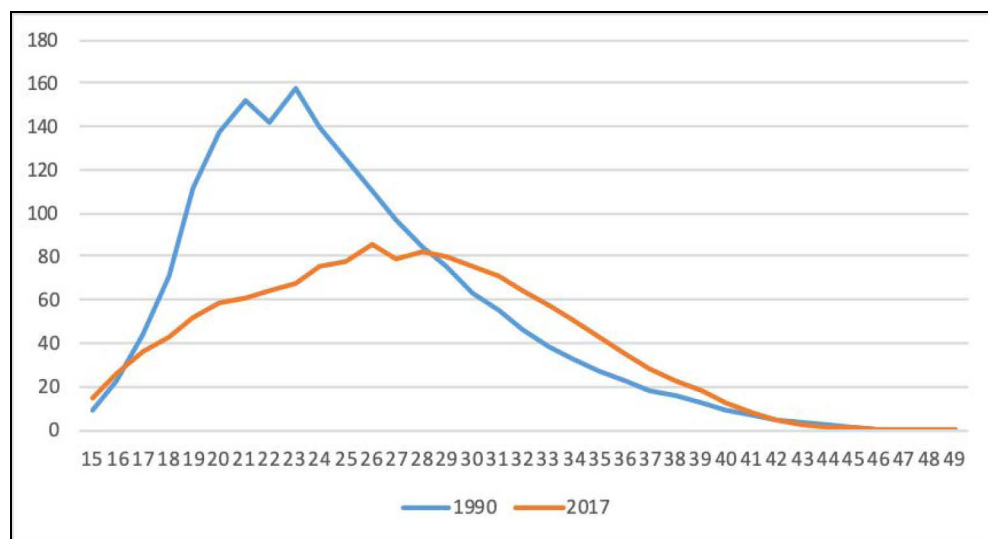
We can also see that the shift in fertility is artificial and has no correct statistical base if we check the INS information in the TEMPO database. Unfortunately, the annual total fertility rates are not presented here, but the specific ones for five years intervals are, and they can approximate TFR. The important thing here is that the calculations are done for the *de jure* or legal population as well, since 2012. If we compare these rates for the last year for which we have the data at the time of writing, 2016, we can see that for the age groups from 20 to 40, the five year rates for the resident population are sensibly higher than for the legal population – by 13% for 20-24 year olds and by 30% for the 25-29 year olds. As we stressed above, only the series that has as a base the legal population can be followed across time, and it is only for this population that we can compare annual values and judge the trend of the values. Nothing points out to changes after 2011 (or, in the case of the EUROSTAT data, after 2005) in the fertility quantum of the Romanian women.

The unfolding of this phenomenon has clearly undergone many transformations, some starting in 1990, some later, but they did not have an impact on the general level of the phenomenon. Romania is still part of the group of European countries with lowest-low fertility. The transformations have taken place on several dimensions, of which I will mention just a few.

Probably the most important from the point of view of the demographic consequences, including the general level of the reproduction of the population, is the change regarding the tempo of fertility, which is the fertility curve by age. As we know, Romania has been characterised – along with the other countries in the area – by early fertility, as compared to the western countries, which was largely the result of the eastern European marriage patterns. Thus, the curve of the women's age at childbirth was asymmetrical, with the modal value to the left, in the 20-24 years old interval, and with a significant share of

mothers under the age of 20. In the time interval we are looking at here, there was a clear move of the births towards the right, which can be seen in Figure 2. Not only has the curve gone flat, due to the drop of the fertility rate, but its peak has moved a lot to the right, with the maximum number of births now due to women 25-29 years old.

The transformation can also be seen by comparing the annual values for the average age at birth. Thus, in 2017 as compared to 1990, the average age<sup>14</sup> for all the births has increased from 25.0 years old to 28.6 years old, while for the first births it has increased from 22.3 years old to 27.1 years old, with the specification that in 1990-1993 the first value decreased, due to the decline of the birth rate because of the decline in higher order births. Only after 1994, the average age for all births began to rise, while the process has been constant for the first births. This explains the larger increase in the age of women at the first birth – 5 years as compared to the 3.6 years increase in age for all the births. In spite of all of these significant changes, the average age of mothers in Romania is still lower than in the majority of the EU countries. Thus, according to the EUROSTAT data, in 2016 average age at birth was over 32 in Ireland and Spain and more than 31 in several other western European countries. In 2016, women in the majority of the EU countries were on average over 29 years old at their first birth.



**Figure 2.** Fertility rates by age in 1990 and 2017 (per one thousand, in the legal population)

<sup>14</sup> These are simple averages, calculated on the basis of the actual frequencies, and not standardized, calculated on the basis of the fertility rates by age.

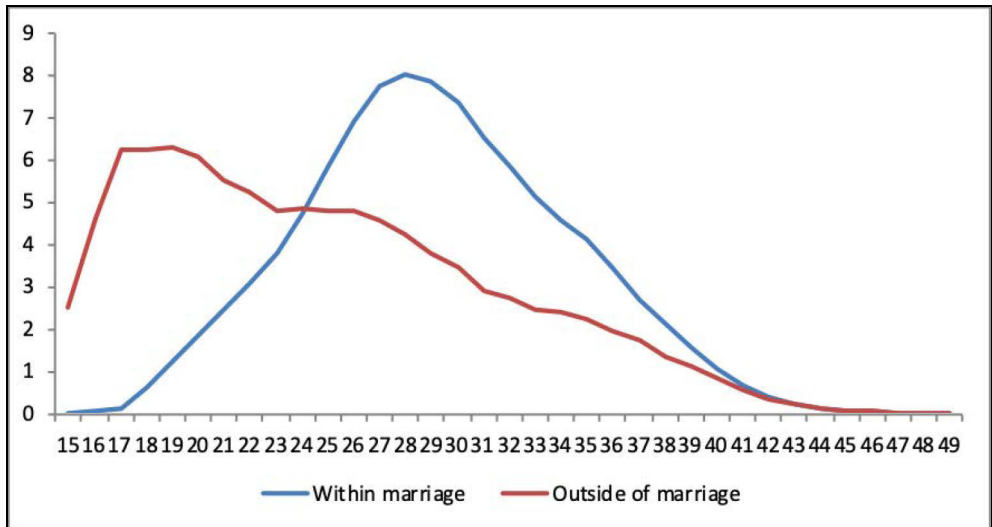
The relatively large proportion of births by very young women, under the age of 20, plays an important part in the lower average age at birth in Romania. Indeed, even though it has dropped from the post-1989 high of about 18% in 1993-1994, to about 10% in the last years, it is still high by European standards, considering that in countries such as Denmark, Switzerland, the Netherlands, or Slovenia, young women under the age of 20 contribute a maximum of 1% of the number of births. It must be noted that in none of the countries in the EUROSTAT databases is there such a high percentage of children born to teenaged mothers as in Romania, not even in countries such as Moldova, Ukraine, Albania, Kosovo, Serbia, or Macedonia.

Another important matter related to births, which has emerged after the fall of communism, is the rising proportion of *births outside of marriage*. Unfortunately, our statistical publications do not provide any information on this phenomenon during the communist period, nor for the first years afterwards, but only starting with 1994. As I have shown elsewhere<sup>15</sup>, the first data found in other sources is for 1992, namely that 15% of births were outside of marriage. This leads us to the assumption that before 1989 the proportion must have been 10% at most. The trend was of fast growth until 2004, when it reached 29% and stayed at the same level until 2010. In 2011, it started rising again a little and currently there are small oscillations between 30-31%. With these numbers, Romania is one of the European countries with a relatively small proportion of births outside of marriage. Indeed, there are many countries with larger proportions, some at more than 50% for several years. Fewer births outside of marriage are to be found in some of the catholic countries (Croatia, Lithuania, Poland, Italy), but the lowest proportion in Europe (less than 10%) is in orthodox Greece.

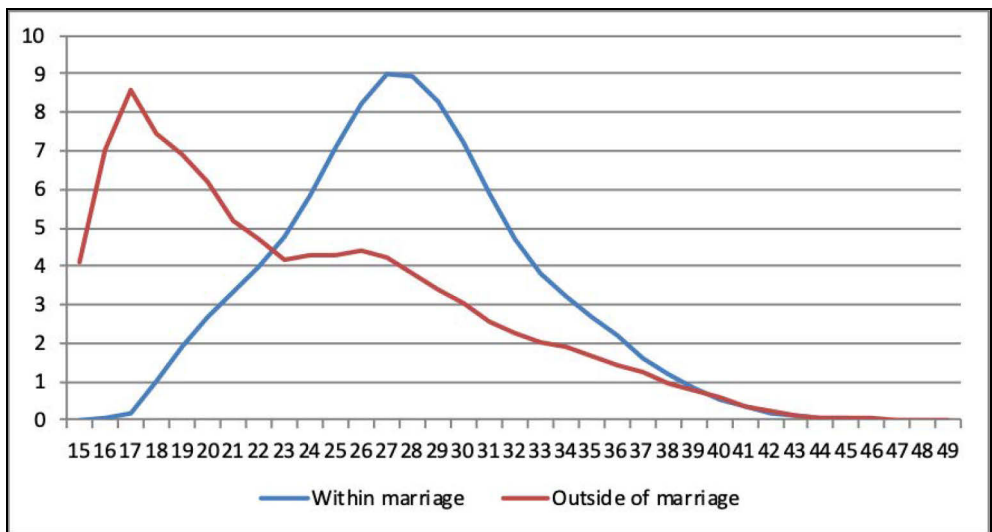
Using an INS database with data for the 2006-2017 births, we can say that the phenomenon is typical for younger women. Thus, in the case of mothers younger than 20, the proportion of those not married at the time of giving birth is in the last years 87%; those between 20 and 24 years old give birth outside of marriage in 43-44% of the cases, and for older ages the proportion drops below the average. Out of all the births outside of marriage, the largest proportion is due to women under the age of 20 (about 27%), followed by those 20-24 years old (26-27%) – the two age groups cumulate a total of more than 50%. In order to visualise more clearly the age difference between the women that participate in the two types of births (within marriage and outside of marriage), I present in figure 3A the respective distributions for all the births, cumulated, in the recent years – 2014-2017. The difference between the shapes of the two curves is obvious as well, with births within marriage of a profile close to the normal curve, with the modal value at 28-29 years old, while the curve for the births outside of marriage is deeply asymmetrical, with maximum frequencies between 17-20 years old.

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<sup>15</sup> Rotariu, Dumănescu, Hărăguș (2017:250).



A. All births



B. First births

**Figure 3.** Age distribution of mothers at birth, 2014-2017, by marital status (% of total births of each type)



As far as birth order is concerned, there are a few important observations to make. As is to be expected, since fertility is on a downward trend, there is a higher proportion of first births out of yearly births. In the last years of the communist regime, firstborns were 39% (in 1989), second births – 29%, third births and higher order – 32% of the total. In 1990, the percentages are: 44%, 29%, and 27%. The situation is stabilized once the drop in fertility is completed, so that for the last 12 years (2006-2017), the values oscillate around the following averages: 53%, 30%, and 17% respectively. It is therefore quite obvious that *the drop in fertility happened mainly due to the drop in higher order births* (3<sup>rd</sup> and higher), with second order births basically unchanged.

The distinction by the order of birth is even more interesting in the case of births outside of marriage. Based on the previous observation regarding the lower age of women giving birth outside of marriage, one could imply most of the births outside of marriage are first births. And indeed, the proportion of births outside of marriage is slightly higher in the case of firstborns than the average for all births over the last 12 years (32% as compared to the average, 30%), and lower for second order births (just 22%). The twist comes from noticing that in the case of higher order births, the proportion of unmarried mothers soars again above average: 33% for third order births and 38% for fourth order and higher.

For a comparison with all births, I introduce in Figure 3B the age distribution of the mothers of the firstborns, within the two birth categories: within marriage and outside of marriage. We can see how asymmetrical the curve for births outside of marriage is; the first births outside of marriage are not of older, educated, professional women, with a penchant for postmodern values, but of young women who did not yet achieve the knowledge and the practice of birth control.

Another aspect related to fertility that I will refer to briefly refers to *the social profile of the women who give birth*. Based on the data collected upon the registration of births, we can get information, even if not very in depth, about the occupational and educational status of the mother. This information can be retrieved from the already mentioned database for the period 2006-2017. When it comes to occupation, the way in which the data is presented allows us to make the distinction between employed and non-employed. The first category includes the few cases of entrepreneurs (about 1%) and the second the very few (less than 1%) cases of agricultural workers, most such situations being accounted for under the label of homemaker – which adds up to 42% of the women who have given birth over those years. The analysis of the data on the basis of this distinction shows that over the last years in Romania about half of the women who give birth every year were employed. For the whole

period of 12 years, the proportion of those employed is about 48%, rising slightly, so that for the last two years it has increased to just over 50%. This dichotomy is essential, since it reveals two worlds with distinct needs, which claim two types of different policies if the aim is raising the fertility rate.

From the point of view of education, there is a clear trend: the education attainment of the women giving birth in the recent period is rising. Between 2006-2017, the weight of the poorly educated mothers (8 years of education at most) has dropped from about 45% to 31%, and the weight of those with superior education (more than 12 years of education) has doubled, from 18% to 36%, this latter category being wider than that of mothers with average education (vocational school or high school), about 33% in 2017.

Nonetheless, it is very clear that a large proportion of the Romanian children are born to the underprivileged categories of population, who can not provide them with the best opportunities while growing up. If we look at the poorly educated women with no jobs, they have given birth over this 12 years period to 34% (just over one third) of the newborns in Romania. Another argument for the vulnerability of the children in this category is the fact that 54% of their mothers were not married, only 25% of their fathers were employed, 48% had no occupation and 27% of newborns were unacknowledged by their fathers. As for the married mothers, only half had husbands in employment. There is no doubt that the situation and the educational prospects of the children are underwhelming in the case of other categories as well, especially where none of the parents is in employment or there is a single, unemployed mother. Therefore, I believe we could say that *more than a third of the children born in the last years live in high risk families*, which makes one ask whether the priority should not be rather for improving the situation of these people, and only afterwards raising the birth rate. Or, even more so, to see what social policies are suitable for raising the birth rate without raising the ranks of these disadvantaged categories.

Since we discussed births outside of marriage we must also mention that they are typical mainly of women with lower education and no clear occupational status. Indeed, if we stick only to the wide education and occupation categories mentioned earlier, we see that the proportion of births outside of marriage varies from 8% in case of the highly educated (more than high school education) women in employment to 54%, as noted, in the case of poorly educated women not in employment, with numbers in between for the other categories. It is easy to see that the data shows that both factors – the educational and occupational status – are strong predictors for the proportion of births outside of marriage, but not in the sense suggested by the so-called “theory of the second demographic transition”, according to which attachment

to postmodern values influences the demographic behaviours, including a rising proportion of births outside of marriage. A similar argument arises from noting that the weight of the births outside of marriage is larger in the case of the higher order births, which means there is a category of older, unmarried women, who, probably for economic reasons, give birth to more children.

Similar arguments arise from analysing the social situation of women by the order of the birth. Out of women on their first or second birth in the period 2006-2017, less than half were in employment (46% and 47% respectively), and out of the mothers on higher order births the great majority were not in employment: 71% for third order births and 86% for fourth or higher order births. The situation is similar from the point of view of education: the proportion of those with poor education attainment is 32% of the mothers of firstborns, 36% for women on their second birth, 61% for women on their third birth and 79% for women on their fourth or successive births.

In brief, then, in Romania there is a significant contribution to natality by two vulnerable categories of population: on the one hand, very young, poorly educated women, with no employment and mostly unmarried, who contribute to the number of firstborns in particular, and on the other hand slightly older women, with similar educational and social profile, who are by far the main source of third and higher order births.

### ***Mortality***

As compared to fertility, mortality is a phenomenon with an evolution that is a lot easier to predict. This is due to a general positive trend caused by improvements in the means of preventing and treating illnesses; diseases are by far the most important cause of mortality, with external causes (injuries) the source of less than 5% of the total number of deaths. Also, in large populations, the indicators of the phenomenon have a much smoother evolution. For this reason, we can say that a brief analysis of mortality, one that can be accommodated by the space of the present paper, is less interesting: the situation is well-known by similarity to other countries in the area and, if not, still does not hold major surprises. However, there are some particularities of mortality in Romania that deserve to be mentioned even in this context, where we observe only the most concise indicator of the phenomenon – expectation of life at birth – and a few death rates by age, including that for zero years old, which is infant mortality.

Looking at things from the perspective of expectation of life at birth, we must stress that Romania has made minor progress between the end of World War II and the instauration of the communist regime. Thus, in 1938, the

average lifespan for both sexes was only 42 years, the duration that was recorded in the western countries at the beginning of the nineteenth century, before entering an era with medical progress. At that point, the lag behind the developed countries was enormous; for example, as compared to the Netherlands, in 1938 the difference was 25.5 years! Favourable circumstances after the war, which I have discussed in more detail elsewhere<sup>16</sup>, made it possible to make up for most of this lag until the mid-1970s, with the difference from the most developed western countries reduced to only 5-5.5 years and only 2-3 years from many of the western European countries.

Unfortunately, however, there was no progress in the period that followed, with 69 years as the average for both sexes still constant until the end of the 1990s. The 70 years threshold has been crossed only in 2000. As we can see on the graph in Figure 4, a clear upward trend started in 1996-97, with the average lifespan overall reaching 75.7 years in 2017.<sup>17</sup> This upward trend is common to both sexes, while the relative stagnation mentioned above is the result of a mild increase in the life expectancy of women and a slight decrease in the life expectancy of men, visible in particular after 1980 and lasting up until 1996-1997. This also led to a larger gap in the life expectancy of the two sexes. The advantage of women over men increased from about 5.5 years in the beginning of the 1970s to almost 8 years in the period 1996-1998 and then went down again to about 7 years in the recent years.

The long period of stagnation of this indicator has meant the difference between Romania and the western European countries has gone up again, reaching about 10 years in 1996 (the average for both sexes) from the most advanced countries. The recent evolution has reduced the difference a bit. According to the most recent data, our country is eight years behind the most advanced European countries and 5.5 years behind the European Union average.

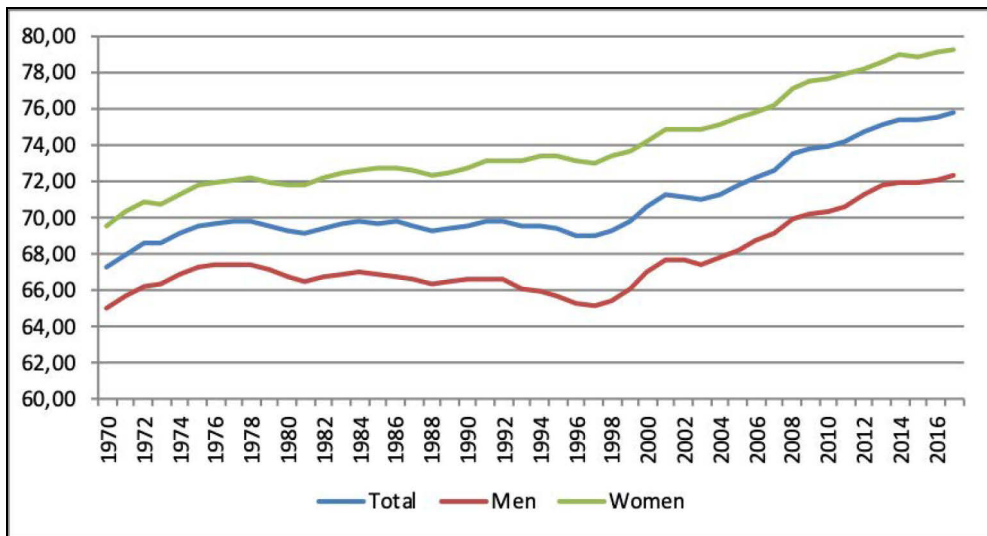
I will not delve in depth into the differences generated by the social conditions in which people live, but I will mention the lag between the urban and the rural, the only variable for which we have official data. As expected, there is an inequality of chances in facing death between the people living in the two types of environment, to the advantage of the urban dwellers. The difference in life expectancy still exists; moreover, I think it needs stressing, it has gone up – from 1.5 years at the beginning of the 1990s to almost three years in 2015-2017 (average for the two sexes) – in spite of the fact that a

<sup>16</sup> See, for example, Rotariu, Dumănescu (2014)

<sup>17</sup> I use in this article the values of the expectation of life at birth provided by INS, calculated as an average for three consecutive years and attributed to the last of those three years. Thus, the value of 75.7 years is the average of the death rates for the years 2015-2017, but is attributed to the year 2017. For this reason, the values used here can differ slightly from the values from other sources, where the calculation is done for one year only.

non-negligible part of the rural population already lives in large settlements, especially the periurban areas around the large cities, with living conditions similar to the urban environment. There still is, no doubt, a category of settlements that belongs to the remote countryside where the state of the medical and sanitary system is very precarious and the quality of life of the inhabitants has not made progress as in other areas. It is interesting to note that the increasing difference mentioned is due mainly to the male sex, while the difference between the women in the rural and urban areas have stayed the same in 1990-2017.

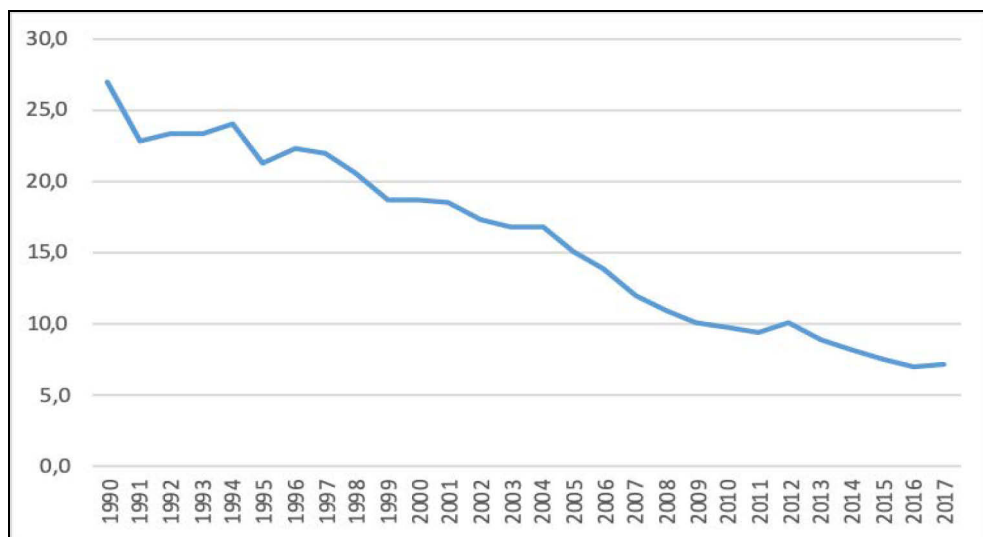
The inequality between the lifespan of women and men observed at the level of the population, is valid for both the urban and the rural environments, but is larger in the rural areas. According to the data for the recent years, women in the urban areas are expected to live about ten years longer than men in the rural areas.



**Figure 4.** Expectation of life at birth (in years), by sex, in 1970-2017

To look a bit more in depth at the transformations outlined above, we will see how the *death rates by age* have changed over the last decades. I will comment briefly on the death rates at zero years old (infant mortality) and on the age groups above 50 years old, which contribute the great majority of death cases – and therefore it is to be expected that they will have changed similarly to the expectation of life at birth. We will see, however, that there are particularities in terms of age and sex that can not be inferred from the general model.

When it comes to *infant mortality*, things are relatively straightforward. The indicator that measures mortality at zero years old has dropped a lot in Romania throughout the communist period (although the rhythm was not constant), since its values were enormous before the war – about 175-180‰. It reached 26.9‰ in 1990. As indicated in the graph in Figure 5, in 1991 infant mortality dropped a few points suddenly, as a result of the drop in natality, and then, in 1992-1994, it stayed at approximately the 1991 value. Later on, the downward slope was constant, with current values at 7-8‰. These are still higher than in most developed countries, but nonetheless indicate a massive change in terms of infant mortality, not only when contrasted with the interwar period, but also as compared to the communist period.



Source: INS, TEMPO series

**Figure 5.** The evolution of infant mortality in 1990-2017  
(deaths under one year old per 1000 live births)

As I already anticipated, death rates are higher after the age of 50, when the incidence of the cardiovascular and neoplastic conditions is higher. These factors are responsible for 58% and 20% respectively of the total deaths (or 51% and 22% if we take into account a population of standard age, according to the OMS methodology). Since we can not look at the situation and evolution of mortality by age in detail here, we will note in brief that after 1990, in the case of the elderly (75 years and older) the rates have dropped

constantly for both sexes and they did so more steeply after 2005. For people between the ages of 50 and 74, the situation by sex is different: in the first years, up to 1996, the mortality of women has stayed relatively constant (if we exclude the small increase in 1996), while that of men had clearly increased. After 1996, there is a drop for both sexes.

The large inequality of chances in the face of death between the two sexes for the older ages is constant throughout the whole period analysed; it has gone up in the last years of the communist regime and in the first years of the postcommunist regime and it is still very significant. If we look at the age groups over 50 and calculate the average of the values for the last three years for which the data is available (2015-2017), we can see that for the individuals between 50 and 60 years old the inequality in terms of report value is over 2.5, which is to say that the death chances for men is more than two and a half larger than for women. After this age interval, the inequalities dwindle gradually, but it is only after the age of 85 that they become similar.

To sum up, mortality in contemporary Romania is still high (in terms of expectation of life at birth or death rates by age) as compared to the majority of the EU countries, even though things have been improving since the mid-1990s. There still is place for substantial improvement when it comes to the deaths caused by cardiovascular illnesses, which are very numerous, especially in the case of the middle-aged and slightly older individuals (45-75 years old), and in particular for the male sex. There is also place for improvement when it comes to infant mortality.

### **Concluding remarks**

The transition of Romania to the postcommunist era, at the end of 1989, has been accompanied by a sudden and substantial demographic decline. The transnational balance of migration already turned negative in 1990, and in 1992 natural growth became negative as well. The status of natural growth was largely dependent on fertility, which has reached after the first five years the lowest level in Europe – 1.3 children per woman. While other countries that have undergone the same transformations have returned to higher fertility rates (reaching 1.6-1.8 children per woman), the numbers for Romania have remained steady and the recent numbers issued by INS or EUROSTAT, which show a growth to 1.5-1.6 children per woman are misleading and a result of live births reported for the resident population (with a smaller proportion of women of fertile age), even though they come in fact from the legal population.

It must be noted that this “frozen” indicator covers a quarter of a century dense in socioeconomic transformations, which did not manage to produce changes in fertility. There were, however, changes in the tempo of fertility, with births due to older mothers. It is also worth mentioning that no political leadership in the postcommunist period has had any clear, consistent demographic policy to stimulate natality, although the public discourse is almost unanimous in judging negatively the state of the birth rate. Measures were isolated, taken *ad hoc* and were not at all efficient in stimulating the birth rate; they might have contributed at most in putting a brake on the initial downward trend, to maintain the current status. Because they consisted mainly in providing financial incentives, the measures have stimulated natality mainly in the poorer social groups, for which the increase in financial support was perceived as a boost to the income of the family. In the recent years, working, more educated women have contributed more substantially to the birth rate. This would require measures fitting for this category, which would also benefit the future of the children and would lead to a growing proportion of children born in families with no risk of poverty.

Less than a third of children in Romania are born outside of marriage, and many of them will eventually live with their parents. Unlike many other European countries, marriage remains the site where children are born and receive their primary socialization. I could not describe here the evolution of the phenomena that refer to the formation and dissolution of families (nuptiality and divortiality). I have done so in detail elsewhere<sup>18</sup> and it is worth mentioning that there were no important transformations of these phenomena after the communist period, with the exception of the rising age at marriage. This institution – marriage/family – always needs to be taken into account whenever there is an intention to intervene with measures for the stimulation of fertility.

Unfortunately, there are no practical models to follow in order to achieve demographic objectives such as the one mentioned above, since the diversity of situations across the world is disconcerting. Theoretical models are not of great help either. Rational choice theory and other theories related to it, based on the cost of raising a child, can not predict accurately the behaviour related to fertility, although the influence of the economic factors (cost and benefits) can not be excluded. But there are always counterexamples too, the most recent that of South Korea, where fertility dropped below one child per woman in 2018 in spite of the pronatalist policies on which the government has spent in the decade leading to 2018 about 70 billion dollars

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<sup>18</sup> See, for example, Rotariu, Dumănescu, Hărăguș (2017) and the contribution of the author to the book coordinated by V. Ghețău (2018).



(Poon, 2018). As for the so-called theory of “the second demographic transition”, I mentioned it above and will not expand here on the arguments, presented in many previous papers.<sup>19</sup> In brief, this is not a consistent theory – there have been epicycles added to it constantly. There is no transition – a transition presupposes the shift from one state to another, both of them well-defined, but in this case we do not know when and how the transition ends. Finally, this is not a demographic theory, since it refers to much wider social matters. In a nutshell, it was not capable to predict the trajectory of fertility at the end of the actual demographic transition in any region of the world. Meanwhile, the target and the central element to be explained and predicted by this theory was precisely the drop of fertility to very low numbers in the post-transition period of the years 1970-80, in the western countries.

Going back to the situation of Romania, there is an increasingly more substantial contribution to the birth rate by the smaller cohorts, born after 1990, which will lead to fewer births, *ceteris paribus*, and therefore to a steeper negative natural growth. The reduced mortality will also not be accompanied in the next few decades by a drop in the number of deaths, as the relatively large cohorts born after the war are reaching the older ages. Consequently, it is not very likely that the deficit of the natural growth will decrease in the future.

For migration, the second most important factor in the drop of the population of Romania and a topic in many recent analyses<sup>20</sup>, I have presented only an approximation of its effects on population growth. The only number that is relatively reliable from the INS data is that regarding permanent migration, which, for the 1990-2017 period, has a negative balance of about 230,000. It was, however, temporary migration that led to the dramatic demographic plunge described for Romania (in terms of *resident population*). I estimated the stock of those living abroad, but with Romanian citizenship and domicile at about 2.8 million, on the basis of the INS data about the *legal population*. Moreover, I have shown there is a stock of migrants of about one million that hold on to their Romanian citizenship, but have neither their residence, nor their domicile in Romania (these are called Romanian citizens domiciled abroad).

As a result of the deficit of the balances of natural growth and of net migration, the resident population of Romania has dropped to about 19.5 million in 2018 (out of which 100,000 to 200,000 foreigners with their residence in Romania), down from 23.2 million on January 1<sup>st</sup> 1990. This drop is often seen as catastrophic, and is the base of projections up until 2050 or beyond.

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<sup>19</sup> See, among the works published in English, Rotariu (2006, 2009, 2010, 2011).

<sup>20</sup> I will mention only Dumitru Sandu, with noteworthy contributions, including in the volume coordinated by V. Ghețău (2018).

What is missing from this kind of projection is the hypothesis that not all of the “temporary” migrants are “permanent” losses for the population of Romania. A similar phenomenon happened to the population of some of the European countries in the decades immediately after the war, when an impressive number of people from Italy, Spain, or Portugal have migrated to the more developed western countries, only to eventually return to their countries of origin. Today, these are some of the main destination countries for Romanian emigrants. Improvements in the quality of life and other social factors in Romania would very likely draw a larger number of foreigners, as well as some of the Romanians who have emigrated and are still connected to the country, thus increasing the volume of the resident population.

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## ANNEX 1

**The evolution of the usually resident population and of the domiciled population in Romania, on the 1<sup>st</sup> of January and 1<sup>st</sup> of July, starting with 1990**

YEAR	Usually resident population		Population domiciled in Romania		The difference between the domiciled population and the resident population on the 1 <sup>st</sup> of January
	On the 1 <sup>st</sup> of January	On the 1 <sup>st</sup> of July	On the 1 <sup>st</sup> of January	On the 1 <sup>st</sup> of July	
1990	23,211,395	23,206,720	23,211,395	23,206,720	0
1991	23,192,274	23,185,084	23,192,274	23,185,084	0
1992	22,810,035	22,788,969	23,143,860	23,126,797	333,825
1993	22,778,533	22,755,260	23,118,745	23,098,108	340,212
1994	22,748,027	22,730,622	23,093,262	23,078,952	345,235
1995	22,712,394	22,680,951	23,062,448	23,033,618	350,054
1996	22,656,145	22,607,620	23,009,075	22,962,740	352,930
1997	22,581,862	22,545,925	22,938,405	22,903,955	356,543
1998	22,526,093	22,502,803	22,885,802	22,864,721	359,709
1999	22,488,595	22,458,022	22,852,905	22,825,196	364,310
2000	22,455,485	22,435,205	22,825,288	22,809,610	369,803
2001	22,430,457	22,408,393	22,809,546	22,791,655	379,089
2002	21,833,483	21,675,775	22,779,441	22,748,121	945,958
2003	21,627,509	21,574,365	22,733,751	22,702,149	1,106,242
2004	21,521,142	21,451,845	22,688,392	22,656,570	1,167,250
2005	21,382,354	21,319,673	22,648,514	22,621,457	1,266,160
2006	21,257,016	21,193,749	22,614,980	22,594,368	1,357,964
2007	21,130,503	20,882,980	22,582,773	22,562,913	1,452,270
2008	20,635,460	20,537,848	22,561,686	22,542,169	1,926,226
2009	20,440,290	20,367,437	22,541,941	22,520,477	2,101,651
2010	20,294,683	20,246,798	22,516,004	22,492,083	2,221,321
2011	20,199,059	20,147,657	22,480,599	22,441,740	2,281,540
2012	20,095,996	20,060,182	22,433,741	22,401,865	2,337,745
2013	20,020,074	19,988,694	22,390,978	22,359,849	2,370,904
2014	19,947,311	19,916,451	22,346,178	22,299,730	2,398,867
2015	19,875,542	19,822,250	22,312,887	22,286,392	2,437,345
2016	19,760,585	19,706,529	22,273,309	22,236,059	2,512,724
2017	19,644,350	19,591,668	22,230,843	22,213,586	2,586,493
2018	19,530,631		22,193,562	22,177,605	2,662,931

**Data source:** INS (Tempo Online, [www.insse.ro](http://www.insse.ro); *Demographic Yearbook*, 2006).

**ANNEX 2**

**The age distribution of the Romanian population in 1990 and for three categories of population in 2017, as well as the proportion of Romanians living abroad and domiciled in Romania (in %)**

Age group	Total population					Women				
	1990	2017				1990	2017			
		Domicile	Residence	Difference	Percent abroad		Domicile	Residence	Difference	Percent abroad
	Five year age groups									
0- 4 years old	7.78	4.65	5.01	1.98	5.03	7.52	4.42	4.77	1.83	4.95
5- 9 years old	7.32	5.05	5.22	3.79	8.87	7.06	4.79	4.96	3.57	8.90
10-14 years old	8.47	5.11	5.37	3.15	7.29	8.17	4.85	5.11	2.96	7.28
15-19 years old	8.10	5.17	5.43	3.19	7.28	7.82	4.91	5.17	3.05	7.40
20-24 years old	8.51	5.30	5.29	5.38	11.97	8.23	5.06	5.06	4.99	11.79
25-29 years old	6.01	7.23	6.38	13.55	22.12	5.79	6.91	5.96	13.90	24.02
30-34 years old	7.36	7.59	6.66	14.58	22.68	7.15	7.24	6.26	14.46	23.85
35-39 years old	7.41	8.32	7.50	14.38	20.41	7.25	7.94	7.18	13.49	20.29
40-44 years old	6.19	8.29	7.80	11.94	17.00	6.10	7.92	7.45	11.43	17.23
45-49 years old	5.16	9.11	8.50	13.65	17.69	5.17	8.84	8.10	14.31	19.34
50-54 years old	6.21	5.47	5.71	3.64	7.85	6.31	5.37	5.50	4.42	9.82
55-59 years old	5.83	6.13	6.22	5.48	10.54	5.95	6.21	6.24	5.95	11.45
60-64 years old	5.25	6.49	6.91	3.36	6.11	5.49	6.80	7.25	3.52	6.18
65-69 years old	4.23	5.37	5.95	1.03	2.26	4.69	5.83	6.49	0.99	2.04
70-74 years old	2.10	3.57	3.99	0.43	1.44	2.48	4.05	4.53	0.48	1.41
75-79 years old	2.30	3.19	3.58	0.26	0.97	2.73	3.84	4.31	0.34	1.07
80-84 years old	1.22	2.31	2.60	0.15	0.78	1.45	2.88	3.25	0.21	0.87
85 years old and above	0.55	1.66	1.87	0.05	0.36	0.65	2.14	2.42	0.08	0.45
Total	100	100	100	100	11.80	100	100	100	100	11.94

NOTES ON THE DEMOGRAPHIC TRANSFORMATIONS IN POSTCOMMUNIST ROMANIA

Age group	Total population					Women				
	1990	2017				1990	2017			
		Domicile	Residence	Difference	Percent abroad		Domicile	Residence	Difference	Percent abroad
	Four large age groups									
0-14 years old	23.57	14.81	15.60	8.93	7.12	22.75	14.06	14.84	8.37	7.10
15-39 years old	37.39	33.61	31.27	51.07	17.94	36.24	32.05	29.63	49.88	18.58
40-64 years old	28.65	35.49	35.15	38.07	12.66	29.02	35.14	34.53	39.64	13.47
65 years old and above	10.40	16.09	17.99	1.93	1.41	11.98	18.74	21.00	2.11	1.34

**Data source:** Personal computations based on data from INS (Tempo Online, [www.insse.ro](http://www.insse.ro)).

### ANNEX 3

#### Natural movement in the period 1990-2017, by domicile and residence

YEAR	Population domiciled in Romania			Population resident in Romania		
	Live births	Deaths	Natural growth	Live births	Deaths	Natural growth
1990	314,746	247,086	67,660			
1991	275,275	251,760	23,515			
1992	260,393	263,855	-3,462			
1993	249,994	263,323	-13,329			
1994	246,736	266,101	-19,365			
1995	236,640	271,672	-35,032			
1996	231,348	286,158	-54,810			
1997	236,891	279,315	-42,424			
1998	237,297	269,166	-31,869			
1999	234,600	265,194	-30,594			
2000	234,521	255,820	-21,299			
2001	220,368	259,603	-39,235			
2002	210,529	269,666	-59,137			
2003	212,459	266,575	-54,116			
2004	216,261	258,890	-42,629			
2005	221,020	262,101	-41,081			
2006	219,483	258,094	-38,611			
2007	214,728	251,965	-37,237			
2008	221,900	253,202	-31,302			
2009	222,388	257,213	-34,825			
2010	212,199	259,723	-47,524			
2011	196,242	251,439	-55,197			
2012	201,104	255,539	-54,435	180,714	253,716	-73,002

YEAR	Population domiciled in Romania			Population resident in Romania		
	Live births	Deaths	Natural growth	Live births	Deaths	Natural growth
2013	214,932	250,466	-35,534	188,599	247,475	-58,876
2014	202,501	255,604	-53,103	198,740	254,965	-56,225
2015	206,190	262,981	-56,791	201,995	262,442	-60,447
2016	203,231	257,547	-54,316	200,009	257,215	-57,206
2017	205,835	261,745	-55,910	202,151	261,402	-59,251

**Data source:** INS (Tempo Online, [www.insse.ro](http://www.insse.ro)).

## ANNEX 4

### Transnational migration in the period 1990-2017

YEAR	Domicile change			Residence change		
	Immigrants	Migrants	Balance	Immigrants	Migrants	Balance
1990		96,929	-96,929			
1991	1,602	44,160	-42,558			
1992	1,753	31,152	-29,399			
1993	1,269	18,446	-17,177			
1994	878	17,146	-16,268			
1995	4,458	25,675	-21,217			
1996	2,053	21,526	-19,473			
1997	6,600	19,945	-13,345			
1998	11,907	17,536	-5,629			
1999	10,078	12,594	-2,516			
2000	11,024	14,753	-3,729			
2001	10,350	9,921	429			
2002	6,582	8,154	-1,572			
2003	3,267	10,673	-7,406			
2004	2,987	13,082	-10,095			
2005	3,704	10,938	-7,234			
2006	7,714	14,197	-6,483			
2007	9,575	8,830	745			
2008	10,030	8,739	1,291	138,929	302,796	-163,867
2009	8,606	10,211	-1,605	135,844	246,626	-110,782
2010	7,059	7,906	-847	149,885	197,985	-48,100
2011	15,538	18,307	-2,769	147,685	195,551	-47,866
2012	21,684	18,001	3,683	167,266	170,186	-2,920
2013	23,897	19,056	4,841	153,646	161,755	-8,109
2014	36,644	11,251	25,393	136,035	172,871	-36,836
2015	23,093	15,235	7,858	132,795	194,718	-61,923
2016	27,863	22,807	5,056	137,455	207,578	-70,123
2017	50,199	23,156	27,043	177,435	242,193	-64,758

**Data source:** INS (Tempo Online, [www.insse.ro](http://www.insse.ro)).